Redpoint Interaction v6.6

Reference Guide Part One

Introduction to Offer Designer

Redpoint Global Inc., 888 Worcester Street, Suite 200, Wellesley, MA 02482 USA
T: 1 781-725-0250 F: 1 781-583-0464 www.redpointglobal.com

Contents

1 Introduction

This user guide provides detailed information about using Redpoint Interaction (RPI).

It documents the version 6.6 functionality available at August 2022.

1.1 What is RPI?

RPI is the key component of Redpoint's Intelligent Orchestration pillar, which allows marketers to execute complex multitouch, multichannel journeys or simple one-off campaigns that are designed to engage with customers and prospects on the channels that they choose to interact with a business. Dynamic rules and content enable marketers to keep up with each customer's cadence as preferences, interests and needs evolve.

Intelligent Orchestration and RPI Are part of rgOne™, Redpoint Global's fully integrated solution, which delivers you a single point of control to connect customer data and execute marketing campaigns, so customers can achieve the real-time, hyper-personalized experiences they demand.

For more information, please visit Redpoint's website.

1.2 About This Document

This document consists of the following sections:

- About RPI: provides an overview of RPI, describes what makes it unique, and summarizes the software architecture that underpins the tool. This section also provides details of the application's key concepts.
- RPI Application Framework: gives a comprehensive account of the features of the RPI framework, which underpins all other aspects of system functionality.
- My Jobs Dialog: provides access to the server-side jobs initiated by the current user.
- Configuration Workbench: provides a single point for the management of the underlying, system-wide entities necessary for RPI's efficient operation.
- Attributes: RPI's unique attributes provide a layer of abstraction that hides unnecessary complexity in your data and allows the tool to speak your language.
- Rule Designer: facilitates management of the following file types:
    - Selection rules: collections of criteria that define a subset of a records within a database. Standard, Basic and NoSQL selection rules are supported.
    - Analysis panels: Venn diagrams, charts, crosstabs, pivot tables and maps that allow you to build selection rules visually.

  - Realtime decisions: rules that facilitate the realtime manipulation of content in accordance with a website visitor's characteristics, behaviors and previous receipt of RPI communications.

  - Decision scorecards: allow you to assign a weight value to a site visitor's fulfilling the criteria defined within a realtime decision. Further content personalization can then be carried out by leveraging scorecards in subsequent realtime decisions

- Analysis Panels: details a series of analysis panels – Venn diagram, Chart, Crosstab, Pivot table and Map – which can be used to expedite the process of creating selection rules.

- Cell List Designer: allows you to create and manage cell lists. Cell lists are bundles of rules that allow you to subdivide your data quickly and accurately in order to ensure the correct treatment is applied to records that share like characteristics.

- Audience Designer: documents the intuitive interface that allows you to create re-usable audiences which can be leveraged across your customer and prospect interactions.

- Asset Designer: allows you to create and manage re-usable text, HTML, image, table and web form assets that can be utilized when building outbound or inbound content.

- Smart Asset designer: allows you to create and manage attribute, audience segment, rule, model, goal and advanced smart assets, which can be used personalize inbound and outbound content.

- Offer Designer: allows you to create and manage offers – collections of content that are able to be tailored for delivery across multiple channels.

- Export Template Designer: allows you to create and manage export templates, which give great flexibility in controlling the format of output files generated by RPI.

- Model Project Designer: enables Classification, Clustering and Regression models created in Redpoint Automated Machine Learning to be leveraged in RPI.

- Subscription Group Designer: allows you to create and manage subscription groups, which help facilitate membership of groups to whom an ongoing stream of communication may subsequently be directed.

- Interaction Designer: allow you to execute interaction workflows, retrieving details of those individuals you wish to contact from your data warehouse and undertaking appropriate fulfillment activities in respect of the same. The Interaction Designer also allows you to observe the results of your executions in real time. In addition, real-time triggered messages can be sent from the Interaction Designer using queue listeners and activities.

- Interaction Tracker: this interface affords visibility of interactions within the current RPI client. A filterable list of interactions is displayed, within which a number of tasks can be undertaken – e.g. viewing results, activating workflows and opening the Interaction Designer.

- Interaction Trigger Tracker: this interface provides an overview of currently-active interaction triggers that have yet to fire, and which match a specified set of filter criteria.

- Workflow Builder: a productivity tool that allows you to build an interaction workflow quickly and simply in a step-by-step, intuitive manner.
- Results Window: facilitates your viewing an interaction's, workflow instance's or audience instance's results. Also allows you to view metadata assignment within an audience.
- Workflow Instance Viewer: provides real time visibility of an interaction workflow's execution.
- Audience Instance Viewer: presents a real time view of an audience as it executes, allowing you to observe status updates and results as they happen.
- Data Connectors: allow you to transfer data, on a repeating basis, to a third party. Data connectors provide a simpler way to effect data integration without the unnecessary overhead inherent in performing this task using an interaction.
- RPI Realtime: provides an overview of RPI's realtime capabilities, which primarily center around the ability to present the most on-demand content to an inbound (typically website) visitor.
- Landing Page Designer: allows you to build landing pages that can be hosted at your website, to which can be added web forms that allow the capture of data from site visitors. Landing pages can be tailored to render content customized to visitors' needs through the use of smart assets and can effect A/B/n or machine learning-based optimization using goal smart assets.
- Realtime Tracker: allows you to view metrics relating to published landing pages, such as the number of times pages were visited, details of links clicked therein and forms submitted. Visibility of visitors' behavior at external web pages can also be provided. In addition, interaction results can be viewed in the same context, allowing the interplay between outbound communications and site visits to be explored.
- Published Content Tracker: this interface allows you to view a list of published (and, if required, unpublished) content (smart assets and landing pages) at the current RPI client.
- Realtime Details: allows you to view metrics and trends thereof, generated by site visitor activity, in respect of a published version of a landing page, smart asset or interaction.
- Single Customer View: allows you to search for records from the data warehouse – typically customers – and then choose one of the records to view in detail in the Single Customer View interface. The interface can display properties of, details of records related to and a timeline of events that have occurred in respect of the selected customer.
- File Approval: describes the elements of RPI that collectively facilitate the approval by designated users of file assets.
- Data Project Designer: facilitates the import of data files into your marketing database.
- Dashboards: allows you to build exportable dashboards, which provide instant and insightful visibility of activities and results of particular interest to specific audiences.

- Wiki Browser/Designer: allow you to view and contribute to pages in the RPI Wiki – a single, one-stop repository for learning and best practice within your RPI user community.

- Reporting Portal: gives access to your own suite of reports directly from the RPI user interface.

- Training Aids: two training aids (Build an Email and Send Emails) are provided. These allow the novice user to acquaint her- or himself with RPI key concepts and interfaces, at the same time undertaking productive work. Training aids can be enabled or disabled as required.

- Operations Interface: provides operational staff with an up-to-date synopsis of system health and provides access to server log files and services.

2 RPI Architecture

This section describes the constituent elements of the RPI software architecture.

2.1 The RPI Architecture

2.2 Client Application

The RPI client application (not to be confused with a multi-tenant client (see below) runs as a stand-alone program on your local machine. It makes use of the latest Microsoft technologies to provide a vibrant, highly performant, graphically rich user interface.

2.3 Components of an RPI Server

At the heart of an RPI server lies its 'core'. The core consists of:

- An initial cluster node (installed on a single physical or virtual machine). By default, the initial node always supports the Node manager role.
- Core operational databases (which can be installed upon the same or another machine).

Optionally, the RPI server cluster can be expanded to include additional cluster nodes. Each cluster node, including the initial node, will expose the Node manager role. In addition, each can expose the following roles:

- Windows services
- Web services
- Help files

The server communicates with a data warehouse (SQL Server, Oracle, Teradata, Netezza, GreenPlum Database, MySQL, Sybase IQ, AWS RedShift, Postgres, SQL Server PDW, DB2, Splice Machine, Azure SQL Database, Azure Synapse Analytics, Azure Database for MySQL, Azure Database for PostgreSQL, MariaDB, Vertica, SAP HANA, Amazon Aurora, Google BigQuery, Snowflake or Yellowbrick), which contains details of the individuals (typically customers and/or prospects) with whom you wish to communicate using RPI.

An RPI server must contain at least one client. If operating in a multi-tenancy capacity, many clients can be hosted in the same installation.

In addition, a server can support many users. Each user may access one or more clients.

The concepts introduced above are described below:

2.4 Core Operational Databases

The following operational databases are created during core installation:

- Pulse: stores details of configuration relating to the cluster as a whole.
- Pulse_Logging: stores details of log messages generated across the whole cluster.

One uniquely named instance of the following operational database is created at the installation of each Windows services role:

- ProcessManager: stores details of workflows' execution across all clients in the cluster.

2.5 Client Operational Databases

The following databases are created for each client installed within the cluster. Note that each client's version of the database will be assigned a unique name by the appending of a database suffix (captured at client creation).

- Interaction_[suffix]: stores details of the entities created by a single client's users running the RPI client application.
- InteractionAudit_[suffix]: stores audit records created in respect of actions undertaken by a single client's users only.

2.6 Data Warehouse

Each RPI client is associated with a data warehouse – a SQL Server, Netezza, Oracle, Teradata, GreenPlum Database, MySQL, AWS RedShift, Postgres, Sybase IQ, SQL Server PDW, DB2, Splice Machine, Azure SQL Database, Azure Synapse Analytics, Azure Database for MySQL, Azure Database for PostgreSQL, MariaDB, Vertica, SAP HANA, Amazon Aurora, Google BigQuery, Snowflake or Yellowbrick marketing database that is the source of the data required to engage in conversational dialogue with customers or prospects. The data warehouse is also used as the repository within which details of the execution of such communications ('offer history') are stored.

2.7 NoSQL Data Warehouse

RPI offers native support for three NoSQL data warehouses – MongoDB, CosmosDB and Couchbase. All three are examples of Document databases, which persist (potentially unstructured) data in a Collection of Documents, rather than in a series of related tables as per a traditional SQL database. NoSQL databases can offer significant cost and performance advantages over SQL databases.

2.8 Auxiliary Databases

Each RPI client can be configured to support one or more auxiliary databases, in addition to the main data warehouse. Data stored within auxiliary databases can be used for targeting and segmentation purposes. Note that appropriate joins between the data warehouse and auxiliary databases must exist – it is not possible to use an auxiliary database table as an interaction resolution table, nor is it possible to write offer history data to an auxiliary database.

All of the supported database management systems suitable for data warehouse use can be used to host an auxiliary database. In addition, the Amazon Athena, Amazon Redshift Spectrum, Apache Hive, Apache Spark, Apache Drill, Cassandra, Google Big Query, Google BigTable, Google Spanner, MarkLogic, Microsoft Azure Cosmos DB, Salesforce.com, MapR DB platforms can be used to host auxiliary databases only. The MongoDB, CosmosDB, Couchbase, Amazon Document DB and Google Datastore NoSQL database platforms can also be used to host auxiliary databases.

2.9 Database Modes

RPI supports clients running in one of the following modes:

- SQL data warehouse with any auxiliary databases: in this mode, a SQL data warehouse can be accompanied by any combination of SQL and/or NoSQL auxiliary databases.
- NoSQL databases only: a NoSQL data warehouse can be optionally accompanied by one or more NoSQL auxiliary databases.
- NoSQL data warehouse with SQL auxiliary databases: a NoSQL data warehouse can be optionally accompanied by one or more SQL or NoSQL auxiliary databases.

2.10 Cluster

An RPI server installation can be installed upon several physical or virtual machines. This collection of machines, and the services (or 'roles') that they offer, are collectively known as a cluster.

2.11 Node

A single machine in the cluster is referred to as a node. An RPI server installation must contain at least one node.

2.12 Node Roles

Nodes within an RPI cluster fulfill a number of roles:

- Node manager
- Windows services

- Web services
- Help files

Each role fulfills the node manager role (although only one node manager (the Master) is active at a given time). Nodes may optionally fulfill the other roles; however, all roles must be exposed at least once in the cluster.

2.13 Node Manager

The node manager service role is supported by all nodes within a cluster. Only one node at a time assumes the status of Master node manager; it is this service that controls the allocation of work to Windows service roles within the cluster. In addition, the node manager service facilitates connection of the Server Workbench application itself to the cluster.

2.14 Windows Services

At least one node in the cluster must support the Windows services role. This role provides two Windows services: Workflow Manager and Task Manager.

Workflow Manager is responsible for executing server jobs generated by the undertaking of activities in the RPI client application – for example, the testing of an audience or execution of an interaction workflow.

Task Manager is responsible for the execution of asynchronous server-side jobs (e.g. catalog synchronization or generation of a selection rule waterfall report).

Note that, when multiple nodes expose the Windows services role, the node to be assigned the responsibility for executing a server job will be determined by the Master node manager (the job will be assigned to the Windows services node with the fewest executing server jobs).

2.15 Web Services

At least one node in the cluster must support the Web services role. This role is responsible for controlling access to the RPI server from the RPI client application. In addition, once connected, all communications between client application and server are carried out by this role.

2.16 Help Files

At least one node in the cluster must support the Help files role (if online help is to be made available to users). This role is responsible for serving online help content in a browser, as requested by RPI client application users.

2.17 Client

A client (not to be confused with the RPI client application) is an entity within an RPI server that represents a discrete and independent usage of the tool by an organization. All clients' data are persisted, securely, entirely independently of one another – a user who is able to access only Client A will be completely oblivious to the existence of Client B within the same server installation.

2.18 User

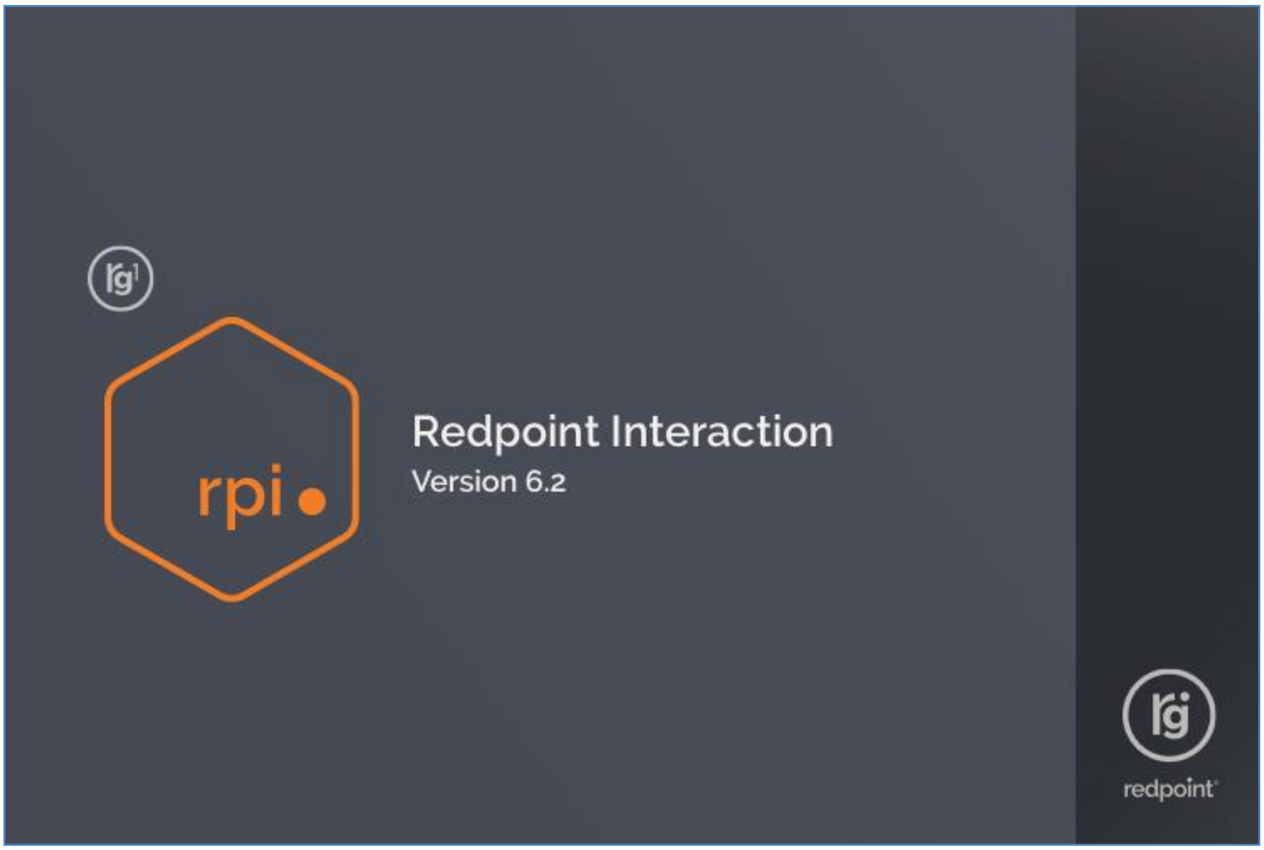
RPI users can be granted access to a single, or more than one, client, and can be provided with appropriate permissions in each such context.

3 RPI Application Framework

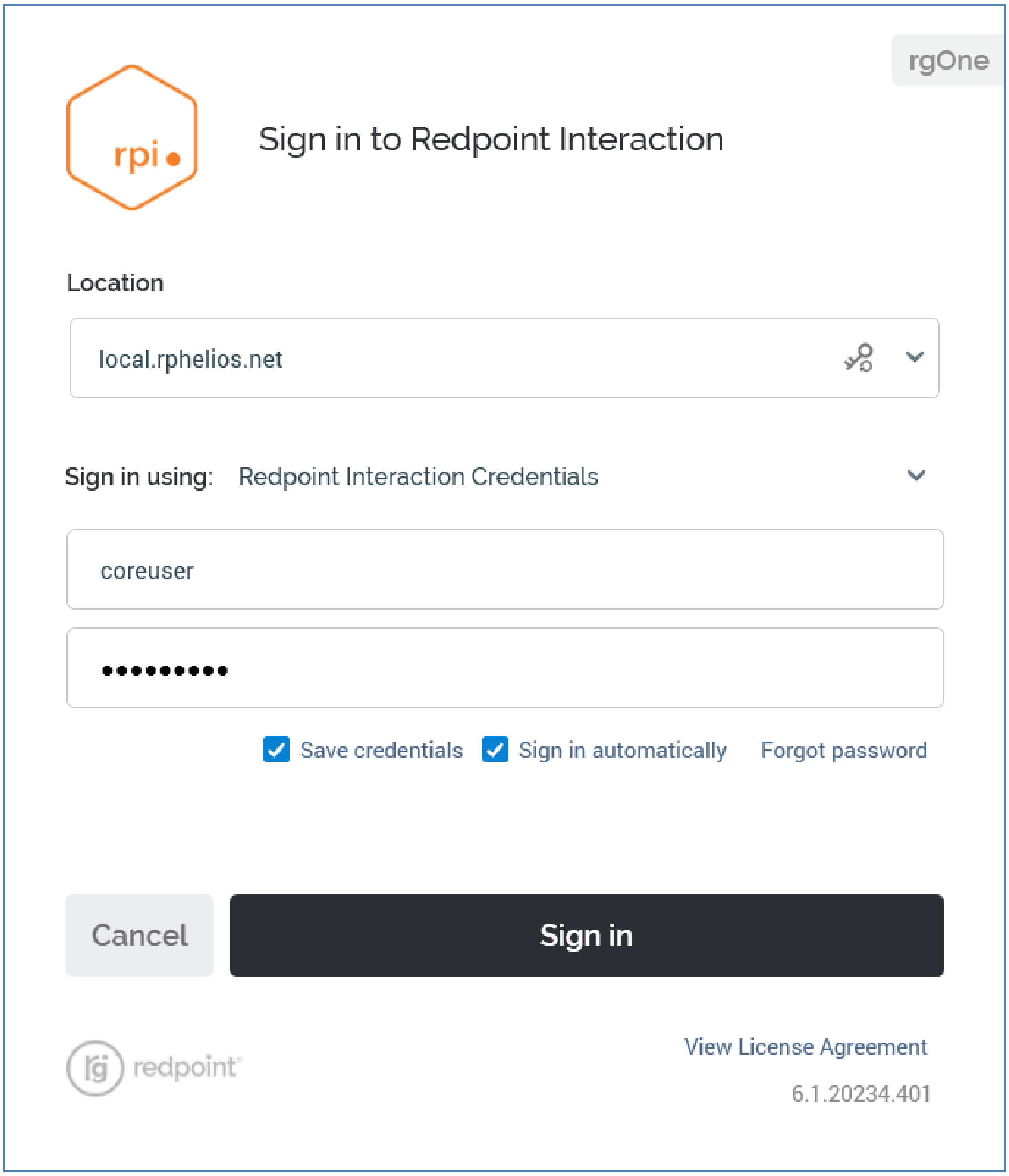
RPI is built on Redpoint's unique application framework, which has been architected to allow a wide range of capabilities to be exposed within a unified user interface. The Framework ensures that all of its contained tools share a cohesive approach to the user experience and integrate seamlessly to provide a joined-up, homogeneous and functionally rich suite of capabilities. The framework provides a number of common features, each of which is covered separately.

3.1 Signing In

RPI is accessed via a Sign in to Redpoint Interaction dialog. Prior to display of the dialog, a splash screen is shown momentarily.



In a short while, the Sign in dialog is shown.



The dialog contains the following:

- Location: this combo box allows you type in the name (and, optionally, port number) of the RPI server to which you wish to connect. Servers to which you have previously successfully connected are listed in the dropdown. The most recent server to which you connected is selected by default.
- Retrieve settings…: the combo box can be populated by clicking the Retrieve settings from the server to enable signing in using external authentication button, which is displayed to the right of the Location to field.

Clicking the button retrieves the latest Active Directory server settings and populates the chooser with any available Active Directory sign in methods. The button is disabled when signing in without saved credentials, and, when signing in using saved credentials, it is hidden until Cancel is clicked.

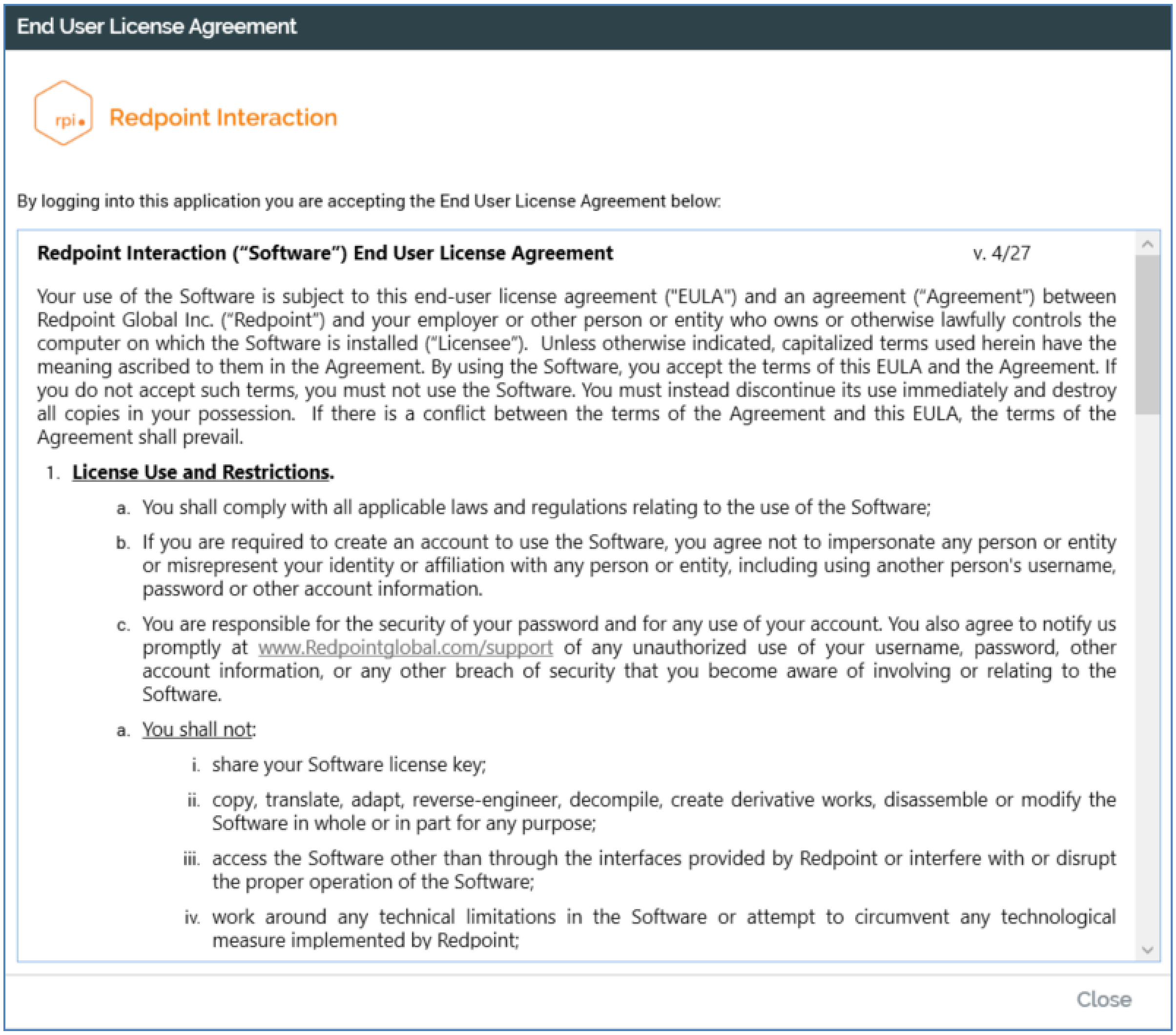
- Sign in using: depending on your current RPI server configuration, you can choose to sign in using at least one, and up to all of the following methods:

    - Redpoint Interaction Credentials (always available)
    - Azure Active Directory (available if configured)
    - Active Directory Federation Services (ADFS) (available if configured)
    - OpenID Authentication (available if configured)

  You can select your method of sign in using the Sign in using a dropdown. Each sign in method is described separately.

  The property defaults to its most recently-used value.

- Username/Password: these fields are displayed if signing in using RPI Credentials. If shown, they are mandatory. Their usage is described elsewhere in the documentation.
- Save credentials: this checkbox is displayed when signing in using RPI Credentials. It is unchecked by default. Its usage is described elsewhere in the documentation.
- Sign in automatically: this checkbox is unchecked by default. Its usage is described elsewhere in the documentation.
- Forgot password?: this button is displayed if signing in using RPI Credentials. Its usage is described elsewhere in the documentation.
- Cancel: clicking this button removes the Sign in to Redpoint Interaction dialog from display.
- Sign in: clicking this button starts the RPI sign in process.
- View License Agreement: clicking the link at the bottom of the dialog displays the RPI End User License Agreement in a separate Window.



End User License Agreement

Redpoint Interaction

By logging into this application you are accepting the End User License Agreement below:

Redpoint Interaction (“Software”) End User License Agreement v. 4/27

Your use of the Software is subject to this end-user license agreement ("EULA") and an agreement (“Agreement”) between Redpoint Global Inc. (“Redpoint”) and your employer or other person or entity who owns or otherwise lawfully controls the computer on which the Software is installed (“Licensee”). Unless otherwise indicated, capitalized terms used herein have the meaning ascribed to them in the Agreement. By using the Software, you accept the terms of this EULA and the Agreement. If you do not accept such terms, you must not use the Software. You must instead discontinue its use immediately and destroy all copies in your possession. If there is a conflict between the terms of the Agreement and this EULA, the terms of the Agreement shall prevail.

1. **License Use and Restrictions.**
   a. You shall comply with all applicable laws and regulations relating to the use of the Software;
   b. If you are required to create an account to use the Software, you agree not to impersonate any person or entity or misrepresent your identity or affiliation with any person or entity, including using another person's username, password or other account information.
   c. You are responsible for the security of your password and for any use of your account. You also agree to notify us promptly at www.Redpointglobal.com/support of any unauthorized use of your username, password, other account information, or any other breach of security that you become aware of involving or relating to the Software.
   a. You shall not:
      i. share your Software license key;
      ii. copy, translate, adapt, reverse-engineer, decompile, create derivative works, disassemble or modify the Software in whole or in part for any purpose;
      iii. access the Software other than through the interfaces provided by Redpoint or interfere with or disrupt the proper operation of the Software;
      iv. work around any technical limitations in the Software or attempt to circumvent any technological measure implemented by Redpoint;

Close

- RPI build number: hovering over this property displays the date and time the build was created.

3.1.1 Signing In Using Redpoint Interaction Credentials

To sign in using Redpoint Interaction Credentials:

- Select a server to which to connect from the drop-down list. You can also enter one manually (including a specific port number, if required). After each successful sign in to a new server, a new entry is added to the drop-down. If cluster configuration setting AllowSavingLoginDetails is set to False, you must always select a server when signing in.
- Enter your user name and password. Any preceding or trailing spaces are removed from the values you enter.
- Click Sign in.

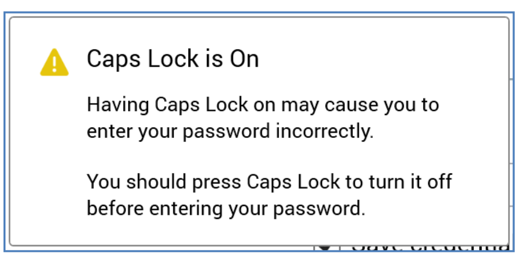
A rotating icon is shown at the Sign in button while the client application attempts to connect to the server.

Following a successful sign in, the RPI Home Page is displayed.

Note that when you connect to the RPI server the connection is entirely secure, being made using the HTTPS (Hypertext Transfer Protocol Secure) protocol.

If you attempt to sign into an RPI server with a client application version number that is higher than the server, your sign in attempt will fail and an error message will be shown.

If Caps Lock is set to On when the Sign in dialog is displayed and the cursor is placed in the Password field, a message is shown:



The message is removed from display when you switch Caps Lock off.

A Save credentials checkbox (unchecked by default) is shown at the bottom of the Sign in dialog. If you check this option, and cluster configuration setting AllowSavingLoginDetails is set to True, on successful sign in, your encrypted credentials are written to your local user configuration on your client machine.

A Sign in automatically checkbox is shown to the right of Save credentials. It is enabled when Save credentials is checked. When RPI starts up, if Sign in automatically is unchecked, the Sign in dialog is presented, allowing stipulation of your username and password.

When checked, the Sign in dialog's credentials and server details are replaced. You are then signed in without the need to enter credentials again.

If AllowSavingLoginDetails is set to False, credentials must always be supplied at sign in.

A Cancel button is shown; when you click it the full Sign in dialog is displayed, allowing you, for example, to change the server to which to sign in. Note that, in this case, you must re-enter your password to proceed.

If you have saved your credentials and need to upgrade your client following sign in, you may do so without the need to re-enter your password.

3.1.2 Signing In Using Azure Active Directory

To sign in using Azure Active Directory, your RPI server must have been configured to support this feature.

In addition, an Azure Active Directory user with an email address matching the RPI user as which you intend to sign in must exist and must have been granted appropriate privileges to access RPI.

To sign in using Azure Active Directory, select this option at the Sign in using chooser. When you do so, Username, Password, Forgot password? and Save credentials… are hidden.

On clicking Sign in, one or more Microsoft Sign In dialogs are displayed (depending on whether your credentials have been cached previously). Enter your credentials (if required) and follow the instructions therein. Upon successful authentication of the supplied credentials, the Sign In dialog is removed from display and, after a short delay, the RPI Sign in dialog is replaced with the Home Page (if you are able to access multiple RPI clients, you will first be asked to select one).

3.1.3 Signing In Using Active Directory Federation Services (ADFS)

To sign in using ADFS, your RPI server must have been configured to support this feature.

In addition, an ADFS user with an email address matching the RPI user as which you intend to sign in must exist and must have been granted appropriate privileges to access RPI.

To sign in using ADFS, select this option at the Sign in using chooser. When you do so, Username, Password, Forgot password? and Save credentials… are hidden.

If you are already signed in using Active Directory, and the credentials are valid in ADFS, you do not need to provide further credentials to sign into RPI.

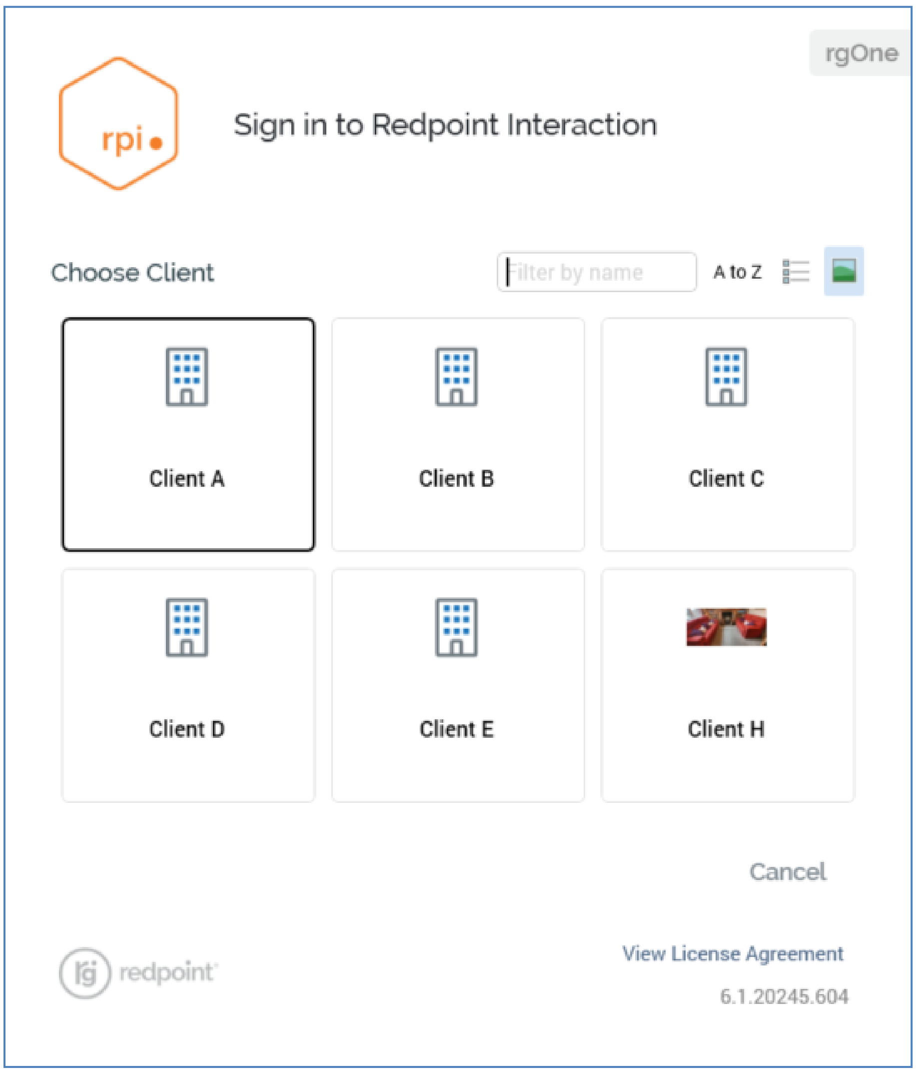
If you are not yet authenticated, on clicking Sign in, an empty dialog is displayed, over which a Windows Security dialog is shown. Enter your credentials and click OK. Upon successful authentication of the supplied credentials, the dialogs are removed from display and, after a short delay, the RPI Sign in dialog is replaced with the Home Page (if you are able to access multiple RPI clients, you will first be asked to select one).

3.1.4 Signing In Using OpenID Connect

To sign in using an OpenID connect provider, select OpenID Authentication at the Sign in using dropdown in the Sign In dialog. Enter your OpenID Connect credentials in the Window provided to sign in.

3.1.5 Signing In – Multiple Clients Available

If you have access to more than one client within the current RPI server, when you provide your credentials successfully, a list of available clients is shown in the Sign in dialog's Choose Client overlay:



Note that the Choose Client overlay is always displayed, even if only one client is available, if cluster configuration setting AlwaysShowClientsAtLogin is set to True. If the setting is False, and you only have access to a single client, the overlay is not shown.

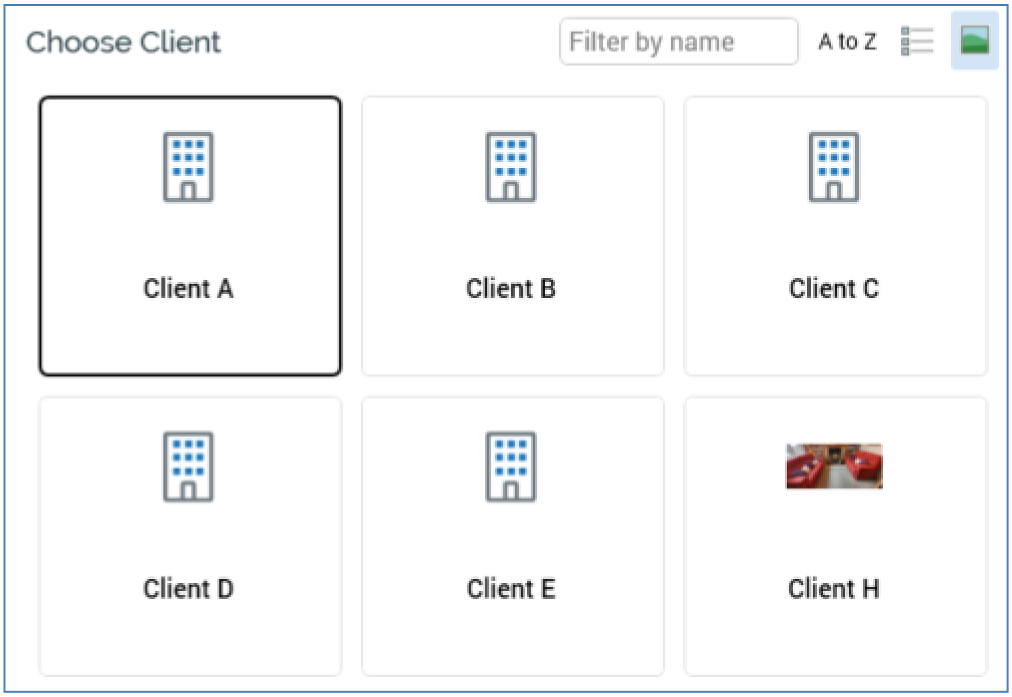
You can click a client to sign into it. Hitting the Return key also signs into the currently-selected client.

You can enter text into the Filter by name field; as you do so, the list of clients is limited to display only those with a name containing the characters entered. The first displayed client is selected automatically. If no clients match the string specified, an advisory message is shown.

You can specify the manner in which clients are ordered in the Sign in dialog using the A to Z/Accessed toggle button. The latter setting presents most-recently accessed clients first.

Buttons also allow you to display clients as a list…

…or as icons:



Your preferred setting is persisted between RPI sessions.

If you choose to Cancel at the Choose Client list, the Sign in dialog is redisplayed, and a message therein confirms the cancellation:

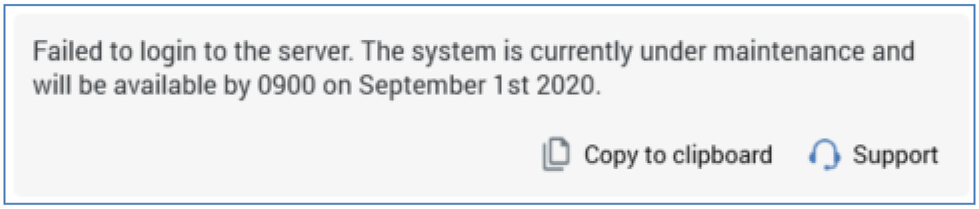
Cancelled choosing client

Note that all clients hosted in a given RPI server installation are entirely autonomous, separate and secure from one another.

3.1.6 Signing in when in Maintenance Mode

A server administrator can place an RPI server into 'Maintenance Mode' – scheduled downtime that allows for system maintenance (e.g. a version upgrade) to be performed.

If you attempt to sign into RPI when in maintenance mode, a message is displayed at the Sign in dialog:



Note that the maintenance mode message is configurable and can be set by a server administrator.

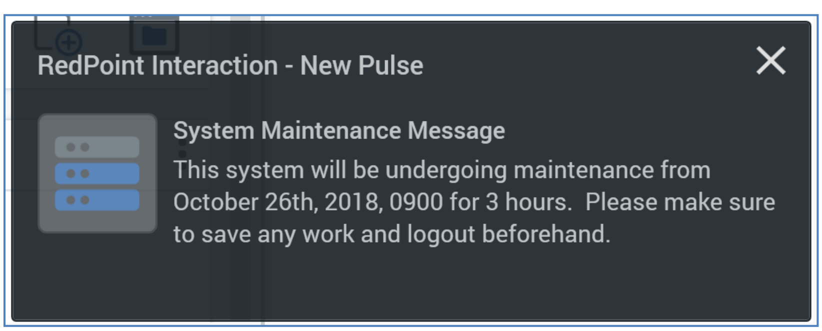
If you happen to be working in the RPI client when the server enters maintenance mode, a dialog is displayed advising of this fact. Changes to any files you are working on will be lost when you click OK, at which point the RPI client is shut down.

3.1.7 System Maintenance Messages

A server administrator can define one or more system maintenance messages. These are displayed when signing in, as pulse notifications (if more than one message has been configured, each is shown in turn; notifications are not sent if system configuration setting EnablePulseMessages is set to False).

System maintenance messages have start and expiry dates, between which they are active. Only active system maintenance messages are displayed.

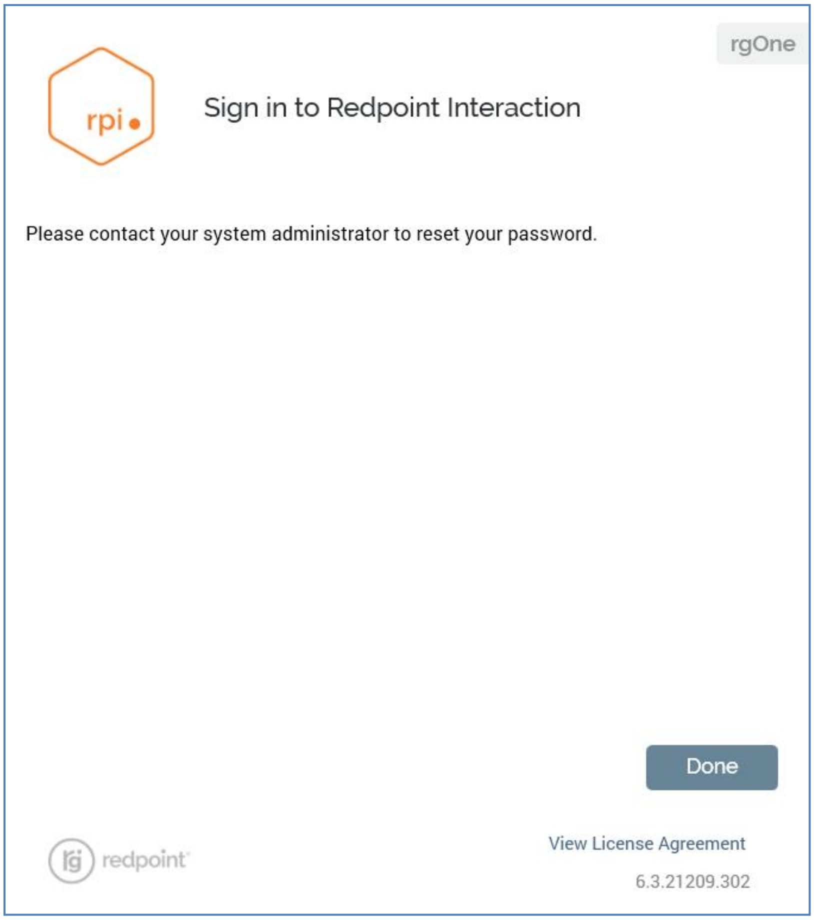
Active system maintenance messages are also shown if added by the server administrator when you are already signed in (similarly, messages are shown if they become active when you are signed in).



Full details of pulse notifications can be found elsewhere in the documentation.

3.1.8 Forgot Password

If you have forgotten your password, you can click on the Forgot password link within the Sign in interface. This displays the following interface:



3.1.9 Support

A Support button displayed at the Sign in dialog following a failed sign in attempt.

It is not shown until a sign in attempt fails. Invocation displays the Redpoint Helpdesk Support page in your default browser. The support page's URL is defined by cluster system configuration setting ApplicationSupportURL. Following a successful sign in, your local client application's support URL configuration setting is updated in accordance with the system configuration setting, ensuring that a failed sign in attempt always gives access to the most up-to-date support URL (should this value ever change).

3.1.10 Sign In Failures

If you are unsuccessful in an attempt to sign into RPI, details of why the sign in attempt failed are displayed. The following scenarios are covered:

- Invalid username and/or password supplied.
- Username not provided.
- Password not provided.
- User account not approved.
- User account not associated with any clients.
- Unable to connect to the server.
- RPI not installed on the server you are attempting to sign into.
- Entered an incorrect password [n] times (where [n] is defined by Interaction web.config setting MaxFailedAccessAttemptsBeforeLockout); account temporarily locked.

  Note that the time period after which your account is automatically unlocked is defined by Interaction web.config setting DefaultAccountLockoutTimeSpan (the value is expressed in minutes)

If desired, you can copy details of the failure message, along with any related trace information, to the clipboard.

3.1.11 Signing in When Already Signed In

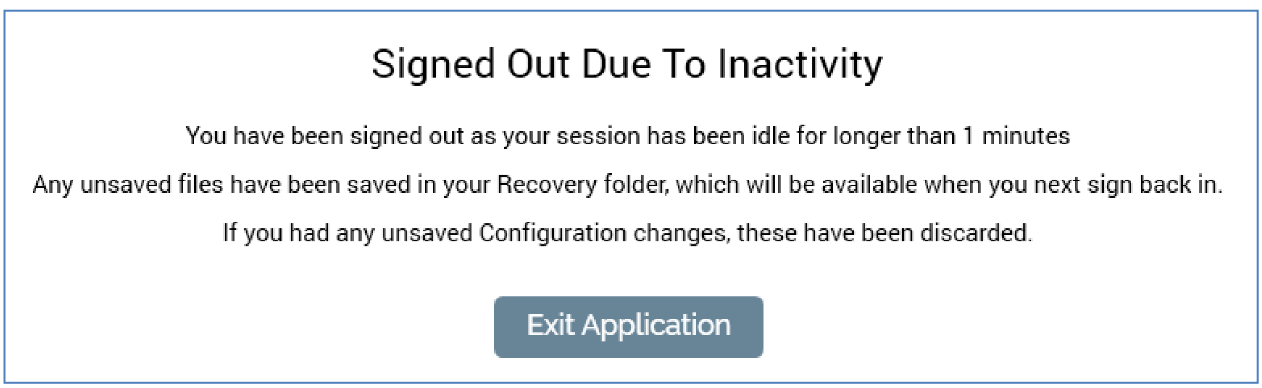
Only one instance of the RPI client application per username per client per RPI server can be open at once on a given client machine.

If you launch a second client application instance and sign in using an already-signed in username, after a short delay, the following message is displayed at the original client instance:

You can click the Exit Application button to close the RPI client. Note that you are not given the opportunity to save any unsaved changes.

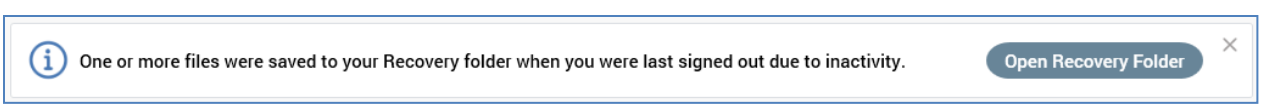
3.1.12 Automatic Sign Out

After a number of minutes' inactivity by a user matching client system configuration session InactiveSessionTimeout, she or he will be automatically signed out of the current RPI client session. Note that automatic sign out does not occur if the setting's value is 0. When automatically signed out, the following message is displayed at the RPI user interface:



Clicking the Exit Application button closes RPI. No opportunity is presented to save any unsaved files.

When signing back into RPI following automatic sign out when one or more files were unsaved, the following is displayed at the top of the RPI Home Page:



Clicking the Open Recovery Folder button displays contents of the Recovered Files folder in the File System Dialog. This root-level, read-only folder can only be viewed by the current user. A recovered file's name is the same as at the point of auto-sign out, with '(yyyy-mm-dd hh:mm:ss n)' appended (the 'n' is used to differentiate files with the same name that were saved at same time. Its version is 0.1.

Clicking the Hide Message button to the top right removes message from display.

Note that if using OpenID Connect to access RPI, a user will be logged out from the provider at automatic sign out.

3.1.13 Mismatched DLL Versions

If you attempt to sign in with an RPI client application that uses one or more DLL files with a different version to that installed on server, a message is displayed at the Sign in dialog:

'One or more loaded assemblies are incompatible with this version of the RPI client application. Copy details to clipboard to view the list of assemblies.'

The following is copied to the clipboard:

'The following assemblies are incompatible with the RPI Client version (v[w].[xx] (Build [yy])):

[For each DLL]:

[DLL name] [w.xx.yy.z]'

You need to close and restart the client application to sign in, even if having replaced the DLL files at fault.

3.1.14 Invalid License

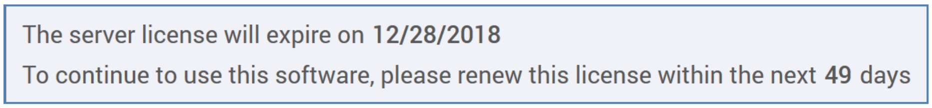
If you attempt to sign into an RPI server that is not configured with a valid license, you will still be able to launch the client application. However, access to all functionality therein is disabled – tasks are not displayed in widgets and the quick access menu and attempts to access Recent Items cause the supportive interfaces' initialization to fail.

The RPI server must be configured with a valid license file for the installation to become usable again.

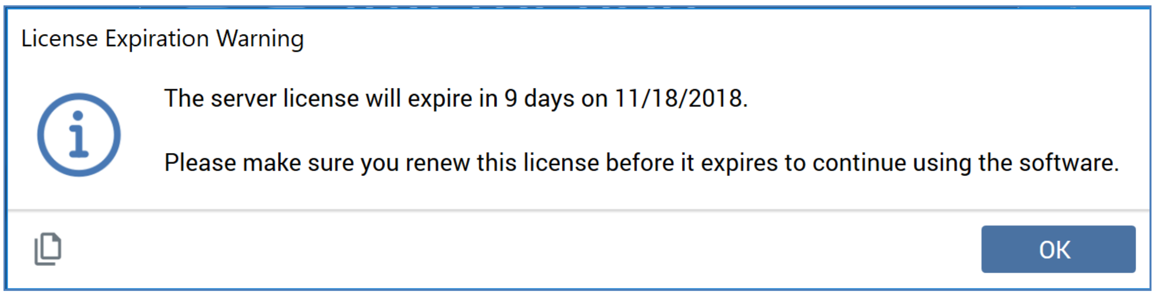
3.1.15 License Expiry

When you sign in and your license has from 60 to 15 days before expiry, a message is displayed to the top right of the RPI interface:

A tooltip is shown on hovering at the same:



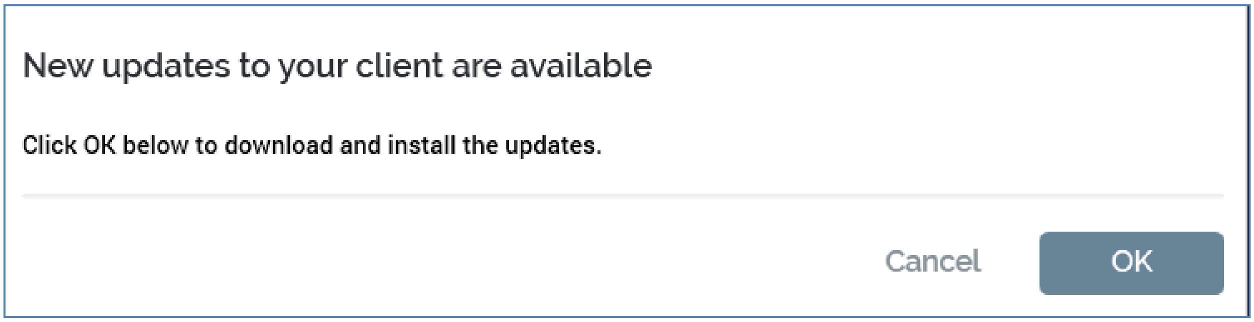
When you sign in and your license has 14 days or fewer before expiry, a dialog is displayed:



The message described above continues to be displayed at the top right of the RPI interface.

3.2 Automatic Client Application Updates

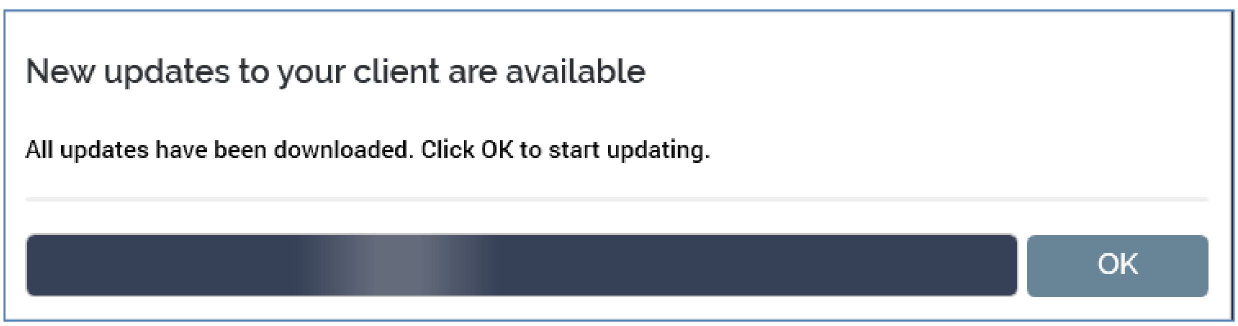
Your installed RPI client application automatically looks after updating itself when new or updated functionality becomes available. If a new version of an RPI client application file is available, the Client Update dialog is displayed after you successfully enter your sign in details.



You can, if you wish, cancel the download and installation of the new client application files. However, you will not be able to sign into the RPI server until you have updated your client application, thereby ensuring its compatibility. You can click OK to accept the download of the new components.

If upgrading to a new version of RPI, 'What's New' information is displayed in the New updates… dialog. The major features of the new version are listed.

After successful download of the new files, a message is displayed.

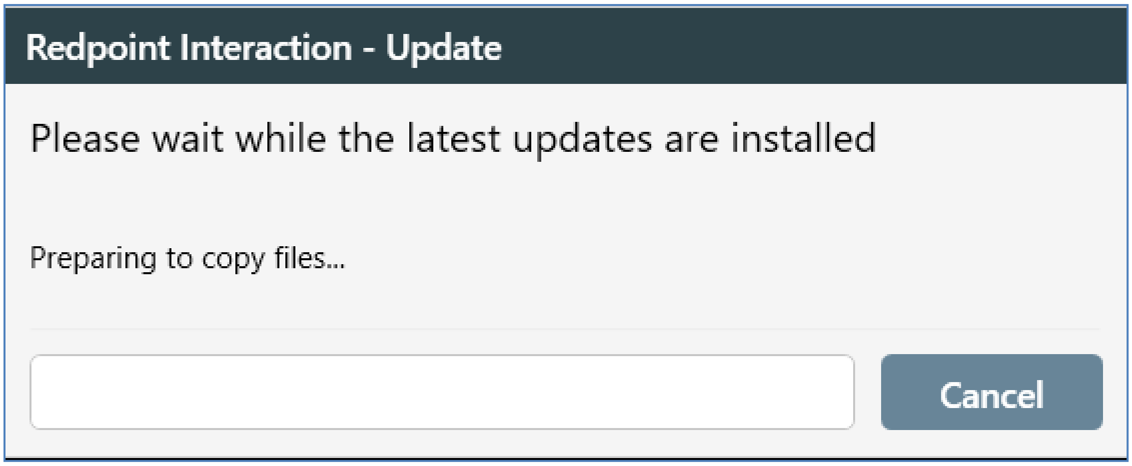


Note that, during or after the download of client components, you can click on the dialog's header bar to view a list of the files that have been downloaded.

At this point, if User Access Control (UAC) is switched on upon your client application machine, and you are installing the client application files in a protected folder (such as C:\Program Files), you will be requested to confirm that you wish to proceed with the installation (note that the application's veracity is confirmed by the assertion that Redpoint Global Inc. is its publisher). This confirmation is not requested if you are installing the RPI client application in a non-UAC-protected folder.

If anything goes wrong when downloading client files, a list of the files that were downloaded and that failed to download is displayed.

Clicking OK displays the Redpoint Interaction – Update dialog.



You can cancel the installation at this point should you wish to.

Following the installation, you can click OK to proceed.

The RPI Sign in dialog is redisplayed. You may then enter your credentials as usual (unless saved) to proceed with signing in.

Note that, if old incompatible DLLs are found in the RPI client folder, initially their names are changed to 'old_*'. The files are then deleted at the next sign in.

There is no need to re- and uninstall the RPI client application at each new build – RPI takes care of this automatically and increments the version number accordingly.

3.2.1 Client Version Self-Awareness

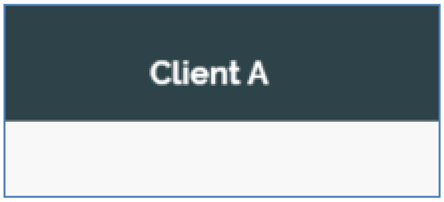
RPI is able to monitor its version's consistency with the server to which it is connected. Every hour, the client application checks to ensure that its version is the same as that of the server. If there is a mismatch, due to a server upgrade having taken place while the client application is running, the Client Update dialog is displayed.

Clicking OK closes the current RPI client application session and commences download and update of the new client application files. Unfortunately, should this situation arise, you will not be able to save any outstanding changes displayed currently in your client application (the version incompatibility meaning that a save at this point would not be possible).

Clicking Cancel closes the RPI client application.

3.3 RPI Interface

Having signed into RPI, the name of the client to which you signed in is displayed in the center of the application header:



This can prove useful if you have access to number of clients in a multi-tenant environment.

The RPI interface contains a number of elements, each of which is documented separately.

3.4 Header

A header is displayed at the top of the RPI interface.

It exposes the following toolbar buttons to the left (shortcut keys provided in parentheses):

- Quick Access menu (Ctrl-Q): documented separately.
- Show/Hide the Home Page (Ctrl-H): this toggle button allows you to switch between display of any designer tabs you have open in the current RPI section, and the Home Page. When one or more tabs are open, on clicking this button, they are hidden, and the Home Page is shown. Clicking the button again redisplays the open tabs. If the Home Page is shown and another tab or file within a tab is opened (e.g. by using a widget, opening a file from the File System Dialog or using the Quick Access menu), the Home Page is hidden and tabs are redisplayed.
- Browse, manage or open files from the File System (Ctrl-M): clicking this button displays the RPI File System Dialog, which is documented separately.
- View a list of the jobs that you initiated (Ctrl-J): clicking this button displays the My Jobs dialog, which is documented separately.

The client's name is shown in the center of the header. If custom colors were selected for the name's display in Server Workbench, the name is displayed accordingly.

The following toolbar buttons are shown to the right:

- Click to view recent error and warning messages: this button allows you to access details of warning and/or error messages that have been generated during the current RPI session. Full details are provided in the Errors and Warnings section elsewhere in this documentation

  View Pulse Notifications or Pulses relating to what you are currently viewing: allows you to view pulse messages. A red circle accompanies the button icon when one or more recent pulse messages that have yet to be viewed in the Pulse Notifications dialog exist. Clicking the button displays the following context menu:

  - View Pulse Notifications…: displays recent pulses in the Pulse Notifications dialog. The option is disabled if none are available. On invocation, the red circle is removed from the button icon.
  - Open Pulse Browser…: invoking this option displays pulses in the Pulses Window.

  Note that the Pulses button is not shown following a client restart when system configuration setting EnablePulseMessages is set to False.

- View Product Updates: this button is shown only when a newer version of RPI is available. The number of new updates contained within the latest available version is shown at the button. If Critical or Important updates are available, the button is surrounded by an orange border. Clicking the button displays the Product Updates dialog (covered separately).
- Open default Wiki page: clicking this button opens the default Wiki page in the Linked Page Browser. If a default Wiki page has not been defined an informational message is shown instead.
- View Help and Support options for the current context: invocation of this menu option displays a sub-menu, exposing the following options:
  - View Help: launches Help in a new window. The RPI online help documentation contains the same content as the user manual. Help is semi-contextual insofar as, if invoked when a given designer is displayed, that designer's initial documentation page is shown automatically. If the Help Window is already shown, invocation brings that window into focus.
  - Technical Support: displays the Redpoint support site in your default browser. For more information, please see the Sign in documentation.
  - View Product Updates: selecting this option allows you to view installed and available updates in the Product Updates dialog (covered separately).
  - About Redpoint Interaction...: displays the About Redpoint Interaction dialog (documented separately in this documentation).

  Note that you can always access contextual help anywhere in RPI by pressing the F1 key.

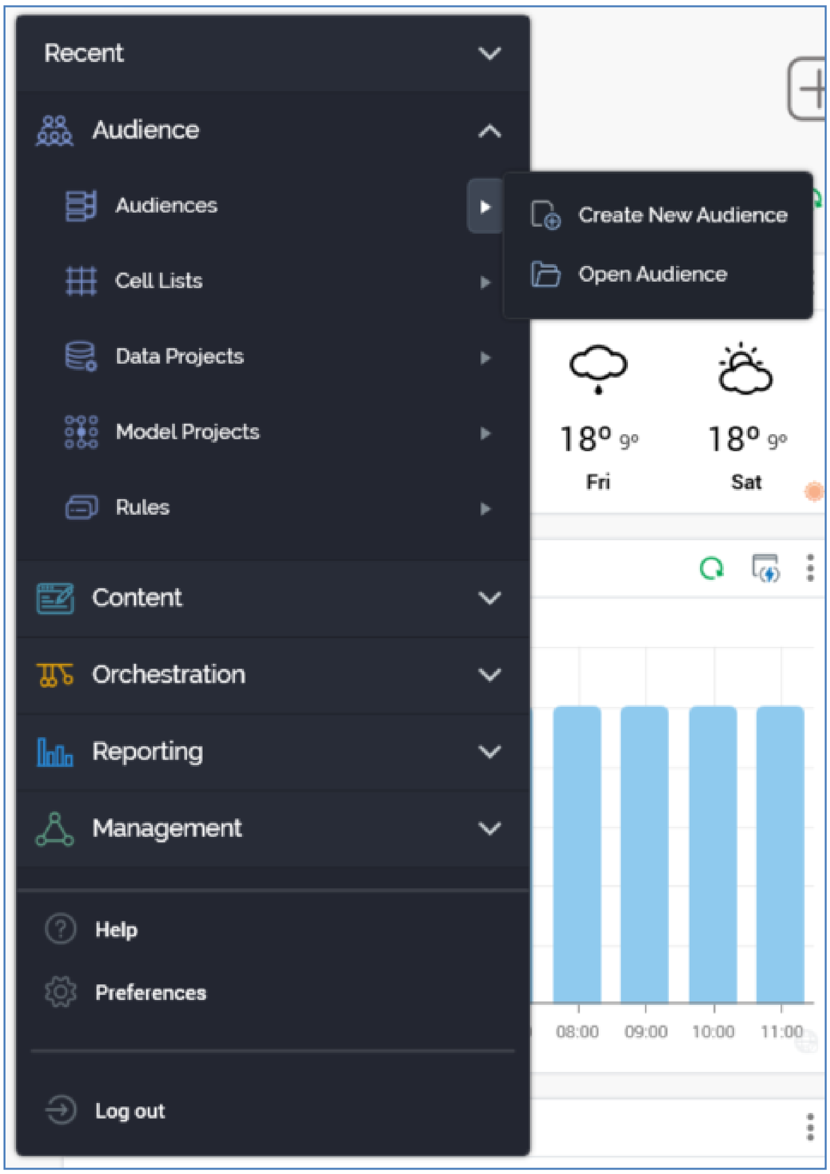
An additional option is accessed via the rightmost toolbar button when RPI is launched with the '-devmode' flag:

- Developer Tools: this is an advanced option that is reserved for system administrators' use. Invocation of this option displays the Client Developer Tools dialog. More details can be found in the RPI System Administration Guide.

3.5 Quick Access Menu

The quick access menu allows you to open an RPI interface in a separate tab. It can be accessed at any time using the button displayed to the top left of the RPI interface:

When you invoke the quick access menu, it appears as follows:

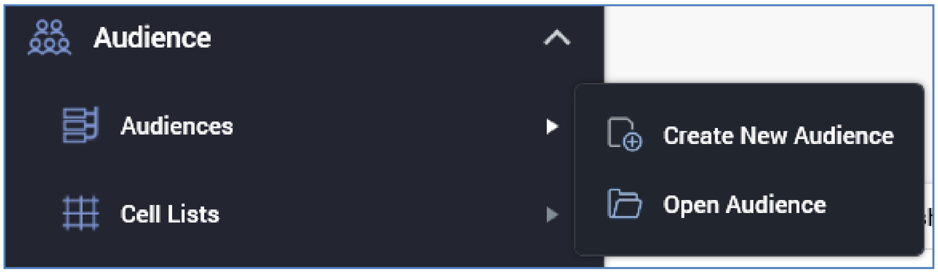


It provides access to RPI functionality. It contains the following.

- Recent: this section lists up to 6 recently-used interfaces in alphabetical order. It is expanded by default when the RPI client application is launched (other sections are rolled up by default).

- Audience:
    - Audiences
    - Cell Lists
    - Data Projects
    - Model Projects
    - Rules
- Content:
    - Assets
    - Export Templates
    - Landing Pages
    - Offers
    - Smart Assets
- Orchestration:
    - Data Connectors
    - Interactions
    - Realtime Layouts
    - Subscription Groups
- Reporting:
    - Dashboards
    - Reporting Hub
    - Single Customer View
- Management:
    - Configuration
    - Operations
    - Wiki
- Help
- Preferences
- Log Out

Within many of the options in the menu further sub-options are available by clicking the arrow to the right:



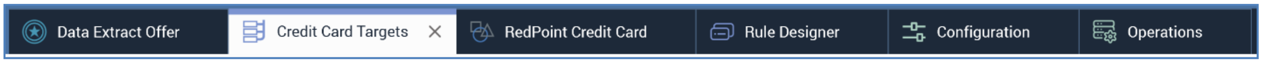
Details of specific designers' invocation are described in each interface's own documentation.

Note that you are only able to open a single instance of each of the Operations interface and Configuration Workbench.

The quick access menu is removed from display when you click elsewhere within or outside RPI, or when a tab is opened.

3.6 Tab Set

The tab set allows you to work upon different tasks by facilitating access to task-specific designers.



When RPI is displayed initially, the Home Page (documented separately) is shown. The tab set is shown when you open a tab. You can open new tabs in a number of ways – for example by:

- Clicking on a file in a widget.
- Clicking on a widget task.
- Double-clicking a file in the Recent Items component.
- Clicking on a task in the quick access menu.

The new tab contains an interface tailored specifically to the task at hand – often a 'designer' such as the Rule, Audience or Interaction Designer.

Clicking on a tab other than the current tab causes the clicked tab, and the interface contained within it, to be displayed.

You can close a tab by clicking on its 'X' icon. Closing a tab causes it, and the interface displayed within, to be removed from the tab set. Note that, if changes have been made in the interface displayed when the tab was closed, you will be asked whether you wish to proceed with saving or abandoning the changes, or abandon closing the tab.

Note that tabs within the tabset are resized in accordance with the text they contain.

The maximum number of tabs that may be open concurrently is accordant with system configuration setting MaxTabsPerClientSession (which defaults to the value 25). If you attempt to exceed this limit, a warning message is displayed.

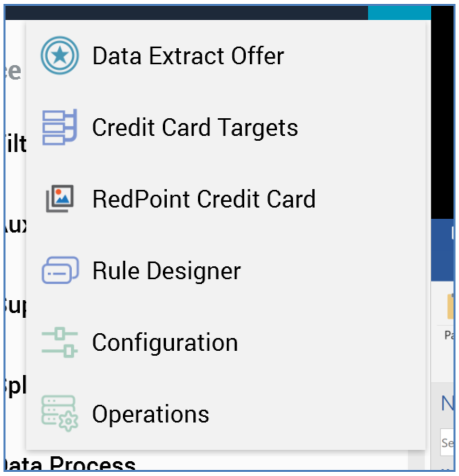
Certain interfaces (Preferences, Operations and the Configuration Workbench) can only be open once within the RPI tabset. Others (e.g. the designers) can be open a number of times. However, a given file can only be open once at any one given time.

A context menu is available when right-clicking on a tab.

- Close All: invocation closes all open tabs. If any contain unsaved changes, (an) 'Are You Sure?' dialog(s) is/are displayed.
- Close All But This: invocation closes all tabs except the tab at which the command was invoked. If any contain unsaved changes, (an) 'Are You Sure?' dialog(s) is/are displayed.

A View open Tabs button is displayed to the far right of the tabset.

Clicking the button lists all open tabs.



You can select an entry from the list to view the tab in question.

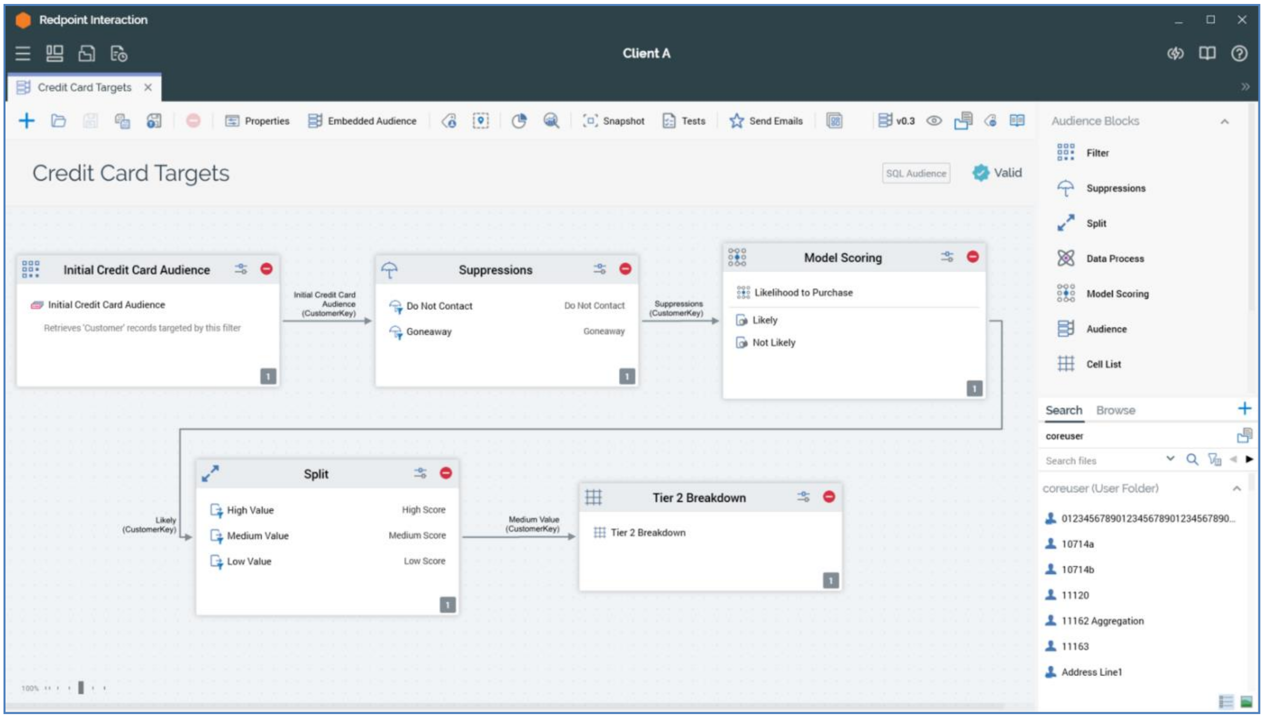
The color shown at the top of each tab reflects the color in which the matching interface is displayed within the Quick Access menu. Each section listed therein is associated with a different color. All entries in a given section appear in that section's color.

You can drag and drop tabs within the tabset in order to change order in which they are displayed.

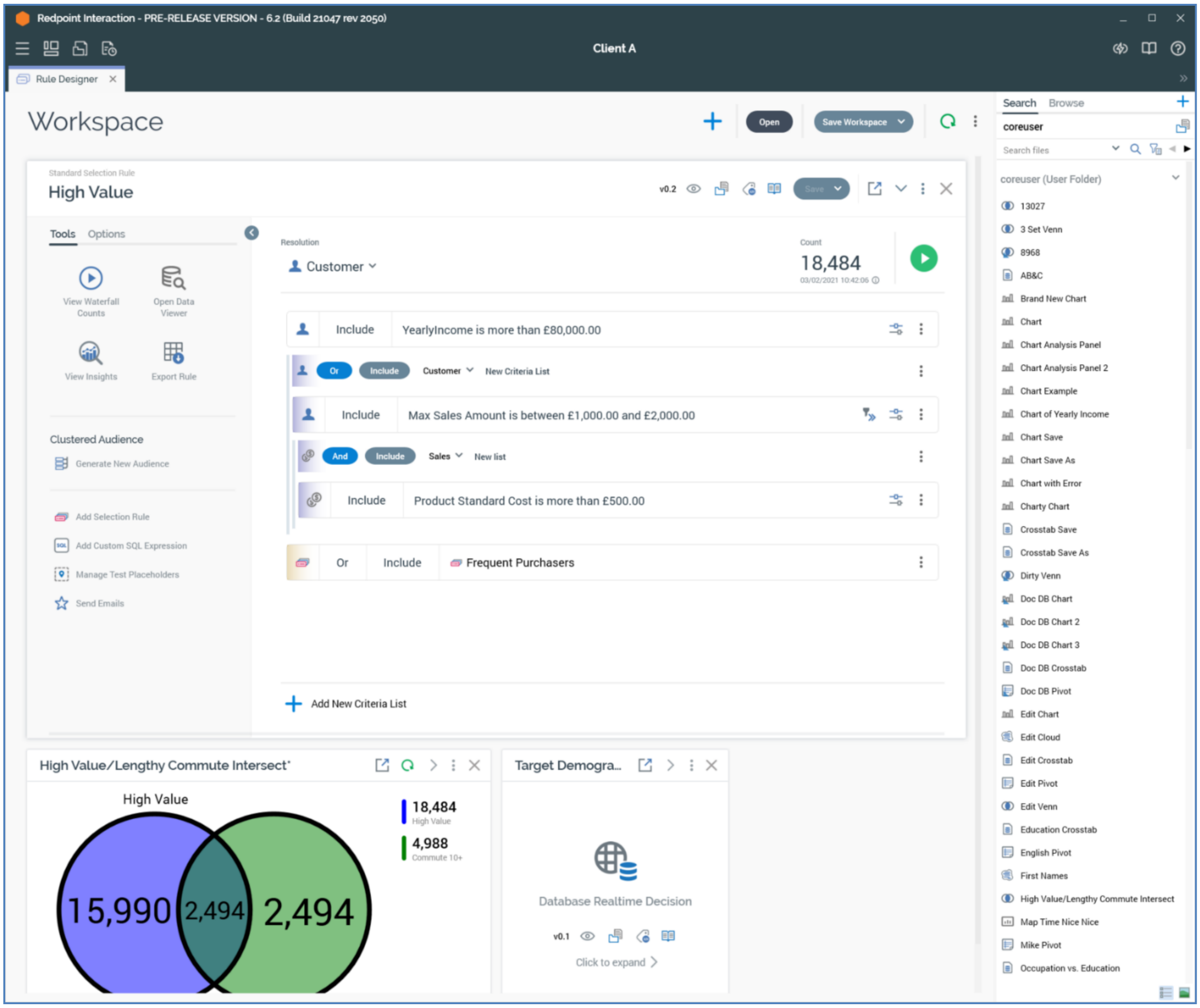
3.7 Designers

The files that you use to perform your customer and prospect communications – such as selection rules, audiences, offers and interactions – are all created and managed in a series of 'designers', each tailored to a specific file type.

Most designers display a single file…for example, the Audience Designer:



However, the Rule Designer is able to show more than one file concurrently:

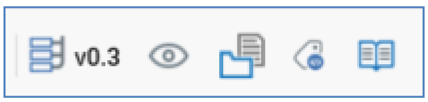


3.8 Designer Toolbars

RPI’s designer interfaces feature a toolbar that provides access to functionality relevant to the current context. All toolbars are different; this example comes from the Audience Designer:

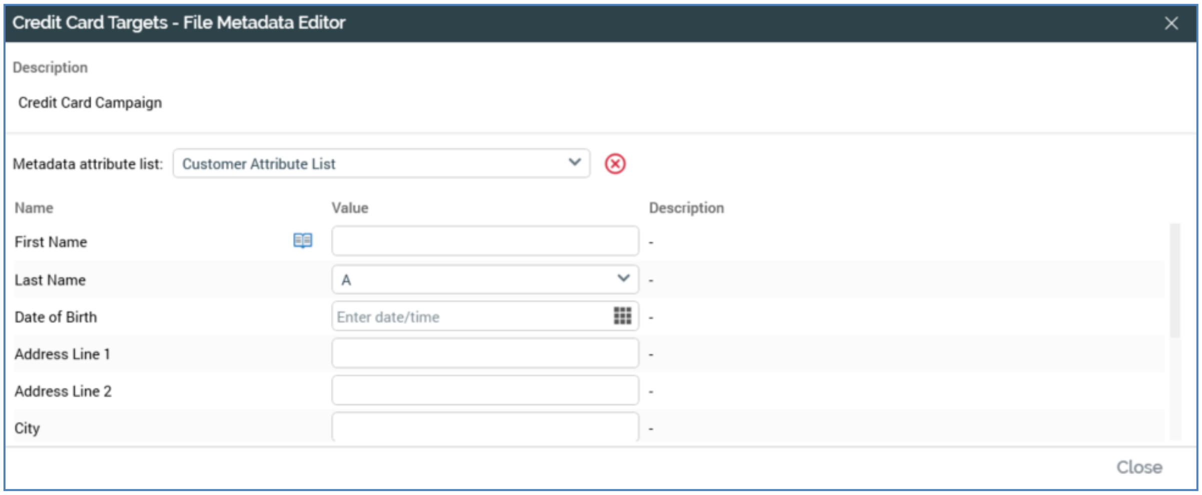
Each designer’s toolbar is documented separately.

The following are shown to the right of a designer toolbar:



- Version number: a read-only representation of the file’s current version number (following its assignment at its initial saving) is displayed.
- Follow/Unfollow File: allows you to take an interest in a specific file, such that alerts are sent to you on the undertaking of activities in respect of the same. Covered separately in this documentation.
- File options: clicking this button displays a context menu, exposing the following options:
    - View File Information: displays the file’s details in the File Information Dialog (documented separately).
    - Open File Location for [filename]: opens the File System Dialog, displaying the contents of the folder in which the file is saved, with the file selected in the same context.

- Manage Metadata for this file: this button is available prior to a file's initial save to the RPI file system. Clicking it displays the [Filename] - File Metadata Editor dialog.

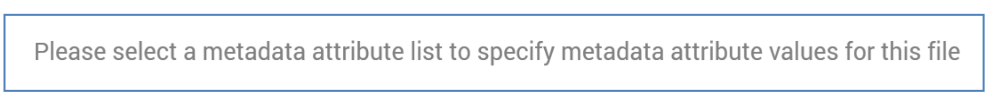


The dialog allows you to record metadata values in the context of a file. The dialog contains the following:

- Description: you can optionally specify a description for the file in this field. The value provided can be up to 1000 characters in length.
- Metadata attribute list: this dropdown list allows you to select a configured attribute list, which defines the set of metadata attributes in respect of which values can be captured for the file. Initially, a list is not selected, and the following text is displayed:

  You must select an attribute list in order to specify metadata attributes for a file.

- Clear selected Metadata Attribute List: this button is only available when a Metadata attribute list has been selected. It allows you to clear the selected value.
- Metadata attributes: prior to selection of a Metadata attribute list, this section displays the following message:



  Once a Metadata attribute list has been selected, the list of metadata attributes associated with the same are displayed. The following columns are shown:

  - Name
  - Open Linked Page: you can click the button to open a linked Page in the Linked Page Browser if applicable.

- Value: a writeable field. The attribute's default value is displayed (if appropriate). When a value is specified, a Revert button shown; invocation removes the override and reverts the value to the default.

- Description

Note that file metadata is persisted as XML in the FileMeta column in the op_Files table in the Interaction_XXX database.

When file metadata has been overridden, the Manage Metadata button icon is augmented with a light blue indicator:

- View Linked Page Options: allows you to view or manage a Wiki or web page associated with the item you are currently working on. If you have established the context of a current item, if the item is not linked to a Wiki page, the menu exposes the following item:

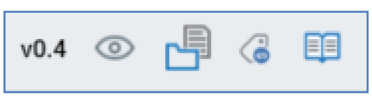
  - Link File to Page: displays the Choose Linked Page dialog, which is covered elsewhere in the Framework documentation.

  If the current item is linked to a Wiki page, the menu displays the following items:

  - Open Linked Page: displays the linked Wiki or web page in the Linked Page Browser.

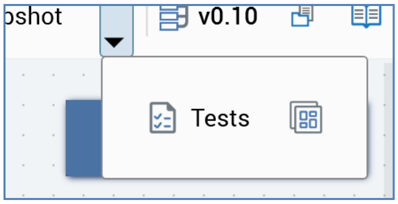
  - Change Linked Page: displays Choose Linked Page dialog, which is covered elsewhere in the Framework documentation.

For files opened in the Rule Designer, the same are shown at panels' footers:



When there is insufficient screen real estate to display all of a toolbar's buttons (for example, if the RPI Window has been restored and reduced in size), an overflow arrow is displayed to the right of the toolbar.

Clicking the arrow provides access to the otherwise inaccessible menu items.



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v0.10
Tests

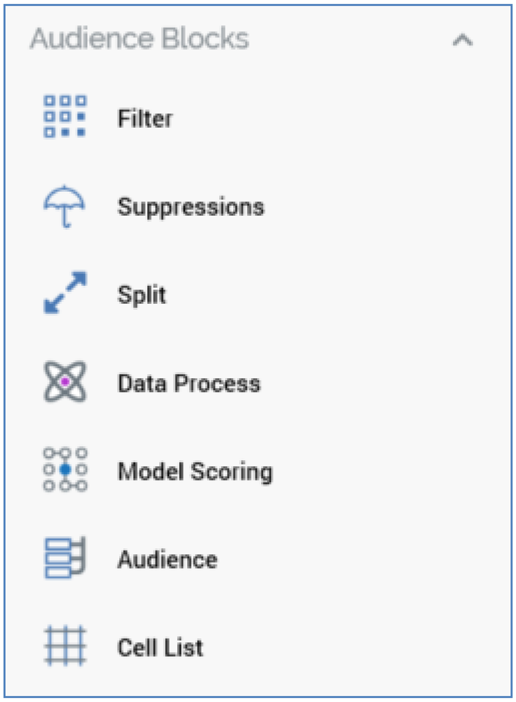
3.9 Toolbox

The RPI toolbox allows you to access items to help you in your current task. These items may be specific to the interface within which you are working or may be other assets stored in the RPI file system. The RPI toolbox is accessible within the following interfaces:

- Rule Designer
- Audience Designer
- Cell List Designer
- Export Template Designer
- Asset Designer
- Smart Asset Designer
- Offer Designer
- Interaction Designer
- Model Project Designer
- Subscription Group Designer
- Landing Page Designer
- Dashboard Designer
- Data Connectors
- Realtime Layouts
- Configuration Workbench
- Wiki Browser
- Wiki Page Designer

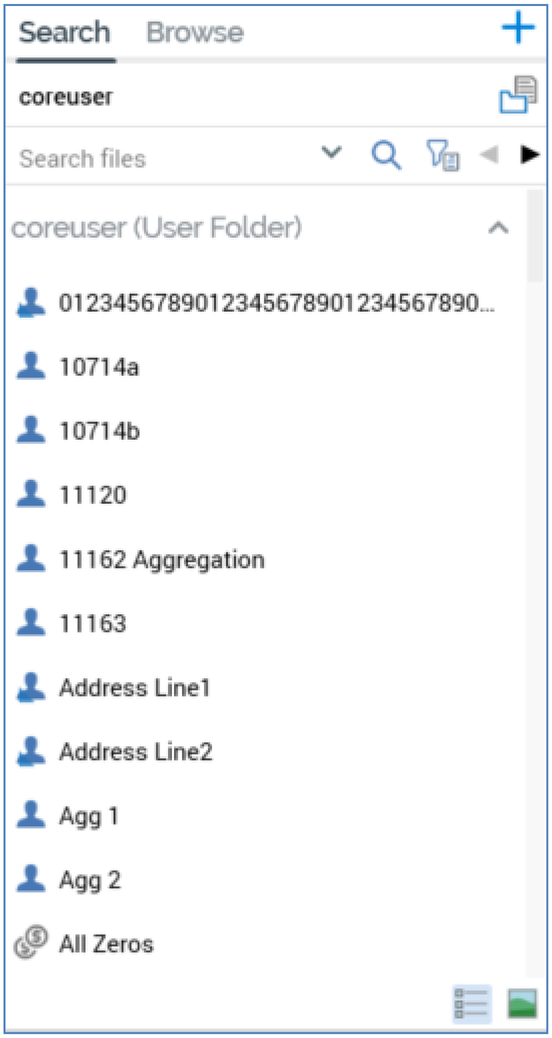
The toolbox is displayed to the right of most designers (except the Configuration Workbench) by default. If you want to show it to the left, use the Show toolboxes on the Left hand side of designers option, which can be found in the Options tab in the Preferences interface.

Toolboxes can contain a section dedicated to the interface within which located. For example, in the Audience Designer toolbox, an Audience Blocks section provides access to the various types of block used to build audiences:



Note that section headers in such toolbox sections can be expanded or rolled up.

In addition, toolboxes also expose a Folder Search component.



The toolbox Folder Search component contains two tabs – Search and Browse – which allow you to access files within the RPI file system in different ways. The Folder Search is documented elsewhere in the Framework documentation.

You can choose whether the toolbox Search and Folders tabs should display files of all types, or just files that are relevant to the current designer within which you are working (this is carried out in the Options tab in the Preferences interface). Your preference is tied to your user ID, so will be applied irrespective of the client application machine you use to access RPI. If you change this setting, your selection is automatically applied to any open designer interfaces. If you choose to view files of all types, note that you cannot utilize a file if its type is not relevant to the current context.

Files of the following types are relevant in the following contexts:

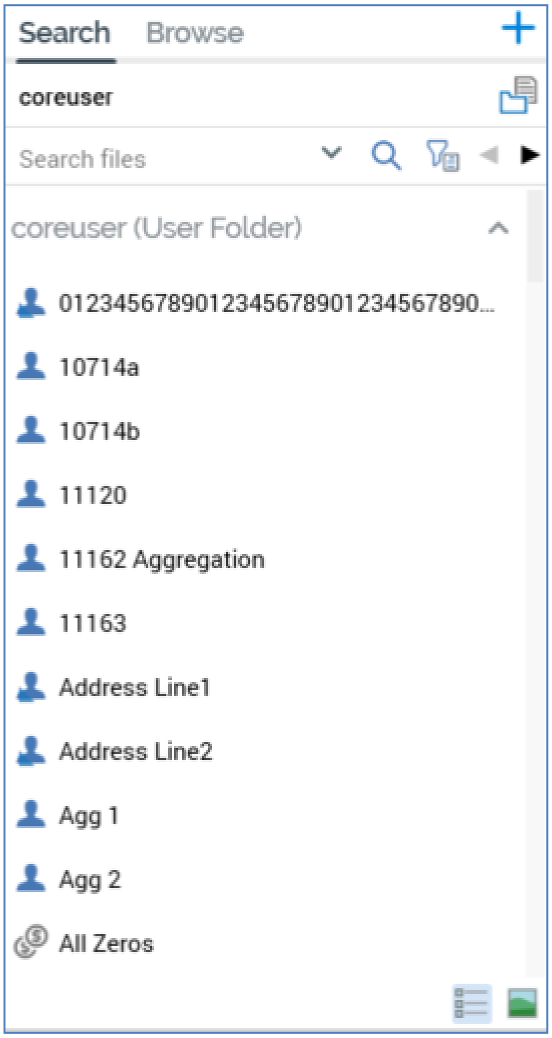
- Rule Designer: analysis panels, attributes, decision scorecards, assets, export templates, model projects, offers, realtime decisions, selection rules, smart assets
- Audience Designer: attributes, cell lists, audiences, selection rules, model projects

- Model Project Designer: attributes
- Offer Designer: attributes, assets, subscription groups, landing pages, smart assets
- Interaction Designer: audiences, export templates, offers, selection rules, subscription groups
- Asset Designer: attributes, audiences, assets, landing pages, model projects, realtime decisions, interactions, selection rules, smart assets
- Smart Asset Designer: attributes, audiences, assets, landing pages, model projects, realtime decisions, interactions, selection rules, smart assets
- Landing Page Designer: attributes, assets, landing pages, smart assets
- Export Template Designer: attributes
- Cell List Designer: attributes, audiences, selection rules
- Subscription Group Designer: attributes, selection rules
- Data Connectors Interface: attributes, audiences, export templates and selection rules
- Realtime Layouts interface: smart assets
- Dashboard Designer: attributes, interactions, offers, selection rules
- Configuration Workbench: attributes, audiences, dashboards, assets, export templates, selection rules, smart assets, Wiki pages

When a toolbox contains multiple sections, the relative heights of each are maintained on a per-user, per-designer basis.

3.10 Folder Search

The Folder Search component provides access to files within the RPI file system.



It forms part of many designers' toolboxes, in which context it is used as a source of files required when building RPI entities such as selection rules, audiences and interactions. Its use in such contexts is described in each designer's own documentation.

3.10.1 Using the Folder Search

The Folder Search component consists of the following:

- Search Tab
  - Search Context
  - Search Toolbar
  - Search Results
- Browse Tab
- Create New Attribute Button

Each is described separately in its own section.

3.10.2 Search Tab

One of two tabs displayed within folder search, the other being Browse, the Search tab contains the following:

- Search Context
- Search Toolbar
- Search Results

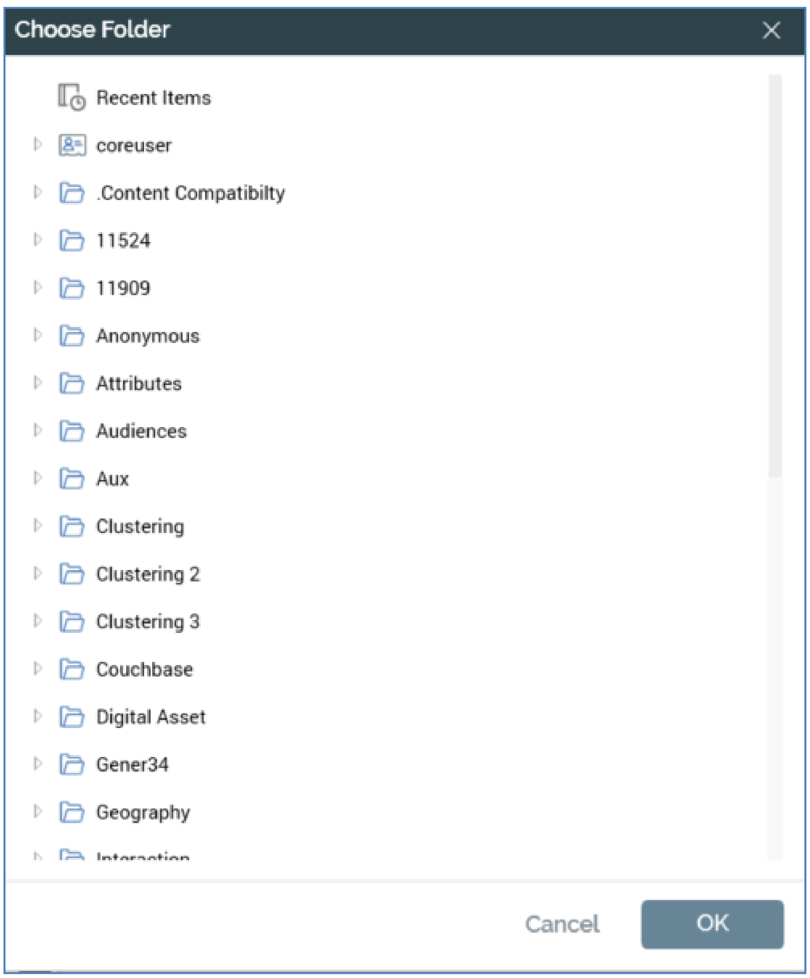
Each is described separately in its own section.

3.10.3 Search Context

The text displayed at the top of the search tab identifies the current search context – either a specific folder within the RPI file system, or All folders.

By default, the search context is set to your user folder, and the tab automatically displays any files persisted therein that are relevant to the current context – for example, having invoked the Rule Designer, the toolbox folder search lists only files relevant to that designer within your user folder.

You can click the folder name displayed in the Search tab header to change the search context. When you do so, the Choose Folder dialog is displayed.



This dialog lists the folders in the RPI file system to which you have access (note that, if required, you can also choose the Recent Items folder).

A context menu is displayed when right-clicking a folder in the Choose Folder dialog, exposing the following options:

- New folder: not available at external content providers.
- Refresh
- Rename: not available at your user folder, or at external content providers.

You can highlight a folder and invoke Choose the selected folder; this updates the Search tab header with the name of the selected folder, and also automatically executes a search to populate the Search tab with files matching the specified search criteria within the selected folder. You can also Cancel the Choose Folder dialog.

When a Search folder context is established, when you hover over the Search tab header a button ('Click here to search within all folders') is displayed to the right. Clicking the button changes the tab header text to 'Search all folders', and automatically executes a search to populate the Search tab with files matching the selected Type (if specified) within all folders.

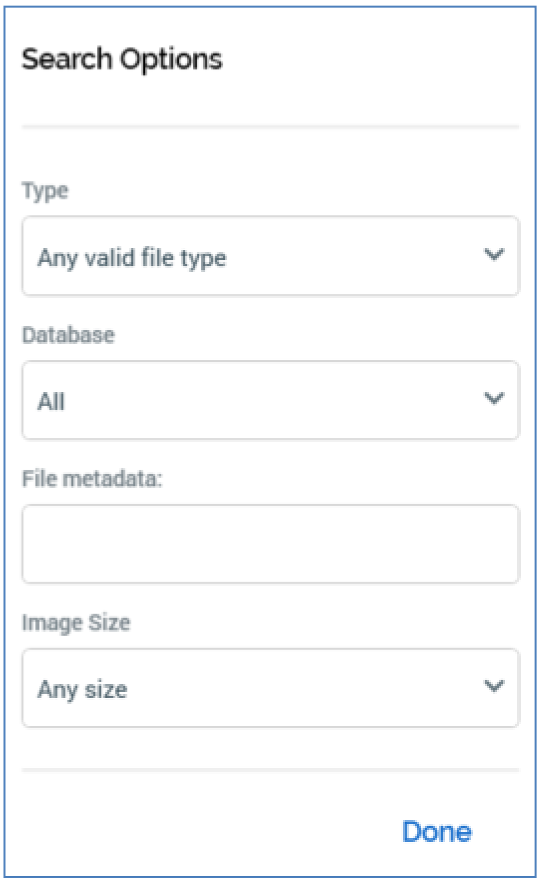
On initial designer invocation, the Search tab's search context is set to your user folder. When you reset the folder manually, upon subsequent invocation, the Search tab's default folder defaults to the folder to which it was most recently set. This applies equally across multiple RPI sessions. You can set the default folder on a designer-by-designer basis. The setting is tied to your user name, so even if you sign in on another RPI client application instance, your preferences will be maintained.

When you execute an explicit file search the results, when displayed, replace the default Search tab display.

3.10.4 Search Toolbar

If the file you need is not displayed within the folder search, you may search for one that fulfils your requirements. The search toolbar is displayed at the top of the Search tab.

You can start a search by typing the name of the file(s) you are looking for into the Search files field to the left. By default, a search is executed against both a file's name and its description; to search by file type, click the Show Search Options button to the right of the main search field. This displays the Search Options dialog, in which you can refine your search using the following:



- Type: you can use the Type drop-down to select a file type to search for. The field lists all file types applicable to the current designer, along with default value 'Any valid file type'. Selection of a value executes a search immediately, and the results are limited to the selected file type(s). Unless reset to 'Any valid file type', the file type restriction continues to be applied in addition to any further search criteria you specify.

- Subtype: this options is displayed when a specific Type has been selected. A dropdown provides access to all of the selected type's subtypes, plus 'Any subtype'. If no explicit subtypes are supported at a type, only the 'Any subtype' value is available. Application of a

Type/Subtype filter limits the files displayed in accordance with the current selections. Note that, if an explicit Image size search option has been applied, Type is set to 'Asset' and Subtype to 'Image'.

- Database: this field is only available when one or more auxiliary databases have been configured at the current RPI client. In addition, it is only available in the following contexts:
    - Rule Designer
    - Model Project Designer
    - Audience Designer
    - Offer Designer
    - Interaction Designer
    - Asset Designer
    - Smart Asset Designer
    - Export Template Designer
    - Cell List Designer
    - Subscription Group Designer
    - Landing Page Designer
    - Data Connectors Interface
    - Dashboard Designer
    - Configuration Workbench

  A dropdown field, it exposes the values ‘All’ (the default), ‘Data Warehouse’, and one row per configured auxiliary database.

  Search results are filtered in accordance with the selection made therein. If an auxiliary database is selected, the following file types may be retrieved:

    - Attribute
    - Selection rule
    - Analysis panel
    - Export template

- Image size: This dropdown field exposes the following options:
    - Any size (default)

- Small (Images with an area size smaller than 120,000px (e.g. 400x300))
- Medium (Images with an area size between 120,000px and 480,000px (e.g. 400x300 to 800x600))
- Large (Images with an area size greater than 480,000px (e.g. 800x600))
- An exact size: selection of this option displays width and height fields. Both default to 100, and the minimum permissible value is 1, the maximum 99999.

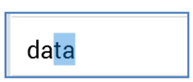
If you specify an explicit image size, non-image asset files that match other search criteria are not returned; when you set Image size to a value other than Any size, the Type field is set to a read-only ‘Image assets only’.

Note that you cannot search by image size at an external content provider or Recent Items.

You can close the dialog by clicking the Close button provided. Clicking off the dialog has the same effect.

Search results that match the entered criteria are displayed in the folder search after a second's delay following the entry of a character in the search field.

As you enter search string characters, if the characters entered match a previous search string, that string is displayed within the search field.



The previous search string is removed from display at the point at which the entered characters diverge from it.

By further qualifying the search string, and pausing for another second, you can execute another search, the results of which replace the existing results within the folder search. You can also choose to execute an entirely new search, the results of which will replace the previously-displayed search results.

Search criteria are not case dependent.

Typing '*' into the search field retrieves all files of relevance to the current folder search across all folders to which you have access in RPI file system.

You can view a list of recent searches in a drop-down list, accessed to the right-hand side of the main search field.

The dropdown lists the most recent searches undertaken by the currently-logged in user. The list’s contents are displayed in reverse chronological order. You may select a search from the list in order to re-execute it. Up to the 15 most recent searches are displayed. Only search strings in respect of which a search was actually executed are added to the recent searches list.

When a search is executed, files are retrieved where:

- Files are relevant to the current interface – for example, a search executed within the Rule Designer will retrieve attributes, but not audiences.
- If searching on name and description, the search criteria (as entered literally) are found anywhere with the file's name (e.g. a search for 'first name' returns 'Customer first name' but not 'Customer name').
- If a file type has been specified, only files of that type are retrieved.
- If searching by image size, are image files of the specified size.
- Irrespective of search type, the file is persisted within an RPI file system folder to which you have read or write access, within the current search context, or a subfolder thereof.

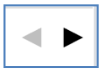
Note that external files are not returned in the results of a search executed across all folders.

At any time, you may click the Cancel Search button to clear the displayed search results in order to return to the default Search tab display. Deletion of your search criteria has the same effect.

3.10.5 Search Results

Search results are displayed after execution of a search.

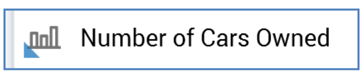
Search results can be displayed across more than one page. The number of results per page is controlled by system configuration setting MaxFileSearchPageSize. Next and Previous Page buttons are displayed to the right-hand side of the Search tab header.



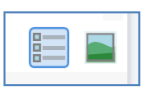
The buttons are enabled only when additional results pages exist. Invocation displays the next or previous page's worth of results (as appropriate).

Search results are grouped by folder. Folders are ordered strictly alphabetically by folder name – irrespective of full folder path. Files are ordered by type, then name within a folder. When you hover over a folder, its full path is displayed in a summary tooltip.

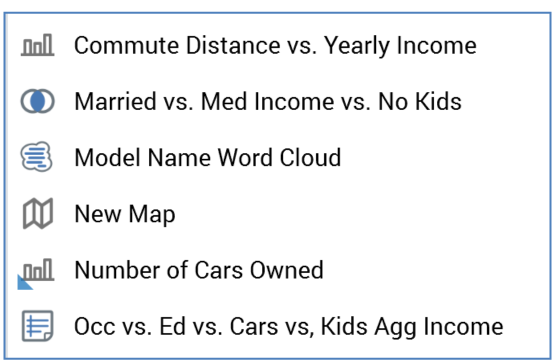
Indication of a file's linkage to one or more Wiki or web pages is carried out through use of a triangle icon:



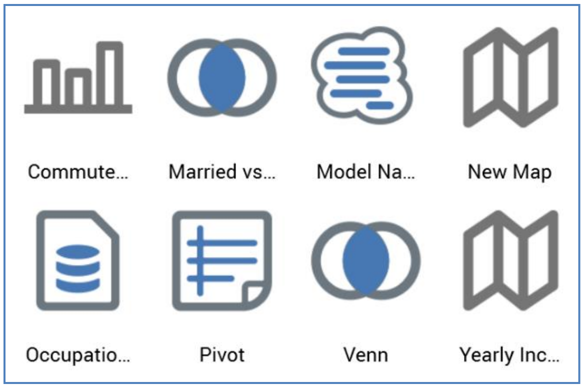
You can choose to view search results as file details, or as thumbnails. You can switch between views using the toggle buttons at the bottom of the tab:



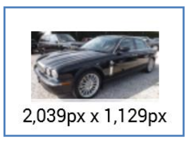
- View details: this option is selected by default, and displays files using icons and names:



- View thumbnails: When this option is selected, files are shown using thumbnail images. If a file's type is other than image asset, a file type icon and name are shown:



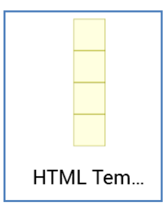
If a file's type is image asset, a thumbnail representation of an image is shown:



The image's dimensions are shown at the bottom right of the thumbnail. These are also displayed in the informational tooltip shown when hovering over an image asset in search results.

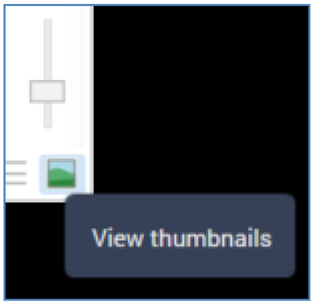
At external images, thumbnails are generated dynamically at initial folder display within each RPI session and are displayed at an open external content provider folder as they are generated. Thumbnails are re-generated at each subsequent RPI session.

If a file is an HTML asset that is used as a template, a thumbnail representation of the template's structure is displayed:



An additional Is template property is shown in the informational tooltip displayed when hovering over an HTML template asset in search results.

You can control the size of thumbnails using the slider displayed when hovering over the View thumbnails button:



Your most recent settings are maintained the next time you access a designer.

3.10.6 Search Tab Context Menu

When you right-click a file in the Search tab a context menu is displayed. The following options are available:

- Create New Audience From Template: this option is available when you right-click an audience, interaction or offer template file. Invocation creates a file of the specified type, based on the template in question, and displays it in new instance of an appropriate designer.
- View Information: displays the File Information dialog.
- Configure Attribute: only displayed when the file is an attribute. Displays the Attribute Builder, allowing the attribute to be modified.
- Manage Values: only displayed when the file is an attribute. Displays the Manage Attribute Values dialog, allowing the values displayed when building a compare to list criterion using the attribute to be managed. This option is not available when the attribute's type is model project, parameter or exists in table, or when its data type is date or decimal.
- Open Latest Version: opens the latest version of the file in an appropriate designer (not available for attribute files).
- Open Linked Page: if the file is associated with a Wiki or web page, this option shows the page within the Linked Page Browser. If no page is associated with the file, the option is disabled.
- Choose Linked Page…: displays the Choose Linked Page dialog, facilitating linking of the file to a Wiki or web page.
- View Insights: only available at audiences and basic/standard selection rules. Displays insights relating to the file in question in the Insights Window.
- Open Data Viewer: this option is only available at selection rule files. Invocation displays the Data Viewer Window. The Data Viewer allows you to view a sample of the records targeted by the current selection rule. For more information, please see the Rule Designer documentation.
- Open File Location: invocation of this option launches the File System Dialog, within which the folder in which the selected file is saved is displayed. The file itself is selected.
- Copy: displays the File System Dialog, within which you can navigate accessible folders in the RPI file system in order to find a suitable folder to which to save a copy of the file.
- Move: displays the Choose Folder dialog, allowing you to choose a folder to which to move the file.
- Delete: moves the file from the folder within which it is stored to the file system's Recycle Bin.
- Preview: displayed where appropriate (e.g. at an image asset file). Opens the File Information Dialog, and displays a preview of the file in question in its Preview tab.

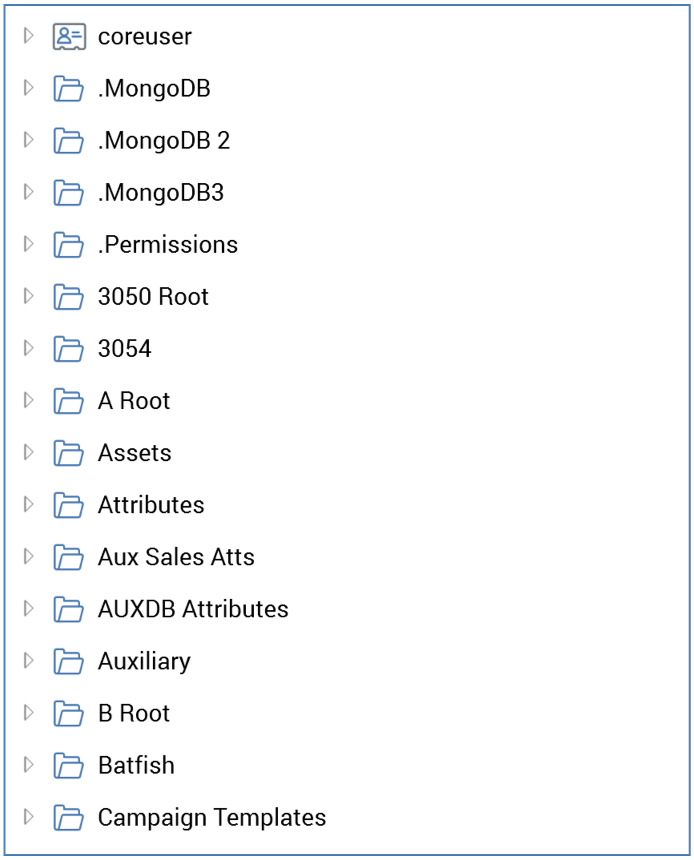
- Copy Content Tag to Clipboard: only available at attributes. Copies a unique code to the clipboard, by which the attribute may be referenced when content is authored externally.
- View Generated SQL: only available if the file is a selection rule.
- Copy Trace Log to Clipboard: only available if the file is a selection rule.

When you right-click an external file in the Search tab the following context menu items are available:

- View Information...: displays the external file's details in the File Information Dialog.
- Download...: selecting this option displays the Download File To... Windows file system dialog. You can specify a file name and location and click Save to initiate the download. Doing so creates an External file download job and displays it in the My Jobs dialog (see that interface's documentation for full details of the job). On successful completion, an Open Folder button is displayed; clicking it displays Windows Explorer, within which the file is selected.
- Copy to Folder...: selecting this option displays the Save [filename] as Asset... File System Dialog. When you click Save, if the file already exists in the selected folder, the File Conflict Dialog is shown. If the file does not already exist, or if you elect to proceed with overwriting the existing file, the second File System Dialog is closed, and a Save [filename] to [folder] job is created and displayed in the My Jobs dialog (see that interface's documentation for full details of the job). On its successful completion, an Open Asset button is displayed, which, when clicked, displays the newly-created asset in the Asset Designer. Note that the job will fail if you do not have permission to write to the selected RPI file system folder.

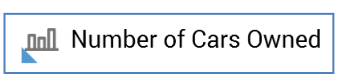
3.10.7 Browse Tab

The Browse tab displays a treeview representation of those folders within the RPI file system to which you have access.



You can roll up and expand folders as required. When a folder contains files, they are similarly displayed within the treeview.

Indication of a file’s linkage to one or more Wiki pages is carried out through use of a triangle icon:



3.10.8 Browse Tab Context Menus

When you right click on a file in the Browse tab a context menu is displayed. The following options are available:

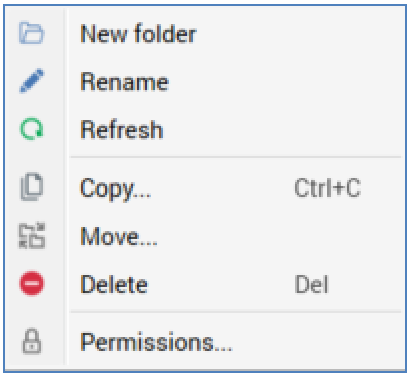
- Create New…From Template: only available at template files. Creates a new file based on the current template, and displays it in the appropriate designer.
- View Information: displays the File Information dialog.
- Configure Attribute: only displayed when the file is an attribute. Displays the Attribute Builder to allow the attribute to be modified.
- Manage Values: only displayed when the file is an attribute. Displays the Manage Attribute Values dialog, allowing the values displayed when building a compare to list criterion using the attribute to be managed. This option is not available when the attribute's type is model project, parameter or exists in table, or when the attribute's data type is date or decimal.
- Open Latest Version: opens the latest version of the file in an appropriate designer.
- Open Linked Page: if the file is associated with a Wiki or web page, this option shows the page within the Linked Page Browser. If no page is associated with the file, the option is disabled.
- Choose Linked Page…: displays the Choose Linked Page dialog, facilitating linking of the file to a Wiki or web page.
- View Insights: only available at audiences and selection rules. Displays insights relating to the file in question in the Insights Window.
- Open Data Viewer: this option is only available at selection rule files. Invocation displays the Data Viewer Window. The Data Viewer allows you to view a sample of the records targeted by the current selection rule. For more information, please see the Rule Designer documentation.
- Open File Location: invocation of this option launches the File System Dialog, within which the folder in which the selected file is saved is displayed. The file itself is selected.
- Rename: displays the file's name in updateable format and allows you to specify an alternative. Note that renaming a file does not create a new version of the file.
- Copy: displays the File System Dialog, within which you can navigate accessible folders in the RPI file system in order to find a suitable folder to which to save a copy of the file.
- Move: displays the Choose Folder dialog, allowing you to choose a folder to which to move the file.
- Delete: moves the file from the folder within which it is stored to the file system's Recycle Bin. Protected by an 'Are You Sure?' dialog.
- Preview: displayed where appropriate (e.g. at an image asset file). Opens the File Information Dialog, and displays a preview of the file in question in its Preview tab.

- Copy Content Tag to Clipboard: only available at attributes. Copies a unique code to the clipboard, by which the attribute may be referenced when content is authored externally.

- View Generated SQL: only available if the file is a selection rule.

- Copy Trace Log to Clipboard: only available if the file is a selection rule.

When you right click on a folder in the Browse tab a context menu is displayed.



The following options are available:

- New folder: creates a new folder within the current folder. By default, the folder is called 'New folder' (if a folder with that name already exists within the parent folder, the new folder is called 'New folder 2' (the number can be incremented if required)).

- Rename: displays the folder's name in updateable format and allows you to specify an alternative.

- Refresh: reloads the contents of the folder from the client's Interaction operational database.

- Copy: displays the Choose Folder dialog, allowing you to choose a parent folder to which to copy the folder.

- Move…: displays the Choose Folder dialog, allowing you to choose a parent folder to which to move the folder.

- Delete: moves the folder and its sub-folders to the file system's Recycle Bin. Protected by an 'Are You Sure?' dialog. Note that you cannot delete a folder that contains one or more files (within itself or its sub-folders).

- Permissions: displays the Folder Permissions dialog, within which you can control user groups' access to the folder.

When you right-click an external content provider in the Browse tab the following context menu items are available:

- Refresh

When you right-click an external folder in the Browse tab the following context menu items are available:

- New folder: invocation of this option displays the Create New External Folder dialog, which contains the following:
    - Folder name: set by default to ‘New folder’. Provision of a name for the folder is mandatory, and it can be a maximum of 100 characters in length.
    - Create Folder: this button is disabled if Folder name is not provided. Clicking it creates the folder as a subfolder within the folder at which New folder was invoked. The new folder is selected automatically at the treeview. If a folder with the same name already exists, a warning message displayed.
    - Cancel: clicking this button removes the dialog from display. Note that clicking off the dialog has the same effect.
- Refresh
- Upload to Folder...: this option is only available if you have the File System - Upload File to External Storage functional permission. Invocation displays the Select file to Upload Windows file system dialog. You can select a file and initiate the upload process, which creates an Upload [filename] job and displays it in the My Jobs dialog (see that interface's documentation for full details of the job).

  You can also upload multiple files to an external folder by selecting a *.zip file.

  Following a successful file upload, you must manually refresh the external folder to view the uploaded file therein.
- Delete: this option is not available for root external folders. Invocation of this option is protected by an ‘Are You Sure?’ dialog. If you proceed, the folder in question is deleted. If the folder contains file(s) or subfolder(s), a warning message is displayed and you cannot delete it.

When you right-click an external file in the Browse tab the following context menu items are available:

- View Information...: displays the external file’s details in the File Information Dialog.
- Download...: selecting this option displays the Download File To... Windows file system dialog. You can specify a file name and location and click Save to initiate the download. Doing so creates an External file download job and displays it in the My Jobs dialog (see that interface's documentation for full details of the job). On successful completion, an Open Folder button is displayed; clicking it displays Windows Explorer, within which the file is selected.
- Copy to Folder...: selecting this option displays the Save [filename] as Asset... File System Dialog. When you click Save, if the file does not already exist, a Save [filename] to [folder] job is created and displayed in the My Jobs dialog (see that interface's documentation for full

details of the job). If the file already exists, it is copied to the folder, with an incrementable integer appended to its name.

On the job's successful completion, an Open Asset button is displayed, which, when clicked, displays the newly-created asset in the Asset Designer. Note that the job will fail if you do not have permission to write to the selected RPI file system folder.

3.10.9 Create New Attribute Button

When available, you may initiate the creation of a new attribute in an appropriate interface by clicking on the Create new Attribute… button, which is available at the top right of the toolbox's folder search component:

This option is only available in those interfaces where attributes are relevant:

- Rule Designer
- Model Project Designer
- Audience Designer
- Cell List Designer
- Export Template Designer
- Offer Designer
- Asset Designer
- Smart Asset Designer
- Subscription Group Designer
- Landing Page Designer
- Data Connectors Interface
- Configuration Workbench

Full details on creating attributes can be found in the Attributes documentation.

3.10.10 File Summary Tooltip

A File Summary is displayed as a tooltip when you hover over a file in a Folder Search component. The tooltip is covered separately in this documentation.

3.11 Functional Permissions

Access to RPI functionality is granted according to your assigned functional permissions, which are defined by the active user groups of which you are a member (each group potentially being linked to several functional permissions). Functional permissions are system-defined and are listed below.

If you do not possess a functional permission that provides access to a designer or other RPI interface, the relevant icon is not shown in widgets (including at the Home Page) and the quick access menu.

Functional permissions available in RPI are as follows:

Name	Description
Analysis Panel - Design	Allows users to design analysis panels
Analysis Panel - Refresh	Allows users to refresh and retrieve Analysis Panel results (e.g. Venn diagram counts)
Asset - Design	Allows users to design assets
Asset – HTML – Design	Allows users to design HTML assets
Asset – Image - Design	Allows users to design image assets
Asset - Text – Design	Allows users to design text assets
Asset – Web Form - Design	Allows users to design web form assets
Attribute - Aggregation	Allows users to build attributes based on aggregations
Attribute - Banding	Allows users to build attributes by grouping values into discrete and/or value range bands
Attribute - Database Column	Allows users to build attributes based on columns from the database
Attribute - Exists in Table	Allows users to build attributes to represent existence of a matching record in a specified table
Attribute - Flag	Allows users to build attributes to generate a Y/N flag
Attribute - Function	Allows users to build attributes using a database function
Attribute – Map Item	Allows users to build attributes based on database map columns
Attribute – Model Project	Allows users to build attributes based on model projects
Attribute - Parameter	Allows users to build parameter attributes for use with Queue Listeners
Attribute - SQL Expression	Allows users to build attributes based on using SQL expressions
Audience - Design	Allows users to design audiences
Cell List - Design	Allows users to design cell lists
Configuration	Allows users to configure all configurable settings, users and user groups
Configuration – Attribute lists	Allows users to configure attribute lists
Configuration - Audience definitions	Allows users to configure audience definitions
Configuration - Audience snapshots	Allows users to configure audience snapshots
Configuration – Cached attribute lists	Allows users to configure database decision cached attribute lists
Configuration - Catalog	Allows users to configure the catalog
Configuration - Channels	Allows users to configure channels
Configuration – Customer views	Allows users to configure customer views
Configuration – Data process projects	Allows users to configure data process projects
Configuration - Database keys	Allows users to configure database keys
Configuration - External Content Providers	Allows users to configure external content providers
Configuration - File type approval	Allows users to configure file type approvals

Configuration - FTP locations	Allows users to configure FTP locations
Configuration - Joins	Allows users to configure joins
Configuration – NoSQL Database Definitions	Allows users to configure NoSQL database definitions
Configuration – NoSQL Offer History Definitions	Allows users to configure NoSQL offer history definitions
Configuration - Organization	Allows users to configure the organization definition
Configuration – Queue providers	Allows users to configure queue providers
Configuration - Resolution levels	Allows users to configure resolution levels
Configuration - Seeds	Allows users to configure seeds
Configuration - SQL Database Definitions	Allows users to configure SQL database definitions
Configuration - State flows	Allows users to configure fulfillment state flows
Configuration - System configuration	Allows users to configure system configuration settings
Configuration – User groups	Allows users to configure user groups
Configuration - Users	Allows users to configure users
Configuration – Value lists	Allows users to configure value lists
Configuration - Web adapters	Allows users to configure web adapters
Configuration – Web publish sites	Allows users to configure web publish sites
Data Connectors - Design	Allows users to design data connectors
Data Connectors - Execute	Allows users to activate, run and deactivate data connectors
Dashboard - Design	Allows users to design dashboards
Data Project - Design	Allows users to design data projects
Data Project - View Table Sample	Allows users to view sample from database tables
Export Template - Design	Allows users to design export templates
File System - Approve File	Allows users to approve files
File System - Copy to Other Clients	Allows users to copy files to another client
File System - Create Root Folder	Allows users to create a root folder
File System - Import and Export	Allows users to import and export files
File System – One Click Approval	Allows users to self-approve a file with one click
File System - Upload File to External Content Provider	Allows users to upload files to external content providers
File System - View External Providers	Allows users to view files from external content providers
Integration API	Allows user access to RPI via the Integration API
Interaction - Build	Allows users to build Interactions within Interaction designer
Interaction - Builder	Allows users to build email interactions using the Send Email training aid within the Interaction Designer
Interaction - Design	Allows users to design interactions
Interaction – Download File	Allows user to download files from interaction results
Interaction - Execute Production	Allows users to play, pause and stop and rewind production workflows within Interaction designer
Interaction - Execute Test	Allows users to play, pause and stop and rewind test workflows within Interaction designer
Interaction - Rollback	Allows users to rollback workflows within Interaction designer
Interactions – Report	Allows users to view the Interactions Report
Interactions – Trigger Report	Allows users to view the Interactions Trigger Report
Landing Page - Design	Allows users to design landing pages
Landing Page - Publish	Allows users to publish landing pages
Model Project – Design	Allows users to define model projects
Offer - Design	Allows users to design offers
Offer - Email Purpose	Allows users to set email purpose
Offer - SMS Purpose	Allows users to set SMS purpose
Offer - Test Inbox Delivery	Allows users to execute and view results of the inbox delivery test for emails
Operations - Approval Summary	Allows users to view the approval summary within Operations

Operations - Audience Instances	Allows users to view audience instances within Operations
Operations - Audience Snapshots	Allows users to view audience snapshots within Operations
Operations - Audit Log	Allows users to view the audit log within Operations
Operations – Execution Services	Allows users to view execution services within Operations
Operations - Housekeeping	Allows users to view housekeeping details within Operations
Operations - Query Trace Log	Allows users to view the query trace log within Operations
Operations - Server and Client Log	Allows users to view the server and client log within Operations
Operations - System Health	Allows users to view system health within Operations
Operations - System Tasks	Allows users to view system tasks within Operations
Operations - Workflow Instances	Allows users to view workflow instances within Operations
Operations - Workflow Summaries	Allows users to view workflow summaries within Operations
Published Content Report	Allows users to view the Published Content Report
Realtime Decision - Design	Allows users to design realtime decisions
Realtime Details Report	Allows users to view the Realtime Details Report
Realtime Layouts - Design	Allows users to design realtime layouts
Realtime Layouts - Limited Design	Allows users to work with realtime layouts in a limited capacity where only Smart Asset changes can be made
Realtime Report	Allows users to view and work with the Realtime Report
Reporting - Design	Allows users to design reports
Reporting Hub	Allows users to access the Reporting Hub
Selection Rule – Basic – Convert to Standard	Allows users to convert a basic selection rule to a standard selection rule
Selection Rule - Basic - Count	Allows users to refresh basic selection rule counts
Selection Rule - Basic – Data Viewer	Allows users to use Data Viewer for basic selection rules
Selection Rule - Basic - Design	Allows users to design basic selection rules
Selection Rule - Basic - Export	Allows users to export basic selection rules
Selection Rule - Basic – View Generated SQL	Allows users to view SQL that will be generated from basic selection rules
Selection Rule - NoSQL - Count	Allows users to refresh NoSQL selection rule counts
Selection Rule - NoSQL – Data Viewer	Allows users to use Data Viewer for NoSQL selection rules
Selection Rule - NoSQL - Design	Allows users to design NoSQL selection rules
Selection Rule - NoSQL - Export	Allows users to export NoSQL selection rules
Selection Rule - Standard - Count	Allows users to refresh standard selection rule counts and run waterfall reports
Selection Rule - Standard - Custom SQL Expression	Allows users to create and edit custom SQL expressions within standard selection rules
Selection Rule - Standard – Data Viewer	Allows users to use Data Viewer for standard selection rules
Selection Rule - Standard - Design	Allows users to design standard selection rules
Selection Rule - Standard - Export	Allows users to export standard selection rules
Selection Rule - Standard – Generate Clustered Audience	Allows users to automatically generate audiences exposing outputs based on AML clusters from standard selection rules
Selection Rule - Standard – View Generated SQL	Allows users to view SQL that will be generated from standard selection rules
Single Customer View	Allows users to search and retrieve data from the database using pre-configured Customer Views
Smart Asset - Advanced - Design	Allows users to design advanced smart assets
Smart Asset – Attribute - Design	Allows users to design attribute smart assets

Smart Asset – Audience Segment - Design	Allows users to design audience segment smart assets
Smart Asset - Design	Allows users to design smart assets
Smart Asset - Goal - Design	Allows users to design goal smart assets
Smart Asset – Model - Design	Allows users to design model smart assets
Smart Asset – Publish	Allows users to publish smart assets directly
Smart Asset – Recommendation – Design	Allows users to design recommendation smart assets
Smart Asset – Rule - Design	Allows users to design rule smart assets
Smart Asset – Table – Design	Allows users to design table smart assets
Smart Asset – Tag – Design	Allows users to design tag smart assets
Subscription Group - Design	Allows users to design subscription groups
View PII Data	Allows users to view PII data within the Data Viewer, Single Customer View and Email Previews
Wiki - Design	Allows users to design wiki pages

Note that the Configuration permission controls access to the Configuration Workbench and provides access to all of the interfaces that it exposes. Possession of one or more of the specialized Configuration permissions (e.g. Configuration - Database keys), in the absence of the main Configuration permission, allows you to access the Workbench, within which only the interface(s) correspondent to your permissions are shown.

In addition to the functional permissions described above, RPI also supports folder-level permissions within the file system. Details of the how such permissions are managed are provided separately in this documentation.

Note that any changes that you make to functional permissions that impact upon your own user are not picked up until you sign out of and back into RPI.

The following functional permissions are not supported when working in NoSQL Databases only or NoSQL Data Warehouse with SQL Auxiliary Databases Mode:

- Cell List - Design
- Configuration - Audience definitions
- Configuration - Audience snapshots
- Configuration - Customer views
- Data Project - Design
- Data Project - View table sample
- Interaction Designer - Workflow Builder permissions
- Operations – Audience Snapshots
- Operations – Workflow Foundation
- Single Customer View

3.12 Keyboard Shortcuts

RPI supports the use of a number of keyboard shortcuts to enhance user productivity. The shortcuts available depend on the interface within which you are working, and are as follows:

- Main toolbar:
    - CTRL-Q: Quick Access
    - CTRL-H: Home Page
    - CTRL-M: File System
    - CTRL-J: My Jobs
- Rule Designer
    - F4: Configure selected criterion
    - DEL: delete selected criterion/criteria list
    - CTRL-C: Copy selected criterion/criteria list
    - CTRL-X: Cut selected criterion/criteria list
    - CTRL-V: Paste copied criterion/criteria list
- Audience Designer/ Audience Instance Viewer:
    - CTRL-N: New
    - CTRL-O: Open
    - CTRL-S: Save
    - F12: Save As
    - F2: View/configure selected block (only when one selected)
    - F5: Refresh status (AIV only)
    - DEL: Delete selected blocks/connectors
    - CTRL-C: Copy selected block (only when one selected)
    - CTRL-X: Not supported
    - CTRL-V: Paste copied block
    - ALT+Arrow keys: Move selected blocks
- Interaction Designer/Workflow Instance Viewer:
    - CTRL-N: New

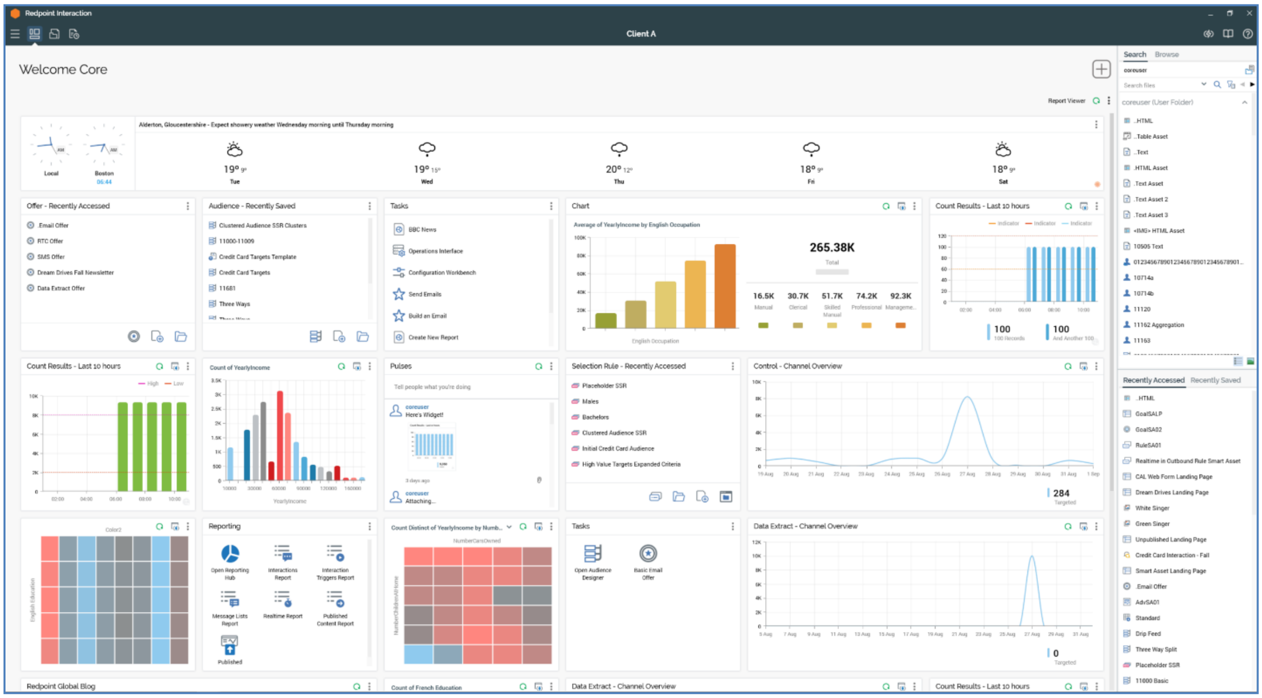
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
  - F2: View/configure selected activity
  - F5: Refresh status
  - ALT+Arrow keys: Move selected activities
- Offer Designer:
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
- Export Template Designer:
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
- Cell List Designer:
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
- Asset Designer:
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
- Smart Asset Designer:
  - CTRL-O: Open
  - CTRL-S: Save

- F12: Save As
- Subscription Group Designer:
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
- Landing Page Designer
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save
  - F12: Save As
- Data Project Designer
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save
- Model Project Designer
  - CTRL-N: New
  - CTRL-O: Open
  - CTRL-S: Save

You can also access contextual help anywhere in RPI by hitting the F1 key.

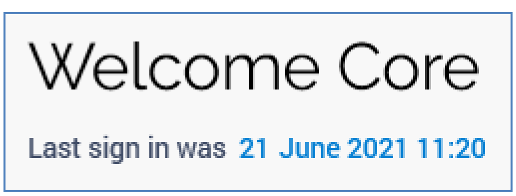
3.13 Home Page

The Home Page is displayed following a successful sign in.



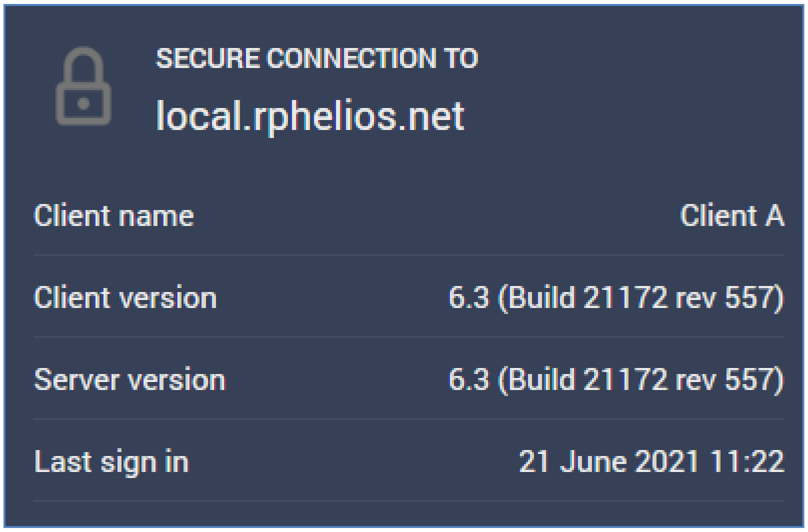
It contains the following:

- Welcome Message: after signing in as a user who has previously logged into RPI, the following is displayed to the top left of the Home Page:



The 'Last sign in' message is removed from display after 30 seconds. It is not displayed when signing in as a user who has not previously signed into RPI.

In addition, the following tooltip is shown when hovering over the Welcome message:



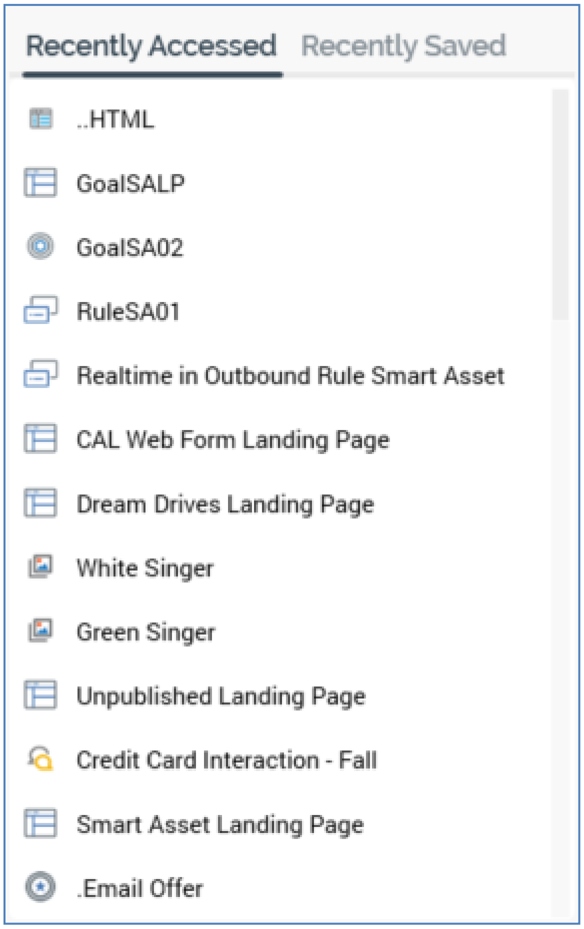
- Widgets: a default set of widgets is provided. You can customize these as required. You can also add your own using the Add New Widget button.

  More information on widgets can be found in the Dashboard Designer documentation. Note that the number of widgets that can be displayed at the same time in the Home Page is controlled by system configuration setting MaxDashboardWidgets.

- Report Viewer: covered separately in this documentation.
- Options menu: exposing the following:
  - Copy Image to Clipboard: copies the current displayed state of your widgets to the clipboard.
  - Save as New Dashboard: displays the Save Dashboard As File System Dialog, allowing you to save the widgets shown in your Home Page as a new dashboard file.
- Folder Search component: covered separately in this documentation.
- Recent Items component: covered separately in this documentation.

3.14 Recent Items

The Recent Items component provides access to the most recent RPI files that you have access or saved most recently.



The recent items component provides a convenient method to quickly return to a file upon which you were recently working, without having to browse the file system using the File System Dialog.

Up to 20 of the most recently accessed or saved files upon which you have worked are listed in the Recent Items component.

You can switch between the display of Recently Accessed and Recently Saved files using the tabs provided

Your most-recently used selection is persisted between RPI sessions. Recently-accessed files are saved to the server every minute. This means that they are available to a user at their next sign in should the application close unexpectedly (files accessed within the previous minute will not appear in the list).

For each file, the name is shown; hovering over an item causes the display of its file type and the folder within which it is saved within a tooltip. Note that, if a file is linked to a Wiki or external web page, a blue triangle is not shown.

You can double click on a file in the list to display it. If it is already displayed within an existing tab, that tab is shown. If the file is not displayed, what happens next depends on whether the file is an MDI file or not (RPI files are displayed in two basic types of designer – a single file per tab, or in a Multi-document Interface (MDI) such as the Rule Designer).

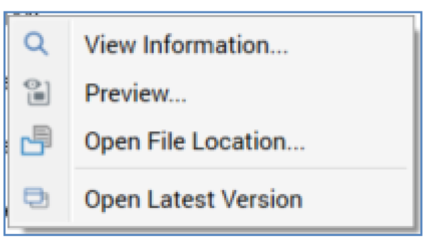
- If opened in a single file designer, a new instance of the appropriate designer is opened in a new tab and the file is displayed.
- If opened in an MDI designer:
    - If the designer is already displayed, the rule is added to the same and the tab within which it is displayed is shown. The file is displayed at the front of any existing files within the designer.
    - If the designer is not displayed, a new tab containing the designer is displayed and the rule shown within it.

If you are unable to open a file in the list (for example, if it has been deleted), a message is displayed when you attempt to navigate to it.

You may then, if you wish, remove the file from display within the list.

A warning is also shown should you attempt to open an external file from Recent Items.

A context menu is displayed when you right-click a file in the Recent Items list:



Note that the Open File Location menu option is not available in respect of wrapper audiences, created during execution of the Send Emails training aid.

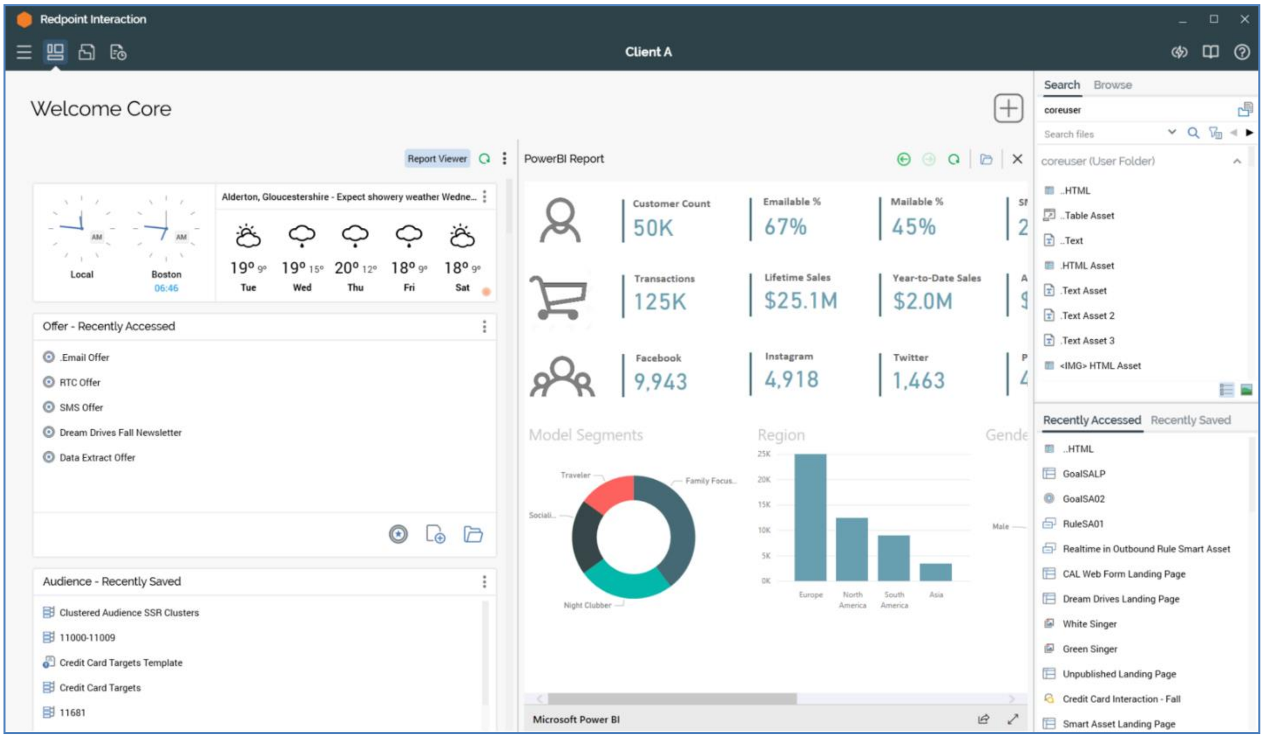
If a menu command is invoked in respect of a file that has since been deleted, you are offered the chance to remove it from the list (see above).

Note that attributes are not displayed in the Recent Items component, as their display in a dedicated designer is not supported.

3.15 Report Viewer

The Home page's Report Viewer button allows you to show or hide the Report Viewer, which facilitates display of an RPI report on the Home Page.

When the Report Viewer is displayed, any configured widgets are pushed to the left, and a Report Viewer panel is shown to the right of the Home Page:



A separator is present between the same, allowing you to adjust widths as required (a minimum width is applied at the widgets section).

When you sign in when the Report Viewer is being shown, it is displayed as expected. If the report with which the Report Viewer was configured has since been deleted, a warning is thrown.

When the Report Viewer is hidden, it is removed from display, and replaced with widgets occupying the full width of the home page. If redisplayed, the previously-selected report is shown.

The following are shown at the Report Viewer:

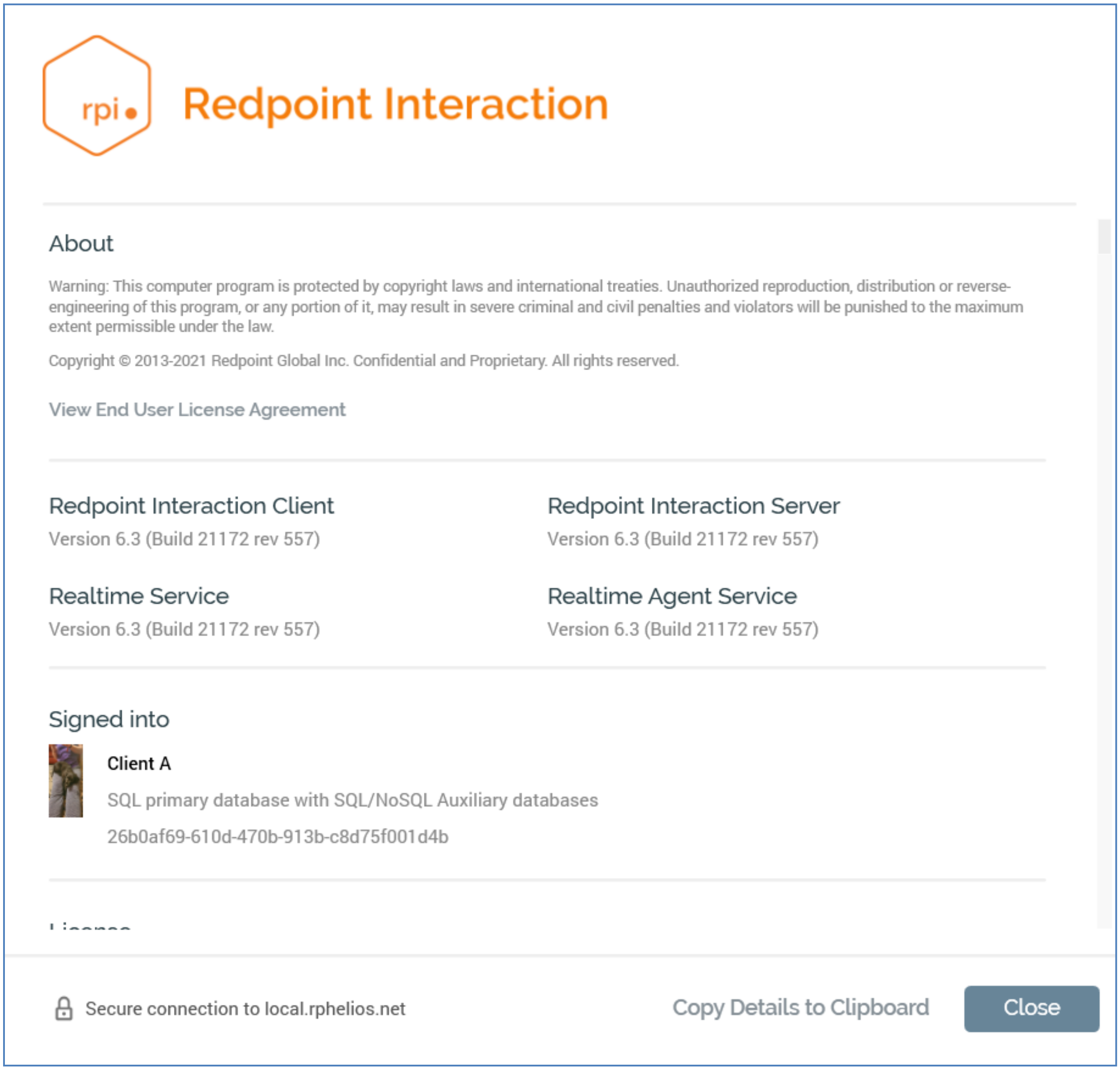
- Toolbar: exposing a single option:
    - Choose report: clicking this button displays the Choose Report File System Dialog. You can select an RPI Report file to be rendered in the Report Viewer.
- Viewer: prior to selection of a report, a message is displayed:

Please choose a report to view here by clicking the 'Choose Report' button above

When a report has been selected, it is rendered in the Viewer.

3.16 About Redpoint Interaction

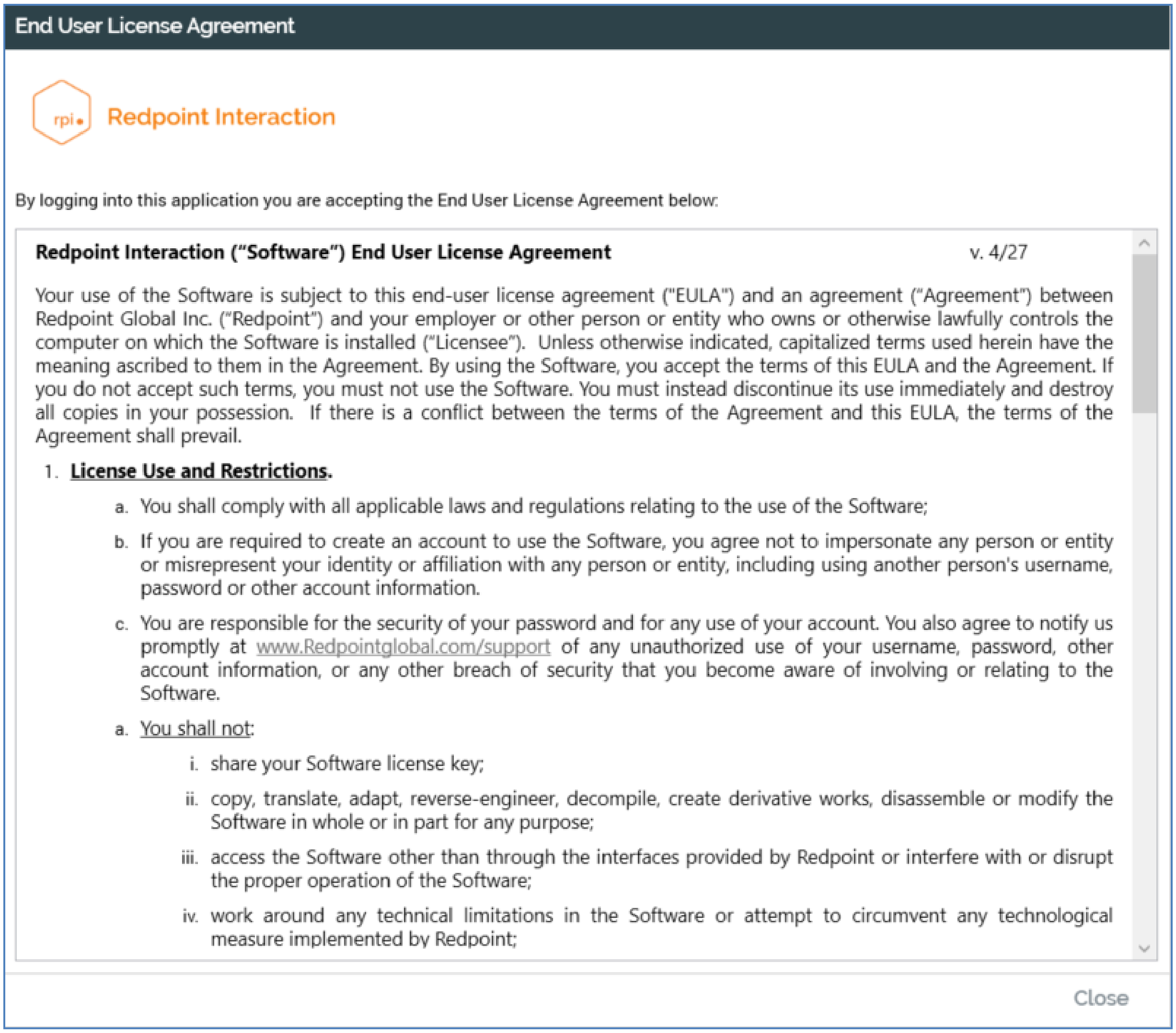
The About Redpoint Interaction dialog is a modal dialog that provides information about the current RPI client application and server.



It is opened via an option in the main application toolbar's Help menu.

The About RPI dialog contains:

- Warning and copyright notice.
- View End User License Agreement: clicking this button displays the RPI EULA in a separate Window.

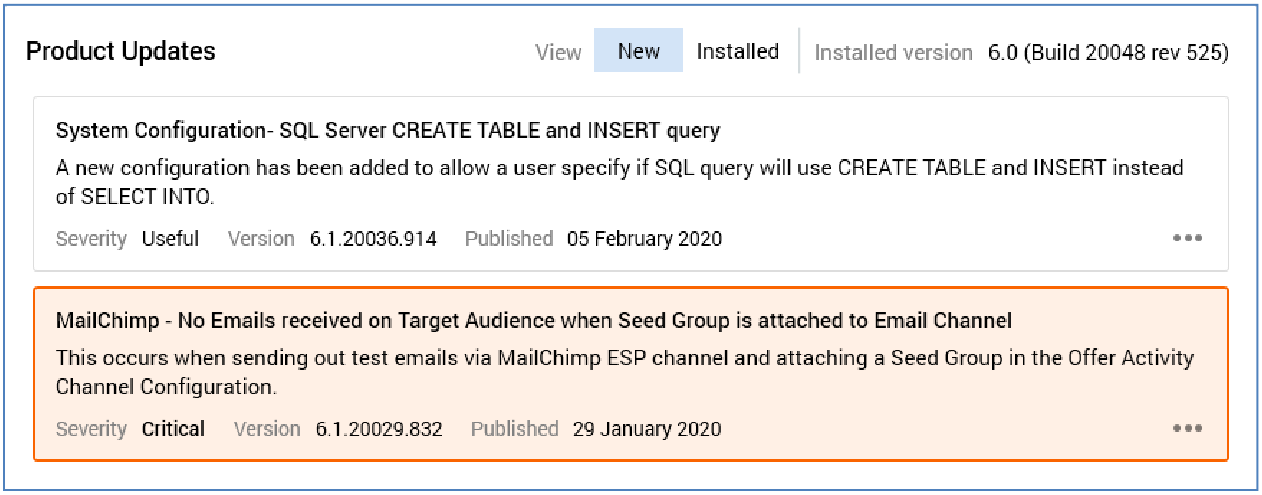


- Client application version and build number
- Server version and build number
- Realtime Service version and build number
- Realtime Agent version and build number
- Signed into: the following details of the client application into which you signed in are shown:
  - Logo
  - Name
  - Description
  - Database mode
  - Client ID

- License: the following license details are listed:
    - Server machine code
    - Status
    - Type
    - Issued to
    - Company name
    - License ID
    - License validation mode
    - Maximum number of clients
    - Number of nodes
    - Node [n] serial number
    - Issued
    - License type
    - NoSQL database mode
    - Permissions (list)
- Installed modules: a list of all of the client application components installed on your machine. For each, the name, version and type are displayed.
- 'Secure connection to [ServerName]'
- Copy Details to Clipboard: invocation of this option copies the contents of the About RPI dialog to the clipboard. In addition, extra installed module information is also copied (which may be of use to an operations user or systems administrator should it be necessary to diagnose a client application issue).
- Close: invocation of this option closes the dialog.

3.17 Product Updates

This dialog is used to provide information on installed and not yet installed, but available, RPI updates.



It contains a toolbar and updates list.

- Toolbar: exposing the following:
  - View: two toggle buttons accompany this property and allow you to choose whether to view a list of New (i.e. not yet installed) or Installed updates.
  - Installed version: this read-only property displays the current RPI version in the format '[Major version].[Minor version] (Build[build number] rev [revision number])'
- Updates list: the contents of the update list depend on whether New or Installed updates are being viewed.

If New updates are displayed, updates available in later versions of RPI than the currently-installed version are listed. If no New updates are available, a message is shown.

If Installed updates are displayed, they are listed by Published date (descending), then Version date (descending).

The following are shown for each update:

- Title
- Description
- Severity: one of Useful, Important or Critical
- Version

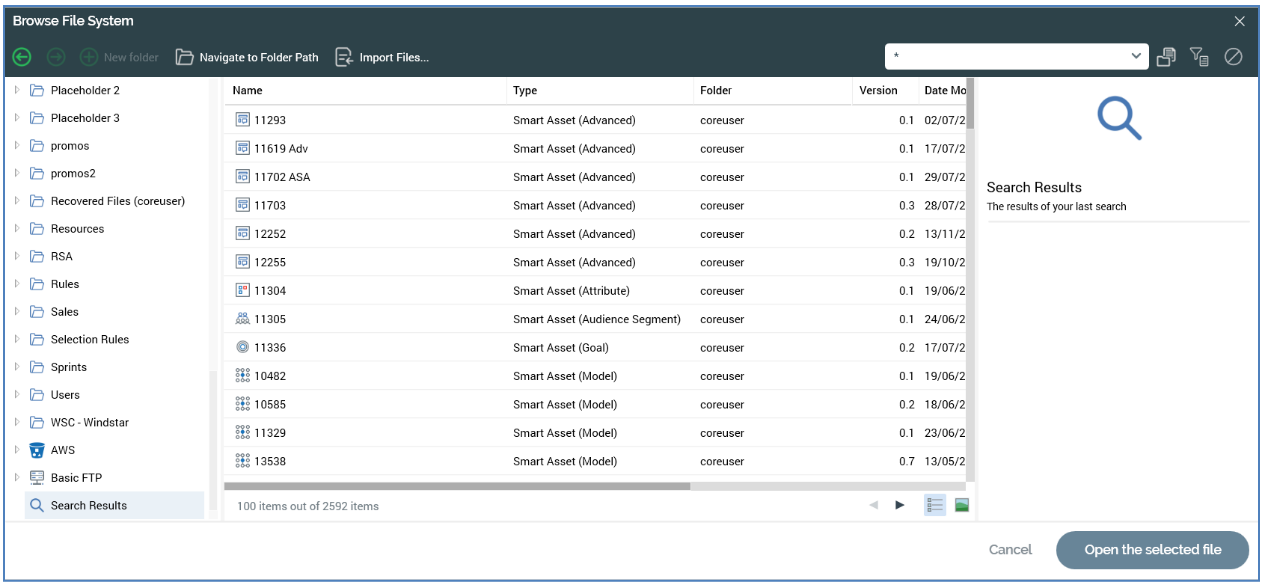
- Published
- View more details: clicking this button displays more details of the update in your default browser.

Note that Critical updates are shown with a red border and orange background.

3.18 The RPI File System and the File System Dialog

The RPI file system operates very similarly to the Windows file system, using the metaphors of files and folders to allow you to save and retrieve the assets you create. Also like the Windows file system, the RPI file system supports the limiting of access to folders by users based upon their assigned permissions. Unlike the Windows file system, however, details of RPI folders and files are stored in the client's Interaction operational database.

The RPI file system is accessed using the File System Dialog.



The dialog will be familiar to anyone who has saved a file in a Microsoft Office application. However, it is used to save, open or manage RPI's 'files' – its system assets, like selection rules and interactions, as opposed to Windows files, within the RPI, as opposed to the Windows, file system.

The File System Dialog is accessed in a number of ways – e.g. when opening an audience, when saving an interaction and specifying its name (i.e. Save As...) or when browsing for a selection rule to associate with a filter. In these circumstances, the contents of the Dialog are filtered to display only assets of the relevant type.

Whenever you open the File System Dialog, the folders you can access are limited in accordance with your folder permissions.

When invoked, the File System Dialog automatically displays the folder you most recently accessed. This applies also to special folders such as Recent Items.

When invoking Browse... to configure a property previously configured with a file, the original file's folder is displayed instead of the current most recently-accessed folder. The original file is selected within the folder, which in turn becomes the most-recently accessed folder.

3.18.1 Browsing the File System

All users may browse the RPI file system using the File System Dialog. This option is invoked from the RPI toolbar.

When browsing the file system, all files to which you have access are shown, irrespective of their type – attributes, selection rules, audiences and interactions are displayed alongside one another.

You can undertake all File System Dialog functionality (folder and functional permissions notwithstanding), including opening a file, which you can do by double clicking it, or by using the Open the selected file button. The file in question is displayed:

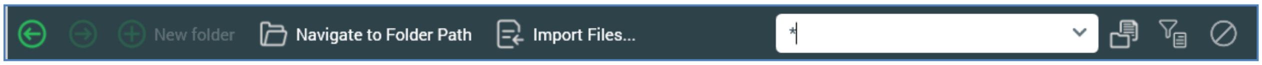
- In new instance of the appropriate designer (if other than a selection rule or realtime decision).
- If a selection rule or realtime decision, and the Rule Designer is open, within the open Designer tab.
- If a selection rule or realtime decision, and the Rule Designer is not open, within a new Rule Designer instance.

An attempt to open an attribute file results in the display of a message advising that the file type may not be opened.

You can close the File System Dialog using the Window Close or Cancel buttons.

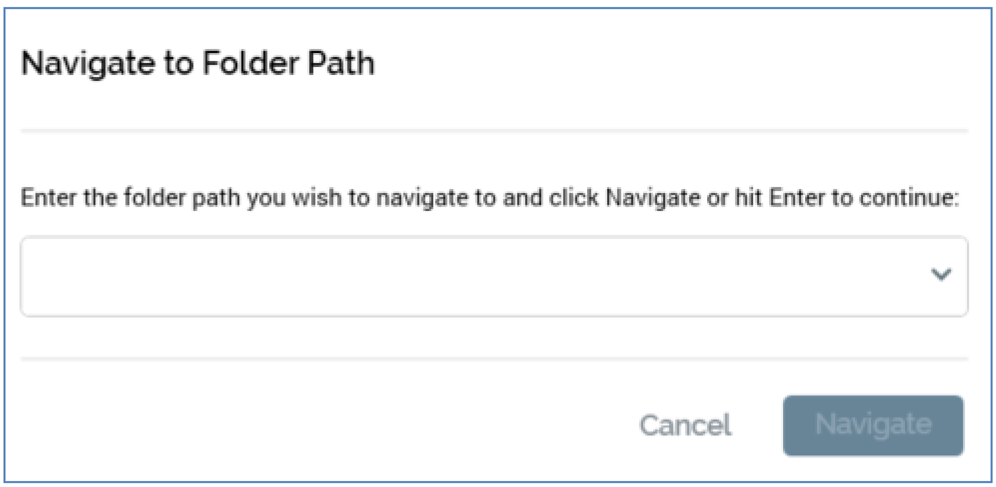
3.18.2 Toolbar

A toolbar is displayed at the top of the File System Dialog.



It exposes the following options:

- Back/Forward: these buttons allow you move backwards or forward through your history of recently-visited folders. Note that this history is reset each time you start the RPI client.
- New folder: clicking this button creates a new folder within the currently-selected folder.
- Navigate to Folder Path: this button allows you to navigate directly to a specific folder. Clicking it displays the Navigate to Folder Path dialog:

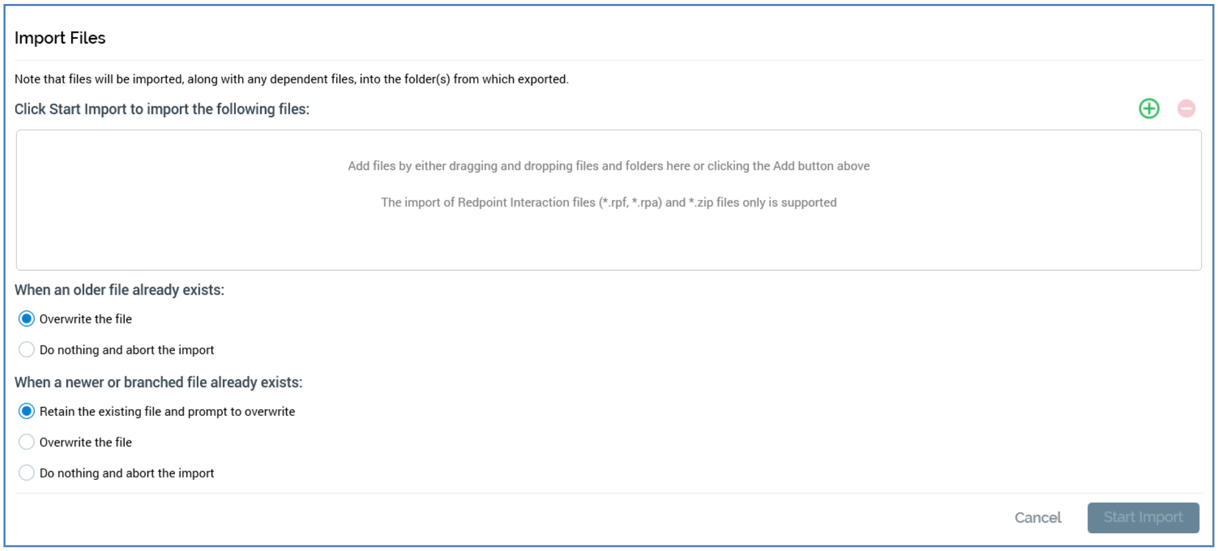


  You can specify the full path of a folder to which you wish to navigate using the combobox provided or select a path to which you have navigated previously. Entering a folder path enables the Navigate button.

  If you entered a valid folder path, on clicking Navigate or hitting Enter, the current folder context is changed to that which you supplied. If you enter an invalid folder path, or you attempt to navigate to Recent Items, your user shortcut, an external folder or the Recycle Bin, a warning message is displayed.

  Clicking Cancel removes the dialog from display. Clicking off the dialog has the same effect.

- Import Files: availability of this button is controlled by functional permission File System – Import. Clicking it displays the Import Files overlay, which facilitates the import of previously-exported RPI files.



The dialog contains the following:

- Toolbar: two options are exposed in the toolbar:

  - Add Files: clicking this button displays the Import Files... Windows file system dialog, within which the Default file type is set to RPI Files (*.rpf).

    Note that *.rpa files, which represent file attachments (such as an image asset's associated image file) are also listed. If a file that is to be imported has an attachment, you must also select it for the file to be imported successfully.

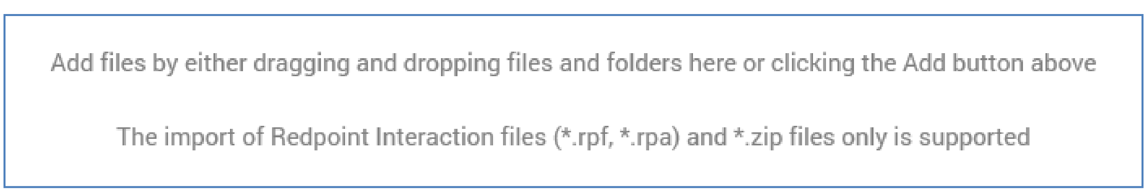
    You can also select a zip file containing exported RPI files when importing files (zip files are also shown when RPI Files are displayed at the Windows file system dialog).

    You can select one or more files and click Open to commence their import. If a file has dependent files (e.g. a selection rule containing criteria based on attributes), to import the file successfully all dependent files must also be selected.

    When you click Open, the file(s) are shown in the Import Files overlay. You can also click Cancel to close the Windows file system dialog.

  - Remove selected Files: invocation of this option removes the selected file(s) from the list. An 'Are You Sure?' dialog is not shown.

- Files list: when empty, a message is shown.



Otherwise, the list contains files, selected from the Windows file system, that are to be imported.

You can drag file(s), folder(s) or combinations thereof from Windows Explorer directly into the list. If you drag in a folder containing a subfolder, all files within the child folder(s) are added to the list.

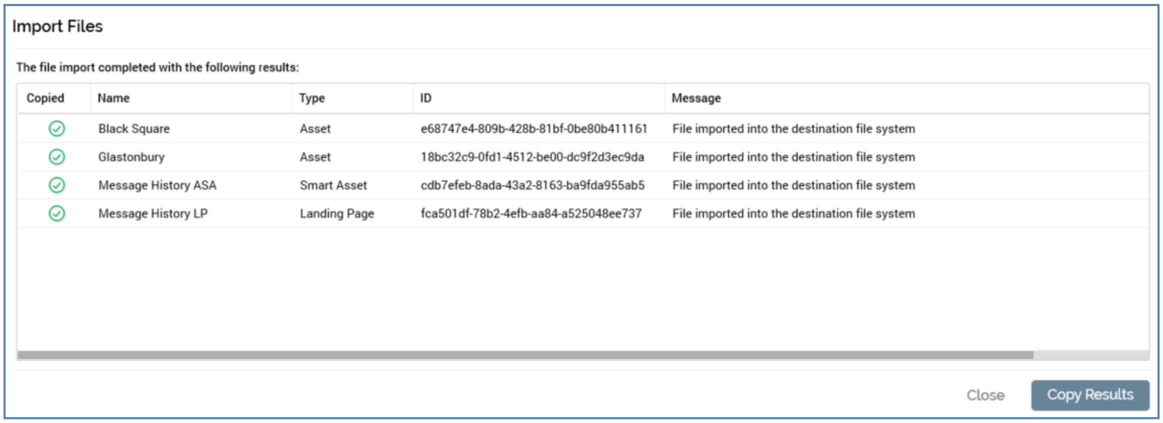
Two sets of radio buttons, displayed below the files list, allow you to specify how the file import should behave in the event that one or more files already exists.

- When a previous version of the file already exists: the accompanying radio buttons allow specification of behavior should an older version of a given file already be present in the same folder at import:
  - Overwrite the file: the default option
  - Do nothing and abort the import
- When a newer version of the file already exists: the accompanying radio buttons allow specification of behavior should a newer version of a given file already be present in the same folder at import:
  - Retain the existing file and prompt to overwrite: the default option. If a newer version of a file being imported already exists at import, a dialog is displayed, containing the message '[File type] '[File name]' already exists. It was last modified by [User] on [Date/time]. Would you like to override this file?'

    You can choose to overwrite or retain the file. You can also choose whether to apply the selected action for any other files being imported (if applicable). If you elect not to apply to all remaining files, and other files qualify for display of the dialog, it is displayed again as required.
  - Overwrite the file
  - Do nothing and abort the import

Two buttons are displayed at the bottom of the overlay:

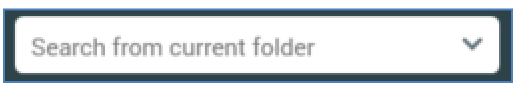
- Start Import: this button is enabled when one or more files are present in the files list. Clicking it imports the files and displays the results of the exercise in an overlay:



You can click the Copy Results to copy the contents of the overlay to the clipboard. Clicking the Close button closes the Import Files overlay. If files were imported successfully, they are available in the current client's file system.

- Cancel: clicking this button removes the Import File overlay from display.

- Search: You can search for files within the File System Dialog. A search field is provided at the dialog's top right-hand corner. Clicking Ctrl-F in the File System Dialog places the cursor in the search field.



At initial invocation, the text 'Search from current folder' is shown in the field.

You can define the context of the search as either within the current folder, or across all folders in the RPI file system. A button with a 'folder' icon is shown to the right hand side of the search field:

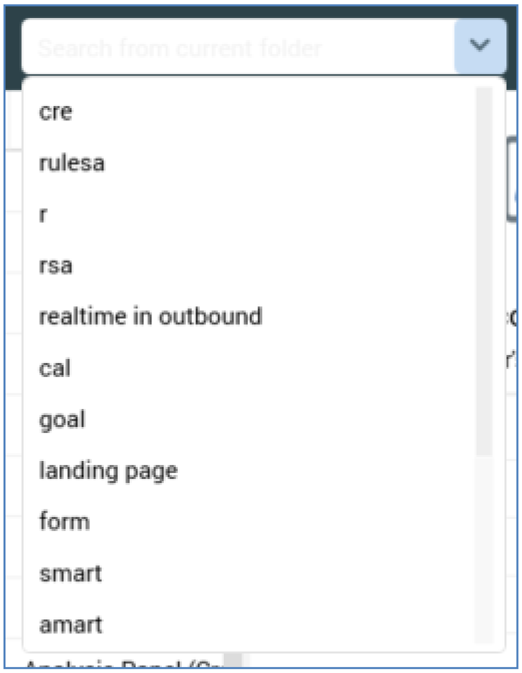
On hovering over the button, the following tooltip is displayed: 'Currently searching from the current folder. Click here to search across all folders'. Clicking the button selects it and changes its tooltip to: 'Currently searching across all folders. Click here to only search from the current folder'. The text shown in the search field is also changed to read 'Search across all folders'.

Searching is initiated automatically one second after having entered one or more characters in the search field.

Having initiated or executed a search, a Cancel search button is shown:

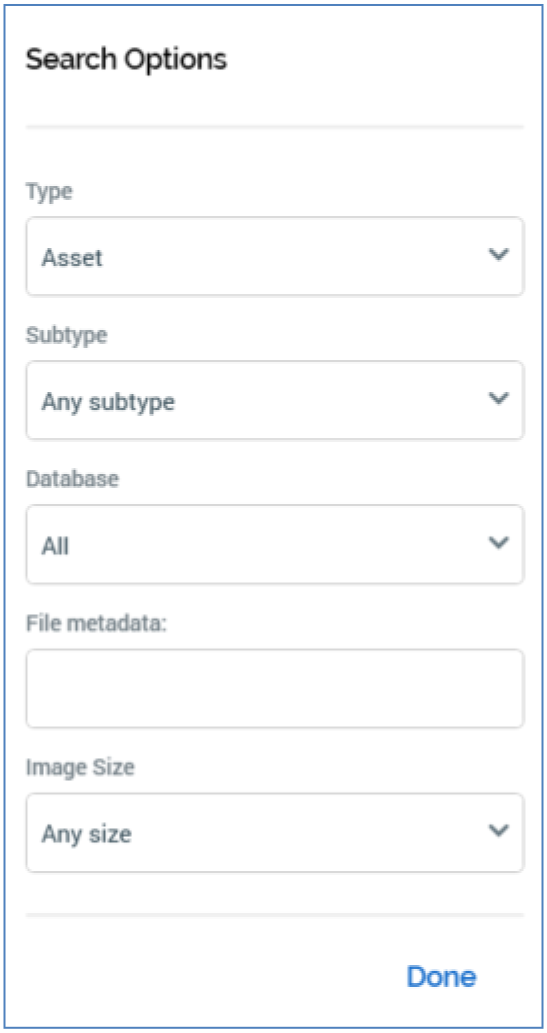
Cancelling a search clears down the search results and continues to display the contents of the Search Results folder.

You can view a list of recent searches in a dropdown list.



The list is displayed in reverse chronological order. You can select a search from the list in order to re-execute it. Up to 15 of your most recent searches are displayed. Only search strings in respect of which a search was actually executed are added to the recent searches list.

The button at the right of the search field is used to show or hide search options. The following search options are available:



- Type: you can use the Type drop-down to select a file type to search for. The field lists all file types, along with default value 'Any valid file type'. Selection of a value executes a search immediately, and the results are limited to the selected file type(s). Unless reset to 'Any valid file type', the file type restriction continues to be applied in addition to any further search criteria you specify.

- Subtype: this options is displayed when a specific Type has been selected. A dropdown provides access to all of the selected type's subtypes, plus 'Any subtype'. If no explicit subtypes are supported at a type, only the 'Any subtype' value is available. Application of a Type/Subtype filter limits the files displayed in accordance with the current selections. Note that, if an explicit Image size search option has been applied, Type is set to 'Asset' and Subtype to 'Image'.

- Database: this field is only available when one or more auxiliary databases have been configured at the current RPI client. A dropdown field, it exposes the values 'All' (the default), 'Data Warehouse', and one row per configured auxiliary database.

  Search results are filtered in accordance with the selection made therein. If an auxiliary database is selected, the following file types may be retrieved:

    - Attribute
    - Selection rule
    - Analysis panel
    - Export template
- File metadata: you can use this field to specify a file metadata attribute value to perform a search upon the same.

  You can also search for files using file metadata, using the following syntax:

  '{meta:keyname operator "value"}'

  (Use of the double quotes at value is optional).

  The following operators are supported: =, ==, !=, <>, >, >=, <, <=, ~, String contains. Multiple concurrent expressions are supported; they should be separated by a space. Note that, if searching for Date metadata, the value provided must match exactly how data is persisted at the database (including any time component, if relevant).

- Image size: This dropdown field exposes the following options:
    - Any size (default)
    - Small (Images with an area size smaller than 120,000px (e.g. 400x300))
    - Medium (Images with an area size between 120,000px and 480,000px (e.g. 400x300 to 800x600))
    - Large (Images with an area size greater than 480,000px (e.g. 800x600))
    - An exact size: selection of this option displays width and height fields. Both default to 100, and the minimum permissible value is 1, the maximum 99999.

  If you specify an explicit image size, non-image asset files that match other search criteria are not returned; when you set Image size to a value other than Any size, the Type field is set to a read-only ‘Image assets only’.

  Note that you cannot search by image size at an external content provider or Recent Items.

The supplied search string is compared to files’ names and descriptions. Files are retrieved if:

- If searching the current folder, they are contained within the current folder, or within a child thereof.
- If searching across all folders, they exist within an accessible folder.

- The search criteria (as entered literally) are matched anywhere within the selected name or description - e.g. search for 'first name' returns 'Customer first name' but not 'Customer name'.
- Saved within a folder to which Full control, Read-Write or Read-Only access is granted.
- If a file type has been specified, are files of that type are retrieved.
- If searching by image size, are image files of the specified size.

Search results are displayed in the Search Results folder, which is displayed immediately before the Recycle Bin in the File System Dialog folders treeview.

A read-only Folder column is shown within the search results files list. It displays the name of the folder within which the file is persisted. The file's full path is not shown as it is available at the File System Dialog information panel. Search results are ordered by file type, name and folder.

Search results may be spread across more than one page. The number of results per page is controlled by system configuration setting MaxFileSearchPageSize. Footer text advises of the current set of search results being displayed:

Showing 1 - 100 out of 1046 results

Next and Previous Page buttons are displayed to the right hand side of the Search field. The buttons are enabled only when additional results pages exist, and invocation displays the next or previous page's worth of results (as appropriate).

Search is always available in the File System Dialog, irrespective of how it was invoked; however, search results are limited to only files that are relevant to the context of its invocation – if invoked to open a selection rule, for example, only selection rules are displayed in search results.

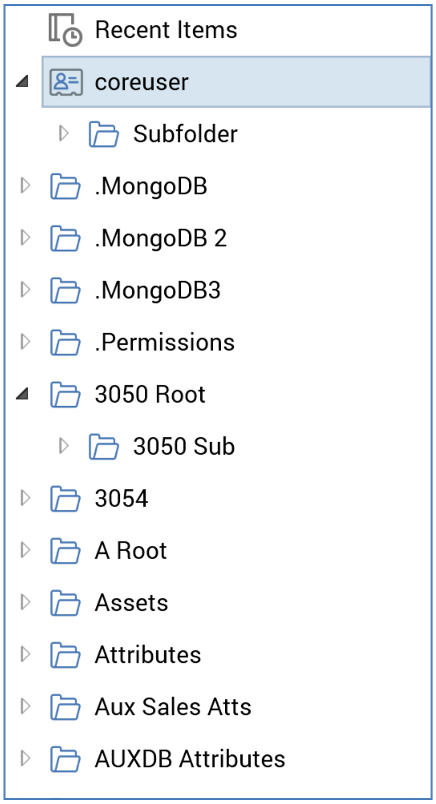
If no search results match the entered criteria, the Search Results folder is still displayed, but a label advises that no search results were retrieved.

Note that searches are not case dependent.

You can execute a 'wildcard' search by typing '*' into the search field. Upon execution, the system retrieves all files within the current folder and all descendent folders.

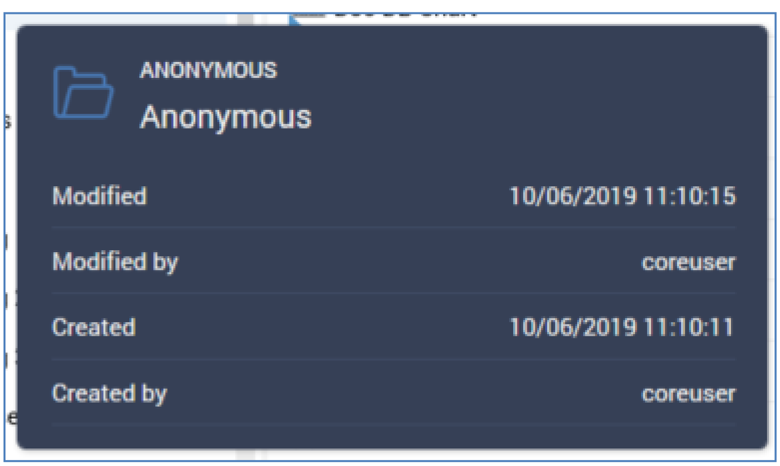
3.18.3 Folders Treeview

A treeview representation of the folders within the RPI file system is displayed to the left hand side of the File System Dialog.

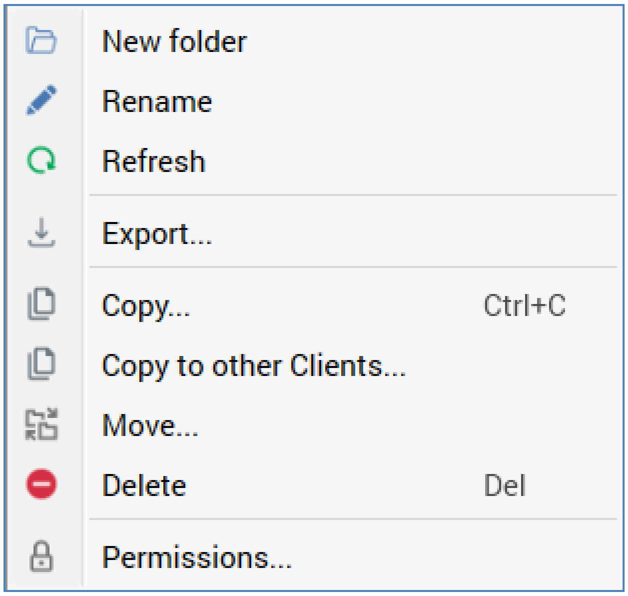


You can expand or roll up folders as required in order to view the child folders that they contain. You can highlight a folder to view the files and folders it contains within the right-hand files list.

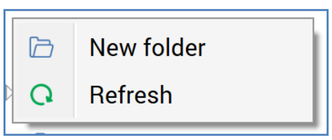
When you hover over a folder in the folders treeview, an informational tooltip menu is displayed.



Right-clicking a standard folder within the folders treeview displays a context menu:

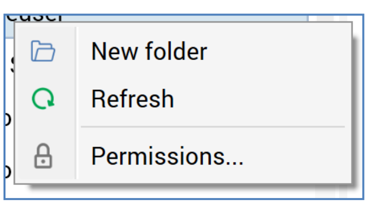


Right-clicking elsewhere within the folders treeview displays a context menu that gives access to the following menu options, which apply to the file system’s root folder:

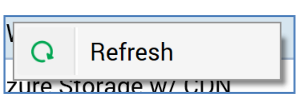


Right-clicking each of the special folders in the folders treeview displays the following menu options:

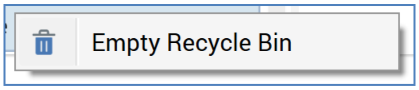
- Recent Items:
    - Context menu not displayed
- User folder:



- External Content Provider (documented elsewhere):



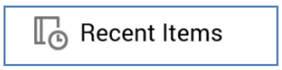
- Recycle Bin



Each context menu command is described separately elsewhere.

3.18.4 Recent Items

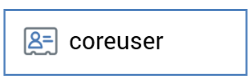
The Recent Items special folder is displayed as the first folder in the folders treeview.



It contains a list of recent items as per that displayed within the Recent Items component. The list is filtered so that only items of relevance to the current context are displayed - e.g. if the File System Dialog is invoked from the Rule Designer, only selection rules are listed, but if invoked to browse the file system, all file types are shown.

3.18.5 User Folder

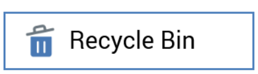
The User Folder special folder is displayed immediately below the Recent Items folder in the folders treeview.



It is named in accordance with your username, even if your actual user folder happens to be named differently. It is serves as shortcut to your user folder.

3.18.6 Recycle Bin

The recycle bin is the final special folder in the folders treeview.



It contains files that you have deleted.

When you delete a file in the File System Dialog, it is not deleted permanently; rather, it is sent to the recycle bin.

If the File System Dialog was invoked to manage the file system, the contents of the recycle bin are not filtered by type. If it was invoked to open or save a file, the recycle bin lists only files of the type relevant to the current context. In both cases, you may only view files that were stored in folders to which you have access.

You cannot open a file within the recycle bin – if you try to do so, a warning message is displayed.

You can restore a file from the Recycle Bin. If the folder within which it was stored still exists, it is restored there. If the folder no longer exists, the folder, and any ancestor folders (if also removed) are restored along with the file. If you restore a file that depends upon other deleted files (for example, you restore a selection rule containing a linked selection rule that has also been deleted), they are restored as well. If the system is unable to restore the dependent files, due to their having been deleted permanently, a warning message is displayed that provides details of the file(s) that cannot be restored. If you restore a file to a folder that contains a file of the same type with the same name as the restored file, the latter is renamed ‘Copy of [filename] (1)’ (this number can be incremented if necessary).

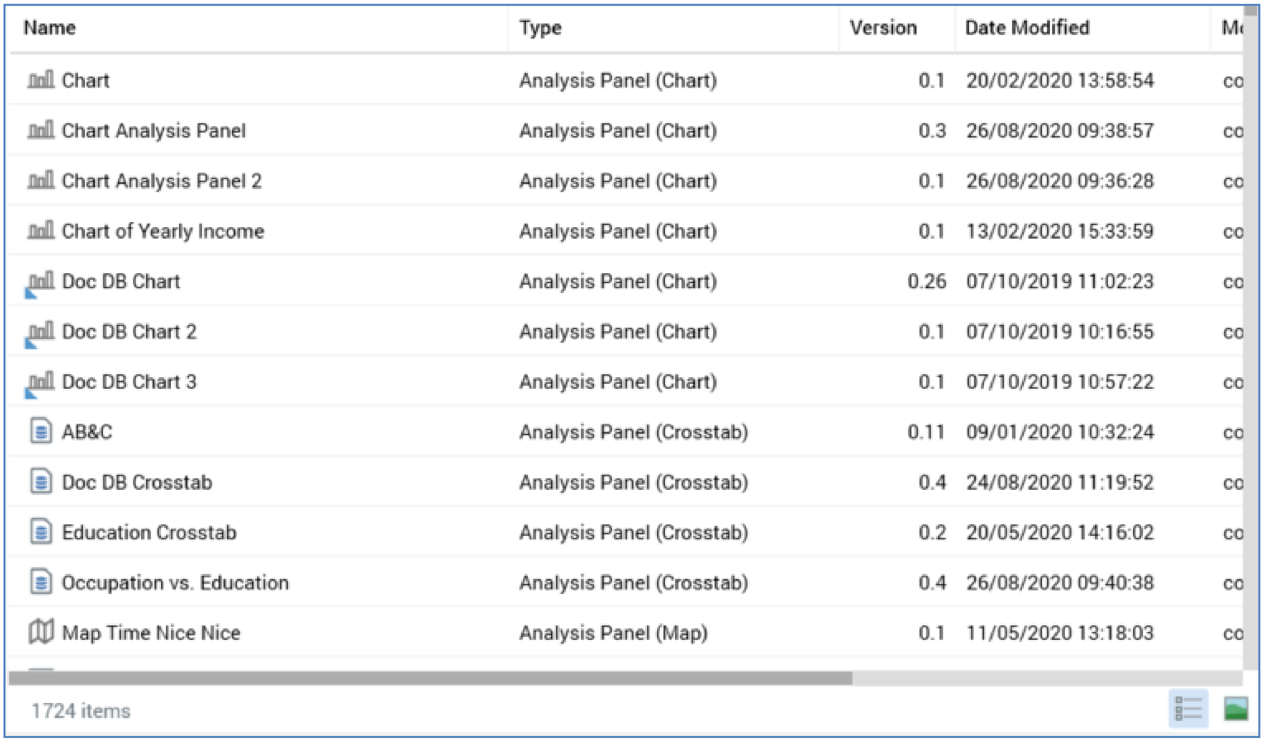
You can also delete a file from the recycle bin. This action, which is protected by an ‘Are you sure?’ dialog, removes the file permanently from the RPI file system.

Finally, you can empty the recycle bin completely. This is also protected by an ‘Are you sure?’ dialog, as it deletes permanently the entire contents of the recycle bin.

Files that have been present in the recycle bin for a default period of 90 days are deleted permanently by the File system housekeeper. You can view details of its execution in the Housekeeping tab in the Operations interface.

3.18.7 Files/Folders List

The files/folders list is displayed in the middle of the File System Dialog.

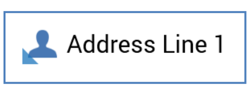


Name	Type	Version	Date Modified	Mo
Chart	Analysis Panel (Chart)	0.1	20/02/2020 13:58:54	co
Chart Analysis Panel	Analysis Panel (Chart)	0.3	26/08/2020 09:38:57	co
Chart Analysis Panel 2	Analysis Panel (Chart)	0.1	26/08/2020 09:36:28	co
Chart of Yearly Income	Analysis Panel (Chart)	0.1	13/02/2020 15:33:59	co
Doc DB Chart	Analysis Panel (Chart)	0.26	07/10/2019 11:02:23	co
Doc DB Chart 2	Analysis Panel (Chart)	0.1	07/10/2019 10:16:55	co
Doc DB Chart 3	Analysis Panel (Chart)	0.1	07/10/2019 10:57:22	co
AB&C	Analysis Panel (Crosstab)	0.11	09/01/2020 10:32:24	co
Doc DB Crosstab	Analysis Panel (Crosstab)	0.4	24/08/2020 11:19:52	co
Education Crosstab	Analysis Panel (Crosstab)	0.2	20/05/2020 14:16:02	co
Occupation vs. Education	Analysis Panel (Crosstab)	0.4	26/08/2020 09:40:38	co
Map Time Nice Nice	Analysis Panel (Map)	0.1	11/05/2020 13:18:03	co

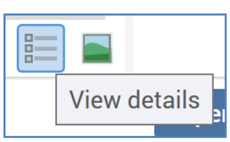
1724 items

It lists files and folders contained within the folder selected in the folders treeview.

Indication of a file's linkage to one or more Wiki or web pages is carried out through use of a small blue triangle to the bottom left of its icon:

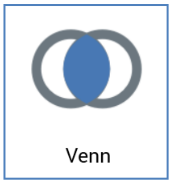


You can choose to view the files list as file details, or as thumbnails. You can switch between views using the toggle buttons at the bottom of the tab:

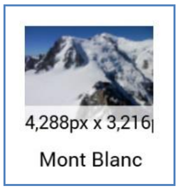


View details: this option is selected by default and displays file details in tabular form. Clicking on a column header in the files list sorts its contents by the column in question.

- View thumbnails: When this option is selected, files are shown using thumbnail images. If a file's type is other than image asset, a file type icon and name are shown:



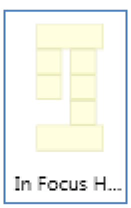
If a file's type is image asset, a thumbnail representation of an image is shown:



The image's dimensions are shown at the bottom right of the thumbnail. These are also displayed in the informational panel shown to the right of the files list.

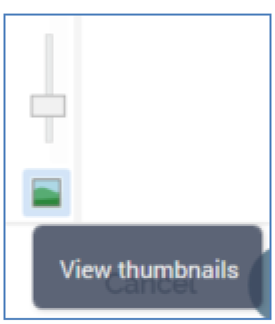
At external images, thumbnails are generated dynamically at initial folder display within each RPI session and are displayed at an open external content provider folder as they are generated. Thumbnails are re-generated at each subsequent RPI session.

If a file is an HTML asset that is used as a template, a thumbnail representation of the template's structure is displayed:



An additional Is template property is shown in the informational panel shown to the right of the files list.

You can control the size of thumbnails using the slider displayed when hovering over the View thumbnails button:



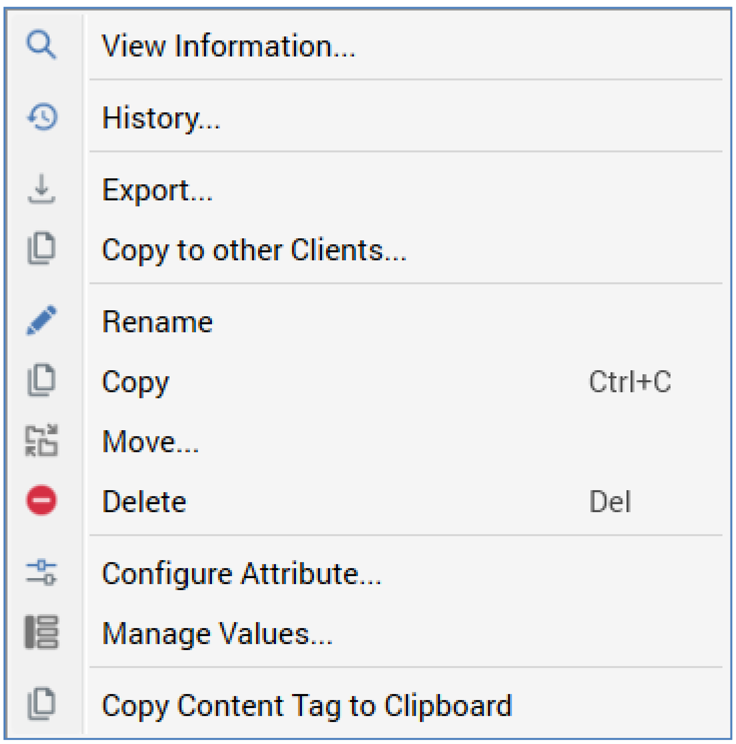
A file summary tooltip is shown when hovering over a thumbnail.

Your most recent settings are maintained the next time you access the File System Dialog.

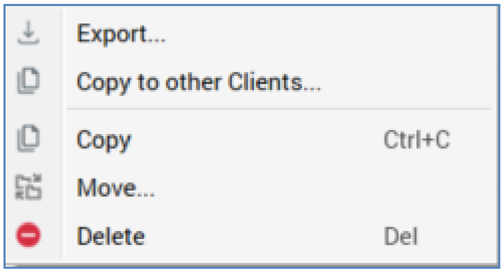
The total number of files and/or folders displayed in the files list is shown in the File System Dialog footer, below the folders treeview:

If displaying search results, the number of items in the current page of results is shown. The ability to scroll forwards and backwards through pages of search results is also provided.

Right-clicking a file within the files list displays a context menu that gives access to the following (note that all options may not be available, depending on the type of file selected):

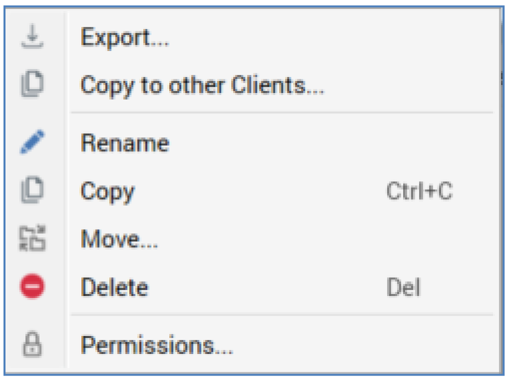


If required, you can highlight multiple files in the files list. When you right-click having done so, the context menu looks like this:



If you highlight a mixture of files and folders, the same context menu is shown.

Right-clicking a folder within the files list displays a context menu that gives access to the following:



Each context menu command is described separately in this documentation.

3.18.8 New Folder

Creates a new folder within the folder in which the command was invoked. The new folder's name is New Folder, and is displayed immediately in edit mode, allowing you to change the default name if so desired. If New Folder already exists, an integer is appended to the folder name. This value may be incremented if required.

On creation of a new root folder, the Full Control permission is assigned at the folder to all user groups of which you are a member.

This option is available at external folders. See the toolbox's Search tab documentation for more details.

3.18.9 Rename (folder)

This option allows you to rename a folder. A name must be supplied and can be a maximum of 100 characters in length.

3.18.10 Refresh

This command reloads the contents of the current folder, and its descendent folders, from the client's Interaction operational database.

3.18.11 Delete (folder)

Removes the folder in question from the RPI file system. This command is protected by an 'Are you sure?' dialog. You cannot delete a folder if it, or a descendent folder, contains one or more files.

This option is available at external folders. See the toolbox's Search tab documentation for more details.

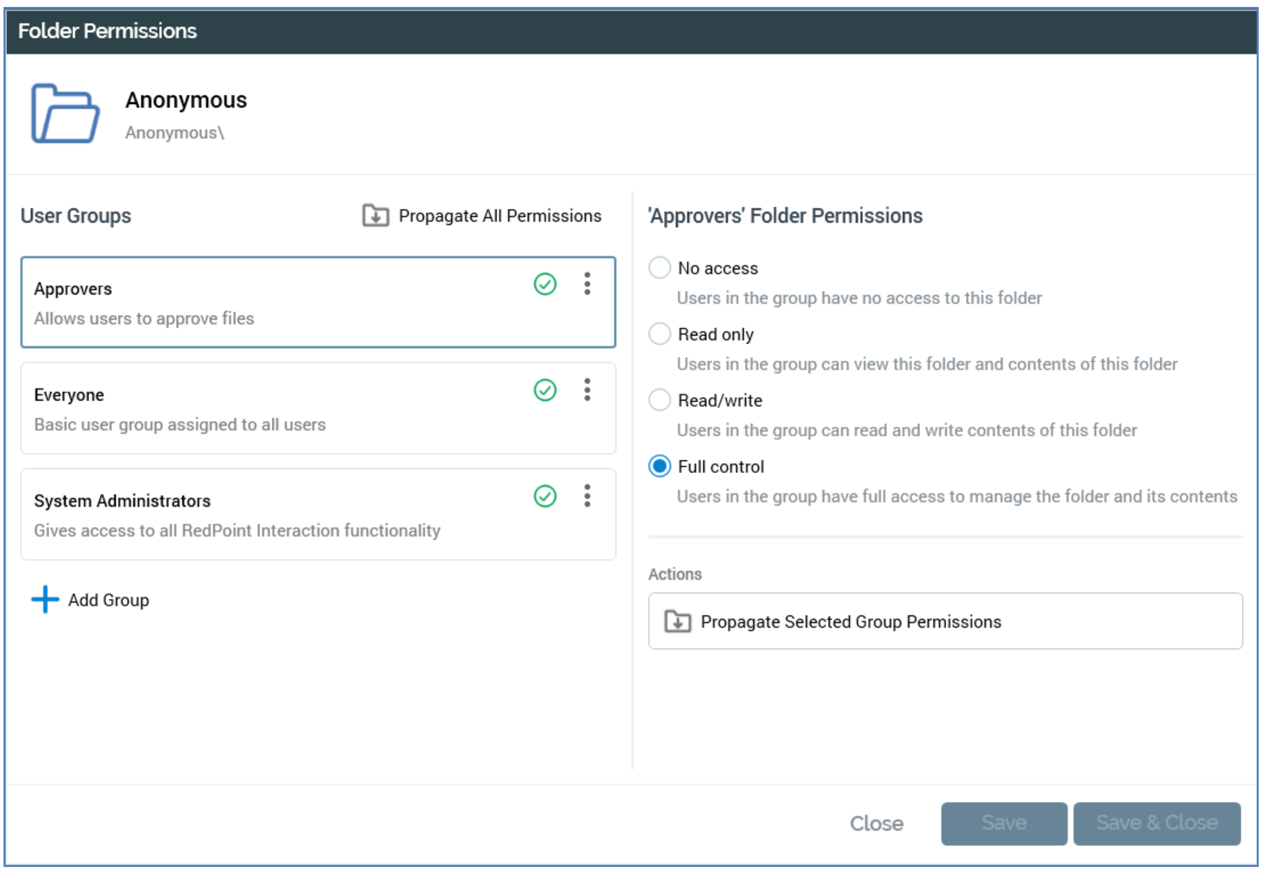
3.18.12 Folder Permissions

Folder security is based on four system-provided folder permissions:

- No Access
- Read-only
- Read/write
- Full control

Each of these is discussed in detail below.

You can initiate folder permissions management from a folder within the File System Dialog, using the Permissions… command. When you do so, the Folder Permissions modal dialog is displayed.



You may only view the Folder Permissions dialog if you have Read or Read/write access within a folder. You can make changes there if you have Full control access to a folder.

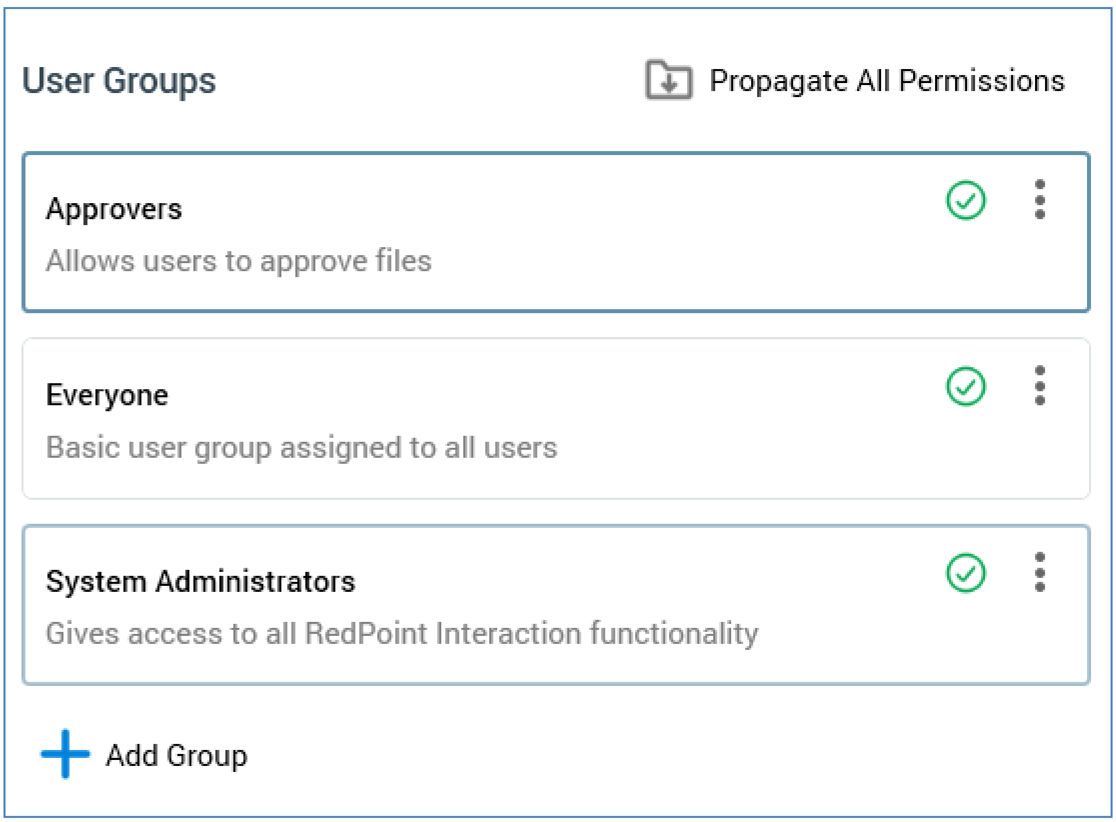
The Folder Permissions dialog contains the following elements:

- Header

Contains the following read-only folder information:

  - Folder name
  - Folder path

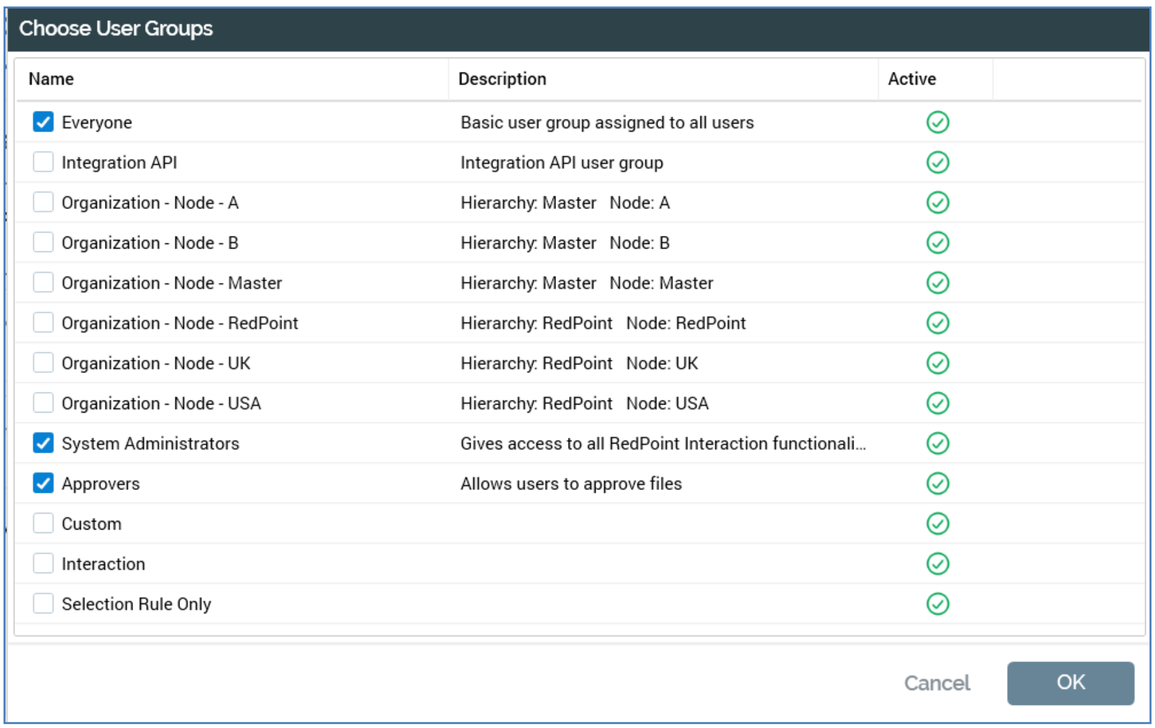
- User Groups: lists user groups to which explicit permissions have been assigned.



  - Toolbar: providing access to the following functionality:
    - Propagate All Permissions: at invocation, a message is displayed advising that this action cannot be undone. This command causes the current user group's permissions to be copied to all descendent folders to which you have Full Control access. Successful completion of propagation is advised via a message. Propagate is only available when no unsaved changes are shown within the Folder Permissions dialog.

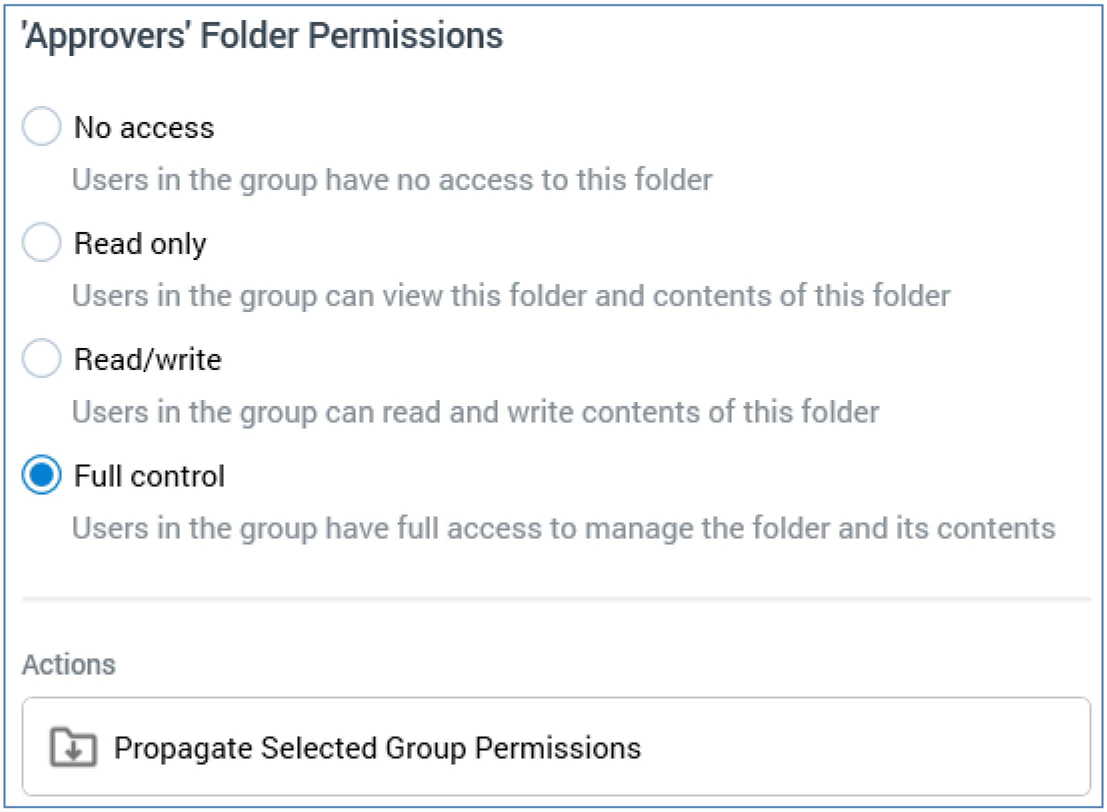
- User Groups list: displays the following read-only properties for each listed user group:
  - Name
  - Description
  - Active flag
  - Actions button: providing access to:
    - Remove: protected by ‘Are You Sure?’.

An Add Group button is provided at the bottom of the list. Clicking it displays the Choose User Groups dialog, in which you can select the groups to be included in the User Groups list using the checkboxes provided.



Note that organization node user groups are included in the list. This means that you can restrict access to folders within the file system based on users’ organizational node membership; for example, a user associated with the ‘Banking’ node might be precluded from viewing the contents of a folder associated with the ‘Insurance’ node.

- '[Group]' Folder Permissions



The list displays the four standard folder access permissions and a description of each. A radio button against each indicates whether the permission has been assigned to the user group selected in the user groups list.

As mentioned above, there are four system-provided folder permissions:

- No access: a user group with this permission does not have access to a folder or its contents. The folder cannot be viewed in the File System Dialog. Having the No access permission is equivalent to having no permissions at all.

- Read only: a user who belongs to a user group with this permission can view the files within a folder. The user cannot delete files within the folder, nor can he or she rename files within the folder. The user cannot make changes to files saved within the folder using a designer. Similarly, he or she cannot save new files to the folder using a designer. The user cannot rename the folder; nor can he or she delete the folder. Finally, the user cannot manage permissions for the folder.

- Read/write: a user who belongs to a user group with this permission can view the files within a folder. The user can delete files within the folder and can rename files within the folder. The user can make changes to files saved within the folder using a designer; similarly, he or she can save new files to the folder using a designer. The user, however, cannot rename the folder; nor can he or she delete the folder. Finally, the user cannot manage permissions for the folder.

    - Full control: a user who belongs to a user group with this permission can view the files within a folder. The user can delete files within the folder and can rename files within the folder. The user can make changes to files saved within the folder using a designer; similarly, he or she can save new files to the folder using a designer. The user can rename the folder and can delete the folder. Finally, the user can manage permissions for the folder.

  A single button is shown at the bottom of this section:

    - Propagate Selected Group Permissions: invocation of this option allows you to propagate the selected group's permissions to all child folders to which you have full control access. Invocation propagates any relaxed permissions in respect of the selected user group only.

  Note that, by default, a user group has No access to a folder. Note also that the system-provided System Administrators group always has Full control permission.

  If all permissions are unchecked for a user group, changes are applied and the Folder Permissions dialog closed, when the dialog is re-opened, No access permission is assigned to the group.

  If you choose to loosen permissions at a folder within a hierarchy (e.g. changing Read only to Full Control), corresponding permissions are also loosened at its folders further up the hierarchy.

The following are displayed at the bottom of the Folder Permissions dialog:

- Changes have been made: this message is shown when changes have been made in the Folder Permissions dialog.
- Close/Cancel: the text ‘Close’ is displayed until changes are made, in which case it is replaced with ‘Cancel’. Upon invocation, if unsaved changes exist, an ‘Are You Sure?’ dialog is displayed. You may save your changes and close, lose your changes and close or cancel closing the Folder Permissions dialog. If you elect to close the dialog, it is removed from display.
- Save: this button saves changes made in the Folder Permissions dialog. Doing so enables the Propagate toolbar button. The dialog remains on display after invocation. The button is only enabled if you have Full control within the current folder.
- Save & Close: this button saves changes made in the Folder Permissions dialog and removes the dialog from display. It is only enabled if you have Full control within the current folder.

Note that, following creation of a new folder, it inherits its parent folder's permissions.

3.18.13 Rename (file)

This command allows you to rename a file. A name must be supplied and can be a maximum of 100 characters in length. You cannot rename the file to the same name as another file of the same type within the same folder. Also, you cannot rename a file within the recycle bin. When you rename a file, a new version of the file is not created.

3.18.14 Delete file

Deleting a file moves it to the recycle bin. Deletion is protected by an 'Are you sure?' dialog.

If you try to delete a file that has files that depend upon it, you are prevented from doing so. Examples include:

- Trying to delete a selection rule linked dynamically within another selection rule.
- Trying to delete a selection rule linked dynamically within an audience via a filter, suppressions block or split rule.
- Trying to delete an audience upon which an audience activity is based within an interaction.

If you attempt to delete an interaction that contains at least one workflow that has commenced execution in Production mode, and which has not been rolled back, you will not be able to do so. A dialog is displayed ('Unable to delete [Interaction] as it contains one or more production workflows').

3.18.15 Copy/Paste

Copy is available in the context menu when one or more files are selected. Invocation of copy results in the display of an informational message at the bottom left of the RPI interface ('[FileName] has been copied to the clipboard' or '[n] files have been copied to the clipboard').

When file(s) have been copied to the clipboard, you can right-click a folder, at both treeview and files list, to invoke Paste. Pasting file(s) creates a copy or copies thereof in the destination folder. New files' versions are set to 0.1, and their Created and Modified (by) properties are set appropriately. Any linked Wiki or web pages are also copied. Pasted file(s) are displayed at appropriate ordinal position(s) in the files list.

If you paste a file into a folder, and a file with the same name and type is already present there, the file is pasted with the name '[Filename] - Copy'. If '[Filename] - Copy' already exists, an incrementable integer is appended to maintain name uniqueness.

You can also invoke Paste at the whitespace at the end of the files list.

An informational message ('[n] file(s) have been copied to [FolderName]) is displayed after a successful Paste.

Note the following restrictions:

- It is not possible to copy a file in the Recycle Bin
- It is not possible to paste a file into the Recycle Bin

3.18.16 Move

Move is available in the context menu when the following are selected in the folders treeview or files list:

- A single file
- A single folder
- Multiple files
- Multiple folders
- A mixture of files and folders

Invocation of Move displays the Choose Folder dialog, which lists all accessible folders in the RPI file system. The Recent Items folder and Recycle Bin are not displayed. You can select a folder to which to move file(s) and/or folder(s).

You can click Choose the selected folder to complete the move. When complete, a confirmatory information message is displayed

If you attempt to move file(s) or folder(s) to their original location, an error dialog is displayed. If you attempt to move to a folder in respect of which you only have Read-only permissions, a warning message is displayed.

You can click Cancel to abandon the move and close the Choose Folder dialog.

Note that you may not move files from the Recent Items folder or the Recycle Bin.

3.18.17 Copy to External Folder…

This button allows you to copy an image asset to a folder within an external content provider.

It is only available when a single file is selected. Invocation displays the Save [asset name] to External Folder… File System Dialog.

Only external content providers are shown in the treeview. You can select an external file to which to save the folder and click Save to start the process of doing so. This creates an Upload asset to ECP job, details of which can be found in the My Jobs documentation.

A Publicly Accessible dropdown is available at the bottom of the File System Dialog. The is set to 'No' by default. If set to 'Yes', the file will be publicly available on completion of the copy.

3.18.18 Export…

This option is available when one or more files, or folders, or combination thereof is/are selected. Its availability is controlled by functional permission File System - Export.

Selecting the option displays the Browse for folder Windows file system dialog. You can choose the folder to which files are to be exported and initiate the export by clicking OK. Doing so creates an Export [n] file(s) job and displays it in the My Jobs dialog (full details of the job can be found in that interface's documentation). On the job's successful completion, an Open Folder button is displayed; clicking it opens the folder to which the file(s) was or were exported in Windows Explorer.

If more than one file is exported, all exported files are included in a zip file. If single file is exported, it is written to a single .rpf file. If the export was invoked in respect of single file that requires export of multiple files, the zip file is named '[Filename]_[DateTime]'. If invoked in respect of multiple files, the zip file is named 'RPIFileArchive_[DateTime]'.

Files are named as follows: '[File Name]_[GUID].rpf', with each GUID value being unique to a specific file. Image assets' image attachments are named '[File Name]_[GUID].rpa'. A file is overwritten at export if it already exists. Any dependent files are also exported - for example, if an audience contains a filter block that is configured with a selection rule, at export of the audience, the selection rule is exported at the same time.

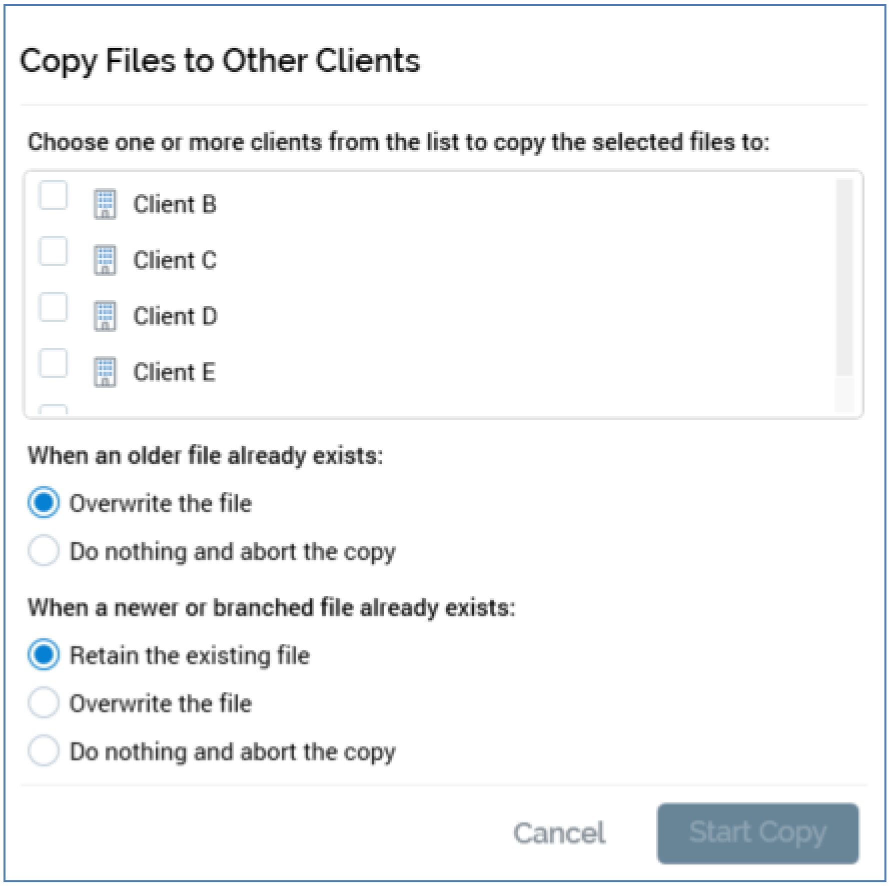
You can also invoke Make New Folder within the Windows file system dialog, as well as being able to Cancel its display.

Note that exporting one or more files generates an audit record.

3.18.19 Copy to Other Clients…

This option is available when one or more files and/or folders are selected. It is not available when there is only a single client in the current RPI installation. Its availability is controlled by functional permission File System - Copy to Other Clients.

Selection of this option replaces the contents of the File System Dialog with the Copy Files to Other Clients overlay.



The overlay contains the following:

- Clients list: displays a list of the other clients in the current RPI installation to which the current user has access. For each, a checkbox (unchecked by default), the client's icon and name are shown. You can check one or more clients to which you wish to copy the selected files prior to invocation of Start Copy.

  A context menu is available when right-clicking clients, exposing the following options:

  - Check All
  - Uncheck All

Note that selection of multiple rows (without automatically checking them) is supported.

Two sets of radio buttons, displayed below the Clients list, allow you to specify how the file copy should behave in the event that one or more files already exists at the selected client.

- When a previous version of the file already exists: the accompanying radio buttons allow specification of behavior should an older version of a given file already be present in the same folder at the destination client:
    - Overwrite the file: the default option
    - Do nothing and abort the copy
- When a newer version of the file already exists: the accompanying radio buttons allow specification of behavior should a newer version of a given file already be present in the same folder at the destination client:
    - Retain the existing file: the default option
    - Overwrite the file
    - Do nothing and abort the copy

Two buttons appear in the overlay's footer:

- Start Copy: this button is enabled when one or more clients in the list is checked. Invocation removes the overlay from display and displays the My Jobs dialog, in which appears a Copy [x] file(s) to [y] client(s) job (for full details of the job, please see that interface's documentation). On successful completion of the job, a Copy results to clipboard button is displayed. Clicking the button copies the following details to the clipboard, for each file copied to each selected client.
    - Copied: True/False
    - File ID
    - File Name
    - File Type
    - Message

    Results are grouped by client.

    File(s) are created as per the selected options, in the same folders as per the source client (which are created if they do not already exist). Version numbers of the new files created in the destination client are set to v0.1. Any dependent files are also copied, again, into appropriate folders - for example, if an interaction that contains a batch audience which, in turn, contains a filter configured with a selection rule, is copied to another client, the dependent audience and selection rule are also copied, with all destination files created in folders that match their source equivalents. Note that a destination file will always be copied, even if it is not accessible to the user who initiated the copy. If, during the copying of a file, a file of the same type with the same name and version number is encountered in the destination folder, the copy does not take place. This applies equally to dependent files.

The act of copying a file to another client generates an audit record.

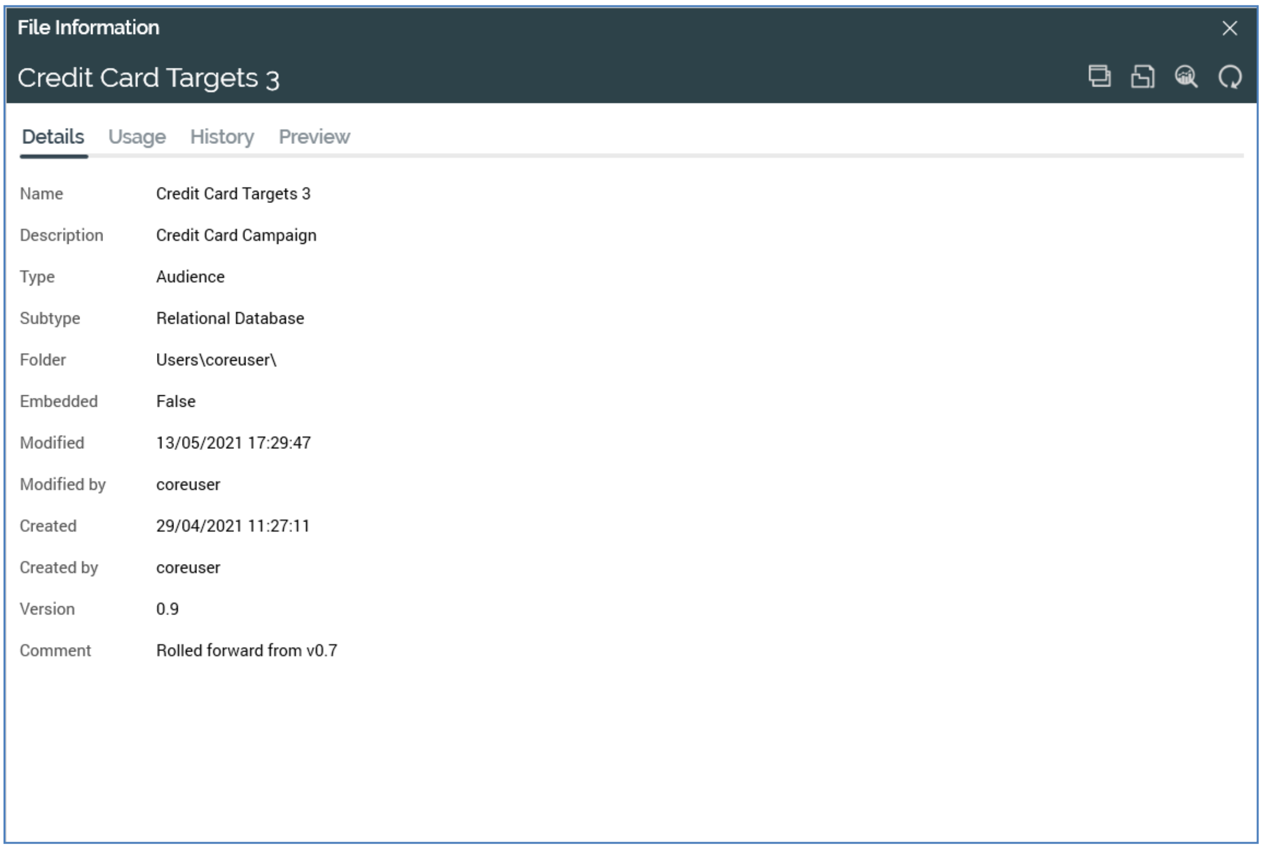
- Cancel: clicking this button removes the overlay from display without copying files.

3.18.20 Create New Audience From Template

This option is available when you right-click an audience, interaction or offer template in the File System Dialog. Invocation creates a file of the specified type, based on the template in question, and displays it in new instance of an appropriate designer.

3.18.21 File Information Dialog

Invoking View Information at a file's context menu in the toolbox displays the File Information dialog.



The dialog can also be opened using the View File Information command in a number of additional contexts across RPI.

If opened from a previous version of a file, the File Information Dialog reflects that version's details.

The dialog contains a toolbar and tabset.

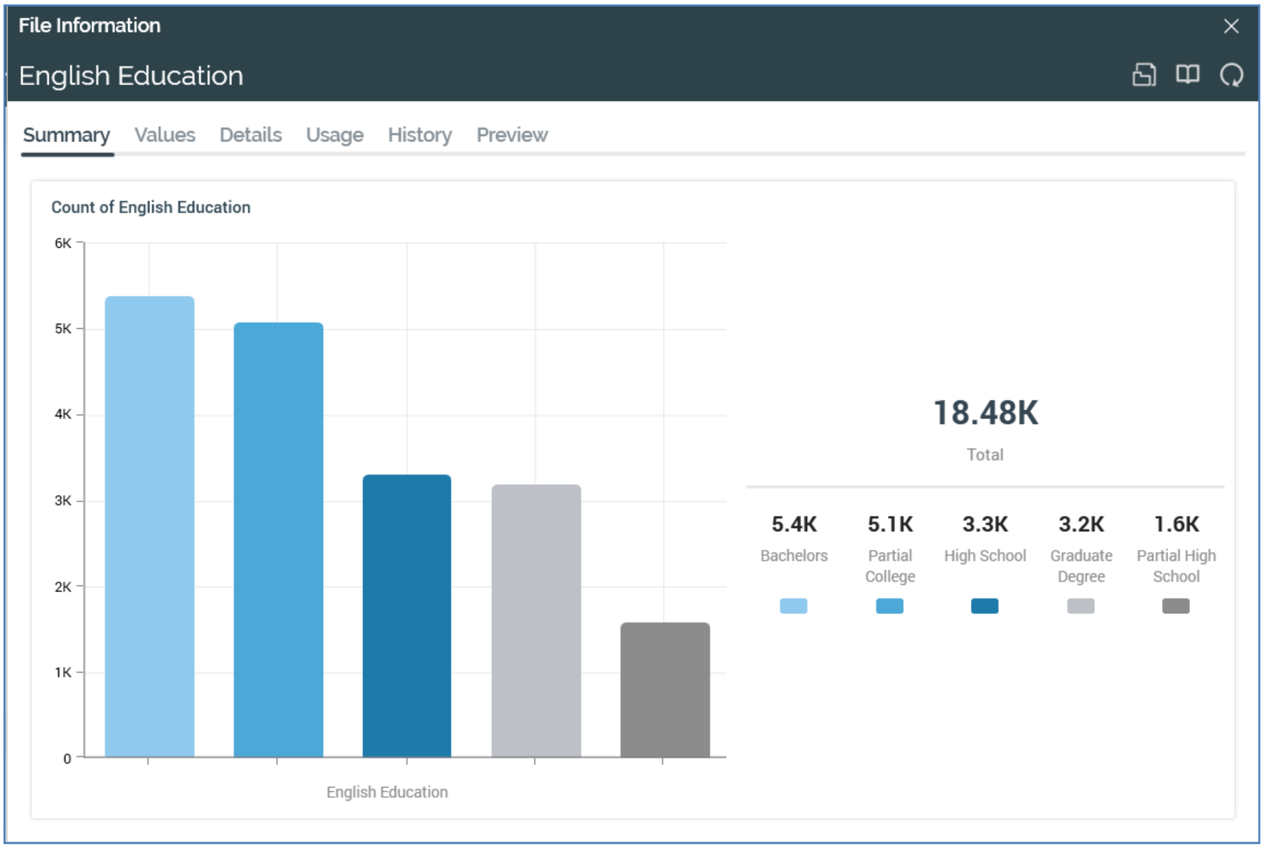
The toolbar exposes the following:

- Open Latest Version: this option is available if the file's type supports a designer. Invocation displays the latest version of the file in the appropriate designer. If the file is already open, it receives the focus. Open latest version is not displayed for files accessed via an external content provider.

- Open This Version: this option is only available for file types for which opening of previous versions is permitted. Invocation displays the version displayed in the File Information Dialog in an appropriate designer instance.
- Open File Location…: this option is available for all file types. Invocation displays the File System Dialog. The folder in which the file is located is displayed, and the file is selected. Open file location is not displayed for files accessed via an external content provider.
- View Insights: only shown for selection rules, and audiences at which audience instances exist. Invocation of this option displays insights relating to the file in question in the Insights Window.
- Open Linked Page: shown if a Wiki or external web page is linked to the file. Invocation displays the page in question in the Linked Page Browser.
- Refresh

The tabset exposes the following tabs:

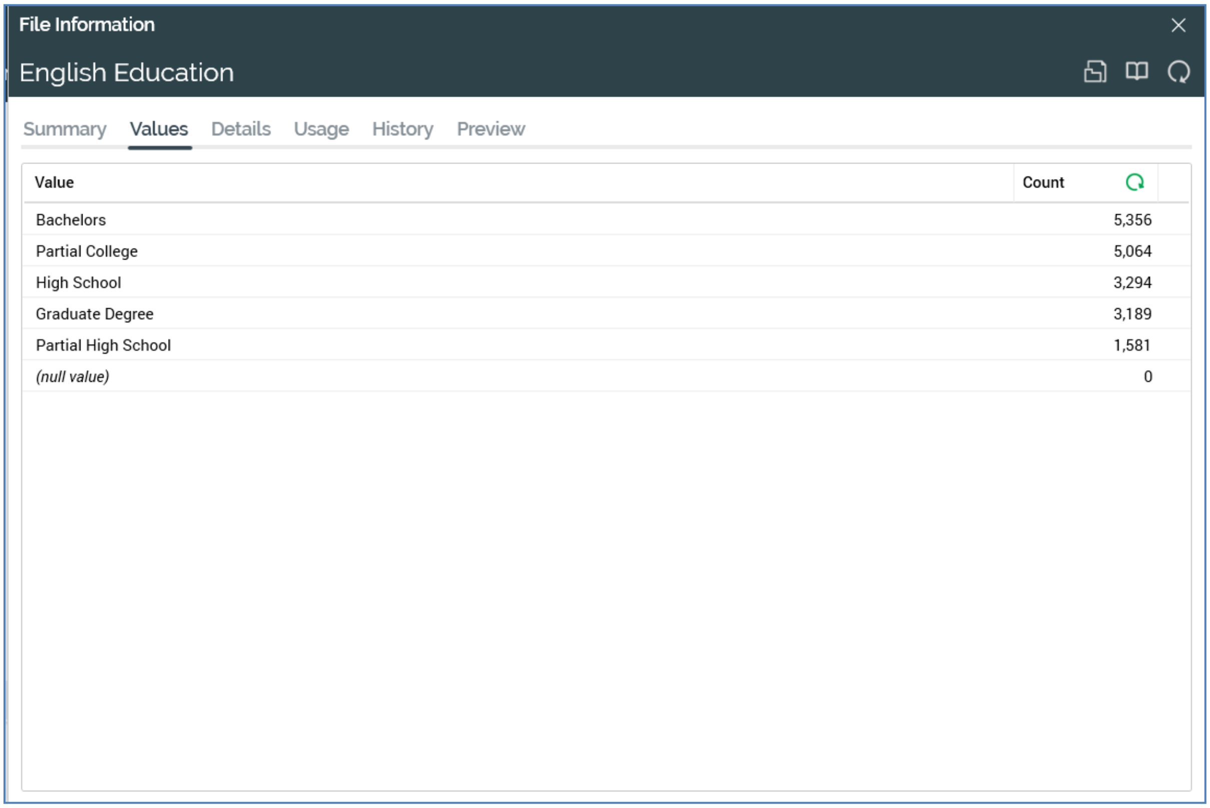
- Summary: displayed only for an attribute, this tab displays a graphical breakdown of its distinct values.



If more than 25 discrete values exist, only the first 25 are shown in the chart.

The Summary tab is not displayed for model project or exists in table attributes.

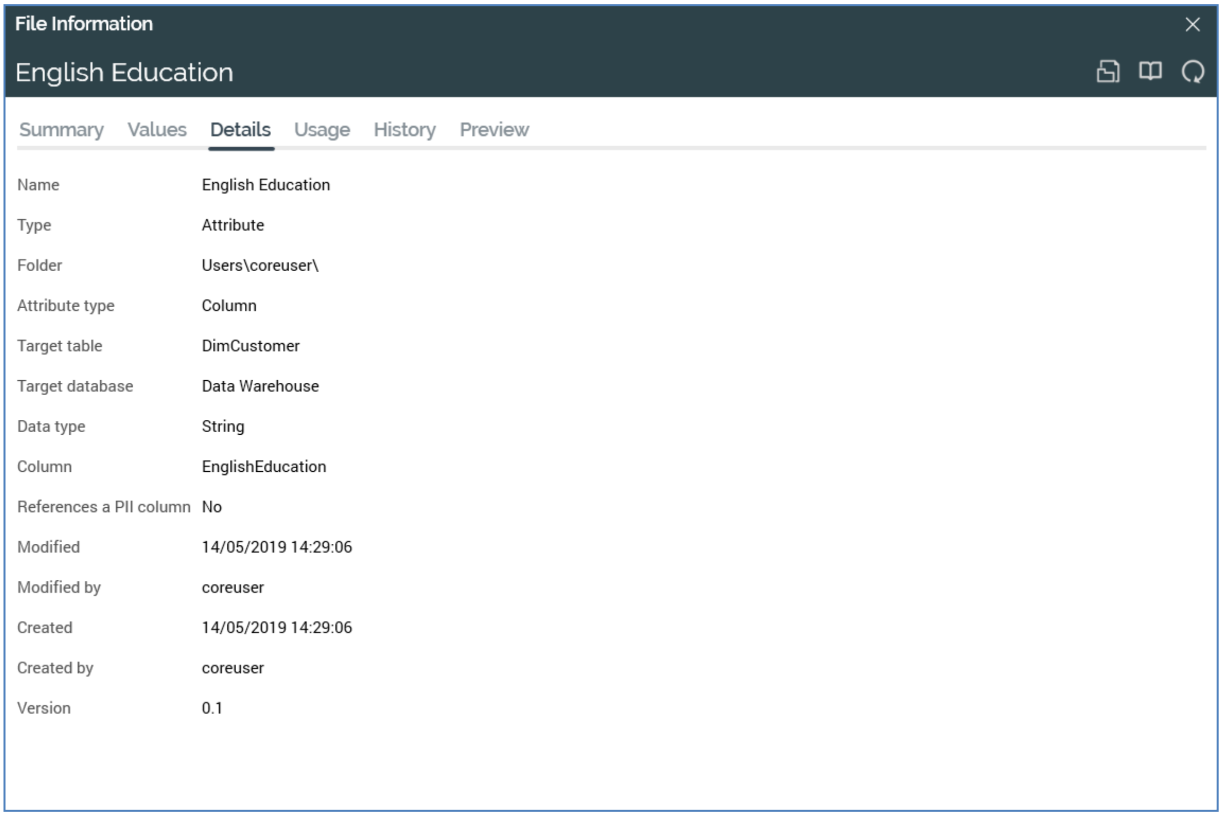
- Values: displayed only for an attribute, this tab lists its values and the counts thereof in a grid.



For each, the attribute value and count are displayed. The number of values displayed is controlled by system configuration setting AttributeValueListSize.

The Values tab is not displayed for model project or exists in table attributes.

- Details: this tab displays read-only information about a file:



The actual information displayed depends on the file type.

If displayed for a file accessed via an external content provider, the following information is shown:

File Details

Name	Red Square.png
Type	Asset
Subtype	Image
Folder	/Images
File URL	http://landingpages.rphelios.net/basicftp/Images/Red Square.png
Public	True
Domain name	localhost
Provider type	FTP
Provider name	Basic FTP
Height	200px
Width	200px
Area	40,000px
Modified	19/03/2020 12:20:00
Created	19/03/2020 12:20:00

The following additional information can be shown:

- Public: True or False.
- Thumbnail URL: displayed for SharePoint files only.
- Modified by: displayed for SharePoint files only.
- Created by: displayed for SharePoint files only.

You can right-click a property in the Details tab to display a Copy Value to Clipboard context menu button.

- Metadata: this tab is only displayed for AWS S3, Umbraco, Google Drive, Razuna, Box, Azure Storage and Cloudinary files. It allows you to view or manage metadata in respect of the external file. It contains a toolbar and External Metadata list.

  The toolbar exposes the following options:

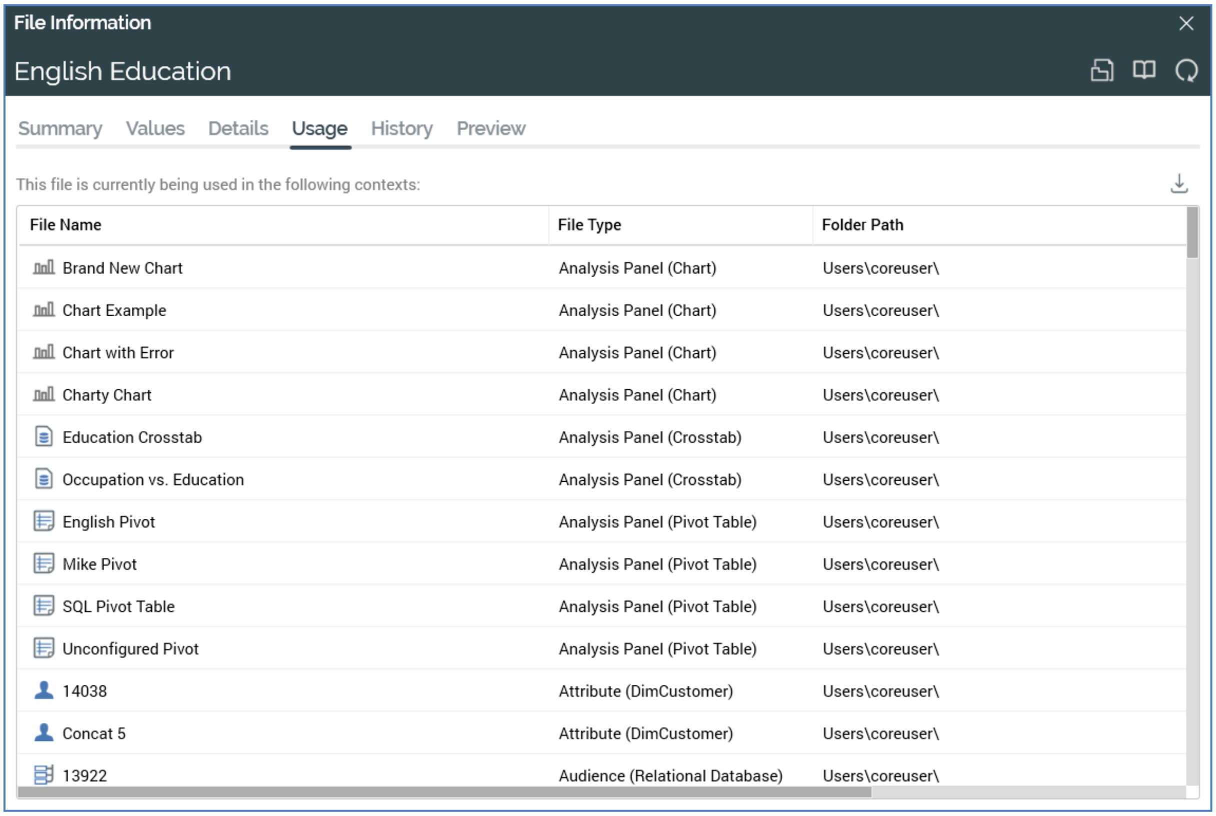
  - Add: this button is available for AWS S3 files only. Clicking it adds a new row in the External Metadata list. The new row's default key is 'newmetadata' (an incrementing integer can be appended to ensure uniqueness), and value is 'value'.
  - Remove: this button is available for AWS S3 files only. Clicking it removes the currently-selected row from the list, without display of an 'Are You Sure?' dialog.
  - Save: this button is available for AWS S3 files only. Clicking it persists changes to metadata at the external provider. You can only save a given key once.

    When AWS S3 metadata is saved, any uppercase letters at the key are converted to lowercase, and any spaces in the same context are replaced by hyphens. A prefix (x-amz-meta-) is appended to the key.

    Metadata is reloaded after a successful Save. An 'Are You Sure?' dialog is shown if you attempt to close the File Information Dialog when unsaved metadata changes are present.

  The External Metadata list displays a key/value pair for each configured metadata attribute. If no metadata has been configured, an advisory message is shown instead. Metadata are listed in alphabetical order by key.

- Usage: this tab provides visibility of the contexts in which the file is currently being used.

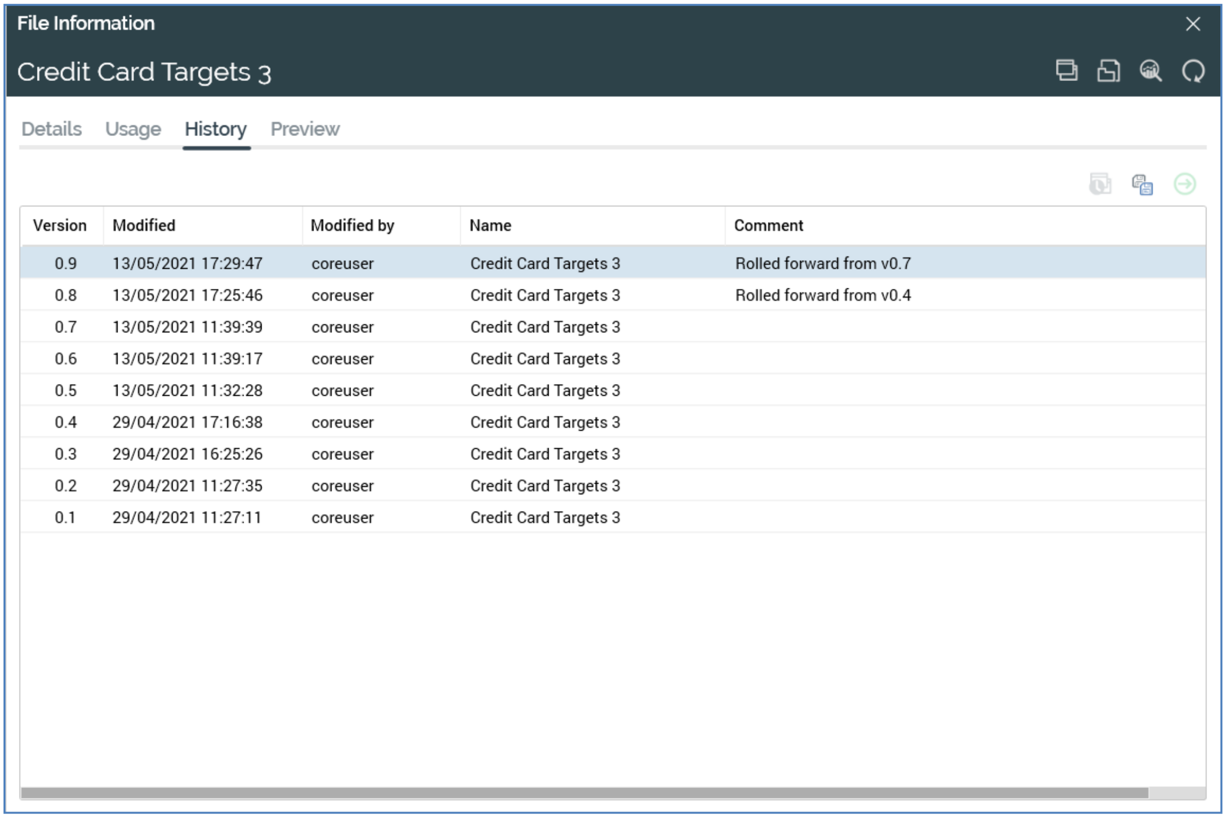


The following options are available when you hover over an entry in the list:

- Open latest version (not available for files accessed via an external content provider, or for configuration collections).
- Open file location (not available for configuration collections).

Note that configuration collections can appear in this list if a file is being used therein.

- History: this tab allows you to view details of the file's history, and the revisions it went through across its versions.



Version	Modified	Modified by	Name	Comment
0.9	13/05/2021 17:29:47	coreuser	Credit Card Targets 3	Rolled forward from v0.7
0.8	13/05/2021 17:25:46	coreuser	Credit Card Targets 3	Rolled forward from v0.4
0.7	13/05/2021 11:39:39	coreuser	Credit Card Targets 3	
0.6	13/05/2021 11:39:17	coreuser	Credit Card Targets 3	
0.5	13/05/2021 11:32:28	coreuser	Credit Card Targets 3	
0.4	29/04/2021 17:16:38	coreuser	Credit Card Targets 3	
0.3	29/04/2021 16:25:26	coreuser	Credit Card Targets 3	
0.2	29/04/2021 11:27:35	coreuser	Credit Card Targets 3	
0.1	29/04/2021 11:27:11	coreuser	Credit Card Targets 3	

A toolbar appears at the top of the tab. It exposes the following options:

  - Open the selected version of the file: this button is only available when the file's type supports the opening of previous versions. Invocation opens the selected version in an appropriate designer instance.

  - Save the selected version as...: this button allows you save the currently-selected version of the file as a new file. Invocation displays the 'Save This Version As' File System Dialog, facilitating the save (note that you cannot open a second instance of the History dialog from this context). On completing the save, the new file is opened in an appropriate designer (which is displayed behind the History and File System Dialogs).

  - Roll the selected version forward to become the current version: you can roll forward a previous file version so that it becomes the latest. You cannot roll forward the current version. Following invocation, an 'Are you sure?' dialog is displayed. If you elect to proceed with the roll forward, a new version is created, exactly as per the selected historical version, but with an incremented version number. The new version is displayed at the top of the list of file versions within the History dialog. A message is shown to advise of the roll forward's success.

    Any deleted files upon which the rolled-forward version depends are restored (if present in the recycle bin). If the rolled-forward version depends on one or more files that have been deleted permanently, a message listing the files in question is displayed following the roll forward.

As an example, assume that a file has versions 0.1, 0.2 and latest version 0.3. You roll forward version New version is 0.4 created and is exactly identical to version Versions 0.2 and 0.3 remain unaffected.

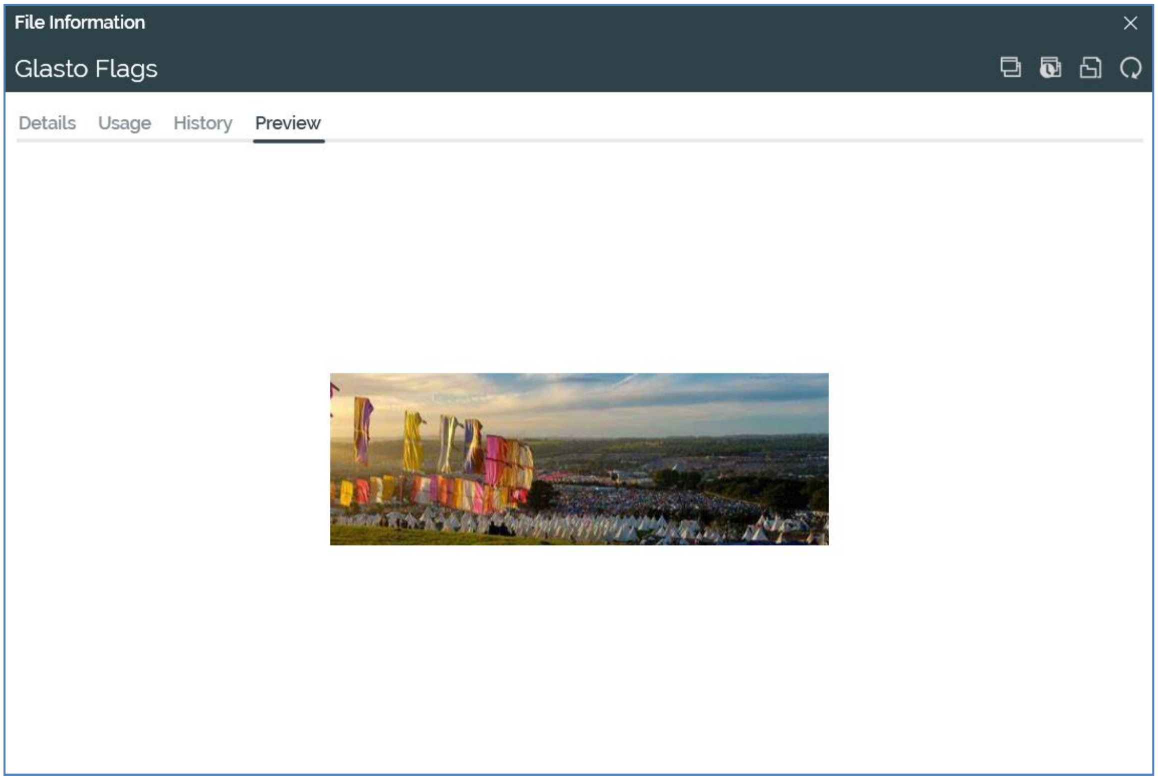
If a file's name has changed between versions, and you roll forward a version with an old name, the newly-created version does not inherit the old name. Its name is the same as the previously most recent version.

Note that you cannot roll forward a file that references a permanently-deleted dependent file.

A read-only grid is displayed below the toolbar, and lists the file's versions in descending version order, with the most recent first. It contains the following columns:

- Version
- Modified: the date and time of the version's most recent modification.
- Modified By: the username of the user who most recently modified the version.
- Name: the file's name at the time of the version's creation
- Comment: this property is populated for files that have been:
  - Copied from another client
  - Imported
  - Rolled forward from a previous version
  - Commented upon during an approval action

- Preview: this tab allows to view a preview of a file's appearance, if the file's type supports such a display. The tab is displayed for all non-external files, irrespective of whether a preview can be shown, and contains:
  - If the file's type supports previewing, the tab displays a visual representation of the file:



The preview represents the state of the file as per the version currently displayed in the File Information Dialog.

Preview is supported at the following file types:

- Asset:
  - Text
  - HTML
  - Image
  - Table
- Smart Asset : if default content exists, its preview is shown. If not, a message ('No preview is available for the selected file') is displayed instead.
- Goal smart asset: the file's initial content is displayed.
- Landing page

        - Offer: a preview is displayed if the offer supports the Email delivery method.
    - If preview is not supported, a message is shown.

The tab is not displayed for external files.

3.18.22 Configure Attribute

This option is only available when right-clicking an attribute file. Invocation displays the attribute's details in the Attribute Builder. When the Builder is closed by clicking Finish, an informational message advises of the attribute's configuration having been updated, and the files list is refreshed.

3.18.23 Manage Values

This option is only available when right-clicking an attribute file. When invoked at a string database column attribute, the Manage Attribute Values dialog is displayed (described in detail in the Attributes documentation). Invocation at other attribute types results in the display of a warning.

3.18.24 Copy Content Tag to Clipboard

This option is only available when you right click an attribute. Invocation copies the attribute's content tag to the clipboard and displays a message to this effect. On pasting the tag, it appears as per the following example (the GUID used will vary):

```
({Attribute;0020315f-085b-4233-a146-6906c8df65b3:Email Address})
```

The tag can be used when personalizing externally-authored RPI content (e.g. HTML asset or email offer). The content thus created can later be pasted into an RPI file, at which point the referenced attribute will be added as an embedded file automatically.

3.18.25 View Insights

This option is available at audiences and selection rules. Invocation displays insights relating to the file in question in the Insights Window, which is covered in detail in the Audience Designer and Standard Selection Rules documentation.

3.18.26 History

Invocation of the History option at a file's context menu displays the file's version history in the File Information Dialog's History tab.

3.18.27 Preview

This option is available at offer files only. Invocation displays the Preview tab within the File Information dialog. If the Dialog is already open, it is refreshed with the new file's details.

3.18.28 File Versions

RPI file versions take the format [Major version].[Minor version].

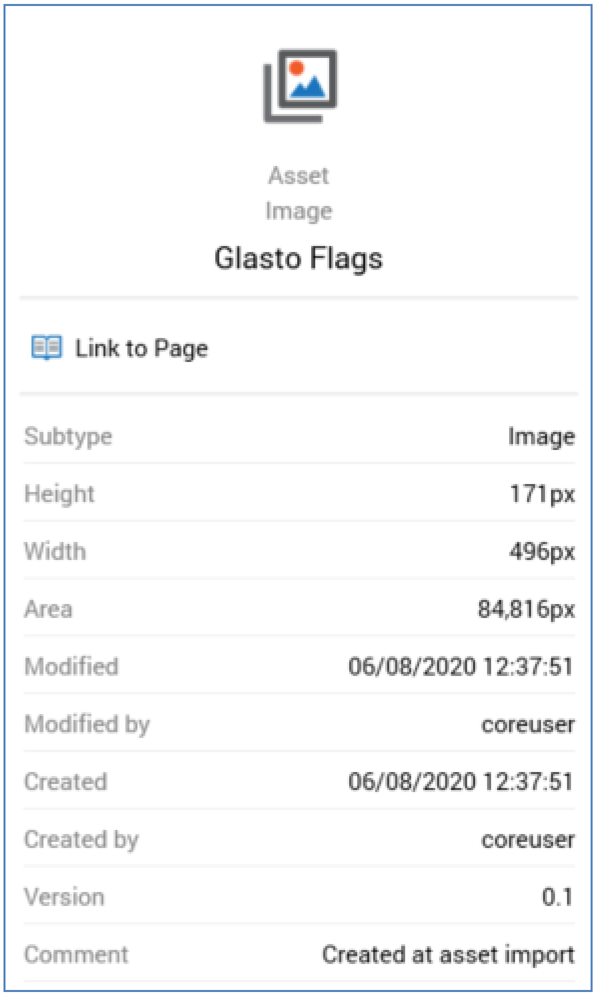
If approval is enabled for a given file type (currently interactions and offers support approval), a minor version '0' indicates an approved file version; a minor version greater than 0 indicates that the file has been saved since its latest approval. For example:

- At initial save of a file, its version is 0.1
- The file is amended and saved. A new version (0.2) is created alongside version 0.1.
- After the file is approved, the existing version is upped to 1.0 (a new version is *not* created).
- The file is amended; when saved, a new version 1.1 is created.
- This leaves the following existing versions:
  - 1.1
  - 1.0
  - 0.1

  If a file type does not support approval, or approval is not enabled for a type that does, a file's version will always be 0.[n].

3.18.29 Information Panel

The information panel is displayed to the right-hand side of the File System Dialog.



It displays a read-only summary of the selected file or folder.

Information is loaded immediately after highlighting, and a message is displayed whilst data is being loaded.

The following information is displayed for a folder:

- Icon
- Type
- Name

The following information is displayed for all file types:

- Icon: a separate icon is displayed for each type of file.
- Type: e.g. attribute, selection rule, audience or interaction.
- Sub-type: if an analysis panel or asset

- Name
- Description
- Wiki page (covered separately)
- Created: the date and time of the file's creation.
- Created by: the username of the user who created the file.
- Modified: the date and time at which the file was last modified.
- Modified by: the username of the user who last modified the file.
- Version: the asset's current version number.
- Lock icon: displayed if the file is read-only.

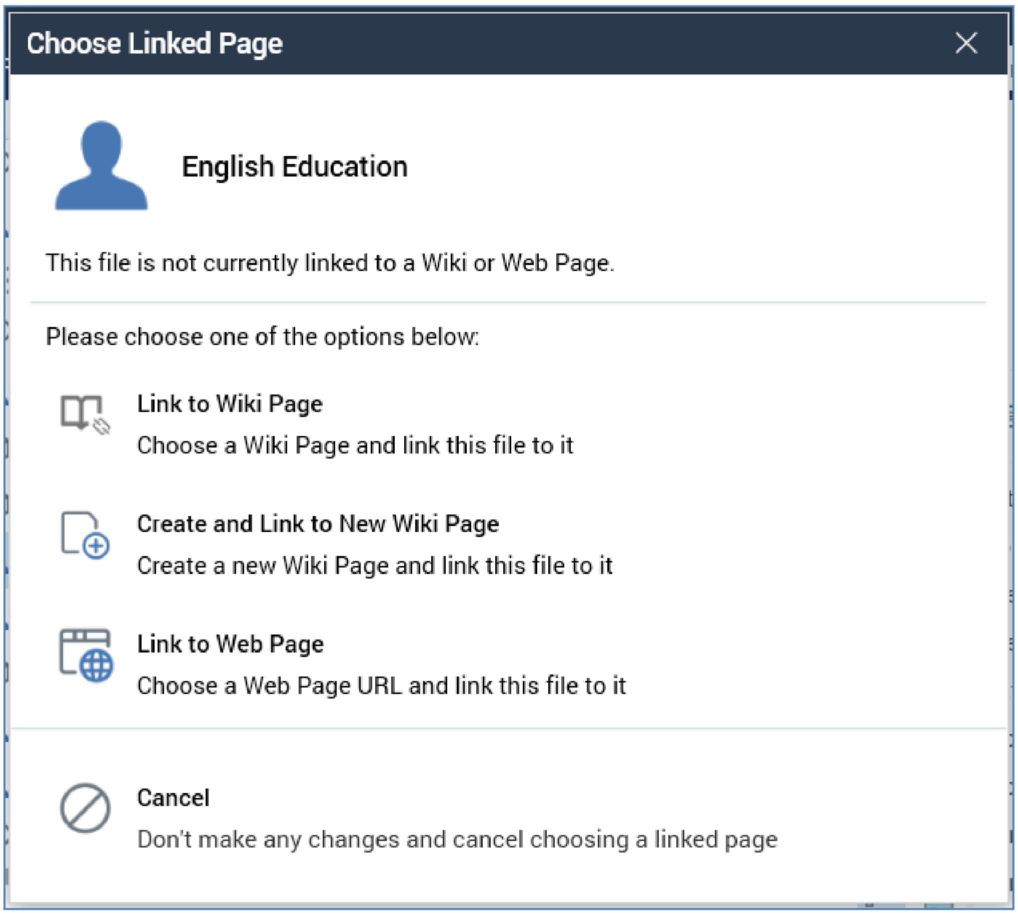
In addition, the following information is displayed if the file is an attribute:

- Target Database
- Target Table

3.18.30 Link File to Page

You can link a file to an RPI Wiki or external web page. This is carried out using the Link to Page button in the information panel.

When you click the button, the Choose Linked Page dialog is shown.

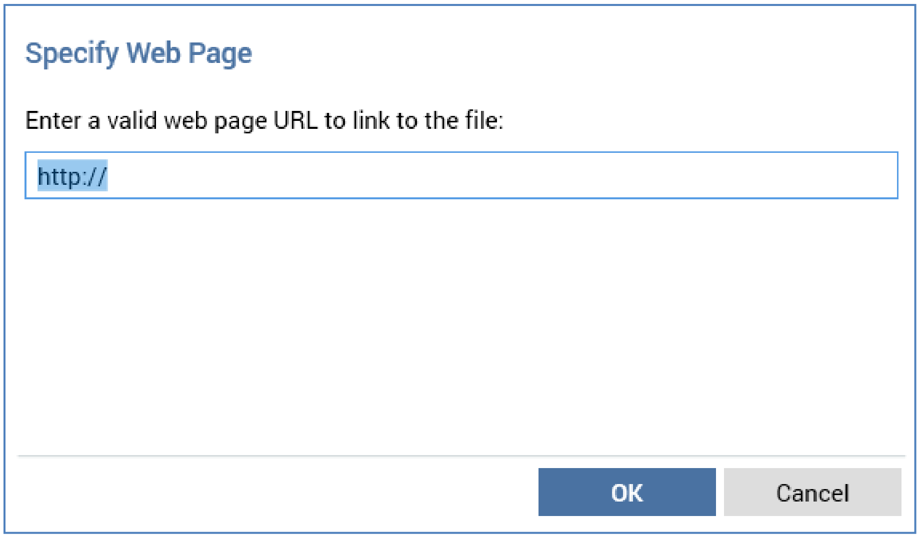


The dialog contains the following:

- File type icon
- File name
- File description
- Link to Wiki Page: clicking this button displays the 'Choose a Wiki Page to link to [Filename]' File System Dialog. Only Wiki Page files are shown. You can double click a Wiki Page, or select it and click OK, to link it to the file. Having done so, a confirmatory message is shown.

- Create and Link to New Wiki Page: clicking this button creates a new Wiki Page, presents it in the Wiki Page Designer, and displays the Save Wiki Page As... File System Dialog. The new Wiki Page is named by default as per the file to which it is to be linked. You can click Save to save the new Wiki Page; a confirmatory message advises that the new Wiki Page has been saved and linked to the file.

- Link to Web Page: clicking this button displays the Specify Web Page overlay.



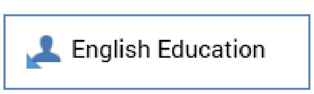
You can enter a valid web page at the URL property and click OK to link the file to the same.

- Change Linked Web Page: clicking this button also displays the Specify Web Page overlay, allowing you to specify the URL of a different web page to which to link the file.

- Remove Linked Page: clicking this button removes the linked page, and having done so, displays a confirmatory message.

Having linked a Wiki or web page to a file, the Link to Page button's text changes, and an inline Clear Linked Page button is displayed to the right.

In addition, an icon is displayed at the file within the files list:



Clicking it clears the link and returns the button text to 'Link to Page'.

A Clear the link to this Wiki page button is also shown.

You may cancel selection of a Wiki page; this resets the File System Dialog's title and retains the button's text as Link to Wiki Page. The Clear the link to this Wiki page button is not displayed.

Having linked a file to a Wiki or web page, invocation of Open Linked Page displays the page in question in the Linked Page Browser.

3.18.31 Most Recently Visited Folder

When invoking the File System Dialog, RPI remembers your most recently visited folder and shows its contents automatically upon the Dialog's redisplay. This feature applies also to special folders such as Recent Items.

Behavior in this context is contingent on your File System Dialog user setting. For more information, please see the Preferences interface documentation.

3.18.32 File System Synchronization

As soon as you save a file to the RPI file system, it is available in all open toolboxes post-refresh. For example, if you have Selection Rule and Audience Designer tabs open concurrently, if you create and save a selection rule, it is available in the Folders tab in the Audience Designer's toolbox when you refresh its contents.

3.18.33 Overwrite at Save

During Save As..., if you specify name of an existing a file of the same type, the File Conflict dialog is displayed. The dialog contains:

- The name of the file
- A file type icon and legend 'A file of this type with the same name already exists in this folder'.
- Options:
    - Overwrite existing file: overwrites the file, replacing it with the current file
    - Save as a new file: the option allows you to provide a new name for the current file and retain the existing file. Invocation redisplays the File System Dialog, allowing stipulation of a new name. If the same name is specified, the File Conflict dialog is shown again – you cannot Save As… over the original file.
    - Cancel: doesn't save anything and cancels the operation; removes the dialog from display without saving the file.

Note that you cannot save a file over itself.

A specialized version of the File Conflict dialog is shown having opened a previous version of an offer, made changes to it and then invoked Save. For more information please see the Offer Designer documentation.

3.18.34 External Content Providers and the File System Dialog

External content providers, managed within the Configuration Workbench, can be used to provide access to files persisted in external file systems – for example, in an Amazon Web Services S3 bucket or SharePoint folder. Such files can be accessed via the File System Dialog for use within RPI – for example, an externally-hosted image might be used in an email offer or landing page. However, they cannot be opened in an RPI Designer, and a different set of actions is available at each, when compared to a standard RPI file.

The following considerations apply when viewing external content providers, folders within an external content provider, or the files persisted in such a folder in the File System Dialog:

- Treeview: one folder per external content provider is displayed at the left-hand treeview at the File System Dialog. External content providers are only shown if the current user is a member of a group associated with the 'File System – View External Providers' functional permission. A custom icon is shown for each external content provider type. External content providers are shown above the Recycle Bin.

  Within an external content provider, a subfolder is shown for each folder checked at the provider in the Configuration Workbench. Subfolders therein are displayed as configured at the external provider itself.

  Context menus are available at each of the following. Note that context menu options specific to external content providers are documented in detail elsewhere.

  - External content provider:
    - Refresh
  - Root folder:
    - New folder: not supported at the Drupal provider.
    - Refresh
    - Upload to Folder...: note that files uploaded to the Drupal provider are always publicly accessible.
  - Subfolder:
    - New folder: not supported at the Drupal, Concrete5 or Magento providers.
    - Refresh
    - Upload to Folder...
    - Delete: not supported at the Concrete5 provider.
- List: the contents of the list depend on whether a root folder, a subfolder or a file is displayed therein.

- Root folder: the following values are displayed within the columns in the list:
    - Name
    - Type: External Folder
    - Version: '-'
    - Date Modified

  The following context menu option is available:

    - Upload to Folder...: note that files uploaded to the Drupal provider are always publicly accessible.
- Subfolder: the following values are displayed within the columns in the list:
    - Name
    - Type: External Folder
    - Version: '-'
    - Date Modified: '-'

  The following context menu option is available:

    - Upload to Folder...: note that files uploaded to the Drupal provider are always publicly accessible.
- File: the following values are displayed within the columns in the list:
    - Icon: reflecting the file's type as if an asset (e.g. image)
    - Name
    - Type: Asset
    - Version: '-'
    - Date Modified:

  The following context menu options are available:

    - View Information...: displays details of the external file in the File Information Dialog.
    - Download...
    - Copy to Folder...

- Information panel: the contents of the information panel are contingent on whether an external content provider, a root folder, a subfolder or a file is currently selected. In all cases, a 'locked' icon, shown at the top right of the panel, indicates that the item is read-only.

Please note the following properties:

- Asset type: one of Image, Text, HTML, Video or Audio file.
- Domain name: if a standard Amazon Web Services (AWS) S3 file, set to 's3.amazonaws.com/[bucket]'. If an AWS S3 file, the external content provider's CloudFront enabled property is checked and the bucket configured accordingly at Amazon, e.g. 'https://s39l7blmmcc310.cloudfront.net' (indicating that the asset is hosted at the CloudFront content delivery network).
- File URL: you can click this property to view the file in your default browser (subject to provider and security set-up at the content site).
- Metadata: available for AWS S3, Umbraco, Google Drive, Razuna, Box, Azure Storage and Cloudinary files only. All metadata key/value pairs assigned to the file are listed. See the File Information Dialog documentation for further information on managing external file metadata within RPI.

- Footer: on clicking Open the selected file when an external file is selected in the File System Dialog, a message ('This file is hosted by an external content provider and can't be opened directly') is shown and the file is not opened.

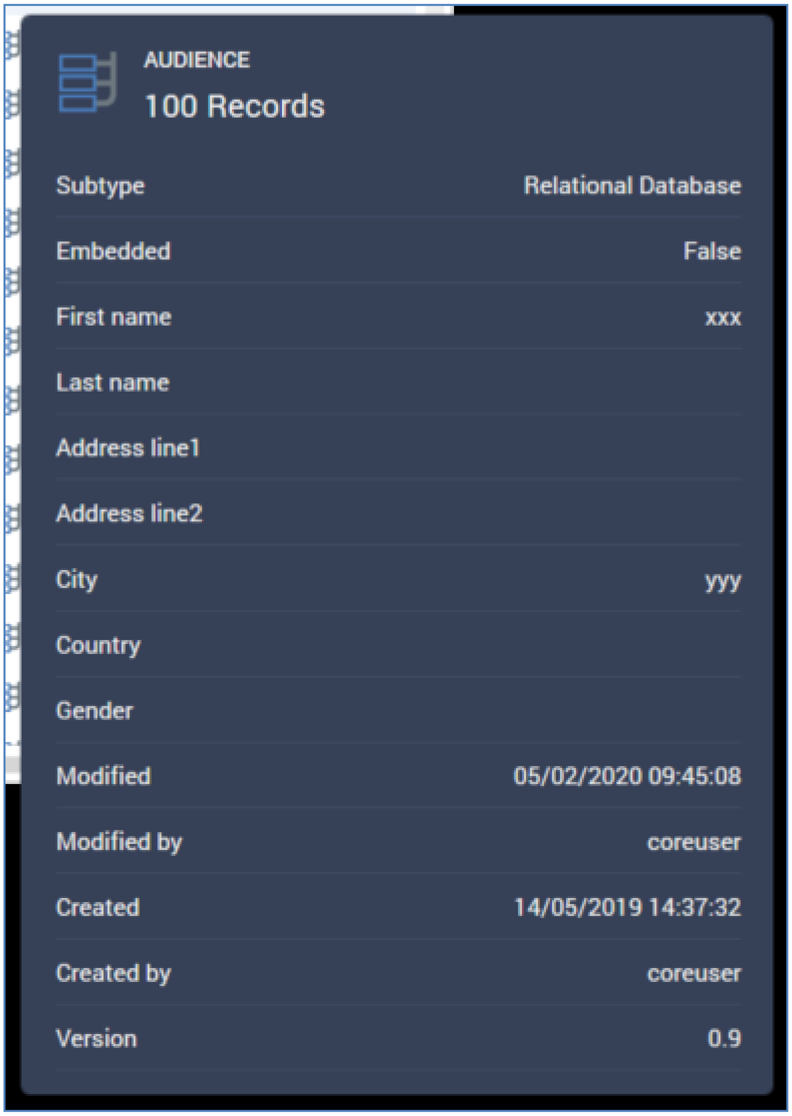
The following sections detail external content provider context menu options:

- Upload to Folder...: this option is only available if you have the File System - Upload File to External Storage functional permission. Invocation displays the Select file to Upload Windows file system dialog. You can select a file and initiate the upload process, which creates an Upload [filename] job and displays it in the My Jobs dialog (see that interface's documentation for full details of the job). Note that only image files may be uploaded to Magento.
- Download...: selecting this option displays the Download File To... Windows file system dialog. You can specify a file name and location and click Save to initiate the download. Doing so creates an External file download job and displays it in the My Jobs dialog (see that interface's documentation for full details of the job). On successful completion, an Open Folder button is displayed; clicking it displays Windows Explorer, within which the file is selected.
- Copy to Folder...: selecting this option displays the Save [filename] as Asset... File System Dialog. When you click Save, if the file already exists in the selected folder, the File Conflict Dialog is shown. If the file does not already exist, or if you elect to proceed with overwriting the existing file, the second File System Dialog is closed, and a Save [filename] to [folder] job is created and displayed in the My Jobs dialog (see that interface's documentation for full details of the job). On its successful completion, an Open Asset button is displayed, which, when clicked, displays the newly-created asset in the Asset Designer. Note that the job will fail if you do not have permission to write to the selected RPI file system folder.

Note that external content providers, and the folders and files that they expose, are not shown when the File System Dialog is invoked to effect a file's being saved.

3.19 File Summary Tooltip

A File Summary is displayed as a tooltip when you hover over a file in various contexts – for example, within the File System Dialog and the Folder Search component.



It is displayed for 30 seconds, or until you move the mouse away from the file. The summary commences loading data immediately upon display – an advisory message advises that this is the case.

The file summary displays all available information pertinent to the file. The actual information presented is contingent on the file's type.

The file summary tooltip is also displayed when hovering over a folder.

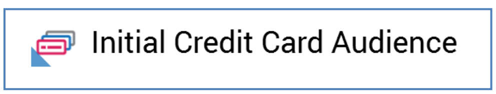
3.20 File Properties

There are numerous contexts throughout RPI where it is possible to configure a property of a file using another file.

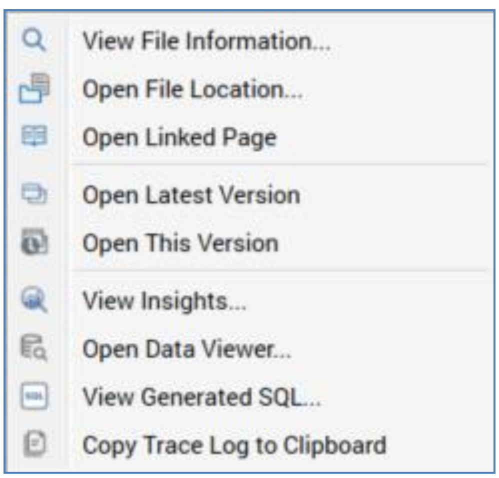
Examples include:

- Configuring a filter block within an audience using a selection rule
- Configuring an offer activity within an interaction using an offer

If the file in question is linked to a Wiki or web page, its icon is augmented with a blue triangle to the bottom left:



A context menu is shown when you right-click a file property at which a file has been selected.

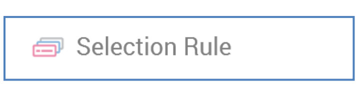


The available context menu items will depend on the type of file in question.

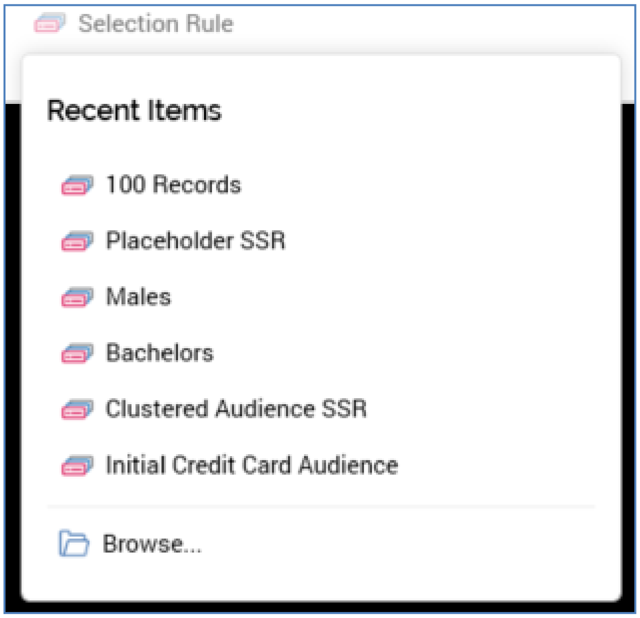
A file information summary dialog is displayed on hovering over a file at a file property.

3.20.1 File Property Inline Buttons

Prior to a property's being configured with a file, the following options are available:



- File property: you can click the property itself to choose a file.

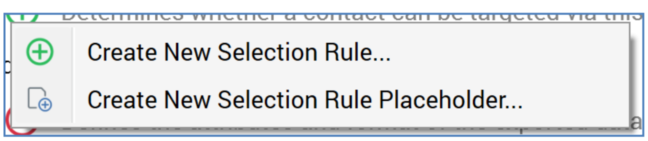


If your list of recent items contains one or more files of the same type as the file property, not including the file with which it is already configured (if appropriate), a dropdown lists recently used files. You can select a recently used file, or you can click Browse… to display the File System Dialog, in which you can choose the file you require.

If your recent items list does not include a file of the type in question, the File System Dialog is displayed immediately.

Note that you can also configure a file property by dragging an appropriate file from the toolbox and dropping it directly onto the property.

- A 'plus' icon is shown to the right of the property. Clicking it displays a context menu:



  - Create New [File Type]…: selecting this option initiates the creation of a new file with which to configure the property. Invocation creates a file and shows it in the appropriate designer. The new file's default name is 'New [File Type]'. A Save [File Type] As... File System Dialog is displayed immediately. The property is populated on saving the new file. If Create New Item is invoked again prior to the first file being saved, another file is created.

  - Create New [File Type] Placeholder…: invocation of this option displays the Save New [File Type] File System Dialog. On the file's being saved, an unconfigured file with the supplied name is persisted to the RPI file system, and the File System Dialog is closed. The file type's designer is not displayed. The property at which Create New Placeholder was invoked is populated with the newly-saved file.

Support for placeholder creation in this way is available in the following file property contexts:

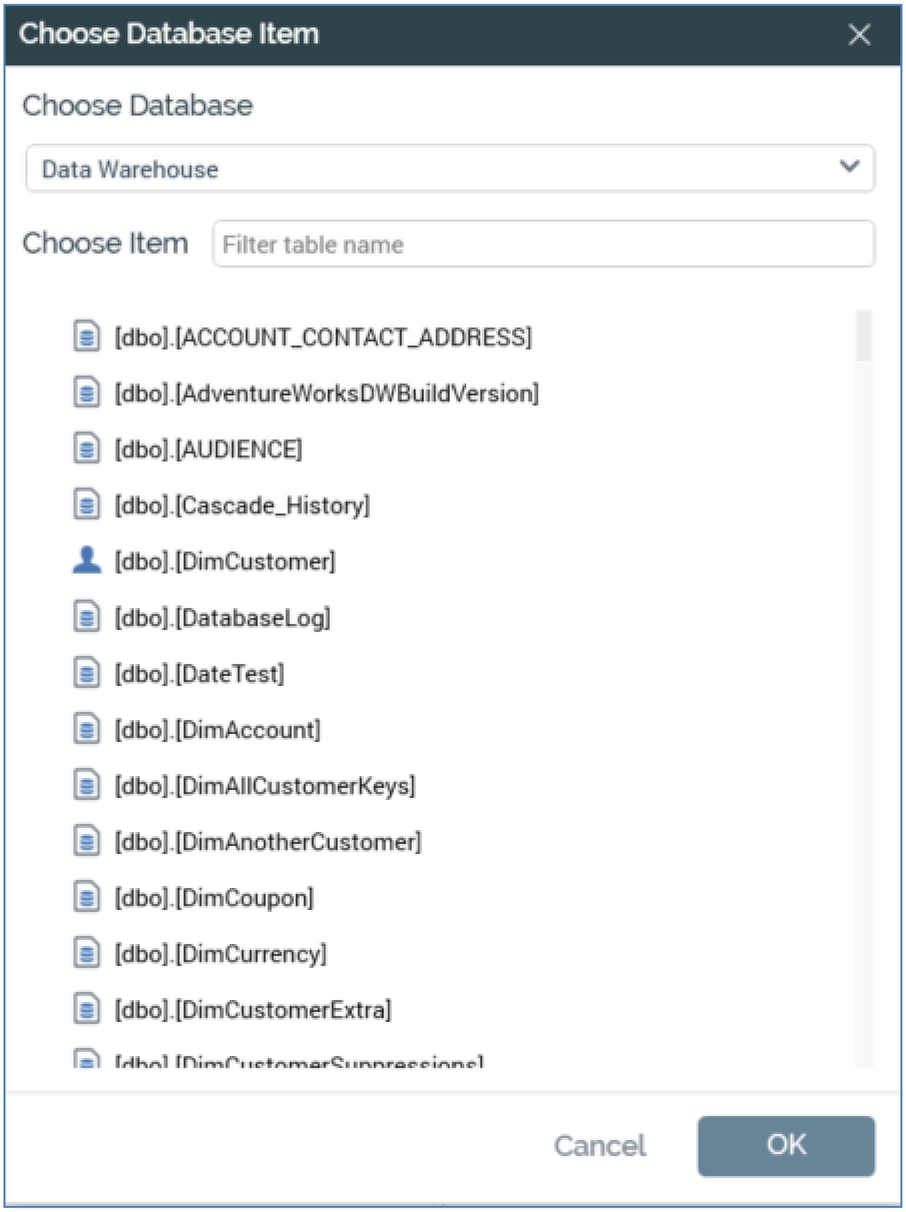
- Selection rule
- Audience
- Cell list
- Offer: in this context, the option is called Create new Email Offer Placeholder, and the Email delivery method is automatically selected at the placeholder offer.
- Landing page
- Wiki page
- Export template

The following options are available having configured a file property:

- File property: you can click the file with which you configured the property to display the File System Dialog, allowing you to choose another file to replace it.
- Open latest version: if the file’s type supports its display in a designer, clicking this button opens a new RPI tab, and shows the file therein.
- Pop out into its own Window: this option is available at selection rules and realtime decisions. Invocation displays the popped out rule in a separate Window. For more information, please the Rule Designer documentation.
- View Insights: if a selection rule or audience.
- Clear: this button allows you to remove the file with which you configured the property.

3.21 Choose Database Item Dialog

The Choose Database Item dialog is used to select a database table or a column from a database table.



It is used when setting a number of properties – e.g. Join Key Pairs, and an attribute's Target table.

Its contents differ depending on the context of its invocation but can contain the following. Please see the documentation of each context of invocation for details on the dialog's contents when invoked there.

- Choose Database section: this is only displayed when one or more auxiliary databases have been set up. A dropdown allows you to specify the database from which the dialog's contents are to be sourced. The property initially defaults to Data Warehouse; having changed the default value, on subsequent invocation, the most recently-used value is shown by default.

  Changing the database refreshes the Choose Item section with a list of tables sourced from the selected database.

- Choose Item section: this section allows you to choose a database table, or column from within a database table.

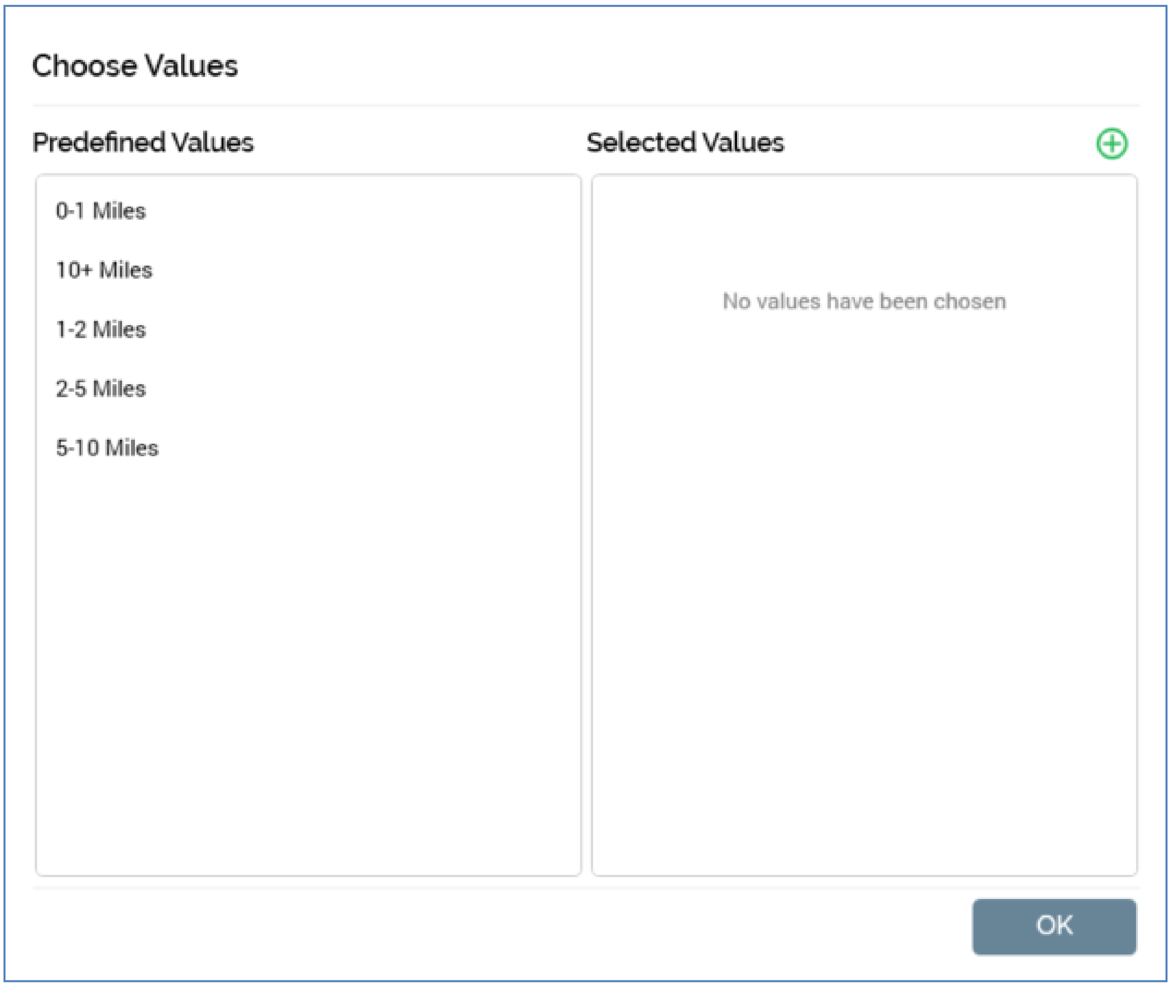
To choose a table or column, select it and click OK. You can also close the dialog without making a selection by clicking Cancel.

- Recent items: you can quickly select a recently-used table or column from the list provided.

3.22 Choose/Specify Database Values Dialogs

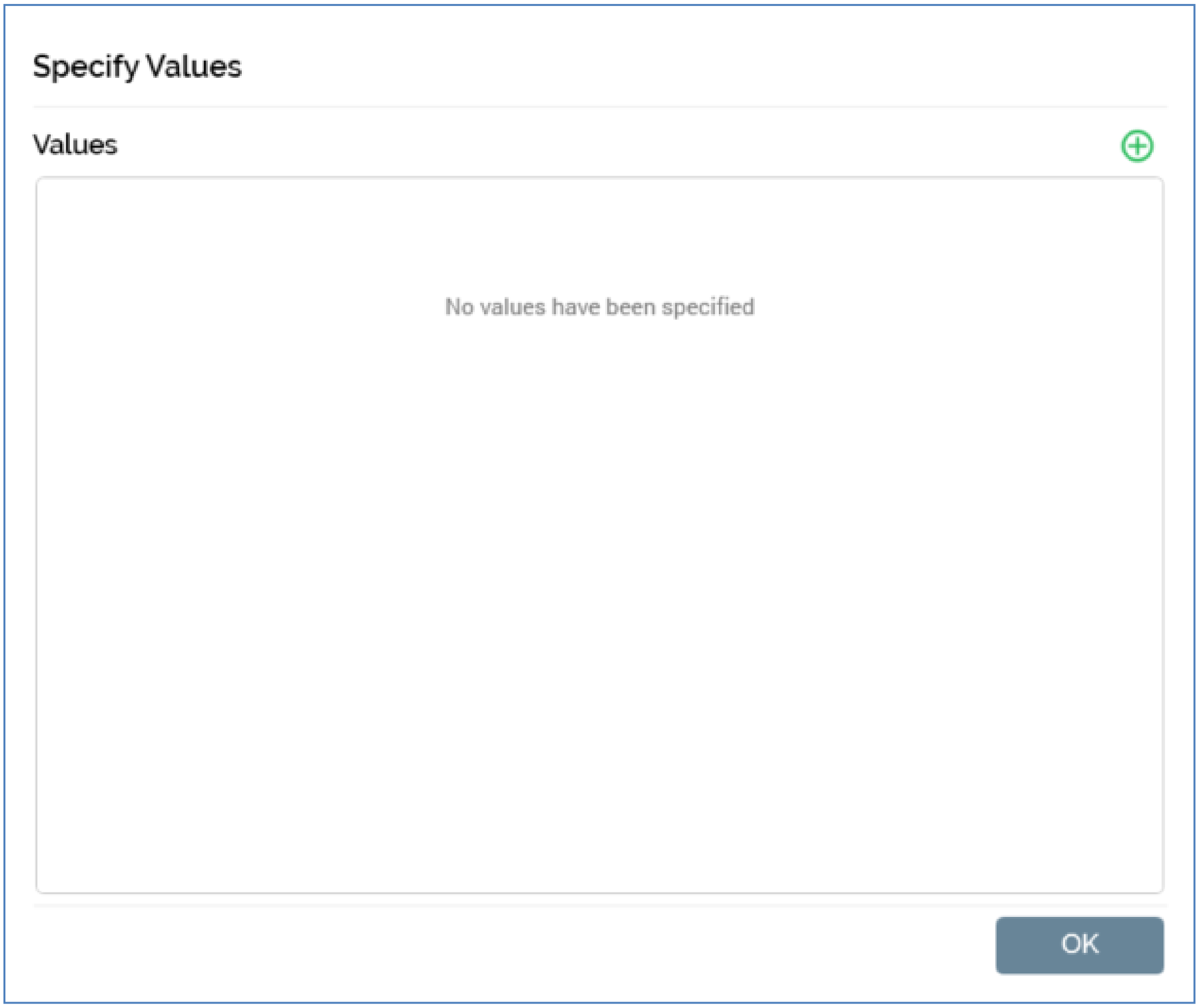
The Choose and Specify Values dialogs are used when configuring rule criteria with values – for example, in a realtime decision or basic selection rule. Full details on rules and realtime decisions are provided elsewhere in the RPI documentation.

The Choose Values dialog is presented when a criterion supports the selection of a value provided by RPI:



You can select values as required from the Predefined Values list to the left. Having done so, you can remove them from the Selected Values list to the right. An inline button is provided should you wish to remove a selected value. You can also add a custom selected value using the toolbar button provided.

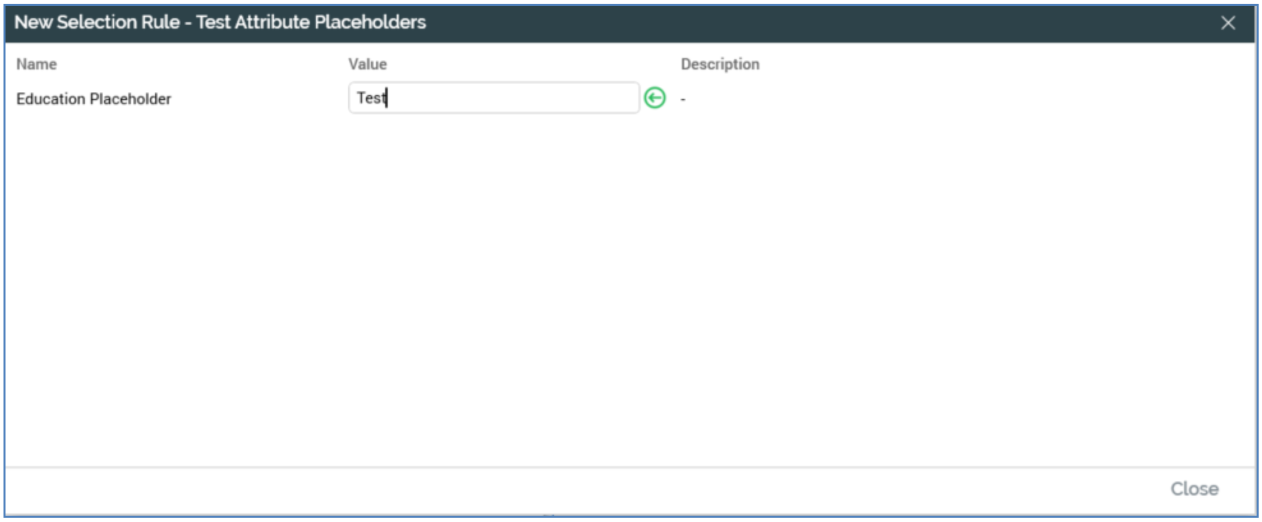
The Selected Values is used when no pre-configured values are available:



Values must be provided manually using the toolbar button.

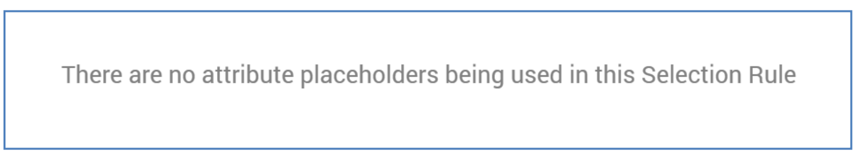
3.23 Attribute Placeholders Dialog

This dialog is used to provide or override placeholder attribute values at standard and basic selection rules, audiences and interactions.



More detail on usage in each context can be found in the respective files' designers' documentation.

The dialog lists all placeholder attributes relevant to the current context of invocation. If no placeholder attributes are being used, an advisory message is shown:



The following columns are shown in the dialog:

- Name: read-only
- Value: writeable; the control shown varying as per the following:
  - If the placeholder attribute's value is set using a list or value list, a dropdown is shown.
  - If set explicitly, a datatype-appropriate control is used.
  - If a default value is provided, it is displayed. When overridden, a Revert button is shown; invocation removes the override and restores the default.
- Description: read-only
- Wiki Page

3.24 Follow/Unfollow File

This toggle button appears in designer toolbars and panel footers. It allows you to take an interest in a specific file, such that alerts are sent to you on the undertaking of activities in respect of the same (primarily by other users).

The ability to follow a file is available when a file is initially saved. Note that following or unfollowing a file does not affect its persistence state.

When following a file, email notifications are sent if another user performs any of the following actions:

- Delete
- Restore
- Roll Forward
- Save
- Publish
- Unpublish
- Interaction:
  - Trigger:
    - Activate
    - Deactivate
    - Pause
    - Restart
    - Stop
  - Activity:
    - Pause
    - Stop
    - Restart
    - Skip
- Approval:
  - Request

- Approve
- Revoke
- Deny

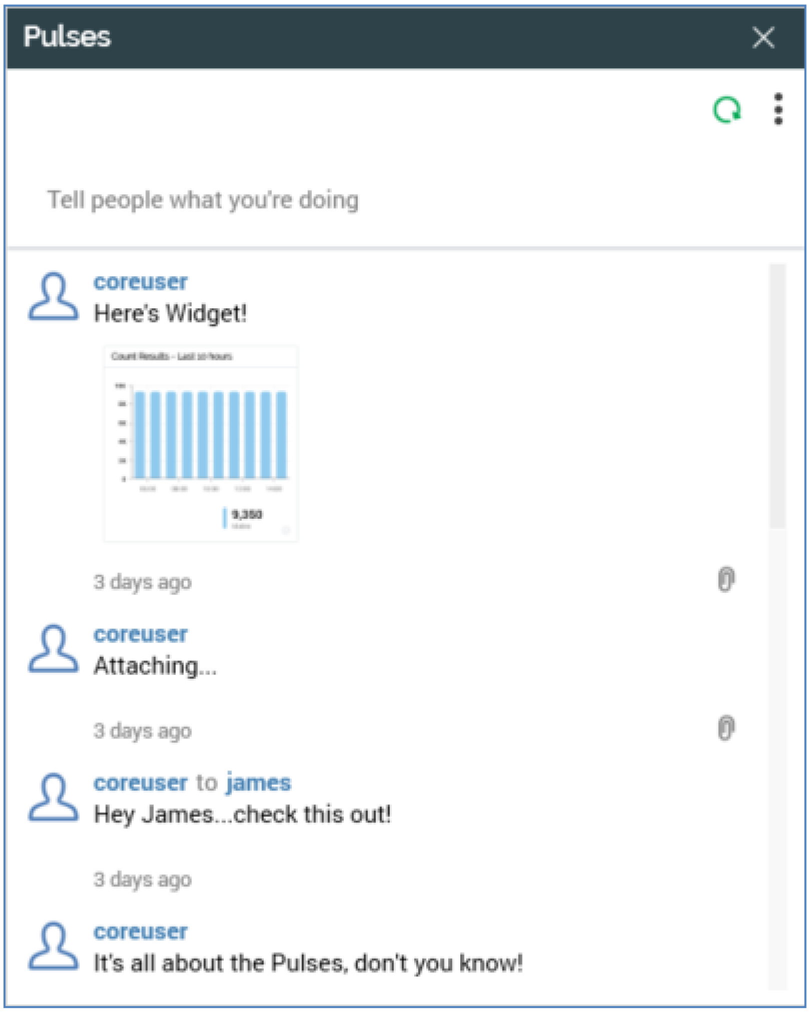
Email notifications are sent to if any of the following actions occur, irrespective of the initiating user:

- Interaction:
  - Workflow completes
  - Activity fails
- Audience:
  - Test completes

3.25 Pulses Window

The Pulses Window is an autonomous, floating Window that is used to display pulses and, in particular, pulses relating to a specific file (full details of what pulses are and how they are used within RPI are provided within the Dashboards documentation, within which context they are realized using the Pulses widget).

You can invoke the Pulses Window by clicking the Pulses button within the main RPI toolbar and selecting Open Pulse Browser or View Pulses related to '[filename]'.



The contents of the Pulses Window depend upon the current context within which it is invoked. You can establish a 'context' by opening a file in its appropriate designer (e.g. an audience in the Audience Designer). You can establish a selection rule or realtime decision as the current context by highlighting it in the Rule Designer. Viewing an unsaved selection rule or realtime decision or highlighting more than one or an unsaved file of these types, does not establish a new context. If you highlight no rules, or more than one rule, in the Rule Designer and the Designer contains a saved selection rule workspace, the workspace becomes the current context. Also, viewing a Wiki page in the Linked Page Browser does not establish a context.

When you invoke the Pulses Window having established a context, its Related to filter is set automatically to the current context's file. Additionally, an extra section (Show Pulses Related To) is displayed at the bottom of the Pulses Window. The name of the file representing the current context is shown, along with an icon illustrating its type. The file's path is also shown. The Pulses Window itself is filtered such that it lists only pulses relating to the current context.

You can re-establish the current context by closing and re-opening the Pulses Window. If the context has changed in the interim, it is reflected in the Window's contents.

The Pulses Window is functionally identical to the pulses widget. You can specify additional filters in the Pulses Window, which will continue to be applied as the context changes. These filter settings are persisted between invocations of the Window.

If you reply to a pulse within the Pulse Window when the context is set to a file, the file is added automatically to the reply.

When you invoke the Pulses Window once a file context has been established, two buttons are displayed to the right hand side of the 'Showing Pulses Related To' header:

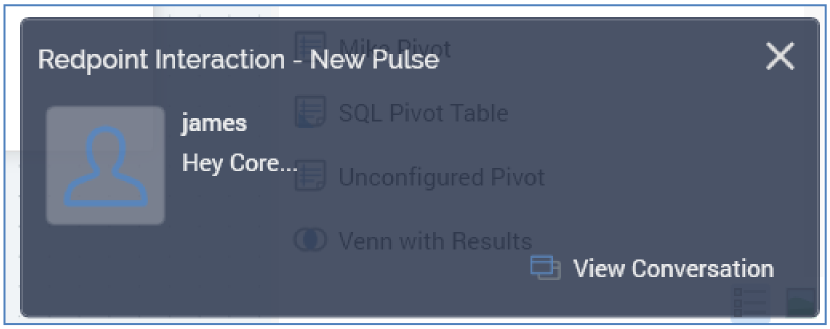
- Open Latest Version: invocation of this option opens the latest version of the file in question in a new tab. If the file is a selection rule or realtime decision, if the Rule Designer is already open, the file is opened in that designer instance; if the relevant designer is not open, it is opened. If the file is already open, the tab within which it is displayed receives the focus.

- View Linked Options: clicking this button displays a context menu, allowing you manage or view the Wiki or web page linked to the file.

The Pulses Window can also be used to display Pulses in a conversational view; for further information please see this topic's own separate section.

3.26 Pulse Desktop Notifications

When you receive a direct pulse, or a reply one of your pulses, a desktop notification is displayed immediately at the bottom right-hand corner of your desktop.



The notification is removed from display after a short while if not clicked. If clicked, the notification remains on display if clicked, in which case it must be closed manually.

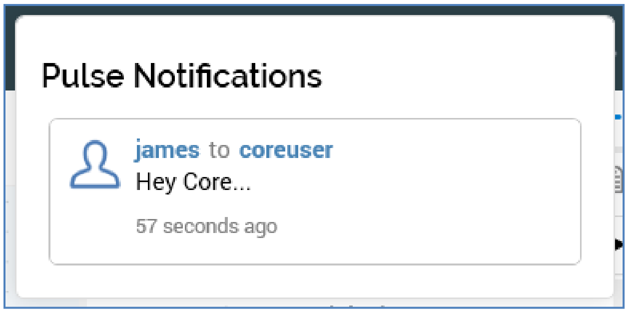
- Close button: displayed to the top right
- Sending user's image
- Sending user's name
- View Pulse conversation: invocation of this option displays the Pulses Window, in which all messages in the conversation are displayed.
- Open attached file: invocation of this option displays the attached file in a designer of an appropriate type. If the file is already open, its designer tab receives the focus.

Notifications are only displayed when the RPI client application is running (irrespective of whether it currently has focus). Notifications are not displayed on receipt of a broadcast pulse.

Also on receipt of a direct Pulse, the Pulses button at the main application toolbar is augmented with a red circle.

Upon receipt of additional direct Pulses within your current RPI session, the number shown in the button is incremented.

Clicking the button displays the Pulse Notifications dialog.



This lists all direct Pulses you have received in your current RPI session. When you hover over a Pulse in the dialog, a View Pulse Conversation button is displayed. Clicking it displays the conversation's pulses in the Pulses Window.

3.27 Pulse Conversations

You can choose to view related pulses that form part of the same conversation by clicking the View all Pulses in this conversation button, which is displayed when you hover over a pulse in the Pulses Window, Pulses widget or Pulse Notifications dialog. Clicking the button displays all related pulses that form part of the conversation in the Pulses Window.

If the Pulses Window is already open, its contents are replaced with the pulse conversation.

A pulse conversation consists of an initial message and all replies to that message or to other messages in the conversation, irrespective of whether the initial message was sent to a specific recipient or not. Pulses in a conversation are shown in reverse chronological order.

3.28 System-Generated Pulses

The list of activities that cause pulses to be generated automatically by the system is as follows:

- Offer activity fulfillment via email, SMS or data extract. One pulse is sent per offer channel. The pulse format is as follows:

  '[n] [email(s)|SMS message(s) has|have been sent]|[row(s) has|have been exported] via channel '[ChannelName]' as part of offer '[Offer Template Name]' by activity '[Offer Activity Name]' in interaction '[InteractionName]''

  The number of emails or SMS messages sent reflects the number of records actually sent to the email service provider. The relevant offer and interaction are attached to the pulse.

- Export activity fulfillment. The pulse format is as follows:

  '[n] row(s) has|have been exported to file [FileName] by activity [Export Activity Name] in interaction '[InteractionName]''

- Broadcast fulfillment via Facebook or Twitter. The pulse format is as follows:

  '[Message] has been posted via channel '[ChannelName]' as part of offer '[OfferName]' by activity '[Activity Name]' in interaction '[InteractionName]''

  The relevant offer and interaction are attached to the pulse.

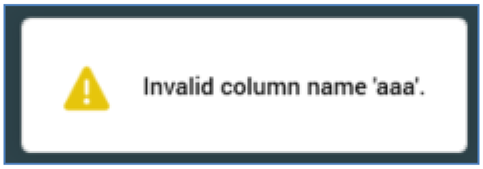
- Offer execution failure. The pulse format is as follows:

  'The activity [Activity Name] has failed during interaction execution'

Note that pulses are not sent when executing interactions in Test mode. A pulse is not sent at control execution; nor is a pulse sent when no rows are targeted.

3.29 Errors and Warnings

Error and warning messages are displayed at the top center of the user interface.

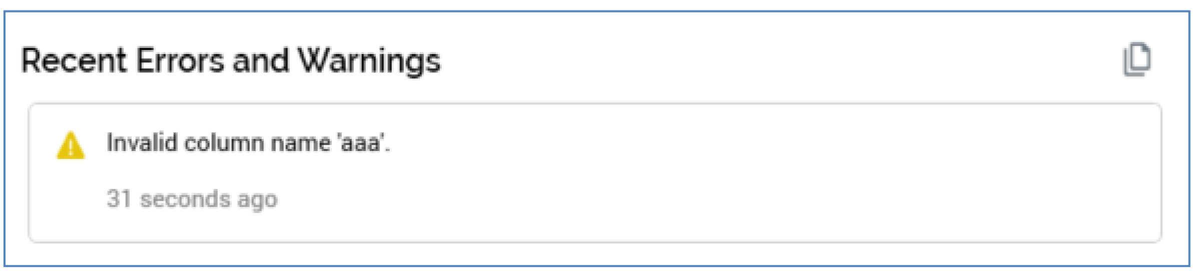


Messages are removed after 5 seconds (unless you hover over the same, when they remain displayed until 5 seconds after the muse is moved away).

Notification of errors and warnings is also provided via a button at the main toolbar.

The button is only displayed once one or more errors and/or warnings have occurred in the current RPI client application session. Once shown, the button is augmented with a red circle when new errors or warnings are listed.

The red circle is removed when the button is clicked, which displays the Recent Errors and Warnings dialog.



The dialog contains the following:

- Copy All Messages to Clipboard: invocation of this option copies the following error or warning details to the clipboard:
    - Date/time
    - Type: Error or Warning
    - Details

Errors and warnings are presented in reverse chronological order. For each error or warning, the following are displayed:

- Icon

- Details
- Duration since occurrence

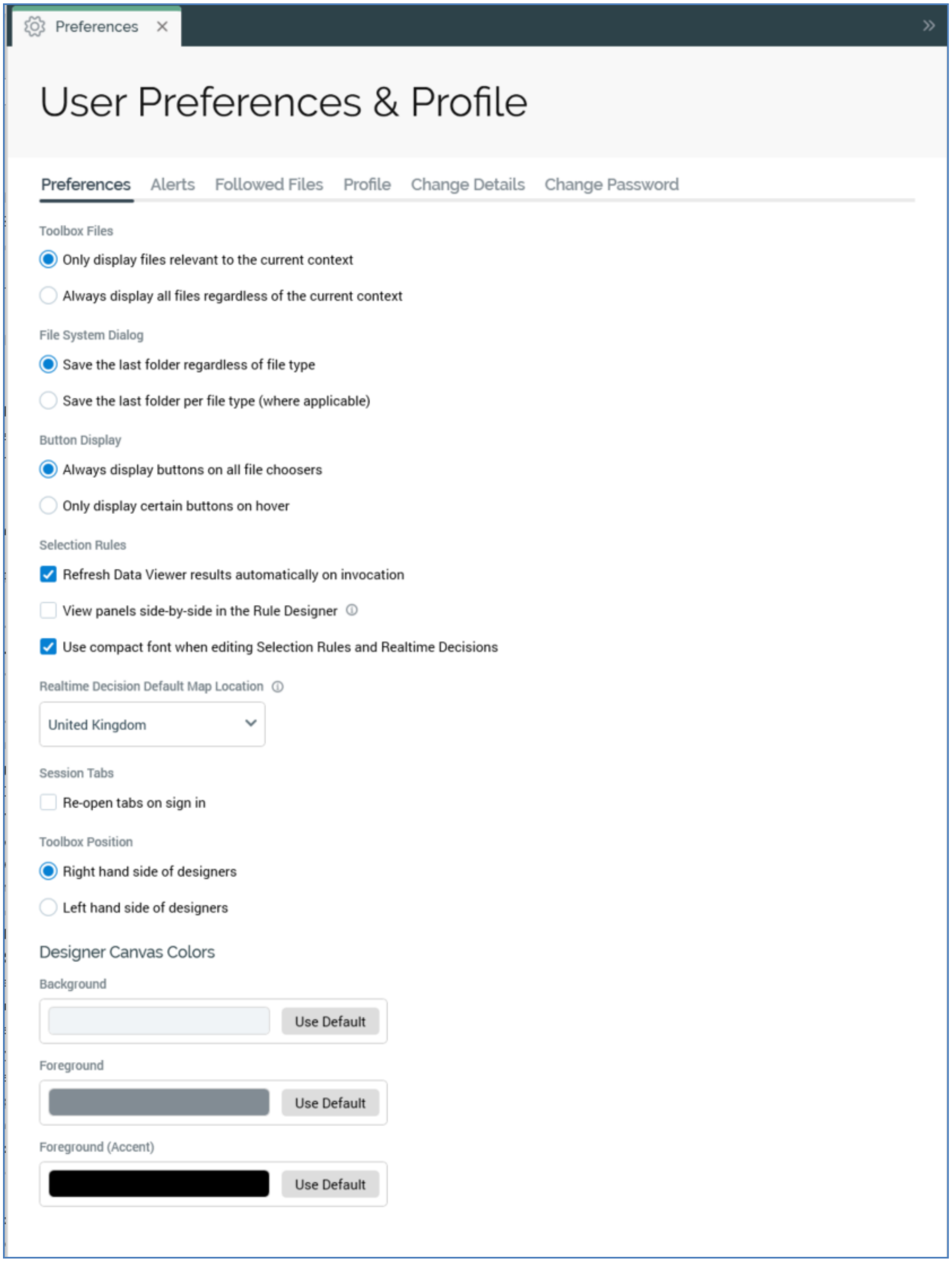
Hovering over an error or warning displays a Copy Message to Clipboard button. Invocation copies the current message's details to the clipboard. When an error is pasted, it will include an error code, which can be referenced when contacting Redpoint Support.

3.30 Client Application Log File

As well as errors being flagged for your attention within the user interface, details are also written to the RPI client application log file. This is a text file written by default to ‘C:\Temp\RPI\trace.log’.

3.31 Preferences

The User Preferences & Profile interface is accessible from the option of the same name in the Quick Access menu. It is displayed within a separate tab.



As with the Configuration Workbench and Operations interface, you can only display a single instance of the Preferences interface at any given time.

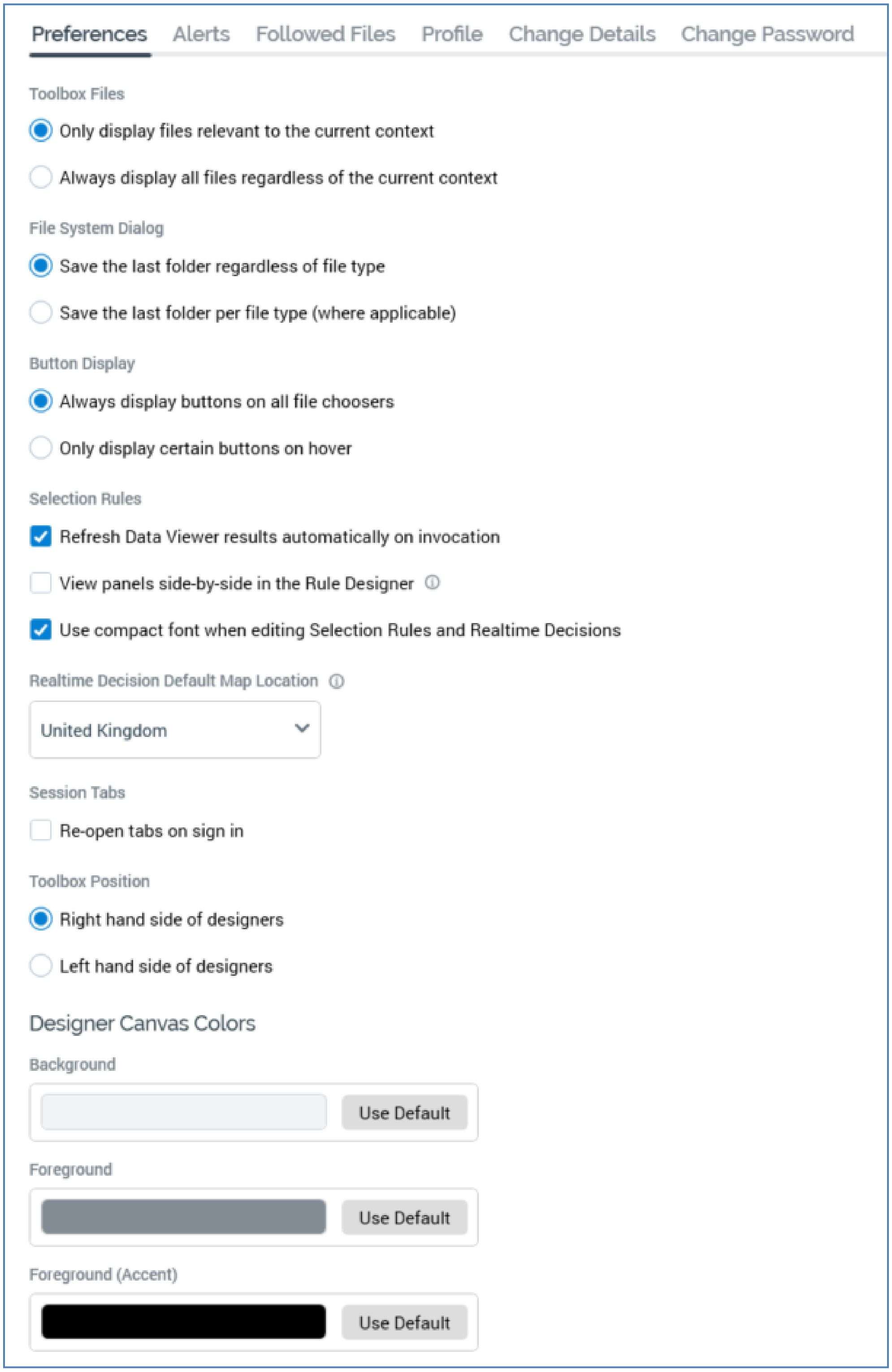
The following tabs are presented in the tabset displayed in the Preferences interface:

- Preferences
- Alerts
- Followed Files
- Profile
- Change Details
- Change Password

Selection of a tab displays an appropriate interface:

3.31.1 Preferences

The Preferences tab allows you to manage the following settings for your RPI user account:



- Toolbox Files: this option is accompanied by two mutually-exclusive radio buttons:
  - Only display files relevant to the current context: the default option. When selected, designers' toolboxes only display files of types that are appropriate to designer in question; for example, attribute and selection rule files are shown in the Rule Designer, but interactions are not.
  - Always display all files regardless of the current context: when selected, designers' toolboxes display all files, irrespective of their relevance to the designer in question; for example, interaction files are displayed in the Rule Designer, despite the fact that they cannot be used in that context.
- File System Dialog: this property is accompanied by two mutually-exclusive radio buttons:
  - Save the last folder regardless of file type: selected by default. When this option is chosen, on invocation of the File System Dialog from the main RPI toolbar, an Open command within a designer, or at a file property, the folder displayed is accordant with the most recently-accessed folder within the most recent previous File System Dialog session.
  - Save the last folder per file type (where applicable): when this option is selected, the most recently-accessed folder is persisted on a file type-by-file type basis. This applies when opening a file in a designer, or when setting a file property.

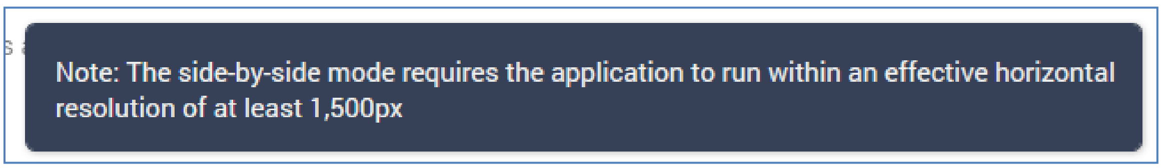
    For example, the most recently-accessed folder, as displayed on invocation of the File System Dialog, is persisted separately at the Offer Designer and at the Interaction Designer (meaning that different folders can be displayed on invocation of the File System Dialog in these two contexts).
- Button Display: this option is accompanied by two mutually-exclusive radio buttons:
  - Always display buttons on all file choosers.
  - Only display certain buttons on hover: selected by default.

  There are certain property contexts within RPI where buttons are hidden unless hovered over (to maximize the user interface's clean appearance). This setting provides control over whether to display buttons in this manner, or to show them at all times. The setting is applied immediately upon clicking Apply Changes – the RPI client does not need to be restarted. Any such properties already displayed within an open tab will not be affected by a change to this property.
- Training Aids: this option is accompanied by two mutually-exclusive radio buttons:
  - Show training aids where applicable: this option is selected by default. When selected, the Build an Email and Send Emails training aids are made available. Note that this option does not control availability of Send Emails at selection rules, audiences and email offers.
  - Don't show any training aids: when this option is selected, training aids are not available in the aforementioned contexts.

Full details on training aids can be found in the Training Aids documentation.

- Selection Rules: this section contains the following properties:
  - Refresh Data Viewer results automatically on invocation: this checkbox is checked by default. When checked, on Data Viewer invocation, the interface is populated with results automatically. If unchecked, results must be refreshed manually.

    Note that this property is not shown if working in a NoSQL environment.
  - View panels side-by-side in the Rule Designer: this checkbox, which is unchecked by default, allows you to choose between whether to display a single panel horizontally at a time within the Rule Designer, or whether multiple rules can be shown side by side. Note the caveat displayed when hovering over the information tooltip:



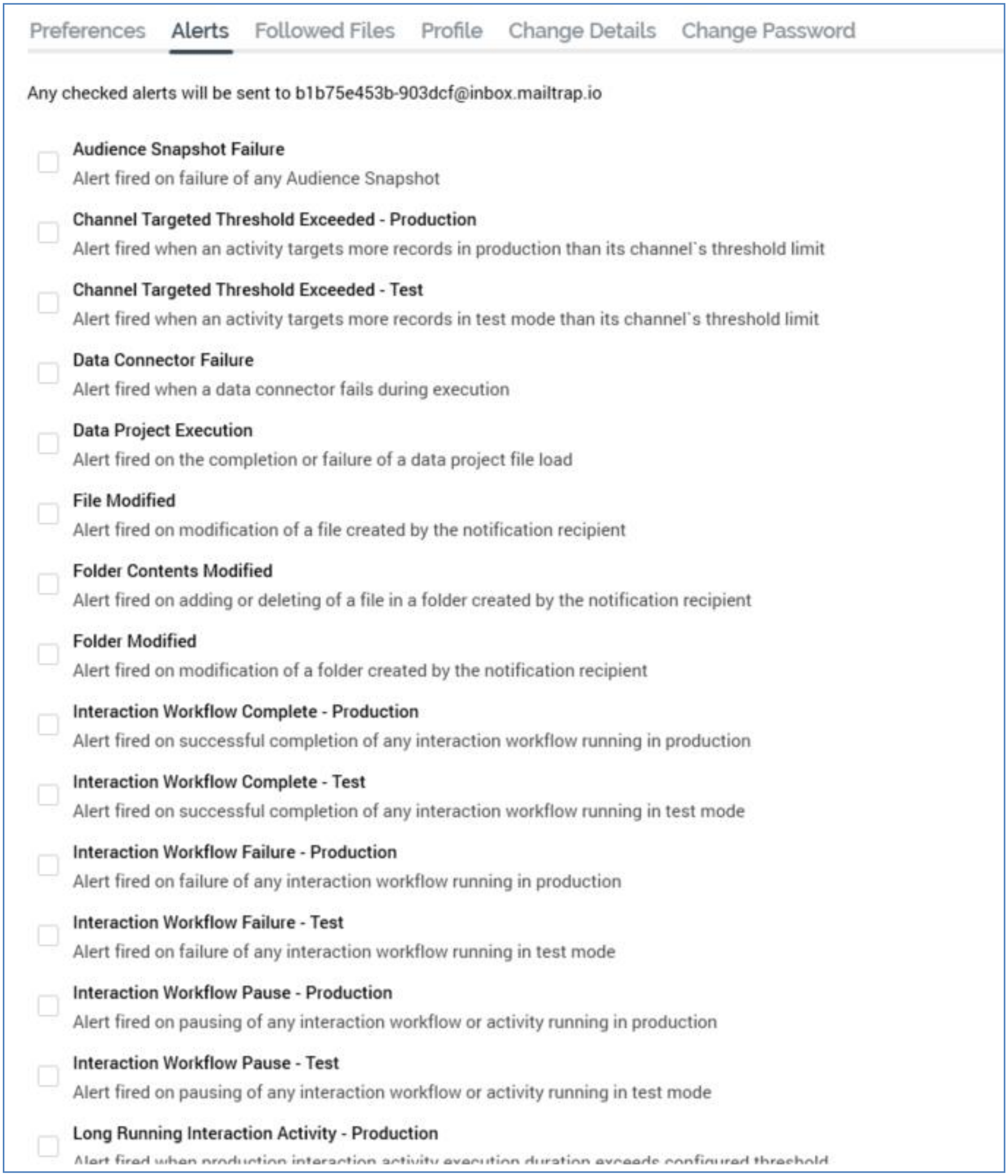
    When the property is checked, Use compact font... is checked and read-only.
  - Use compact font when editing Selection Rules and Realtime Decisions: this checkbox, which is unchecked by default, allows you to specify whether to use a larger or more compact font when viewing and editing rules and panels in the Rule Designer. The property is checked and read-only when View panels side-by-side... is checked.
- Realtime Decision Default Map Location: this setting defines the default location that will be shown when creating a new Geolocation criterion in a Web Realtime Decision. A dropdown property, is exposes the following values:
  - Africa
  - Asia
  - Australia
  - Europe
  - North America (the default)
  - South America
  - United Kingdom
- Session Tabs: this property is accompanied by a checkbox:
  - Re-open tabs on sign in: this checkbox is unchecked by default. When checked, at next sign in, any open tabs (at the point at which the RPI client was shut down) are re-opened automatically.

If a file was unsaved at the point of its being closed, if changes were saved, the file is displayed in the opened tab. If changes were abandoned, if the file had already been saved to the RPI file system, it is displayed without changes. If never saved, the file is not displayed (an empty designer instance is shown instead).

- Toolbox Position: this property allows you to specify whether to display the designer toolbox to the right (the default) or to the left. Two accompanying radio buttons allow you to define your preference.
- Designer Canvas Colors section: this section contains three properties, which allow you to specify the following colors within the application:
  - Background: note that this is not applied at the Rule Designer.
  - Foreground
  - Foreground (accent)

  Each is set using a Choose Designer Canvas Color dialog. Each property is accompanied by a Use Default button, which you can click to revert to the application's original color selection.

3.31.2 Alerts



The Alerts tab allows you to subscribe to various types of alerts generated automatically upon the occurrence of certain events within RPI.

A label at the top of the interface states that 'Any checked alerts will be sent to [your registered email address]'.

A list of available alert types is displayed:

- Audience Snapshot Failure: alert fired on failure of any Audience Snapshot. This alert is not available when working in a NoSQL environment.
- Channel Targeted Threshold Exceeded: alert fired when an activity targets more records than its channel's defined Targeted warning threshold. Separate Production and Test alerts are provided.
- Data Connector Failure: alert fired when a data connector fails during execution.
- Data Project Execution: alert fired on the completion or failure of a data project file load.
- File Modified: alert fired on modification of a file created by the notification recipient.
- Folder Contents Modified: alert fired on addition or deletion of a file in folder created by the notification recipient.
- Folder Modified: alert fired on modification of a folder created by the notification recipient.
- Interaction Workflow Complete: alert fired on successful completion of an interaction workflow. Separate Test and Production alert types are provided.
- Interaction Workflow Failure: alert fired on any failure of an interaction workflow. Separate Test and Production alert types are provided.

  If system configuration setting InteractionFailureAlertsAttachZip is set to True, on receipt of an interaction failure alert email, the email includes a .zip attachment, named '[Interaction name]-[Trigger name]-[GUID]'. The zip file contains a folder, within which are presented the following files, which can be used to assist diagnosis of why the failure occurred:

  - AuditHistory.txt
  - ExecutionPlan.txt: used by the Execution Service to execute activity within the workflow.
  - ExecutionSchedule.txt: the state of activity execution at the Execution Service.
  - Interaction Workflow.json: a dump from the table of the same name.
  - QueryTrace.txt
  - ServerLog.txt
  - Summary.txt: high-level summary information.
  - SystemHealth.json
  - Telemetry.txt

- For each audience/fulfillment activity:
  - Audience: dump from the DataWorkflow table.
  - Instance: serialized activity details.
  - Log: relating to the current activity's execution.
- Files: the exported interaction files.

- Interaction Workflow Pause: alert fired on pausing of any interaction workflow or activity. Separate Test and Production alert types are provided.
- Long Running Interaction Activity: alert fired when interaction activity execution duration exceeds a configured threshold.   Separate Test and Production alert types are provided.

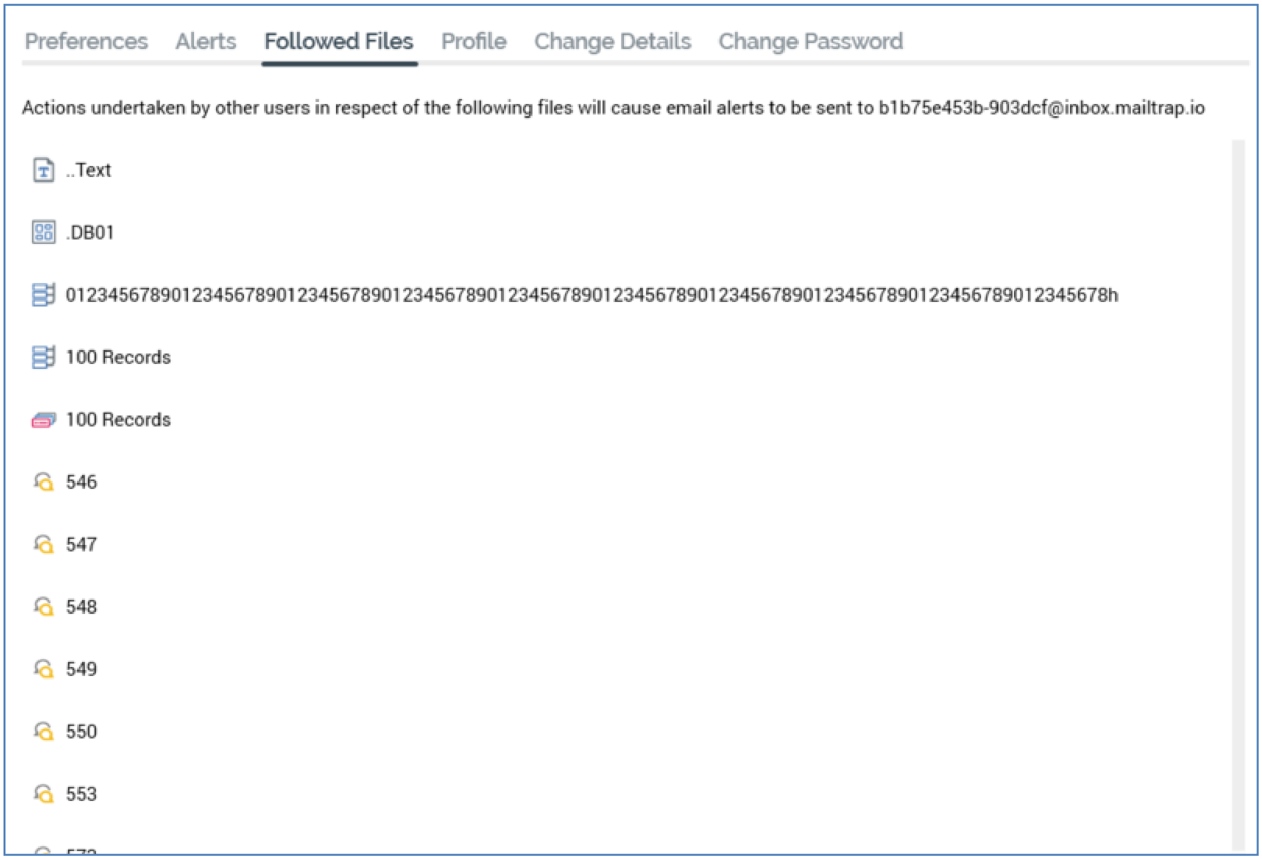
  When activity execution duration exceeds the value set at system configuration setting LongRunningActivityThreshold, an alert email is sent. This applies at interaction execution in both Test and Production mode, as well as at audience testing.

- Long Running System Task: alert fired when system task execution duration exceeds a threshold defined by system configuration setting LongRunningTaskThreshold.
- Pulse – Direct receipt: alert fired on receipt of any pulse that was sent directly to me (only displayed if system configuration setting EnablePulseMessages is set to True).
- Pulse – Related object: alert fired on receipt of any pulse with an attached object created or modified by me (N.B. – only if modified by another user; only displayed if system configuration setting EnablePulseMessages is set to True).
- System Health – Attention Required: alert fired when one of the System Health checks requires immediate attention.
- System Health – Warning: alert fired when one of the System Health checks enters the warning state.

A checkbox is displayed alongside each alert type; by default, all are unchecked.

You can choose the type of alerts to which you which to subscribe by checking the relevant boxes.

3.31.3 Followed Files



This tab displays all files you are currently following. Files are listed alphabetically. For each, the following are displayed:

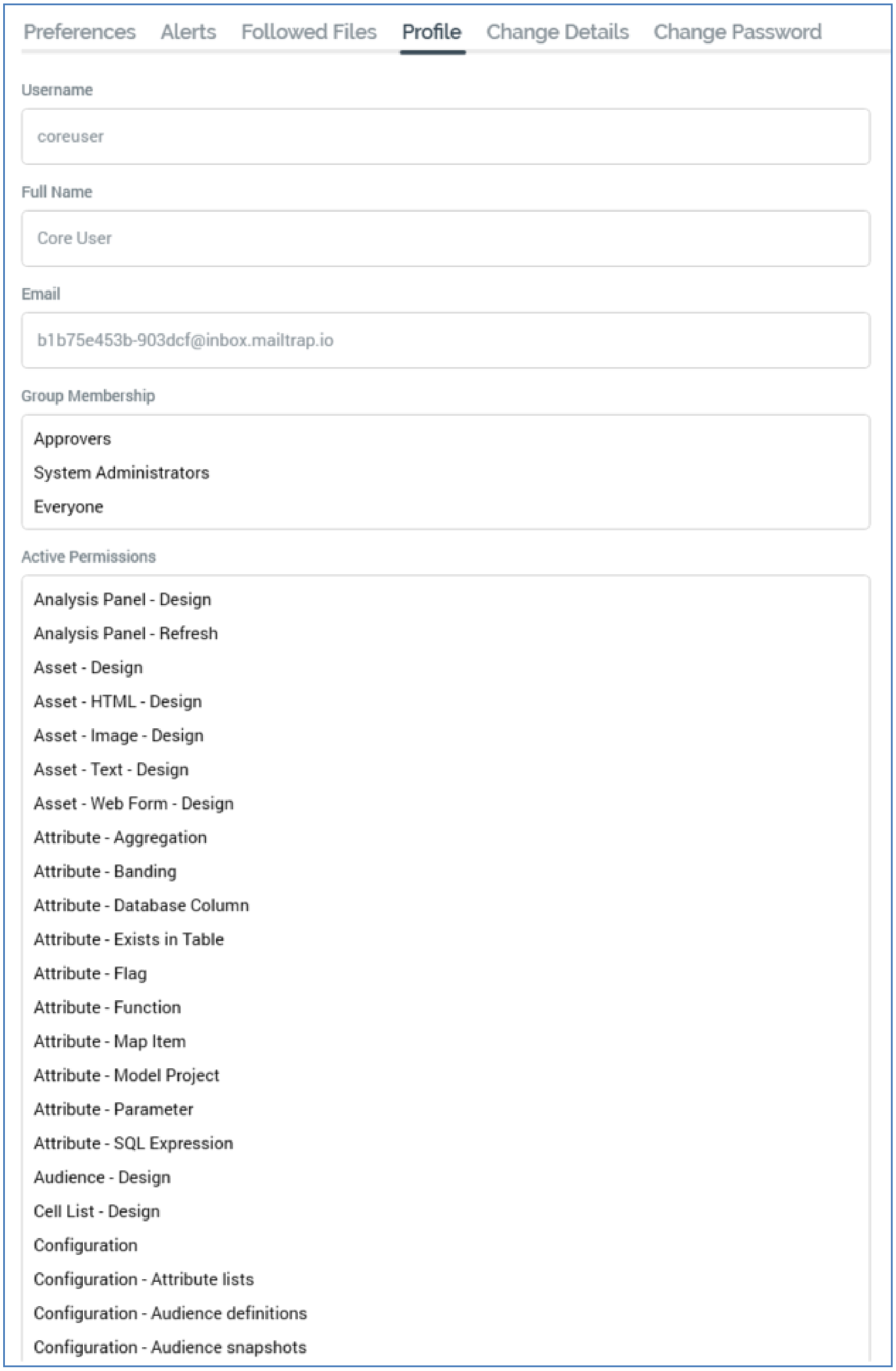
- Icon
- Name
- Unfollow File: this button is displayed on hover. Clicking it unfollows the file and removes it from the Followed Files list. A confirmatory message is displayed.

A context menu is available at files within the list, with the available options being dependent on the file's type.

Note that an alert will be sent when the duration of execution of an activity within a followed interaction exceeds the value defined at system configuration setting LongRunningActivityThreshold.

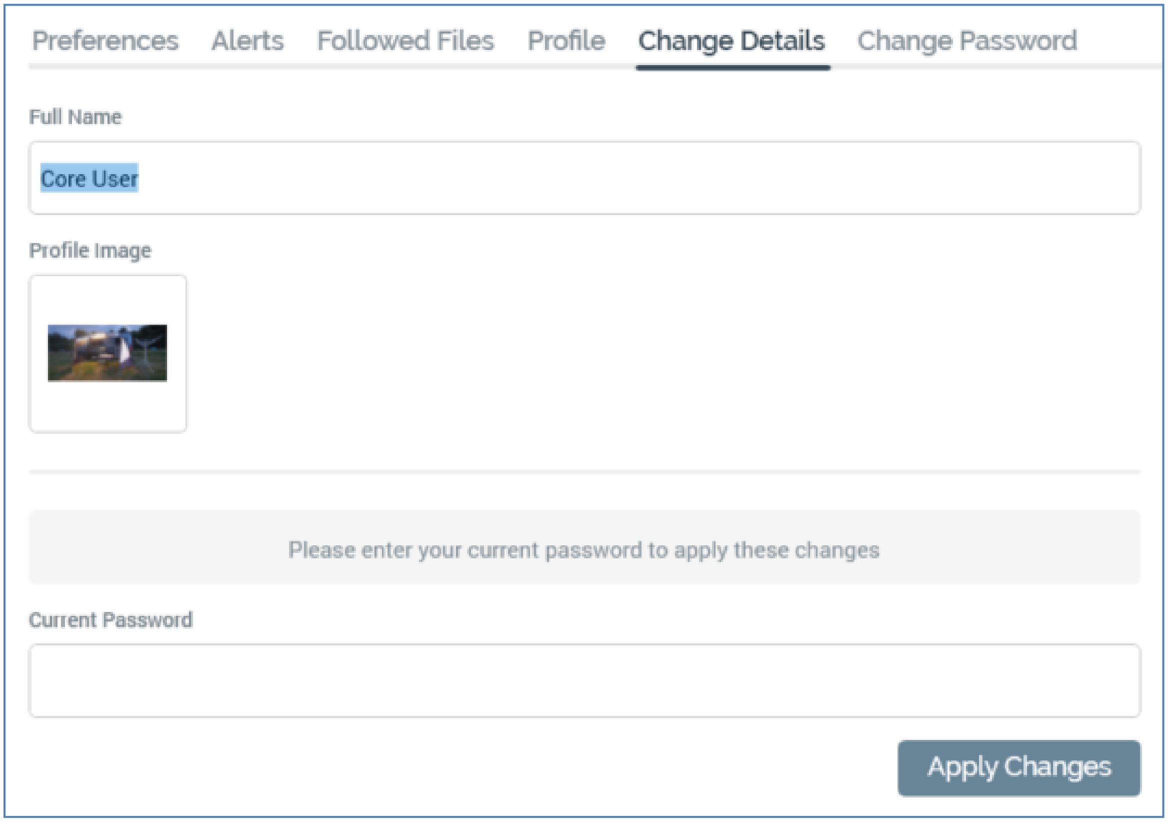
3.31.4 Profile

The Profile tab displays the following read-only information:



- Username
- Full Name
- Email
- Group Membership
- Active Permissions

3.31.5 Change Details



This tab allows you to update your Full (display) Name (mandatory, maximum 256 characters).

You can also select your Profile Image. Your image is used when you post a pulse within a pulses widget or the Pulses Window (or when the system does so on your behalf).

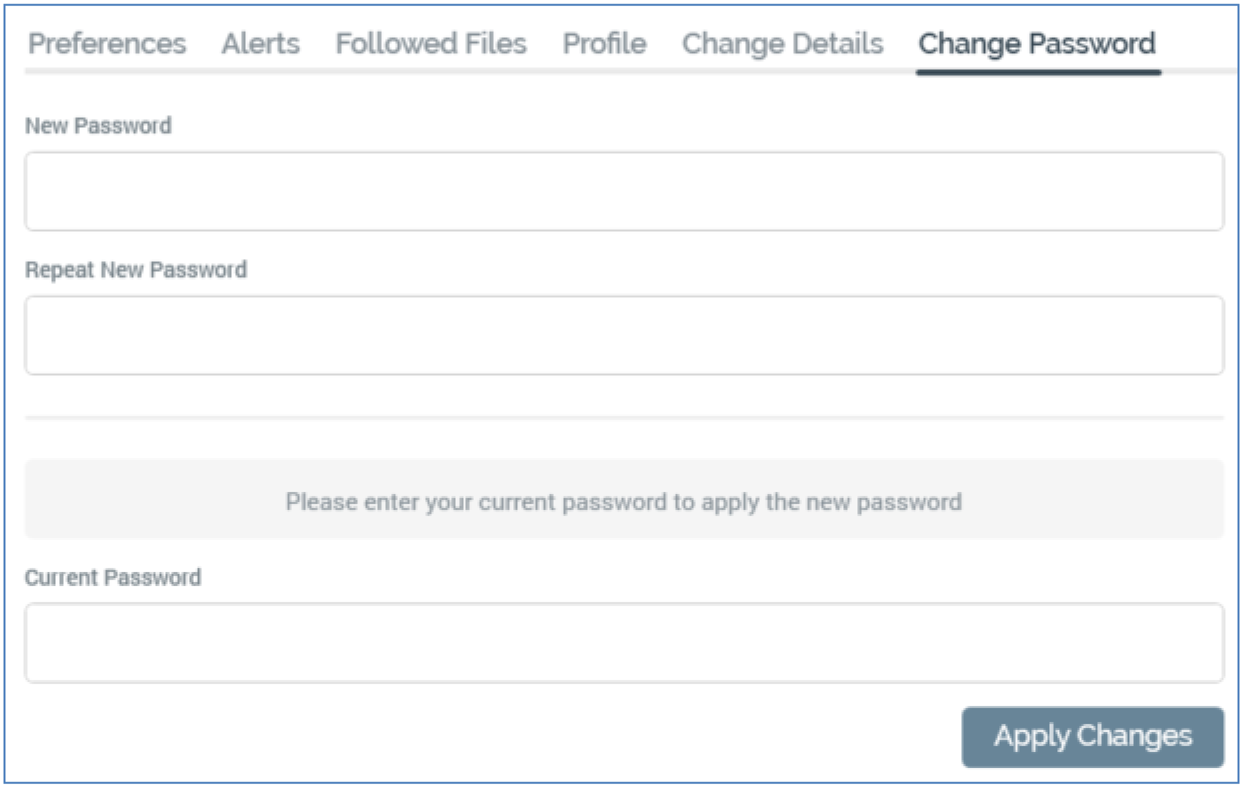
A default image is provided for a newly-created user. You can click the image to change it. Doing so displays the Choose Profile Image Windows file system dialog. By default, the dialog is limited to the display of image files only. You can select an image in the dialog and confirm your selection by clicking Open (note that an attempt to select a non-image file results in the display of a warning message). Following selection of the image, it is resized to icon size and is displayed in the Change Details interface. You can also cancel the Choose Profile Image dialog, which retains your original image.

You must supply your Current password prior to the application of changes. A warning message is displayed when Caps Lock is on and focus is in the Current password field:

'Caps Lock is On. Having Caps Lock on may cause you to enter your password incorrectly. 'You should press Caps Lock to turn it off before entering your password.'

Clicking Apply Changes saves any changes you have made.

3.31.6 Change Password



This tab allows you to change your password by inputting your current password, new password and repeat new password.

The password supplied must be accordant with the currently-defined password policy (please contact your system administrator for further information).

A warning message is displayed when Caps Lock is switched on and focus lies upon the password fields.

Clicking Apply Changes saves any changes you have made.

3.32 Audit

RPI includes comprehensive auditing features that ensure that details of all significant activities undertaken by users are recorded. These audit records are persisted in the client's InteractionAudit operational database, in the AuditHistory table, and may be viewed using the Operations interface's Audit Log tab, as well as being queried or reported upon independently.

Audit records have an audit type that describes the general area within which an activity occurred, and a sub-type, which describes the specific type of activity. For example, 'Interaction Event' is an audit type, and 'Activity Completed' a sub-type.

Audit records are created upon the occurrence of each of the following types of activity:

Audit Type	Audit Sub-Type
Client Job	Analyze File
Client Job	Catalog Re-sync
Client Job	Connectivity Test
Client Job	Download Asset From ECP
Client Job	Email Delivery Test
Client Job	Email Link Test
Client Job	File Download
Client Job	File Export
Client Job	File External Copy
Client Job	File Import
Client Job	Fulfillment Test
Client Job	Joins Refresh
Client Job	Publish To Web
Client Job	Delete Staged Email Offer Content
Client Job	Re-subscribe Contacts
Client Job	Sample Database Table
Client Job	Rule Count
Client Job	Refresh Value Lists
Client Job	Rule Export
Client Job	Selection Rule Waterfall
Client Job	Upload Asset To ECP
Client Job	Upload File To ECP
Client Job	Validate And Load File
Client Job	Validate Audience Definitions
Client Job	Validate Channels
Client Job	Validate SQL Expression
Client Job	Workflow Waterfall Report
Client Job	AML Model Builder
Configuration	Clear All Attribute Values
Configuration	Create Attributes From Database
Configuration	Delete Attribute Values
Configuration	Export Seeds
Configuration	Import Seeds
Configuration	Manage Attribute Values
File Access	Add Folder
File Access	Approve File
File Access	Cancel File Approval Request
File Access	Copy File
File Access	Copy Folder
File Access	Copy From Another Client

File Access	Copy From External Content Provider
File Access	Copy To Another Client
File Access	Copy To External Content Provider
File Access	Delete File
File Access	Delete Folder
File Access	Deny File Approval Request
File Access	Export To File
File Access	Import From File
File Access	Load File
File Access	Modify Folder
File Access	Move File
File Access	Move Folder
File Access	Overwrite File
File Access	Permanently Delete File
File Access	Rename File
File Access	Request File Approval
File Access	Resend File Approval Request
File Access	Restore File
File Access	Roll Forward
File Access	Save File
File Access	Update Permissions
Interaction Event	Activity Pause Request
Interaction Event	Activity Resume Request
Interaction Event	Activity Skip Request
Interaction Event	Activity Stop Request
Interaction Event	Activity Trigger Request
Interaction Event	Activity Completed
Interaction Event	Activity Failed
Interaction Event	Activity Paused
Interaction Event	Activity Restarted
Interaction Event	Activity Started
Interaction Event	Activity Stopped
Interaction Event	File Download
Interaction Event	Initialize Audience Test
Interaction Event	Trigger Deactivated
Interaction Event	Workflow Activation Request
Interaction Event	Workflow Completed
Interaction Event	Workflow Deactivation Request
Interaction Event	Workflow Failed
Interaction Event	Workflow Pause Request
Interaction Event	Workflow Paused
Interaction Event	Workflow Reactivation Request
Interaction Event	Workflow Restarted
Interaction Event	Workflow Resume Request
Interaction Event	Workflow Rollback Request
Interaction Event	Workflow Started
Interaction Event	Workflow Stop Request
Interaction Event	Workflow Stopped
Interaction Event	Workflow Termination Request
Interaction Event	Workflow Trigger Request
Object Execution	Analysis Panel Refresh
Object Execution	Attribute Refresh Attribute Values
Object Execution	Attribute Validate SQL Expression
Object Execution	Data Project Analyze Data
Object Execution	Data Project Load Data
Object Execution	Audience Definitions Validate
Object Execution	Smart Asset Publish

Object Execution	Smart Asset Unpublish
Object Execution	Landing Page Publish
Object Execution	Landing Page Unpublish
Object Execution	Offer Email Delivery Test
Object Execution	Offer Test Email
Object Execution	Offer Test Links
Object Execution	Offer Test SMS
Object Execution	Selection Rule Count
Object Execution	Selection Rule Export
Object Execution	Selection Rule Waterfall
Object Execution	Unstage
Operations	Force Workflow Status
Operations	Trigger Snapshot
Operations	Update Snapshots
Operations	Update System Task
Security	Edit User (including details of current and previous user groups)
Security	Create User Group
Security	Delete User Group
Security	Edit User Group (including details of current and previous permissions)
System Access	Change Password
System Access	Change Registered Alerts
System Access	Change User Details
System Access	Login
System Access	Login Failed
System Access	Log Out
System Access	Reset User Password

In addition, if cluster configuration setting AuditTaskEvents is set to True, the following events are audited:

System Task	Started
System Task	Completed

The Audit History table has the following structure:

- AuditID: a unique identifier for the audit record; an incrementing, system-supplied integer.
- UserName: depending on whether the auditable action was undertaken explicitly by a user or upon the RPI server by one of its workflow service instances, either the username or workflow manager service instance ID.
- ComputerName: the name of the computer upon which the auditable act was initiated. This might be the user's client application machine, or the RPI server machine.
- ComputerIP: the IP address of the same computer.
- ServerName: the name of the RPI server that handled the auditable action.
- AuditTimestamp: date/time when the action occurred (in Universal Time).

- ObjectID: GUID representing the unique identifier of the object in respect of which the action was undertaken (e.g. a selection rule). Given that an action may occur without involving an object (e.g. a user signing in), this field is nullable.
- ObjectName: name of the object against which the action was undertaken. Nullable.
- ObjectFolder: the full path of the RPI file system folder within which the object is stored. Nullable.
- VersionMajor
- VersionMinor
- AuditType: textual description of the general type of audited activity.
- AuditSubType: textual description of the specific type of audited activity.
- Details
- ClassName
- AssemblyName

3.32.1 Cluster Auditing

Certain activities are audited at the cluster, rather than client, level. These audit records are not visible in the Operations Audit Log. Rather, they can be accessed at the AuditHistory table in the Pulse_Logging database.

The following activities are audited at the cluster level:

Audit Type	Audit Sub-Type
Interaction Event	Pause All Request
Interaction Event	Resume All Request
Security	Create User
Security	Delete User
Security	Edit User (including details of current and previous user groups)
Security	Sign In
Security	Sign In Failed
Security	Password Reset
Security	Reset User Password
Security	Unlock User
Workbench	Add Client
Workbench	Add Node
Workbench	Delete Client
Workbench	Enter Maintenance Mode
Workbench	Exit Maintenance Mode
Workbench	Remove Node
Workbench	Reset User Password
Workbench	Unlock User
Workbench	Update Auxiliary Databases
Workbench	Update Client
Workbench	Update Database Connection

Workbench	Update System Configuration
Workbench	Update System Messages
Workbench	Update User Groups
Workbench	Upload Plugins

3.32.2 Auditing Table and Column Usage

RPI allows you to audit the usage of data warehouse tables and columns when running audiences in production interaction workflows. Such auditing is controlled by system configuration setting AuditAudienceFieldUsage. Table and column auditing is switched on when this setting is set to 1, and off when set to 0. When auditing table and column usage, the following audit tables are populated:

- DataflowAuditSummary: one row is created per audience segment. For each segment, the following are captured:
  - OutputID
  - DataflowInstanceID
  - OutputName
  - WorkflowAssociationInstanceID
  - OutputCount
  - ExecutionDate
  - ResolutionTable
  - ResolutionKey
- DataflowAuditFields: multiple rows are created per DataflowAuditSummary record. For each field, the following are captured:
  - ID
  - OutputID
  - TableName
  - ColumnName
  - Operator
  - Values
  - DataflowInstanceID
- DataflowAuditExecutionLookup: if the audience is used in e.g. an email offer or in data extract file generation, a record in this table is used to link to the ChannelExecutionID, which can be used to link to the Channel Execution table in the client's Interaction operational database and the Offer History tables in the data warehouse. The following are captured:

- OutputID
- ChannelExecutionID
- DataflowInstanceID

3.33 Lights-Out Alerting

RPI includes a lights-out alerting feature that sends emails to those users who have chosen to subscribe to one or more event types (you can subscribe to email alerts in the Manage Alerts tab in the Preferences interface).

When an event with which an alert is associated occurs, emails are sent to registered email addresses of users subscribing to the event type.

If system configuration setting AlertEmailSubjectPrefix is set, any alerting emails' subject lines have the string specified therein appended to the beginning of their subject lines.

An audit record is created on the sending of an alert email.

The following types of alert events are supported:

3.33.1 Audience Snapshot Failure

An email is sent to alert subscribers on the failure of any configured audience snapshot.

The received mail contains the following:

'Audience Snapshot Failure - [snapshot name]'

'Audience snapshot has failed with the following details'

Client
Audience snapshot
Start date
Start time
User name
Audience name
Failure date
Failure time
Duration
Message
Server

3.33.2 File Modified

An email is sent to the creator of a file affected by another user through being:

- Modified
- Renamed
- Rolled Forward
- Deleted

3.33.3 Folder Contents Modified

An email is sent to the creator of a folder within which a file is affected by another user through:

- Being added
- The creation of a new file
- Using save as...
- Being deleted

3.33.4 Folder Modified

An email is sent to the creator of a folder affected by another user through being:

- Renamed
- Deleted

3.33.5 Interaction Complete

An email is sent when any interaction workflow completes. Separate emails are sent for Production and Test modes.

3.33.6 Interaction Failure

An email is sent when any interaction workflow fails. Separate emails are sent for Production and Test modes.

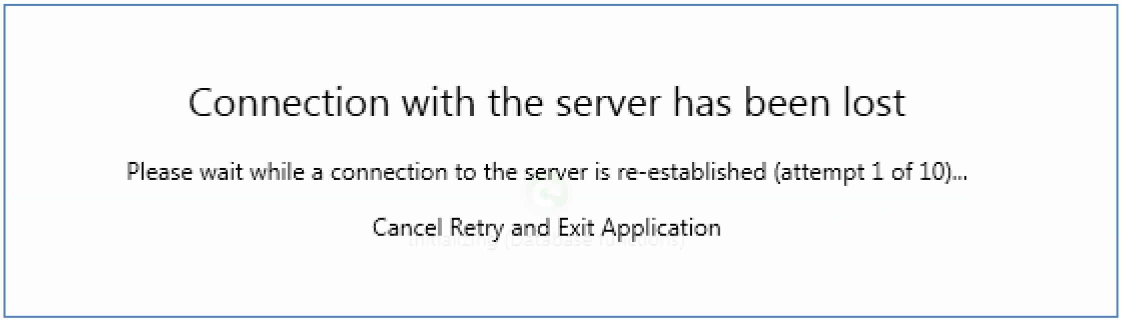
3.33.7 System Health

An email is sent when the server enters an Attention Required or Warning state following execution of the System Health Monitor task. If one or more issues require attention, the email is entitled ‘System Health Attention Required’. If one or more issues are in a warning state (and no issues require attention, the email is entitled ‘System Health Warning’

The email lists all of the current system health issues of the type(s) to which the recipient has subscribed, and also includes the name of the server where the issue(s) occurred

3.34 Connectivity Loss

If your RPI client application loses its connection to the server, the interface is blanked out and a message displayed:



If you click the Cancel Retry and Exit Application button, displayed below the message, your RPI client application is shut down and any outstanding changes are lost.

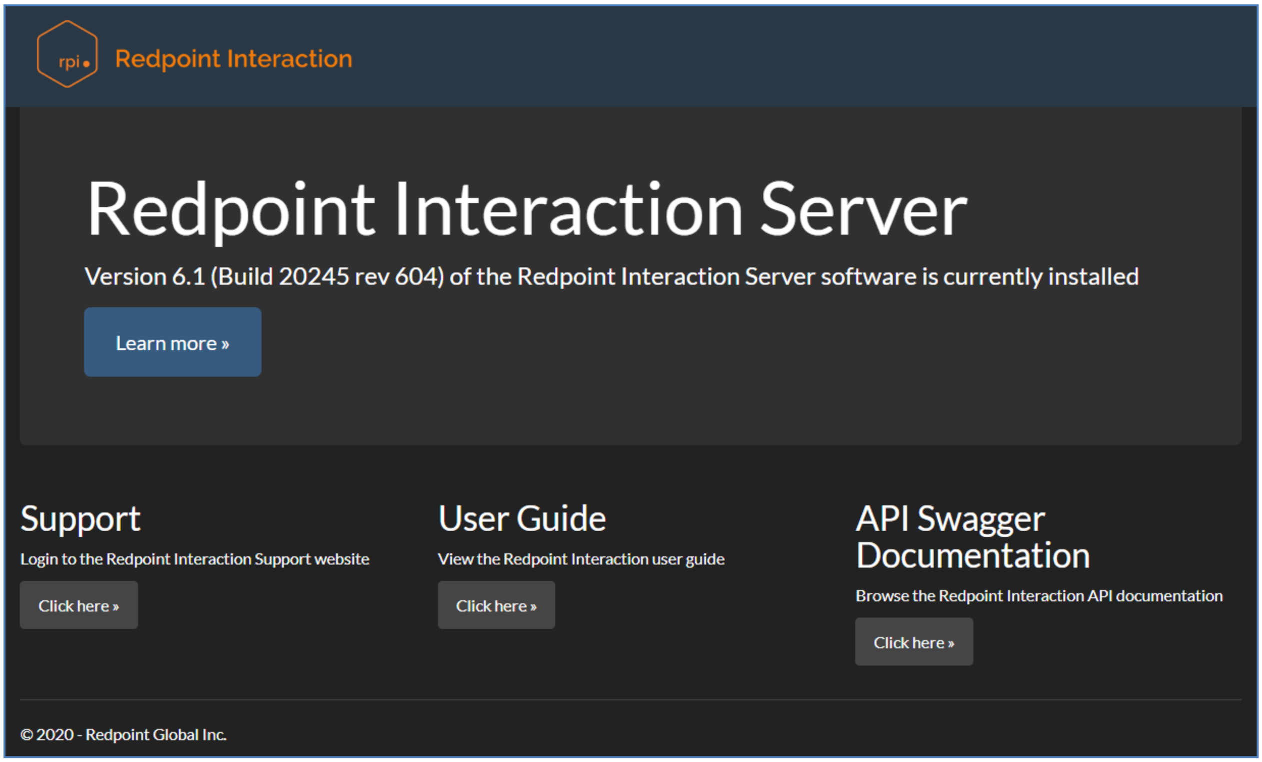
10 attempts are made to reconnect, after which the Lost Connection to Server dialog is displayed. Clicking OK repeats another 10 attempts to connect retries. You can click OK 10 times in the Lost Connection to Server dialog before the Retry and Exit Application button, displayed below the message, your RPI client application shuts down, losing any unsaved changes.

Invocation of Cancel at the Lost Connection to Server dialog shuts down your client application, losing any unsaved changes.

3.35 RPI Server Website

When an RPI server is installed, a website is automatically installed at the same time.

The website's address is 'https://[server]/Interaction'. Its home page appears as follows:



The following buttons appear on the page:

- RPI Server.Learn more: clicking this button navigates to the RPI section of the redpointglobal.com website.
- Support.Click here: displays the RPI support portal.
- User Guide.Click here: displays the RPI online Help files.
- API Swagger Documentation.Click here: clicking this button displays Swagger documentation describing the RPI Application Programmer's Interface (API).

3.36 File Output Directory

The RPI file output directory is used when:

- Performing a data extract channel connectivity test.
- Exporting a selection rule.
- Executing an export within an interaction.
- Performing file exports and imports within the File System Dialog.
- Executing the Load Web Cache Data system task.
- Running the audience housekeeper.

The folder in question is defined by the following system configuration settings:

- Server configuration setting GlobalFileOutputDirectory. This setting allows definition of a single cluster-wide folder to be used by multiple clients.
- Client configuration settings FileOutputDirectoryUseGlobal and FileOutputDirectory. These settings allow the file output directory to be defined on a client-by-client basis.

If FileOutputDirectoryUseGlobal is set to True, RPI will use the folder defined by GlobalFileOutputDirectory. If FileOutputDirectoryUseGlobal is set to False, RPI will use the folder defined by FileOutputDirectory.

On installation of a new RPI client, if GlobalFileOutputDirectory has been configured, setting FileOutputDirectoryUseGlobal will be set automatically to True. If not defined, FileOutputDirectoryUseGlobal will be set to False, and FileOutputDirectory set to the default value 'C:\RPI\[client name]\FileAssets'.

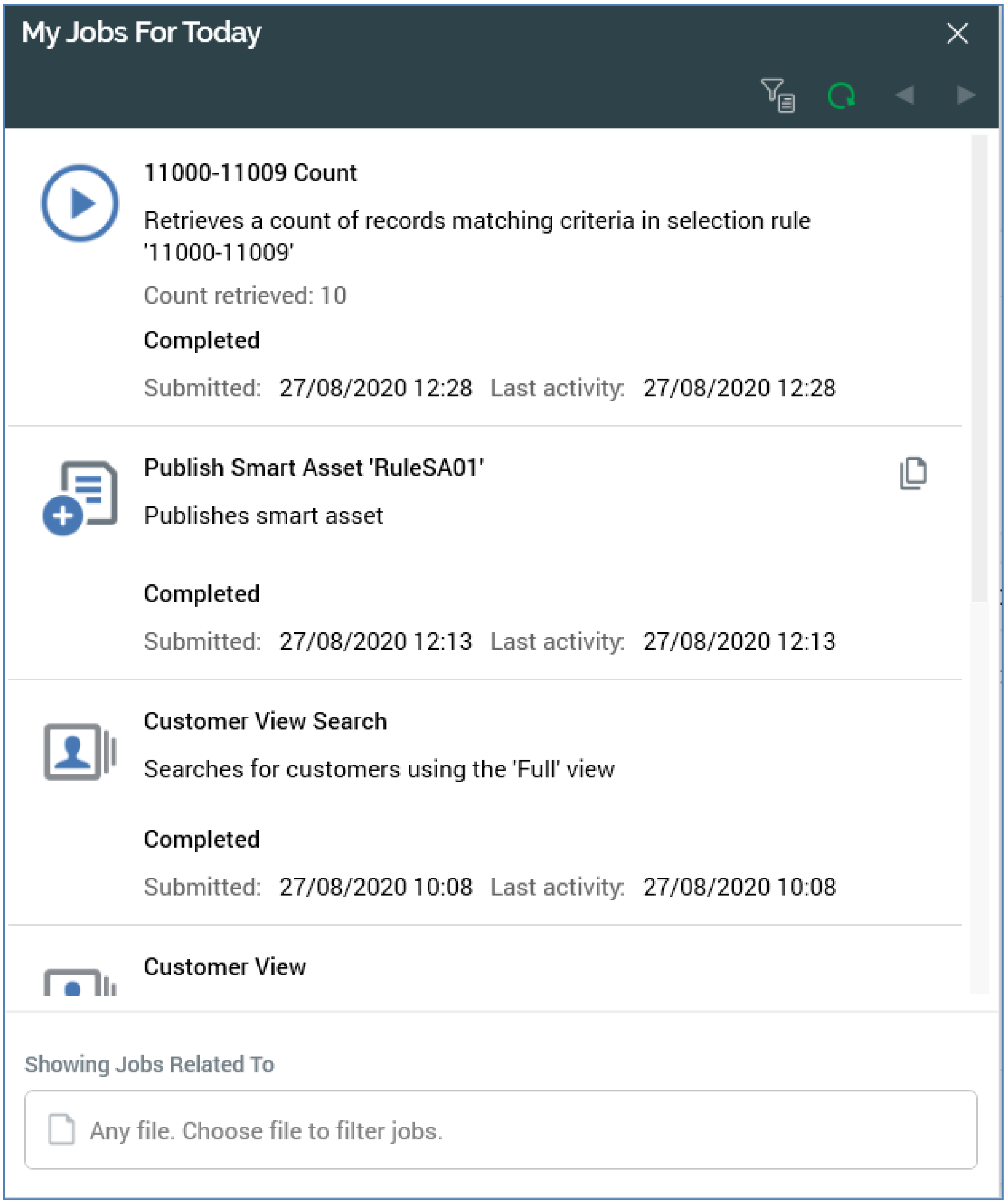
If FileOutputDirectoryUseGlobal is set to True, and GlobalFileOutputDirectory is not set, FileOutputDirectory is used instead.

If FileOutputDirectoryUseGlobal is set to False, and FileOutputDirectory is not set, files are written to C:\. The same happens if both GlobalFileOutputDirectory and FileOutputDirectory are not set.

4 My Jobs

Certain actions undertaken in RPI result in the creation and execution of jobs at the RPI server. Examples include running a selection rule's count, downloading an export file and synchronizing the catalog with the data warehouse.

You can access the jobs that you initiated via the My Jobs Dialog.



This section details the Dialog itself, and also provides descriptions of the various types of jobs that it can display.

4.1 Invoking the My Jobs Dialog

The My Jobs Dialog can be displayed using the My Jobs menu button displayed at the main RPI menu:

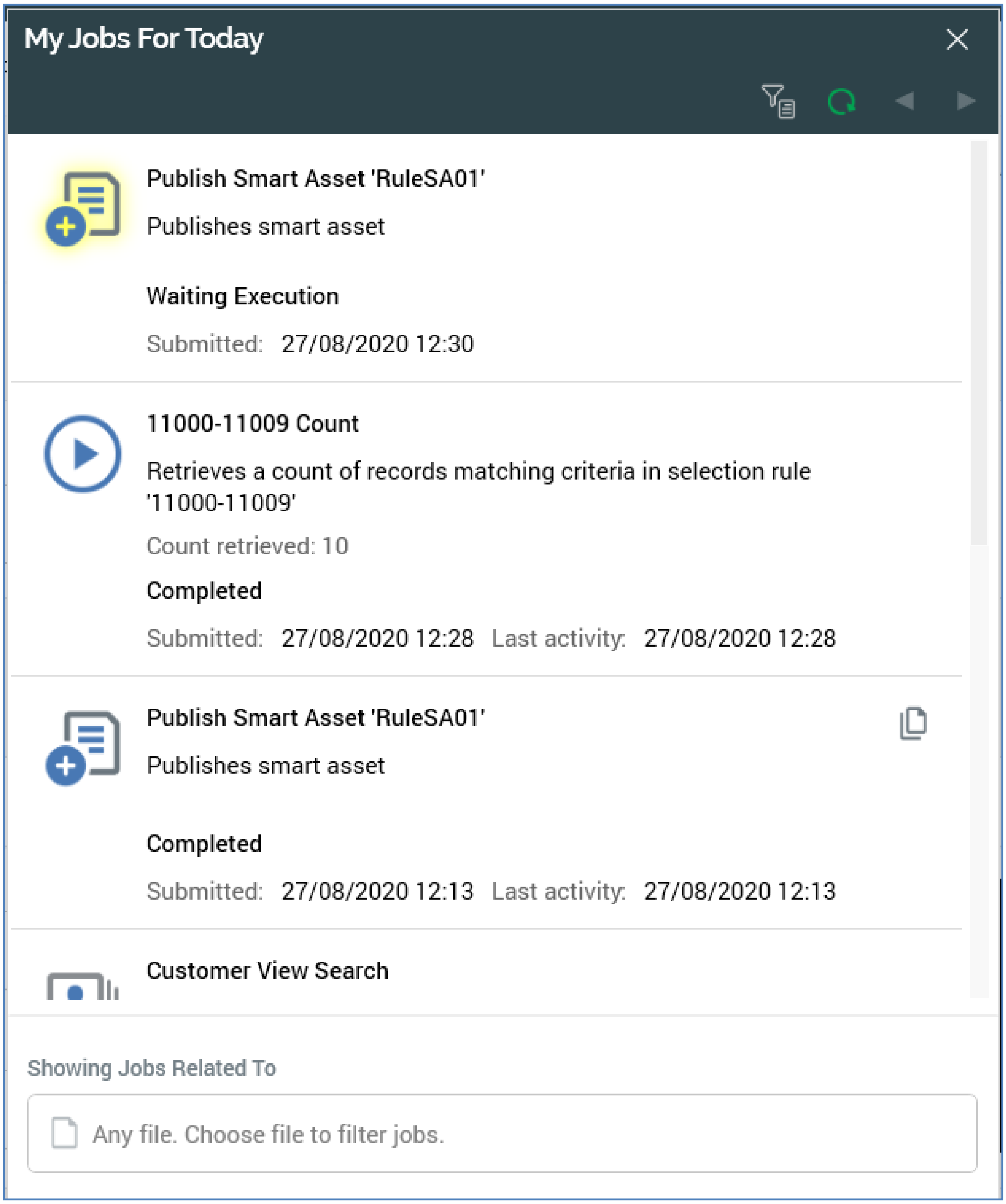
Clicking the button displays the My Jobs Dialog without a file context. All jobs that satisfy the default search criteria are shown.

In addition, the My Jobs Dialog is also shown automatically at the creation of a most job types. Further details are provided elsewhere in the documentation.

4.2 My Jobs Dialog Content

The My Jobs Dialog is non-modal; you can continue to work within the main RPI client application interface while it is displayed.

The Dialog is composed of the following sections, each of which is documented separately:



- Toolbar

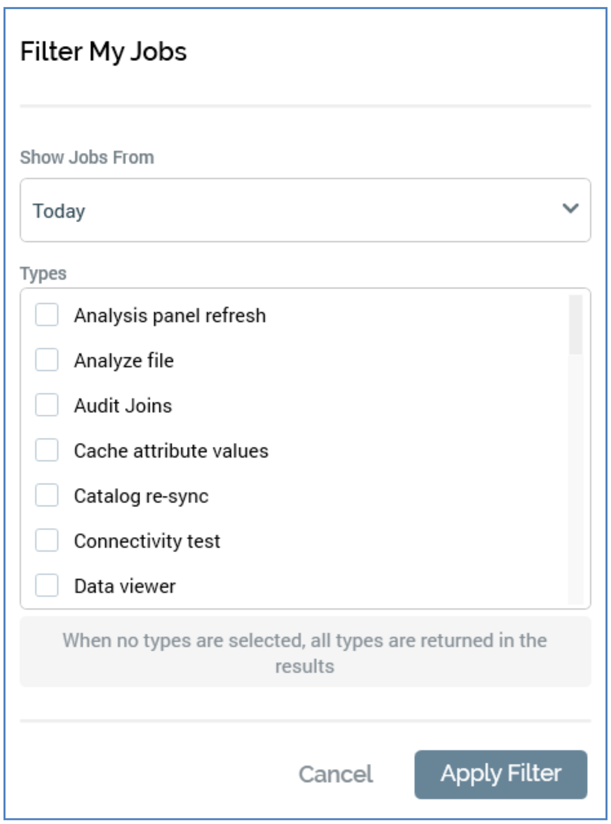
- My Jobs list
- 'Showing jobs related to'

Each type of job that can be shown in the My Jobs Dialog is also documented separately.

4.3 Toolbar

A toolbar is shown at the top of the My Jobs Dialog, and exposes the following options:

- Change the Filter: invocation of this option displays the Filter My Jobs dialog:



The dialog contains the following:

  - Show jobs from: this dropdown allows you to define the time period in respect of which you wish to view jobs. It exposes the following values:
    - Today (default)
    - The past 2 days
    - The past 7 days

        - The past 28 days

  - Types: a list of types is shown, with each accompanied by a checkbox, all of which are unchecked by default. The list includes the following types:

    - Analysis panel refresh
    - Analyze file
    - Audit Joins
    - Cache attribute values
    - Catalog re-sync
    - Connectivity test
    - Data viewer
    - Delete staged email offer content
    - Download asset from ECP
    - Email delivery test
    - Email link test
    - File download
    - File export
    - File external copy
    - Fulfillment test
    - Generate audience from clusters
    - Get Single Customer View
    - Joins refresh
    - Offline Channel Configuration
    - Perform Single Customer View Search
    - Publish to web: also covers Stage email content.
    - Refresh Value Lists
    - Re-subscribe contacts
    - Rule count
    - Rule export

    - Selection rule waterfall
    - Unpublish
    - Update cached attribute list table
    - Upload asset to ECP
    - Upload file to ECP
    - Validate and load file
    - Validate audience definitions
    - Validate channels
    - Validate SQL expression
    - Workflow diagnostics
    - Workflow waterfall report

    A note at the bottom of the list clarifies that 'When no types are selected, all types are returned in the results'.

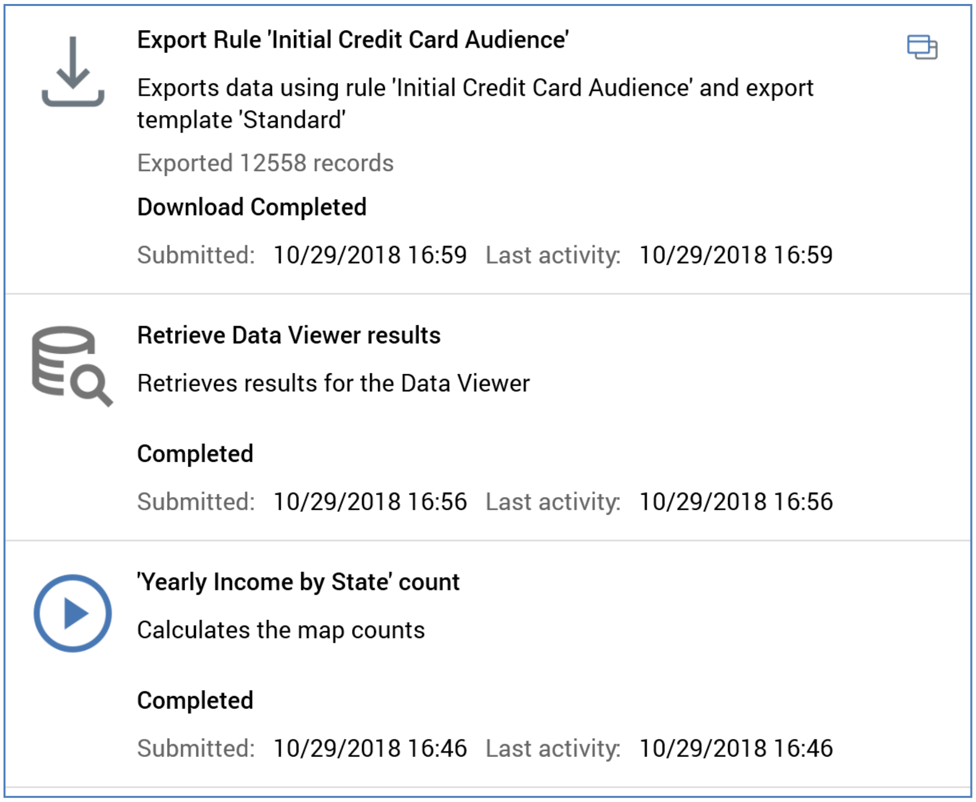
  - Start search: invocation of this option refreshes the My Jobs Dialog with jobs that match the supplied search criteria.
  - Cancel: clicking this button removes the dialog from display without applying the search criteria.

  Closing and re-opening the Dialog resets any applied criteria to their default values.

- Refresh: invocation of this option retrieves details of jobs accordant with the supplied search criteria.
- Previous page: this option is only displayed when a page other than the first is shown. Invocation displays the previous page's jobs.
- Next: this option is only displayed when a page other than the last is shown. Invocation displays the next page's jobs.

4.4 My Jobs List

The main body of the My Jobs Dialog is occupied by a list of jobs, initiated by the current user, which satisfy the currently-specified search criteria.



Its title is set to 'My jobs for [date range]'. A message ('There are no jobs to display') is shown if the list is empty.

One page's worth of jobs are shown at a time, with the size of a page controlled by system configuration setting MaxTableSearchRows. Jobs are listed in reverse date/time submitted chronological order, with the newest jobs being displayed at the top of the list. Note that, if a new job is created when the My Jobs Dialog is shown, it will not be shown therein if the filter settings preclude such (for example, if only jobs of another type are being displayed, or if an unrelated file context has been established).

The My Jobs Dialog is periodically refreshed automatically to ensure that the latest job and status information are displayed.

For each job, the following are shown:

- Icon
- Status: one of:
    - Waiting Execution
    - Executing (shown with a green halo around the icon)
    - Completed
    - Failed (shown with a red halo around the icon)

- Notification Waiting (shown for Catalog re-sync and Refresh joins job types only)
- Notification Completed (shown for Catalog re-sync and Refresh joins job types only)
- Download Waiting (shown for Rule export, Selection rule waterfall and Workflow waterfall report job types only)
- Download Executing (shown for Rule export, Selection rule waterfall and Workflow waterfall report job types only)
- Download Completed (shown for Rule export, Selection rule waterfall and Workflow waterfall report job types only)
- Synchronization Waiting (shown for the Validate audience definition job type only)
- Synchronization Completed (shown for the Validate audience definition job type only)

- Name
- Description
- Most recent activity status information: this section provides visibility of the most recent activity to have occurred during the job's execution. It is also used to display error details for Failed jobs (full error details are displayed as a tooltip on hover)
- [Action]: post-execution, a number of different actions can be performed in respect of a job. Available actions are determined by the job's type and status. Actions are accessible via a button shown to the top left of the job:

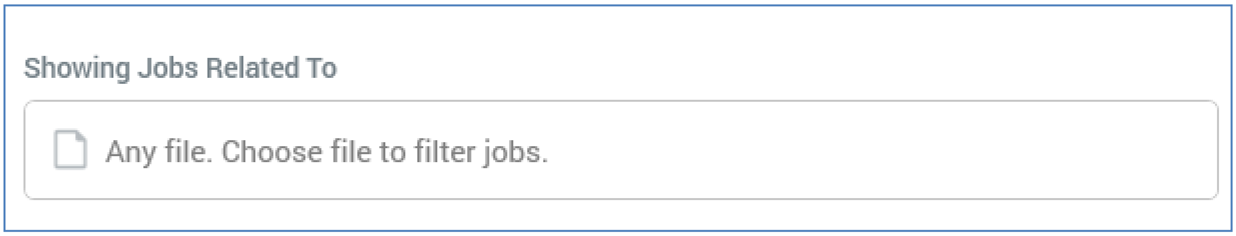
  The following actions are available:

  - View Results: available at Connectivity test, Email delivery test, Email link test and Validate audience definitions jobs when results are available.
  - Download: available at File download, Rule export, Selection rule waterfall and Workflow waterfall jobs. Also available having generated a file in these contexts, then having closed and re-opened the RPI client application. You can supply a file name at a Windows file system dialog. Having performed the download, an Open Folder/File action is available.
  - Open Folder/File: this option is available at File download, Rule export, Selection rule waterfall and Workflow waterfall jobs. The option is only available if a file has been downloaded. Invocation opens the relevant folder or file in question.
  - Copy error details to clipboard: this option is only available for jobs that have Failed.
- Date and time submitted
- Date and time of most recent activity

4.5 Showing Jobs Related To

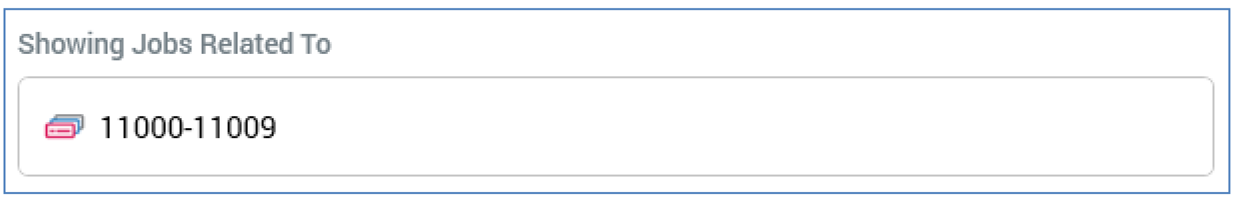
This section is shown at the bottom of the My Jobs Dialog. It indicates whether or not the Dialog is currently showing jobs that relate to a specific file.

If no file context has been set, the section appears as follows:



You can choose to set a file context by clicking the Browse… button shown when you hover over the 'Any file…' message. Doing so displays the 'Choose file to filter My Jobs' File System Dialog. You can select a file in order to filter the My Jobs list such that only jobs related to the file are shown.

If the context of a file has been set, the section looks like this:



A file type-specific icon and the file's name are displayed. Once a file context has been established, you can Open the latest version of the file in an appropriate designer or Clear the file context.

4.6 Job Types

The My Jobs Dialog supports the display of the following job types:

4.6.1 Analysis Panel Refresh

An analysis panel refresh job is created on invocation of Refresh at an analysis panel (chart, crosstab, map or Venn diagram).

Note that the My Jobs Dialog is not displayed automatically at creation of this job type.

4.6.2 Analyze File

This job is created when you analyze a data project file for the first time as part of its being established or re-analyze it subsequently.

On completion, an Open Data Project button is shown. Clicking it displays the data project in question in the Data Project Designer.

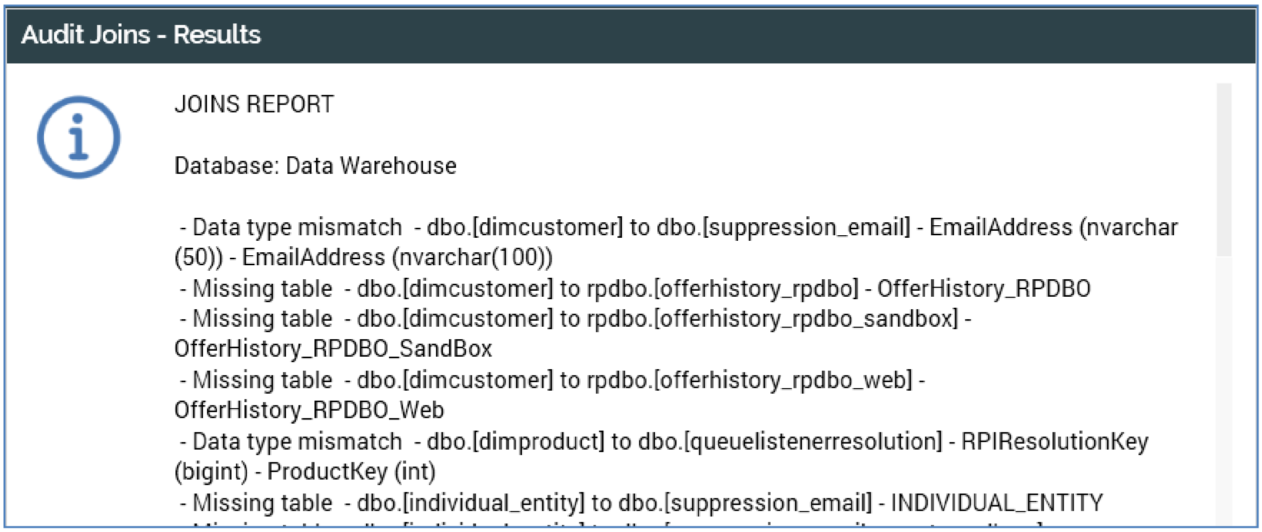
4.6.3 Cache Attribute Values

This job type is created on invocation of Start Loading Values when creating a compare to list criterion in respect of an uncached attribute.

4.6.4 Audit Joins

This job type is created on clicking the Audit Joins job in the Joins configuration interface.

When the job completes, a View Results button is shown. Clicking it displays the Audit Joins – Results dialog.



A Joins Report is displayed therein, documenting the following:

- Missing tables
- Missing columns
- Data type mismatches
- Missing indexes

A Copy Results to Clipboard button is available at the bottom of the dialog.

4.6.5 Catalog Re-sync

Invocation of Synchronize Catalog at the Catalog configuration interface displays an 'Are You Sure?' dialog. If you elect to proceed, a Catalog re-sync job is created.

During the job's execution, the catalog representation of the currently-displayed database is updated to reflect its latest structure. Any tables or columns that include apostrophes in their names are ignored by the cataloging process (server log entries are created to advise of this fact).

If a table has been removed from the database in respect of which the catalog is being synchronized, any joins relating to the missing table will need to be removed manually in RPI.

On completion of the job, an orange advisory message is shown at the Catalog configuration interface. Clicking Refresh updates the interface with the latest table and column information.

4.6.6 Connectivity Test

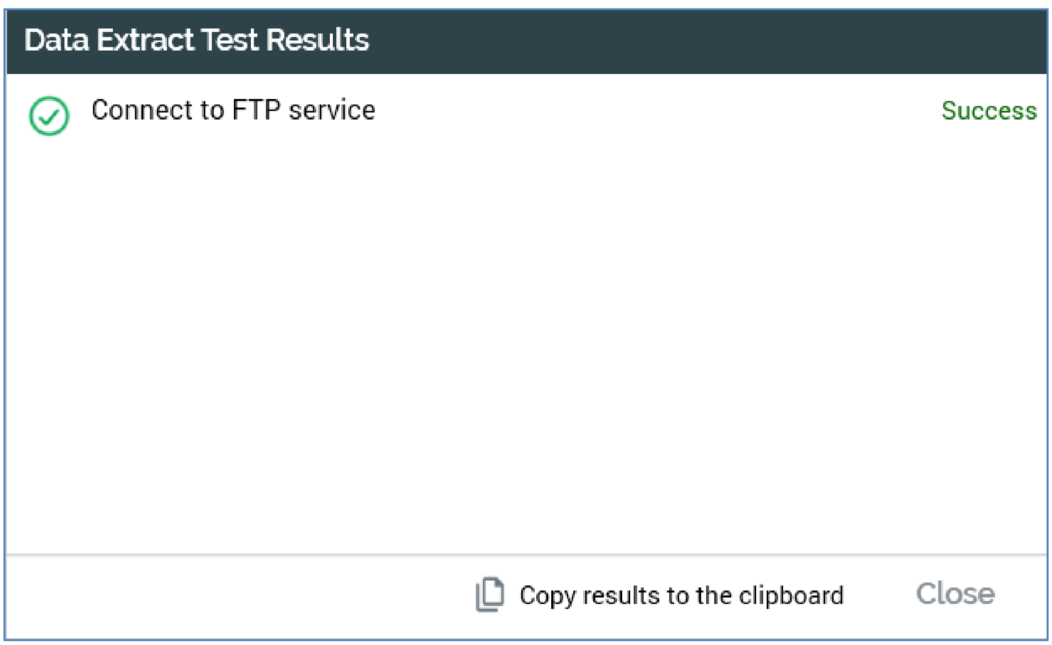
This job type can be created in three contexts:

- In the Channels configuration interface, by clicking Create new job to test this channel at a variety of channel types (for further details, please see the Configuration Workbench documentation). Invocation in this context creates a 'Test [channel name] channel connectivity' job.

  On completion, the job assumes one of the following latest activity statuses:

  - Test completed successfully
  - Test completed with errors
  - Test failed

  A View Results button is available on completion. Clicking it displays the Connectivity Test Results dialog.

  The tests performed are dependent on the channel type:

  - Data extract: if the channel is configured to:
    - Write to file system: Access network folder path
    - Write to an FTP site: Connect to FTP service
    - Write to an external content provider: Validate default external content provider

- Salesforce Marketing Cloud Email: Connect to Salesforce Marketing Cloud web service, Connect to Salesforce Marketing Cloud FTP service, Connect to FTP service (if Import via file is checked)
- SendGrid Email: Connect to SendGrid web service, Connect to SendGrid SMTP, Connect to Callback service, Connect to FTP service (if Import via file is checked)
- CheetahMail Email: Connect to CheetahMail service, Connect to CheetahMail FTP service, Verify subscriber list availability, Connect to FTP service (if Import via file is checked)
- Acoustic Email: Connect to Acoustic web service, Connect to Acoustic FTP service, Connect to FTP service (if Import via file is checked)
- SparkPost Email: Connect to SparkPost Service, Validate SparkPost sending Domain
- Instiller Email: Connect to Instiller service, Validate Field Maps identifier, Connect to FTP service (if Import via file is checked)
- Responsys Email: Connect to Responsys Service, Verify profile list, Connect to FTP service (if Import via file is checked)
- Dotdigital email: Connect to Dotdigital service, Connect to External dynamic content service
- Listrak: Connect to Listrak Service
- Mailchimp: Connect to Mailchimp Service
- Salesforce Marketing Cloud MobileConnect SMS: Connect to Salesforce Marketing Cloud MobileConnect
- Messente SMS: Connect to Messente
- Twilio SMS: Connect to Twilio
- Twilio Inbound SMS: Connect to Twilio Inbound SMS
- Vibes SMS: Connect to Vibes service
- Facebook
- Twitter: Connect to Twitter
- Twitter Direct: Connect to Twitter Direct
- Salesforce: Connect to Salesforce, Log into Salesforce
- LinkedIn: Connect to LinkedIn
- YouTube: Connect to YouTube
- Azure Notification: Connect to Windows Azure Notification Hub service
- Azure Push Direct Notification: Connect to Azure Push Direct Notification service

- Reddit: Connect to Reddit
- Salesforce Marketing Cloud Data Transfer: Connect to Salesforce Marketing Cloud web service, Connect to Salesforce Marketing Cloud FTP service
- SurveyMonkey: Connect to SurveyMonkey
- Alchemer: Connect to Alchemer
- Microsoft Dynamics CRM: Connect to Microsoft Dynamics CRM, Verify for Configured Campaign Status, Verify for Configured Data Field Mapping
- RSS: Connect to FeedPress
- LiveRamp: as Data Extract channel
- LiveRamp RampID: Connect to LiveRamp Distribution service
- Outbound Delivery: as Data Extract; if Web service URL configured, Connect to callback service.
- Twilio Notify: Connect to Twilio Notify
- Twilio Notify Direct: Connect to Twilio Notify Direct
- Airship Push Direct: Connect to Airship service
- Facebook Audience: Connect to Facebook service
- Twitter Tailored Audience: Connect to Twitter Ads service
- Google Firebase: Connect to Google Firebase
- Google Firebase Direct: Connect to Google Firebase
- Cordial: Connect to Cordial service, Validate export, Validate import
- LuxSci: Connect to LuxSci service
- Paubox: Connect to Paubox service
- Google Ads Customer Match: Connect to Google Ads service
- Amazon Simple Email Service (SES): Connect to Amazon Simple Email Service service
- Amazon Pinpoint: Connect to Amazon web service, Validating segment role ARN '[Segment role ARN]', Validating read/write permission to Amazon S3 bucket
- Yahoo: Connect to Yahoo! API service

If desired, you can copy the contents of the dialog to the clipboard using the button at its footer.

- In the FTP Locations configuration interface, by clicking Create new job to test this FTP location. Invocation in this context creates a ‘Test [location name] FTP location connectivity’ job.

On completion, the job assumes one of the following latest activity statuses:

- Test completed successfully
- Test completed with errors
- Test failed

A View Results button is available. Clicking it displays the Connectivity Test Results dialog. A single test is performed:

- Connect to FTP location

If desired, you can copy the contents of the dialog to the clipboard using the button at its footer.

- In the Web Adapters configuration interface, by clicking Create new job to test this adapter at Bitly, Google Analytics, Web Events, Kissmetrics and Rebrandly adapters. Invocation in this context creates a 'Test [adapter name] adapter connectivity' job.

  On completion, the job assumes one of the following latest activity statuses:

  - Test completed successfully
  - Test completed with errors
  - Test failed

  A View Results button is available. Clicking it displays the Connectivity Test Results dialog. The tests performed are dependent on the adapter type:

  - Bitly adapter: Connect to Bitly
  - Google Analytics adapter: Connect to Google Analytics, Validate metrics
  - Web Events adapter: Load web event tracking page, Register test event on event queue
  - Kissmetrics adapter: Connect to Kissmetrics, Validate metrics
  - Rebrandly adapter: Connect to Rebrandly service

  If desired, you can copy the contents of the dialog to the clipboard using the button at its footer.

  In the External Content Providers configuration interface, by clicking Test connectivity. Invocation in this context creates a 'Test [external content provider name] provider connectivity' job. On completion, the job assumes one of the following latest activity statuses:

  - Test completed successfully
  - Test completed with errors
  - Test failed

A View Results button is available. Clicking it displays the Connectivity Test Results dialog. A single test is performed:

- Accessing root folders

If desired, you can copy the contents of the dialog to the clipboard using the button at its footer.

- In the Queue providers configuration interface, by clicking the Test connectivity button at the queue provider (for further details, please see the Configuration Workbench documentation). Invocation in this context creates a 'Test [Queue provider name] provider connectivity' job.

  A View Results button is available on completion. Clicking it displays the Connectivity Test Results dialog. The following tests are performed irrespective of the queue provider type:

  - Write to the test queue
  - Read from the test queue

4.6.7 Customer View

This job type is created on invocation of Choose at the Search overlay in the Single Customer View interface. It is used to retrieve full details of a given record (typically a customer), which are then displayed in the Single Customer View interface. No results are available at the job.

4.6.8 Customer View Search

This job type is created on invocation of Search at the Search overlay in the Single Customer View interface.

It is used to retrieve a list of records matching entered search criteria, which are then displayed in a list of Search Results. No results are available at the job.

4.6.9 Data Project Drop Table

This job type is created on invocation of Drop table at a data project.

4.6.10 Delete Staged Email Offer Content

This job type is created on invocation of Delete Staged Email Content at an email offer.

4.6.11 Download Asset from ECP

When you invoke Copy to folder at an external content provider file, an External file download job is created.

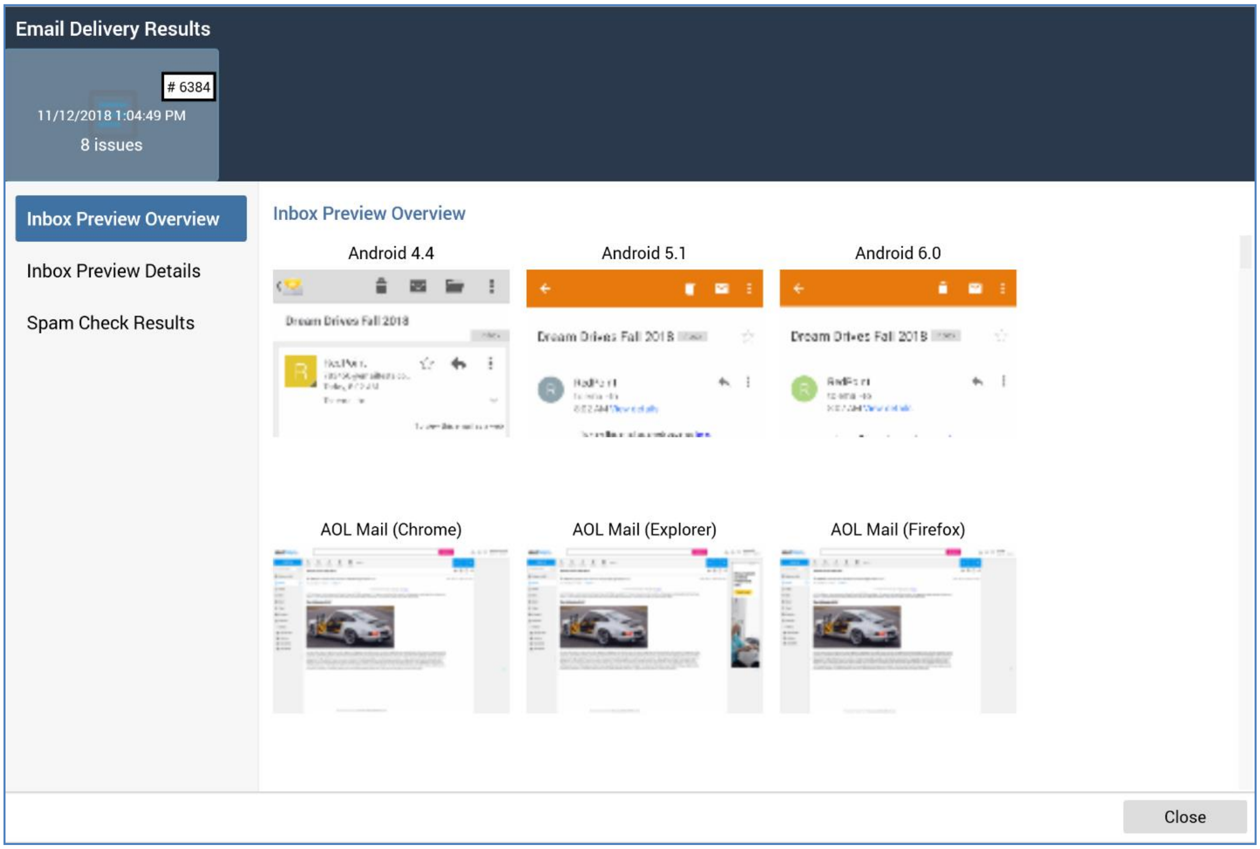
On its successful completion, an Open Folder button is available. Clicking it opens the folder to which the file was downloaded in Windows Explorer and highlights the file itself therein.

4.6.12 Email Delivery Test

In the Offer Designer's Email tab, clicking OK at the Test Inbox Delivery dialog creates a Test email delivery for [offer name] job.

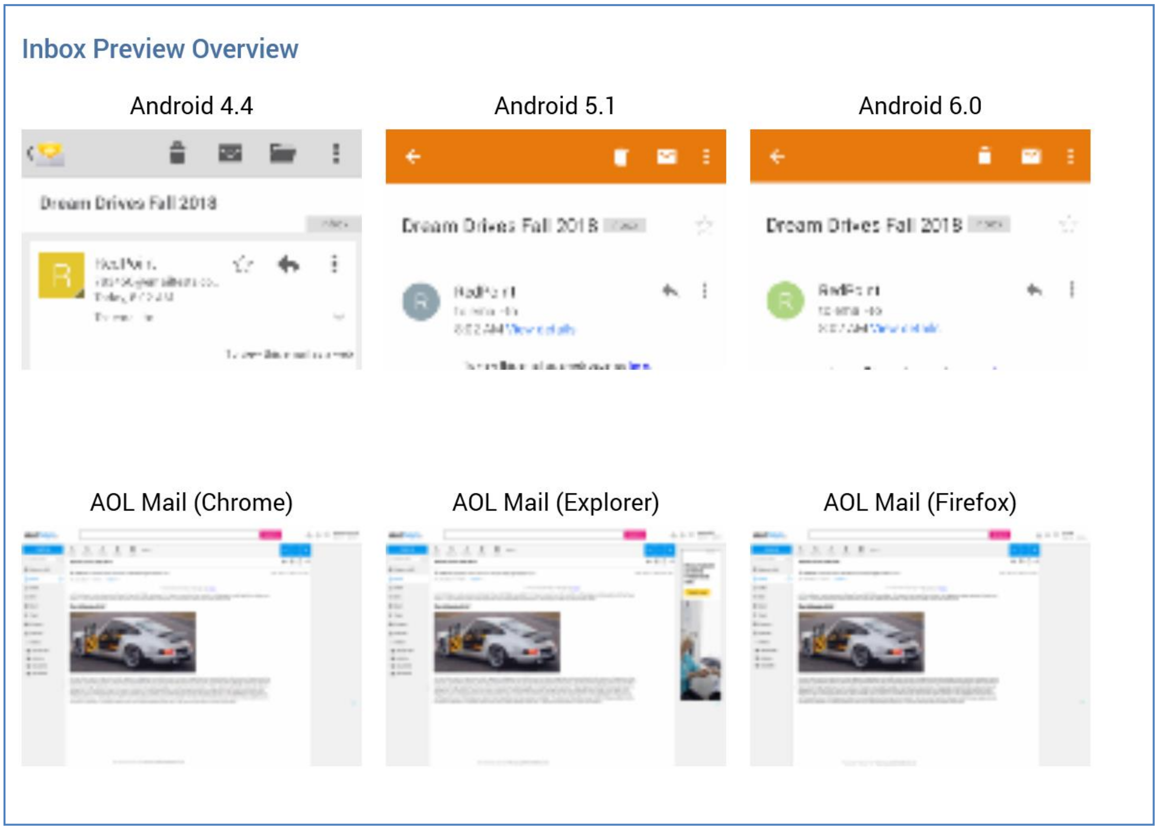
The dialog details the status of each link in the offer content.

On completion, a View Results button is displayed. Clicking it displays the Email Delivery Results dialog.



The dialog contains:

- Inbox Preview Overview tab: this tab displays inbox preview images for a number of email clients. If system configuration setting EmailCheckerSandboxSwitch is set to 1, a series of sample images are displayed.

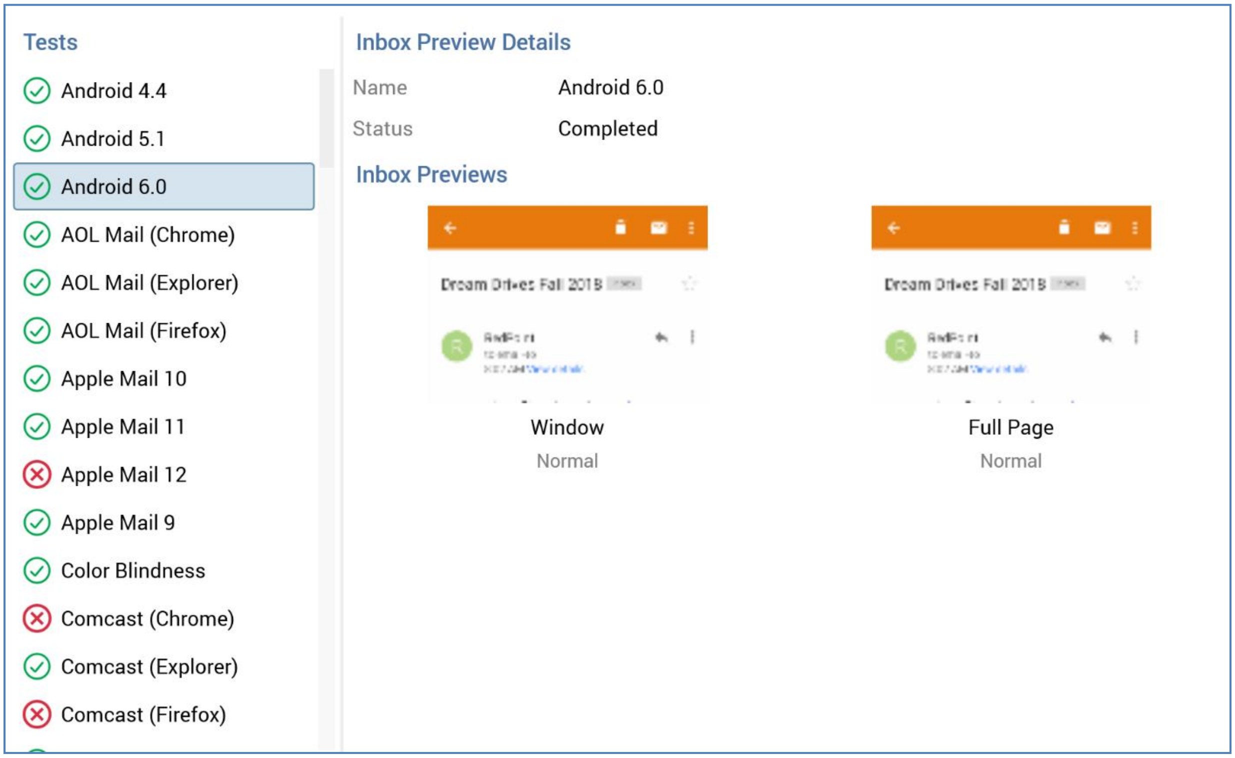


If system configuration setting EmailCheckerSandboxSwitch is set to 0, genuine preview images are displayed.

A Zoom image button accompanies each image on hover. Invocation displays a larger version of the image in a fixed panel. This can be closed by clicking Close or by clicking off the panel.

If a test was failed, the image is not displayed and the legend 'Failed' shown instead (accompanied by a cross icon). A warning icon is displayed if a test timed out.

- Inbox Preview Details tab: this tab provides a more detailed view of inbox deliverability test results.

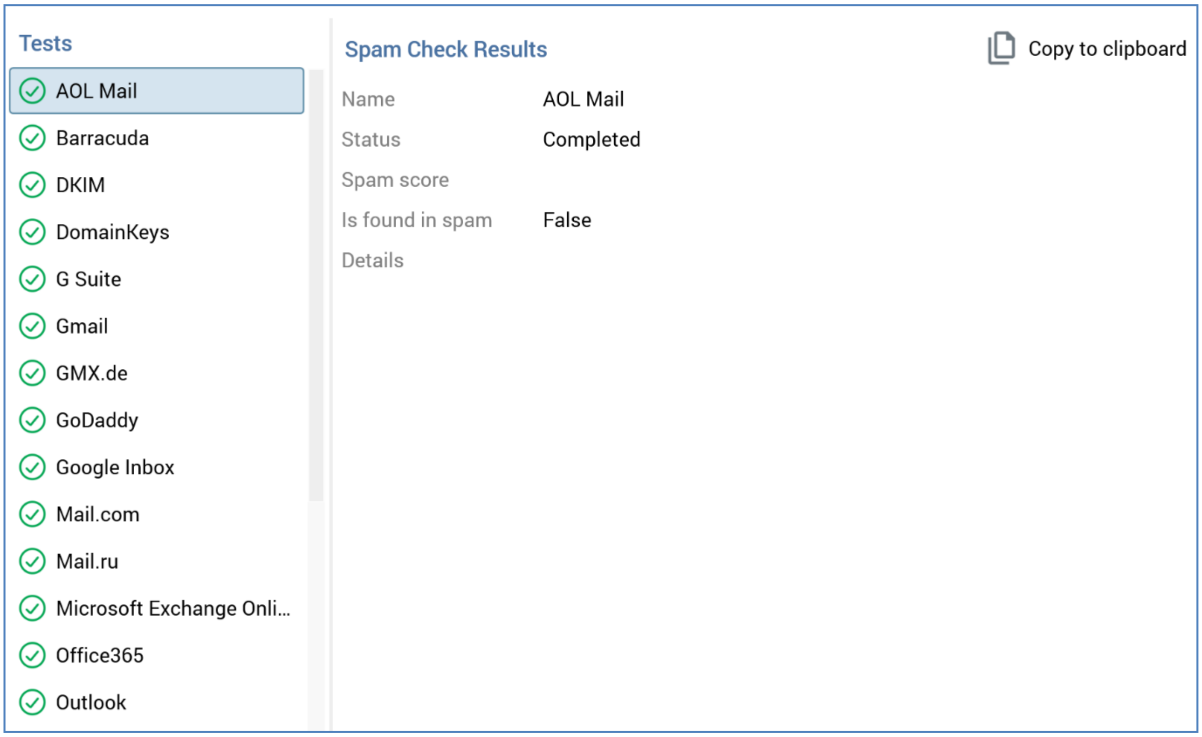


A list of email client-specific tests is displayed to the left. Successful tests are accompanied by a tick, and failed tests by a cross.

When you highlight a test, the right-hand panel is updated to display Inbox Preview Details. Preview images are displayed (sample images if EmailCheckerSandboxSwitch is set to 1, genuine preview images if set to 0). Window and Full Page images are displayed for both Normal and Blocked content.

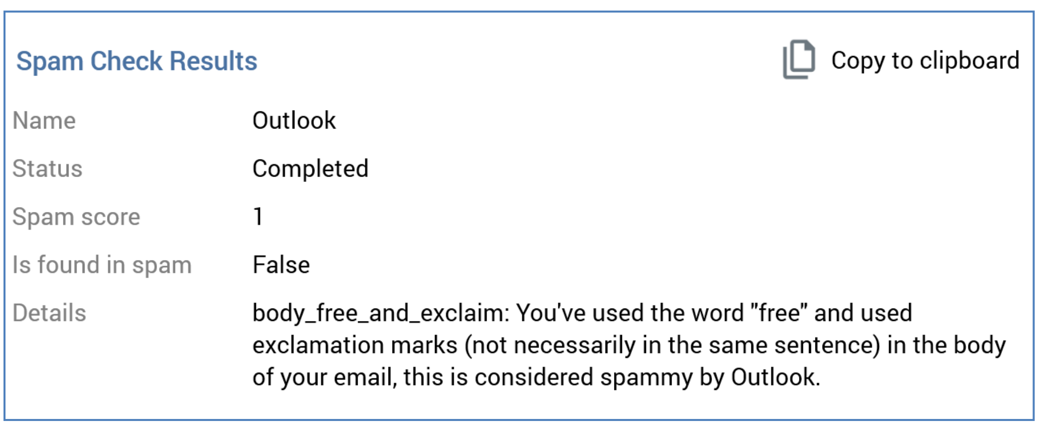
A zoom image button accompanies each image on hover. Invocation displays a larger version of the image in a fixed panel. This can be closed by clicking Close or by clicking off the panel.

- Spam Check Results tab: this tab displays spam check results.



A series of spam checker tests displayed to the left. Successful tests are accompanied by a tick, and failed tests by a cross.

When you highlight a spam test, the right-hand panel is updated with the following:



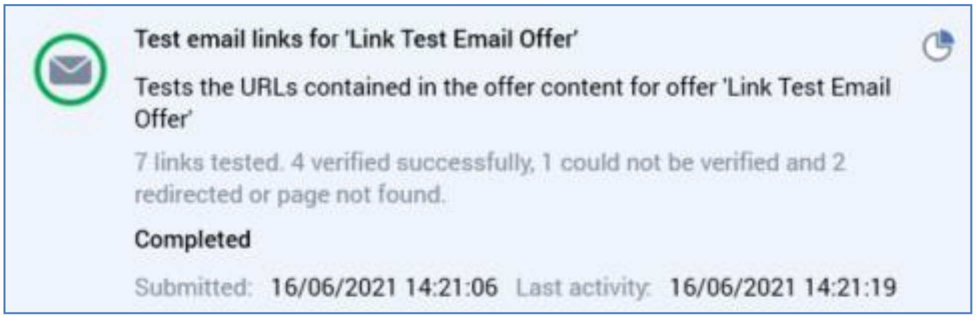
If you wish, you can copy the spam check results to the clipboard.

Clicking the Close button removes the Email Validation Results dialog from display.

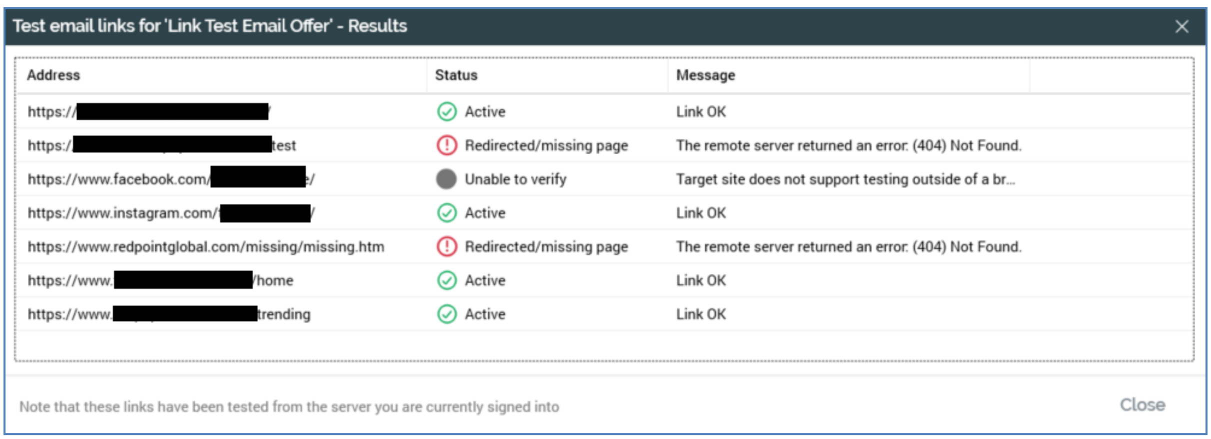
4.6.13 Email Link Test

In the Offer Designer's Email tab, clicking the Test Email Links button creates a Test email links for [offer name] job.

On completion, the job's status advises of the status of the links in the offer content.



A View Results button is available, and clicking it displays the 'Test email links…' dialog.



The dialog details the status of each link in the offer content. You can right-click an entry in the Address column to copy the link address to the clipboard.

A message at the bottom highlights the fact that the links were tested from the server to which currently connected (as opposed to the client on which RPI is running).

4.6.14 File Download

On clicking Save at the Download file via FTP or Download file from server Windows file system dialog, a Download [file name] job is created.

On the job's assuming a Download Completed status, an Open Folder button is displayed.

Note that if you close and re-open the RPI client application, the Open Folder button is replaced by a Download button; you must save the file again before the Open Folder button is displayed.

Clicking Open Folder opens Windows Explorer and highlights the downloaded file.

4.6.15 File Export

This job type is created when you export one or more files or configuration collections.

On its successful completion, an Open Folder button is available. Clicking it opens the folder to which the file(s) was or were downloaded in Windows Explorer.

4.6.16 File External Copy

This job type is created on invocation of Copy to other Clients, which can be invoked both in the context of one or more files or configuration collections.

On its successful completion, a Copy results to clipboard button is available. Invocation copies details of the success or otherwise of the copying of each file (including dependent files) to each selected client.

4.6.17 Fulfillment Test

This job type can be created in the following contexts:

- Email: the job can be created by clicking Send Test Emails in the Email tab within the Offer Designer, or by clicking the same button in the Preview…Dynamic Content dialog. Doing so creates a Send test emails for [offer name] job.

  Emails are delivered in accordance with specified options. Email addresses that appear in more than one seed group are de-duplicated. Any URL parameters defined by association of channels through which test emails are sent with PURL adapters, or any parameters added automatically to support web analytics adapters with which the channels are associated are not added to URLs contained within test email content.

- SMS: the job can be created by clicking Send Test SMS Message in the SMS tab within the Offer Designer. Doing so creates a Send test SMS message for [offer name] job.

  The SMS message is delivered in accordance with your stipulations. If duplicate cellphone numbers are targeted, they are deduplicated. Attributes are substituted in the delivered message where a seed column name matches the embedded attribute name.

4.6.18 Generate Audience From [Selection Rule]

The Generate Audience From [Selection Rule] job is created when generating a clustered audience from a standard selection rule.

On the job's completion, a View Results button is shown; clicking it displays the clustered audience's test execution results in the Insights Window.

More information on generating clustered audiences is provided in the Standard Selection Rule documentation.

4.6.19 Joins Refresh

Initiating a joins refresh (in respect of the data warehouse or an auxiliary database) in the Joins configuration interface results in the created of a Refresh Joins job.

On completion, any joins extant within the current database context that were not configured at the RPI server are created there. The job assumes a Notification Completed status. If shown, the Joins configuration interface is updated automatically.

4.6.20 Publish To Web

Execution of this job type publishes a landing page, or smart asset, to a web publish site or folder.

When objects such as realtime decision logic or images are published, if one or more values are supplied at string list system configuration setting RealtimeAPIPublishAddresses, objects are published to each address supplied at the setting. If no values are supplied for the setting, objects are published to the address specified at system configuration setting RealtimeAPIAddress.

Publish jobs are also created when saving realtime layouts, and when publishing smart assets from the Realtime Layouts interface.

Upon completion, a Copy published location to clipboard button is available. If invoked at a rule published directly to the realtime cache, a message advises that no published location is available.

4.6.21 Re-subscribe Contacts

When an email channel is selected in the Channels configuration interface, you can create a Re-subscribe contacts job by clicking the Choose contacts to re-subscribe to this channel button, specifying the contacts' email addresses in the Re-Subscribe Contacts dialog (as described in the Configuration Workbench documentation), and then clicking the Create job to re-subscribe these Email Addresses button in the same context.

Doing so creates a Re-subscribe contacts for [channel name] job.

The job removes the email addresses provided from the channel's email subscription table, and also from the email provider's subscription records.

On completion, the job's status advises of the number of contacts successfully re-subscribed at the channel.

4.6.22 Refresh Value Lists

A Refresh Value Lists job refreshes any database value lists with the latest set of values from the data warehouse.

It is executed on invocation of Save in the Value Lists configuration interface, following a change to database value list(s) therein, or as required when an audience or interaction is loaded.

Note that the Refresh Value Lists job is a system job, which is not normally shown to users.

4.6.23 Retrieve Data Viewer Results

A Retrieve Data Viewer results job is created on population of the Data Viewer. For more information, please see the Rule Designer documentation.

Note that the My Jobs Dialog is not displayed automatically at creation of this job type.

4.6.24 Rule Count

A rule count job is created on running a selection rule in the Rule Designer.

Note that the My Jobs Dialog is not displayed automatically at creation of this job type.

The job's most recent activity status displays the count of matching records retrieved.

4.6.25 Rule Export

Upon saving a selection rule export file, an Export rule '[rule name]' job is created.

On completion, its most recent activity status is set to 'Export [n] records'. Its status is set to Download Completed, and an Open File button is displayed.

Note that if you close and re-open the RPI client application, the Open File button is replaced by a Download button; you must save the report again before the Open File button is displayed. On clicking Open File, the export file is displayed.

Its contents are accordant with the associated rule, export template and export settings. If exporting a selection rule, and the selected export template contains one or more attributes from a joined table, and if the values of said attribute(s) are NULL, all rows targeted by the selection rule are exported, with blank attribute values in the export file as appropriate.

A rule export produces a single file on the RPI server, within the folder defined by client system configuration setting FileOutputDirectory or cluster setting GlobalFileOutputDirectory (as appropriate). The file's structure is defined by the selected export template. The data contained there is sourced from data warehouse records that match the criteria specified in the rule. If a selection rule, data is deduplicated in accordance with the selected export template's Deduplication property.

4.6.26 Save Workflow Diagnostics

This job type is created at invocation of Download Diagnostic information for this Workflow Instance in the Results Window. Its description is 'Saves workflow diagnostics for workflow instance ID [nnnnn]'.

The job controls the download of a diagnostics zip file, which contains a series of files that can be used e.g. in determining why a workflow failure occurred.

On the job's successful completion, an Open File Location button is shown. Clicking it displays the diagnostics zip file in Windows Explorer. The zip file contains the following:

- AuditHistory.txt
- ExecutionPlan.txt: used by the Execution Service to execute activity within the workflow.
- ExecutionSchedule.txt: the state of activity execution at the Execution Service.
- Interaction Workflow.json: a dump from the table of the same name.
- QueryTrace.txt
- ServerLog.txt
- Summary.txt: high-level summary information.
- SystemHealth.json
- For each audience/fulfillment activity:
- Audience: dump from the DataWorkflow table.
    - Instance: serialized activity details.
    - Log: relating to the current activity's execution.
- Files: the exported interaction files.
- Telemetry.txt: client telemetry information for a previous number of days defined by client system configuration setting DiagnosticsTelemetryTimespan. The file includes the following information:
    - File type usage in the last n days
    - Workflows in the last n days
    - Published files in the last n days
    - Configured channels

4.6.27 Selection Rule Waterfall

Upon saving a selection rule waterfall report from the Save Selection Rule Waterfall Report As… Windows file system dialog, a Waterfall for selection rule '[rule name]' job is created.

Following the job's completion, and assumption of a Download Completed status, an Open File button is displayed.

Note that if you close and re-open the RPI client application, the Open File button is replaced by a Download button; you must save the report again before the Open File button is displayed.

On clicking Open File, the waterfall report is displayed in Excel (which must be installed for the report to be run). A waterfall report contains:

	A	B	C	D
1	**Name:**	**High Priority Targets**		
2	**High Priority Targets**	Resolution: Customer		
3				
4		Criterion	Count	Drop Off
5		*Total available*	18,484	
6		*Group 1*	4,598	13,886
7	include	Gender is Female	9,134	9,350
8	and include	*Product Criteria*	4,598	4,536
9	**Product Criteria**	Table: DimProduct		
10		*Total available*	9,134	
11	include	ListPrice is more than £500.00	4,598	4,536
12	and include	*New list*	4,598	0
13	**New list**	Table: DimCustomer		
14		*Total available*	4,598	
15	include	*High Income*	4,598	0
16	**High Income**	Resolution: Customer		
17		*Total available*	4,598	
18				
19				
20				
21	or	*Group 2*	8,258	-3,660
22	include	*Sales Criteria*	8,258	-3,660
23	**Sales Criteria**	Table: FactInternetSales		
24		*Total available*	4,598	
25	include	SalesAmount is more than £1,000.00	8,258	-3,660
26				
27				
28				

- Initial header section, containing selection rule name and resolution level.

- Summary grid, displaying, for each criteria list within the rule:
  - Name of the criteria list
  - And/Or relationship to the previous list (if not the first list)
  - Count after application of the criteria list
  - Drop-off after application of the criteria list (if not the first list)
- For each criterion within each criteria list:
  - Name of the criterion
  - Count after application of the criterion
  - Drop-off after application of the criterion (if not the first criterion)

If configuration setting EnableNonNestedStyleWaterfallReport is set to True, the contents of the report that are rolled up using the controls to its left are instead shown inline.

	A	B	C	D
3				
4		Criterion	Count	Drop Off
5		*Total available*	18,484	
6		*Group 1*	4,598	13,886
10	or	*Group 2*	8,258	-3,660
13				
14				
15	**Name:**	**Product Criteria**		
16	**Product Criteria**	Table: DimProduct		
17				
18		Criterion	Count	Drop Off
19		*Total available*	606	
20	include	ListPrice is more than £500.00	193	413
21	and include	*New list*	116	77
22				
23				
24	**Name:**	**New list**		
25	**New list**	Table: DimCustomer		
26				
27		Criterion	Count	Drop Off
28		*Total available*	18,484	
29	include	*High Income*	18,484	0
30				
31				
32	**Name:**	**High Income**		
33	**High Income**	Resolution: Customer		
34				
35		Criterion	Count	Drop Off
36		*Total available*	18,484	
37				
38				
39	**Name:**	**Sales Criteria**		
40	**Sales Criteria**	Table: FactInternetSales		
41				
42		Criterion	Count	Drop Off

Waterfall

4.6.28 Stage Email Offer Content

This job type is created on invocation of Stage Email Offer Content at an email offer.

Upon its successful completion, you can copy the publish location to which the email offer content was staged using the Copy published location to clipboard button.

4.6.29 Unpublish

Execution of this job type unpublishes a landing page or smart asset from a web publish site or folder.

An unpublished landing page or smart asset's files are deleted; however, any relevant cached details are not removed from the realtime cache.

4.6.30 Update Table In The Cache

This job type is created when you click the Create new job to update the cache button in the Cached Attribute Lists configuration interface.

The job updates the realtime cache with the latest data for the cached attribute list's attributes from the database.

4.6.31 Upload Asset to ECP

Invocation of Copy to External Folder at a file in the File System Dialog creates this job type (where 'ECP' stands for 'External Content Provider').

4.6.32 Upload File to ECP

This job type is created on invocation of Upload to Folder at an external folder in the File System Dialog (where 'ECP' stands for 'External Content Provider').

4.6.33 Validate and Load File

This job type is created on invocation of Validate and Load at the Data Source Designer.

4.6.34 Validate Channels

When you save a newly-created email channel, or when an existing email channel's Recipient email address field is changed, a Validate channels job is created.

The job creates a join is between the email suppression table (as defined by system configuration setting EmailUnsubscribersTable) and the Recipient email attribute's resolution table.

The following additional columns are added to the offer history table if they if do not exist already:

- Selected
- Sent
- Delivered
- Opened
- Unsubscribed
- ClickThrough
- HardBounced
- SoftBounced

These columns are used to store additional channel-specific state information – for example, indicating whether an individual clicked on a URL in an email delivered via an email channel.

Following the job's completion its status is set to Completed, and a View Results button is shown. Clicking the button displays the Channel Validation Results dialog, which details the nature of any issues that occurred during the job's execution.

4.6.35 Validate Audience Definitions

When you save a newly-created audience definition or make changes to an existing audience definition's offer history table or transactional configuration, a validate audience definitions job is created.

It is the job's responsibility to ensure that the offer history tables within the data warehouse match the stipulations made within the audience definitions.

Following the job's completion its status is set to Synchronization Completed, and a View Results button is shown. Clicking the button displays the Audience Definition Validation Results dialog, which details the nature of any issues that occurred during the job's execution.

4.6.36 Validate SQL Expression

This job type is created upon validation of a SQL Expression attribute, or custom SQL expression within a standard selection rule.

4.6.37 Workflow Waterfall Report

Upon saving a workflow waterfall file from the Save Waterfall Report As… Windows file system dialog, a Waterfall for workflow instance [ID] job is created.

On completion, its status is set to Download Completed, and an Open File button is displayed.

Note that if you close and re-open the RPI client application, the Open File button is replaced by a Download button; you must save the report again before the Open File button is displayed.

On clicking Open File, the waterfall report file is displayed in Excel (which must be installed for the report to be run). It contains the following:

- Summary tab: this tab displays the following information:

Interaction Name:	0.806
Trigger Name:	Manual
Start Date:	February 15 2016 10:21:32
Last Event Date:	February 15 2016 10:21:58
Workflow ID:	1629
Execution Mode:	Production

Fulfillment Summary

Offer Channel Name	Activity	Channel	Fulfillment Option	Count
Data Extract	Data Extract Offer	Data Extract	Data Extract Offer-Data Extract	4167

  - Interaction Name
  - Trigger Name
  - Start Date
  - Last Event Date
  - Workflow ID
  - Execution Mode
  - Fulfillment Summary: for each fulfillment activity, the following are shown:
    - Offer Channel Name
    - Activity
    - Channel
    - Fulfillment Option
    - Count

- One tab per results-producing activity.

Activity Name:	Credit Card Targets 3
Activity Type:	Batch audience
Start Date:	June 08 2017 14:24:21
Last Event Date:	June 08 2017 14:24:32
Input Activity:	No data input
Total Count:	18297

AUDIENCE SUMMARY

Segment Summary

Name	Expiry_Date	Segment_Type	Execution_Code	Qualifying_Code	Geography_Code	Count
Medium Model Score	8/9/2016	A	1			6286
Low Model Score	8/9/2016	A	1			3216
Tier 2 Applicants	8/9/2016	A	1			5587
Low-M	8/9/2016	A	1			551
Low-F	8/9/2016	A	1			502
Medium-M	8/9/2016	A	1			671
Medium-F	8/9/2016	A	1			635
High-M	8/9/2016	A	1			425
High-F	8/9/2016	A	1			424

Audience Block Summary

Name	Input	Count
Suppressions	Initial Credit Card Audience	18297
High Model Score	Suppressions	3208
Medium Model Score	Suppressions	6286
Low Model Score	Suppressions	3216

The following are common to all activity tabs:

- Activity Name
- Activity Type
- Start Date
- Last Event Date
- Input Activity
- Total Count

In addition, the following additional information is displayed for specific activity types:

- Batch audience:
  - Audience Summary
    - Input Filters: Activity, State(s)
  - Segment Summary: one row is displayed per segment. For each row, the following are shown:
    - Name

        - One column per metadata attribute
        - Count
    - Audience Block Summary: one row is shown per audience block. For each block, the following are shown:
        - Name
        - Input
        - Count

      The following additional information is shown at suppressions blocks:

        - Total before suppressions
        - [Suppression 1]
        - [Suppression n]
        - Total after suppressions
  - Interactive activity: the tab is displayed as per a batch audience if the activity is configured with an audience. If not, the Audience Block Summary is not shown.
  - Offer:
    - Input Filters
    - Fulfillment Channels: the following are shown for each channel:
        - Offer Channel Name
        - Channel
        - Fulfillment Option
        - Count
        - State Results: the following are shown for each state result:
        - Name
        - Category
        - Count
    - [Email offer only] - Specific Link Clicks: for each specific link clicked, the following are shown:
        - Name

        - Count
    - Export: the tab is displayed as per an offer

5 RPI Realtime

RPI Realtime consists of a suite of functionality that allows you to make decisions about the most appropriate content to be displayed to a person of interest in real time.

Typically, RPI Realtime is used to make such decisions in the context of a web page (either an RPI landing page, or an externally-hosted web page), with the most appropriate content being rendered to a page visitor. However, its capabilities extend beyond this use case, with the RPI Realtime API (Application Programmer's Interface) facilitating leverage of its capabilities in a range of contexts – e.g. Internet of Things (IoT) devices and inbound call centers.

This document consists of the following sections:

- Using RPI Realtime: describes the contexts in which RPI Realtime can be used.
- Building up visitor profiles: explains how each unique visitor is assigned their own visitor profile, in which details of their known data and actions can be stored.
- Making realtime decisions: discusses how the entities provided by RPI can be leveraged to make sure that the most appropriate content is displayed.
- RPI web forms: describes how web forms created in RPI can be used to elicit information from site visitors.
- RPI web events: gives an insight into the types of visitor activities that are monitored by RPI Realtime.
- RPI Realtime and the data warehouse: discusses how RPI Realtime reads data from and writes data to RPI's marketing data store.
- RPI Realtime Architecture: gives an overview of the structure of and technologies behind RPI Realtime's architecture.
- RPI Realtime Audit

5.1 Using RPI Realtime

RPI Realtime functionality can be used to increase the appropriateness of content rendered within a website, through the application of rules when a page is viewed.

RPI Realtime functionality can be used in RPI landing pages. Its functionality can also be invoked from any other web page in which required using the realtime JavaScript web client. Please note that the setup and use of the JavaScript web client is documented in a separate dedicated set of documentation found in Deployment Files in the following directory:

DeploymentFiles\InteractionRealtimeAPI\RPIFormValidation\shared\js\rpiwebclient\documentation\index.html

In addition, developers of other applications can invoke the functionality by making direct HTTP POST or GET method calls to the RPI Realtime API, meaning that invocation of RPI Realtime functionality is not limited to web pages alone.

5.1.1 Using RPI Realtime in Landing Pages

The simplest path to using RPI Realtime functionality is through the use of RPI landing pages. These are web pages that are created in RPI, then published to a specified website. Full details of landing pages can be found in the Landing Page Designer documentation.

When you publish a landing page, the page will automatically contain all of the JavaScript necessary to invoke RPI realtime functionality.

Landing pages controlled by RPI Realtime are published to the address defined at system configuration setting RealtimeAPIAddress.

5.1.2 Using RPI Realtime in External Web Pages

When using RPI Realtime in a non-RPI landing page, it is necessary to add script manually to web pages to invoke its functionality.

The scripts required for utilizing dynamic content can be generated at an RPI smart asset. For full details of smart assets, please see the Smart Asset Designer documentation.

5.1.3 RPI Realtime in External Applications

An external application can make calls to the methods exposed by the RPI Realtime API. This opens a host of possibilities – for example, a call center application could invoke RPI Realtime to present the most appropriate offer to an inbound caller.

5.2 Building Up Visitor Profiles

Every known and anonymous visitor to a web page tagged using RPI Realtime's JavaScript web client, and a call made directly to an RPI Realtime API method, results in the building up of a unique profile per discrete individual. Note that profiles are built up on a per-device basis, so if the same person views a web page in Chrome and also in Firefox, she or he will be treated as two visitors by RPI.

Visitor profiles are stored in an in-memory realtime cache. This means that latency is minimized when making decisions based on the information in the visitor profile.

A visitor's profile can also be built up through the execution of realtime cache offers, and through database lookups using cached attribute lists.

5.2.1 Populating the Visitor Profile

Visitor data in the form of name/value pairs can be added to the visitor profile through a variety of methods:

- Querystring parameters: if a visitor navigates to a web page tagged by RPI Realtime using a URL to which querystring parameters have been appended, the parameters' name/value pairs will be added to the realtime cache.

  For example, navigating to 'http://mylandingpage.com?CustomerKey=12345' will result in the addition of value '12345' for attribute 'CustomerKey' to the visitor profile.

- Web form submission: on submission of an RPI web form, the data entered by a visitor within the form will be added to his or her visitor profile if the RPI Realtime web.config setting CacheWebFormData is set to True.

- A call to the RPI Realtime API:

  - api/Cache/Visit
  - api/Decisions/[endpoints]

- The Realtime JavaScript web client provides methods for pushing data in the visitor profiles. In addition, the web client allows for the configuration of "Realtime Lenses" which are mechanisms for capturing and storing Realtime parameters based on the various sources from a web page. Full details on Realtime lenses can be found in the web client documentation in Deployment Files in the following directory: DeploymentFiles\InteractionRealtimeAPI\RPIFormValidation\shared\js\rpiwebclient\documentation\index.html. The following is a summary of the available Realtime lenses:

  - Storage Lens: allows the use of web site cookies and local storage values to be collected and stored as parameters in the Realtime profile
  - JavaScript Lens: allows the use of site JavaScript variables or objects values to be collected and stored as parameters in the Realtime profile

- Search Lens: allows URL query string parameters to be collected and stored as parameters in the Realtime profile. This extends the capture of Querystring parameters described in the first bullet point by providing the ability to rename the parameters as desired.
- Path Lens: allows parts of a web page URL path to be collected and stored as parameters in the Realtime profile
- Form Lens: allows form field values to be collected and stored as parameters in the Realtime profile. Extends the form submission functionality described above by providing the ability to be more selective about which fields are stored as well as providing the ability to rename the parameters as desired
- DOM Lens: allows elements of the DOM to be collected and stored as parameters in the Realtime profile

Data from the data warehouse can also be added to the visitor profile through the following mechanisms:

- Data can be retrieved from the data warehouse and stored in the visitor profile at a visitor's identifying him- or herself to RPI, through the use of a cached attribute list. A cached attribute list is a list of RPI attributes, managed within a dedicated configuration interface in RPI. Identification of a visitor can occur:
  - At submission of a web form, when the web form is associated with a cached attribute list.
  - On receipt of a name/value pair (e.g. through a querystring parameter) when the name maps to an entry within the RPI Realtime ParameterToDataMappings web.config setting (see Appendix A for details of RPI Realtime web.config settings).
  - Via a call to the RPI Realtime API:
    - api/Cache/CachedAttributes
- Cached attribute lists can also be used to store 'virtual lookup tables' in the realtime cache. Calls to the data warehouse to retrieve visitor data can be avoided through the usage of this mechanism.
- Visitor profile data can be populated in advance of site visits through the execution of a realtime cache offer. This offer type is executed in the Interaction Designer workflow, within which an audience is used to define the list of potential site visitors for whom profile data is to be loaded. A realtime cache offer is subsequently executed against the audience. Data, the structure of which is defined by the realtime cache offer, is retrieved from the data warehouse and stored in visitors' profiles in the realtime cache. This data is then available when making decisions about content to be rendered to site visitors.
- Visitor profile data can also be populated in batches via the RPI Realtime API:
  - api/Cache/Visitors/CachedAttributes

5.2.2 Visitor ID Management

Each unique unknown visitor of which RPI Realtime becomes aware is by default assigned a GUID identifier, which is used to key their visitor profile. The visitor ID is stored in a cookie to ensure its maintenance across sessions.

When a visitor makes her- or himself know to RPI (via one of the mechanisms listed above), the GUID is replaced with one of a configurable set of IDs. These are defined using the following RPI Realtime appsettings.json configuration settings:

- MasterKeyName: this setting facilitates the definition of the name of the principal key to be used to identify known visitors' profiles.

  For example, when 'CustomerKey' is defined as the master key, navigating to 'http://mylandingpage.com?CustomerKey=12345' will result in the visitor's profile being keyed on CustomerKey, with value '12345'.

- MasterKeyAliases: this setting facilitates the definition of an array of alternative names for the master key. For example, a 'CustomerKey' master key might be referenced as 'CK' in a querystring (e.g. 'http://mylandingpage.com?CK=12345'.

- AlternativeKeys: this setting provides the ability to specify alternative keys that can be used to identify a visitor. The link between the master key and alternative keys can be established by:

  - A querystring's containing both sets of name/value pairs.

  - Populating the realtime cache using either a cached attribute list or realtime cache offer containing both the master and additional keys.

If a previously-unknown visitor already has a visitor profile, and is identified using one of the keys listed above, the existing profile is updated with the new visitor ID. In addition, if contents of the unknown visitor profile are merged with any existing known visitor profile, to create a single, unified visitor profile per visitor.

When two profiles are merged, details of the same stored in visitor profile to which merged; e.g.:


```
"Merge":[{"fid":"c371b2e2-fb6b-4788-b274-
376ae57dca80","tid":"11000","dir":"MergeFrom","mst":"True","mDate":"20
21-03-30T08:35:30.7518212+01:00"}].
```


In addition, if appsettings property EnableProfileMergeEvents is set to true, a ProfileMerge event is raised. If TrackProfileMergeInSourceProfile is set to true, the profile from which merged is updated with the merge details.

A HashVisitorID appsettings property can be used to obfuscate visitor IDs as returned in calls from the RPI Realtime API.

5.3 Making Realtime Decisions

One of RPI Realtime's primary tasks is to decide upon the most appropriate content to be served in a given context. To make this decision, content has to be created and rules implemented to define when it should be rendered. These tasks are carried out in the RPI client application, using the following file types:

5.3.1 Realtime Decisions

Realtime decisions are the basic sets of rules that govern when content should or not be shown. Realtime decisions are created and edited in the Rule Designer. A number of types of realtime decisions are supported; notable types include:

- Database: allows you to define rules based on attribute values sourced from a visitor profile. For example, you might wish to target an offer based on a known visitor's income.
- Offer: allows you to define rules based on a visitor's previous receipt (or otherwise) of an RPI offer.
- Web Events: allows you to define rules based on a visitor's interactions with a website, such as page visits and link clicks.

Full details of realtime decisions can be found in the Realtime Decisions documentation.

5.3.2 Smart Assets

Smart assets are built and managed in the Smart Asset Designer. Smart assets allow you to define a series of content elements, and associate applicability rules with each.

For example, you might have a 'Credit Card Image' smart asset, containing 'Platinum', 'Gold' and 'Silver' image content elements. Each might be associated with a separate database realtime decision, which targets on the basis of 'High', 'Medium' and 'Low' income. If a known visitor browses a web page containing the smart asset, RPI Realtime is able to discern their income as 'Medium', and hence render the 'Gold' credit card image.

Smart assets can be published directly from the Smart Asset Designer. Typically, you would do so to leverage their capabilities in an external web page or application. When you publish a smart asset, for each content element that it contains:

- The rules in each associated realtime decision are published to the realtime cache.
- Content is published to one of:
    - The default or a specific content location
    - The realtime cache (only if text)

You can also generate scripts to leverage published smart assets in external contexts. This is also carried out in the Smart Asset Designer.

When objects such as realtime decision logic or images are published, if one or more values are supplied at string list system configuration setting RealtimeAPIPublishAddresses, objects are published to each address supplied at the setting. If no values are supplied for the setting, objects are published to the address specified at system configuration setting RealtimeAPIAddress.

Full details on smart assets can be found in the Smart Asset Designer documentation.

5.3.3 Advanced Smart Assets

Advanced smart assets are a specialized type of smart asset, and are also managed in the Smart Asset Designer. They allow you define:

- A series of 'variants', and default content for each. A variant might represent a web page element, such as a hero image or header.
- A series of messages, at which content can be defined for each variant.
- Qualification rules, attached to messages within the advanced smart asset. When the rules attached to a message are satisfied, the content associated with each variant can be rendered.

  The following qualification rules are supported:

  - Message rule: the rule is satisfied if the visitor meets the criteria defined within a related selection rule or realtime decision.
  - Local history rule: a visitor's previous receipt of messages – both inbound and outbound – is stored in their visitor profile. A local history rule is satisfied on a visitor's having (or having not) previously received a message served by the current advanced smart asset.
  - External history rule: an external history rule is satisfied on a visitor's having (or having not) previously received a message served by an advanced smart asset other than the current asset.

Full details on advanced smart assets can be found in the Smart Asset Designer documentation.

5.3.4 Goal smart assets

Goal smart assets are created and managed in the Smart Asset Designer. A goal smart asset facilitates realtime A/B/n and machine learning-based optimization.

A landing page or external web page will have a defined goal. A goal is a web event such as 'Link Click'. A goal smart asset must be configured with at least two pieces of content. In an A/B/n test, winning content is determined statistically as the content most likely to result in the goal being met and served to subsequent site visitors, with ongoing testing of a holdout group continuing thereafter. When machine learning is used, a site visitor's profile is used to determine the most efficacious content to be rendered to assist in driving him or her to achieve a goal.

A goal smart asset can be published automatically when included in an RPI landing page or can be published independently for use in external web pages and applications.

Full details on goal smart assets can be found in the Smart Asset Designer documentation.

5.3.5 Landing Pages

RPI landing pages are created and managed in the Landing Page Designer.

They can be used to host content entered directly at the page. In addition, the following can be embedded in landing pages:

- Assets: text, HTML and image
- Smart assets
- Goal smart assets
- Web forms
- Attributes: if you include RPI attributes in landing page content, on the page's being rendered to a visitor, if matching attributes are present in the realtime cache, they are used to customize page content.

Landing pages can be published from the Landing Page Designer. When you publish a landing page, you automatically publish all embedded files contained therein. On its being published, an RPI landing page automatically contains all of the JavaScript necessary to invoke RPI realtime functionality.

Full details on landing pages can be found in the Landing Page Designer documentation.

5.4 RPI Web Forms

RPI web forms are created and managed in the Smart Asset Designer.

Web forms can be hosted inside landing pages, published to a website and then used to capture data from both anonymous and known visitors.

Web forms support a number of form elements that can be customized to capture a variety of data. On submission of a web form and following execution of the Web form processor system task, data entered therein is written to tables within the RPI data warehouse, where it can be leveraged for later communication purposes. The submitted data can also be written to a visitor's profile in the realtime cache.

You can also generate script in the web form Asset Designer to allow you to leverage an RPI web form in an external web page.

If you associate a web form element with a cached attribute list, on the form's submission the value submitted at the element will be used as a lookup key to retrieve data defined by the cached attribute list and load it into the realtime cache.

5.5 RPI Web Events

RPI Realtime automatically records details of the following web events in a visitor's profile:

- Page visit
- Link click
- Form submission

In addition, the following states, which are also made available by default, require configuration of Realtime Plugins in order to be leveraged in the tool.

- Recent Items:
  - Add Item
  - Clear
  - Remove Item
  - Update All Items
- Shopping Cart:
  - Add Item
  - Clear
  - Remove Item
  - Update All Items
  - Update Quantity

For more information, please contact Redpoint Support.

You can also define any other required custom web event states and metrics in a Web Events Adapter. Having done so, call to the RPI Realtime API can be used to record state or metric values for a site visitor.

Web events adapters can be associated with a landing page to define goals for a page. Goals can be used in realtime decisions or by goal smart assets.

Web events standard and custom states and metrics can be used:

- To trigger action within an RPI interaction workflow. For example, an interactive activity might monitor for visitors' clicking on a specific link, and initiate action on the occurrence thereof.
- For reporting purposes in the following contexts:

- Interaction results
- Realtime Tracker
- Realtime Details

- To make realtime decisions using a web events decision.
- When defining goals in a goal smart asset.

5.6 RPI Realtime and the Data Warehouse

Data captured due to site visitors' interactions with RPI landing and other web pages, and stored in the realtime cache, can then be persisted in a series of tables in the RPI data warehouse.

The following tables are used to record data gathered in respect of visitors' submission of web forms:

- RPI_WebForm

  Stores details of RPI web forms.

  - FormID: unique identifier of a web form.
  - FormName: name of a web form.
- RPI_WebFormSubmission

  Stores records of visitors' submissions of RPI web forms.

  - FormSubmissionID: unique ID representing a visitor's submission of a web form.
  - FormID: unique identifier of a web form.
  - SubmissionDate: date and time at which a web form was submitted.
  - EmailAddress: email address captured at web form submission.
  - ChannelExecutionID: unique ID representing an instance of outbound fulfilment having been undertaken by RPI.
  - RPContactID: unique ID referencing an RPI offer history record.
  - VisitorID: ID uniquely identifying a site visitor.
  - PublishHistoryID: unique ID representing the publishing of an RPI web form.
  - Fields: when system configuration setting FormSubmissionPersistFieldsAsJSON set to true, this field is used to persist form fields as JSON.
- RPI_WebFormFieldSubmission
  - Stores records of values captured for specific RPI web form fields at web form submission.
  - FormFieldSubmissionID: unique ID associated with capture of data within a specific form field.
  - FormID: unique identifier of a web form.
  - FieldName: name of the field.

- FieldValue: data captured in the field.

Data in these contexts is collated using the Web Form Processor system task.

The following tables are populated by the Web Cache Data Importer task:

- RPI_WebVisitors

  Persists details of RPI Realtime visitors.

  - VisitorID: ID uniquely identifying a site visitor.
  - FirstVisitDate: date and time of first visit by a visitor.
  - LastVisitDate: date and time of most recent visit by a visitor.

- RPI_WebVisitorsDecisions

  Persists details of decisions made in respect of RPI Realtime visitors.

  - VisitorID: ID uniquely identifying a site visitor.
  - DecisionID: publish ID uniquely identifying the RPI file in respect of which a decision was made.
  - ContentName: RPI file name.
  - DecisionResult: ordinal number of content served.
  - PageInstanceID: unique ID of instance of landing page in which decision made, or unique ID of interaction activity if decision made in outbound realtime mode.
  - DecisionDate: date and time when decision was made.
  - DeviceID: ID of the device to which content was served.
  - ResultID: unique ID representing the instance of the content's being served to the visitor.
  - DecisionContent: stores text content published to the cache (up to a maximum of 100 characters). If more than 100 characters are returned, nothing is stored in this column.
  - ContentPath: populated if content published to a web publish site.
  - ContentFormat: one of TEXT, HTML, JSON or XML.
  - ContextName: populated if content published using a context.
  - ContextSlotName: populated if content published using a context slot (if only a context supplied, set to 'rpidefault'.
  - DefaultResult: ordinal number of default content to be served (if appropriate).

- Source: e.g. landing page name, ‘API’.
- ImpressionID: ID representing a visit to e.g. a web page. Note that a given impression may reference multiple results.

- RPI_WebVisitorsParameters

  Persists details of parameters passed in respect of RPI Realtime visitors when making calls to API endpoints.

  - VisitorID: ID uniquely identifying a site visitor.
  - FieldName: name of parameter.
  - Value: parameter value.
  - UpdateDate: date and time of capture of parameter value.
  - DeviceID: ID of the device to which content was served.

  A CacheOutputExclusions array property within the RPI Realtime appSettings file allows you specify one or more parameter names. Inclusion of a parameter name within the setting results in its being ignored when the Web Cache Data Importer task populates RPI_WebVisitorsParameters.

- RPI_WebVisitorsScores

  Persists details of RPI Realtime visitors’ decision scorecard scores.

  - VisitorID: ID uniquely identifying a site visitor.
  - ScorecardIdentifier: identifier property, captured at decision scorecard toolbox.
  - PublishID: ID of smart asset in which decision scorecard utilized.
  - Score: score assigned to the visitor in this context.
  - UpdateDate: date and time of score’s being captured.
  - DeviceID: ID of the device to which content was served.

- RPI_WebPages

  Persists details of landing or external web pages visited by RPI Realtime visitors.

  - VisitorID: ID uniquely identifying a site visitor.
  - PageName: name of the page.
  - PageInstanceID: RPI landing pages only; represents unique instance of publishing of the same.

- VisitDate: date and time of page visit.
- DeviceID: ID of the device to which content was served.
- ImpressionID: typically a unique viewing of a page by a visitor.
- HostDomain: domain of site hosting the web page.

- RPI_WebGoals

  Persists details of goal smart asset goal attainment by RPI Realtime visitors.

  - VisitorID: ID uniquely identifying a site visitor.
  - GoalName: name of the goal.
  - PageInstanceID: RPI landing pages only; represents unique instance of publishing of the same.
  - AttainedDate: date and time at which the goal was attained.
  - DeviceID: ID of the device to which content was served.

- RPI_WebEvents

  Persists details of RPI web events. The table is populated if system configuration settings WebCacheOutputEventData is set to True.

  - VisitorID: ID uniquely identifying a site visitor.
  - DeviceID: ID of the device to which content was served.
  - ImpressionID: typically a unique viewing of a page by a visitor.
  - EventTime: date and time of the event's occurrence.
  - EventName: name of the event.
  - EventDetail: additional detail captured along with an event (e.g. the URL associated with a Link Click event).
  - MetricValue: numerical value captured along with an event.
  - RPContactID: unique ID referencing an RPI offer history record.
  - ChannelExecutionID: unique ID representing an instance of outbound fulfilment having been undertaken by RPI.
  - PageInstanceID: RPI landing pages only; represents unique instance of publishing of the same.
  - SourceReference: URL (external page only)

    - EventMetadata: any metadata associated with the event (list of name/value pairs).

- RPI_WebDevices

  Stores details of devices upon which RPI Realtime content viewed.

    - VisitorID: ID uniquely identifying a site visitor.
    - IPAddress: the visitor's IP address.
    - UserAgent: user agent string, as provided by the visitor's device.
    - FirstVisitDate: date and time of first visit by a visitor.
    - LastVisitDate: date and time of most recent visit by a visitor.

The following tables are used to persist file metadata captured at publish:

- RPI_WebForm_Meta
    - PublishHistoryID: unique ID representing the publishing of an RPI web form.
    - PublishDate: date and time at which the web form was published.
    - FormName: name of the web form.
    - FormMeta: any RPI file metadata captured in respect of the web form (list of name/value pairs).
- RPI_WebPages_Meta
    - PageInstanceID: RPI landing pages only; represents unique instance of publishing of the same.
    - PublishDate: date and time at which the landing page was published.
    - FileName: file name of the landing page.
    - PageName: page name of the landing page.
    - SiteName: name of the RPI web publish site to which published.
    - SiteFolderName: name of the folder within the same.
    - PageMeta: any RPI file metadata captured in respect of the landing page (list of name/value pairs).
- RPI_WebDecisions_Meta
    - PublishHistoryID: unique ID representing the publishing of a smart asset.
    - DecisionID: publish ID uniquely identifying the RPI file in respect of which a decision was made.

- DecisionResult: ordinal number of content served.
- LastPublishDate: date and time of asset's most recent publishing.
- DecisionMeta: any RPI file metadata captured in respect of the smart asset (list of name/value pairs).

5.7 Writing Realtime Data to Files

As well as writing realtime cache data to the data warehouse, the Load web cache data task can also be used to write the same data to a file. This occurs when system configuration setting WebCacheOutputToFile is set to True.

The folder destination to which realtime cache data is written is defined by system configuration setting WebCacheOutputToFilePath.

- If set, realtime cache data is written to the folder defined by this setting.
- If not set, realtime cache data is written to a file in the folder defined by client system configuration setting FileOutputDirectory or server setting GlobalFileOutputDirectory (as appropriate), within a subfolder called WebCacheOutput.
- If set to an invalid value, realtime cache data is not written to a file.

The file is named in accordance with the following pattern:

```
'RPIWebCache' + [yyyyMMdd] + '.txt'
```

A new file is created every day, and its contents are written in JSON format. When data is changed, only updated values are written to the file.

If system configuration setting WebCacheOutputEventData is set to True, the data written to the file includes web events data.

If WebCacheOutputToFile is set to False, cached data is not written to a file.

5.8 RPI Realtime Authentication

Each RPI Realtime endpoint method is linked to a role. Roles are used in both types of authentication supported at the RPI Realtime API:

- Static Token
- OAuth

Each of these is discussed separately below.

5.8.1 Static Token Authentication

The following section appears at the appsettings.json configuration file. It allows you to specify whether an RPIAuthKey authentication token needs to be passed when making calls to API endpoint methods that require the roles listed therein.

```
"BasicAuthenticationRequireToken":
    {
    "Standard": false,
    "Forms": true,
    "ListenerQueue": true,
    "Recommendations": true,
    "Views": true
    }
```

In this case, methods protected by the Standard role do not require an RPIAuthKey authentication token, whereas those protected by the Forms role do require a token.

If authentication is not satisfied when calling a method, the following body is returned:

```
{
"Message": "Authorization has been denied for this request."
}
```

The return's status is 401 Unauthorized.

5.8.2 OAuth Authentication

To enable RPI Realtime OAuth authentication, the following must be carried out:

Database

A Realtime authentication database must be made available, and tables created therein through running the following SQL script:

DeploymentFiles\SQL Server\Useful Scripts\Realtime\Realtime.sql

Configuration

The EnableOAuth setting must be set to 'true' at the RPI Realtime API web.config file:

```
<setting name="EnableOAuth" serializeAs="String">
    <value>True</value>
</setting>
<setting name="OAuthTokenTimespan" serializeAs="String">
    <value>1209600</value>
</setting>
<setting name="RootServiceURL" serializeAs="String">
    <value />
</setting>

<connectionStrings>
    <add name="DefaultConnection"
connectionString="Server=localhost;Database=RPIRealtime;Integrated
Security=true;ConnectRetryCount=12;ConnectRetryInterval=10"
providerName="System.Data.SqlClient" />
</connectionStrings>
```

- OAuthTokenTimespan: token's lifetime, in seconds.
- RootServiceURL: Realtime API home page address; used when authenticating using OAuth at Swagger.

When using OAuth authentication, the RPI Realtime website's application pool user requires access to the Realtime authentication database.

Note that, once OAuth authentication is enabled, it takes precedence over the usage of static token authentication.

Token Endpoint

To use RPI Realtime with OAuth, the RPI Realtime Token endpoint ([Realtime server]/token) must be called, and a username and password passed to the same. The endpoint is used to obtain a bearer token, which is a time-limited token that defines the user making subsequent calls to Realtime API endpoints. The roles associated with the bearer token are defined at point of its generation. Note that, if roles change, you will need to generate new a token to pick up the changes.

The following should be passed in the call to the token endpoint:

- Headers:
    - Content-Type: application/x-www-form-urlencoded
- Body:
    - x-www-form-urlencoded
    - Keys:
        - grant_type: password
        - username
        - password

The following represents an example of a bearer token returned by the endpoint:


```
{
    "resource": "resource-server",
    "token_type": "Bearer",
    "access_token":                   "CfDJ8IbSSMi3VZdJnFSayQaR4O5WqBuu-
oif0HYOBsO6ChiE3wEI9ojNuSFed9xNPEmvRsS6yLKp-
s7WBeSmXM415McSFc3fYSDYa8ZL0lsNnVksgZzb2AZSR3hEhhfmE4HEIJpM_r29pvuCwZP
sMiLIzj8NSwuUNNhk-Bk5A4p6hAVE7Q1oQr0xBGQcGAwoA-
ipBiRGQOnWxGUd9cbM7rC7a2SYQD0bRYUd6JTIbWLDrmLmXPYyebjSxVyYw18TbIiVQh3O
AvF6g0mPcMWTCTHwjw9PzukiiRjhVgSyq7FPjq_KBvDb012quHeqQJ9TaDGHqLxZ8I0UoO
oOry38gD5jeF1PxljZ6LuVO6ot8wevtpK8KZwY15aTbfgPGEtMrIihIFNgVWzlDwwS7f0t
7erEVxkn9ODmn32v6W401vqthn3R4m6ZMWSAyR8EhbwYdSurE4M65EH1ENPbU6nyjMYgSp
ngaHUaid7M84bhtGZJe5sVPm1Zzkh2xvbAsPQ99QbifPP0Xhq3ilrm5PEHD5ox8J7Xo5j8
iAyNpiChg24Nh-
2VQmsyL5RN_ZAYbmf2w0MOc9pse2YEcbIlr4L088op3roYA8qmAnnCc91MIkhSRcvtIYKL
L-
IJ0yB02daxO_zkxVSQukv8jd9TdVz48uN3Z0fTTLXYEPBsGtUsbY_QnD8ZLc1aMSBu8jcD
QWcwh11hQq6YRrHZ8M5BeMx8bi-St61n5do5WA7x-
EzW0HYTAXG7BGLrtT2mlTJrcctDza3Pm41p12FQFQmgIqDBbamiyvc",
    "expires_in": 1209600
}
```


<u>Users</u>

Two users are provided out-of-the-box for use when using RPI Realtime with OAuth

- coreuser: associated with all roles.

- standarduser: associated with the Standard, Forms, ListenerQueue and Recommendations roles.

Default passwords for the above are available on request.

The following roles are supported:

- Administrator
- Forms
- Interaction
- ListenerQueue
- Recommendations
- Standard
- System
- Views

The RPI Realtime documentation includes details of the roles required to access specific endpoints.

User Management Endpoints

The following Account endpoint are provided to facilitate management of RPI OAuth users:

- POST /api/Account/Register: creates a new user.
- GET /api/Account/Users: gets the list of user names.
- delete /api/Account/Users/{userName}: deletes a user.
- GET /api/Account/Users/{userName}/Roles: gets the roles assigned to a given user.
- POST /api/Account/Users/{userName}/Roles: update the roles assigned to a given user.
- POST /api/Account/Users/ResetPassword: resets the password for a given user.
- POST /api/Account/ChangePassword: changes the password for the current authenticated user.

Full details of the above are provided at the RPI Realtime online documentation.

RPI OAuth User

RPI itself requires OAuth user credentials, which are used when e.g. publishing content. The credentials are set using the following client-level system configuration settings:

- RealtimeAPICredentials
- RealtimeAPIUseCredentials

Note that the RPI user must be associated with the Interaction role.

5.9 RPI Realtime Architecture

The following sections describe RPI Realtime's components.

5.9.1 RPI Realtime API

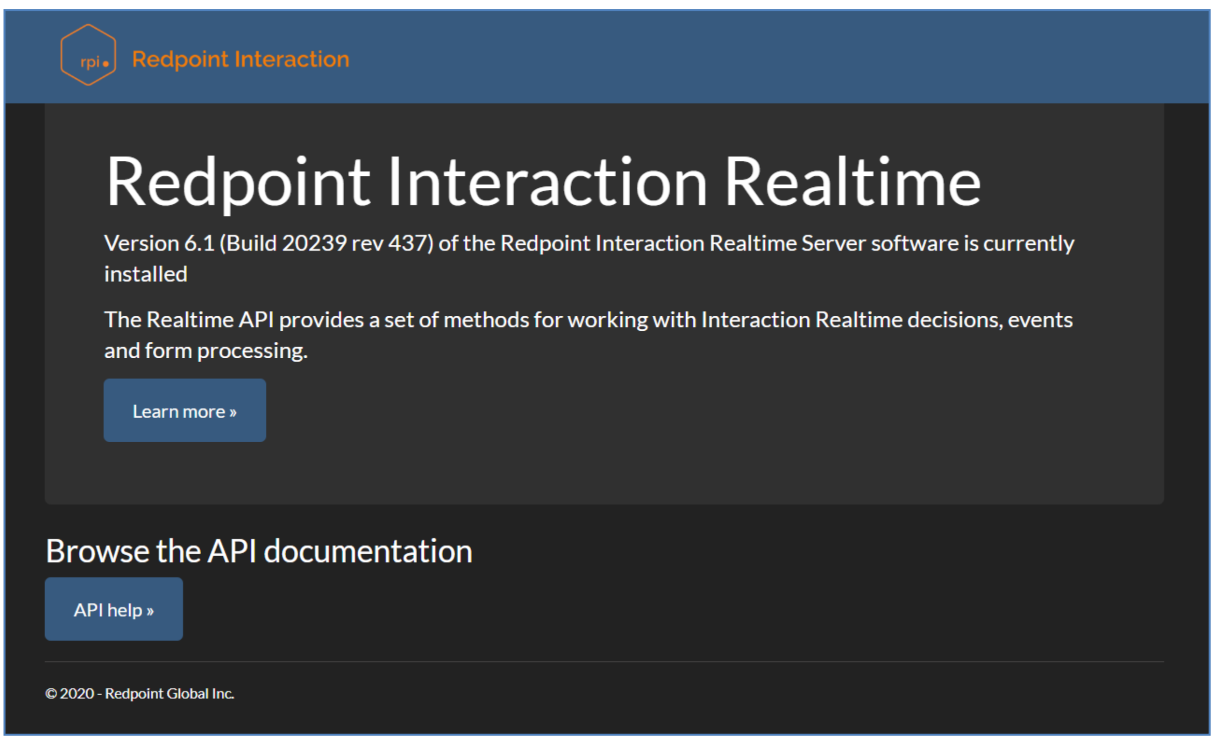
The RPI Realtime API is an interface that provides functionality such as:

- The management of visitor profiles
- The ability to make content applicability decisions
- The processing of RPI web forms
- The handling of communication with the RPI application server

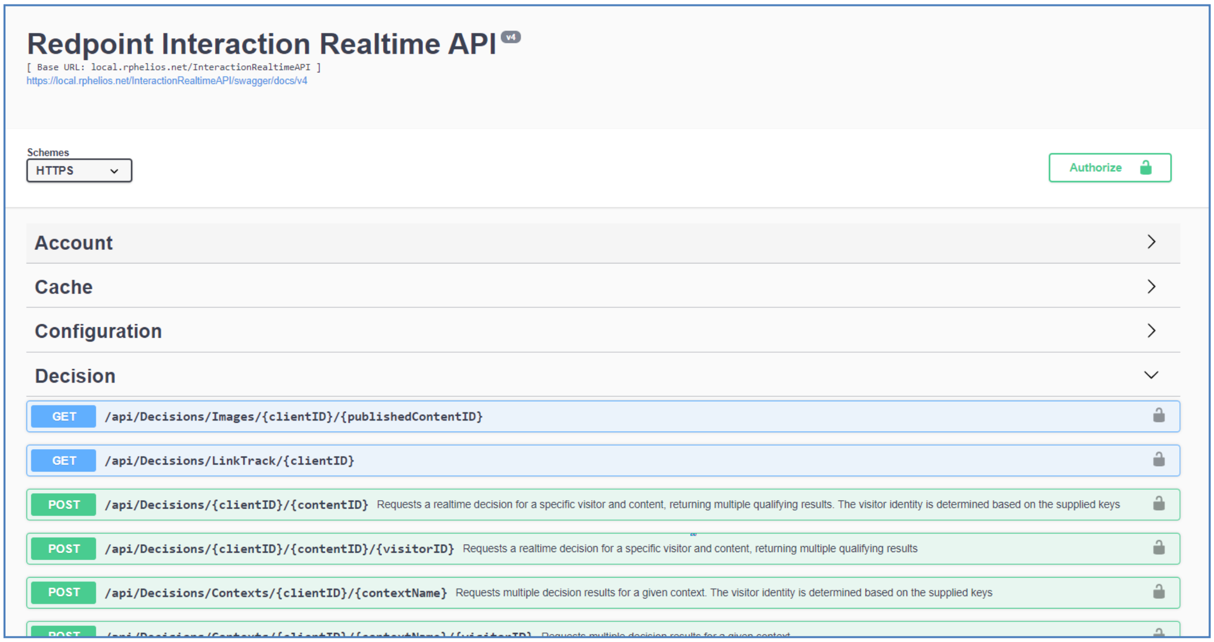
RPI's realtime capabilities are exposed via a website, which provides an API, and, optionally, its associated documentation.

You can access the site by navigating to the RPI Realtime website, either directly within a browser, or using the Browse command in Internet Information Services (IIS).

When you do so, the following web page is displayed:



If enabled, clicking the button in the API Documentation section displays details of the RPI Realtime API’s endpoints.



5.9.2 Realtime Agent Service

The RPI Realtime Agent Service is an ASP.Net Web API service which provides the ability to load information from the RPI app server, including:

- Cached attribute lists
- Message history
- Page and decision metadata
- Database connectivity to facilitate usage of the same as a cache

5.9.3 Realtime Cache

The RPI Realtime realtime cache is used to persist data such as the following:

- Visitor profiles
- Rules as defined in realtime decisions
- Text content (if published directly from a smart asset)

A variety of technologies can be used to host the realtime cache, including:

- Memcached

- Redis
- Windows AzureRedisCache
- SAP Hana
- Amazon Elasticache
- Cassandra
- Database
- Couchbase
- MongoDB
- SQL Server
- Ncache
- CosmosDB
- MemoryDB Redis

5.9.4 Queues

RPI Realtime makes use of the following queues, which are used to provide asynchronous connectivity from the RPI Realtime API to the RPI application server:

- Form submission: used to process data submitted in a web form.
- Web events: used to process web events other than form submissions.
- Visitor profile: used to process visitor profile data from the realtime cache to a database or file.

Each queue has its own matching system configuration setting that must be set appropriately.

Queues can be hosted using a variety of technologies. Queue Providers can be created and managed in a dedicated configuration interface. The following technologies can be used to host RPI Realtime queues:

- Azure Service Bus
- Azure Event Hubs
- Apache ActiveMQ
- Amazon Simple Queue Service (SQS)
- IBM MQ

- Microsoft Message Queueing (MSMQ)
- RabbitMQ
- Google Pub Sub
- Kafka

5.10 RPI Realtime Audit

Realtime audit records are written to the Interaction_XX database table op_RequestAudit, with a single record representing a day's realtime activity at an RPI client. Audit data is only written if system configuration setting RealtimeAuditEnabled set to True. The table's structure is as follows:

- EntryID
- RequestDate
- RequestType: see below for more details.
- Endpoint
- UpdateTimestamp
- UpdateCount: the number of updates to the data during the course of the day
- Requests: the number of calls to the endpoint
- Results: the number of results returned; note that this figure may be greater than the number of requests.
- EntryHash: a hashed value based on the contents of the row. This is present to ensure that the row's contents are not changed manually.
- ReportingTimezone
- FirstUpdate: the timestamp of the first update of the record that day.

The following audit data is persisted in the table:

- RequestType Decision: audit data is imported at execution of the Web events importer system task. Note that Smart Asset endpoint is responsible for the production of audit data.
- RequestType QueueListener: audit data is imported at regular intervals. Queue listener execution at web form submission is also supported. The following endpoints produce audit data:
    - [server]/queuelistener/test

    - [server]/queuelistener/production

- RequestType = WebForms: audit data is imported at execution of the Web form processor system task. The following endpoint produces audit data:

    - api/formdata

- RequestType Recommendation: audit data is imported at execution of the Recommendation results importer task. The following endpoints produce audit data:

    - api/recommendations/{visitorID}

    - api/recommendations

An 'Interaction Realtime Audit Summary ([RealtimeAuditReference]) email is generated the day after the day specified by system configuration setting RealtimeAuditPeriodEndDay. The email sent is at execution of the Housekeeping system task if system configuration setting RealtimeAuditEnabled is set to True and is sent to the email addresses defined by setting RealtimeAuditEmailAddresses. If no email addresses are configured, no emails are sent. The email contains the following:

- 'RPI Realtime Audit [month]-[year]'

- 'Summary:'

- Reference: as per system configuration setting RealtimeAuditReference

- RPI client ID

- RPI client name

- Period start date: today - 31 days

- Period end date: today

- Days in period: depends on the length of the month and if the end period has changed since the last report date.

- Number of invalid rows: a row is marked as invalid if the data therein was changed manually.

- Includes decision audits (true/false)

- Includes recommendation audits (true/false)

- Includes web form audits (true/false)

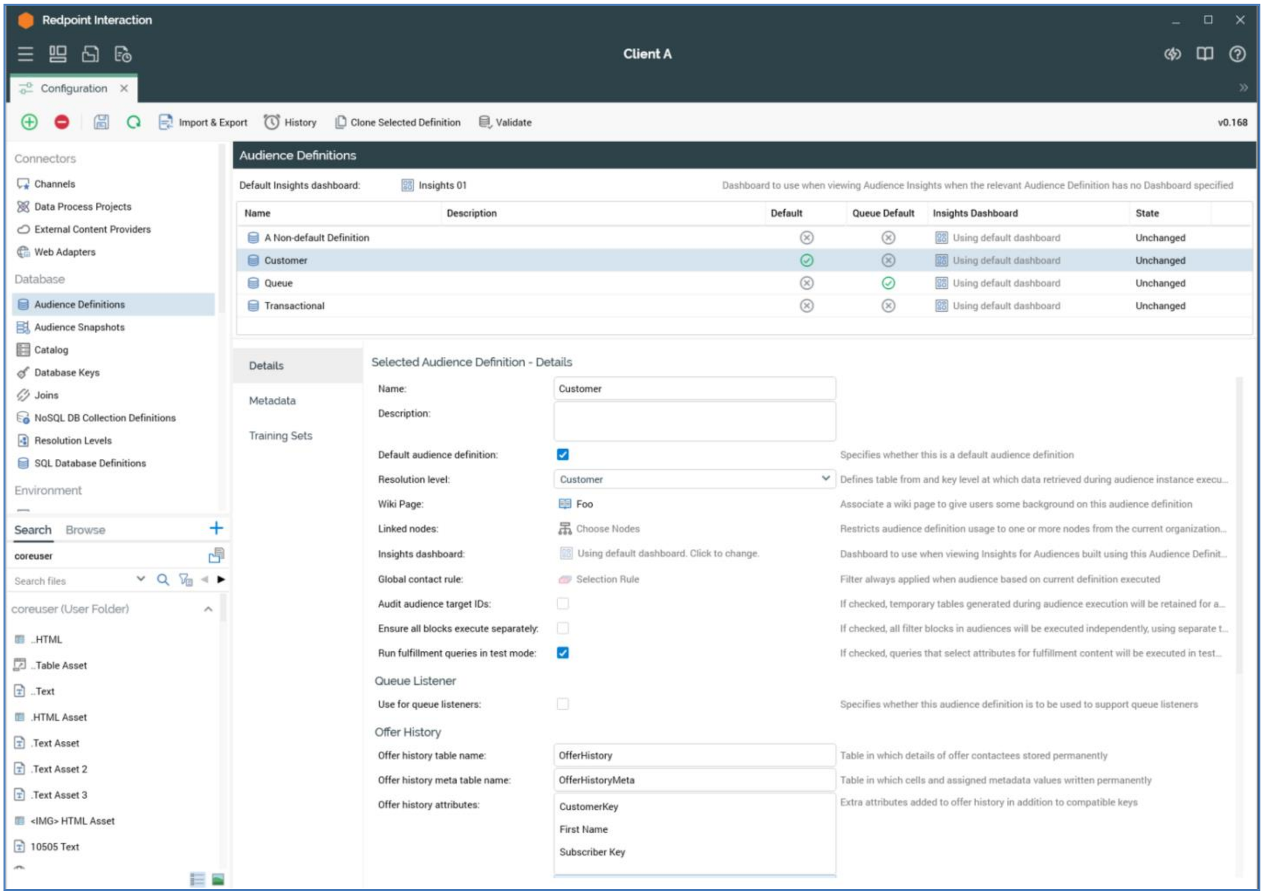
- Includes queue listener audits (true/false)

- Hash signature

A zip file attachment is included with the email; its name is 'Realtime Audit [RealtimeAuditReference].zip'. The zip file contains a single file ('Realtime Audit [RealtimeAuditReference] [month]-[year].csv'), which contains a dump of the data from op_RequestAudit on which the audit report is based.

6 Configuration

RPI is a very powerful, flexible tool. You can configure RPI to work with a whole range of data, stored in a wide variety of formats. To make it easy to harness this flexibility for your own needs, RPI provides the Configuration Workbench.



The Workbench gives you access to an array of tools to help you set up RPI to your particular requirements.

6.1 Invoking the Configuration Workbench

- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.

  Clicking the button displays the Configuration Workbench in a separate tab in the RPI framework. Only one Configuration Workbench tab may be open at a time.

- From the quick access menu's Configuration menu. The Configuration menu exposes the same option as described above.

Note that access to the Configuration Workbench is controlled via Configuration functional permissions. If none of the user groups of which you are a member are associated with one of these permissions, you will not be able to able to access the Configuration Workbench.

Association with the overall Configuration permission affords access to all interfaces within the Configuration Workbench. Association with one or more of the sub-permissions (e.g. Configuration – Catalog), and not the overall Configuration permission, provides access to only the interfaces in question.

6.2 Configuration Workbench

The Configuration Workbench is a portal that provides access to all of RPI's configuration features.

The Workbench consists of the following elements:

6.2.1 Toolbar

The toolbar is only enabled once you have clicked on an item in the top left-hand interfaces list. The following options are exposed by the toolbar:

- Create a new [item]: causes a new item of the appropriate type to be created. The type of item is determined by the currently-selected interface - for example, if Joins is selected, a new join is added to the list of joins displayed within the workspace.

- Delete selected [item(s)]: causes the deletion of the selected item(s). If you delete an item that has been saved previously, it is marked as Deleted within the list. Such deletions are not made permanent until Save is invoked. If you delete an item that has yet to be saved, it is removed immediately.

  Please exercise caution when deleting items in the Configuration Workbench. When you delete an item that is in use elsewhere (for example, a database key that is used by a resolution level that is, in turn, required by an audience definition), no checks are performed, and you may precede with the deletion (to the detriment of the resolution level, which will no longer work!). This is in contrast with performing a deletion in the File System, where you are prevented from deleting a file that is depended upon by another file.

- Save: makes permanent any changes to the item(s) within which you are working currently. Clicking Save causes the current item(s) to be validated to ensure they meet the item type's mandatory requirements. If validation fails, you are presented with a list of specific validation errors. Following a successful save, a message is displayed. Note that save does not apply to user groups or users, details of which are written to the database immediately after their creation or update within a modal dialog.

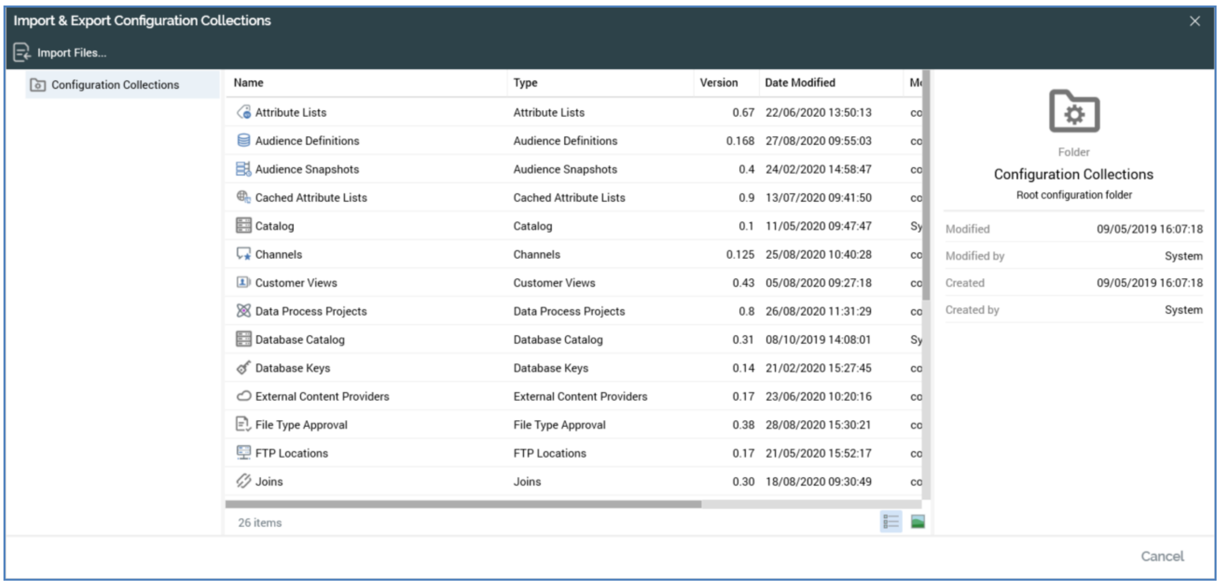
  If you are editing a configuration collection and another user has saved the same collection, on your invocation of save, the File Conflict dialog is displayed. You can choose to overwrite the existing file (causing the other user's changes to be lost) or cancel your save. Note that this feature is available at all configuration collections other than Catalog, System Configuration, User Groups and Users.

  Please see History, below, for full details of configuration collections and their versions.

- Refresh: this option causes the current list of items displayed in the workspace to be reloaded from the operational database.

- Import & Export: having commissioned an RPI client, there may be occasions when you wish to utilize the same set of configuration objects in another client. Another circumstance where re-using configuration objects might prove useful is when you have a test environment that you wish to copy to a production context. Import & Export allows you to export one or more configuration collections before importing them into another RPI client or installation (for more details on configuration collections please see History, below).

  Availability of Import & Export is controlled by the File System - Import and Export functional permission. Invocation displays the Import & Export Configuration Collections file system dialog.



  The dialog contains a toolbar, treeview, grid and information panel.

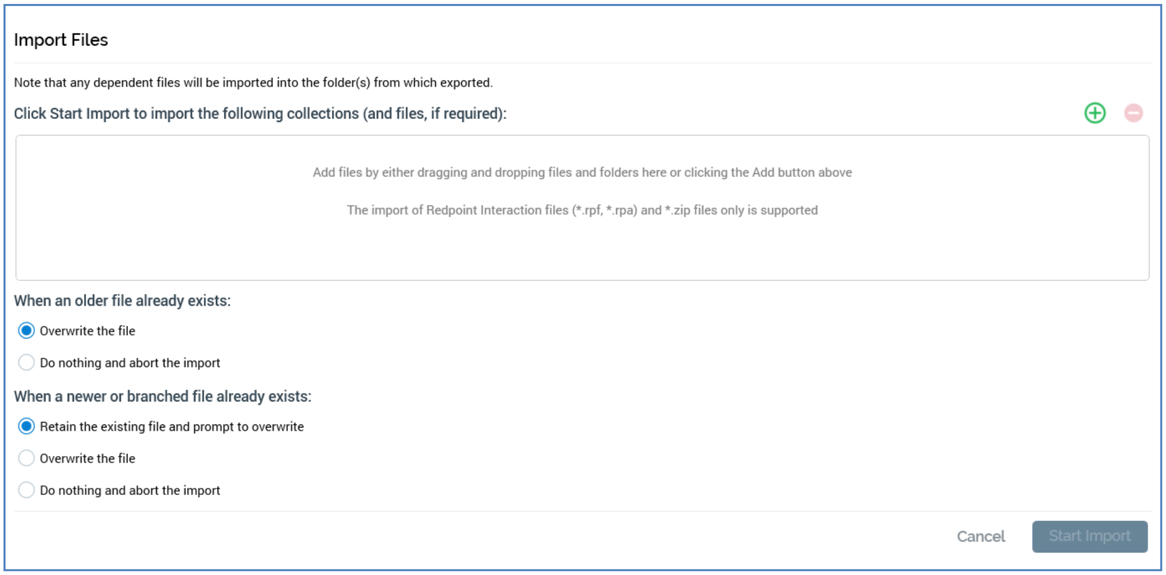
  The toolbar exposes a single option:

  - Import Collections: clicking this button displays the Import Configuration Collections... Windows file system dialog. The default file type is set to RPI Files (*.rpf).

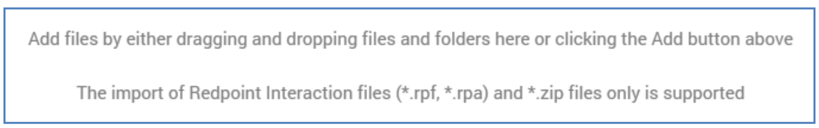
    A configuration (for example, database keys) collection is represented by a single .rpf file. In addition, certain configuration collections may require you to simultaneously import other, dependent, RPI files.

    You can select the .rpf files you wish to import and click Open to commence their import. Doing so displays the file(s) in the Import Files overlay (see below). You can also select a zip file containing exported RPI files. Clicking Cancel removes the Windows dialog and returns to the RPI File System Dialog.

    The Import Files overlay contains the following:



- A message is displayed at the top of the overlay:



- Add Files: this button is shown in a toolbar above the list. Clicking it redisplays the Import Files… Windows file system dialog, allowing you to specify additional collections and files to be imported.

- Remove selected Files: this button is shown in the toolbar, next to Add Files. It is enabled when one or more collections or files are selected in the list. Clicking it removes the selected items without display of an 'Are You Sure?' dialog.

- List: when empty, a message ('Click Add Files to select the files you wish to import') is shown in the list. The list is used to display the collections and files that are to be imported.

- When an older file already exists: two radio buttons allow you define how the import is to behave when an older copy of a file being imported is discovered at the destination client:

  - Overwrite the file (the default option)

  - Do nothing and abort the import

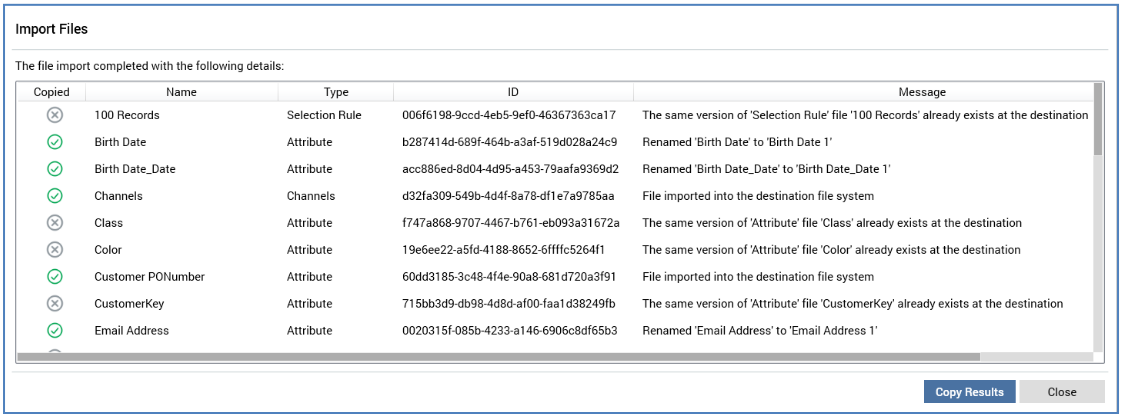
- When a newer or branched file already exists: three radio buttons allow you define how the import is to behave when a newer or branched copy of a file being imported is discovered at the destination client:

  - Retain the existing file (the default option)

  - Overwrite the file

- Do nothing and abort the import

- Start Import: clicking this button imports the files, displaying the results in an overlay:



An advisory message is also shown when the task is complete.

You can click the Copy Results button to copy the results shown in the overlay to clipboard. You can also click the Close button to remove the Import Files overlay.

A treeview is shown to the left of the Import & Export Configuration Collections File System Dialog. It contains a single root-level node – Configuration Collections. Right-clicking the node displays a context menu with a single option: Refresh.

The grid to the right lists configuration collections. The System Configuration, User Groups and Users collections are not listed.

The following context menu options are available when you right-click a configuration collection:

- View Information...: this option is available when a single configuration collection is selected. Selecting it displays the File Information Dialog. Its toolbar exposes only a Refresh button, and only the Details tab is shown.
- History...: this option is available when a single configuration collection is selected. Selecting it displays the configuration collection's history details in the History tab within the File Information dialog. Documented separately.
- Export...: this option is available when one or more configuration collections are selected. Selecting it displays the Browse for folder Windows file system dialog. You can choose a folder to which the selected configuration collections are to be exported. Having done so, you can click OK to start the export. Doing so creates an 'Export [n] file(s)' job, on successful completion of which an Open Folder button is displayed. When you click the button, the folder to which the configuration collections were exported is opened in Windows Explorer.

  Files are named as follows:

  '[Config Collection Name]_[GUID].rpf'

  The GUID is unique to a given file. Files are overwritten if the already exist. Any dependent files are also exported.

  If more than one collection is exported, all exported files are included in a zip file. If single file is exported, it is written to a single .rpf file. If the export was invoked in respect of single file that requires export of multiple files, the zip file is named '[Filename]_[DateTime]'. If invoked in respect of multiple files, the zip file is named 'RPIFileArchive_[DateTime]'.

  You can also make a new folder within and cancel display of the Browse for Folder dialog.

- Copy to another Client...: this option is available when one or more configuration collections are selected. Selecting it displays the Copy Files to Another Client overlay. For details of the functionality available therein, please see the RPI File System Dialog documentation.

An information panel is shown to the right of the Import & Export Configuration Collections File System Dialog. It displays read-only details of the currently-selected object.

The Import & Export Configuration Collections File System Dialog footer contains a single button:

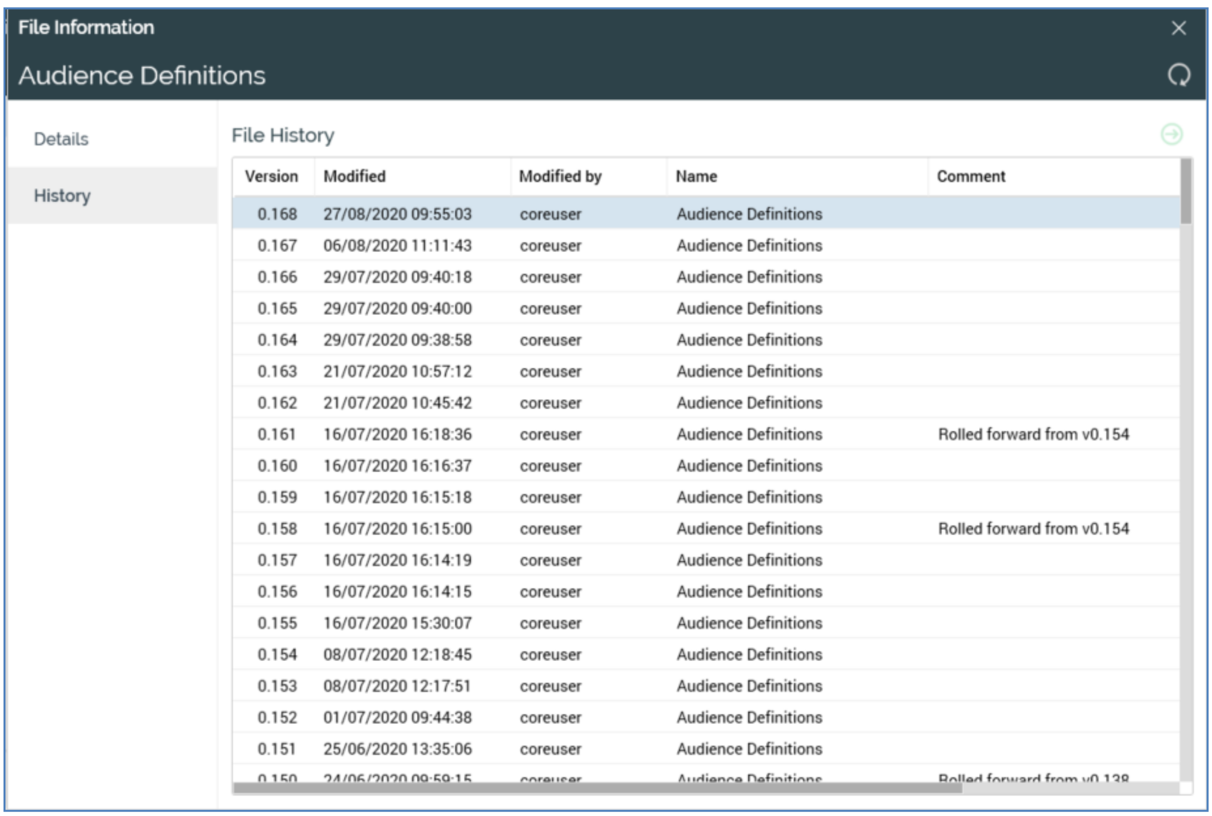
- Cancel: clicking this button removes the dialog from display.

  Note that the import, export or copying to another client of configuration files generates an audit record.

- History: this button is available at all Configuration interfaces except Catalog, System Configuration, User Groups and Users. Clicking it displays the configuration collection's history details in the History tab within the File Information Dialog.

  Configuration objects, like database keys, resolution levels and audience definitions, are stored in the RPI file system in file-like structures called configuration collections. All instances of a particular configuration object are stored in a single configuration collection – for example, all channels are stored in the Channels configuration collection.

  As per its equivalent invocation at a file within the RPI file system, the dialog facilitates access to previous versions of a configuration collection, which could prove useful should you need to roll back to a previously-saved version.



  The dialog contains a toolbar and a grid.

  The toolbar exposes a single option:

  - Roll Forward: this button is only available when a version of the configuration collection other than the current is selected. Its invocation is protected by an 'Are You Sure?' dialog and creates a new current version of the configuration collection, based on the selected version. The new version's version number is incremented accordingly. On closing the dialog, the configuration interface is refreshed to reflect the rolled-forward version. Note that, if you roll forward data process projects, any custom images will be lost at the new version of the configuration collection.

The grid contains the following read-only columns:

- Version
- Modified
- Modified By
- Name
- Comment: populated e.g. when a configuration collection was copied from another client.

Entries in the grid are displayed in descending version number order.

Version number: the current version of the configuration collection being viewed is displayed to the right of the toolbar. Please see History for details of configuration collections and their versions. Note that version number is displayed at all configuration collections other than Catalog, System Configuration, User Groups and Users.

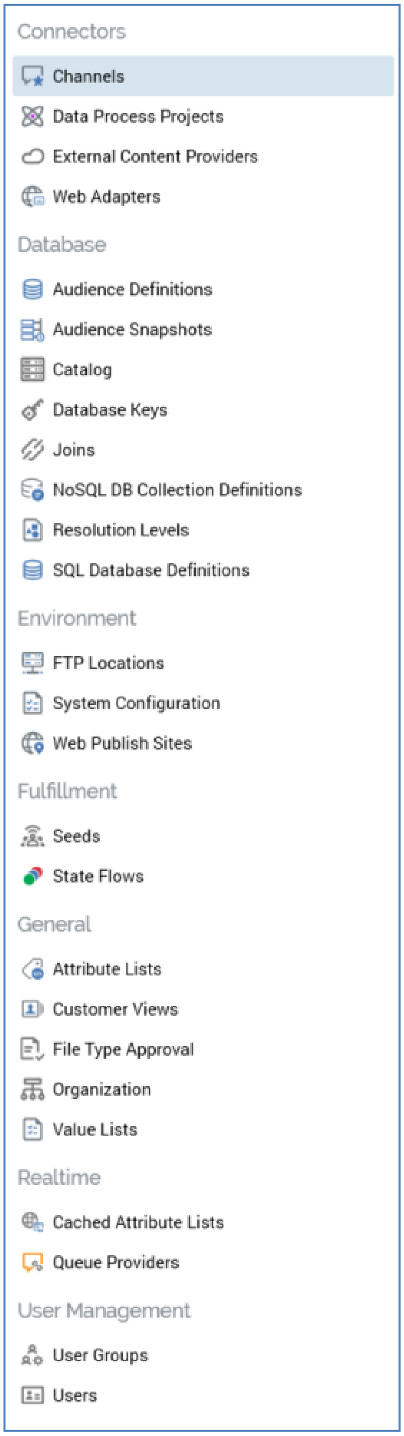
6.2.2 Toolbox

The toolbox is displayed to the left of the Configuration Workbench. You may resize it horizontally (subject to maximum and minimum widths). You may also increase or decrease the relative heights of its constituent panels (again, subject to maximum and minimum values).

The toolbox contains two panels, each of which is documented separately

6.2.3 Toolbox – Interfaces List

The interfaces list is displayed at the top of the toolbox.



Interfaces are grouped as follows:

- Connectors

- Channels
- Data Process Projects
- External Content Providers
- Web Adapters

- Database
  - Audience Definitions
  - Audience Snapshots
  - Catalog
  - Database Keys
  - Joins
  - NoSQL DB Collection Definitions
  - NoSQL DB Offer History Definitions
  - Resolution Levels
  - SQL Database Definitions
- Environment
  - FTP Locations
  - System Configuration
  - Web Publish Sites
- Fulfillment
  - Seeds
  - State Flows
- General
  - Attribute Lists
  - Customer Views
  - File Type Approval
  - Organization
  - Value Lists
- Realtime

    - Cached Attribute Lists
    - Queue Providers
- User Management
    - User Groups
    - Users

Depending on the database mode in which you are operating (SQL vs. NoSQL), not all of the options above may be available.

Clicking on an item in the list displays a dedicated configuration interface in the workspace, in which you can manage items of the appropriate type.

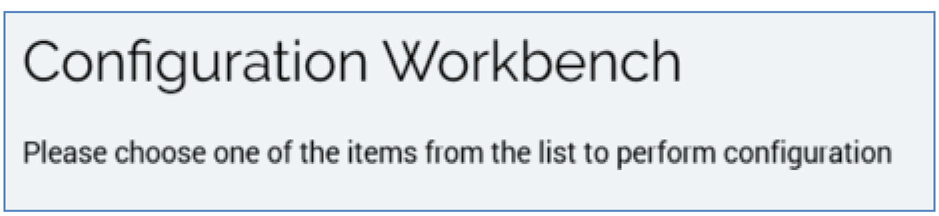
6.2.4 Toolbox – Folder Search

The lower toolbox panel exposes a Folder Search component. For more information, please see the Framework documentation.

The folder search part can be used to source files required when performing configuration tasks.

6.2.5 Workspace

The Configuration Workbench workspace is displayed to the right of the toolbox. When displayed initially, it contains a message that advises you to select an item from the interfaces list in order to undertake your desired task.



The workspace is tailored in accordance with the type of item(s) displayed.

Note that you can change between contexts of configuration items without having to save each time (e.g. if configuring joins, you can switch to audience definitions without saving; if you return to joins, your changes will not have been lost).

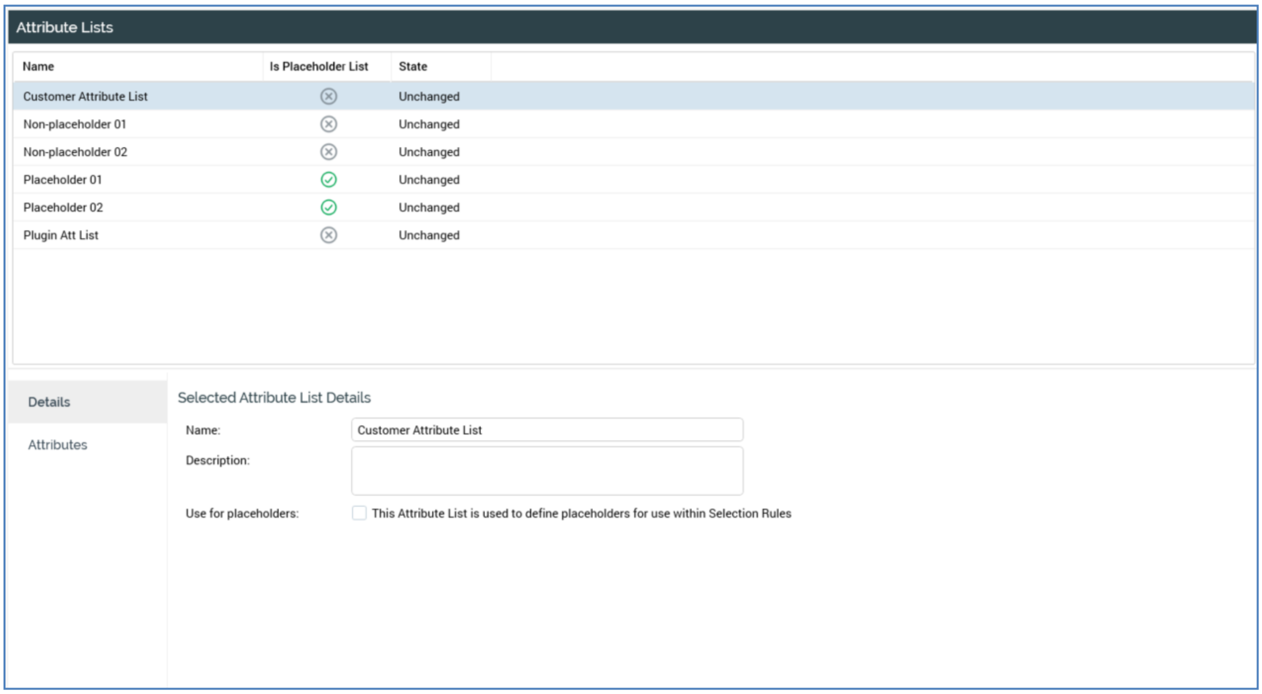
If attempt to close the Workbench when unsaved changes exist, a warning message is displayed, and you are offered the opportunity to save or lose your changes. This applies also to closing RPI as a whole.

6.3 Configuring Attribute Lists

Attribute Lists are used in two contexts in RPI:

- To manage placeholder attributes, which can be used in standard selection rule criteria.
- To facilitate the capture of file metadata

Configuration of attribute lists is carried out in the Attribute Lists configuration interface.



The Attribute Lists configuration interface contains the following elements:

- Attribute Lists grid
- Tabset, exposing the following tabs:
    - Details
    - Attributes

Each is documented separately below.

6.3.1 Attribute Lists

A grid is displayed, listing all existing attribute lists:

Name	Is Placeholder List	State
Customer Attribute List	⊗	Unchanged
Non-placeholder 01	⊗	Unchanged
Non-placeholder 02	⊗	Unchanged
Placeholder 01	✓	Unchanged
Placeholder 02	✓	Unchanged
Plugin Att List	⊗	Unchanged

Within the grid, the following read-only columns are displayed:

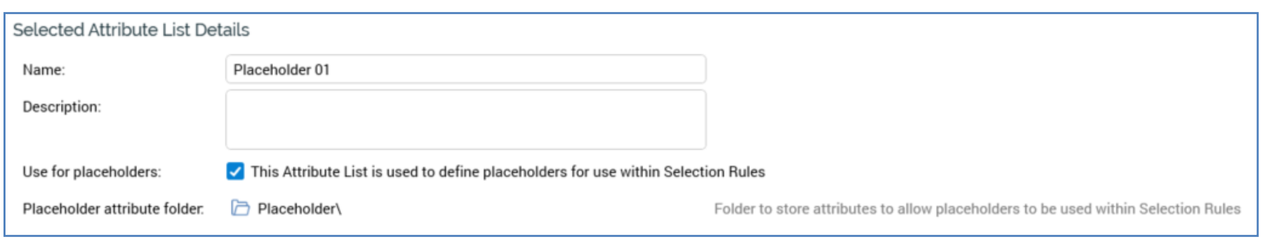
- Name
- Is Placeholder List
- State

When no attribute lists have been configured, an advisory message is displayed.

6.3.2 Details Tab

This tab displays the details of the attribute list selected currently in the grid. If no attribute lists have been configured, an advisory message is displayed.

The section contains the following properties:

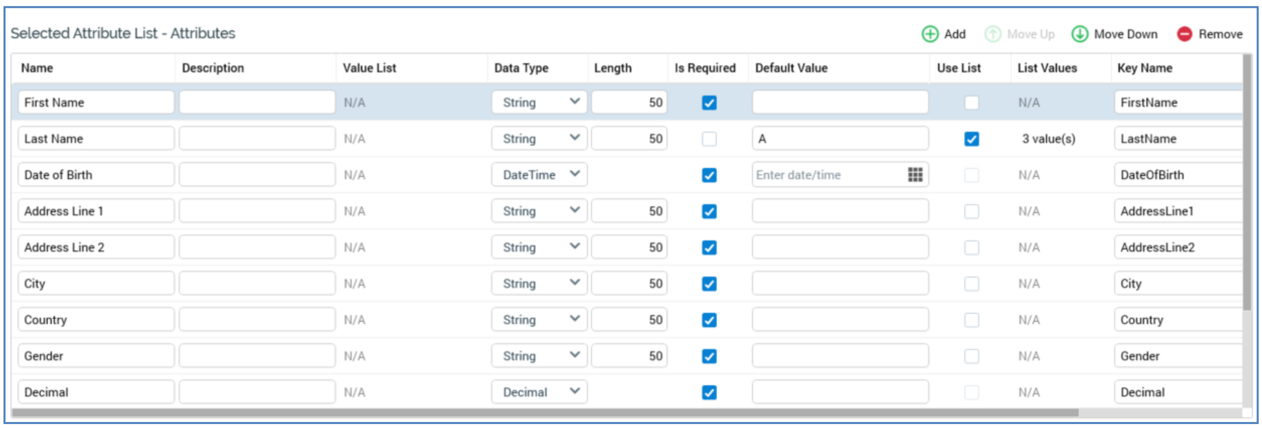


- Name: the unique name used to identify the attribute list. Name is mandatory, can be a maximum of 100 characters in length, and must be unique across all attribute lists.
- Description: an optional property that can be a maximum of 1000 characters in length.

- Use for placeholders: this checkbox, which is unchecked by default, allows you to specify that the attribute list is to be used to define placeholder attributes for use within standard selection rules. For more information on placeholders, please see the Standard Selection Rules documentation. When checked, the Placeholder attribute folder property is shown.
- Placeholder attribute folder: this RPI file system folder property, which is mandatory when shown, is displayed when Use for placeholders is checked. It allows you to select a folder in which to store attributes that allow for the use of placeholders within standard selection rules.

6.3.3 Attributes Tab

This tab allows you to define the attributes within the attribute list.



The tab's behavior is very similar to the Metadata tab within the Audience Definitions configuration interface (for more information, please see that section's documentation); the only difference is that the Metadata tab's Offer History Meta Name property is replaced by a Key Name property. Note that multiple attributes can share the same Key Name. Note also that an attribute list must contain at least one attribute before being saved.

6.3.4 Create New Attribute List

This is carried out in the toolbar. On clicking the button, a new attribute list is added to the grid, and placed in an appropriate alphabetical position.

Its Name is 'New attribute list' (an incrementable integer can be added to the name to ensure uniqueness).

6.3.5 Configure Existing Attribute List

This is carried out in the tabset. If you configure an attribute list that has been saved previously, its State is set to Edited.

6.3.6 Delete Selected Attribute List

This is carried out in the toolbar. A deleted attribute list's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.3.7 Save Changes to Attribute Lists

Save is carried out using the Save changes to Attribute Lists toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

At Save, if an attribute list's Use for placeholders property is checked, new placeholder attributes are created and saved to the folder defined by the list's Placeholder attribute folder property. Any subsequent saved changes to attributes' names at the list are reflected at placeholder attribute file names.

Following a successful save, attribute lists are displayed in alphabetical order. All lists' states are updated to Unchanged. Any deleted lists are removed from display.

6.3.8 Creating Parameter Attributes from an Attribute List

When you select an Unchanged attribute list at which Use for placeholders is unchecked, a Create Parameter Attributes button is made available at the Configuration Workbench toolbar.

The button is used to create parameter attributes based on the attributes in the attributes list.

Clicking the button displays the Choose Folder to Save Parameter Attributes folder chooser dialog. You can select a folder within the RPI file system and click OK to create parameter attributes based on the attributes within the attribute list. An information message advises that the parameter attributes were saved to the selected folder.

If any attributes were unable to be saved, due to their Key Name property values matching the names of files already present in the folder, a warning message advises of number of attributes thus affected. Clicking Cancel at the dialog removes it from display.

Properties at a parameter attribute created from an attribute list are set as follows:

- Name: set to the attribute list's attribute's Key Name
- Description: set to the attribute list's attribute's Description
- Default value: set to the attribute list's attribute's Default Value.
- Linked Wiki Page: set to the attribute list's attribute's Wiki Page.

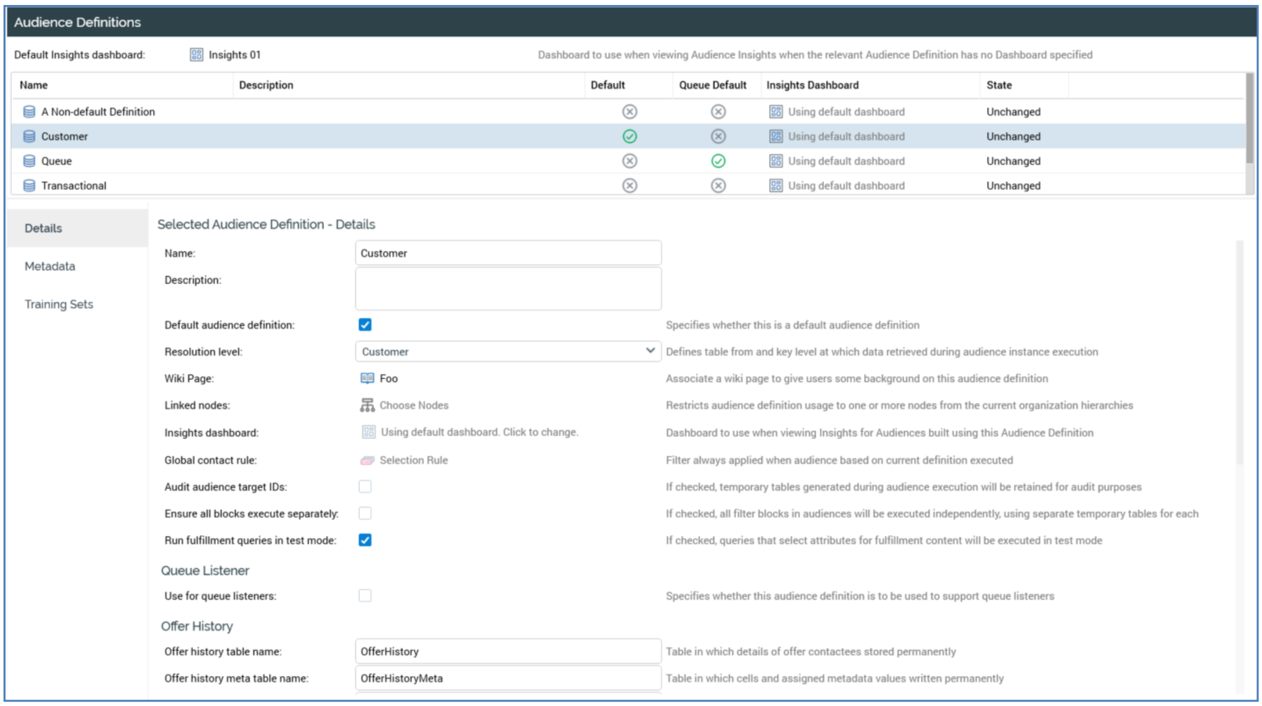
6.3.9 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.4 Configuring Audience Definitions

Audience definitions are used by audiences. They define a series of defaults for the audience, including the structure of the tables to which records are to be written when an audience instance based upon the template is run, and the metadata attributes available to the audience. In addition, they allow for the definition of training sets, used when creating clustered audiences from standard selection rules (for more information, please see the Standard Selection Rules documentation).

You can configure audience definitions by clicking on Audience Definitions in the interfaces list. Doing so displays the Audience Definitions configuration interface.



The interface consists of the following elements:

6.4.1 Default Insights Dashboard

This optional property allows you to select a dashboard to be displayed when viewing audience insights in the Insights Window when the audience's audience definition has no dashboard specified (for more information, please see the Audience Designer documentation).

You can select a dashboard file, which must contain at least one Chart or Count Results widget. You can populate the property by browsing for a dashboard or by using drag and drop. Note that any count results widgets’ Display results as properties must be set to List of latest values. Once populated, you can open the latest version of the dashboard in the Dashboard Viewer. You can also clear your selection.

6.4.2 Audience Definitions Grid

All existing audience definitions are displayed in alphabetical order in a read-only grid towards the top of the interface.

Name	Description	Default	Queue Default	Insights Dashboard	State
A Non-default Definition		⊗	⊗	Using default dashboard	Unchanged
Customer		✓	⊗	Using default dashboard	Unchanged
Queue		⊗	✓	Using default dashboard	Unchanged
Transactional		⊗	⊗	Using default dashboard	Unchanged

The following columns are shown:

- Name
- Description
- Default: a tick is shown at the default standard audience definition.
- Queue Default: a tick is shown at the default queue listener audience definition.
- Insights Dashboard: if set specifically at an audience definition, the name of the Insights dashboard, else ‘Using default dashboard’.
- State: one of Unchanged, Added, Edited or Deleted

You can select an audience definition in the grid to view its details.

6.4.3 Informational Message

When a new, unsaved audience definition is displayed, or when changes have been made to a previously-saved audience definition’s Offer history or Offer history meta table names, the following informational message is displayed above the selected audience definition’s details:

The database will be validated when the audience definitions are saved

The sequence of events that occurs upon invoking save when the informational message is displayed is described elsewhere.

6.4.4 Selected Audience Definition Details

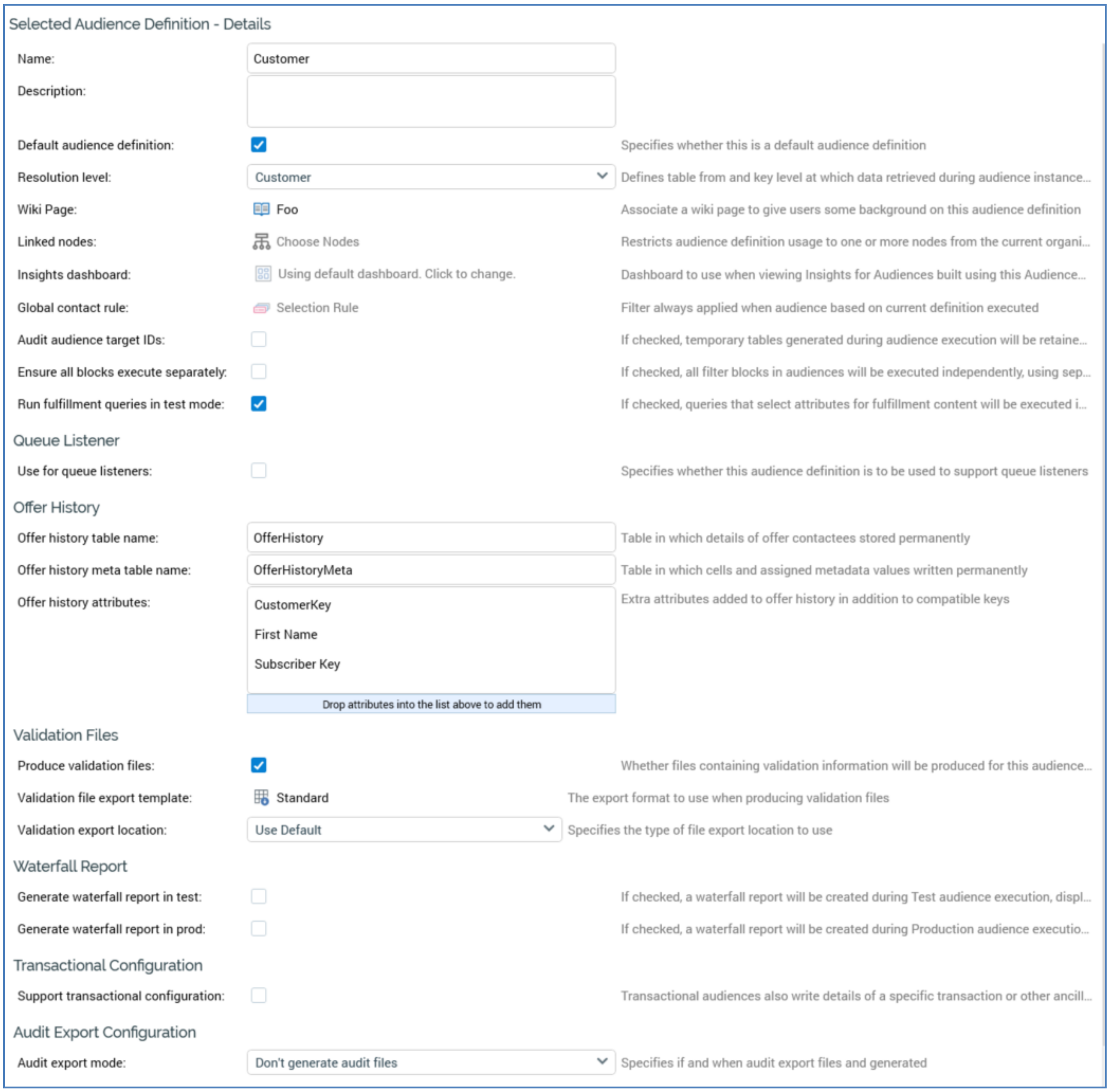
This section displays details of the currently-selected audience definition. Prior to selection of an audience definition, a message is shown:

Please choose one of the Audience Definitions above to make changes

When an audience definition has been selected, this section contains a tabset, which exposes Details, Metadata and Training Sets tabs.

6.4.5 Details Tab

This tab contains the following updateable fields:



- Name: a mandatory textual field that can be a maximum of 100 characters. Name must be unique across all audience definitions.
- Description: an optional textual field that can be a maximum of 1000 characters.

- Default audience definition: this checkbox, which is unchecked by default, allows you to specify whether the audience definition is the default. One default standard audience definition can exist, along with one default queue listener audience definition. Stipulation of default audience definitions is optional.

  When a default standard audience definition has been specified, it is selected by default when creating a new audience or cell list. When a default has not been specified, the first audience definition in the list of available values is selected instead.

  If the default audience definition is not available to the current user, on creating a file of the types listed above, the audience definition is set to the first in the list of available values.

  When a default queue listener audience definition has been specified, it is assigned automatically when a queue activity is added to an interaction.

- Resolution level: if the audience definition is not intended to support queue listeners, this property is set using a drop-down list, constrained to a blank value (when creating a new audience definition) and all existing resolution levels. Resolution level defaults to blank but is updated to the resolution level of the first attribute added to the attributes list. Resolution level is mandatory and is accompanied by the text ‘Defines table from and key level at which data retrieved during audience instance execution’.

  Selection of a resolution level during audience definition creation adds one row per database key as found within the selected resolution table to the Attributes grid. Changing the resolution level removes any attributes associated with the resolution level and replaces with them with attributes compatible with the new resolution level.

  Note that you cannot configure an audience definition with a resolution level based on an auxiliary database.

  If the audience definition is intended to support queue listeners, the audience definition's Resolution level property is replaced by the following message:

  When audience definitions are saved, the message changes:

  On completion of resolution level creation, the message changes again:

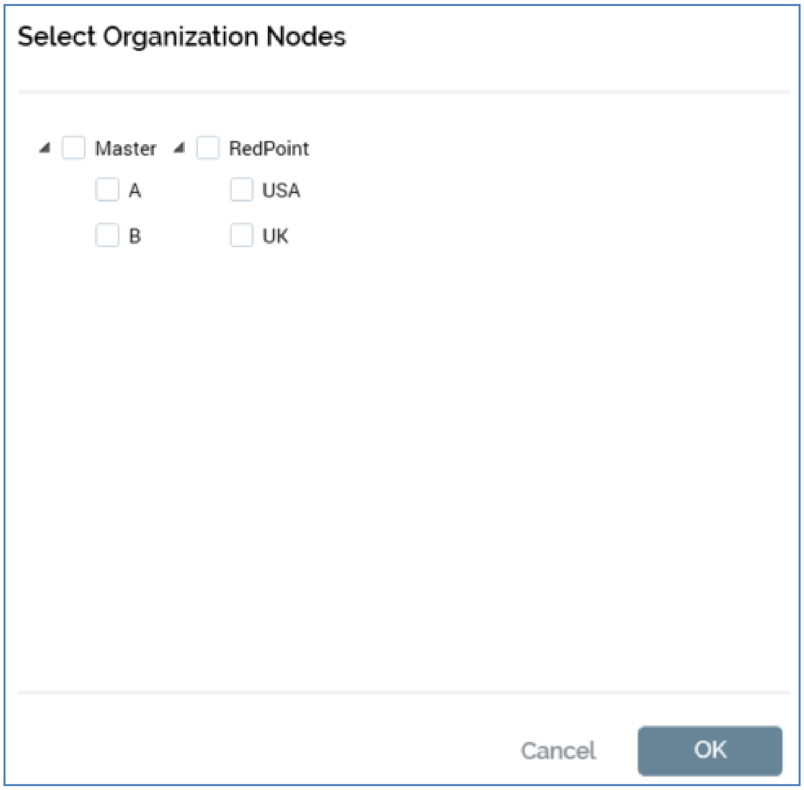
  An orange message is displayed at the top of the Resolution Levels configuration interface:

On refreshing audience definitions, the queue listener audience definition's Resolution level property is read-only and is set to '[Audience definition name] [Queue listener table name]'. The newly-created resolution level is displayed alongside all other resolution levels at the Resolution Levels configuration interface. Note that a queue listener resolution level is not deleted when a queue listener audience definition is deleted.

- Wiki page: you can browse for a wiki page to which to link the audience definition (the wiki page can be used to provide background information on how the audience definition is to be used). Invoking this option launches the File System Dialog, within which only wiki pages are listed. You can select a wiki page and invoke OK, after which the name of selected wiki page is displayed in the Audience Definition configuration interface (you can also cancel selection of the wiki page). Having selected a wiki page, you can clear it. You can also view the selected wiki page in the Wiki Browser: if the linked page is displayed in an existing Wiki Browser tab, that tab is given the focus; otherwise, the page is opened in a new Wiki Browser tab. Wiki page is accompanied by the text 'Associate a wiki page to give users some background on this audience definition'.

- Linked nodes: this property allows you to associate the audience definition with one or more nodes from the current client's organization hierarchies. When an audience definition is tied to organization node(s) in this way, and configuration setting EnableOrgNodeConfigUserControl is set to true, a user not associated with at least one of the nodes in question will be unable to make use of the audience definition at runtime. Full details of such restrictions can be found in relevant contexts elsewhere in the documentation.

  On the property's initial display, the button text 'Choose nodes' is shown. Clicking the button displays the Select Organizational Nodes dialog:



Each organization hierarchy, and the tree of nodes that it contains, are displayed. Each is accompanied by a checkbox (unchecked by default). You can check the nodes to be associated with the audience definition, and then click the OK button to confirm your selection. You can also click Cancel to remove the dialog from display.

- Insights dashboard: this property allows you to choose a specific dashboard to be displayed when viewing insights for audiences built using the currently-selected audience definition. For more information, please see the Default Insights dashboard property, above.
- Global contact rule: an optional standard or basic selection rule that can be associated with the audience definition; when an audience based on the definition is executed, the additional filter criteria supplied by the rule are applied. You can browse for a selection rule using the File System Dialog, which is limited to the display of selection rules only. You can also populate this field by dropping a selection rule dragged from the toolbox. Global contact rule is accompanied by the text 'Filter always applied when audience based on current definition executed'.

  Once populated, you can Open the rule's latest version, displaying it in the Rule Designer, and you can also Clear it.

  You cannot use an anonymous auxiliary database-resolving or NoSQL selection rules as an audience definition's Global contact rule.

- Audit audience target IDs: if checked, any temporary tables generated during execution of audiences based on the definition will be retained for audit purposes. The property is unchecked by default. If checked, Execute all blocks separately is checked and cannot be unchecked.

If the property is checked, at execution of an audience based on the definition, one row per audience block is added to the [InteractionAudit_[Client]].DataflowTempTableLookup table (this table can be found in the Pulse database in installations that were upgraded from v1.1 to v2.0). The table contains the following columns:

- AuditID
- DataflowName
- BlockName
- WorkflowAssociationInstanceID
- DataflowID
- TempTableName
- ExecutionDate

Note that TempTableName references the name of the temporary table as created in the data warehouse, which contains the following columns:

- [The columns referenced during audience execution]
- OutputName

Any RP_BC_* tables are retained for a period accordant with system configuration setting AudienceAuditDaysToPersistTempTables. Thereafter they are deleted by the Audience housekeeper.

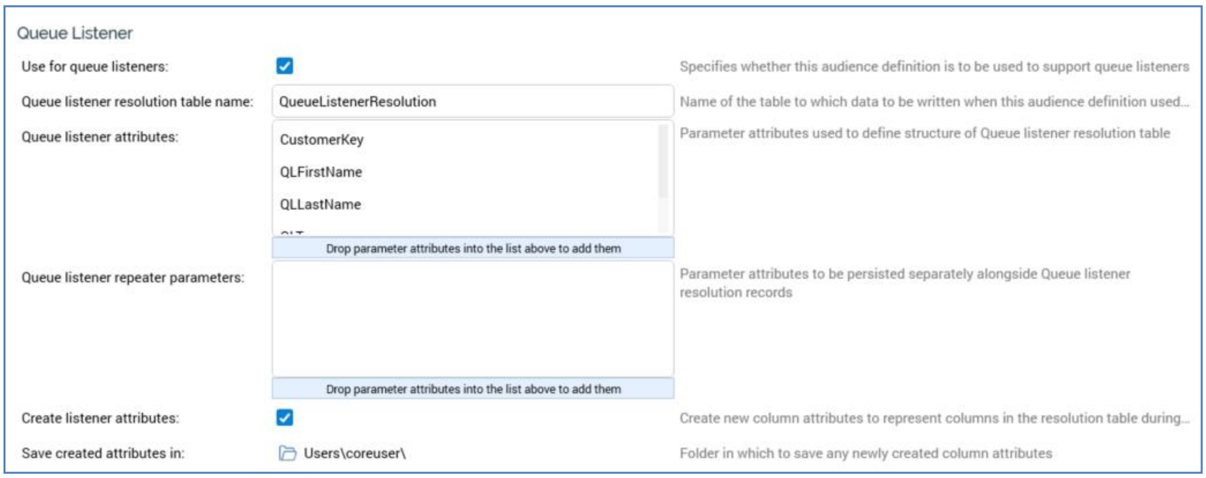
- Ensure all blocks execute separately: if checked, all filter blocks in audiences based on the definition will be executed independently, using separate temporary tables for each. The property is unchecked by default. If checked, at audience execution, one table per audience block is always created. If unchecked, any chained filter blocks are executed using a single temporary table.
- Run fulfilment queries in test mode: a checkbox, which is unchecked by default. If the property is checked, when the current audience definition is used during interaction workflow execution in Test mode, all queries that select attributes for fulfilment content will be executed. This will provide a more accurate impression of the time that might be expected to be taken at Production workflow execution. When checked, 'Testing fulfilment queries' entries will appear in the workflow's query trace.

Queue Listener Section

- Use for queue listeners: this checkbox, which is unchecked by default, allows you to specify whether the current audience definition is to be used to support queue listeners (for more information on queue listeners, please refer to the Interaction Designer documentation).

  When checked, the audience definition's Resolution level property is affected. Please see the property's documentation for further details.

  Also when checked, the following additional properties are displayed:



  - Queue listener resolution table name: this mandatory property defines the name of the table to which data will be written when the audience definition is used by a queue listener. It accepts a value with a maximum length of 50 characters, which must be database-compatible.

  - Queue listener attributes: this property allows you to provide a series of parameter attributes, which are used to define the structure of the queue listener resolution table. You can drag one or more parameter attributes from the toolbox and drop them onto the list to add them. A warning is displayed if you attempt to add a non-parameter attribute. Having added a queue listener attribute, you can view its information in the File Information Dialog. Provision of queue listener attributes is optional. For more information on parameter attributes, please see the Attributes documentation.

  - Queue listener repeater parameters: this property represents additional repeater parameter attributes that are to be persisted separately alongside queue listener resolution records. You can drag parameter attributes from the toolbox and drop onto the property to populate it. A warning is shown if you attempt to add attributes of a type other than parameter. Queue listener repeater parameters are presented in alphabetical order at the property; you can invoke View Information or Remove at any parameter within the list. A warning is shown if you attempt to add the same attribute more than once to the list.

Repeater parameters are stored in a table named '[Queue listener resolution table name]_RP'. Its structure as follows:

- RPIResolutionKey
- [Columns as defined by QL RPs]

Repeater parameters are only written in Production mode. If incompatible data is passed in a repeater parameter, a NULL value is persisted at the database column. If data is not passed for a column, the parameter attribute's default value is recorded at the same.

- Create listener attributes: this checkbox, which is unchecked by default, allows you to specify that new column attributes, representing the queue listener resolution table's columns, are to be created during audience definition validation. If checked, the Save created attributes in property is displayed; on saving audience definitions, column attributes representing the following are created in the specified folder:

  - RPIResolutionKey
  - Each Queue listener attribute

  This applies both at the initial saving of an audience definition, and also when an existing audience definition is updated.

- Save created attributes in: this property represents the folder in which queue listener column attributes are to be created. It is displayed when Create... is checked. When shown, provision of a folder is mandatory. Having chosen a folder, you can Clear it.

When Use for queue listeners is checked, the RPIResolutionKey attribute is added to the list of Offer history attributes. This represents the primary key of the queue listener resolution table.

Offer History Section

- Offer history table name: the name of the table within which details of who was contacted at execution of an offer are stored permanently. The field is populated using a textbox, is mandatory, may be a maximum of 50 characters in length (22 if running against an Oracle data warehouse), may not contain database-illegal characters and must differ from the other table name configured within the audience definition. The property defaults to value ‘OfferHistory’. Offer history table name is accompanied by the text ‘Table in which details of offer contactees stored permanently’.

  Note that if the RPI installation on which you are working was configured appropriately at installation, it is possible to create offer history tables in the data warehouse within a separate schema to the marketing tables.

- Offer history meta table name: the name of the table to which details of cells and the metadata values assigned to them are to be written permanently when an offer is executed. The field is a mandatory textual field and may be a maximum of 50 characters (22 if running against an Oracle data warehouse). It must contain valid database characters and must differ from the other table name configured within the audience definition. The property defaults to value ‘OfferHistoryMeta’. Offer history meta table name is accompanied by the text ‘Table in which cells and assigned metadata values written permanently’.

- Offer history attributes: an audience definition's Offer history attributes list defines the additional attributes that are to be written into the offer history table. By default, the offer history table will automatically contain all relevant key values. Note that, when viewing such attributes’ details in the File Information Dialog, only the Details tab is shown.

  A list of the audience definition's existing attributes is presented in the Audience Definition configuration interface. You can add one or more attributes to an audience definition by dragging them from the toolbox and dropping them onto the attributes list. If one or more attributes are already present in the list, a warning message is shown.

  Having added an attribute, you can remove it from the audience definition. You can also view its details in the File Information dialog (only the Details tab is shown).

  You can include attributes in the list with target tables other than the currently-specified resolution table (assuming that appropriate joins exist). When more than one qualifying attribute value from a linked table exists, standard audience deduplication rules are utilized to determine the value that will be written to Offer History. Note that when cross-resolution attributes are listed, the resultant SQL generated by RPI will use outer joins to link to the related table. This means that any records without a linked table attribute value will end up with a null value at the related Offer History column.

  It is not mandatory to supply additional attributes; however, if you remove the resolution level's database key from the attributes list, a validation error is displayed when you save the audience definition: 'Attributes must include the resolution level key column'.

Note that you cannot include an attribute in both the Offer history attributes and the Transactional attributes lists. Also, you cannot include Exists in table attributes or parameter attributes in the list.

A validation error is raised when an audience definition's Offer history attributes list contains more than one attribute referencing the same database column.

If you include a flag attribute in an audience definition's Offer history attributes list, the name of the column created at offer history is based on the attribute’s name. Any non-database acceptable characters are stripped out, increasing the likelihood of creation of a column with a duplicate name. A checksum digit is therefore added to the end of the column name to ensure uniqueness.

You cannot use anonymous auxiliary database attributes at an audience definition's Offer history attributes.

Validation Files Section

- Produce validation files: a checkbox, unchecked by default. Checking this field ensures that when audiences based on the current audience definition are executed, an additional set of validation files is produced. This occurs even when executed from an audience test, or in an interaction workflow running in test mode, meaning that a sample of the audience's output can be generated and checked prior to production execution. The size of the sample selected is controlled by system configuration setting AudienceOutputValidationSize. Produce validation files is accompanied by the text: 'Whether files containing validation information will be produced for this audience definition'. Checking the field enables as series of properties, as described below.

- Validation file export template: this field is enabled when Produce validation files is checked. When enabled, provision of an export template is mandatory. You can browse for an existing export template using the File System Dialog, or you can provide an export template by dragging one from the toolbox and dropping it directly onto the field. You cannot select an auxiliary database-resolving export template.

  The field is accompanied by the text: 'The export format to use when producing validation files'. Once populated, you can clear the template you selected, and you can also open its latest version in the Export Template Designer.

  You cannot use an export template resolving to an anonymous auxiliary database as an audience definition's Validation file export template.

- Validation export location: this property is enabled when Produce validation files is checked. It allows you to define the context to where validation files are to be written. A dropdown exposes the following values:

  - Use Default (the default)
  - Network Path
  - FTP Server
  - External Content Provider

- Export path format: this property is displayed if Validation export location is set to a value other than Use Default. It allows you to set the path using the Validation Export Path Format dialog. Provision of a value is mandatory if Validation export location is set to Network Path, otherwise the field is optional.

- Validation FTP location: this property is displayed if Validation export location is set to FTP Server. A dropdown field, it lists all configured FTP locations. The default FTP location is selected automatically.

- Validation external content provider: this property is displayed if Validation export location is set to External Content Provider. A dropdown field, it lists all configured external content providers. The default external content provider is selected automatically.

Waterfall Report Section

- Generate waterfall report (in Test): this checkbox is unchecked by default. When it is checked, a waterfall report is created during Test audience execution, displaying drop off counts for each audience block.

  Note that, if checked, a 'Performance may be impacted' warning is displayed next to the checkbox. This advises that the time taken to execute an audience in Test mode may increase significantly if this option is selected.

- Generate waterfall report (in Prod): this checkbox is unchecked by default. When it is checked, a waterfall report is created during Production an audience execution, displaying drop off counts for each audience block.

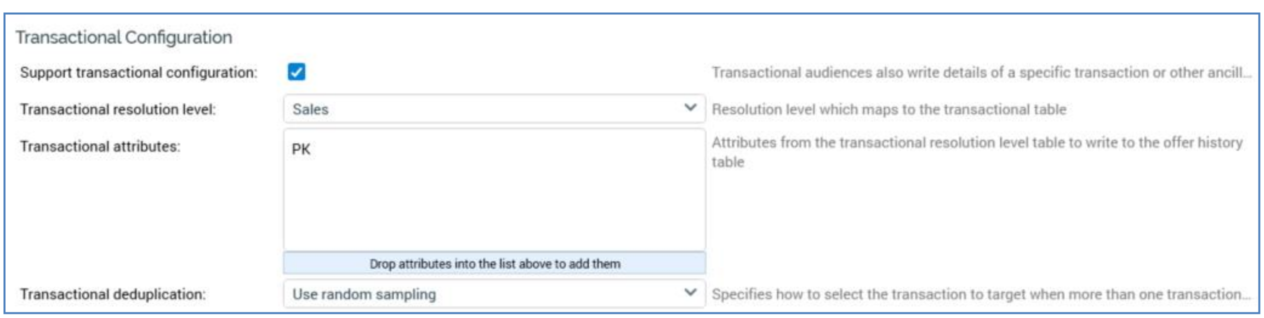
  Note that, if checked, a 'Performance may be impacted' warning is displayed next to the checkbox. This advises that the time taken to execute an audience in Production mode may increase significantly if this option is selected.

Transactional Configuration Section

An audience definition's transactional configuration allows you to specify that, when an audience based on the definition executes, in addition to customer or prospect data being written to offer history, details of an additional transaction or other ancillary record are also recorded.

For example, you might define a customer audience definition as supporting transactional configuration; if so, when you execute an audience based on the audience definition, you may also choose to write details of the customer's most recent purchase to offer history.

An audience definition's transactional configuration settings are managed in a dedicated section in the Audience Definition configuration interface.



It contains the following:

- Support transactional configuration: this checkbox, unchecked by default, controls whether a transactional or other ancillary record will be written into offer history alongside customer or prospect data. Checking it displays the other transactional configuration properties.

- Transactional resolution level: this dropdown exposes all resolution levels configured within the current RPI installation. Selecting a resolution level allows you to define the source of the ancillary record to be written to offer history.

  You cannot use an anonymous auxiliary database resolution level at an audience definition's Transactional resolution level

- Transactional attributes: this list contains the set of attributes, drawn from the database table linked to the selected Transactional resolution level, that are to be written to offer history in addition to customer or prospect data.

  Upon selecting the definition's Transactional resolution level, the resolution level's database key column is automatically added to the list. Note that any attributes added automatically in this way are removed when you change the Transactional resolution level. You can also drag attributes from the toolbox and drop them directly into the list. The target table of any such attributes must be the Transactional resolution level's table. The list must contain at least one attribute. Exists in table, model project and parameter attributes are not supported in this context.

  Having added an attribute, the following options are available when you hover over it:

  - View Information...: invocation of this option displays the File Information dialog
  - Remove this Attribute

  You cannot use anonymous auxiliary database attributes at an audience definition's Transactional attributes.

- Transactional deduplication: this dropdown allows you to define the manner in which selection of the transactional record is to be carried out. It exposes the following values:

  - Use random sampling: the default value. A transactional record is selected on a random basis.
  - Sample ascending using: selecting this option displays the [Prioritization attribute] field. Selection of a transactional record is carried out in accordance with its [Prioritization attribute] value; for example, should you choose to Sample ascending using 'Transaction Date', the transactional record with the lowest date will be selected.
  - Sample descending using: selecting this option enables the [Prioritization attribute] field. Selection of a transactional record is carried out in accordance with its [Prioritization attribute] value; for example, should you choose to Sample descending using 'Transaction Value', the transactional record with the highest value will be selected.

- [Prioritization attribute]: this field is only displayed if Transactional deduplication is set to one of Sample ascending or descending. If shown, an attribute must be supplied (you can browse for or drag one from the toolbox). The selected attribute's Target table must be the Transactional resolution level's table. Having selected an attribute, you can invoke View

Information to view its details in the File Information dialog. You can also Clear the attribute. Exists in table, model project and parameter attributes are not supported in this context.

Audit Export Configuration Section

This section is used to define whether an audit file should be generated on execution of a fulfillment activity (offer, export or control) that targets data sourced using the current audience definition. It contains the following properties:

- Audit export mode: this dropdown is used to specify when audit files will be produced. It exposes the following values:
  - Don't generate audit files: default value; no audit files will be produced.
  - Generate audit files in Test only: audit files will only be produced during Test interaction execution.
  - Generate audit files in Production only: audit files will only be produced during Production interaction execution.
  - Generate audit files in Test and Production: audit files will be produced during both Test and Production execution.
- Audit export template: this property is displayed when Audit export mode is set to a value other than Don't generate audit files. If displayed, provision of an export template is mandatory. You can provide an export template using browse or drag and drop. You can also initiate the creation of a new export template. Once an export template has been provided, a button facilitates opening of its latest version. You can also clear your selection.

  You cannot use an export template resolving to an anonymous auxiliary database as an audience definition's Audit export template.
- Include attributes: this checkbox is displayed when Audit export mode is set to a value other than Don't generate audit files. It is unchecked by default. If unchecked, when an audit file is generated, only the attributes from the Audit export template will be included in the audit file. If checked, additional attributes from the fulfillment activity that initiated generation of the audit file will also be included.

Backfill Export Configuration Section

This section is used to define whether audiences based on the audience definition will, at execution, generate ‘backfill files’. Offer history Backfill files can optionally be generated during interaction workflow execution. Backfill files can be used by external processes to populate a reporting repository. Separate backfill files can be generated for offer history, offer history meta and offer history details tables.

The section contains the following properties:

- Produce backfill files: this checkbox, which is unchecked by default, allows you to specify whether files containing offer history backfill data will be produced when audiences based on the audience definition are run. When unchecked, other backfill properties are hidden. When checked, other backfill properties are shown.

- Backfill export template: this property allows you to specify an export template that will define the basic properties of the files produced when backfill files are generated. It is displayed when Produce backfill files is checked and is mandatory when shown. You can populate the property using browse, or by using drag and drop. Having selected an export template, you can open its latest version in the Export Template Designer. You can also clear your selection or initiate the creation of a new export template or export template placeholder.

  The specified export template is used to define backfill files' basic properties (e.g. whether delimited or JSON), rather than the attributes included in backfill files; as such, provision of attributes at export templates is no longer a hard requirement. Also, the selected template's Resolution level need not match that of the current audience definition.

  Note that fixed width export templates are not supported in this context.

- Backfill extract location: this property allows you to specify the type of file export location to be used when backfill files are generated. The property is displayed when Produce backfill files is checked. A dropdown field it exposes the following values:

  - Use Default: the default value.
  - Network Path: when this value is selected, the Export path format property is displayed.
  - FTP Server: when this value is selected, the Backfill FTP location and Export path format properties are displayed.
  - External Content Provider: when this value is selected, the Backfill external content provider and Export path format properties are displayed.

- Export path format: this property is shown when Produce backfill files is checked and Backfill extract location is set to a value other than Use Default. Clicking the property displays the Design Backfill Export Path dialog, allowing you to specify the format of the export path to be used when backfill files are generated. The following text parts are supported at the dialog:

  - String
  - Date part
  - Test indicator: set to 'TEST' when files are generated in Test mode.
  - Table name
  - Query type: one of INSERT, DELETE or UPSERT

  Note that the property is mandatory when Backfill extract location is set to Network Path.

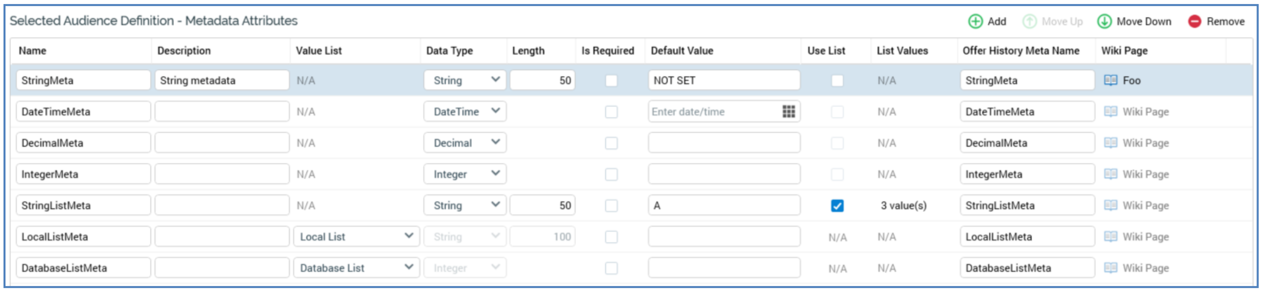
- Backfill FTP location: this property is displayed when Produce backfill files is checked and Backfill extract location is set to FTP Server. It allows you specify the FTP server to be used when backfill files are generated. A dropdown field, it lists all configured FTP locations at the current RPI client. Selection of an FTP location is mandatory when the property is shown.

- Backfill external content provider: this property is displayed when Produce backfill files is checked and Backfill extract location is set to External Content Provider. It allows you specify the external content provider at which backfill files will be generated. A dropdown field, it lists all configured external content providers at the current RPI client. Selection of an external content provider is mandatory when the property is shown.
- Produce in test mode: this checkbox, which is unchecked by default, allows you to define whether backfill files are to be generated in Test mode.
- Export channel metrics: this checkbox, which is unchecked by default, allows you to define whether files containing aggregated channel metrics will be produced.

  In addition, the Export backfill state data system task generates offer history states and channel execution results backfill files. For more information, please see the Operations interface documentation.

6.4.6 Metadata Tab

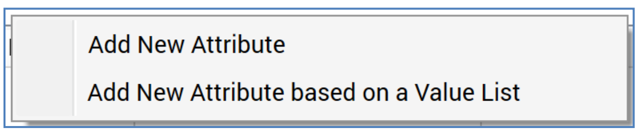
This tab allows you to define the set of metadata attributes that will be available to audiences that use the audience definition. You can also define default values for these attributes.



An audience definition's metadata attributes are listed in the Selected Audience Definition – Default Metadata grid.

A toolbar is presented above the grid. It exposes the following options:

- Add: invocation of this option displays a sub-menu:



Selection of either option adds a new row to the grid, with its Name set to ‘New Item’ (if ‘New Item’ exists, Name defaults to ‘New Item 2” (this number can be incremented to ensure uniqueness)).

Selection of Add New Attribute creates a standard metadata attribute, the properties of which must be defined manually. The new attribute’s Data type is set to String, and its Length to 50.

Selection of Add New Attribute based on a Value List creates a value list-based metadata attribute, with properties set as follows:

  - Description: the metadata attribute's Description property is set by default to the value list's description.
  - Value List: set by default to the first list available (alphabetically).
  - Data Type: set by default to the selected value list's Value data type.
  - Length: set by default to the selected value list's String field length (if a string value list), else blank.
  - Is Required: checked by default.
  - Use List: set to ‘N/A’

- List Values: set to 'N/A'

- Move Up: this button is enabled when a row other than the first in the grid is selected. Clicking it moves the row up one place in the grid.
- Move Down: this button is enabled when a row other than the last in the grid is selected. Clicking it moves the row down one place in the grid.
- Remove: clicking this button removes the selected metadata attribute(s) from the grid.

You can configure an existing metadata attribute. Configuration is carried out directly within the grid.

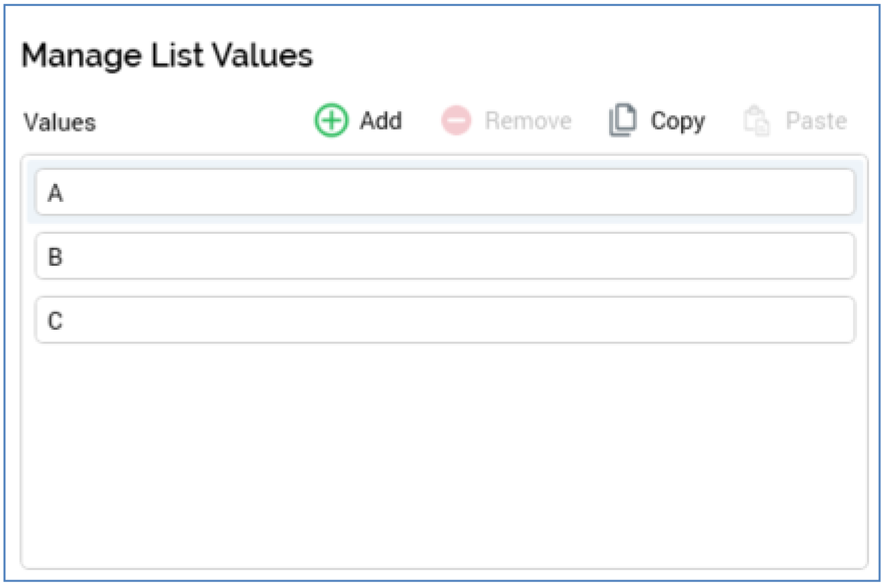
Metadata attributes have the following properties:

- Name: a mandatory textual field, which may be no more than 100 characters in length.
- Description: an optional text field, which may be no more than 1000 characters in length.
- Value list: if a value list-based metadata attribute, a dropdown, in which all currently-configured value lists are available, is shown. Note that, in this case, selection of a Value List is mandatory; you will not be able to save the audience definitions if no value lists have been defined.
- Data Type: if a standard metadata attribute, this field is populated using a drop-down list, constrained to the following values: String, Integer, Decimal and DateTime. If a value list-based attribute, this property is set to the selected value list's Value data type and is read-only.
- Length: only relevant if Data type is String. If a standard metadata attribute, length must be a positive integer and defaults to value 50. If a value list-based attribute, this property is set to the selected value list's String field length.
- Is Required: this checkbox is checked by default and allows you to define whether provision of a value for the metadata attribute is required.
- Default Value: you may optionally provide a default value for a standard metadata attribute. The value provided must be accordant with the attribute's Data type and Length (if relevant). You can, if you wish, use metadata parameters when specifying a metadata attribute's default value. A DateTime attribute's default value must be on or after 1 January 1800.

  If a value list-based attribute, no restriction (other than data type) is applied when setting the attribute's default value.

- Use List: a checkbox, enabled when Data Type is String. Use List is unchecked by default; checking it enables the List Values field. It is set to the read-only string 'N/A' in the case of value list-based metadata attributes.

- List Values: enabled when Use List is checked. List Values is displayed as '[n] value(s)', where [n] is the number of values in a constrained list of valid values for the metadata attribute. You can click the field to display the Manage List Values dialog.

  The Manage List Values dialog facilitates the specification of a constrained list of values appropriate to the field. It contains the following:

  - Toolbar: the Manage List Values toolbar exposes the following functionality:

    - Add: invocation adds a new value to the bottom of the list. Its name is 'New value'. If 'New value' already exists, the value is called 'New value 2'. The number can be incremented if required.

    - Remove: invocation of this option removes the selected value from the list.

    - Copy: clicking this button copies the contents of the Values list to the clipboard.

    - Paste: this button is only enabled when the clipboard contains text. Clicking it pastes the contents of the clipboard into the Values list. New values are appended to the bottom of the list. Existing values are unaffected. Any new values that match existing values are not pasted.

  - Values list: lists all of the attribute's constrained values. The attribute's Default value is added to the values list when Use List is checked. The list is cleared when Use List is unchecked.

    Values are presented using editable fields. Provision of a value is optional. The list must contain at least one constrained value. The default attribute value must appear in the constrained list. All constrained values must be unique. Any list updates are reflected in the number displayed in the List Values field in the underlying grid immediately. Clicking off the dialog removes it from display.

- Remove: this button is displayed and enabled when a list value is selected. Invocation removes the list value in question and is not protected by an ‘Are You Sure?’ dialog.

  The property is set to the read-only string ‘N/A’ in the case of value list-based metadata attributes.

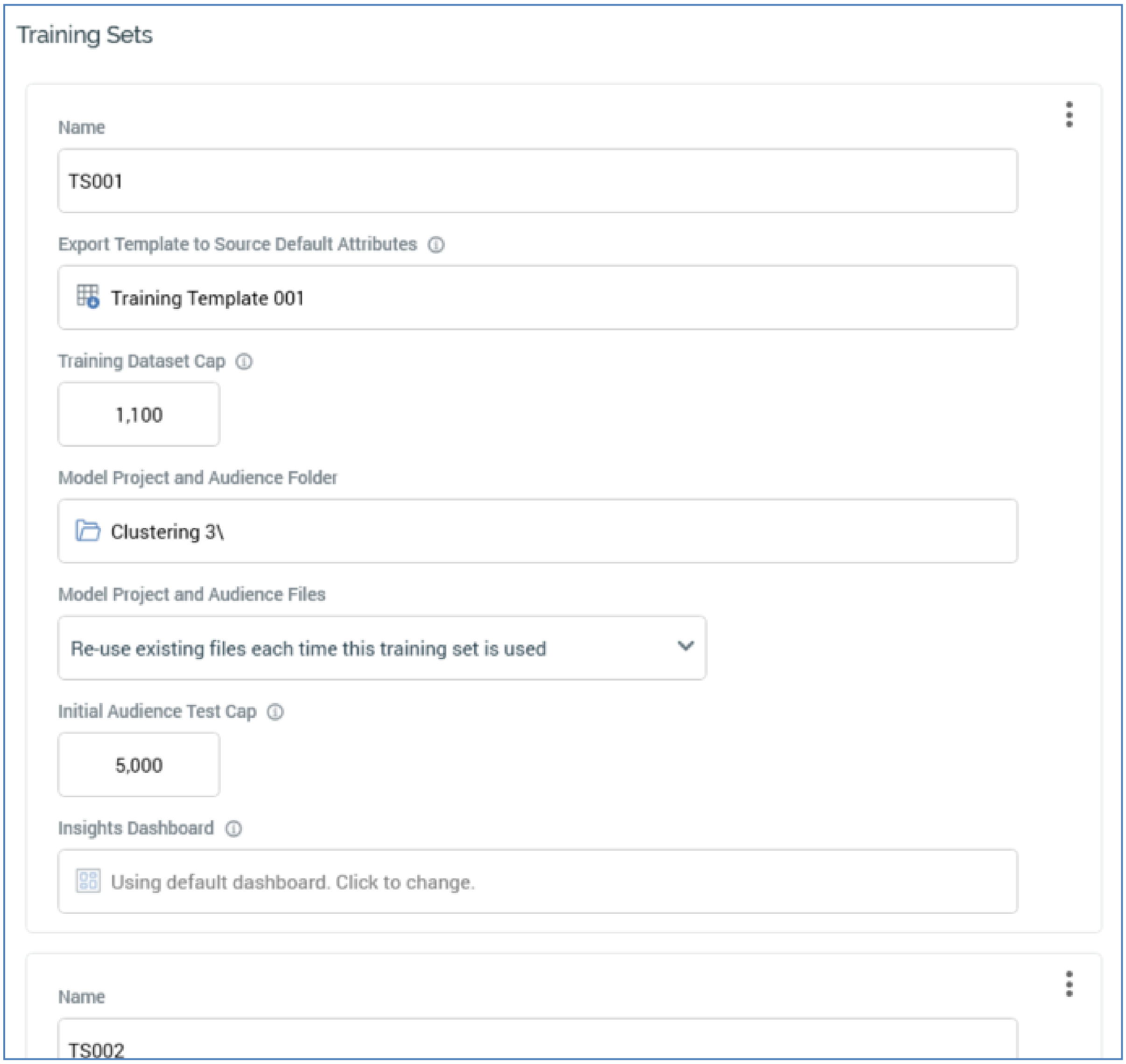
- Offer History Meta Name: a mandatory textual field that may be a maximum of 50 characters and which must contain database-valid characters (including not starting with a numeric character). The field represents the column name by which the metadata attribute will be known when persisted within the offer history meta tables.

- Wiki Page: you can browse for a Wiki page with which to associate the attribute using the File System Dialog. You can also drag an existing Wiki page from the toolbox and drop it onto the property. Having chosen a wiki page, its name is displayed in the Audience Definition configuration interface. You can clear the selected wiki page. You can also view the selected page in the Wiki Browser.

Note that the existence of metadata attributes within an audience definition is optional.

6.4.7 Training Sets Tab

This tab allows you to define training sets, which are collections of attribute used when generating a clustered audience from a standard selection rule. For more information on clustered audiences, please see the Standard Selection Rule documentation.



The tab contains a list of training sets, and displays all training sets configured at the current audience definition.

A training set exposes the following properties:

- Name: this mandatory text property can be a maximum of 100 characters in length. All training sets within the current audience definition must have unique names.

- Export template to source default attributes: you must select an export template for each configured training set. The export template is used as the basis for defining a set of attributes to be used during clustered audience generation. It is important to ensure that the selected template does not contain attributes not suitable for use at AML - e.g. unique identifiers such as a Customer Key. The selected template must be valid, be from the same database as the audience definition's Resolution level and must contain at least two attributes.

- Training dataset cap: this mandatory integer property represents the maximum number of records to be passed to AML to train a clustering model when the training set is used. The property defaults to the value 10,000, which is also the maximum permitted.

- Model project and audience folder: you must select an RPI file system folder, which will be used to save the model project and audience files created during clustered audience generation. You cannot select an external folder in this context.

- Model project and audience files: this dropdown field exposes the following values:

  - Re-use existing files each time this training set is used: when this option is selected, rather than generating new model project and audience files for a particular selection rule, RPI will overwrite any existing files.

  - Create new files each time this training set is used: the default value. When this option is selected, RPI will generate new model project and audience files for a specific selection rule each time a clustered audience is generated.

- Initial audience test cap: this integer property allows you to optionally apply a cap to the number of records used to run an audience test after model training is complete. The maximum permissible value is 999,999,999.

- Insights dashboard: by default, the results of initial audience test execution will be displayed using the audience definition's Default Insights dashboard. You can select another dashboard here to overwrite the default, if required.

An Add new Training Set button is displayed at the bottom of the list. Clicking it adds a new training set. The new training set’s default name is 'New Training Set' (an integer can be appended and, if required, incremented to ensure name uniqueness), and it is selected automatically. An inline Options menu gives access to a Remove option.

6.4.8 Create New Audience Definition

This is carried out using the Create new Audience Definition toolbar button. A new audience definition is added to the list of definitions displayed at the top of the Audience Definitions configuration interface. Its name is New Definition. If New Definition exists already, its name is New Definition 2 (this number can be incremented if required). The new audience definition's state is Added.

6.4.9 Delete Selected Audience Definition

This is carried out within the toolbar.

If you delete an Edited or Unchanged audience definition, its state is set to Deleted, and its accompanying text shown in the list is displayed in red. If you delete an Added definition, it is removed from display immediately. Deleted audience definitions are removed when you invoke Save.

Note that deleting an audience definition does not delete any of the tables to which it is configured to write data.

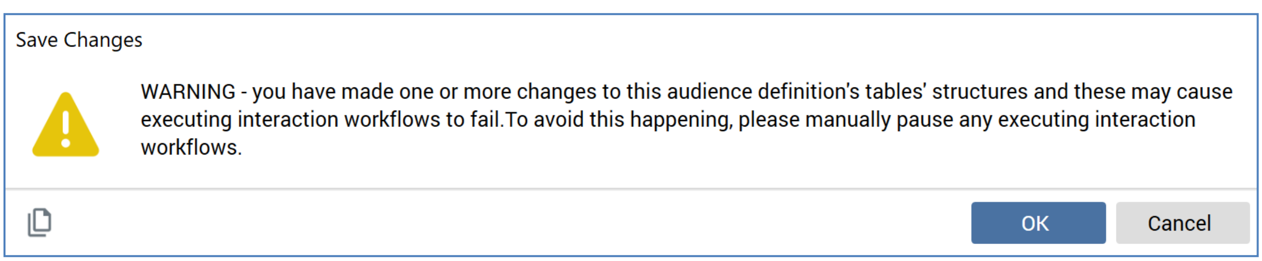
6.4.10 Save Changes to Audience Definitions

This is carried out using the Save changes to Audience Definitions toolbar button. Any changes you have made to definitions are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until they are resolved.

Following a successful save, all audience definition changes you have made are persisted. All audience definitions' states are updated to Unchanged. Any Deleted audience definitions are removed from display.

A validation error is raised at save if offer history tables are unable to be created.

When a save occurs, and the orange informational message is displayed above the audience definition's properties, a warning message is shown.



If you elect to proceed with the save, create or modify actions may be undertaken against the following database tables as defined within the audience definition:

- Offer History

- Offer History Meta

If you have specified that one or more of an audience definition's table names are the same as existing data warehouse tables, the columns specified within the audience definition are added to the existing tables.

In addition to the creation of offer history and offer history meta tables, two extra 'sandbox' tables are created at the same time (being named in accordance with the other tables, but with the suffix '_SandBox' appended to the table name). These tables store the results of interaction execution in test mode (in contrast to production mode, in which results are stored in the original three tables).

The following tables are also created for a new audience definition:

- [Offer History Table Name]_Content: used for email and SMS offers; stores the specific version of offer content received by an offer target.
- [Offer History Table Name]_Details: provides a synopsis of a specific fulfillment activity's execution (useful for reporting purposes).
- [Offer History Table Name]_States: persists historical details of any events undertaken by an offer target post-receipt of the offer: e.g. clicking on a hyperlink, sharing to a social site.

Note that, if you make changes to an audience definition's tables' name(s), new tables are created alongside the existing tables – the original tables are not renamed.

Joins are also created to link the new offer history tables to the resolution level's table.

If any database updates fail then the audience definition is not saved and you are advised accordingly.

The actions above are carried out by a Validate audience definitions job, which is displayed in the My Jobs Dialog on invocation of Save. Full details of the job and Dialog can be found in the My Jobs documentation.

Note that any changes to links to files from the audience definition will be picked up by the Execution Service within an hour of being saved (or immediately at service restart).

6.4.11 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.4.12 Clone Selected Definition

This option allows you to create a copy of an existing audience definition. The button is only enabled when an Unchanged audience definition is selected.

On invocation, the copy is created and selected automatically. All properties are per the original definition (however, if you clone the default definition, the newly-created clone is not marked as default).

The orange 'The database will be validated…' message is shown at the top of the Audience Definitions configuration interface, and a Validate audience definitions job is created and executed on subsequent invocation of Save.

6.4.13 Validate

Clicking this button creates a Validate audience definitions job and displays it in the My Jobs Dialog (for more information, please see that interface's documentation). On its completion, an orange message is displayed at the top of the Audience Definitions configuration interface:

> **Validation job has completed. Please refresh to get the latest audience definition details.**

Clicking Refresh updates the list of audience definitions and removes the orange message from display.

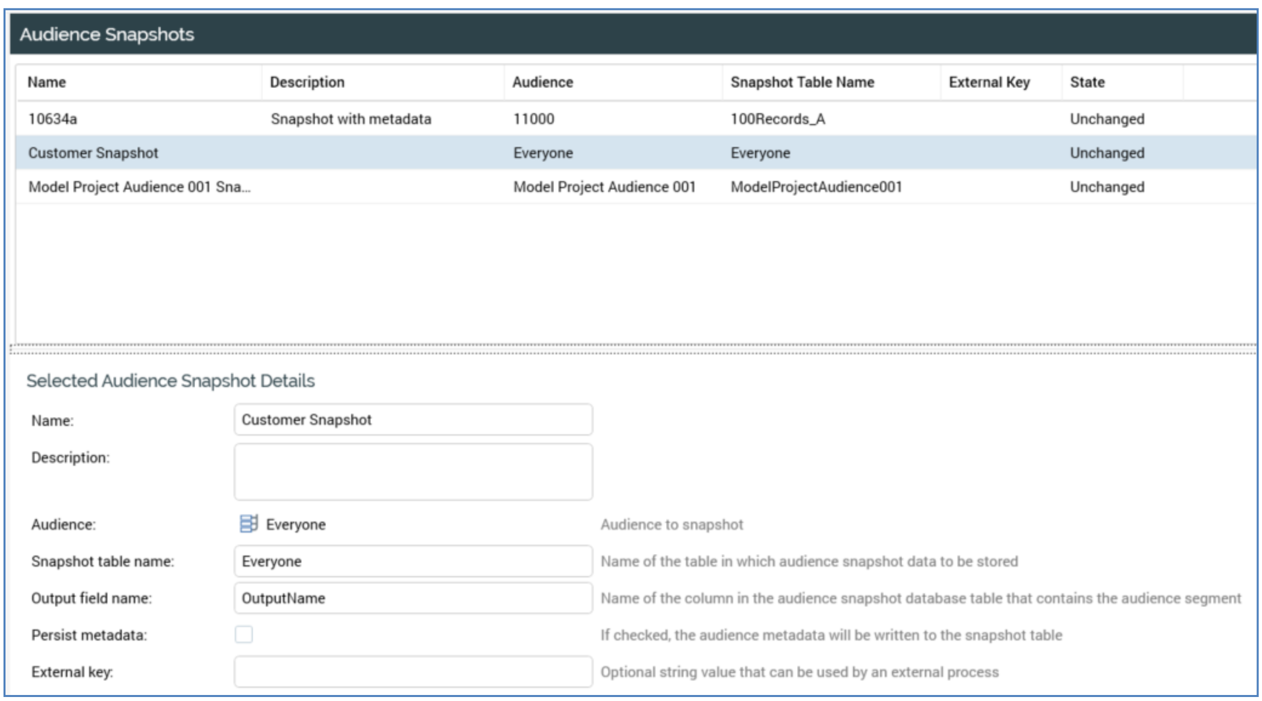
6.5 Configuring Audience Snapshots

An audience snapshot allows you to improve query performance by persisting the results of the execution of a commonly-run audience in a data warehouse table. You can then build attributes from this table, which you can leverage to build highly performant selection rules (which can, in turn, be used in other audiences).

For example, suppose you have a complex audience, execution of the logic in which takes several hours. Suppose also that the data queried by the audience is refreshed once a week.

You can build an audience snapshot that executes the rules in the audience and writes the results to a data warehouse table. It then becomes a simple exercise to build attributes based on the snapshot table and use them to identify the persons targeted by the original audience (and, if required, the segments within which they qualify). These can then be used in selection rules, and, in turn, in an audience that executes much more quickly than the original.

Definition of audience snapshots is carried out in the Audience Snapshots configuration interface.



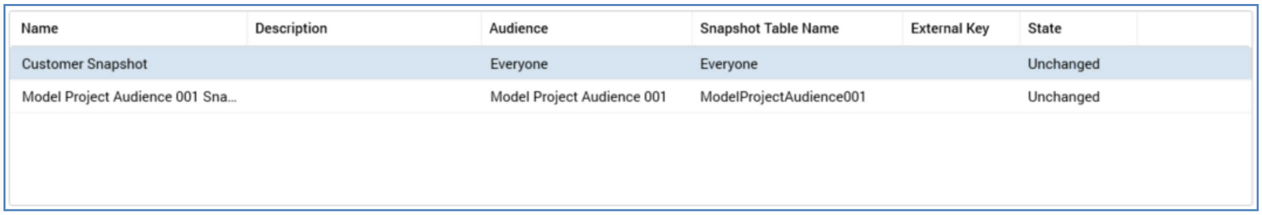
A separate Audience Snapshots tab is to be found in the Operations interface; this is used to manage the execution of audience snapshots. This can be manually invoked or may be performed in accordance with a defined schedule (in the example above, you might schedule the audience snapshot to execute overnight on a weekly basis, immediately after the data is refreshed). It is recommended that you save any changes to audience snapshots that you make in the Configuration Workbench, and close the interface, before managing audience snapshots' operational configuration.

For details of the Audience Snapshots tab in the Operations interface please see the Operations documentation.

The Audience Snapshots configuration interface contains the following:

6.5.1 Audience Snapshots List

All existing audience snapshots are presented in alphabetical order by name.



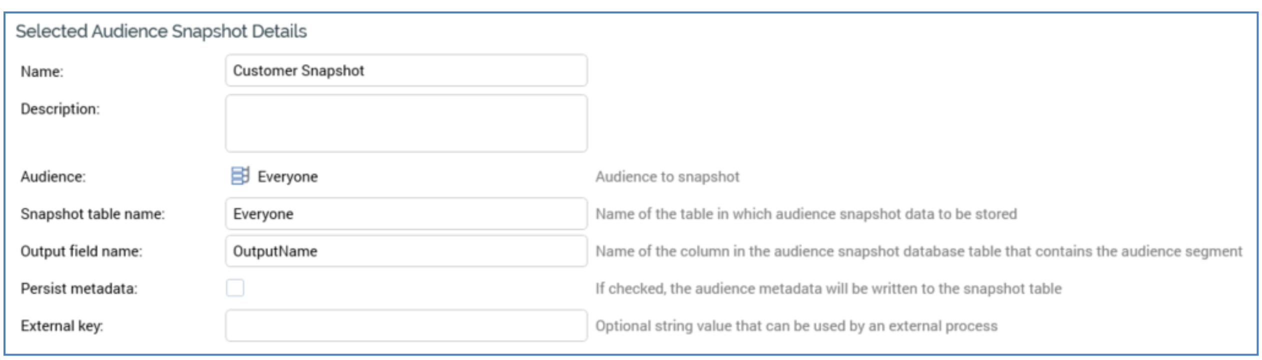
Name	Description	Audience	Snapshot Table Name	External Key	State
Customer Snapshot		Everyone	Everyone		Unchanged
Model Project Audience 001 Sna...		Model Project Audience 001	ModelProjectAudience001		Unchanged

The following read-only columns are displayed:

- Name
- Description
- Audience
- Snapshot Table Name
- External Key
- State: one of Unchanged, Added, Edited or Deleted.

6.5.2 Selected Audience Snapshot Details

This section contains the following updateable fields:



- Name: the name of the audience snapshot. Name is a text field, may be a maximum of 100 characters and is mandatory. Name must be unique across all audience snapshots.
- Description: an optional field that may be a maximum length of 1000 characters.

- Audience: provision of an audience for the snapshot is mandatory. You can drag an audience from the toolbox and drop it in the field, or you can Browse for an audience. Once populated, you can invoke Open latest version to display the in the Audience Designer. You can also Clear the selected audience.
- Snapshot table name: this field is used to store the name of the table in which results of execution of the audience snapshot are to be stored. Provision of a Snapshot table name is mandatory, and the value provided must be a maximum of 50 database-compatible characters in length. In addition, the value must be unique within the list of audience snapshot table names. Note that joins to the snapshot table are not created automatically and must be managed manually.
- Output field name: represents the name of the column in the snapshot table that will contain the name of the audience segment.
- Persist metadata: a checkbox, unchecked by default. When checked, at audience snapshot execution, metadata values are written to the snapshot table.
- External key: this optional string value facilitates the invocation of execution of an audience snapshot. When a value is inserted into data warehouse table RPI_DataflowSnapshotRequests, execution of any audience snapshots with a matching External key value will be carried out by the Audience snapshot requests system task. Note that External key need not be unique; if multiple audience snapshots share the same value, all will be executed on insertion of the value in question.

6.5.3 Create New Audience Snapshot

This is carried out using the Create new Audience Snapshot toolbar button. A new audience snapshot is added to the list of existing audience snapshots. Its name is New Audience Snapshot. If New Audience Snapshot exists already, its name is New Audience Snapshot 2 (the number can be incremented accordingly). Its State is Added. Having added an audience snapshot, it is selected automatically.

6.5.4 Configure Existing Audience Snapshot

This is carried out in the simple fields in Selected Audience Snapshot Details. You can select an existing audience snapshot to view its details. If multiple audience snapshots are selected, a message is displayed.

6.5.5 Delete Selected Audience Snapshots

This is carried out in the toolbar. A deleted snapshot's State is set to Deleted, and its row text color to red. You are no longer able to select a deleted row. Note that you can delete multiple audience snapshots concurrently. Having deleted an audience snapshot, it is no longer listed in the Audience Snapshots tab in the Operations interface.

6.5.6 Save Changes to Audience Snapshots

Save is carried out using the Save changes to Audience Snapshots toolbar button. When invoked, the changes you have made are validated. Any validation errors are advised in a dialog. You are not able to proceed with Save until you have resolved them. Following a successful save, audience snapshots are displayed in alphabetical order. All snapshots' States are updated to Unchanged. A newly-saved snapshot is available in the Audience Snapshots tab in the Operations interface. Deleted snapshots are removed from display.

6.5.7 Refresh

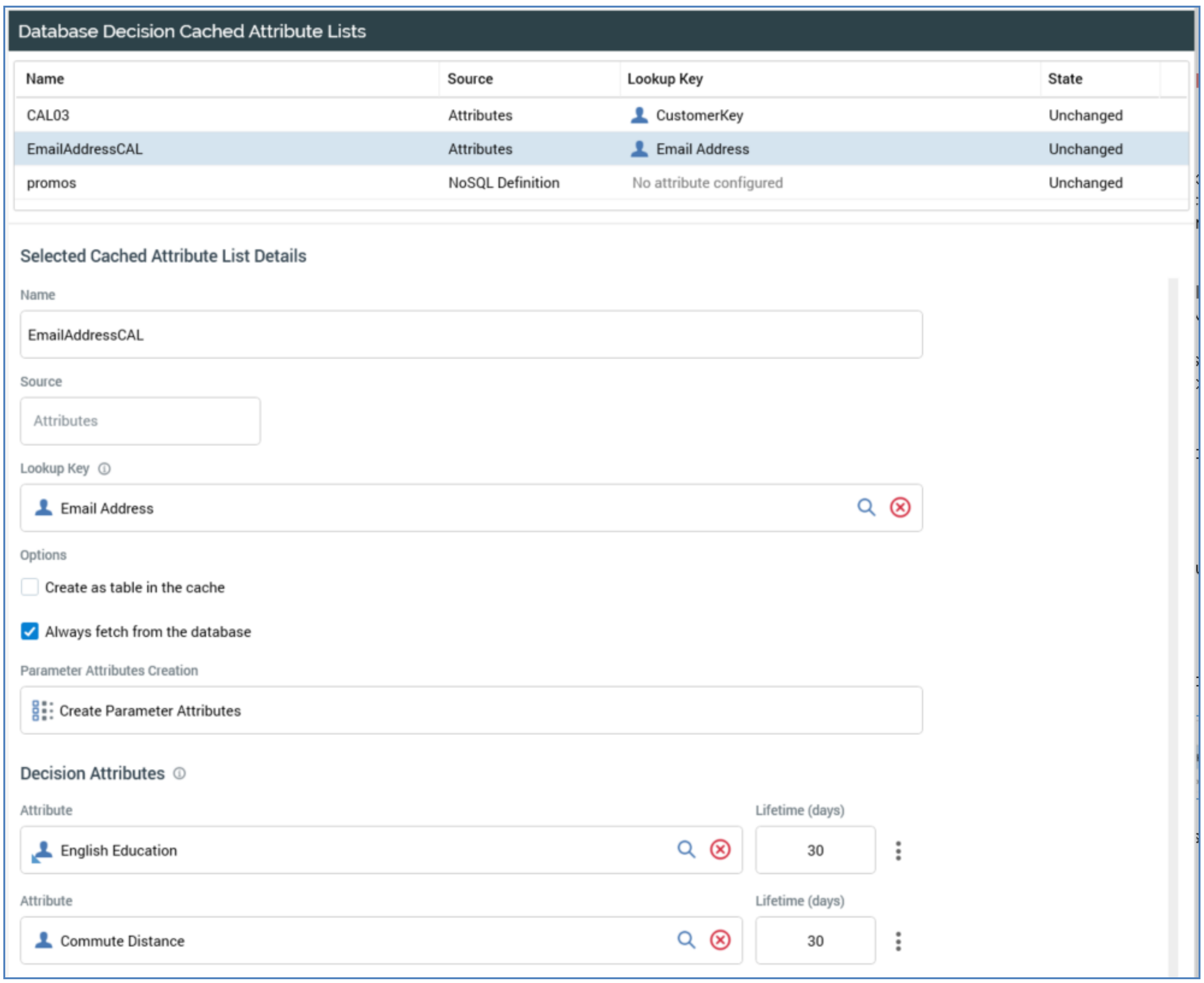
This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.6 Configuring Cached Attribute Lists

Cached attribute lists are used by database realtime decisions to determine applicable content to be rendered to a visitor to a web page containing an RPI rule smart asset, within which at least one content element must be configured with a database realtime decision.

A cached attribute list is a collection of database column attributes and a lookup key. When a website visitor provides RPI with a lookup key value – for example, by submitting an email address in a web form – the provided value can be used as a lookup into the data warehouse, or an auxiliary database, and the visitor's unique values for a range of attributes – defined by the cached attribute list's Decision attributes property – can be retrieved and stored in the realtime cache.

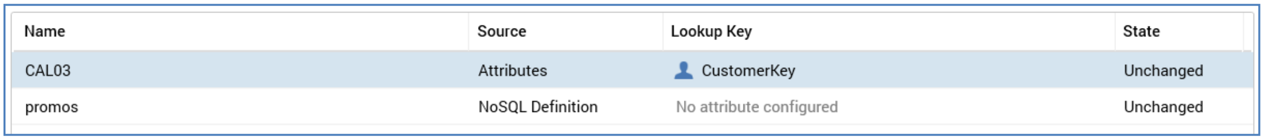
These stored values can then be used to make decisions about the content that should be presented to the (now known) website visitor.



Configuration of cached attribute lists is carried out in a dedicated configuration interface.

6.6.1 Database Decision Cached Attribute Lists

A grid lists all existing cached attribute lists, which are presented in alphabetical order.



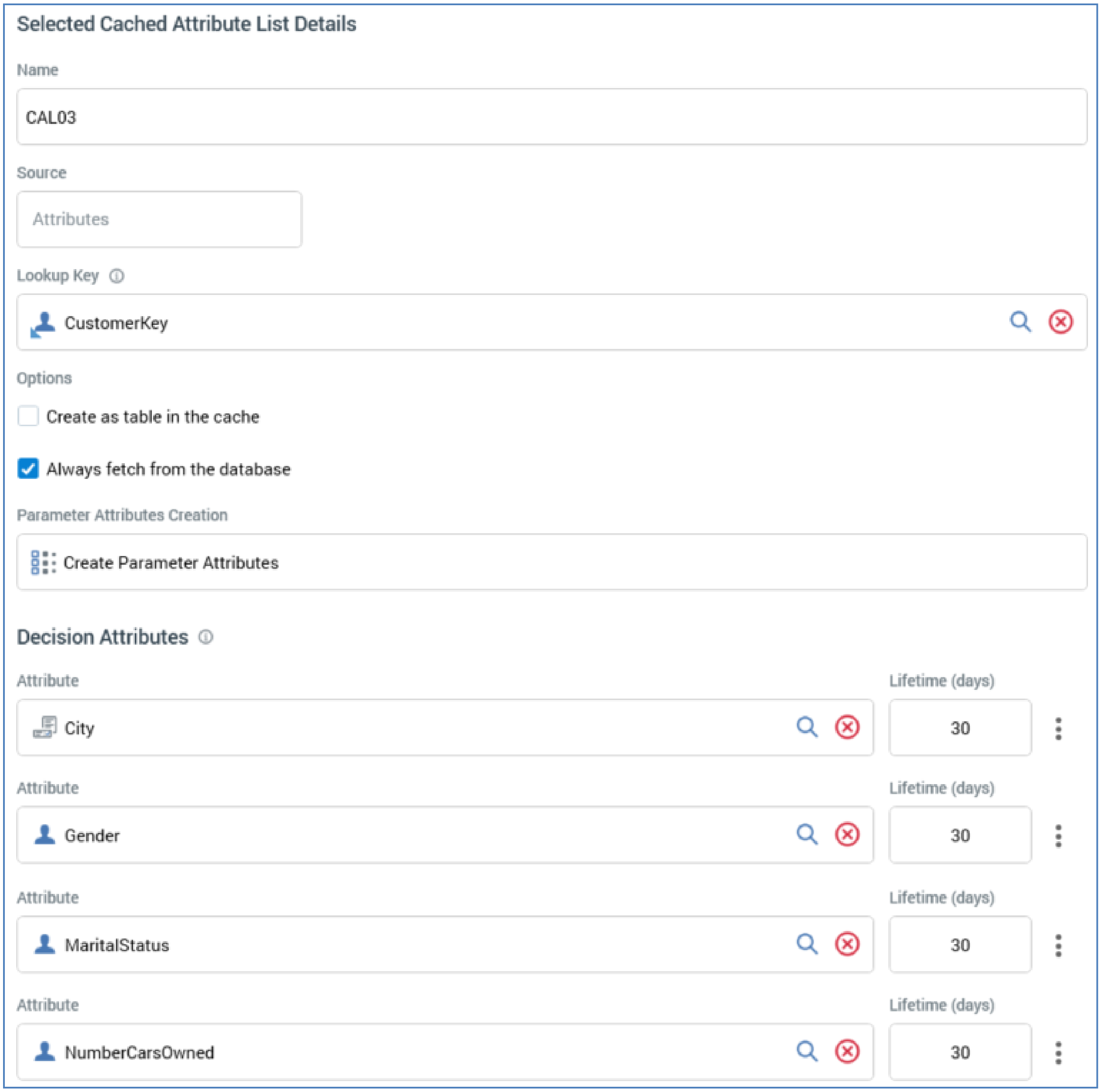
Name	Source	Lookup Key	State
CAL03	Attributes	CustomerKey	Unchanged
promos	NoSQL Definition	No attribute configured	Unchanged

Within the grid, the following read-only columns are displayed:

- Name
- Source
- Lookup Key
- State: one of Unchanged, Added, Edited or Deleted.

6.6.2 Selected Cached Attribute List Details

This section allows you to configure details of the cached attribute list selected currently in the grid. If an Attribute-based cached attribute list, the following updateable fields are displayed:



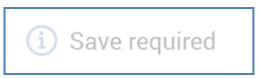
- Name: a mandatory, textual field that may be a maximum of 100 characters in length. Name must be unique across all cached attribute lists.
- Source: read-only, and set to the value 'Attributes'.
- Lookup key: this property represents the data to be provided by a website visitor in order to facilitate his or her identification: for example, a visitor might input their email address into a web form; on submission thereof, RPI can use the email address to perform a lookup against the data warehouse or an auxiliary database, thereby populating the realtime cache with values of the attributes listed in the Decision attributes list that are unique to the visitor.

Provision of a lookup key is mandatory, and the property must be configured using a database column attribute.

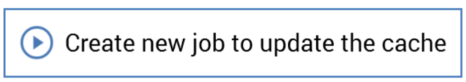
- Create as table in the cache: this checkbox is unchecked by default. If checked, data defined by the attributes in the cached attribute list will be persisted as a virtual 'table' within the realtime cache. If checked, the Always fetch from database checkbox is not shown, and the Update the cache button is displayed.

  Note that this feature is appropriate for use cases where a smaller amount of lookup data is to be supported. For more details please see the RPI Admin Guide.

- Update The Cache: this button is only displayed when Create as table in the cache is checked. It is used to refresh values for the attributes with which the cached attribute list is configured, as persisted in the realtime cache. When unsaved changes are present in the cached attribute list, the button is disabled and appears as follows:

  When no unsaved changes are present in the list, the button is enabled and appears as follows:

  Clicking the button creates a job, which is used to update the realtime cache with the latest data for the list's attributes from the database. The job is listed in the My Jobs Dialog, which is displayed if not already shown. Full details of the job can be found in the My Jobs Dialog documentation. The job populates the realtime cache with the data defined by the attributes within the cached attribute list. The data is keyed on the list's Lookup key. The maximum number of rows that can be loaded is controlled by system configuration setting MaxRowsPerCachedTable.

  For full details of using cached attribute lists that have been persisted as virtual tables, please see the Database Decision section within the Realtime Decisions documentation.

- Always fetch from database: this checkbox, which is unchecked by default, allows you to specify that, when values from the attributes within the cached attribute list are required at realtime decision assessment, they will always be retrieved from the database, and not read from the realtime cache. The property is not shown when Create as table in the cache is checked. When unchecked, attributes in the list and their values are persisted in a visitor's profile, and realtime decisions are made against the same. When checked, attributes in the list are not persisted in visitor profile, and realtime decisions are always made against values retrieved from the database.

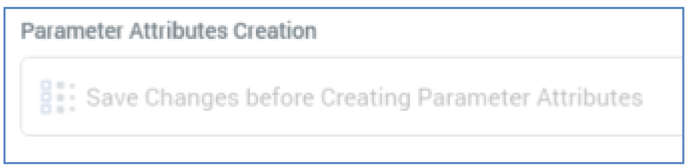
- Enable transactional decision support: this checkbox is unchecked by default, When checked, any decisions made on multiple transactions will be evaluated on each transaction individually. For example, assuming that separate transactions with Color 'Red' and 'Silver' exist:

When checked: Color = Red AND Color = Silver gives a FALSE result

When unchecked: Color = Red AND Color = Silver gives a TRUE result

- Maximum Number of Rows: this numeric property allows you to specify the maximum number of rows to be returned per lookup. It defaults to 100, and accepts a range of values from 1 to 10,000.

- Create Parameter Attributes: this button allows you to create a series of parameter attributes based on the listed decision attributes and save them in a folder of your choice. It is enabled when no changes are present in the cached attribute list; when unsaved changes exist, it is displayed as follows:

  Clicking the button displays the Choose Folder to Save Parameter Attributes dialog. The folder chosen most recently in the current context is selected automatically. Having selected a folder, you can click OK to proceed. Parameter attributes based on the list of decision attributes are created in the selected folder, and an information message advises of the attributes' creation. The parameter attributes are named in accordance with the decision attributes' names. If one or more attributes was unable to be created as it already exists, a warning is displayed.

  You can also click Cancel to remove the dialog from display.

- Decision Attributes: you must configure a cached attribute list with at least one decision attribute. Decision attributes represent those facets of a website visitor's profile that can be used by database decisions to determine which content to render. If you configure two decision attributes with the same name, a validation error is raised on Save.

  The property consists of a list of decision attributes, below which is displayed an Add Decision Attribute button.

  The following are shown at a decision attribute displayed within the list:

  - Attribute: this property represents a piece of data about a website visitor to be populated in the realtime cache, in accordance with the supplied Lookup key value.

    Attribute must be a database column attribute. Provision of an attribute for a row within the grid is mandatory. A given attribute can be used once only in a cached attribute list.

You can populate the property using Browse…, or by dragging an attribute from the toolbox and dropping it onto the grid row. You can also drop an attribute directly onto whitespace within the grid to create a new decision attribute.

All attributes must be sourced from the same database as the Lookup key.

- Lifetime (Days): this mandatory integer property represents the length of time, in days, that a decision attribute value will be maintained within the realtime cache. Its minimum value is 1, and its maximum 999.

- Actions button: exposing the following context menu options:

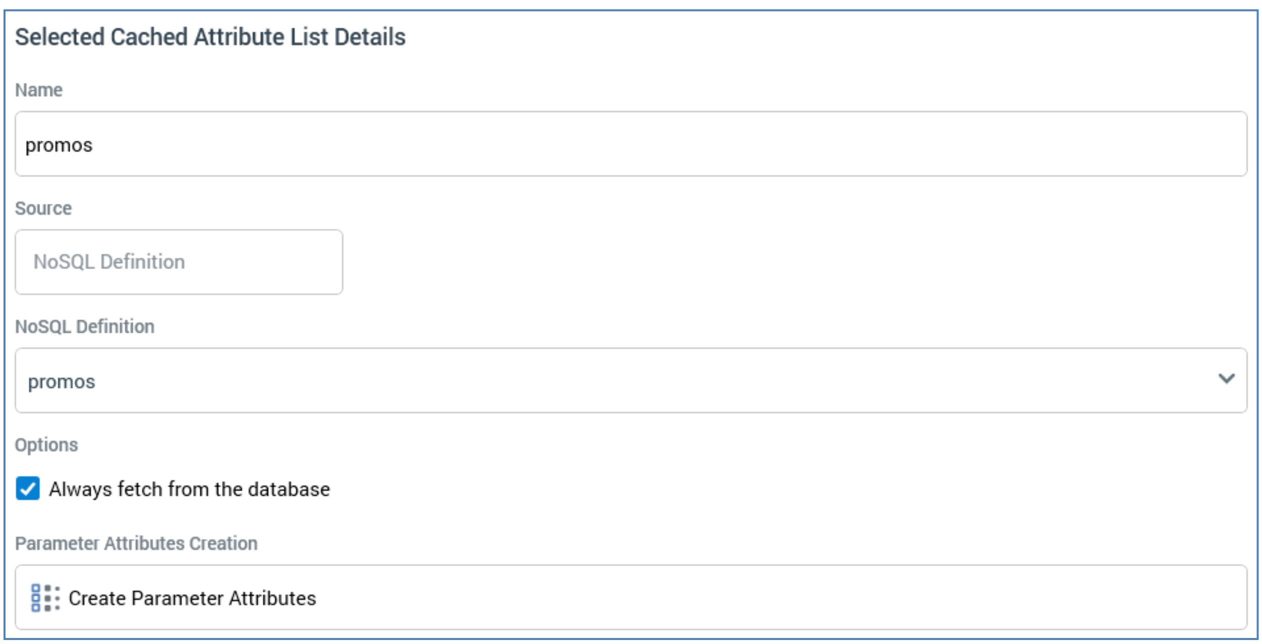
  - Add: clicking this button adds a new decision attribute to the grid. The new row's Attribute property is not set, and Lifetime defaults to 30 days.

  - Move Up: this option is only enabled when an attribute other than the first in the grid is selected. Invocation moves the selected attribute up one position in the grid.

  - Move Down: this option is only enabled when an attribute other than the last in the grid is selected. Invocation moves the selected attribute down one position in the grid.

  - Remove: invocation of this option removes the selected decision attribute(s) from the grid. An 'Are You Sure?' dialog is not displayed.

If a NoSQL-based cached attribute list, the following fields are displayed:



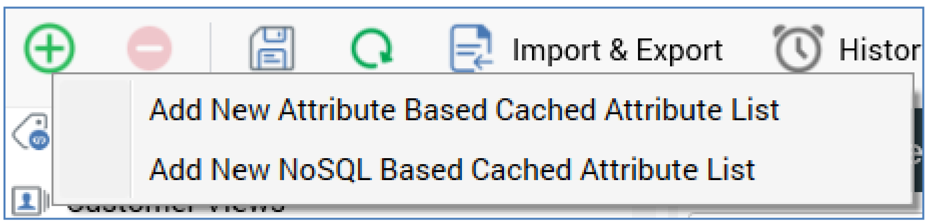
- Name

- Source: read-only, and set to the value 'NoSQL Definition'.

- NoSQL Definition: this dropdown field allows you to select from the list of currently-configured NoSQL database definitions.
- Always fetch from database
- Parameter Attributes Creation: parameter attributes created from the cached attribute list are named in accordance with their position in the JSON hierarchy. An attribute representing the entire JSON document is also provided.

6.6.3 Create New Cached Attribute List

Invocation of Create new Cached Attribute List at the Configuration Workbench toolbar displays a sub-menu:



Selecting an option adds a new cached attribute list of the chosen type to the grid, placing it in an appropriate alphabetical position. Its Name is 'New Cached Attribute List'. An incrementable integer can be appended to the default name to ensure uniqueness.

The new list's State is Added, and it is selected automatically.

6.6.4 Configure Existing Cached Attribute List

This is carried out in the simple fields in the Selected Cached Attribute List section, by selecting an existing list. If you make changes to a list that has been saved previously, its State is set to Edited.

6.6.5 Delete Selected Cached Attribute List

This is carried out in the toolbar. A deleted list's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.6.6 Save Changes to Cached Attribute Lists

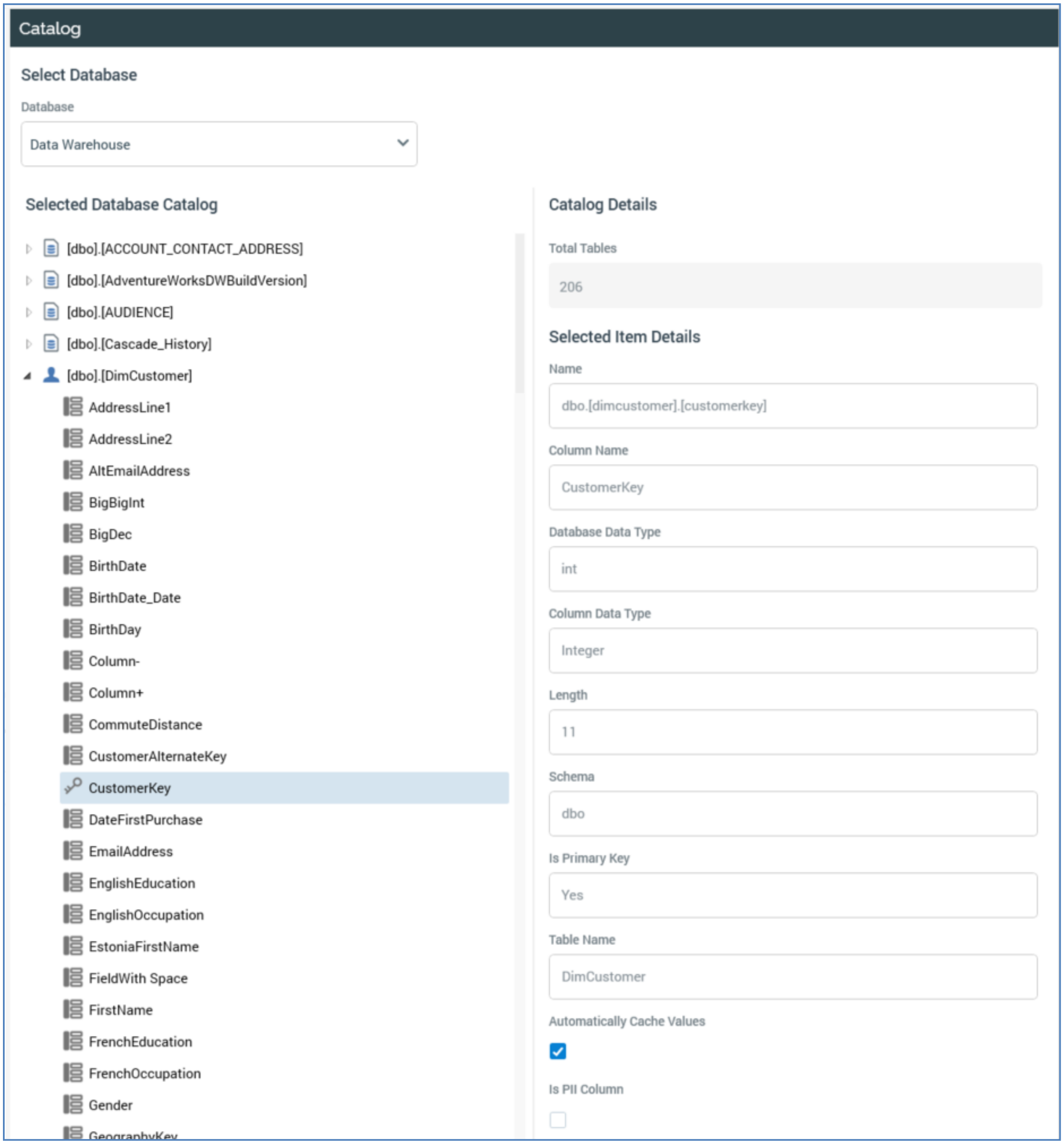
Save is carried out using the Save changes to Cached Attribute Lists toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, lists are displayed in alphabetical order. All lists' states are updated to Unchanged. Any deleted lists are removed from display.

6.6.7 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.7 Configuring the Catalog

The RPI catalog is used to improve performance by maintaining, within the RPI server's memory, a representation of the underlying state of the data warehouse, and any configured auxiliary databases, and associated count data.



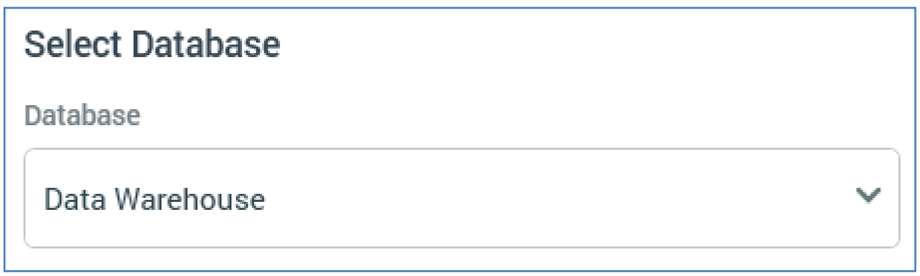
The Catalog configuration interface is used to:

- Provide visibility of the data warehouse catalog (and the catalogs of any configured auxiliary databases).
- Invoke the en masse creation of attributes based on a selected database table.
- Initiate the re-synchronization of the catalog with the data warehouse or an auxiliary database.
- Clear down any attribute count data held on the server.

The interface contains the following:

6.7.1 Select Database Section

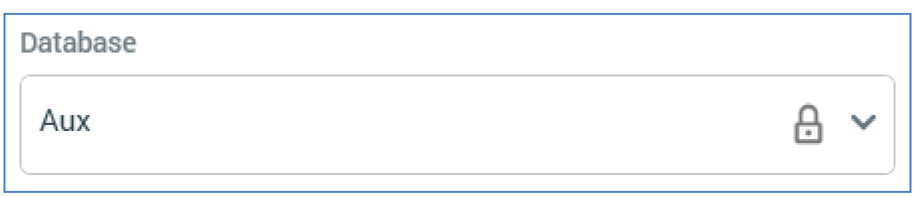
This section contains a single property:



- Database: allows you to specify the database for which catalog information will be displayed. By default, Database is set to Data Warehouse, and details of the database tables within the data warehouse are displayed in the Selected Database Catalog section.

  If one or more auxiliary databases have been configured at the current RPI client, you can choose to view another database's catalog by selecting a different Database value using the dropdown.

  If the selected database is a PII vault, a 'lock' icon is displayed to the right:

  On selection of a value, the Selected Database Catalog section is cleared and refreshed to display the selected database's catalog. While the newly-selected database's catalog is being prepared for display, a message is shown at the database treeview advising that a copy of the catalog is being built for viewing/editing.

6.7.2 Database Treeview

Database tables of which details are held within the catalog are displayed in a treeview, which forms the main section of the Catalog configuration interface. The contents of the treeview reflect the context specified at the Select Database section's Database property.

If the selected database has yet to be cataloged, a message is displayed instead:

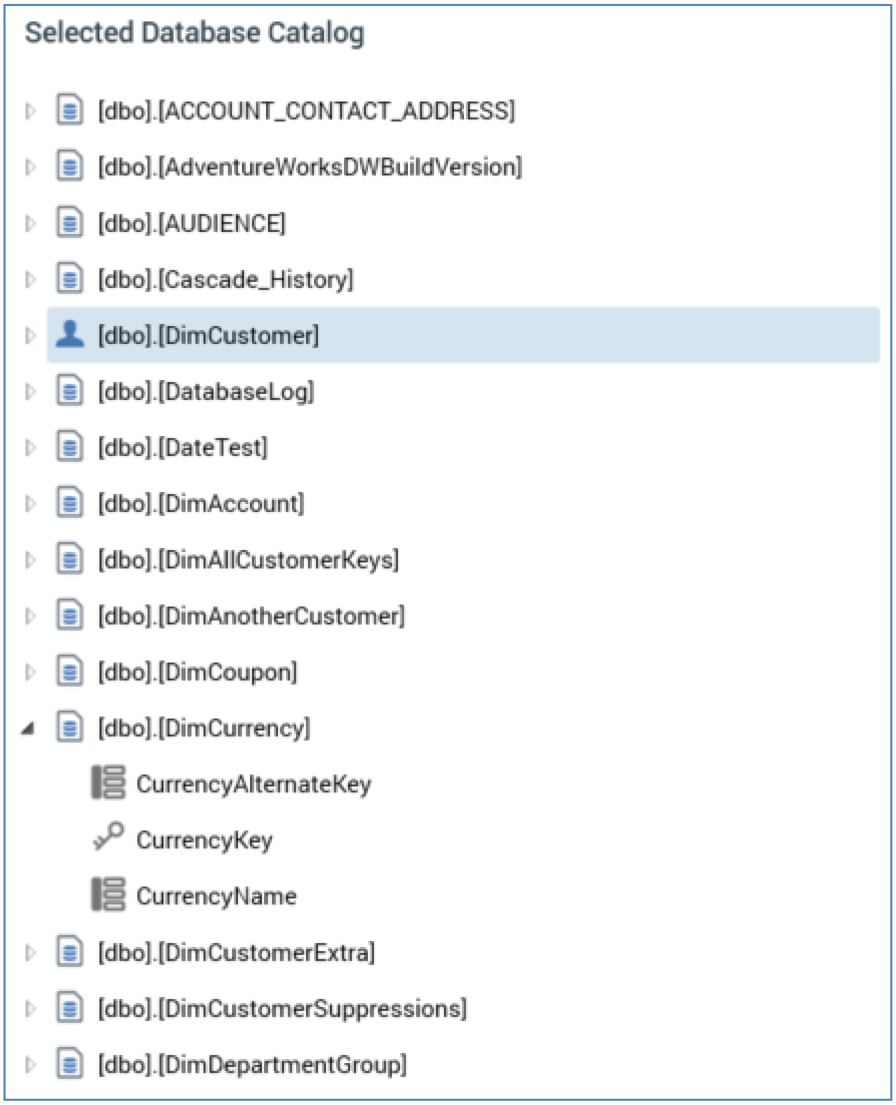
> The Database Catalog is currently empty.
>
> If the Data Warehouse, please confirm the DefaultSchema setting is correct, and synchronize the Catalog to view Tables and Columns here.

Please see the Synchronize Catalog documentation for further information.

The IsVisible column in the client's Interaction_XXX operational database table dm_TableMappings can be used to control whether a table is shown in the catalog; if set to 1, the table is displayed, if set to 0, it is not (note that if this value is changed you will need to refresh the catalog to display or remove the table in question).

Also, system configuration setting CatalogRPITempTables can be used to control whether temporary tables are displayed in the catalog. If set to True, all tables are shown. If set to false, the following tables are not displayed in the Catalog:

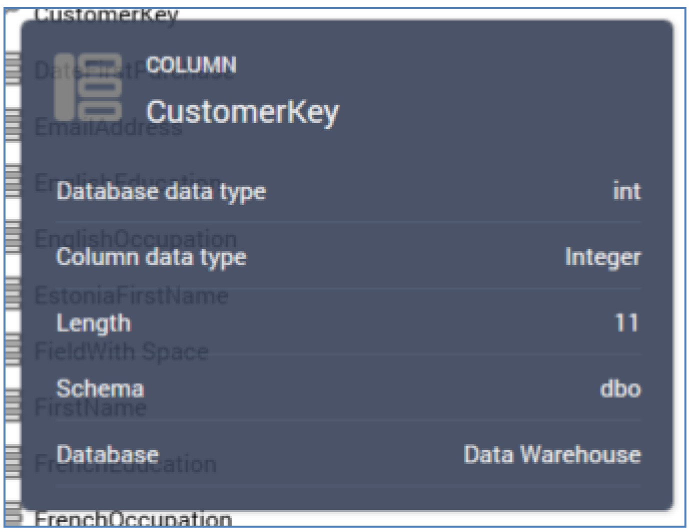
- Dataflow_*
- RPI_OH_*
- RPI_*_axml_*



The treeview is read-only. Database tables are ordered first by schema, then by table name, and are displayed as '[schema name].[table name]'. You can expand a table to view an alphabetical list of the columns it contains or roll up list of columns to view the table name only.

When you hover over a table…

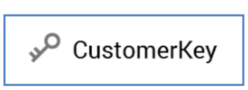
…or a column…



…an informational tooltip is displayed.

You can right-click a table or column in the treeview to display a context menu, exposing the following options:

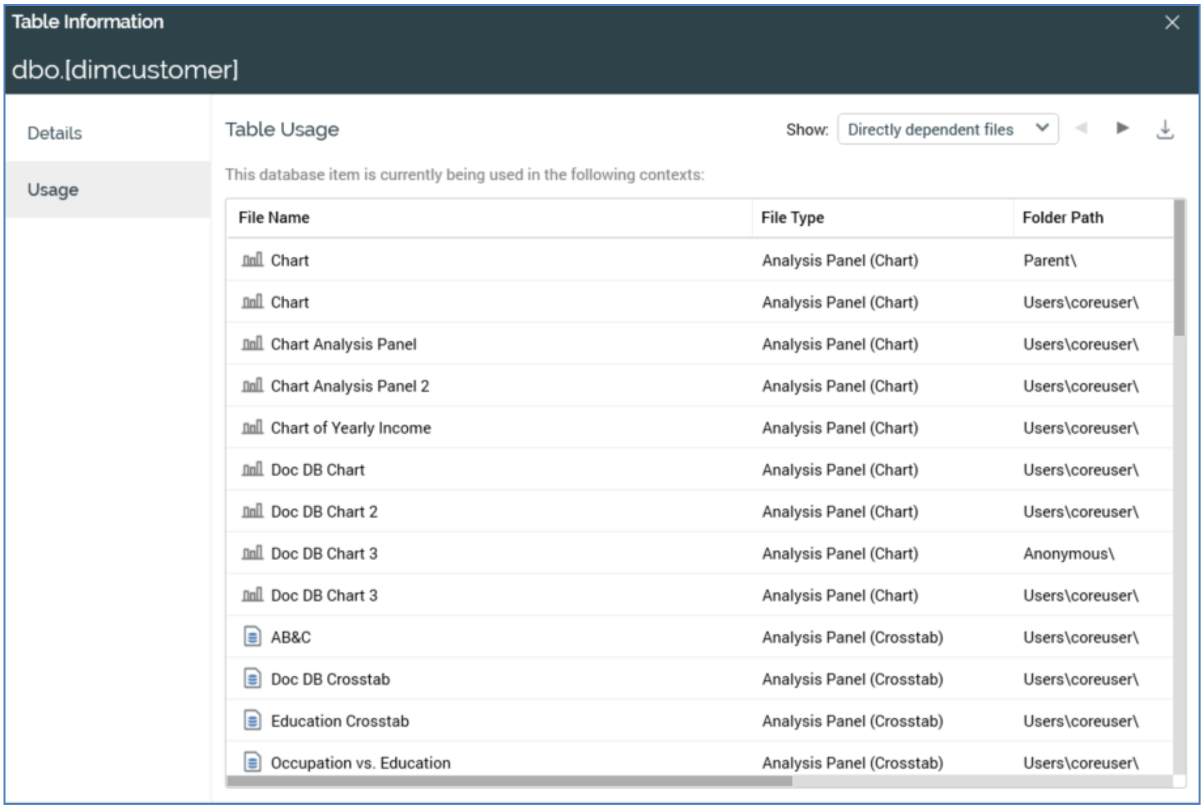
- Use Column as Primary Key: this option is only shown when right-clicking a column. When you set a column as a table's primary key a 'key' icon is displayed next to the column's name:

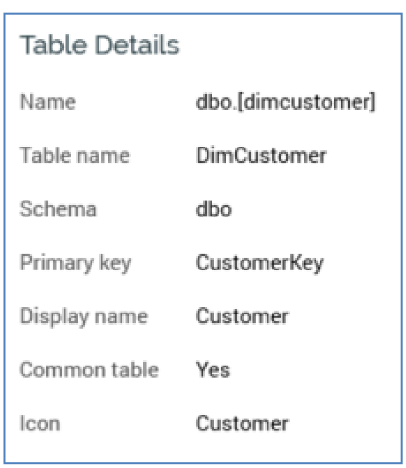
  Setting a table's primary key can improve the efficiency of SQL query execution when running selection rules and audiences.

  You can also unset a table's primary key using Clear Primary Key context menu option.

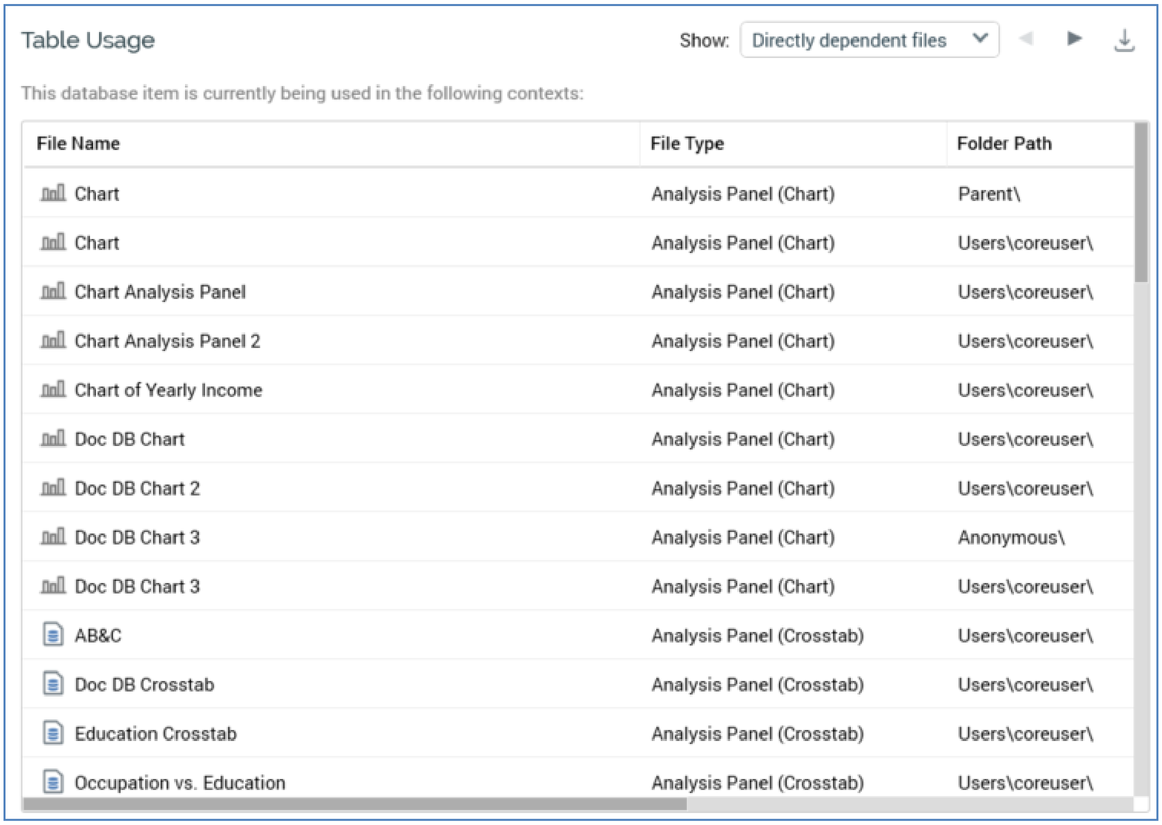
- View usage: this option is available at both tables and columns. It allows you to view usage information relating to the selected database item. Clicking it displays the Table/Column Information dialog, which contains the following:



  - Title: 'Schema.[tablename] (plus .[columnname] if appropriate)'
  - Tabset: exposing Details and Usage tabs.
  - Details tab: this tab displays table or column details, showing the same information as per the Selected Item Details section to the right of the Catalog interface.



- Usage tab: this tab is displayed by default. It contains a toolbar and files list.



Toolbar: exposing the following options:

- Show: this dropdown allows you to display directly dependent files (for example, a database column attribute that references a column) or all dependent files (for example, a standard selection rule that references the aforementioned attribute).

- Previous page: this button is enabled when more than one page of results is shown, and a page other than the first is displayed. Clicking it displays the previous page's results.

- Next page: this button is enabled when more than one page of results is shown, and a page other than the last is displayed. Clicking it displays the next page's results.

- Export usage list: clicking this button displays the Save Usage Details Windows file system dialog. At the same, the File name property is set to '<Dialog Title> Usage <yyyy-mm-dd>' and Save as type to 'Tab Delimited Files'. When you click Save, a file containing usage details is written to the specified location. An information message confirms the successful export. Clicking Cancel removes the dialog from display. The exported file contains the following:

  - ID

    - VCID (version control ID)
    - Name
    - Type
    - Subtype
    - Created By
    - Created (dateTime)
    - Modified By
    - Modified (dateTime)
- Files list: the files list displays files at which the current database item is in use. Configuration collections are shown, if appropriate. Files are presented in alphabetical order by default. The following columns are shown:
  - File Name: note that the following inline buttons are shown on hover:
    - Open Latest Version (where appropriate)
    - Open File Location
  - File Type
  - Folder Path

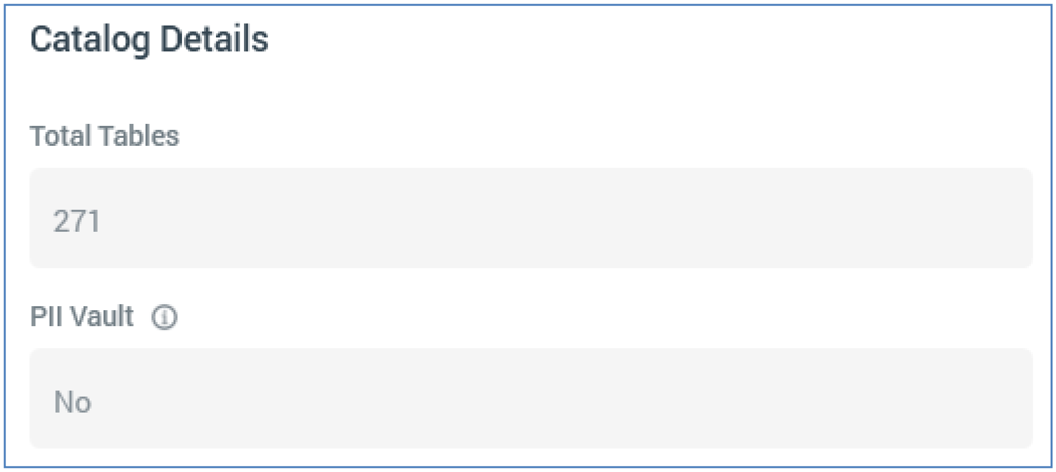
Note that the display of views in the database treeview is supported.

The display of synonyms in the database treeview is supported at the following database providers:

- Azure SQL Database
- DB2
- Netezza
- Oracle
- SAP HANA

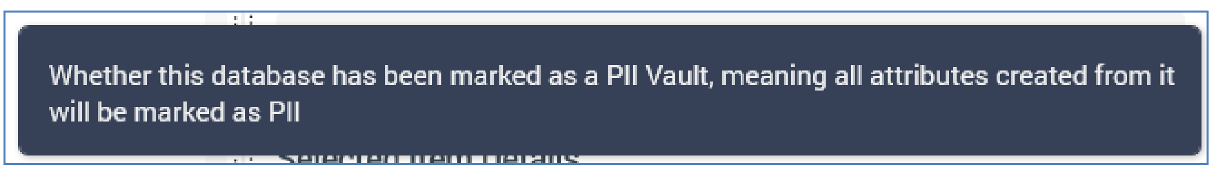
6.7.3 Catalog Details

The Catalog Details section is displayed to the right of the treeview.



It contains the following:

- Total Tables: this read-only property lists the total number of tables in the catalog.
- PII Vault: a read-only Yes/No flag, which advises as to whether the selected database is used exclusively to store PII data. An information icon is shown to the right of the property label. Hovering over the same displays the following tooltip:

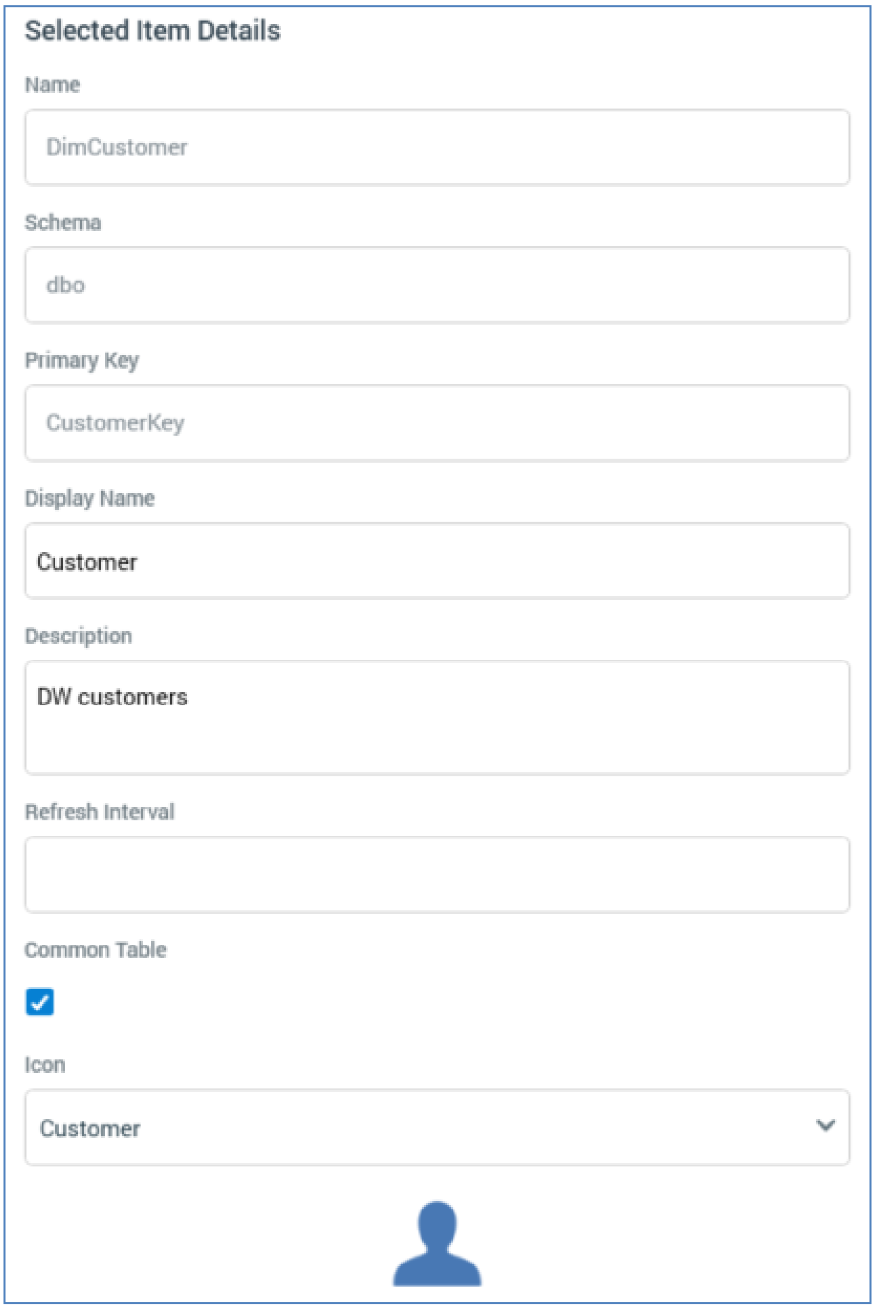


6.7.4 Selected Item Details

The Selected Item Details section is displayed to the right of the treeview below the Details section. It is also read-only. Its contents depend upon the item selected currently in the treeview.

If nothing is selected in the tree, Selected Details displays 'Nothing currently selected'.

If a table is selected in the tree, Selected Details displays:



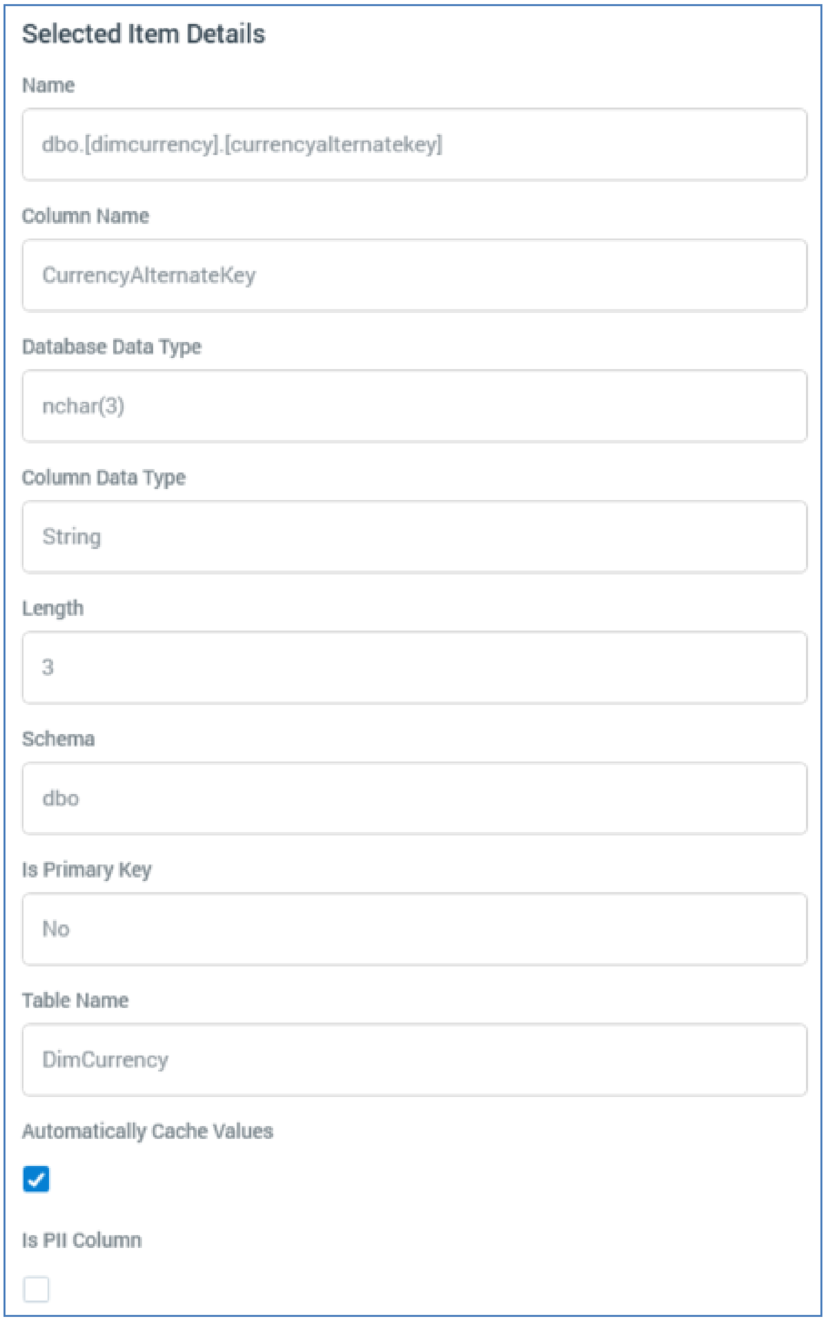
- Name: read-only

- Schema: read-only
- Primary key: read-only
- Display name: this editable, mandatory text field defaults to the name of the database table. Display name may be a maximum length of 100 characters and is displayed when viewing table details in information dialogs.
- Refresh interval (override): writeable. Optionally, you can provide an integer value to override the default value provided by config setting AttributeRefreshInterval for the current table. The value provided must be greater than or equal to 5.
- Description: you can optionally provide a description for a table within the catalog, with a maximum supported length of 1000 characters.
- Common table: this checkbox is unchecked by default. If you elect to define a table as a common table, it appears in the list displayed following invocation of Change Target Table at a criteria list in the Rule Designer.
- Icon: you can choose an icon for common tables only. This is then displayed alongside attributes, criteria and criteria lists based on the common table. Icon is set using a dropdown, which exposes the following values:
    - [Use default]
    - Account
    - Customer
    - Family
    - Household
    - Individual
    - Offer
    - Product
    - Sale
    - Table
    - Orange Slice
    - Pink Slice
    - Marine Slice
    - Green Slice
    - Aqua Slice
    - Blue Slice

- Yellow Slice

Once you have selected an icon, a representation thereof is displayed below the dropdown.

If a column is selected in the tree, Selected Item Details displays:



- Name: full name (including the database schema and table name)
- Column name: Name of column only (excluding schema and table name)
- Database data type: as stored in the database

- Column data type: as used in the application
- Length
- Schema
- Is primary key
- Table name
- Auto-cache values: a checkbox, checked by default. If unchecked, values in the column will not be auto-cataloged (see separate documentation for details on automatic cataloging).
- Is PII column: this checkbox, which is unchecked by default, allows you to specify that a column contains Personally Identifiable Information. Note that, if the selected column belongs to a table in a PII vault database, the property is checked automatically and read-only.

  Marking a column as PII introduces a number of restrictions in viewing such data in RPI. When an attribute's configuration includes a reference to a PII column, the following apply:

  - In a standard selection rule:
    - When using a Custom Table resolution level, you cannot select a PII vault database.
    - If an existing resolution level becomes PII vault-based, an attempt to get the count of a rule in which it is used results in an error.
    - You can build a Compare to List criterion based on the attribute, but you cannot view list values at the same.
  - A NoSQL selection rule is invalid if its definition is based on a PII Vault.
  - You cannot export a selection rule using an export template containing one or more PII attributes.
  - In the File Information Dialog:
    - Details tab: new properties are displayed for Attributes (References a PII column) and Export Templates (Contains PII columns).
    - Summary tab: not shown

    The same information is also shown at:

    - File information panel in the File System Dialog.
    - File summary tooltip
  - You cannot Manage Attribute Values.
  - An export template is invalid if:
    - When used for SQL databases: its resolution level becomes PII vault-based.

        - When used for NoSQL databases: its NoSQL Database Collection Definition resolves to a PII vault.
    - You cannot select an export template containing PII attributes in the Data Viewer unless you have been granted the View PII Data permission.
    - You cannot use a customer view containing PII attributes in the Single Customer View unless you have been granted the View PII Data permission.
    - You cannot preview an email offer containing PII data by recipient unless you have been granted the View PII Data permission.
    - You cannot make applicability decisions using PII attributes in an attribute driven smart asset.
    - You cannot source values from a list when creating a criterion based on a PII attribute in a basic selection rule.
    - You cannot create a cell list dimension based on a PII attribute.
    - If you use a PII attribute to configure another function attribute, no values are listed when creating a compare to list criterion using the same.
    - You cannot view PII values when creating a discrete banding attribute band.
    - A validation error is raised and refresh is disabled when configuring analysis panels with a PII attribute in the following contexts:
        - Chart:
            - Attribute
            - Function attribute
        - Crosstab:
            - Row attribute
            - Column attribute
            - Function attribute
        - Pivot table:
            - Columns
            - Rows
            - Function attribute
        - Word cloud:
            - Word attribute

- You cannot configure the following chart widget properties with a PII attribute:
  - Attribute
  - Heatmap attribute
  - Function attribute

  Note that PII can still be accessed via a SQL expression attribute when using a compare to list criterion; it is necessary to disable this attribute type to preclude this from happening.

When you save changes made in Selected Item Details, a Catalog Saved dialog is displayed, which advises that changes made to table and column properties are only available in designers after you close and restart your RPI client application.

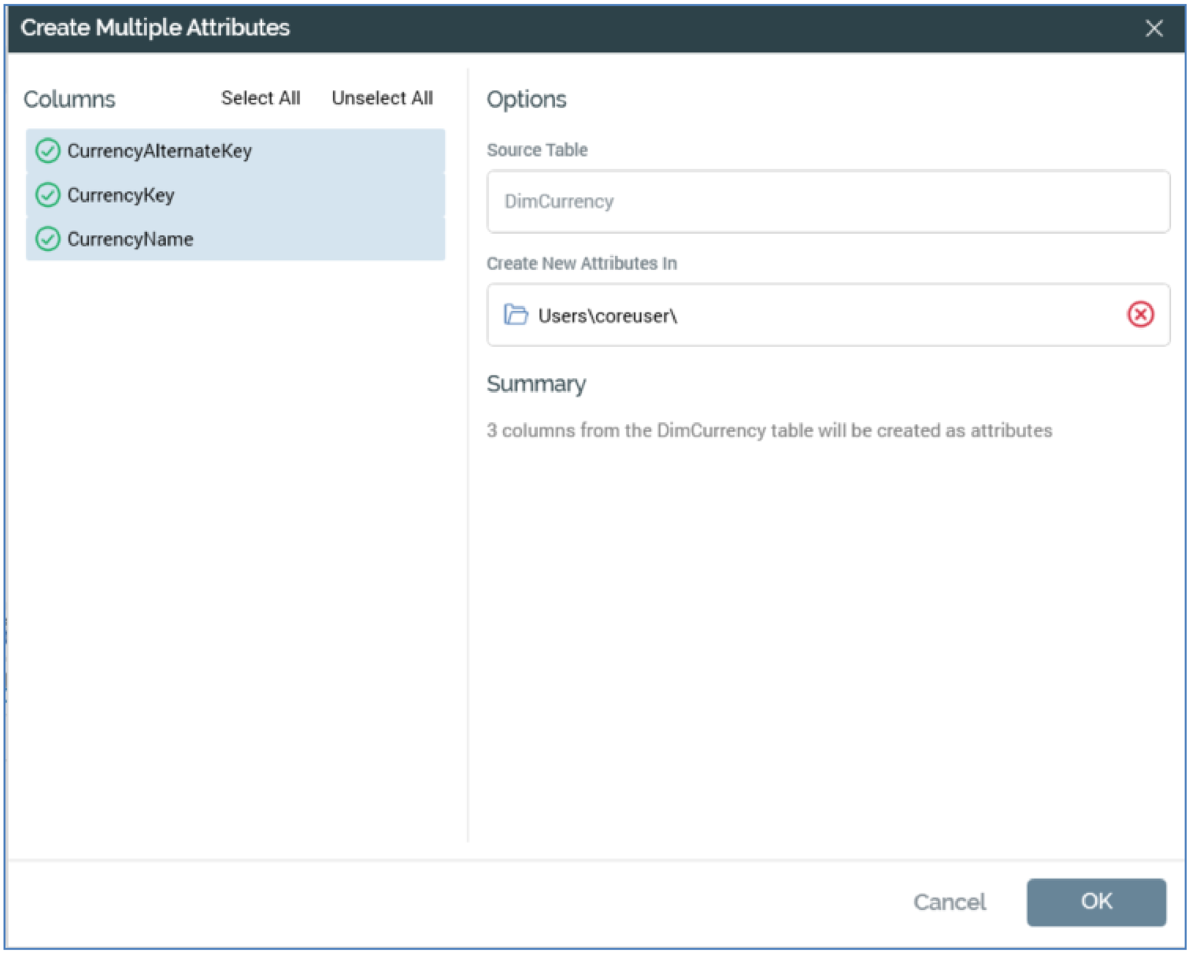
6.7.5 Toolbar

The following toolbar options are specific to the Catalog configuration interface:

Each is discussed in detail separately.

6.7.6 Create Attributes from Table

This option is enabled only when a table is selected in the catalog treeview. Invocation displays the Create Multiple Attributes dialog.



The dialog contains the following:

- Columns: this section lists all columns in the selected table. A toolbar exposes the following options:
  - Select All: invocation selects all columns in the table.
  - Unselect All: invocation deselects all columns in the table

  You can select a column in the columns list by clicking it. Selected columns are accompanied by a tick icon. You can use Shift or Ctrl to make multiple selections.

- Options: this section contains the following:
  - Source Table: the read-only name of the table in respect of which attribute creation was initiated.
  - Create New Attributes In: a folder, which defaults to your most recently-accessed folder. You can invoke Browse... to view the Choose Folder dialog, in which you can select the folder in which attributes are to be created. Having selected a folder, you can Clear it. Provision of a folder is mandatory.

- Summary: a read-only of the action to be undertaken: '[n] columns from the [Table Name] table will be created as attributes'.

- Create attributes: this button is enabled when one or more columns are selected.

  At invocation, if a folder has not been selected, a warning message is displayed.

  When invoked, a spinning 'busy' icon and 'Creating attributes' message are displayed. On successful completion, a Success dialog is displayed ('The attribute(s) have been created and saved to the chosen folder.'). On clearing the Success dialog, the Create Multiple Attributes dialog is removed from display.

  The target table of the newly-created attributes is set to the table in respect of which attribute creation was initiated.

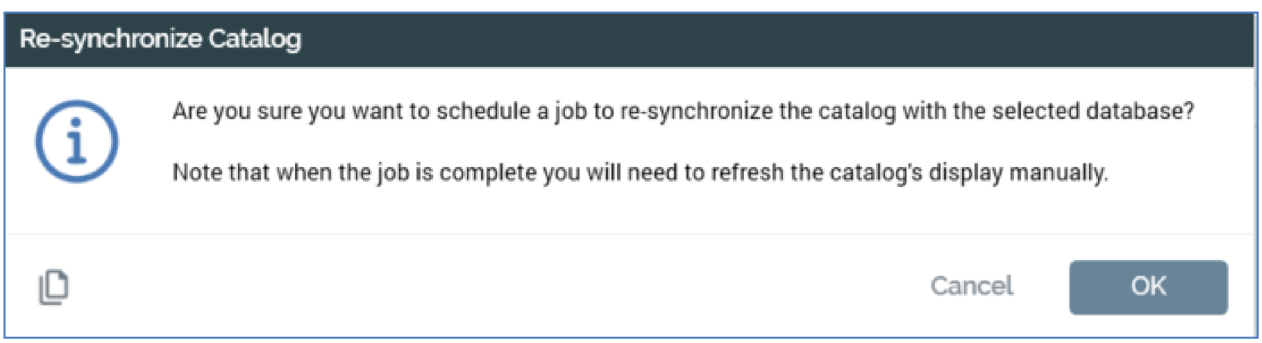
  If attribute(s) with the same name(s) already exist in the target folder, they are not created, and a message is displayed: 'Not all attributes could be created. [n] attribute(s) already exist in the chosen folder'.

- Cancel: invocation of this button removes the Create Multiple Attributes dialog from display.

6.7.7 Synchronize Catalog

This option allows you to synchronize or re-synchronize the currently-selected database's catalog. Synchronization allows any changes in the database's schema to be reflected in the catalog.

Its invocation is protected by an 'Are you sure?' dialog.



Note the message at the bottom of the dialog.

If you proceed, a Catalog re-sync job is created and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

Upon successful completion of the synchronize job, if the Catalog configuration interface is still displayed, a label is shown at the top:

The catalog has finished synchronizing. Please refresh the list of tables to get the latest version.

Invocation of Refresh within the Configuration Workbench menu causes the up-to-date version of the catalog to be displayed within the treeview.

6.7.8 Clear Attribute Counts

Invoking this option causes all attribute counts stored currently in the catalog for the currently-selected database to be cleared down. Note that counts are stored in the catalog to improve system performance.

Its invocation is protected by an ‘Are you sure?’ dialog.

You must invoke this option before any change made to system configuration value AttributeValueListSize can take effect.

An informational message is displayed post-successful clearing of attribute counts.

6.7.9 Refresh

This option is available in the Configuration Workbench toolbar. It loads the latest version of the catalog and refreshes the treeview accordingly.

6.7.10 Automatic Attribute Cataloging

As well as providing the ability to manage the catalog manually, RPI also automatically catalogs values for any newly-created attributes. This is carried out by the Attribute Value Catalog system task.

Following an attribute’s initial cataloging, the frequency at which it is refreshed is controlled by system configuration setting AttributeRefreshInterval, which controls the number of days between refreshes. Every [n] (where [n] = AttributeRefreshInterval) days since an attribute’s last refresh, attribute counts are refreshed automatically.

These features ensure that any disruption experienced while building selection rules due to having to wait while attribute values are cataloged is kept to a minimum.

Note that auto-cataloged attribute counts are only available once you log off and back into RPI.

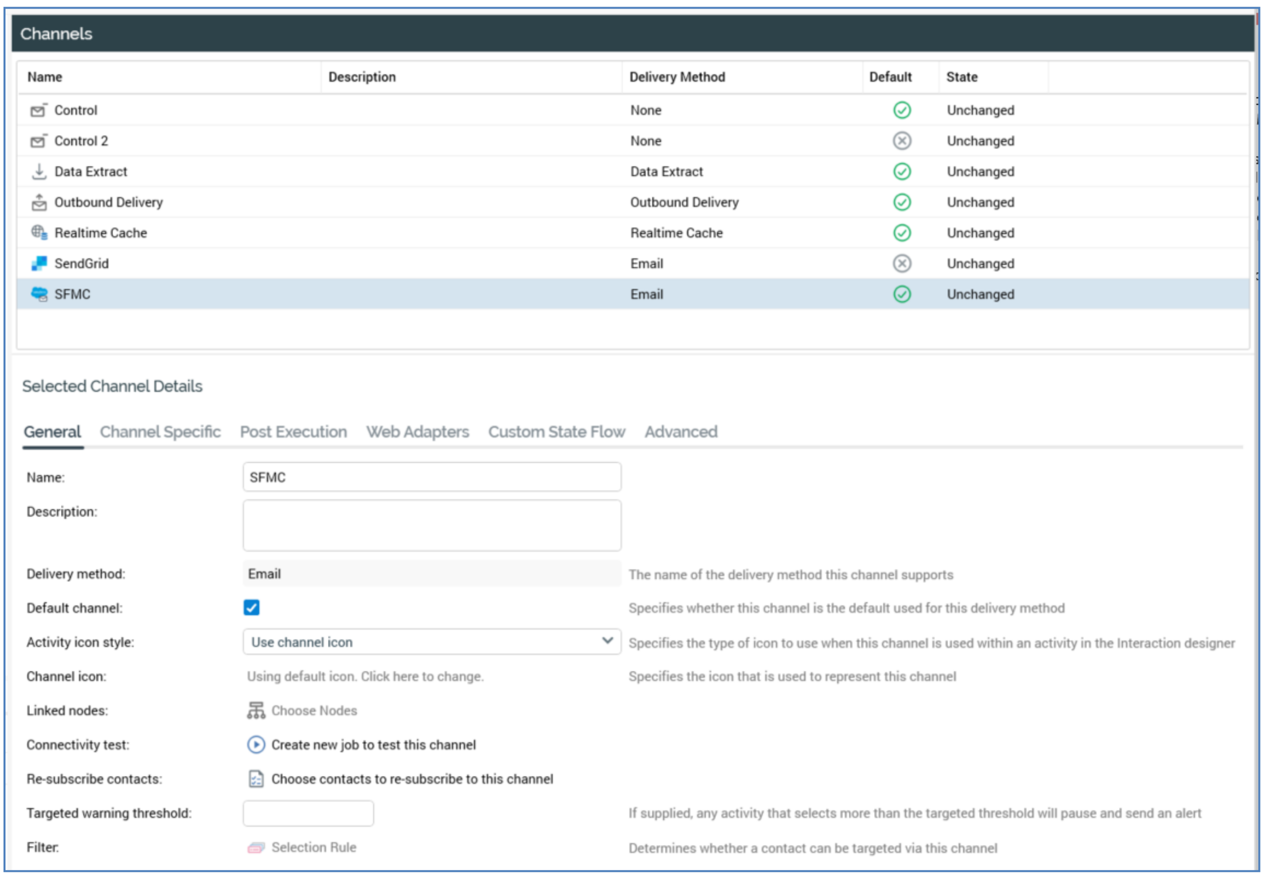
An external third party can invoke a refresh of the values of all attributes that share a given target table by inserting the name of the table into data warehouse table RPI_AttributeUpdateRequests. The refresh occurs on execution of the Attribute value catalog system task. Afterwards, the row is removed from RPI_AttributeUpdateRequests. Any refreshed attribute values are available when the client application is restarted.

6.8 Configuring Channels

Channels are used when executing offers within interactions. A channel defines the media by which an offer is to be executed – by email and SMS, for example.

All channels are based on a delivery method, which defines the nature of the channel's fulfillment. An example delivery method is email. A given delivery method may support multiple channels – for example, an RPI installation might be configured to execute email messages via more than one account at an email provider. In this case, separate account settings can be captured within a series of channels.

Channels configuration is carried out in a dedicated interface.



6.8.1 Channels List

All existing channels are presented in alphabetical order by name.

The following read-only columns are displayed:

- Icon
- Name
- Description
- Delivery Method
- Default
- State

6.8.2 Selected Channel Details

The Selected Channel Details section contains a tabset, which can expose some or all of the following tabs:

- General
- Channel Specific
- Post Execution
- Web Adapters
- Custom State Flow
- Advanced

Each is discussed separately.

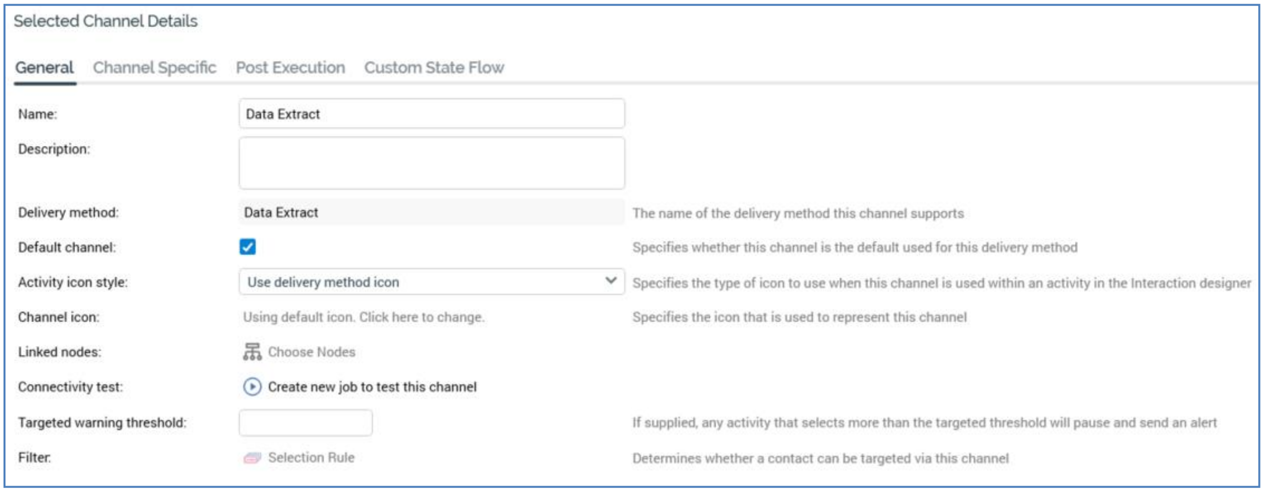
Note that channel providers' specific properties may be split across the Channel Specific and Advanced tabs.

6.8.3 Channel Authorization

Several types of RPI channel require to be authorized before being saved and used. Each channel's authorization process is unique and is described individually. If you attempt to authorize a channel prior to the provision of its mandatory properties, a warning is thrown. Note that you can save a channel prior to its authorization, but if you attempt to utilize it in an interaction workflow, a runtime validation error will be thrown.

6.8.4 General Tab

The General tab is shown for all channel types. The General tab exposes the following properties:



- Name: an updateable text field that may be a maximum of 100 characters in length. Name is mandatory and must be unique across all channels.
- Description: an optional, updateable field that may be a maximum of 1000 characters in length.
- Delivery method: read-only (unless an Above The Line channel), having been selected at channel creation. Delivery method may be one of:
    - None (Control channel)
    - Data Extract (Data Extract channel)
    - Email (Salesforce Marketing Cloud, SendGrid, CheetahMail, Acoustic, SparkPost, Instiller, Responsys, Dotdigital, Listrak, MailChimp, Cordial, LuxSci, Paubox, Amazon Simple Email Service (SES) and Amazon Pinpoint channels)
    - SMS (Salesforce Marketing Cloud MobileConnect SMS, Messente, Twilio and Vibes channels)
    - Facebook (Facebook channel)
    - Twitter (Twitter channel)
    - Salesforce.com (Salesforce.com channel)
    - Microsoft Dynamics CRM (Microsoft Dynamics CRM channel)
    - Salesforce Marketing Cloud Data Transfer (Salesforce Marketing Cloud Data Transfer channel)
    - LinkedIn (LinkedIn channel)

- Twitter Direct (Twitter Direct channel)
- YouTube (YouTube channel)
- SurveyMonkey (SurveyMonkey channel)
- Alchemer (Alchemer channel)
- Reddit (Reddit channel)
- Facebook Audience (Facebook Audience channel)
- RSS (RSS channel)
- LiveRamp Onboarding (LiveRamp Data Onboarding channel)
- LiveRamp RampID (LiveRamp RampID channel)
- Outbound Delivery (Outbound Delivery channel)
- Realtime Cache (Realtime Cache channel)
- Twilio Inbound SMS (Twilio Inbound SMS channel)
- Push Notification (Azure Notification, Google Firebase, Twilio Notify channels)
- Push Notification Direct (Airship Push Direct, Azure Push Direct Notification, Google Firebase Direct, Twilio Notify Direct, Amazon Pinpoint channels)
- Facebook Audience (Facebook Custom Audience, Facebook Offline Event channels)
- Twitter Tailored Audience (Twitter Tailored Audience channel)
- Google Ads Customer Match (Google Ads Customer Match channel)

If an Above The Line channel, Delivery method must be provided manually and can be a maximum of 100 characters in length

- Default channel: a checkbox that is unchecked by default. Is default indicates whether the channel is added automatically to an offer or broadcast activity if the activity supports the channel's delivery method. Only one default channel per delivery method is allowed.
- Activity icon style: this property allows you to specify the type of icon to be displayed when the channel is used in an activity in the Interaction Designer. A dropdown, it exposes the following values:
  - Use default activity icon
  - Use delivery method icon (the default)
  - Use channel icon

The value selection is reflected when a single-delivery method offer or broadcast based on the channel is created at the Interaction Designer.

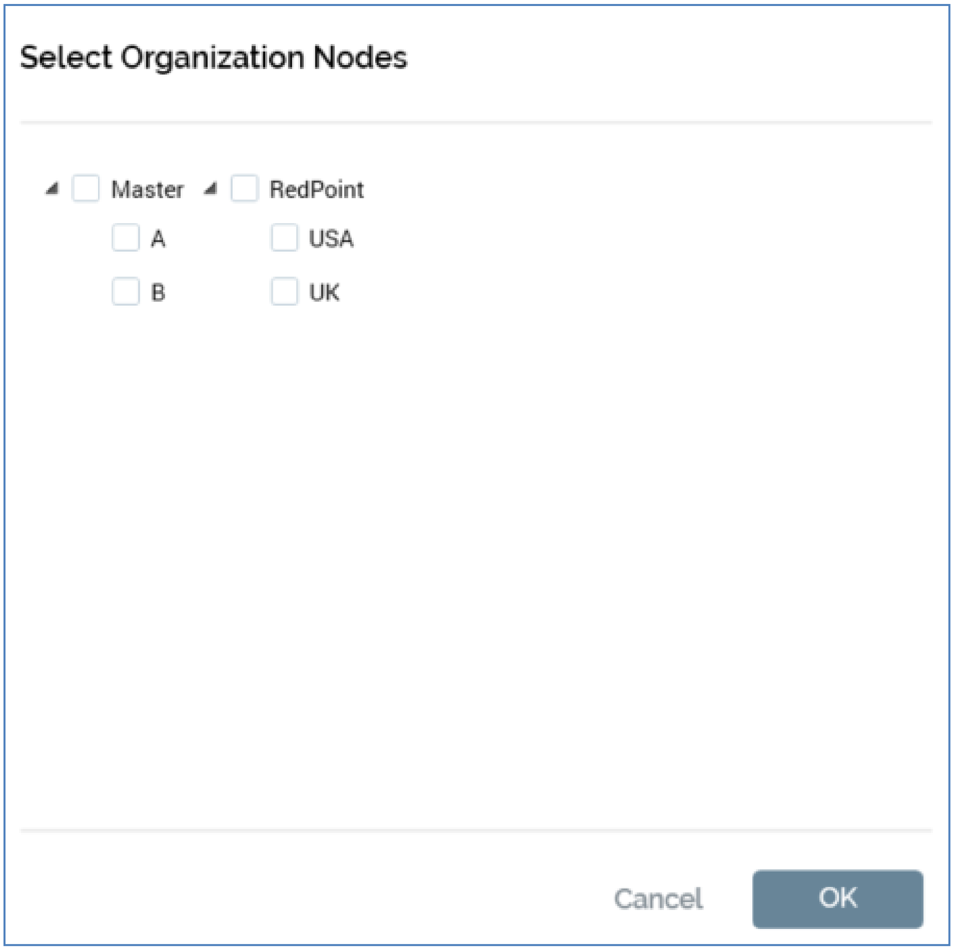
- Channel icon: by default, the following text is displayed at this property: 'Using default icon. Click here to change'. Clicking the button displays the Choose Custom Channel Icon Windows file system dialog, which is constrained to display Image files only. You can choose an image file and click Open to set the property. Having done so, an icon-sized representation of the selected image is displayed at the Channel icon property. You can click the image to redisplay the Windows file system dialog in order to change it.

  A Clear custom icon button is displayed to the right of the custom icon image. Clicking it removes the icon image from display and redisplays the 'Using default...' text.

  The selected custom icon is reflected at the Channels list. In addition, if the channel's Activity icon style is set to Use channel icon, if the channel is configured with a custom Channel icon, and a single-delivery method offer or broadcast is displayed the Interaction Designer, the activity is represented using the custom icon. The custom icon is also displayed at the Offer Activity Channel Configuration dialog.

- Linked nodes: this property allows you to associate the channel with one or more nodes from the current client's organization hierarchies. When a channel is tied to organization node(s) in this way, and configuration setting EnableOrgNodeConfigUserControl is set to true, a user not associated with at least one of the nodes in question will be unable to make use of the channel at runtime. Full details of such restrictions can be found in relevant contexts elsewhere in the documentation.

  On the property's initial display, the button text 'Choose nodes' is shown. Clicking the button displays the Select Organizational Nodes dialog:



Each organization hierarchy, and the tree of nodes that it contains, are displayed. Each is accompanied by a checkbox (unchecked by default). You can check the nodes to be associated with the channel, and then click the OK button to confirm your selection. You can also click Cancel to remove the dialog from display.

- Connectivity test: a button (Create new job to test this channel) is provided for the following channel types:
    - Data Extract
    - Salesforce Marketing Cloud Email
    - SendGrid Email
    - CheetahMail Email
    - Acoustic Email
    - SparkPost Email
    - Instiller Email
    - Responsys Email

- Dotdigital Email
- Listrak Email
- MailChimp Email
- Cordial Email
- LuxSci Email
- Paubox Email
- Amazon Simple Email Service (SES) Email
- Amazon Pinpoint Email
- Salesforce Marketing Cloud MobileConnect SMS
- Messente SMS
- Twilio SMS
- Twilio Inbound SMS
- Vibes SMS
- Twitter
- Facebook
- Salesforce.com
- Salesforce Marketing Cloud Data Transfer
- LinkedIn
- Twitter Direct
- YouTube
- Azure Notification
- SurveyMonkey
- Reddit
- Alchemer
- RSS
- LiveRamp
- LiveRamp RampID
- Outbound Delivery

- Microsoft Dynamics CRM
- Facebook Audience
- Azure Push Direct
- Twilio Notify
- Twilio Notify Direct
- Airship Push Direct
- Google Firebase
- Google Firebase Direct
- Amazon Pinpoint
- Twitter Tailored Audience
- Google Ads Customer Match

The button is disabled when unsaved changes are present (in which case the button's text is changed to 'Save this channel to test connectivity').

Clicking the button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

- Targeted warning threshold: this property allows you to define a limit which, when the number of messages sent by an activity using the channel exceeds the value supplied, triggers the sending of an alert email. It is not available at broadcast or subscription group channels. An integer field, it defaults to blank, and accepts a minimum value of 0 and a maximum of 9,999,999,999.

- Filter: a channel's Filter determines whether a given record can receive communications via the channel. If a record is selected by the Filter's linked selection rule, communication with the person represented by that record is possible via that channel. In this way, the Filter can be used to determine via which of the channels in a multi-channel offer a customer or prospect will be contacted: channels are listed in priority order, and contact will be made using the first applicable channel (as determined by its filter). If a filter is not applied to a channel, all records may be contacted via that channel.

  To configure the channel's Filter, you can select a recently-used selection rule, or browse the folders in the RPI file system to which you have access to locate a selection rule. When you do so, the File System Dialog displays only selection rule files. You can also drag a selection rule from the toolbox and drop it directly onto the property. Note that you cannot choose a selection rule with an auxiliary database resolution level.

  You can clear the filter, which removes the association between the channel and selection rule. You may also display the selection rule in the Rule Designer by clicking Open latest version. If a Designer instance is already open, the rule is shown there; if not, it is shown in a new instance.

Filter is accompanied by the following text: ‘Determines whether a contact can be targeted via this channel’.

Filter is not shown for Above The Line, Facebook, Twitter, LinkedIn and YouTube channels.

Note that any changes to a filter selection rule are not picked up by the channel until the channel is re-saved.

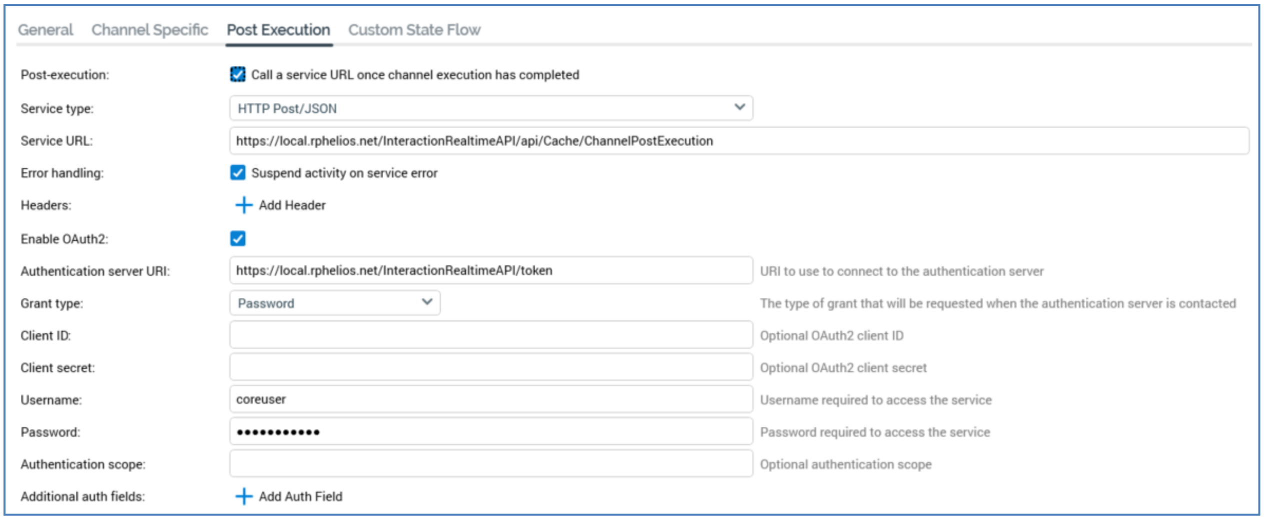
You cannot use an anonymous auxiliary database-resolving selection rule as a channel's Filter.

6.8.5 Channel Specific Tab

The Channel Specific tab exposes properties that are particular to the currently-selected channel type. Each channel’s specific properties are documented separately.

6.8.6 Post Execution Tab

The Post Execution tab allows you to configure a service call, to be executed immediately after fulfillment using the channel.



It exposes the following properties:

- Post-execution: this checkbox, unchecked by default, is accompanied by the text 'Call a service URL once channel execution has completed'. It allows you, at channels where supported, to provide the address of a web service to be called each time the channel is used in an interaction, just prior to the activity's completion.

  When checked, a number of additional properties are shown. Each is documented hereafter.

- Service type: a dropdown field, exposing three values, which allows you to specify the nature of the supplied web service:

  - SOAP Web Service: if using SOAP, the web service call to be used is a basic http web service call without any transport or message security configured.

    The web service must expose the following 'OnOfferComplete' method (code example is .Net) - e.g.:

```
[ServiceContract]
public interface IInteractionService
{
[OperationContract]
void OnOfferComplete(string[][] args);
}
```

    The Workflow Manager service calls this method when the channel activity completes and passes in execution-specific arguments in an array of name/value pairs.

- HTTP Post/JSON (the default): an example JSON packet:


```
{"interactionID":"7d200b95-f51d-4389-a47d-
4400f1114f96","workflowAssociationID":"ajfa2a17-81df-4de7-ada1-
85e3f5da8f62","workflowAssociationInstanceID":"8828","dataflowID":"24951","
offerName":"NA","channelName":"Control
2","activityName":"Control","channelOfferName":"Control","channelExecutionI
D":"5719","clientID":"73d74e87-25b8-464f-92a3-423d9b7dd4ff"}
```


The following arguments are passed for both SOAP Web Service and HTTP Post/JSON:

InteractionID	Interaction file ID
WorkflowAssociationID	ID that identifies the trigger within an interaction
WorkflowAssociationInstanceID	Workflow instance ID
DataflowID	ID available in offer history which identifies the audience instance
OfferName	Offer name
ChannelName	Channel name
ActivityName	Workflow activity name
ChannelOfferName	Name of channel within offer
ChannelExecutionID	Channel execution instance ID
ClientID	Client ID

- RPDM (Redpoint Data Management) Web Service: selection of this option allows you to specify that the channel will call an RPDM web service upon completion of execution downstream from a batch audience, or interactive activity configured with an audience. When selected, two additional properties are shown:
  - Service port: this integer field accepts a minimum value of 1, and a maximum value of 99,999.
  - Service name: provision of a value in this text field is mandatory.

- Service URL: a web service URL, with a maximum length of 1000 characters, must be provided.
- Error handling: this checkbox, which is unchecked by default, is accompanied by the text 'Suspend activity on service error'. When checked, at a post-channel execution service call, if an error is encountered, the fulfilment activity in question enters a Paused state. If the property is unchecked, the activity completes. A log entry is added in both cases.

- Headers: this property allows you to specify headers to accompany the service call. An Add Header button is provided. Clicking it adds new header, with default 'Name' and 'Value' properties. A header's Name is mandatory, and must be unique within the channel. Provision of a Value is also mandatory. An Options button, displayed to the right of a header, exposes a single Remove option, invocation of which removes the header without display of an 'Are You Sure?' dialog.

- Enable OAuth2: this checkbox is unchecked. When checked, a series of properties are shown that allow you to use OAuth2 when making the service call.

- Authentication server URI: this property is shown when Enable OAuth2 is checked. It allows you to specify the address of the OAuth2 authentication server, and its provision is mandatory.

- Grant type: this property is shown when Enable OAuth2 is checked. It allows you to select the type of grant that will be requested when the authentication server is contacted. A dropdown field, it exposes values 'Password' (the default) and 'Credentials'.

- Client ID: this optional property is shown when Enable OAuth2 is checked.

- Client secret: this optional property is shown when Enable OAuth2 is checked.

- Username: this property, which is shown when Enable OAuth2 is checked, allows you to specify the username required to access the OAuth2 service. It is shown and mandatory when Grant type is set to 'Password'.

- Password: this mandatory property is also shown when Enable OAuth2 is checked, and accompanies Username.

- Authentication scope: this optional property is shown when Enable OAuth2 is checked.

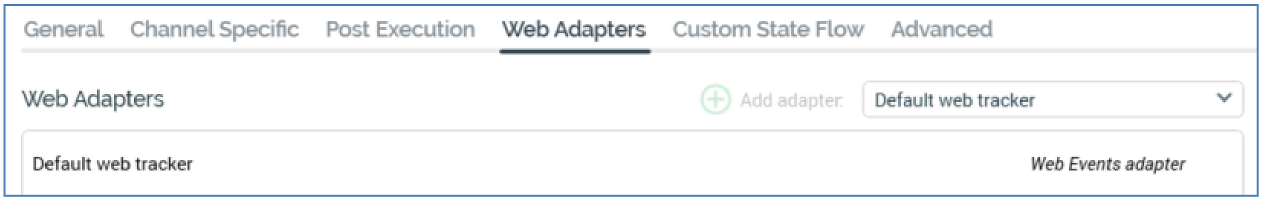
- Additional auth fields: another property that is shown only when Enable OAuth2 is checked. An Add Auth Field button is provided. Clicking it adds a new auth field, with default 'Name' and 'Value' properties. An auth field's Name is mandatory, and must be unique within the channel. Provision of a Value is also mandatory. An Options button, displayed to the right of an auth field, exposes a single Remove option, invocation of which removes the header without display of an 'Are You Sure?' dialog.

The Post Execution tab is not shown for Above The Line, Facebook, Twitter, LinkedIn and YouTube channels.

Note that, if a channel’s Post-execution property is set, and the specified web service is not available, an error does not occur. Rather, error details are logged to the server log.

6.8.7 Web Adapters Tab

The Web Adapters tab is shown if web adapters are supported at the channel.



It exposes the following:

- Web adapters: optionally, you can choose to associate one or more web adapters with the channel.

  Five types of web adapters are available: Google Analytics, Web Events, PURL, Matomo and Kissmetrics adapters.

  - Google Analytics adapters allow you to collate metrics gathered by Google based on the behavior of a contact witnessed at a website. Navigation to such a website must be effected from a hyperlink in an email received via an email channel associated with a Google Analytics adapter.

  - Web Events adapters are similar, but collation of metrics is carried out by custom scripts at the website.

  - PURL adapters allow you to personalize hyperlinks in an email delivered via an email channel associated with a PURL adapter.

  - Matomo adapters allow you to append querystring parameters to URLs in offer content, which can then be used to track website behaviors in a Matomo dashboard (beyond the scope of RPI).

  - Kissmetrics adapters are similar to Google Analytics adapters, in that they allow you to collate metrics based on website visitors' behaviors. However, this collation is carried out by the Kissmetrics external provider, rather than by Google.

  You can associate one or more adapters of each type, or a combination of types, with the channel.

  Web adapters are specified in a grid. The grid's toolbar exposes the following options:

  - Add adapter: this option is disabled unless a previously-unselected web adapter is shown. You can click the displayed adapter type to change it. Invocation of Add adds the selected web adapter to the grid. You can only add a web adapter once.

    If no web adapters have been configured, an advisory message is displayed.

  - [Dropdown]: this field lists all existing web adapters, irrespective of whether already selected and displayed in the grid. All types of web adapter are shown in the field, which is initially blank. Selection of a previously-unselected web adapter enables Add.

The Web adapters grid lists all web analytics adapters associated with the channel. Web adapters are presented in the order in which they were attached to the channel. The grid contains the following:

- Name: of the web adapter. Read-only.
- Type: read-only; one of Google Analytics, Web Events, PURL, Matomo or Kissmetrics adapter.
- Remove this Web Adapter: this button is displayed and enabled when a web adapter is hovered over. Invocation removes the web adapter from the grid. and is not protected by 'Are You Sure?'.

When you create a new Salesforce Marketing Cloud email channel, or when an existing Salesforce Marketing Cloud email channel's Recipient email address field is changed, an orange message is displayed to top of the Salesforce Marketing Cloud email channel interface:

The database will be validated when these channels are saved.

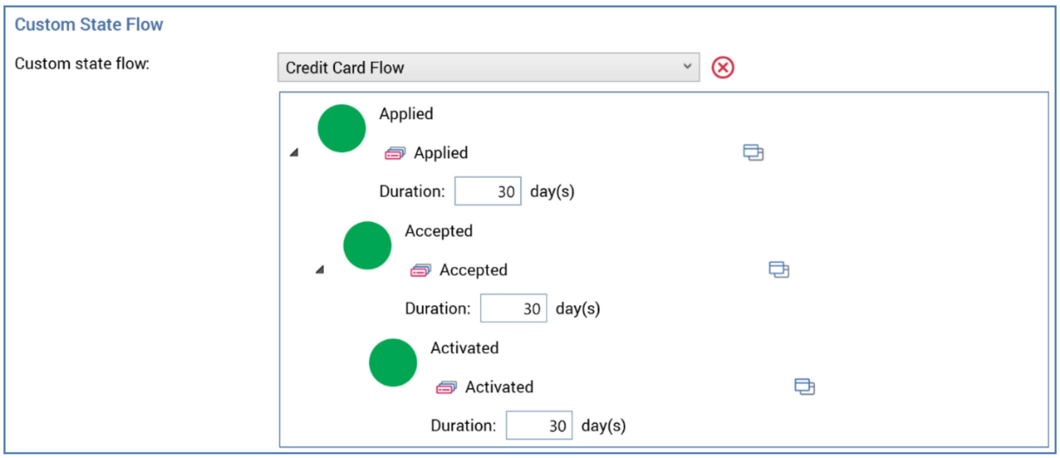
When the message is displayed, at invocation of Save, a Validate channels job is created and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation. The message is removed immediately on saving.

6.8.8 Custom State Flow Tab

The Custom State Flow tab allows you define a custom state flow for the channel.

It exposes the following:

- Custom state flow: this dropdown lists all state flows configured for the current RPI client. No state flow is selected initially, and a message is shown ('No custom state flow is currently associated with this channel'). When a state flow is selected, a read-only image is displayed below the property.



  If desired, you can clear the selected state flow.

  When a custom state flow has been associated with a channel and following fulfillment through the channel in an interaction workflow, state results are available at the Results Window. In addition, custom states are available at downstream activities, and are shown within a separate treeview node alongside the standard channel states.

  The property is disabled when no state flows have been configured.

6.8.9 Advanced Tab

When shown, the Advanced tab can expose additional channel-specific properties. It is not displayed when no advanced properties are supported at a channel.

In addition, the following properties are available in this tab:

- No. of days fulfillment active: this property is only available at channels that support a channel synchronization task, which updates RPI with results and state data from the channel's provider. It defaults to a blank value and accepts a numerical value from 1 to 365.

  When a value is provided, interaction fulfillment activities are monitored for updates for a duration in days as defined by the property. Thereafter, no further monitoring occurs. Also, in the case of Salesforce Marketing Cloud email channels, data extensions are deleted after the defined number of days.

If a value is not provided, monitoring for results data (and data extension deletion) are carried out for/after a default number of days. The default value is 30, and is defined in the Pulse database table op_Housekeepers, where the row representing the Fulfillment activity housekeeper's Configuration value is set as follows:

```
<config daysFulfillmentActive="30" />
```

- Fail if no merge files: this checkbox is unchecked by default. If checked, offer execution will fail if no mail merge files are generated.

  The property is supported at the following channels:

  - Email
    - Acoustic
    - CheetahMail
    - DotDigital
    - Instiller
    - Listrak
    - LuxSci
    - Mailchimp
    - Paubox
    - SendGrid
    - SparkPost
  - Mobile
    - Azure Push Direct Notification
    - Google Firebase Direct
    - Messente
    - Salesforce Marketing Cloud MobileConnect SMS
    - Twilio Notify Direct
    - Twilio SMS
    - Airship Push Direct

        - Vibes
    - Social
        - Twitter Direct

6.8.10 Data Extract

The following channel-specific fields are shown for data extract channels:

- Export template: 'Defines the attributes and format of the exported data'. You can Browse for an export template using the Choose Export Template File System Dialog, which is limited to display export template files only. You can also provide an export template by dragging an existing export template file from the toolbox and dropping it directly onto the field. You cannot select an auxiliary database-resolving export template.

  Having populated the Export template, you can invoke Open latest version to display the export template in the Export Template Designer. You can also Clear the Export template.

  You cannot use an export template resolving to an anonymous auxiliary database as a data extract channel's Export template.

- Extract Location: this section contains the following:
  - Location type: a dropdown field that exposes the following values:
    - Use Default: the default value. When selected, the channel will use the default data extract mechanism as defined by configuration setting FileExportLocation.
    - Network Path: when selected, files generated during data extract channel execution will be created on the server, irrespective of the default FileExportLocation configuration setting. Choosing this value makes the Export path format button visible.

      The value provided must be a full network path if configuration setting FileOutputAllowAllServerLocations is set to True. If set to False, only a relative network path can be specified.

      If the file output location is being set at the cluster level, setting GlobalFileOutputAllowAllServerLocations applies instead.

      Note that, if the default setting is used and FileExportLocation is set to 0, if RPI is running in a multi-server cluster, the path provided must be an accessible share location.
    - FTP Server: when selected, files generated during data extract channel execution will be available via FTP, irrespective of the default SFTPLocation configuration setting. Choosing this value makes the Export path format button and FTP location fields visible.
    - External Content Provider: selecting this value makes the Export path format and External content provider fields visible. If selected, the export file will be made available at the selected provider.

    - Database Table: rather than data being written to file, when this option is selected, data is instead written to a database table. When selected, the following sections are not shown:

        - Extract Filename
        - Compression Options
        - Encryption Options
        - Production Suppression Options

        The Extract Table Name section is shown instead.

- Append to existing: this checkbox is visible and enabled when Location type is set to Network Path. It is unchecked by default.

    When the property is checked, on production execution of a second data extract offer, or export activity using a data extract channel, when the following stipulations are realized:

    - The second activity follows an initial activity.
    - A custom extract filename is specified at both activities.
    - The filename is the same at both activities.
    - The first and second activities are either in the same, or separate, interaction workflows.

    …records are appended by the second activity to the main export file generated by the first. Separate sample and summary files continue to be generated by each activity.

    Note that it is possible for the same record to be written, by separate activities, to the same export file more than once.

    Note also that no validation is performed at the Interaction Designer to ensure that the format of files generated by both activities are identical.

- Export path format: 'Specifies the format of the export path'. This button is visible and enabled when Location type is set to Network Path, FTP Server or External Content Provider. You can click to change the format; doing so displays the Design Export Path Format dialog (covered separately).

    Once set, a read-only representation of the export path example is shown on the button. Provision of an Export path format is mandatory if Location type is set to Network Path.

    If Location type is set to Network Path, the folder is created on the RPI server at runtime (if it does not already exist). If set to an absolute path, it is created as such. If set to a relative path, it is created within 'C:\Windows\System 32'.

If Location type is set to FTP Server, the folder is created as a relative path at the root of the FTP server (if it does not already exist).

  - FTP location: 'The location details of the FTP server'. This field is visible and enabled when Location type is set to FTP Server. It is mandatory if enabled. A dropdown lists all currently-configured FTP locations. The default is selected if one exists.
  - External content provider: this mandatory dropdown field is visible and enabled when Location type is set to External Content Provider. It lists all configured external content providers. The default location is automatically selected.
  - Fail on copy error: this checkbox is unchecked by default. It is displayed when Location type is set to one of the following:
    - Use Default
    - FTP Server
    - External Content Provider

    If checked, when unable to copy a file to an FTP site or external content provider, the activity performing the action fails.

- Extract Filename: this section contains the following:
  - Use custom format: 'Defines whether a custom format will be used when generating filenames'. A checkbox, unchecked by default. Checking enables the Custom format field.
  - Custom format: 'The custom format to use when generating filenames'. This button is visible and enabled when Use custom format is checked. You can click to change the format, which displays the Design Filename Format dialog (covered separately). Once set, the button displays a read-only representation of the filename example. Custom format is mandatory if enabled.
- Compression Options: this section contains the following:
  - Create Zip file: this checkbox is unchecked by default. If checked, on activity execution, the full export file is zipped and made available in the Results Window's Files tab. Note that the unzipped file is also made available at the server. A validation error is raised if both Append to existing and Create zip file are checked concurrently.
- Encryption Options: this section contains the following:
  - Use PGP encryption: this checkbox allows you to specify that extract files generated using the channel will be encrypted using a public key. It is unchecked by default. Checking it displays the Public key file property.

    When PGP encryption is configured at a data extract channel, full export files generated using the channel are encrypted. Sample and summary files are not encrypted. PGP encryption is also applied when files are generated in Test mode, and when file compression is enabled.

- Public key file: this property is shown when Use PGP encryption is checked. It is mandatory when displayed. It allows you to select a public key file to be used by the channel's PGP encryption. You can browse the Windows file system for a public key file. Having selected a public key file, you can clear your selection.

- Production Suppression Options: this section contains the following:

  - Suppress sample file: a checkbox, unchecked by default.

  - Suppress summary file: a checkbox, unchecked by default.

  If either or both of these options are checked, when the channel is utilized in production interaction execution, the files in question are not produced, irrespective of any setting at an export activity.

- Extract Table Name: this section contains the following:

  - Use custom format: this checkbox, which is unchecked by default, defines whether a custom format will be used when generating table names. When checked, the Custom Format field is displayed.

  - Custom Format: this property, which is mandatory when shown, is displayed when Table Name Format is set to 'Custom'. It defaults to the value 'RPI_'. You can click the property to design the table name using the Design Table Name Format dialog. The value provided must be a valid database table name.

  - Days To Persist Table: this mandatory integer property represents [TBD - Mike - the number of days after which the table will be removed by RPI Housekeeping]. It defaults to 7, and accepts a range of values between 1 and 999.

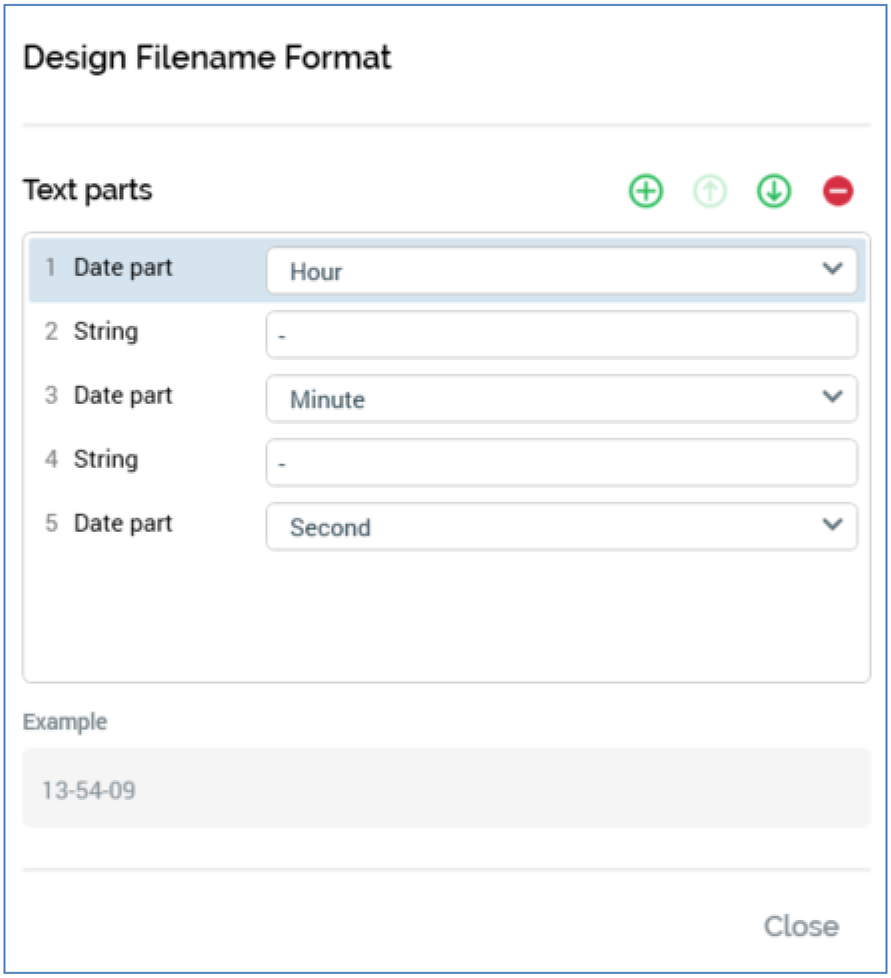
- Advanced: this section contains the following:

  - Allow duplicates on resolution: this checkbox is unchecked by default. When the option is selected, at runtime, if the channel's or export activity's export template, or the data extract offer, is configured with any cross-resolution attributes, deduplication is ignored, and multiple records for a single resolution key can be output in the export file.

  - Create exports in Test mode: this option allows you to define whether data is to be exported when a data extract offer, or export activity configured with a data extract channel, is executed in a Test interaction workflow. It is a checkbox, and is unchecked by default.

6.8.11 Design Export Path/Filename Format Dialog

The same dialog is used when designing a data extract channel's export path or filename format. The dialog is named in accordance with its usage context.



The dialog contains the following:

- Text parts toolbar: exposing the following options:
  - Add a new Text Part: invocation of this option displays a submenu:
    - Add String
    - Add Date part
    - Add Interaction name
    - Add Trigger name
    - Add Activity name
    - Add Offer name
    - Add Channel name
    - Add Offer channel name

        - Add Execution ID
        - Add Workflow ID
        - Add Audience ID
        - Add Test Indicator: this option facilitates customization of the path or filename by inserting the word 'TEST' in the event that an interaction is run in Test mode, and extract files are produced.

      Selection of a submenu option adds a text part of the appropriate type to the Text parts list. The example cell code formats displayed at the bottom of the dialog and on the invoking button are updated immediately.

    - Move the selected Text Part up: this option is enabled when a text part other than the first in the list is selected. Invocation moves the text part up one position in the list. Example cell code formats are updated immediately.
    - Move the selected Text Part down: this option is enabled when a text part other than the last in the list is selected. Invocation moves the text part down one position in the list. Example cell code formats are updated immediately.
    - Remove the selected Text Part: this option is enabled when a text part is selected in the list. Invocation removes the selected text part and is not protected by 'Are You Sure?'.
- Text parts list: displays all text parts configured for the current context. For each, the following are displayed:
    - [Ordinal position indicator]: a read-only, system-supplied integer
    - [Text part type]: read-only
    - [Value]:
        - If a String text part: a text field is displayed, provision of a value within which is mandatory. The default value is blank. The value provided cannot contain illegal characters (e.g. '/').
        - If a Date text part: a dropdown is displayed, exposing DayOfTheMonth (default), DayNameShort, DayNameFull, Month, MonthNameShort, MonthNameFull, Year2Digits, Year4Digits, Hour, Minute, Second and Millisecond. Examples default to the current date and time.
        - If another type of text part, the examples are shown as e.g. '[Interaction]'
- Example: a read-only field that displays an example of the export path or filename format. String values are displayed as entered. Date part values displayed in accordance with dropdown setting and show the current date and time. Other text parts are displayed as e.g. '[Interaction]'. The example's maximum length is 100 characters. The example is also displayed at the invoking button.

- Close: invocation of this button removes the dialog from display. Clicking off the dialog has the same effect.

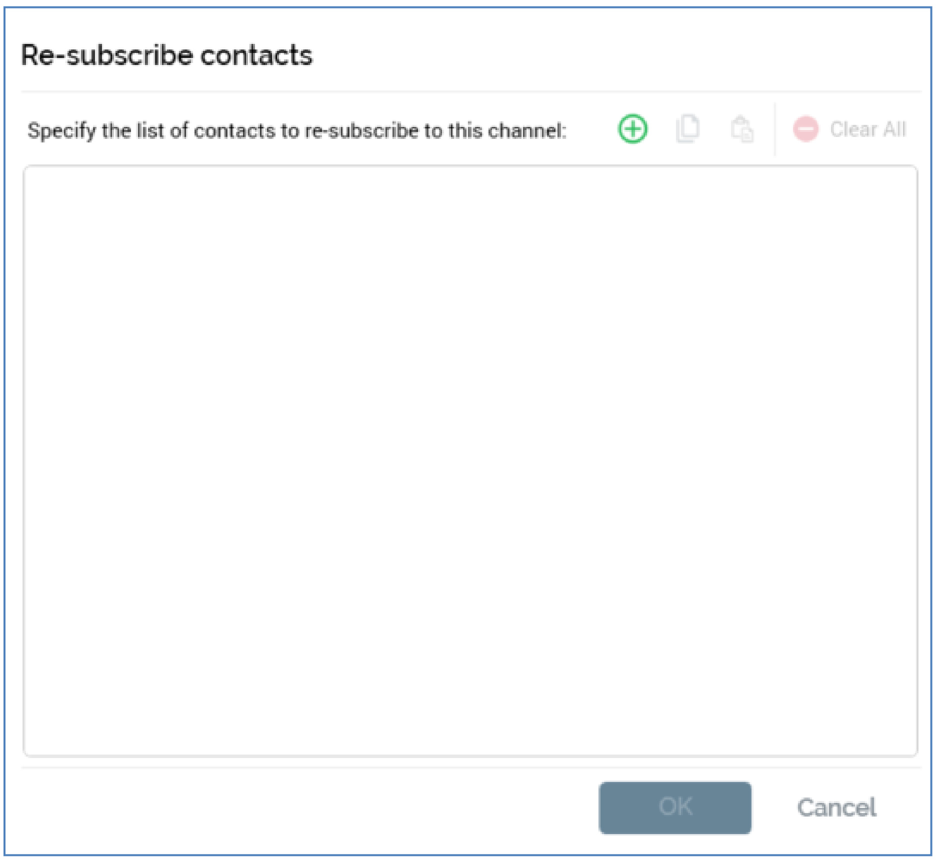
6.8.12 Salesforce Marketing Cloud Email

Salesforce Marketing Cloud provides a third-party email execution engine used by RPI to deliver interaction emails.

The following channel-specific fields are shown for Salesforce Marketing Cloud email channels:

- Re-subscribe contacts: this option, which is shown in the General tab, allows you to re-subscribe contacts who have at some point previously opted out from receiving communications via the channel. By doing so, you may once again begin sending them email communications.

  Invocation of Re-subscribe displays the Re-Subscribe Contacts dialog.



  The dialog contains:

  - Label: 'Specify the list of contacts to re-subscribe to this channel'
  - Add new Email Address: invocation adds a new, blank email address to the list:
  - Copy list of Contacts to clipboard: this button is enabled when at least one row is present in the email address list. Invocation copies the list of email addresses to the clipboard. Blank values are ignored.

- Paste list of Contacts from clipboard: clicking this button displays a submenu exposing the following options:

  - Replace Existing Values: selecting this option replaces the list of displayed email addresses with the contents of the clipboard. Duplicate values are not pasted.

  - Add to Existing Values: selecting this option appends the contents of the clipboard to the list of email addresses. Duplicate values are not appended.

- Clear all Email Addresses: invocation of this option removes all email addresses from the list and closes the dialog. It is not protected by an 'Are You Sure?' dialog.

- Email address list: you can specify one or more email addresses that you wish to re-subscribe in the list. A button is shown to the right of a list entry:

  - Remove: invocation of this option removes the current list entry. An 'Are You Sure?' dialog is not shown.

- Create job to re-subscribe these Email Addresses: this button is shown at the bottom right of the dialog and is only displayed when one or more email addresses are listed. If one or more list entries are blank at invocation, a warning message is displayed. Clicking the button creates a Re-subscribe contacts job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

- Cancel: this button is shown at the bottom right of the dialog and is always available. Invocation closes the dialog without re-subscribing email addresses.

- Recipient email: provision of the attribute that contains recipients' email addresses is optional; however, you must supply an email address attribute if the channel is to be used for delivering emails to outbound targets sourced from an RPI audience.

  Recipient email is optional if the channel will be used exclusively for the sending of emails from a queue activity. Please see the Interaction Designer documentation for further information.

  You can browse for an email address attribute using the recent items chooser or File System Dialog, or you can drag an attribute from the toolbox and drop it onto the field. You cannot select an attribute from an auxiliary database. Having done so, you can clear the selected attribute. You can also view details of the attribute in the File Information dialog.

  Note that model project, exists in table and parameter attributes are not supported in this context.

- Disable recipient email dedupe: this checkbox allows you to switch off recipient email deduplication. It is unchecked by default.

The following properties appear within the Service Credentials section:

- API service: this dropdown field allows you define the specific Salesforce Marketing Cloud API you wish to use. You can select from the following values:

- Standard service
- Alternative service 1 (S4) (the default)
- Alternative service 2 (S6)
- Custom: selection of this option enables the Web service address and FTP server host address fields:
  - Web service address: this field is read-only when API service is set to a value other than Custom. It defaults to the following value:

    'https://webservice.xxx.exacttarget.com/Service.asmx'.

    If writeable, provision of a value is mandatory, and the maximum permissible length is 100 characters.

  - FTP server host address: this field is read-only when API service is set to a value other than Custom. It defaults to the following value:

    'ftp.xxx.exacttarget.com'

    If writeable, provision of a value is mandatory, and the maximum permissible length is 100 characters.

  If you enter custom values that match a standard list entry, the matching standard value is selected instead.

- Use OAuth authentication: this checkbox is enabled when API service is set to 'Custom'. It is unchecked by default. If set, OAuth authentication will be used to connect to the Salesforce Marketing Cloud service.
- Client ID: this property is enabled when API service is set to 'Custom'. A mandatory textbox, it accepts a maximum of 100 characters. It allows you to specify a client ID, to be used to connect to the Salesforce Marketing Cloud service.
- Client secret: this property is enabled when API service is set to 'Custom'. A mandatory password-masked text field, it accepts a maximum of 100 characters. It allows you to specify a client secret, to be used to connect the Salesforce Marketing Cloud service.
- API Scopes: this property is enabled when API service is set to 'Custom'. An optional textbox, it accepts a maximum of 4000 characters. It allows you to specify one or more API scope values (each separated by a single space), which can be used to override the default API scopes configured at SFMC.
- Account MID: this property is enabled when API service is set to 'Custom'. A mandatory textbox, it accepts a maximum of 50 characters. It allows you to specify the Account MID to be used to connect to the Salesforce Marketing Cloud service.

- Service username: the user name used to connect to the Salesforce Marketing Cloud service. This field is mandatory and can be a maximum of 100 characters.
- Service password: the password used to connect to the Salesforce Marketing Cloud service. This password-masked field is mandatory and can be a maximum of 100 characters. Service password is encrypted when stored.
- SFTP username: the user name used to connect to the Salesforce Marketing Cloud FTP server. This field is mandatory and can be a maximum of 100 characters.
- SFTP password: the password used to connect to the Salesforce Marketing Cloud FTP server. This password-masked field is mandatory and can be a maximum of 100 characters. SFTP password is encrypted when stored.

The following properties appear within the Suppressions section:

- Auto-suppress: this checkbox, checked by default, controls whether the system should automatically suppress (i.e. not send mail to) any individual whose email address is registered in the email suppression table (as defined by system config setting EmailUnsubscribersTable).
- Custom suppression table: checkbox, default unchecked. This field allows you to specify that the email channel is to use its own custom suppression table, rather than the default email suppression table (defined by system configuration setting EmailUnsubscribersTable). Checking the field enables Suppression table name.
- Suppression table name: this text field is enabled and mandatory when Custom suppression table is checked and can be a maximum of 50 characters. Any characters entered must be database-valid.

  When a contact elects to unsubscribe from email communications received via a channel using a custom suppression table, his or her email address is stored in that table. Any other email channels remain unaffected, so emails could still be sent using those mechanisms.

- Suppress marketing emails only: this checkbox is unchecked by default. When operational emails are sent using a Salesforce Marketing Cloud email channel, and this property is checked, any email addresses within the channel's suppression table are not suppressed. This means that those targets who have opted out from receiving marketing communications will still be able to be targeted with operational, non-marketing emails. Note that an email offer's Purpose setting determines whether it is marketing or operational in nature.

The following properties appear within the Send Classification section:

- Mktg. (marketing) send profile: the name of the 'marketing send classification' set up in Salesforce Marketing Cloud. This series of Salesforce Marketing Cloud settings mean that, when an email is sent via Salesforce Marketing Cloud for marketing purposes, it will include the mandatory 'unsubscribe' links, etc. The field itself is mandatory and can be a maximum of 100 characters.

- Ops. (operations) send profile: the name of the 'operational send classification' set up in Salesforce Marketing Cloud. This series of Salesforce Marketing Cloud settings mean that, when an email is sent via Salesforce Marketing Cloud for operational (i.e. non-marketing) purposes, it will not include 'unsubscribe' links, etc. The field itself is mandatory and can be a maximum of 100 characters.

The following properties appear within the Import Options section:

- Import timeout: this value represents the length of time (in minutes) that an email offer activity will wait for a Salesforce Marketing Cloud data import job to complete. It is a mandatory integer, with a default value of 60, a minimum value of 1, and a maximum value of 999. If this duration is exceeded the email offer will fail.

- Import via file: a checkbox, unchecked by default. Checking this option means that a Redpoint Data Management (RPDM) job needs to be configured at the RPI server to manage the receipt of email results data (in lieu of the standard email results reporting mechanism). This approach is best suited to high volume email environments.

  If system configuration setting DataManagementDataConnection is set, Data Management will use its value as the connection string when executing Data Management jobs. If the setting is not set, Data Management will use the default Data Connection as configured in the RPDM project.

  Note that setup and configuration of the RPDM job is beyond the scope of this documentation.

  In order for Import via file to be used, values must be provided for the following system configuration settings:

  - DataManagementCredentials
  - DataManagementServerName
  - DataManagementServerPort
  - DataManagementUploadDirectory

  When Import via file is checked, the following results are returned via the RPDM job:

  - Opened
  - Unsubscribed
  - Click Through
  - Forward to Social
  - Forwarded
  - Hard Bounce
  - Soft Bounce

  - Other Bounce

- Import table suffix: this optional field is enabled when Import via file is checked. It is appended to the name of the import table used by the RPDM job, in situations where more than one channel makes use thereof. If provided, the value entered must be database-compatible and can be a maximum of 16 characters in length.

- Import FTP location: this property is enabled when Import via file is checked. It allows you to specify a specific FTP location from which email results are to be sourced when RPDM is used to gather channel results. If no FTP location is specified, the default is used.

  A dropdown list, the property is populated with FTP locations configured at the current RPI client. No value is selected by default. On selecting an FTP location, a Clear button is displayed; clicking it clears the chosen FTP location.

- Decrypt imported file: this checkbox is unchecked by default. If set, files imported by the channel will be assumed to be encrypted. When checked, the subsequent properties are enabled.

- Encryption type: this dropdown field is enabled when Decrypt imported file is checked. It allows you to specify the type of encryption that will be used to decrypt imported files. It exposes values Pretty Good Privacy (PGP) (the default) and Gnu Privacy Guard (GPG)

- Encryption private key: this property is enabled when Decrypt imported file is checked. You can click it to select a private key with which to decrypt imported file from the Windows file system. When enabled, provision of a private key is mandatory. Having chosen the same you can clear your selection.

- Passphrase: this password-masked text field is enabled when Decrypt imported file is checked. It accepts a maximum of 50 characters, and optionally allows you to specify the passphrase of the private key used to decrypt imported files.

- Tracking extract activity ID: this mandatory text property is enabled when Decrypt imported file is checked. It accepts a maximum of 100 characters, and allows you to specify the ID of the tracking data extract activity configured at SFMC.

- File transfer activity name: this mandatory text property is enabled when Decrypt imported file is checked. It accepts a maximum of 100 characters, and allows you to specify the name of the file transfer activity configured at SFMC.

The following properties appear within the File Encryption Options section:

- Encrypt exported file: this checkbox is unchecked by default. When checked, export files generated by the channel will be encrypted.

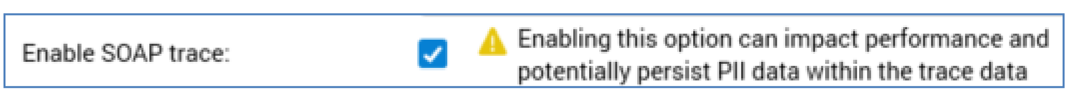
- Encryption type: this dropdown property is enabled when Encrypt exported file is checked. It exposes values Pretty Good Privacy (PGP) (the default) and Gnu Privacy Guard (GPG). It allows you to specify the type of encryption that will be used to encrypt exported files.

- Encryption public key: this property is enabled when Encrypt exported file is checked. When enabled, it is mandatory. You can choose a public key file to be used by the channel when encrypting export files. Having chosen a file, you can clear your selection.
- File transfer activity name: this text property is enabled when Encrypt exported file is checked. It is mandatory when enabled, and accepts a maximum length of 100 characters. It represents the name of the file transfer activity configured at SFMC.

The following properties appear within the Miscellaneous section:

- Remove default text footer: another checkbox, checked by default. When you check Remove default text footer the footer appended automatically by Salesforce Marketing Cloud at email execution is not added to the end of delivered emails. When unchecked, the field is added.
- API upload limit: this property represents a threshold up to which limit records will be uploaded to Salesforce Marketing Cloud via the API. Above the threshold, records will be uploaded by a file import. The property's default value is 20, its minimum 0, and its maximum 999. At production email offer execution, if the number of records to be sent to Salesforce Marketing Cloud is less than or equal to its value, the records are sent directly via the API. If a larger number of records are to be transferred, a file transfer mechanism is utilized.
- API call retry period: this property represents the maximum period, in minutes, for which retries will be performed when an API call encounters an error. An integer field, it defaults to the value 10, and supports a maximum value of 9,999.
- Send confirmation timeout: this value represents the length of time (in minutes) that an email offer activity will wait to receive confirmation that emails were sent successfully by Salesforce Marketing Cloud. It is a mandatory integer, with a default value of 60, a minimum value of 1, and a maximum value of 999. If this duration is exceeded the email offer will fail.
- Enable SOAP trace: a checkbox, unchecked by default. If checked, on email execution, information messages containing Salesforce Marketing Cloud Trace Send and Reply details are written to the server log.

  Note the following message, shown when the property is checked:

- Content character set: sets the email character encoding standard. Note that, if set, the International Sends feature must be enabled on the associated Salesforce Marketing Cloud account. It is an optional string field, set to blank by default. When set, characters in email content are displayed in accordance with the specified character set (e.g. 'UTF-8').
- Subscriber key: this attribute property is optional by default but is required if Disable email recipient deduplication or Exclude email address are checked. You can browse for an attribute, or provide one using drag and drop. Once the property has been set, you can clear your selection. Only database column and parameter attributes are supported in this context. The attribute selected must exist in the audience definition's offer history attribute list and

must be a primary key with unique values. The name of the selected attribute must exactly match that of the Subscriber Key configured at Salesforce.

- Deduplicate by email: the checkbox is disabled when no Subscriber key has been provided. It allows SFMC deduplication to be overridden when a Subscriber key has been specified. When enabled, it is unchecked by default.

- Enable asynchronous processing: this checkbox is unchecked by default. When checked, the sending of emails through the Salesforce Marketing Cloud SOAP API will be carried in asynchronous processing mode. Checking the property enables the Asynchronous call timeout property.

  When checked, the Salesforce Marketing Cloud Data Extension, Data Extension Objects, Import Definition, Email and Email Send Definition will be created asynchronously. In addition, an RPI polling mechanism will check every minute to monitor for each object's availability.

- Asynchronous call timeout: this integer property is enabled and mandatory when Enable asynchronous processing is checked. It defaults to 60 and accepts a value in the range 1 to 999. It represents the time, in minutes, for which the RPI polling mechanism will wait for an asynchronous call to complete.

- Disable field quote wrapping: this checkbox is unchecked by default. When checked, fields will not be wrapped in double quotes in export files sent to Salesforce Marketing Cloud.

- BCC email address: this property allows you to provide an email address to which any emails executed through the channel will be blind carbon copied. The property is optional and can be a maximum of 100 characters in length. The value supplied therein must be a valid email address (note that a semicolon-delimited list of email addresses can also be used).

- Import additional unsubscribers: this checkbox is unchecked by default. If checked, during channel data synchronization, additional unsubscribers (who did not unsubscribe via communications sent from RPI) are downloaded and stored in the default channel suppression table. Note that additional unsubscribers have no effect on the SFMC Existing Unsubscribes and Unsubscribed counts as displayed in the Results Window.

- Enable send log: this checkbox is unchecked by default. When checked, Send Logging is enabled when sending emails. During offer execution, a new data extension is created, based on an existing data extension with a name matching the channel's Send log data extension name. Messages identifying the data extension's name and ID are written to the RPI execution logs. Offer activity execution will fail if a matching data extension does not exist.

- Send log data extension name: this 100 character text property is enabled and mandatory when Enable send log is checked. It represents the name of the send log data extension to be used as a template.

- Data extension folder: this optional property allows you to select a SFMC subfolder in which to save the channel's data extensions. Clicking the button provided displays a dialog, listing subfolders within the SFMC Data Extensions folder. You can choose a folder and click the OK button to confirm your selection. A warning is displayed on clicking OK if you select the root folder, or if a subfolder is not selected. Having made your selection, the selected subfolder's full path is displayed at the property. Clicking Cancel removes the dialog from display. Having chosen a folder, you can clear your selection.

When an email offer is executed using the channel, and a Data extension folder has been specified, the data extension thus generated is saved in the folder in question. If a Data extension folder is not specified, the data extension is saved to the 'Data Extensions' root folder.

- Send definition folder: this optional property allows you to select a SFMC subfolder in which to save the channel's send definitions. Clicking the button provided displays a dialog, listing subfolders within the SFMC Send Definitions folder. You can choose a folder and click the OK button to confirm your selection. A warning is displayed on clicking OK if you select the root folder, or if a subfolder is not selected. Having made your selection, the selected subfolder's full path is displayed at the property. Clicking Cancel removes the dialog from display. Having chosen a folder, you can clear your selection.

  When an email offer is executed using the channel, and a Send definition folder has been specified, the send definition used is saved in the folder in question. If a Send definition folder is not specified, the send definition is saved to the 'Send Definitions' root folder.

- Remove decimal trailing zeroes: this checkbox is unchecked by default. When checked, any trailing zeroes at decimal values in export files generated using the channel will be removed.

- Exclude email address: this checkbox is unchecked by default. If checked, the email address field will not be included in the SFMC data extension and subscriber key will be used instead (that field is mandatory if the property is checked).

- Use data extension retention: this checkbox is unchecked by default. If checked, the channel's data extension's retention features are enabled.

- Data retention period length: this numeric property is enabled when Use data extension retention is checked. It defaults to the value '48'. It specifies the number of Data retention period units for which data extension data will be retained.

- Data retention period unit: this dropdown property is enabled when Use data extension retention is checked. It supports values 'Days' (the default), 'Weeks', 'Months' and 'Years', and allows you to specify the time unit to use with Data retention period length.

- Row-based retention: this checkbox is enabled when Use data extension retention is checked. It is unchecked by default. If checked, all records within a data extension will be removed at the same time.

- Reset retention period on import: this checkbox is enabled when Use data extension retention is checked. It is checked by default. If checked, the data retention period will be reset upon completion of a successful data import.

- Delete at end of retention period: this checkbox is enabled when Use data extension retention is checked. It is unchecked by default. If checked, data within the data extension will be deleted, but the data extension itself will be retained. If unchecked, the entire data extension will be deleted.

Please note that Salesforce does not permit concurrent combinations of the following properties:

- Row-based retention and Delete at end of retention period
- Row-based retention and Reset retention period on Import

The following property is available in the Advanced tab:

- Move hashtags to end of URL: this checkbox, unchecked by default, allows you to specify that any hashtags (#) within email links are to be moved to the end of the URL in which they occur.

  Note that this property will only be applied if a Google Analytics or PURL web adapter is attached to the channel.

  Upon receipt of the email, any link URLs containing hashtags URL will be reformatted as per the following example:

  http://www.redpoint.net/products/#interaction

  …would be reformatted as:

  https://www.redpoint.net/products/?utm_source=RPI&utm_medium=Email&utm_content=0&utm_campaign=Test#entertainment

Note that Web Adapters are supported at the channel.

6.8.13 Salesforce Marketing Cloud Data Transfer

This channel type is suitable for those users who simply want to transfer target data selected by RPI to Salesforce Marketing Cloud, with a view to managing creative and performing email execution within Salesforce Marketing Cloud's own user interface.

The following channel-specific fields are shown. Note that each of these is documented in the Salesforce Marketing Cloud Email channel section, unless otherwise specified.

- Delivery method: read-only, and set to Salesforce Marketing Cloud Data Transfer
- Connectivity test
- Re-subscribe contacts
- Recipient email
- API service
- Web service address
- FTP server host address
- Use OAuth authentication
- Client ID
- Client secret
- API scopes
- Account MID
- Service username
- Service password
- SFTP username
- SFTP password
- Auto-suppress
- Custom suppression table
- Suppression table name
- Import timeout
- Import via file
- Import table suffix
- Import FTP location

- Decrypt imported file
- Encryption type
- Encryption private key
- Passphrase
- Tracking extract activity ID
- File transfer activity name (import)
- Encrypt exported file
- Encryption type
- Encryption public key
- File transfer activity name (export)
- API call retry period
- Send confirmation timeout
- Enable SOAP trace
- Subscriber key
- Import additional unsubscribers
- Data extension folder. Chosen using a folder selector; If a Data extension root folder has been provided, only immediate sub-folders of the same can be selected.
- Data extension root folder: this optional text property accepts a maximum of 255 characters. It allows you to specify the name of the data extension root folder.
- Remove decimal trailing zeroes
- Exclude email address
- Track email send: this checkbox is unchecked by default. If checked, it enables the capture of SFMC email send data.
- Email send tracking table name: this textbox is enabled and mandatory if Track email send is checked. It accepts a maximum of 50 characters. It allows you to specify the name of a table in which SFMC email send data will be persisted. The table contains the following columns:
    - SendID
    - SendDate: the value returned from the API, not based on the SFMC portal.
    - ChannelExecutionID
    - EmailName

- Data extension field source: this dropdown property exposes two values: 'Use database column' (the default) and 'Use attribute name'. It allows you to specify whether data extension field names will be sourced from exported attributes' database column or attribute names.

As per the Salesforce Marketing Cloud Email channel, when you create a new Salesforce Marketing Cloud Data Transfer channel, or change an existing channel's Recipient email property, an orange message is shown at the top of the Channels configuration interface, and a Validate channels job is created and run at Save.

6.8.14 Salesforce Marketing Cloud MobileConnect SMS

The following channel-specific fields are shown for Salesforce Marketing Cloud MobileConnect SMS channels:

- Recipient phone: this attribute defines the field in which a contact's cellphone number is stored. Provision of Recipient phone is mandatory. You can browse for an attribute using the recent items chooser or File System Dialog. You can also drag an attribute from the toolbox and drop it directly onto the field. Once selected, you can clear the attribute, or view its details in the File Information Dialog. Note that any cellphone number data must not contain the '+' character.

- Service Credentials section: exposing the following properties:

  - API URL: this property represents the URL that will be used to connect to the Salesforce Marketing Cloud MobileConnect SMS service. A mandatory text field, it can be a maximum of 1000 characters in length. It defaults to the value 'https://www.exacttargetapis.com/sms/v1'.

  - Client ID: this mandatory text property represents the client ID that will be used to authenticate API calls to Salesforce Marketing Cloud MobileConnect. It can be a maximum of 100 characters in length.

  - Client secret: this password-masked text field can be a maximum of 100 characters in length. It represents the client secret that is used to authenticate API calls to Salesforce Marketing Cloud MobileConnect.

  - Use short code: this checkbox is checked by default. When checked, the channel will use the supplied Short code when sending SMS messages. When unchecked, the Long code is used instead.

  - Country code: this dropdown field defaults to the value 'US United States'. It is enabled when Use short code is checked and represents the country code associated with the specified short code. Available values are as follows:

    - US United States
    - GB United Kingdom
    - BR Brazil
    - DE Germany

  - Short code: this text field is enabled when Use short code is checked. It is mandatory when enabled and can be a maximum of 100 characters in length. It should be set to a valid short code as set up at the Salesforce Marketing Cloud MobileConnect account.

  - Long code: this text field is enabled when Use short code is unchecked. It is mandatory when enabled and can be a maximum of 100 characters in length. It should be set to a valid long code as set up at the Salesforce Marketing Cloud MobileConnect account.

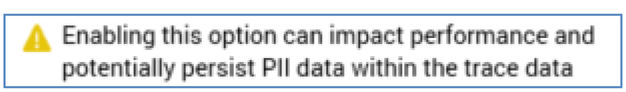
- Keyword: this mandatory text field can be a maximum of 100 characters in length. It represents the keyword that will be used when subscribing mobile numbers.

- Suppressions section: exposing the following properties:
    - Auto-suppress: this checkbox is checked by default. When checked, at SMS offer execution, sending of messages to any phone number registered in the SMS suppression table is prevented.
    - Custom suppression table: this checkbox is unchecked by default. When checked, the Suppression table name field is enabled. It allows you to override the system default suppression table with a custom table.
    - Suppression table name: this text field is enabled when Custom suppression table is checked. It is mandatory when enabled and can be a maximum of 50 characters in length. The value supplied must be database-valid. When supplied, a custom suppression table is created using the name supplied.
- Miscellaneous section: exposing the following:
    - Opt-out message: this optional text property is used to specify text that will be appended to marketing messages to provide help and opt-out guidance. It can be a maximum of 100 characters in length.
    - Request timeout: this integer property defaults to 60. It represents the period of time, in minutes, for which RPI will wait for Salesforce Marketing Cloud MobileConnect API requests to complete before timing out.
    - Enable trace: this checkbox is unchecked by default. When checked, RPI will log API requests and corresponding responses from Salesforce Marketing Cloud MobileConnect.
    - Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

    Note the following message, displayed when the property is checked:



Note that, in the Web Adapters tab, you can add a URL shortener adapter only to the channel.

When you create a new Salesforce Marketing Cloud MobileConnect SMS channel, or when an existing channel's Recipient phone field is changed, an orange message is displayed to top of the channel configuration interface:

The database will be validated when these channels are saved.

When the message is displayed, at invocation of Save, a Validate channels job is created and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation. The message is removed immediately on saving.

6.8.15 SendGrid Email

SendGrid is a third-party email execution engine used by RPI to deliver interaction emails.

The following channel-specific fields are shown for SendGrid email channels:

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- Service Credentials section, containing the following:
  - Web API version: this dropdown field allows you to select the version of the SendGrid API to which you wish the channel to connect. It exposes two values - v2, selected by default, and v3.

    If v2 is selected:

    - The SMTP Details section is enabled
    - API user is shown and enabled
    - API key ID is hidden

    If v3 is selected:

    - The SMTP Details section is disabled
    - API key ID is shown and enabled
    - API user is hidden
  - Web API URL: the URL of the API used to connect to the SendGrid service. Use of an HTTPS URL is supported in this context. The property defaults to ‘https://api.sendgrid.com/’.
  - API key: this text field is mandatory. It accepts a maximum length of 100 characters. It represents the API key that will be used by the channel to connect to the SendGrid service. Note that the field is only visible when Web API version is set to 'v3'. Note also that the supplied API key must have the ‘Full Access’ API key permission.
  - API user: this property is shown, enabled and mandatory when Web API version is set to v2. It defaults to the value 'apikey', and accepts a maximum length of 100 characters. It allows you to specify the API username used to authenticate SMTP when sending emails.
  - API key ID: this text field is shown and enabled when Web API version is set to v3, in which case it is mandatory. It accepts a maximum length of 100 characters. It represents the API key ID that accompanies the provided API key, and which will be used by the channel to connect to the SendGrid service. Note that the field is only visible when Web API version is set to 'v3'.

- Suppressions section, containing the following:
  - Auto-suppress: as per Salesforce Marketing Cloud email channel.
  - Custom suppression table: as per Salesforce Marketing Cloud email channel.
  - Suppression table name: as per Salesforce Marketing Cloud email channel.
- SMTP Details section, containing the following:
  - SMTP server: the SMTP (Simple Mail Transfer Protocol) server used by the SendGrid service.
  - SMTP port: the port used at the aforementioned server.
  - SMTP timeout: the SMTP send call timeout (in milliseconds). This numerical field is mandatory and must be a value between 1 and 999,999,999. The value is set to 300,000 by default.
  - Use SMTP relay: this checkbox is unchecked by default. When checked, it specifies that the channel should use the SendGrid SMTP relay (which is designed for use by high volume senders).
    - SMTP authentication: this property is only enabled when Use SMTP relay is checked. It represents the type of authentication to be used to connect to the SendGrid SMTP relay service.

      A dropdown list, it exposes the following values:
      - Anonymous (the default)
      - Credentials
      - Windows Integrated
    - Username: this property is only enabled when Use SMTP relay is checked, and when SMTP authentication is set to Credentials. The textbox is mandatory when enabled and accepts a maximum value length of 100 characters. It represents the user name that will be used to connect to the SendGrid SMTP relay service.
    - Password: this property is only enabled when Use SMTP relay is checked, and when SMTP authentication is set to Credentials. The password-masked textbox is mandatory when enabled and accepts a maximum value length of 100 characters. It represents the password to be used to connect to the SendGrid SMTP relay service.
- Campaign Category section, containing the following:
  - Use campaign category: this checkbox is unchecked by default. If checked, one or more category names will be used as part of an email campaign. When an email offer is executed using a channel at which Use campaign category is checked, configured category names will be substituted with runtime values, and will be reflected as Category

names for the email campaign in SendGrid. Note that, if using SendGrid's Categories feature, there exists the potential for execution performance to be compromised.

- Category names: this property consists of a toolbar and a list.
  - Toolbar: exposing a single button:
    - Click here to design category format: clicking this button displays the Design Category Name Format dialog.

      The dialog is based on the standard RPI Design Format dialog and allows you to select text parts from which category names will be constructed. An example is shown at the bottom of the dialog. Clicking Close, or clicking off the dialog, closes it.
  - List: at least one, and a maximum of ten, custom category name formats can be supplied. Duplicates are not permitted. An inline Remove button is available at each list entry.

- Callback Service section, containing the following:
  - Callback service URL: a public-facing service to which SendGrid will post state and metric data. The value entered should be the same as the Post Event URL configured in the SendGrid account's Event Notification app, which must be enabled to facilitate the return of results from SendGrid. Use of an HTTPS URL is supported in this context.
  - Events external folder: clicking this button displays the Events External Folder dialog, in which you can select an external folder to which SendGrid event details will be written. The AWS, Azure Storage, Box, FTP, WebDAV and Cloudinary external content providers can be used to host such a folder. When an Events external folder is provided, email results are imported from the external folder.
  - Configuration: this button allows you to copy the JSON configuration used at the SendGrid Callback service settings' ExternalContentProviderSettings section to the clipboard. It is enabled when an Events external folder has been selected.
- List Unsubscribe (optional) section, containing the following:
  - Email unsubscribe: this text property, which is blank by default and which can be a maximum of 100 characters in length, allows you to specify the mailto portion of the List-Unsubscribe header that will receive unsubscribe requests. Email unsubscribe is mandatory when Web unsubscribe is provided. It must be set to a valid email address.
  - Email unsubscribe subject: this optional text property accepts a maximum of 1000 characters. It allows you to specify the email unsubscribe subject parameter to be used for the mailto portion of the List-Unsubscribe header. If provided, Email unsubscribe must also be set.

When emails are sent and both properties are set, the 'List-Unsubscribe' header will be populated using the following format:

```
<mailto:[Email unsubscribe]?subject=[Email unsubscribe subject]>
```

- Web unsubscribe: this text property, which is blank by default and which can be a maximum of 1000 characters in length, allows you to specify the http portion of the List-Unsubscribe header that will receive a POST whenever someone clicks an unsubscribe link in an email. It must be set to a valid URL.

  Note that configured Email and Web unsubscribe settings take effect only when SendGrid subscription tracking is disabled.

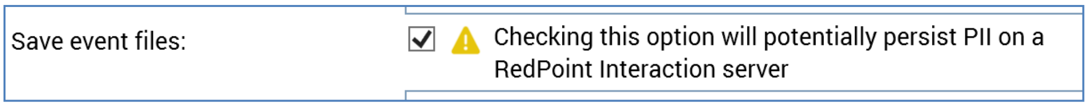
- Miscellaneous section, containing the following:
  - Remove footer: as per Salesforce Marketing Cloud email channel.
  - Disable click track: this checkbox is unchecked by default. If checked, URL click tracking is disabled at the current channel.
  - Disable open track: this checkbox is unchecked by default. If checked, Open tracking is disabled at the current channel.
  - Max send batch size: this integer property represents the maximum number of recipient records that can be sent at a single time to SendGrid. It defaults to 1000, which is also the minimum supported value, and accepts a maximum value of 10,000.
  - Max send thresholds: this mandatory integer property defaults to 10, and can be set to between 1 and 10. It represents the maximum number of concurrent send operations that can be executed for a batch of email campaigns. At email offer activity execution, SendGrid email campaigns will be grouped as a batch based on identical content sets (such as HTML, Text and subject line). Batches of email campaigns can be sent in parallel in accordance with the value set at the property. Batch of email campaigns are processed based on the total number of batches/Max send thresholds. If the total number of batches is less than or equal to Max send thresholds, only a single send operation is performed. Details of send operations are available in the activity Log via the Results Window.
  - BCC email address: as per Salesforce Marketing Cloud email channel.
  - Email events shared folder: this mandatory text property accepts a maximum length of 1000 characters. If supplied, email events will be imported into the SendGridEvents table from the network folder path provided.

    Note that the property is still required when using an Events external folder. In the event of an error in connecting with the external folder, email events will be saved to a folder defined by cluster system configuration setting SendGridEmailMetricsFolderPath. The channel's Email events shared folder should be configured to the same folder to afford access to those events that were unable to be saved to the external folder.
  - Content templates shared folder: as per CheetahMail email channel.

- Event import batch size: this mandatory integer property defaults to the value 10,000. It accepts a minimum value of 5,000 and a maximum value of 20,000. It represents the maximum number of email events that can be imported into SendGrid in a single batch. If more events than the stipulated value need to be processed, they are handled in separate batches.

- Save event files: this checkbox, which is unchecked by default, indicates whether SendGrid event files will be moved to the '<TENANT ID>\Processed' folder.

  If checked, a warning message is shown:



- Save mail merge files: this checkbox is unchecked by default. When checked, SendGrid mail merge files will be persisted on the RPI server, in a location defined by the Mail merge shared folder property. If checked, a warning message is shown:

  At channel execution when the property is checked, generated mail merge files will be saved to:

  [Mail merge shared folder]\<clientid>\<channelName>\<channelexecutionid>.

- Mail merge shared folder: this text property is enabled when Save mail merge files is checked. It allows you specify a network folder to which SendGrid mail merge files will be saved.

- Override processed files location: this checkbox is unchecked by default. When checked, manual specification of the SendGrid processed event files default folder is supported.

- Processed files location: this textbox is enabled and mandatory when Override processed event files location is checked. It allows you to specify a network folder where processed event files will be saved. External folders are not supported in this context.

- Processed file retention period : this numeric property defaults to the value '30' and allows you to specify the number of days after which SendGrid processed files will be removed by RPI housekeeping.

- Max import file count: this property represents the maximum number of SendGrid event import files that will be processed each time the channel synchronization task executes. A mandatory integer, it defaults to 200, and accepts a minimum value of 10 and a maximum value of 9,999,999.

- API rate limit max. re-try: this mandatory numeric property, which defaults to 30, allows you to specify the number of retries to be attempted if a rate limit is hit when making calls to a SendGrid API.
- Use secondary password: this checkbox is unchecked by default. If checked, a secondary password will be used to validate each HTTP request against whitelisted IP addresses.
- Secondary password: this password-masked text field is enabled and mandatory when Use secondary password is checked. It allows you to specify a secondary password to be used to connect to SendGrid.
- Process older event files first: this checkbox is unchecked by default. If checked, RPI will prioritize the processing of older event files first.
- Fail if no mail merge files: this checkbox is unchecked by default. If checked, execution using the channel will fail in the event of no mail merge files being generated.
- Use open-track pixel: this checkbox is unchecked by default. If checked, a single '%open-track%' pixel must be provided in HTML content (a runtime validation error being raised if this is not the case).
- Custom headers: this property allows you to specify custom header values to be sent with emails executed using the channel. It consists of a header and a list.
  - Header: exposing the following:
    - Add: invocation adds a new custom header to the list.
    - Remove: invocation removes the currently-selected header from the list without display of an 'Are You Sure?' dialog.
  - List: lists custom headers associated with the channel. For each, are displayed:
    - Custom header name: mandatory, and a maximum of 100 characters in length.
    - Custom header value: mandatory, and a maximum of 100 characters in length.
    - Remove: inline button. Invocation removes the currently-selected header from the list without display of an 'Are You Sure?' dialog.

The following settings are available at the Advanced tab:

- External folder: as per Acoustic email channel.
- Import via file: as per Salesforce Marketing Cloud email channel.
- Import table suffix: as per Salesforce Marketing Cloud email channel.
- Import FTP location: as per Salesforce Marketing Cloud email channel.
- Request timeout: this property is set to a default value of 60 and accepts a minimum value of 3. It represents, in minutes, the amount of time for which an activity will wait for API requests to complete. At execution of an email offer in an interaction workflow, or a channel

synchronization job, RPI will continue to send requests to SendGrid until a successful response is received or timeout period elapses.

- Enable trace: this checkbox is unchecked by default. When checked, API requests and corresponding replies from the email service provider are logged. At execution of an email offer in an interaction workflow, or a channel synchronization job, if checked, all requests made to SendGrid are logged. Note that this feature should be used only when troubleshooting to avoid logging an excessive amount of data to the database.

  Note the following message, which is displayed when the property is checked:

  Note also, when Enable trace is checked at a SendGrid channel, copies of any related MailMerge files will be created and stored at C:\temp\RPI\Emails\SendGrid\.

- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

A Validate channels job is created and executed on saving a new SendGrid email channel, or on saving following a change to an existing SendGrid email channel's Recipient email address field. Full details are as per the Salesforce Marketing Cloud email channel documentation.

6.8.16 CheetahMail Email

CheetahMail is a third-party email execution engine used by RPI to deliver interaction emails.

Note that usage of a CheetahMail email channel requires a one-time setup of an email account at the CheetahMail user interface.

The following channel-specific fields are shown for CheetahMail email channels:

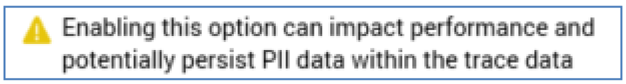
- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- FTP server host address: mandatory, and a maximum of 100 characters. Allows specification of the CheetahMail SFTP server host address.
- SFTP username: mandatory, and a maximum of 100 characters. The user name that will be used to connect to the CheetahMail SFTP server host address
- SFTP password: mandatory, and a maximum of 100 characters. This password-masked field is also used to connect to the CheetahMail SFTP server host address.
- Service username: mandatory, and a maximum of 100 characters. The user name that will be used to connect to the CheetahMail service.
- Service password: mandatory, and a maximum of 100 characters. This password-masked field is also used to connect to the CheetahMail service.
- Segment ID: this mandatory text property represents the ID of the CheetahMail segment to be used when sending emails using a CheetahMail channel. It can be a maximum of 100 characters in length. For more information, please see the section on CheetahMail account setup in the RPI External Provider Configuration documentation.
- Subscriber list ID: this mandatory text property represents the ID of the CheetahMail subscriber list to be used when sending emails using a CheetahMail channel. The property is used to identify the subscriber list to which email recipients, uploaded to CheetahMail in an xdb file, are subscribed. It can be a maximum of 100 characters in length. For more information, please see the section on CheetahMail account setup in the RPI External Provider Configuration documentation.
- Upload report email: mandatory, and a maximum of 100 characters. The email address to which the contact upload report is to be mailed.

  The report is generated each time a CheetahMail email offer completes successfully. At each such execution, CheetahMail performs an upload of contacts. Afterwards, a report is sent to the email address configured at this property. The report includes the total records uploaded, the total upload errors, subscription statistics, and other notes.

- Auto-suppress: as per Salesforce Marketing Cloud email channel.

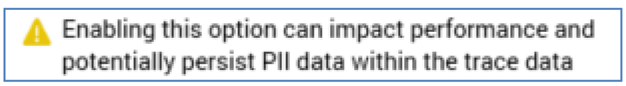
- Remove default text footer: as per Salesforce Marketing Cloud email channel.
- Custom suppression table: as per Salesforce Marketing Cloud email channel.
- Suppression table name: as per Salesforce Marketing Cloud email channel.
- Suppress marketing emails only: as per Salesforce Marketing Cloud email channel.
- Log API calls: this checkbox is unchecked by default. When it is checked, logs of the API calls made to CheetahMail at workflow execution are generated.

  Note the following message, displayed when the property is checked:

- Enable logging: this checkbox controls whether log records are to be generated during the sending of emails.

  Note the following message, displayed when the property is checked:

- Email flow rate: this dropdown allows you to control the rate at which emails will be sent using a CheetahMail channel. The default setting is for no throttling of email delivery to be performed. A variety of settings – from fast through slow – are available.
- Required fields: this property allows you to define a list of fields required by the CheetahMail account. It consists of a toolbar and a grid.
  - Toolbar: exposing two options:
    - Add: clicking this button adds a new entry to the bottom of the grid.
    - Remove: clicking this button removes the selected entry from the grid, without the display of an 'Are You Sure?' dialog.
  - Grid: the grid allows you to define all of the required fields associated with the CheetahMail account. For each field, the following are shown:
    - Attribute: you must map an RPI attribute to a CheetahMail required field. You can browse for an attribute, or provide one using drag and drop. Neither Exists in table attributes, nor those based on an auxiliary database, are not supported in this context. Once provided, you can clear an attribute, or view its details in the File Information Dialog.
    - Field Name: this mandatory property can be a maximum of 50 characters in length.
    - Remove this field: this inline button is displayed on hover. Invocation removes the field from the list and is not protected by 'Are You Sure?'.

- Content templates shared folder: this optional text field allows you to specify the path of a folder, in which email, SMS, and push notification content templates will be created to ensure that workflow execution does not fail in a multi-node cluster.

The following properties are exposed at the Advanced tab:

- External folder: as per Acoustic email channel.
- Import via file: as per Salesforce Marketing Cloud email channel.
- Import table suffix: as per Salesforce Marketing Cloud email channel.
- Import FTP location: as per Salesforce Marketing Cloud email channel.
- Request timeout: as per SendGrid email channel.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

A Validate channels job is created and executed on saving a new CheetahMail email channel, or on saving following a change to an existing CheetahMail email channel's Recipient email address field. Full details are as per the Salesforce Marketing Cloud email channel documentation.

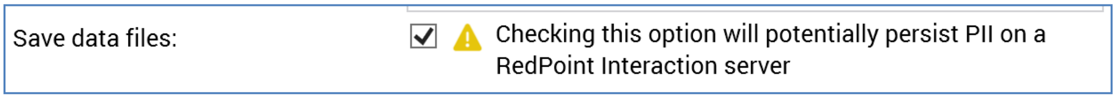
6.8.17 Acoustic Email

Acoustic is a third-party email execution engine used by RPI to deliver interaction emails.

The following channel-specific fields are shown for Acoustic email channels:

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- Web service address: mandatory, and a maximum of 100 characters. The Acoustic web service address.
- Host server URL: mandatory, and a maximum of 100 characters. The host server is used for tracking links clicked within delivered emails. Defaults to ‘http://sdm3.rm04.net’.
- Client ID: this mandatory text property allows you to specify the client ID to be used when connecting to the Acoustic service. It accepts a maximum of 100 characters.
- Client secret: this password-masked mandatory text property allows you to specify the client secret to be used when connecting to the Acoustic service. It accepts a maximum of 100 characters.
- Refresh token: this password-masked mandatory text property allows you to specify the refresh token to be used when connecting to the Acoustic service. It accepts a maximum of 256 characters.
- Export FTP location: this mandatory property allows you to choose an existing FTP location to which exported files will be uploaded.
- Group ID: mandatory, and a maximum 100 characters. This setting must reflect the value configured at the Acoustic website.
- Opt out URL: optional, and a maximum of 1000 characters. Facilitates navigation to an Acoustic landing page, where opt-out from communications can be requested.
- Max send batch size: an integer property that defines the maximum number of records that can be sent to Acoustic at a time. The property’s value defaults to 1000.
- Auto-suppress: as per Salesforce Marketing Cloud email channel.
- Remove default text footer: as per Salesforce Marketing Cloud email channel.
- Custom suppression table: as per Salesforce Marketing Cloud email channel.
- Suppression table name: as per Salesforce Marketing Cloud email channel.
- Save data files: this checkbox is unchecked by default. It allows you to specify whether Acoustic mail merge data files are to be moved to a 'C:\temp\RPI\Acoustic\[Client ID]\Processed\[ChannelExecutionID]' folder after email offer execution.

Note that, if checked, this means that PII will potentially be stored on an RPI server; accordingly, a warning is shown to this effect at the property's being checked.



- Content templates shared folder: as per CheetahMail email channel.
- Save XML files: this checkbox is unchecked by default . If checked, Acoustic XML files will be saved to a network path
- XML files shared folder: this text property is enabled and mandatory when Save XML files is checked. It allows you to specify the path of a network folder where Acoustic XML files will be saved. At channel execution, the generated XML files will be saved to the following path:

  '[XML files shared folder]\[clientid]\[channelexecutionid]'

The following properties are exposed at the Advanced tab:

- External folder: this optional Button allows you to specify an external folder to which embedded image will be uploaded. The button initially displays the text 'Choose external folder'. Clicking the button displays the External Folders dialog.

  A treeview lists all instances of existing external content providers, with the exception of SharePoint Online and OneDrive. You can expand an external content provider in order to select a single folder. Having selected a folder, you can click OK to choose it. You can also click Cancel to remove the dialog from display.

  On invocation of OK, the name of the selected external provider and folder is displayed at the property. Having specified an external folder, you can clear it.

- Import via file: as per Salesforce Marketing Cloud email channel.
- Import table suffix: as per Salesforce Marketing Cloud email channel.
- Import FTP location: as per Salesforce Marketing Cloud email channel.
- Request timeout: as per SendGrid email channel.
- Enable trace: as per SendGrid email channel.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

A Validate channels job is created and executed on saving a new Acoustic email channel, or on saving following a change to an existing Acoustic email channel's Recipient email address field. Full details are as per the Salesforce Marketing Cloud email channel documentation.

6.8.18 SparkPost Email

SparkPost is a third-party email execution engine used by RPI to deliver interaction emails.

The following channel-specific fields are shown for SparkPost email channels:

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- Service Credentials section:
    - API service URL: this mandatory text field allows you to specify the URL used to connect to the SparkPost API service. It accepts a maximum length of 100 characters, and defaults to 'https://api.sparkpost.com/api/v1/'.
    - Sending domain: this mandatory text field represents the domain from which emails are to be sent. It supports a maximum value length of 100 characters.
    - Tracking domain: this mandatory text field represents the domain to be used to track opens and clicks. It supports a maximum value length of 100 characters.
    - API key: this mandatory text field represents the API key to be used to authenticate when connecting to the SparkPost service. It supports a maximum value length of 100 characters.
    - Unsubscribe URL: this mandatory text field represents the URL to be used to manage unsubscribes. It supports a maximum value length of 1000 characters.
- Suppressions section
    - Auto-suppress: as per Salesforce Marketing Cloud email channel.
    - Custom suppression table: as per Salesforce Marketing Cloud email channel.
    - Suppression table name: as per Salesforce Marketing Cloud email channel.
- Miscellaneous section:
    - IP Pool: this optional property allows you to specify a dedicated IP pool from which emails will be sent when the channel is used. It is initially presented as a Choose IP pool button. It is enabled when the channel has been saved. Clicking the button displays the Choose IP Pool dialog. The dialog lists all IP pools configured at the SparkPost account. You can select a single IP pool, and click OK to confirm your choice. A Cancel button is also provided.

      Having selected an IP pool, a Clear button is shown. Clicking it clears the selected IP pool.
    - Campaign ID: this optional property allows you to specify the name of a SparkPost campaign to be used when executing an email offer using the channel. It is initially presented as a Click here to design the format button. Clicking the button displays the

Design Campaign ID format dialog. You can use the following text parts can be used to build the campaign ID:

- String
- Date part
- Interaction name
- Trigger name
- Activity name
- Offer name
- Channel name
- Offer channel name
- Execution ID
- Workflow ID
- Audience ID
- Test indicator

Note that a campaign ID can be a maximum of 50 characters in length; any characters beyond this limit will be truncated.

- Subaccount: this optional property allows you to specify the name of a SparkPost subaccount from which emails will be sent when the channel is used. It is initially presented as a Choose subaccount button. It is enabled when the channel has been saved. Clicking the button displays the Choose Subaccount. The dialog lists all subaccounts configured at the SparkPost account. You can select a single subaccount and click OK to confirm your choice. A Cancel button is also provided.

  Having selected a subaccount, a Clear button is shown. Clicking it clears the selected subaccount.

- Remove default text footer: as per Salesforce Marketing Cloud email channel.
- BCC email address: as per Salesforce Marketing Cloud email channel.
- API request limit: this numeric property represents the number of API requests that can be made per minute. It defaults to 6.
- Event request count: this numeric property specifies the number of records to request when processing message events. It defaults to 5000.

- Save event files: this checkbox, which is unchecked by default, allows you stipulate that SparkPost event files will be moved to the 'C:\temp\RPI\SparkPost\TENANT_ID\Processed' folder after email offer execution.

  Note that, if this option is selected, there is the potential for the persistence of PII data on the RPI Server. Accordingly, a warning is shown when this option is checked:

- Content templates shared folder: as per CheetahMail email channel.

The following properties are exposed at the Advanced tab:

- External folder: as per Acoustic email channel.
- Enable trace: as per SendGrid email channel.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

A Validate channels job is created and executed on saving a new SparkPost email channel, or on saving following a change to an existing SparkPost email channel's Recipient email field. Full details are as per the Salesforce Marketing Cloud email channel documentation.

6.8.19 Instiller Email

Instiller is a third-party email execution engine used by RPI to deliver interaction emails.

The following channel-specific fields are shown for Instiller email channels:

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- Service Credentials section:
    - API service URL: this text property is mandatory and can be a maximum of 100 characters in length. It represents the URL that will be used to connect to the Instiller API service. It defaults to the value 'https://control.instiller.co.uk'.
    - Username: this text property is mandatory and can be a maximum of 100 characters in length. It represents the user name that will be used to connect to Instiller.
    - API identifier: this password-masked text property is mandatory and can be a maximum of 100 characters in length. It is used during authentication when connecting to the Instiller API service.
    - API key: this text property is mandatory and can be a maximum of 100 characters in length. It is also used when authenticating against to use the Instiller API service.
    - Field maps identifier: this text property is mandatory and can be a maximum of 100 characters in length. It is used to map the columns of the data file to the email data fields. Note that, to acquire a Field maps identifier, the 'List > Field Maps > API Identifier' property must be configured at the Instiller UI.
    - Click tracking domain: this text property is mandatory and can be a maximum of 100 characters in length. It is used when tracking link clicks. It defaults to 'clicks.dnsentries.co.uk'.
    - Email profile name: this property represents the email profile name to be used by the sending email address.
    - Email profile API identifier: this property represents the email profile API identifier to be used by the sending email address.
- Suppressions section:
    - Auto-suppress: as per Salesforce Marketing Cloud email channel.
    - Custom suppression table: as per Salesforce Marketing Cloud email channel.
    - Suppression table name: as per Salesforce Marketing Cloud email channel.
- Synchronization section: the properties in this section are used to limit the API calls/transactions made to the Instiller API during channel synchronization. Setting lower

duration values limits the number of API calls made; setting higher frequency values further limits API calls.

- Override sync frequency: this checkbox is unchecked by default. When checked, the other fields in the Synchronization section are enabled.
- HardBounced sync duration: this numeric property is enabled when Override sync frequency is checked. It defaults to 5, accepts a minimum value of 1 and a maximum value of 30. It allows you to define the maximum number of days across which to synchronize HardBounced results.
- SoftBounced sync duration: this numeric property is enabled when Override sync frequency is checked. It defaults to 5, accepts a minimum value of 1 and a maximum value of 30. It allows you to define the maximum number of days across which to synchronize SoftBounced results.
- HardBounced sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 24, accepts a minimum value of 1 and a maximum value of 720. It allows you to define the frequency, in hours, at which HardBounced results will be synchronized.
- SoftBounced sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 24, accepts a minimum value of 1 and a maximum value of 720. It allows you to define the frequency, in hours, at which SoftBounced results will be synchronized.
- Complaints sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 24, accepts a minimum value of 1 and a maximum value of 720. It allows you to define the frequency, in hours, at which Complaints results will be synchronized.
- Global OptOut sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 24, accepts a minimum value of 1 and a maximum value of 720. It allows you to define the frequency, in hours, at which Global OptOut results will be synchronized.
- Campaign metrics sync sequence: the following properties provide control over the synchronization of high level campaign metrics.
- Initial sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 20, accepts a minimum value of 5 and a maximum value of 60. It allows you to define the frequency, in minutes, of the initial synchronization of high level campaign metrics.
- Initial sync duration: this numeric property is enabled when Override sync frequency is checked. It defaults to 4, accepts a minimum value of 1 and a maximum value of 24. It allows you to define the duration, in hours, of the initial synchronization of high level campaign metrics.
- Post initial sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 1 accepts a minimum value of 1 and a maximum value of 24. It

  allows you to define the frequency, in hours, at which post initial campaign metrics will be synchronized.

  - Post initial sync duration: this numeric property is enabled when Override sync frequency is checked. It defaults to 24, accepts a minimum value of 1 and a maximum value of 720. It allows you to define the duration, in hours, of the post initial synchronization of high level campaign metrics.

  - Sync frequency: this numeric property is enabled when Override sync frequency is checked. It defaults to 24, accepts a minimum value of 1 and a maximum value of 720. It allows you to define the frequency, in hours, at which high level campaign metrics will be synchronized after the post initial sync.

- Miscellaneous section:

  - Remove default text footer: as per Salesforce Marketing Cloud email channel.

  - Include view online link: this checkbox is unchecked by default. If checked, a View Online link is inserted into delivered email content. If unchecked, the link is not inserted.

  - Save event files: this checkbox is unchecked by default. When checked, Instiller event files will be moved to the 'C:\temp\RPI\Instiller\TENANT_ID\Processed' folder.

    Note that, if this option is selected, there is the potential for the persistence of PII data on the RPI Server. Accordingly, a warning is shown when this option is checked:

  - Retry count: this integer property allows you to specify the number of retry attempts to be made in the event of an error occurring when connecting to the Instiller service.

  - Content templates shared folder: as per CheetahMail email channel.

  - Send throttle rate: this integer property is set to 500,000 by default. It accepts a minimum value of 50,000. It represents the maximum number of email messages that can be sent per hour.

The following properties are exposed at the Advanced tab:

- External folder: as per Acoustic email channel.
- Import via file: as per Salesforce Marketing Cloud email channel.
- Import table suffix: as per Salesforce Marketing Cloud email channel.
- Import FTP location: as per Salesforce Marketing Cloud email channel.
- Enable trace: as per SendGrid email channel.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

A Validate channels job is created and executed on saving a new Instiller email channel, or on saving following a change to an existing Instiller email channel's Recipient email field. Full details are as per the Salesforce Marketing Cloud email channel documentation.

6.8.20 Responsys Email

Responsys is a third-party email execution engine used by RPI to deliver interaction emails.

The following channel-specific fields are shown for Responsys email channels:

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- Service Credentials section, containing the following:
  - API service URL: this mandatory text field represents the URL used to connect to the Responsys service. It can be a maximum of 1000 characters in length, and defaults to the value 'https://login2.responsys.net/'.
  - Username: this mandatory text field can be a maximum of 100 characters in length.
  - Password: this password-masked mandatory field can be a maximum of 100 characters in length.
- FTP Credentials section, containing the following:
  - FTP server host address: this mandatory text field can be a maximum of 1000 characters in length.
  - SSH2 key: this mandatory text field represents the Private key file used to authenticate to the Responsys file server using public key cryptography. You can browse for a private key file using the Windows file system dialog. Having done so, you can clear the selected file.
  - SFTP username: this mandatory text field can be a maximum of 100 characters in length.
  - SFTP password: this password-masked mandatory field can be a maximum of 100 characters in length.
- Campaign Options section, containing the following:
  - Exported event path: this mandatory text field represents the directory in the Responsys file server where contact event data are to be exported. It can be a maximum of 1000 characters in length.
  - Profile list: this mandatory text field represents name of the profile list to associate with Responsys campaigns. It can be a maximum of 100 characters in length.
  - Root folder: this mandatory text field represents the name of the root folder used to upload email content. It can be a maximum of 1000 characters in length.
  - Link table: this mandatory text field represents the name of the link table located in the same folder as the profile list. It can be a maximum of 100 characters in length.
- Suppressions section, containing the following:

  - Auto-suppress: as per Salesforce Marketing Cloud email channel.
  - Custom suppression table: as per Salesforce Marketing Cloud email channel.
  - Suppression table name: as per Salesforce Marketing Cloud email channel.
- Launch Options section, containing the following:
  - Progress report email: this optional text field represents the email address to which the Responsys campaign launch status will be emailed. It can be a maximum of 1000 characters in length.
  - Progress chunk: this dropdown field allows you to define the limit of messages sent per hour when a Responsys campaign is launched. It exposes the following values:
    - 10K (the default)
    - 50K
    - 100K
    - 500K
    - 1M
- Miscellaneous section, containing the following:
  - Remove default text footer: as per Salesforce Marketing Cloud email channel.

The following properties are exposed at the Advanced tab:

- Import via file: as per Salesforce Marketing Cloud email channel.
- Import table suffix: as per Salesforce Marketing Cloud email channel.
- Import FTP location: as per Salesforce Marketing Cloud email channel.
- Enable trace: this checkbox is unchecked by default. When checked, on email execution, information messages containing Responsys trace HTTP request and reply details are written to the server log.

  Note the following message, which is displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

A Validate channels job is created and executed on saving a new Responsys email channel, or on saving following a change to an existing Responsys email channel's Recipient email field. Full details are as per the Salesforce Marketing Cloud email channel documentation.

6.8.21 Dotdigital Email

The following channel-specific fields are shown for Dotdigital email channels:

- Service Credentials section:
  - Service URL: this mandatory text field can be a maximum of 1000 characters in length. It defaults to the value 'https://r3-api.Dotdigital.com/' and represents the service URL that is used to connect to Dotdigital.
  - Username: this mandatory text field can be a maximum of 100 characters in length. It allows you to specify the username to be used to connect to Dotdigital.
  - Password: this mandatory, password-masked field can be a maximum of 100 characters in length. Password is used in conjunction with Username when connecting to Dotdigital.
- Suppressions section:
  - Auto-suppress: as per Salesforce Marketing Cloud email channel.
  - Custom suppression table: as per Salesforce Marketing Cloud email channel.
  - Suppression table name: as per Salesforce Marketing Cloud email channel.
- Miscellaneous section:
  - Image folder name: this mandatory text field can be a maximum of 20 characters in length. It represents the name of the folder to which images to be included in email content will be uploaded.
  - External dynamic content URL: this mandatory text field can be a maximum of 1000 characters in length. It allows you to specify a public-facing URL where personalized dynamic content table assets can be accessed by Dotdigital.
  - External dynamic content folder: this mandatory text field can be a maximum of 1000 characters in length. It allows you specify a local or network folder to which personalized dynamic content table assets will be uploaded.
  - Content templates shared folder: as per CheetahMail email channel.

The following properties are exposed at the Advanced tab:

- Enable trace: this checkbox is unchecked by default. When checked, on email execution, information messages containing Dotdigital Trace HTTP request and reply details are written to the server log.

  Note the following message, which is displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

6.8.22 Listrak Email

The following channel-specific fields are shown for Listrak Email channels:

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.
- Recipient email: as per Salesforce Marketing Cloud email channel.
- Service Credentials section, containing the following:
  - API service URL: this mandatory text property can be a maximum of 1000 characters in length. It defaults to 'https://api.listrak.com/email/v1'.
  - Client ID: this mandatory text property can be a maximum of 1000 characters in length. It is used when connecting to the Listrak service.
  - Client secret: this mandatory, password-masked text property can be a maximum of 100 characters in length. It is used in conjunction with Client ID when connecting to the Listrak service.
- Suppressions section, containing the following:
  - Auto-suppress: as per Salesforce Marketing Cloud email channel.
  - Custom suppression table: as per Salesforce Marketing Cloud email channel.
  - Suppression table name: as per Salesforce Marketing Cloud email channel.
- List Settings section, containing a single property:
  - List name: this optional property allows you to select a list to be used when sending a Listrak campaign. It is initially presented as a Choose list name button. On clicking the button, a dialog is shown, within which you can select a single campaign list from those configured at Listrak. An OK and Cancel button are provided; on clicking the former, a list is selected, and its name displayed at the property. Having selected a list, a Clear button is shown.
- Miscellaneous section, containing the following:
  - Content templates shared folder: as per CheetahMail email channel.

The following properties are exposed at the Advanced tab:

- External folder: as per Acoustic email channel.
- Enable trace: this checkbox is unchecked by default. When checked, on email execution, information messages containing Listrak trace HTTP request and reply details are written to the server log.

  Note the following message, which is displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

6.8.23 Cordial Email

The following channel-specific fields are shown for Cordial email channels:

General Tab

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.

Channel Specific Tab

- Recipient email: as per Salesforce Marketing Cloud email channel.

The following properties are exposed within the Service Credentials section:

- Service URL: this mandatory text property allows you to specify the API service URL used to connect to the Cordial service. It defaults to the value 'https://api.cordial.io', and accepts a maximum of 1000 characters.
- API key: this mandatory, password-masked text field is also used when connecting to Cordial. It accepts a maximum of 100 characters.

The following properties are exposed within the Suppressions section:

- Auto-suppress: as per Salesforce Marketing Cloud email channel.
- Custom suppression table: as per Salesforce Marketing Cloud email channel.
- Suppression table name: as per Salesforce Marketing Cloud email channel.

The following properties are exposed within the Audience Export Settings section:

- Export location: this dropdown field exposes values 'External Content Provider' (the default) and 'FTP Location'. It allows you to specify the export location to which exported files will be uploaded.
- Export external folder: this property is only displayed when Export location is set to 'External Content Provider'. When displayed, you must select an RPI external folder (AWS S3 or Google Cloud Storage only).
- Export FTP location: this property is only displayed when Export location is set to 'FTP Location'. When displayed, you must select an RPI FTP location.
- Custom Cordial contact FTP: this checkbox, which is unchecked by default, is displayed if Export location is set to 'FTP Location'. If checked, you can override the contact export FTP location settings used by Cordial.
- Transport type: this dropdown property is enabled when Custom Cordial contact FTP is checked. It allows you to specify the type of transport to be used to connect to the FTP server.

A dropdown list, it exposes values 'SFTP' (the default - used to establish a secure connection) and 'FTP'.

- Host name: this mandatory text property is enabled when Custom Cordial contact FTP is checked. It allows you to specify a host name to be used when connecting to the Cordial FTP server. The property is empty by default.
- Host port number: this mandatory integer property is also enabled when Custom Cordial contact FTP is checked. It is used in conjunction with Host name, and allows you to specify a port number to be used when connecting to the Cordial FTP server. The property defaults to the value '22'.
- Login username: this mandatory text property is enabled when Custom Cordial contact FTP is checked. It allows you to specify a user name to be used when connecting to the Cordial FTP server.
- Login password: this mandatory, password-masked field is enabled when Custom Cordial contact FTP is checked. It is used in conjunction with Login username when connecting to the Cordial FTP server.
- Folder path: this mandatory text property is enabled when Custom Cordial contact FTP is checked. It allows you to specify a folder path where contact CSV files are to be uploaded at Cordial.
- Account list: this property is only enabled when Cordial credentials have been provided. It allows you to select an account list, as configured at Cordial. Having chosen an account list, you can clear your selection.
- Batch export: this checkbox is unchecked by default. If checked, the batching of records to be exported to the specified export external folder is enabled.
- Max. export batch size: this mandatory numeric property defaults to 1000, and accepts a range of values from 1000 to 500,000. It allows you to specify the maximum number of contact records that can be written to an exported file.

The following properties are exposed within the Audience Activity Import Settings section:

- Email events location: this this dropdown field exposes values 'External Content Provider' (the default) and 'FTP Location'. It allows you to specify the export location to which imported files will be uploaded.
- Import external folder: this property is only displayed when Email events location is set to 'External Content Provider'. When displayed, you must select an RPI external folder (AWS S3 or Google Cloud Storage only).
- Import FTP location: this property is only displayed when Email events location is set to 'FTP Location'. When displayed, you must select an RPI FTP location.
- Custom Cordial event FTP: this checkbox, which is unchecked by default, is displayed if Email events location is set to 'FTP Location'. If checked, you can override the event export FTP location settings used by Cordial.

- Transport type: this dropdown property is enabled when Custom Cordial event FTP is checked. It allows you to specify the type of transport to be used to connect to the FTP server. A dropdown list, it exposes values 'SFTP' (the default - used to establish a secure connection) and 'FTP'.
- Host name: this mandatory text property is enabled when Custom Cordial event FTP is checked. It allows you to specify a host name to be used when connecting to the Cordial FTP server. The property is empty by default.
- Host port number: this mandatory integer property is also enabled when Custom Cordial event FTP is checked. It is used in conjunction with Host name, and allows you to specify a port number to be used when connecting to the Cordial FTP server. The property defaults to the value '22'.
- Login username: this mandatory text property is enabled when Custom Cordial event FTP is checked. It allows you to specify a user name to be used when connecting to the Cordial FTP server.
- Login password: this mandatory, password-masked field is enabled when Custom Cordial event FTP is checked. It is used in conjunction with Login username when connecting to the Cordial FTP server.
- Folder path: this mandatory text property is enabled when Custom Cordial event FTP is checked. It allows you to specify a folder path where event CSV files are to be uploaded at Cordial.
- Max. email events batch size: this mandatory numeric property defaults to 1000, and accepts a range of values from 10 to 500,000. It allows you to specify the maximum number of contact records that can be written to an exported file.

The following properties are exposed within the Miscellaneous section:

- Custom subscriber key: this property is optional unless a custom primary key has been enabled at Cordial. It allows you to select a database column attribute with a name exactly matching that of the Cordial primary custom field. If an attribute is not specified, the default Email Address will be used as the primary key.
- Message classification: this dropdown property allows you to specify the type of message classification to use when creating Cordial email message templates. It exposes values 'Promotional' (the default) and 'Transactional'.
- Request timeout: as per SendGrid email channel.
- Monitor import job timeout: this numeric property is set to 60 by default, and accepts a range of values from 15 to 1,440. It represents a timeout period, in minutes, for which RPI will monitor for the completion of an import job.
- Max send thresholds: this numeric property, which defaults to 10, and which accepts a range of values from 1 to 30, allows you to specify the maximum number of concurrent connections that will be used to send emails.

Web Adapters Tab

All types of web adapters are supported.

Advanced Tab

- External folder: as per Acoustic email channel.
- Enable trace: as per SendGrid email channel.
- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

6.8.24 LuxSci Email

The following channel-specific fields are shown for LuxSci email channels:

General Tab

- Re-subscribe contacts: as per Salesforce Marketing Cloud email channel.

Channel Specific Tab

- Recipient email: as per Salesforce Marketing Cloud email channel.

The following properties are exposed within the Service Credentials section:

- Host: this mandatory text property defaults to the value 'rest.luxsci.com'. It accepts a maximum of 1000 characters. It represents the API host URL used to connect to the LuxSci service.
- Username: this mandatory text property accepts a maximum of 100 characters. It allows you to specify the username to be used to connect to the LuxSci service.
- Password: this password-masked text property accepts a maximum of 100 characters. It is used in conjunction with Username when connecting to the LuxSci service.
- API token: this mandatory text property accepts a maximum of 100 characters. It allows you to specify a user API token, which is also used when connecting to the LuxSci service.
- Secret key: this password-masked text property accepts a maximum of 100 characters. It is also used when connecting to LuxSci.
- Secure message: this checkbox allows you to specify that message recipients who receive emails via the channel will need to log into the LuxSci SecureSend Portal to view the message. Note that use of this feature is intended only for low-volume sends.

The following properties are exposed within the Suppressions section:

- Auto-suppress: as per Salesforce Marketing Cloud email channel.
- Custom suppression table: as per Salesforce Marketing Cloud email channel.
- Suppression table name: as per Salesforce Marketing Cloud email channel.

The following property is exposed within the Miscellaneous section:

- BCC email address: as per Salesforce Marketing Cloud email channel.
- Max send batch size: this numerical property defaults to 1000, and accepts a range of values from 10 to 10,000. It allows you to specify the maximum number of recipients to be sent at a time to LuxSci.

- Max send threshold: this numerical property defaults to 10, and accepts a range of values from 1 to 30. It allows you to specify the maximum number of concurrent connections to be used when sending emails.

- Max mail merge batch size: Max mail merge batch size: this numeric property defaults to 1000, and accepts a range of values from 1000 to 5000. It represents the maximum number of contact records to process within a mail merge batch.

- Template retention period: this numeric property defaults to 7, and accepts a range of values from 1 to 60. It allows you to specify the number of days after which LuxSci templates will be deleted (RPI-created LuxSci template are deleted by Housekeeping).

- Custom headers: this property allows you define custom headers to attach to emails sent using the channel. It consists of a toolbar and a list.

    - Toolbar: exposing the following buttons:

        - Add: clicking this button adds a new custom header to the list.

        - Remove: this button is enabled when a custom header is selected within the list. Clicking it removes the header without displaying an 'Are You Sure?' dialog.

    - List: each row within the list contains the following:

        - Use attribute: this checkbox is unchecked by default. When checked, the value of the custom header for a given target will be sourced from an attribute; accordingly, the Custom header value field is replaced by an attribute file property.

        - Custom header name: this mandatory text field accepts a maximum of 100 characters. It accepts alphanumeric and underscore ('_') characters.

        - Custom header value: this text field, which is shown when Use attribute is unchecked, is mandatory when displayed and accepts a maximum of 100 characters.

        - Attribute: this file property is shown when Use attribute is checked and is mandatory when displayed. You can populate the property with a database column attribute using drag and drop, or by browsing the RPI file system. Having populated the property, inline View File Information and Clear buttons are shown.

        - Remove: this inline button is shown on hovering over a custom header. Clicking it removes the header without displaying an 'Are You Sure?' dialog.

  Note that a maximum of 2 custom headers can be provided, and they must match the email headers configured in the LuxSci portal's 'SMTP Header Tracking' section.

<u>Web Adapters Tab</u>

All types of web adapters are supported.

<u>Advanced Tab</u>

- External folder: as per Acoustic email channel.
- Request timeout: as per SendGrid email channel.
- Enable trace: as per SendGrid email channel.
- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

6.8.25 Paubox Email

The following channel-specific fields are shown for Paubox email channels:

<u>Channel Specific Tab</u>

- Recipient email: as per Salesforce Marketing Cloud email channel.

The following properties are exposed within the Service Credentials section:

- Host: this mandatory text property can be a maximum of 1000 characters in length, and defaults to the value 'https://api.paubox.net/v1'. It allows you to specify the API host URL to be used to connect to the Paubox service.
- Username: this mandatory text property can be a maximum of 100 characters in length. It allows you to specify an API endpoint username to be used to connect to the Paubox service.
- API key: this mandatory, password-masked property accepts a maximum of 100 characters. It allows you to specify an API key to be used to connect to the Paubox service.
- Secure message: this checkbox is checked by default. When checked, recipients who receive an email via the channel will need to click a link in the message content to view a secure copy of the message's details as hosted by Paubox.

The following properties are exposed within the List unsubscribe (optional) section:

- Email unsubscribe: this text property is mandatory when a value has been provided at Web unsubscribe. It accepts a maximum of 100 characters and represents the mailto portion of the List-Unsubscribe header that will receive unsubscribe requests.
- Web unsubscribe: this text property can be a maximum of 1000 characters in length. It allows you to specify the http portion of the List-Unsubscribe header that will receive a POST whenever someone clicks an unsubscribe link in an email.

The following properties are exposed within the Suppressions section:

- Auto-suppress: as per Salesforce Marketing Cloud email channel.
- Custom suppression table: as per Salesforce Marketing Cloud email channel.
- Suppression table name: as per Salesforce Marketing Cloud email channel.

The following properties are exposed within the Miscellaneous section:

- Max send batch size: this numeric property defaults to 500, and accepts a range of values from 1 to 1000. It allows you to specify the maximum number of recipients that contacted at a time.
- BCC email address: as per Salesforce Marketing Cloud email channel.

Web Adapters Tab

All types of web adapters are supported.

Advanced Tab

- External folder: as per Acoustic email channel.
- Request timeout: as per SendGrid email channel.
- Enable trace: as per SendGrid email channel.
- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

6.8.26 Amazon Simple Email Service (SES) Email

The following channel-specific fields are shown for Amazon SES email channels:

Channel Specific Tab

- Recipient email: as per Salesforce Marketing Cloud email channel.

The following properties are exposed within the Service Credentials section:

- Access key: this mandatory text property can be a maximum of 100 characters in length. It allows you to specify an access key to be used to connect to Amazon Web Services (AWS).
- Secret key: this password-masked text property can be a maximum of 100 characters in length. It allows you to specify a secret key used to connect to AWS.
- Region endpoint: this dropdown property lists a series of AWS region endpoints. It defaults to 'US East (N. Virginia us-east-1)'.
- Configuration set: a button is displayed initially at this property, which is used to choose the SES configuration set to be used for email event publishing. The button is enabled only when AWS credentials have been provided. Clicking the button displays the Configuration Set List dialog, in which are displayed a list of configuration sets as configured at Amazon SES. You can select a configuration set and click the OK button to confirm your choice. Clicking Cancel removes the dialog from display (clicking off the dialog has the same effect). Having selected a configuration set, a button is provided to allow you to clear your choice.
- Use existing topic: this checkbox is unchecked by default. When checked, the Topic name button is shown, and the Topic name textbox is hidden. When unchecked, the Topic name button is hidden, and the Topic name textbox is shown.
- Topic name (textbox): this text property allows you to specify the name a topic, which will be used to subscribe or re-subscribe recipients in a contact list. It defaults to the value 'Marketing', and accepts a maximum of 1000 characters.
- Topic name: this button allows you to select a topic from the Topic List dialog. It is enabled when you have provided AWS credentials. Having selected a topic, you can clear your selection.

The following properties are exposed within the Callback Service section:

- Callback service URL: this mandatory text property accepts a maximum of 1000 characters, and allows you to specify a URL to be used to process incoming email events.
- Events external folder: this button allows you to select an external folder to which Amazon SES email events will be imported, using the Events External Folder dialog. Having chosen an external folder, you can clear your selection.

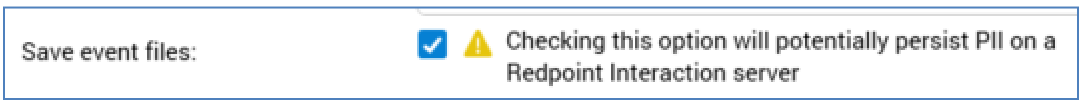
- Configuration: this button is enabled when an Events external folder has been specified. It allows you to copy to the clipboard the JSON configuration to be used in the callback service's 'ExternalContentProviderSettings' section.

The following properties are exposed within the Miscellaneous section:

- Max send batch size: this numeric property allows you to define the maximum number of recipients to whom a batch of emails will be sent at a time. It defaults to the value 50, and accepts a value range from 1 to 50.

- Save event files: this checkbox is unchecked by default. It allows you to specify whether SES event files will be moved to the external folder '[TENANT_ID]\Processed folder'. It is enabled when an Events external folder has been configured.

  Note the following warning, shown when the property is checked:

- Event import batch size: this mandatory numeric property allows you to specify the maximum number of email events to be processed from a network folder and imported into the AmazonSesEvents table. It defaults to 10,000 and accepts a range of value from 5,000 to 20,000.

6.8.27 Mailchimp Email

The following channel-specific fields are shown for Mailchimp Email channels:

- Re-subscribe contacts: functionally as per other email channels; however, email addresses that are resubscribed are not automatically opted in until having been resubscribed using Mailchimp's own resubscription form.
- Service Credentials section, containing the following:
  - Service URL: this mandatory, editable text field can be a maximum of 1000 characters in length. It defaults to the value 'https://us7.api.mailchimp.com/3.0/' and represents the API service URL used to connect to the Mailchimp service. Note that the 'us7' part of the URL corresponds to the data center to be used for the channel; e.g. if the last part of your Mailchimp API key is us7, all API endpoints for your account are available at https://us7.api.mailchimp.com/3.0/.
  - Username: this mandatory text field can be a maximum of 100 characters in length, and allows you to specify the user name to be used when connecting to Mailchimp.
  - API key: this mandatory, password-masked text field can be a maximum of 100 characters in length and allows you to specify the API key to be used when connecting to Mailchimp.
- Suppressions section, containing the following:
  - Auto-suppress: as per Salesforce Marketing Cloud email channel.
  - Custom suppression table: as per Salesforce Marketing Cloud email channel.
  - Suppression table name: as per Salesforce Marketing Cloud email channel.
- Audience Settings section, containing a single property:
  - Audience name: this optional property allows you to specify a list name from which emails will be sent when the channel is used. It is initially presented as a Choose list name button. It is enabled when the channel has been saved. Clicking the button displays a dialog. The dialog displays all campaign lists configured at the Mailchimp account. You can select a list name and click OK to confirm your choice. A Cancel button is also provided.

    Having selected a list name, a Clear button is shown. Clicking it clears the selected list name.

    Note that the term ‘List’ in this context is equivalent to Mailchimp’s usage of the term ‘Audience’.
- Miscellaneous section, containing the following:
  - Remove footer: this checkbox, which is unchecked, allows you to specify that the footer be removed from email content at execution using the channel.
  - Content templates shared folder: as per CheetahMail email channel.

The following properties are exposed at the Advanced tab:

- Enable trace: this checkbox is unchecked by default. It allows you to log API requests and corresponding replies from Mailchimp. If checked, on email execution, information messages containing Mailchimp Trace HTTP request and reply details are written to the RPI Server Log.

  Note the following message, which is displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.

- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

Note that Web Adapters are supported at the channel.

6.8.28 Amazon Pinpoint Email

The following channel-specific fields are shown for Amazon Pinpoint email channels:

Channel Specific Tab

- Recipient email: as per Salesforce Marketing Cloud email channel.
- Access key: this mandatory text property allows you to specify the access key to be used when connecting to Amazon Web Services (AWS). It accepts a maximum of 100 characters.
- Secret key: this password-masked mandatory text property allows you to specify the secret key to be used when connecting to AWS. It accepts a maximum of 100 characters.
- Region endpoint: this dropdown property allows you to specify the AWS region to be used when connecting to Amazon Pinpoint. It defaults to the value 'US East (N. Virginia)(us-east-1)'.
- Pinpoint application: clicking this button displays a dialog, in which you can choose the Amazon Pinpoint application to be used when sending emails. Note that a validation error is raised if you click the button prior to provision of credentials. Specification of a Pinpoint application is mandatory.
- Segment role ARN: this mandatory text property allows you to specify the Amazon Resource Name (ARN) to be used to authorize Pinpoint to access an AWS S3 bucket folder. It accepts a maximum of 100 characters.
- Amazon S3 CSV bucket folder: clicking this button displays a dialog, in which you can choose an AWS S3 bucket folder from within a list of existing external content providers. The selected bucket will be used when uploading CSV files. Specification of an Amazon S3 CSV bucket folder is mandatory.
- Amazon S3 event bucket folder: clicking this button displays a dialog, in which you can choose an AWS S3 bucket folder from within a list of existing external content providers. The selected bucket will be used to store email event details. Specification of an Amazon S3 event bucket folder is mandatory.
- Max. recipients per file: this numeric property allows you to specify the maximum number of records to be exported per CSV file. It defaults to 10,000, and accepts a range of values from 10,000 to 200,000.
- Unsubscribe redirect URL: this mandatory text property allows you to specify an unsubscribe link redirect URL. It accepts a maximum of 100 characters.

Web Adapters Tab

URL shorteners are not supported.

Advanced Tab

- External folder: as per Acoustic email channel.
- Enable trace: as per SendGrid email channel.
- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.
- Move hashtags to end of URL: as per Salesforce Marketing Cloud email channel.

6.8.29 Messente SMS

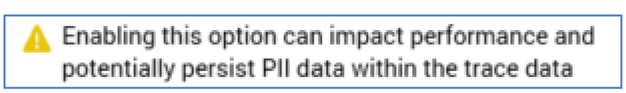
The following channel-specific fields are shown for Messente SMS channels:

- Recipient phone: this attribute defines the field in which a contact's cellphone number is stored. Provision of Recipient phone is mandatory, and the attribute's data type must be string. You can browse for an attribute using the recent items chooser or File System Dialog. You can also drag an attribute from the toolbox and drop it directly onto the field. Once selected, you can clear the attribute, or view its details in the File Information dialog.
- Username: this field represents the API user account as provided by Messente. It is mandatory and may be a maximum of 100 characters in length.
- Password: the Messente API account security key. Password is also mandatory and can be a maximum of 100 characters in length.
- Auto-replace: this dropdown field allows you to automatically substitute message characters with GSM-friendly alternatives. It is set by default to 'Off'.
- Auto-suppress: checking this checkbox ensures that, at SMS channel execution, any individuals whose cellphone numbers are registered in the SMS suppression table are suppressed. By default, Auto-suppress is checked.
- Custom suppression table: checkbox, default unchecked. This field allows you to specify that the SMS channel is to use its own custom suppression table, rather than the default SMS suppression table (defined by system configuration setting SMSUnsubscribersTable). Checking the field enables Suppression table name.
- Suppression table name: this text field is enabled and mandatory when Custom suppression table is checked and can be a maximum of 50 characters. Any characters entered must be database-valid.

The following properties are exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

Note that, in the Web Adapters tab, you can add a URL shortener adapter only to the channel.

When you create a new Messente SMS channel, or when an existing Messente SMS channel's Recipient phone field is changed, an orange message is displayed to top of the Messente SMS channel interface:

The database will be validated when these channels are saved.

When the message is displayed, at invocation of Save, a Validate channels job is created and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation. The message is removed immediately on saving.

6.8.30 Facebook

The Facebook channel is used to execute standard Facebook and Facebook Marketing posts, as well as Lookalike Audiences, which create an audience that closely matches an existing Custom Audience.

The following channel-specific fields are shown for Facebook channels:

- App ID: the unique ID of the Facebook app that will perform posting of content to Facebook. Typically, your app will have undertaken a Facebook Login review prior to the channel's setup.
- App secret: the secret value associated with the Facebook app.
- Facebook action: three checkboxes accompany this property, which allows you to define the types of Facebook activity supported by the channel. Selection of at least one checkbox is mandatory.
    - Post: this checkbox is checked by default. When checked, the following properties are shown:
        - Page name, Web publish site

      The following properties are hidden:

        - Account name, Ad account, Custom audience list limit

      The default App permissions value is set to 'public_profile,email,pages_manage_ad, pages_manage_metadata, pages_read_user_content,pages_manage_posts,pages_manage_engagement.
    - Marketing: this checkbox is unchecked by default. When checked, the following properties are shown:
        - Page name, Web publish site, Account name, Ad account

      The following property is hidden:

        - Custom audience list limit

      The default App permissions value is set to 'ads_management,pages_manage_ad, pages_manage_metadata, pages_read_user_content,ads_read,pages_manage_posts,pages_manage_engagement'.
    - Lookalike audience: this checkbox is unchecked by default. When checked, the following properties are shown:
        - Account name, Ad account, Custom audience list limit

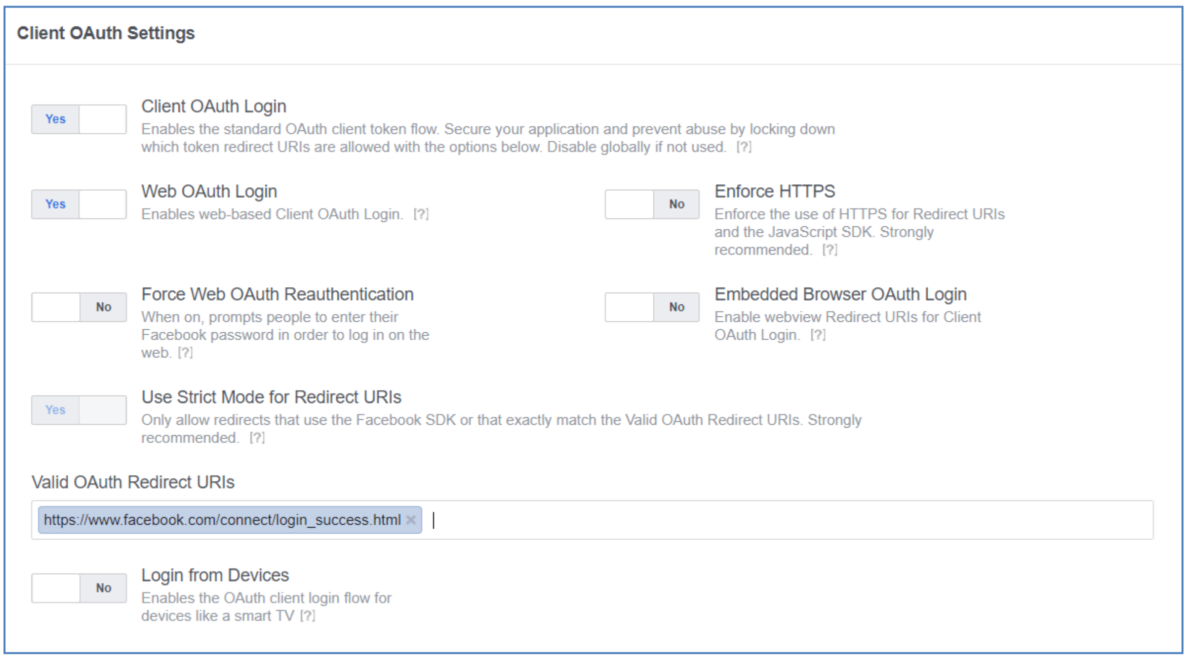
      The following properties are hidden:

- Page name, Web publish site

  The default App permissions value is set to 'ads_management'.

- App permissions: set by default in accordance with the specified Facebook action(s). This list represents the minimum set of permissions required by RPI.

- Redirect URI: the Facebook app's Redirect URI. The value provided should match the setting in the Facebook app's Facebook Login product https://developers.facebook.com/apps/[AppID]/fb-login/settings/?business-id=[BusinessID] - oAuth settings:



- API version: this dropdown property exposes values 'v13' (the default) and 'v12'. It must be set to the Facebook API version used by the channel's app.

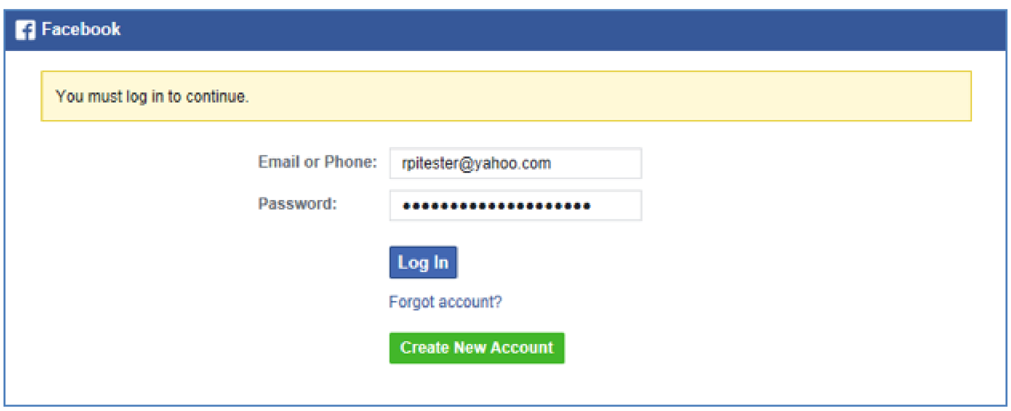
  When any of the options is selected, the Facebook Marketing permissions for the channel are as follows:

  - ads_management
  - pages_manage_ads
  - pages_manage_metadata
  - pages_read_user_content
  - ads_read
  - pages_manage_posts

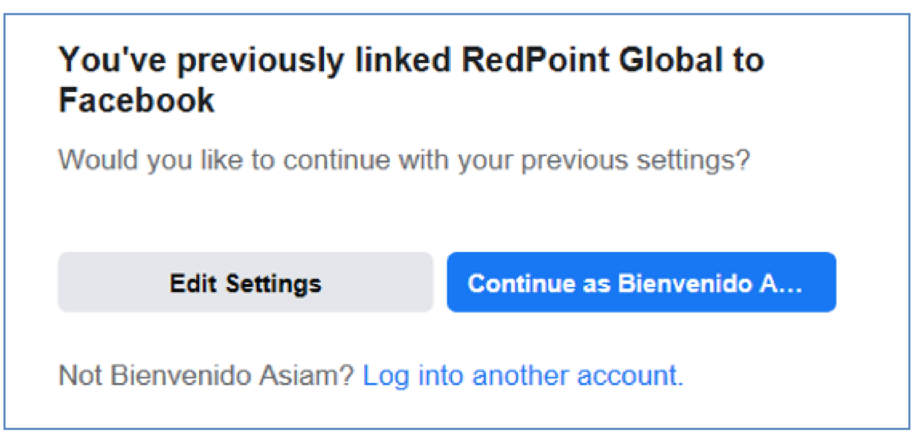
- pages_manage_engagement
- business_management

- Account name: this text field, which is mandatory when shown, may be a maximum of 100 characters in length, and represents the name of the account used to login to Facebook. The account name provided must an Admin, Developer or Tester of the aforementioned Facebook app.
- Authorization: a Facebook channel must be authorized by Facebook before being able to be used. A read-only label displays one of the following:
  - If the channel has yet to be authorized successfully, 'The connection to Facebook is not authorized' (this is the initial status).
  - If the channel has been authorized successfully, 'The connection to Facebook has been authorized'.

  A button is also displayed. When the Facebook channel has yet to be authorized successfully, its text is 'Copy authorization URL to clipboard' and 'Click here to authorize RPI'. Invocation of 'Click here to authorize RPI' displays a Facebook authorization page in your default browser:

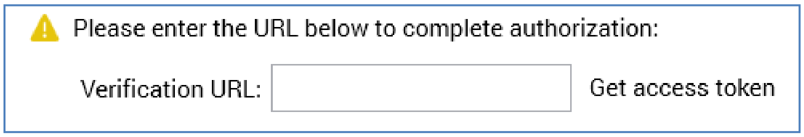


  Enter your credentials and click Log In. Another interface is displayed:



Click the Continue as... button.

The browser will redirect to the configured Redirect URI. Copy the entire URL shown and paste it into the newly-displayed Verification URL property:



Use ‘Copy authorization URL to clipboard’ when authenticating in a machine with no internet access. Invocation copies the URL to the clipboard.

If the channel is newly added (or if an existing channel’s authorization has been reset), save the channel first as indicated by the ‘Save this channel to get access token’ message after invocation of ‘Copy authorization URL to clipboard’.

In a separate machine with internet access, open a browser and paste the URL. This will display the Facebook authorization page. Follow the previous procedure when authenticating Facebook until it redirects to the configured Redirect URI then copy the entire URL displayed in the browser and paste it into the Verification URL property.

Click ‘Get access token’ to complete the authentication process.

You can use the Click here to reset the authorization token button to reset the channel’s authorization status to Not authorized.

- Page name: at initial channel creation, the list of values available in this combobox is empty; after the channel is authorized, it is populated with all pages associated with the supplied authorization credentials. Selection of a Page name is mandatory.
- Ad account: displayed if the Marketing Facebook action checkbox is checked. This mandatory property represents the Facebook ad account that will be used for managing ads. A dropdown field, it is populated with values after successful channel authorization.
- Web publish site: you can select a web publish site at which Facebook offer images are to be hosted. The property initially displays the text ‘Choose publish location’. You can click the property to choose a web publish site or folder therein using the Choose Publish Location dialog.
- Custom audience list limit: displayed if the Lookalike Audience Facebook action checkbox is checked. This numeric property allows you to specify the number of Facebook custom audiences that can be displayed for selection in the Facebook Offer Designer. It defaults to 100 and accepts values between 25 and 10,000.

- API call request timeout: this mandatory integer property is set to a value of 20,000 by default. It represents the period, in milliseconds, after which an API call request will time out.

- API call retry period: this mandatory integer property is set to a value of 10 by default. It represents the maximum period, in minutes, for which retries will be performed when an API call encounters a retriable error.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

  > ⚠ Enabling this option can impact performance and potentially persist PII data within the trace data

The following properties are exposed at the Web Adapters tab:

- Web Adapters: you can associate one or more web adapters with a Facebook channel. Note that only Web Events, Google Analytics, Bitly, Matomo and Kissmetrics adapters can be added.

  If a Facebook message posted via a channel configured with a web events adapter contains a URL that is compatible with the adapter's settings, on traversing the link to that URL, web analytics results can be collated and reported upon at the level of the Facebook channel. For example, if a Facebook post links to an online store, within which a visitor makes a purchase, and an associated web adapter tracks Web Purchase Amount, that metric can be viewed at the Facebook channel's results.

  Similarly, results retrieved via Google analytics can be retrieved via a Google analytics adapter and viewed in the same contexts.

  Matomo adapters allow you to append querystring parameters to URLs in offer content, which can then be used to track website behaviors in a Matomo dashboard (beyond the scope of RPI).

  Kissmetrics adapters are similar to Google Analytics adapters, in that they allow you to collate metrics based on website visitors' behaviors. However, this collation is carried out by the Kissmetrics external provider, rather than by Google.

  Note that the same applies to any post action links supported by the Facebook channel.

  When a Facebook message is posted via a channel configured with a Bitly adapter, URLs contained within the post are shortened by the Bitly service.

  Web adapters are specified in a grid. The grid's toolbar exposes the following options:

- Add adapter: this option is disabled unless a previously-unselected web adapter is shown. You can click the displayed adapter type to change it. Invocation of Add adds the selected web adapter to the grid. You can only add a web adapter once.

- [Dropdown]: this field lists all existing web adapters, irrespective of whether already selected and displayed in the grid. All types of web adapter are shown in the field, which is initially blank. Selection of a previously-unselected web adapter enables Add.

The Web adapters grid lists all web adapters associated with the channel. Web adapters are presented in the order in which they were attached to the channel. The grid contains the following:

- Name: of the web adapter. Read-only.

- Type: read-only; one of Google Analytics adapter, Web Events adapter, Bitly adapter, Matomo adapter or Kissmetrics adapter.

- Remove this Web Adapter: this button is displayed and enabled when a web adapter is hovered over. Invocation removes the web adapter from the grid. and is not protected by ‘Are You Sure?’.

6.8.31 Facebook Audience

The following channel-specific fields are shown for Facebook Audience channels:

- User ID: this optional attribute file property represents an ID used to uniquely identify users uploaded to the Custom Audience. You can browse for an attribute, or populate the property using drag and drop. Once populated, you can view details of the selected attribute in the File Information Dialog. You can also Clear the property.
- App ID: a mandatory text field, which can be a maximum of 100 characters in length. The property represents the Facebook app ID bound to the channel.
- App secret: a mandatory text field, which can be a maximum of 100 characters in length. The property represents the specified Facebook app's app secret.
- Facebook action: two checkboxes accompany this property, which allows you to define the types of Facebook activity supported by the channel. Selection of at least one checkbox is mandatory.
  - Custom Audience: this checkbox is checked by default. When checked, the following properties are shown:
    - Customer file source, Custom audience list limit

    The following property is hidden:

    - Save data files
  - Offline Event: this checkbox is unchecked by default. When checked, the following properties are shown:
    - Save data files

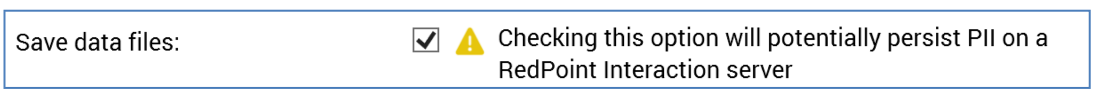
    The following properties are hidden:

    - Customer file source, Custom audience list limit
- App permissions: a mandatory text field, which can be a maximum of 1000 characters in length. The property defaults to the value 'ads_management,business_management', and represents the scope of permissions required by the specified Facebook app.
- Redirect URI: this mandatory text field can be a maximum of 100 characters in length.
- Account name: a mandatory text field, which can be a maximum of 100 characters in length. The property represents the name of the account to be used to login to Facebook.
- Ad account: a dropdown field, which allows you to select the Ad account to be used for managing ads.
- Customer file source: a dropdown field, exposing the following values:

- User provided only
- Partner provided only (the default)
- Both user and partner provided

The property represents the source from which customer information will be obtained.

- Custom audience list limit: this integer property defaults to the value 100. It allows you to specify the maximum number of Facebook Custom Audiences that will can be displayed in an offer.
- Pre-hashed data: this checkbox is unchecked by default. If checked, it indicates that the data warehouse is using pre-hashed data, and hashing data should be skipped when uploading data to Facebook.
- API version: this dropdown property exposes values 'v13' (the default) and 'v12'. It must be set to the Facebook API version used by the channel's app.
- Authorization: the connection to Facebook must be authorized. For more information, please see the Facebook channel documentation.
- Save data files: this checkbox is unchecked by default. When checked, Facebook Offline Event data files will be moved to folder 'C:\temp\RPI\Facebook Offline Event\[Tenant ID]\Processed\[ChannelExecutionID]'. When checked, a warning message is shown, advising that checking the option will potentially persist PII on an RPI server.



- API call request timeout: this mandatory integer property is set to a value of 20,000 by default. It represents the period, in milliseconds, after which an API call request will time out.
- API call retry period: this mandatory integer property is set to a value of 10 by default. It represents the maximum period, in minutes, for which retries will be performed when an API call encounters a retriable error.
- Limited data use US states: this property is displayed only when the Offline Event Facebook action is selected. It allows you to specify a list of US states to associate with Facebook's limited data use feature, and consists of a toolbar and a list.
    - Toolbar: exposing the following:
        - Add: clicking this button adds a new, configured entry to the list.
        - Remove: having selected a list entry, clicking this button removes it without display of an 'Are You Sure?' dialog.
    - List: each entry in the list exposes the following:

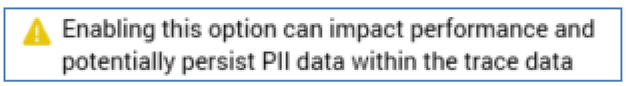
    - US state: this mandatory text property can be a maximum of 2 characters in length. It should be used to specify a state's 2-character ANSI abbreviation code.
    - Data processing code : this mandatory numeric property accepts values from 0 to 99999. The code is determined by Facebook; for example, 1000 is the code for California.
    - Inline Remove button.

  A single default list entry is provided (CA, 1000).

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



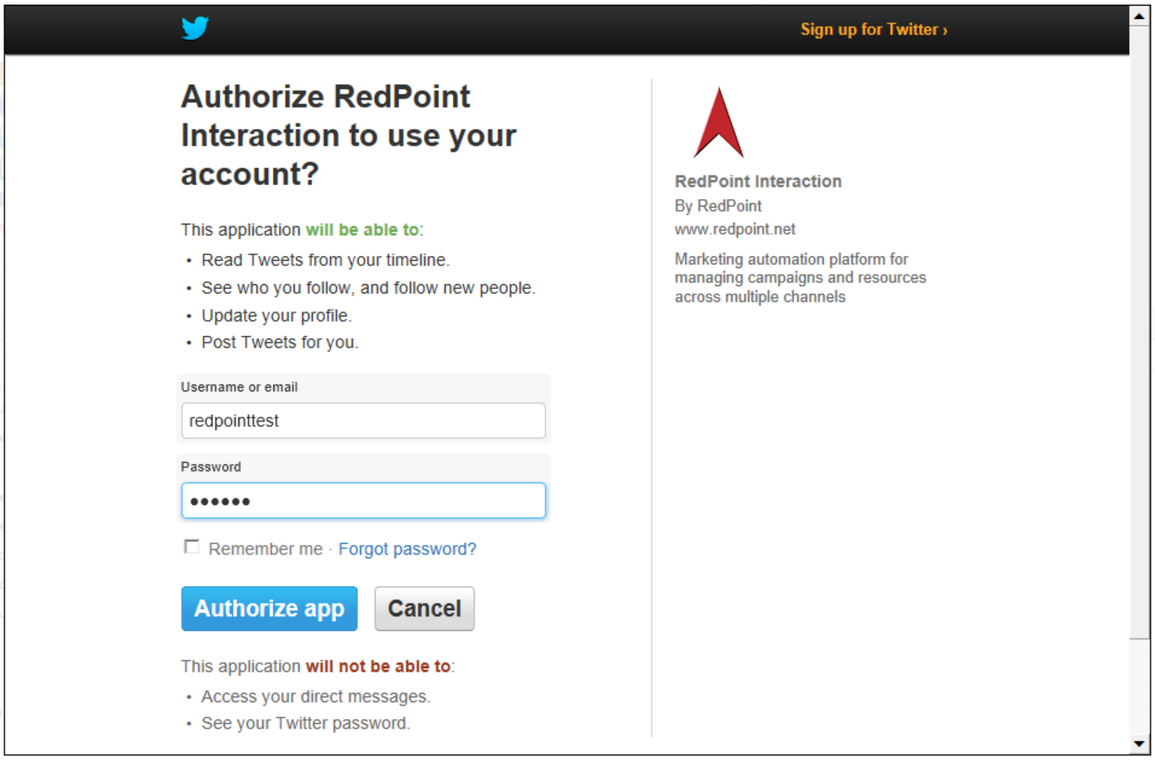
6.8.32 Twitter

The following channel-specific fields are shown for Twitter channels:

- Account name: the name of the Twitter account to which messages will be posted. Mandatory, and a maximum of 100 characters.
- Use custom app credentials: this checkbox is unchecked by default. If checked, the Consumer key and Consumer secret properties are enabled and mandatory. Otherwise, they are disabled. If the property is checked, the application associated with the provided key and secret will be used to post Twitter messages, instead of the default RPI Twitter app. Otherwise, the RPI Twitter app will be used in conducting all Twitter-related activities. If the property's value is changed, the channel will need to be re-authorized.
- Consumer key: this string property is mandatory when enabled (when Use custom app is checked). It accepts a maximum of 100 characters and allows you to specify the consumer key of the Twitter app to be used when posting Twitter messages using this channel.
- Consumer secret: this password-masked field is similarly mandatory when enabled and allows you to specify the consumer secret accompanying the consumer key provided.
- API version: this dropdown property exposes values 'V1' (the default) and 'V2'. It allows you to specify the version of the Twitter API to be used by the channel.
- Authorization: a label advises of the channel's authorization status:
    - When the channel has yet to be authorized, the label states 'The connection to Twitter is not authorized' (this is the channel's initial status).
    - When the channel is awaiting an authorization PIN, the label states 'Please enter the PIN below to complete authorization'.
    - When the channel has been authorized successfully, the labels states 'The connection to Twitter has been authorized'.

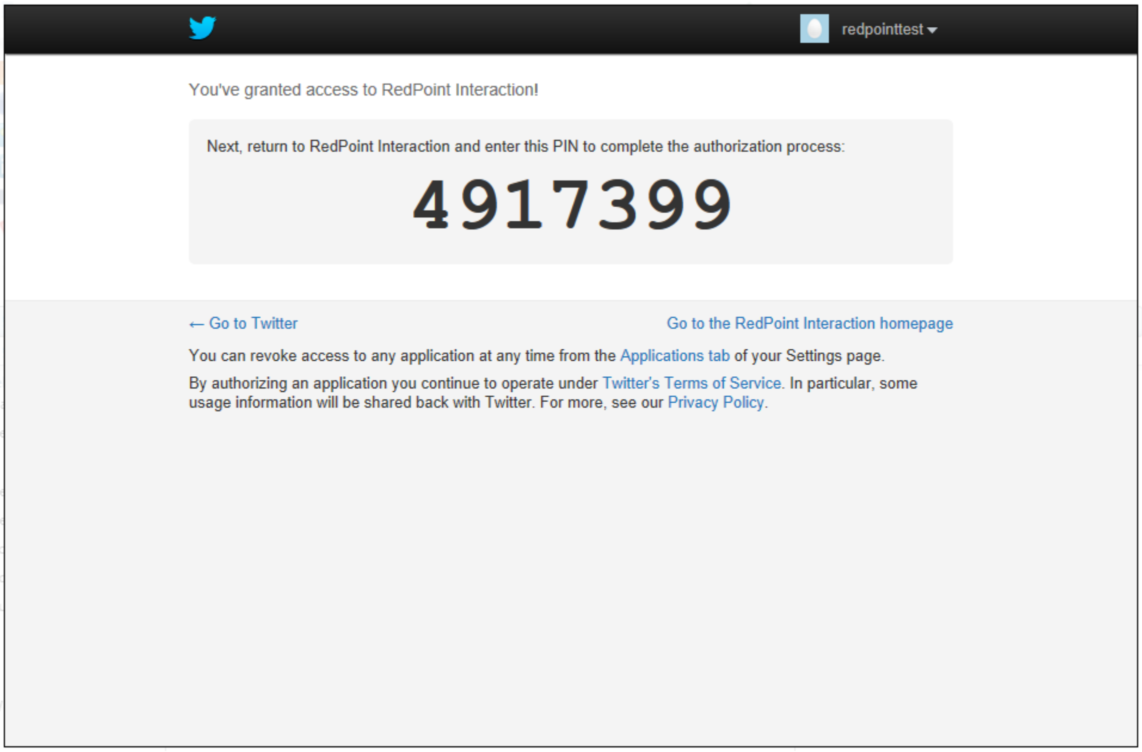
  A button accompanies the label.

    - When the channel has yet to be authorized, its text reads 'Click here to authorize RPI'. Invocation opens your default browser, in which is displayed an RPI-branded Twitter authorization page.



You can enter a Twitter username or email and password (unless you have already signed into Twitter). Having done so, you can Authorize app – thereby authorizing RPI to post messages to Twitter.

If the credentials you supplied were correct, a PIN is displayed.



Take a note of the supplied PIN (it is not possible to copy it to the clipboard).

If the credentials you supplied were incorrect, the Twitter authorization page is redisplayed.

You can also Deny access – although this is not recommended!

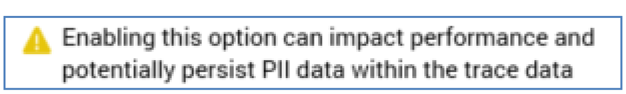
- When awaiting a PIN, or following authorization, the button text is set to 'Click here to reset the authorization token'. Invocation resets the channel's authorization status to not authorized.

When a PIN has been generated, a PIN field is displayed. You can paste the PIN that you copied to the clipboard, and then click the accompanying Submit PIN button. If the PIN is accepted, the Twitter channel is authorized. If the PIN is rejected, a warning message is shown.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



The following property is exposed at the Web Adapters tab:

- Web Adapters: you can associate one or more web adapters with a Twitter channel. Note that only Web Events, Google Analytics, Bitly, Matomo, Kissmetrics and Rebrandly adapters can be added.

  If a Twitter message posted via a channel configured with a web events adapter contains a URL that is compatible with the adapter's settings, on traversing the link to that URL, web analytics results can be collated and reported upon at the level of the Twitter channel. For example, if a Twitter message links to an online store, within which a visitor makes a purchase, and an associated web adapter tracks Web Purchase Amount, that metric can be viewed at the Twitter channel's results.

  Similarly, results retrieved via Google analytics can be retrieved via a Google analytics adapter and viewed in the same contexts.

  Matomo adapters allow you to append querystring parameters to URLs in offer content, which can then be used to track website behaviors in a Matomo dashboard (beyond the scope of RPI).

  Kissmetrics adapters are similar to Google Analytics adapters, in that they allow you to collate metrics based on website visitors' behaviors. However, this collation is carried out by the Kissmetrics external provider, rather than by Google.

  When a Twitter message is posted via a channel configured with a Bitly or Rebrandly adapter, URLs contained within the post are shortened by the selected service.

  Web adapters are specified in a grid. The grid's toolbar exposes the following options:

  - Add: this option is disabled unless a previously-unselected web adapter is shown. You can click the displayed adapter type to change it. Invocation of Add adds the selected web adapter to the grid. You can only add a web adapter once.
  - [Dropdown]: this field lists all existing web adapters, irrespective of whether already selected and displayed in the grid. All types of web adapter are shown in the field, which is initially blank. Selection of a previously-unselected web adapter enables Add.

  The Web adapters grid lists all web adapters associated with the channel. Web adapters are presented in the order in which they were attached to the channel. The grid contains the following:

  - Name: of the web adapter. Read-only.
  - Type: read-only; one of Google Analytics, Web Events, Bitly, Matomo, Kissmetrics or Rebrandly adapter.

- Remove this Web Adapter: this button is displayed and enabled when a web adapter is hovered over. Invocation removes the web adapter from the grid. and is not protected by ‘Are You Sure?’.

6.8.33 Twitter Direct

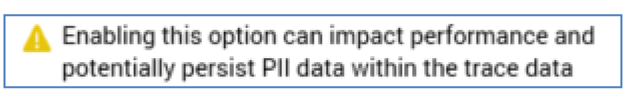
The following channel-specific fields are shown for Twitter Direct channels:

- Recipient's Twitter user ID: you must provide a string Column attribute to identify the user name of recipients of RPI Twitter Direct offers. You cannot select an attribute from an auxiliary database.
- Account name: as per the Twitter channel type, the name of the account that will be used to log into Twitter, and from whom RPI Twitter Direct messages will be received. Provision of an Account name is mandatory.
- Use custom app credentials: this checkbox is unchecked by default. If checked, the Consumer key and Consumer secret properties are enabled and mandatory. Otherwise, they are disabled. If the property is checked, the application associated with the provided key and secret will be used to send Twitter messages, instead of the default RPI Twitter app. Otherwise, the RPI Twitter app will be used in conducting all Twitter-related activities. If the property's value is changed, the channel will need to be re-authorized.
- Consumer key: this string property is mandatory when enabled (when Use custom app is checked). It accepts a maximum of 100 characters and allows you to specify the consumer key of the Twitter app to be used when sending Twitter messages using this channel.
- Consumer secret: this password-masked field is similarly mandatory when enabled and allows you to specify the consumer secret accompanying the consumer key provided.
- API version: this dropdown property exposes values 'V1' (the default) and 'V2'. It allows you to specify the version of the Twitter API to be used by the channel.
- Authorization: a Twitter Direct channel must be authorized in the same way as a standard Twitter channel. Please see that channel type's documentation for further details.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

The following property is exposed at the Web Adapters tab:

- Web adapters: please see the Twitter channel documentation for details.

  Note also that saving a Twitter Direct channel creates and executes a Validate channels job.

6.8.34 Twitter Tailored Audience

The following channel-specific fields are shown for Twitter Tailored Audience channels:

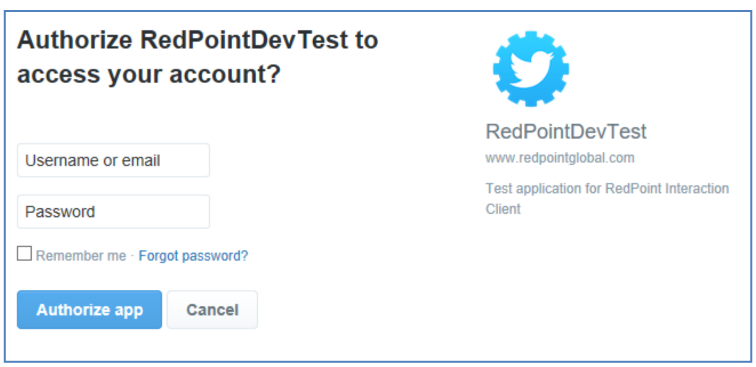
- API Service URL: this mandatory text property defaults to 'https://api.twitter.com', and can be a maximum of 1000 characters in length. It represents the URL used to connect to the Twitter Ads service. Note that RPI uses version 10 of the Twitter Ads API.
- Consumer key: this mandatory text property, which can be a maximum of 100 characters in length, represents the consumer key used to connect to the Twitter Ads service.
- Consumer secret: this mandatory text property, which can be a maximum of 100 characters in length, is also used when connecting to the Twitter Ads service.
- Authorization: a label advises of the channel's authorization status:

  When the channel has yet to be authorized, the label states 'The connection to Twitter Ads service is not authorized' (this is the channel's initial status).

  When the channel has been authorized successfully, the labels states 'The connection to Twitter Ads service has been authorized'.

  A button accompanies the label.

  When the channel has yet to be authorized, its text reads 'Click here to authorize Redpoint Interaction'. It is enabled on provision of an API Service URL, Consumer key and Consumer secret. Invocation opens a web browser panel over the Channels configuration interface in which is displayed a Twitter Ads authorization page.



  You can enter your registered username and password and click Authorize app.

  If the credentials you supplied were correct, redirect URL displayed.

  Copy the URL and return to RPI, where a Verification URL property will now be displayed.

  Paste in the URL you copied and click the Get access token button. The Twitter Tailored Audience channel will now be authorized.

When the Twitter Tailored Audience channel has been authorized successfully, the button's text is 'Click here to reset the authorization token'. Invocation resets the LinkedIn channel's authorization status to Not authorized and changes the button text to 'Click here to authorize RPI'. If you elect to authorize the channel again, you may not have to provide credentials if having done so successfully previously.

- Advertising account: you can click this button to choose a Twitter advertising account. A list of advertising accounts associated with the supplied credentials is displayed in a dialog.

  Select the account you wish to use, and click the OK button. You can also click Cancel is required. Having chosen an advertising account, you can clear your selection.

- Tailored audience list limit: this mandatory integer property defaults to 100, and accepts a range of values between 25 and 10,000. It allows you to define the maximum number of Twitter Tailored Audiences that can be displayed in an offer.

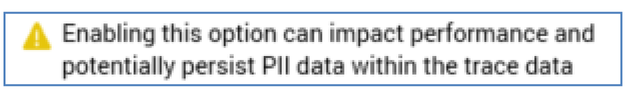
- API max retries: this mandatory integer property, which defaults to 30, and which accepts a range of values between 30 and 99, allows you to specify the number of retry attempts to be made when a request to the Twitter Ads API fails.

- Upload users max retries: this mandatory integer property, which defaults to 30, and which accepts a range of values between 30 and 99, allows you to specify the number of retry attempts to be made when an error occurs uploading users.

The following property is exposed at the Advanced tab:

- Enable trace: this checkbox, which is unchecked by default, allows you to specify whether to log API requests and corresponding replies from the service provider.

  Note the following message, displayed when the property is checked:



6.8.35 Salesforce.com

The following channel-specific fields are shown for Salesforce.com channels:

- Service username: a mandatory field, which may be a maximum length of 100 characters.
- Service password: a mandatory field, which may be a maximum length of 100 characters.
- Security token: a mandatory field, which may be a maximum length of 100 characters.
- Allow update: by checking this checkbox, you can define that the channel will support the automatic synchronization of data updates to and from Salesforce.com.

  By default the checkbox is unchecked. Checking it enables the Update behavior dropdown.

- Update behavior: this dropdown is enabled when Allow update is checked. It exposes the following values:
  - Sync from Salesforce to RPI Data Warehouse (default)
  - Sync from RPI Data Warehouse to Salesforce

  It allows you define the update behavior for the initial synchronization of lead or contact records between RPI and Salesforce.

- Data to synchronize: this dropdown allows you to define the type of data the Salesforce channel will be used to manage. It exposes the following values:
  - Leads (the default)
  - Contacts
  - Accounts

  On changing the value, if the channel has an existing set of Field parameters defined, an 'Are You Sure?' dialog advises that 'Changing the data to synchronize option causes the existing data field mappings to reset', and checks that you wish to proceed. If you do, the existing Field parameter settings will be lost.

- Table name: this mandatory field, with a maximum length of 50 characters, allows you to define the name of the table into which Salesforce.com data will be imported.
- Field parameters: this grid facilitates the mapping of Salesforce.com fields to RPI attributes.

  Clicking the Load data fields toolbar button loads the available list of field parameters from Salesforce.com. If Field parameters have already been defined, an 'Are You Sure?' dialog advises 'Reloading data fields from Salesforce will cause your existing data field mapping to be reset' and asks you whether you wish to continue.

If you elect to proceed, RPI retrieves from Salesforce a list of updatable, not system based, non-referenced data fields. An advisory message is shown if the list of fields was not able to be populated.

The following data fields warrant special mention:

- LeadID: used as a lookup key when Data to synchronize is set to Leads and does not support write-back of data if Allow updates is checked, being system-generated by Salesforce (unlike other field parameters).
- ContactID: used as a lookup key when Data to synchronize is set to Contacts and does not support write-back of data if Allow updates is checked, being system-generated by Salesforce (unlike other field parameters).
- MobilePhone: setting this field parameter facilitates population of the Phone field at Saleforce.com's Activity History (if configured at the Salesforce user interface).
- Email: setting this field parameter facilitates population of the Email field at Saleforce.com's Activity History (if configured at the Salesforce user interface).
- Note that the Status (optional) and LeadSource fields are included in the list only to facilitate write-back of these data if Allow updates is checked; at Salesforce.com offer activity execution, the values of lead status and source are always provided by the Salesforce.com offer.

For each field parameter, the following are displayed:

- Lookup key: a checkbox, unchecked by default. Lookup key is enabled when a field parameter is mapped to an Attribute. When checked, the field is included as a lookup key at execution of a Salesforce offer in an interaction.
- Name: read only; the name of the Salesforce.com data field to which an RPI attribute is to be mapped.
- Attribute: you can browse for an attribute, or you can populate using drag and drop. Once an attribute has been selected, you can invoke View Information and Clear. You can only map a given attribute once, and you can only map database column attributes (although not primary key columns). You cannot map an attribute from an auxiliary database.

  Mandatory attribute provision is contingent on the channel's Salesforce data to sync property:

  - If set to 'Leads', the following data fields must be mapped to RPI attributes: LastName, Company and Status.
  - If set to 'Contacts', the following data field must be mapped to an RPI attribute: LastName.
  - If set to 'Accounts', the following data field must be mapped to an RPI attribute: Account Name.

In addition to the required fields mentioned above, ‘mandatory’ or ‘optional’ behavior of the fields are also sourced from Salesforce.com.

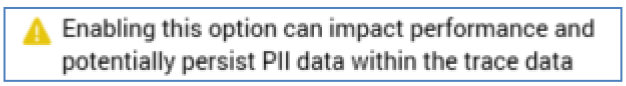
- Data Type: read only.
- Description: read only. Sourced from Salesforce’s Help Text property.

A channel’s Field parameters must be defined prior to its being saved.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



6.8.36 Microsoft Dynamics CRM

The following channel-specific fields are shown for Microsoft Dynamics CRM channels:

- Server URL: a mandatory field, which can be a maximum of 200 characters in length, this represents the address of the Microsoft Dynamics CRM server.
- Authentication: this dropdown field exposes values Online (the default), Integrated and Active Directory.
    - If Online is selected, you must provide a Username and Password.
    - If Active Directory is selected, you must provide a Domain, Username and Password.
    - If Integrated is selected, the aforementioned values need not be provided.
- Domain: displayed and mandatory when Authentication is set to Active Directory. Domain can be a maximum of 50 characters in length.
- Username: displayed and mandatory when Authentication is set to Online or Active Directory. Username can be a maximum of 50 characters in length.
- Password: displayed and mandatory when Authentication is set to Online or Active Directory. Password can be a maximum of 50 characters in length.
- Use campaign with status: this property allows you to specify the status of campaigns that will be loaded in the Microsoft Dynamics CRM Offer Designer.

  The button accompanying the property initially reads 'Choose campaign status'. On invocation, the Campaign Statuses dialog is displayed.

  You can select one or more campaign statuses in the dialog and click OK to confirm your choice. You can also click Cancel to remove the dialog without choosing a campaign status.

  If you select a single status, the status name is shown at the property. If you select more than one status, '[Status name] + [n]' is shown.

  Having selected one or more campaign statuses, you can clear the property.

- Allow update: by checking this checkbox, you can define that the channel will support the automatic synchronization of data updates from Microsoft Dynamics CRM.

  When an offer activity is executed using a Microsoft Dynamics CRM channel, one or more leads or contacts may be created at Microsoft Dynamics CRM. If this checkbox is checked, on execution of the channel's data synchronization system task, if a lead's or contact's details, which are mapped to Field parameters at the channel, are updated, the new data values are written back to the data warehouse fields represented by the field parameters' mapped attributes.

  By default the checkbox is unchecked.

- Data to synchronize: this dropdown allows you to define the type of data the Microsoft Dynamics CRM channel will be used to manage. It exposes values Leads (the default) and Contacts.

  On changing the value, if the channel has an existing set of Field parameters defined, an 'Are You Sure?' dialog advises that 'Changing the data to synchronize option causes the existing data field mappings to reset', and checks that you wish to proceed. If you do, the existing Field parameter settings will be lost.

- Table name: this mandatory field, with a maximum length of 50 characters, allows you to define the name of the table into which Microsoft Dynamics CRM data will be imported.

- Field parameters: this grid facilitates the mapping of Microsoft Dynamics CRM fields to RPI attributes.

  Clicking the Load data fields toolbar button loads the available list of field parameters from Microsoft Dynamics CRM. If Field parameters have already been defined, an 'Are You Sure?' dialog advises 'Reloading data fields from Microsoft Dynamics CRM will cause your existing data field mapping to be reset' and asks you whether you wish to continue.

  If you elect to proceed, RPI retrieves from Microsoft Dynamics CRM a list of updatable, non-system based, non-referenced data fields. An advisory message is shown if the list of fields was not able to be populated.

  For each field parameter, the following are displayed:

  - Name: read only; the name of the Microsoft Dynamics CRM data field to which an RPI attribute is to be mapped.

  - Attribute: you can browse for an RPI attribute, or you can populate this property using drag and drop. Once an attribute has been selected, you can invoke View Information and Clear. You can only map a given attribute once, and you can only map database column attributes with appropriately-matching data types. You cannot map an attribute from an auxiliary database.

    In addition, the 'mandatory' or 'optional' behavior of field parameters is also sourced from Microsoft Dynamics CRM.

  - Data Type: read only.

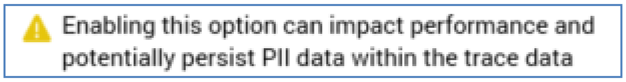
  - Required: a tick or cross is displayed, as appropriate.

  - Description: as sourced from Microsoft Dynamics CRM.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

Note the following message, displayed when the property is checked:



6.8.37 LinkedIn

The following channel-specific fields are shown for LinkedIn channels:

- Consumer key: this mandatory property is used to capture the consumer key required by the LinkedIn API.
- Consumer secret: this mandatory property is used to capture the consumer secret required by the LinkedIn API.
- Account name: provision of a valid LinkedIn account is mandatory and represents the account from whom LinkedIn postings made via the channel will be presented.
- App permissions: a set of LinkedIn permissions required by the channel. Set to 'r_liteprofile r_emailaddress w_member_social' by default.
- Redirect URI: this mandatory text property allows you to specify a valid redirect URI of the LinkedIn App to be used by the channel.
- Authorization: a label advises of the channel's authorization status:
    - When the channel has yet to be authorized, the label states 'The connection to LinkedIn is not authorized' (this is the channel's initial status).
    - When the channel has been authorized successfully, the labels states 'The connection to LinkedIn has been authorized'.

  A button accompanies the label.

    - When the channel has yet to be authorized, its text reads 'Click here to authorize RPI'. Invocation opens your default web browser, in which is displayed a LinkedIn authorization page. You can enter a LinkedIn username or email and password. Having done so, the redirect URI is displayed.

      Copy the URL and return to RPI, where a Verification URL property will now be displayed.

      Paste in the URL you copied and click the Get access token button. The LinkedIn channel will now be authorized.

    - When the LinkedIn channel has been authorized successfully, the button's text is 'Click here to reset the authorization token'. Invocation resets the LinkedIn channel's authorization status to Not authorized and changes the button text to 'Click here to authorize RPI'. If you elect to authorize the channel again, you may not have to provide credentials if having done so successfully previously.

The following property is exposed at the Web Adapters tab:

- Web Adapters: you can associate one or more web adapters with a LinkedIn channel. Note that only Web Events, Google Analytics, Bitly, Matomo and Kissmetrics adapters can be added.

  If a LinkedIn message posted via a channel configured with a web events adapter contains a URL that is compatible with the adapter's settings, on traversing the link to that URL, web analytics results can be collated and reported upon at the level of the LinkedIn channel. For example, if a LinkedIn message links to an online store, within which a visitor makes a purchase, and an associated web adapter tracks Web Purchase Amount, that metric can be viewed at the Twitter channel's results.

  Similarly, results retrieved via Google analytics can be retrieved via a Google analytics adapter and viewed in the same contexts.

  Matomo adapters allow you to append querystring parameters to URLs in offer content, which can then be used to track website behaviors in a Matomo dashboard (beyond the scope of RPI).

  Kissmetrics adapters are similar to Google Analytics adapters, in that they allow you to collate metrics based on website visitors' behaviors. However, this collation is carried out by the Kissmetrics external provider, rather than by Google.

  When a LinkedIn message is posted via a channel configured with a Bitly adapter, URLs contained within the post are shortened by the Bitly service.

  Web adapters are specified in a grid. The grid's toolbar exposes the following options:

  - Add: this option is disabled unless a previously-unselected web adapter is shown. You can click the displayed adapter type to change it. Invocation of Add adds the selected web adapter to the grid. You can only add a web adapter once.

  - [Dropdown]: this field lists all existing web adapters, irrespective of whether already selected and displayed in the grid. All types of web adapter are shown in the field, which is initially blank. Selection of a previously-unselected web adapter enables Add.

  The Web adapters grid lists all web adapters associated with the channel. Web adapters are presented in the order in which they were attached to the channel. The grid contains the following:

  - Name: of the web adapter. Read-only.

  - Type: read-only; one of Google Analytics adapter, Web Events adapter, Bitly adapter, Matomo adapter or Kissmetrics adapter.

  - Remove this Web Adapter: this button is displayed and enabled when a web adapter is hovered over. Invocation removes the web adapter from the grid. and is not protected by 'Are You Sure?'.

  Note also that v2 of the LinkedIn API is now supported.

6.8.38 YouTube

The following channel-specific fields are shown for YouTube channels:

- Client ID: the client ID, as required by the YouTube API.
- Client secret: the client secret, as required by the YouTube API.
- API key: the API key used to connect to the YouTube service.
- Redirect URL: the YouTube redirect URL.
- Account name: the name of the account used to login to YouTube.
- Authorization: on creation of a YouTube channel, the following are displayed:

You can click the button to start the process of authorizing the YouTube channel. When you do so, a Google Sign page is displayed in your default web browser. Having entered your YouTube account's Email and Password, click Sign in. Click Allow to proceed.

Having clicked the Allow button, a redirect URI is displayed. Copy this value and return to RPI, where a Verification URL property will now be displayed. Paste in the URL you copied and click the Get access token button. The YouTube channel will now be authorized.

When the YouTube channel has been authorized successfully, the button's text is 'Click here to reset the authorization token'. Invocation resets the YouTube channel's authorization status to Not authorized and changes the button text to 'Click here to authorize RPI'. If you elect to authorize the channel again, you may not have to provide credentials if having done so successfully previously.

6.8.39 Azure Notification

The following channel-specific fields are shown for Azure Notification channels:

- Notification hub name: a mandatory field, which can be a maximum of 100 characters in length.
- Connection string: also mandatory, the Azure notification hub’s connection string can be a maximum of 500 characters.
- Send msg as entire JSON payload: this checkbox is unchecked by default. When checked, messages sent using the channel will use a JSON-formatted payload.
- Notification lifetime: this optional property consists of a numeric field, which defaults to 0, and a dropdown, exposing the following values:
  - Hours (default)
  - Days
  - Weeks
- The property represents the length of time for which the channel will attempt to resend messages when devices are unavailable.
- Tags: this optional text property allows to provide a comma-delimited set of tag values. When using the channel, messages will only be sent to devices with the tags.
- Also use registered tags: this checkbox is unchecked by default. When checked, the Load tags button and Registered tags property are enabled.
- Load tags: this button is enabled when Also use…is checked. Clicking it populates the Registered tags field.
- Registered tags: this property lists all of the registered tags associated with the selected Azure Notification channel. For each, the following are displayed:
  - Is selected: a checkbox, which is unchecked by default. When checked, subscribers who registered with this tag will receive notifications via the selected channel.
  - Tag name

  You can right-click the Registered tags list to a context menu exposing the following options:

  - Select All: on invocation, all the tags in the list are selected.
  - Select None: on invocation, all the tags in the list are deselected.

6.8.40 Azure Push Direct Notification

The following channel-specific fields are shown for Azure Push Direct Notification channels:

- Recipient address: an attribute, which is used to uniquely identify recipients of Azure Push Direct Notification offers. Provision of an attribute in this context is mandatory. Having selected an attribute, you can view its details. You can also clear your selection.
- Notification hub name: a mandatory field, which can be a maximum of 100 characters in length.
- Connection string: also mandatory, the Azure Push Direct notification hub's connection string can be a maximum of 500 characters.
- Send msg as entire JSON payload: as Azure Notification channel.
- Notification lifetime: as Azure Notification channel.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

6.8.41 SurveyMonkey

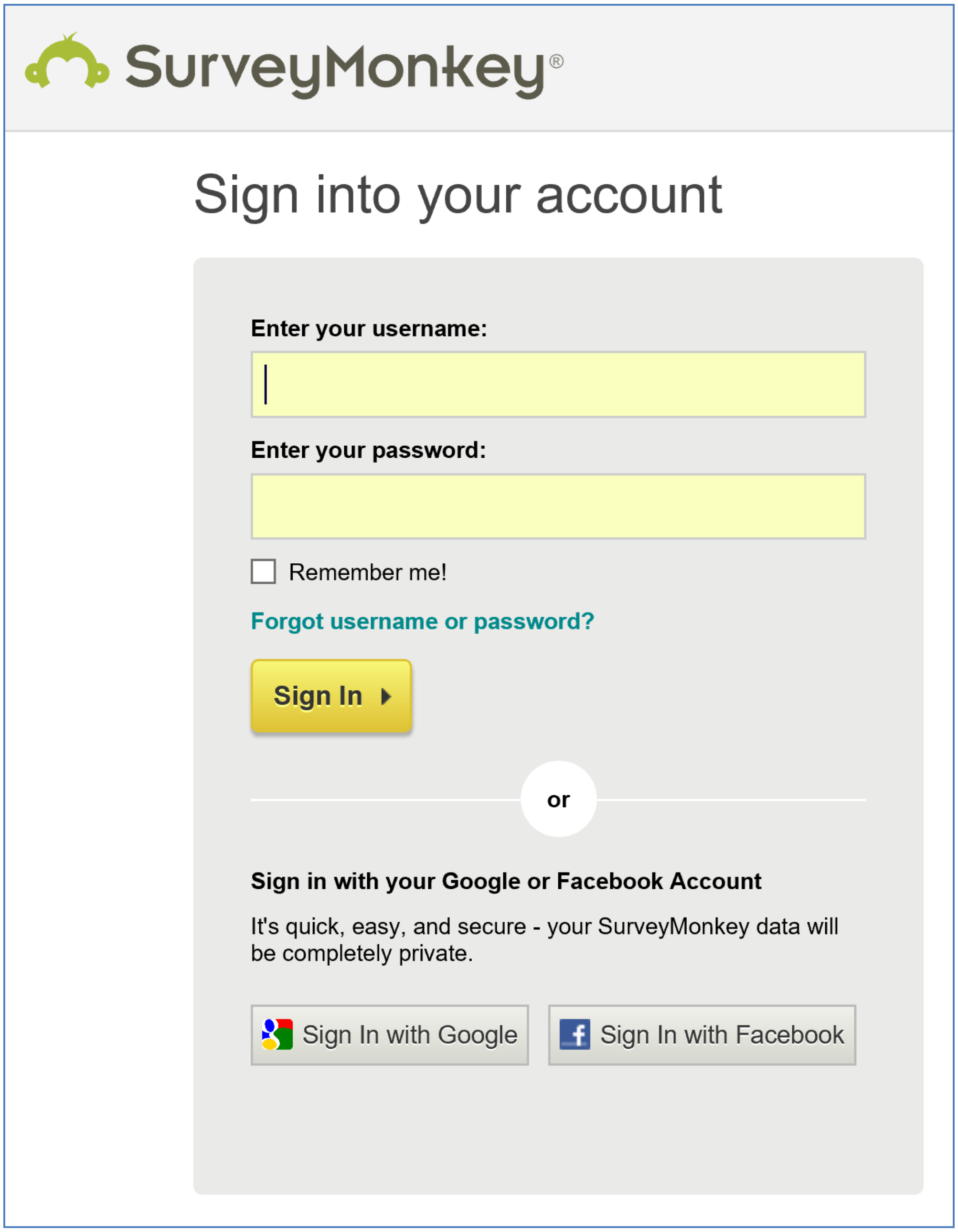
The following channel-specific fields are shown for SurveyMonkey channels:

- Client ID: a mandatory property that can be a maximum of 100 characters in length.
- Client secret: a password-masked mandatory property that can be a maximum of 256 characters in length.
- Redirect URL: a mandatory property that can be a maximum of 4096 characters in length.
- Authorization: a SurveyMonkey channel must be authorized before being able to be used. A read-only label displays one of the following:
  - If the channel has yet to be authorized successfully, 'The connection to SurveyMonkey is not authorized' (this is also the initial status):
  - If the channel has been authorized successfully, 'The connection to SurveyMonkey has been authorized'.

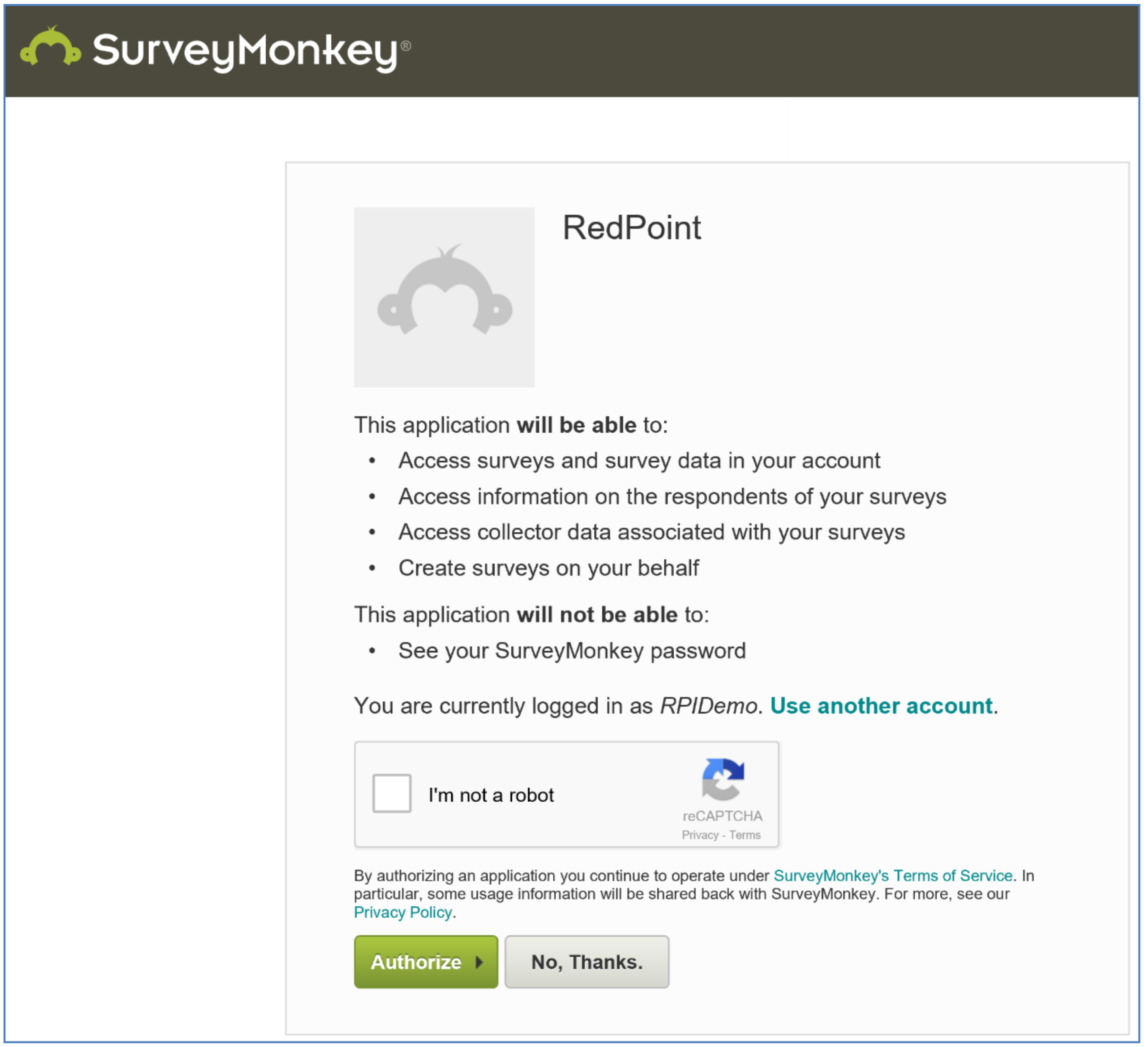
  A button is also displayed:

  - When the SurveyMonkey channel has yet to be authorized successfully, the button's text is 'Click here to authorize RPI'. The button is enabled when Client ID, API key and Redirect URL are provided.

    Clicking it displays a web page in your default browser, within which you can enter a valid SurveyMonkey Username and Password:

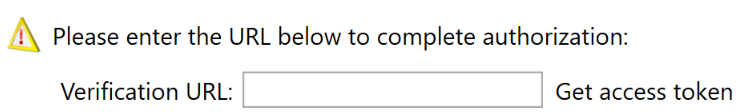


Having done so, you can click Sign In. If the credentials provided are valid, another web page is displayed:



Check the ‘I’m not a robot’ checkbox and complete the Captcha dialog before clicking Verify. On the dialog’s removal, click Verify. The main SurveyMonkey interface will now be displayed.

In the SurveyMonkey interface, copy the URL and return to RPI, where a Verification URL property will now be displayed:



Paste in the URL you copied and click the Get access token button. The SurveyMonkey channel will now be authorized.

- When the SurveyMonkey channel has been authorized successfully, the button’s text is ‘Click here to reset the authorization token’. Invocation resets the SurveyMonkey channel’s authorization status to Not authorized and changes the button text to ‘Click here to authorize RPI'. If you elect to authorize the channel again, you may not have to provide credentials if having done so successfully previously.

- SurveyMonkey Data Import section: this section initially exposes two checkboxes: Import respondent data and Import survey data, each of which is documented separately.

- Import respondent data: a checkbox, unchecked by default. This setting controls whether the channel will import respondent data from SurveyMonkey. When checked, the Respondent table name field is displayed.

- Respondent table name: this field is shown when Import respondent data is checked. It is mandatory when displayed and allows you to define the name of the database table into which respondent details will be imported. The value provided can be a maximum of 50 characters in length and must be database-compatible.

- Import survey data: a checkbox, unchecked by default. This setting controls whether the channel will import survey data from SurveyMonkey. When checked, the Survey table name field is displayed.

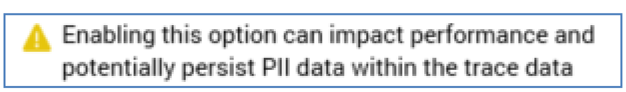
- Survey table name: this field is shown when Import survey data is checked. It is mandatory when displayed and allows you to define the name of the database table into which survey details will be imported. The value provided can be a maximum of 50 characters in length and must be database-compatible.

- API rate limit max re-try: the number of retry attempt to be performed in the event of the API rate limit being hit. Defaults to 30.

The following properties are exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.

6.8.42 Alchemer

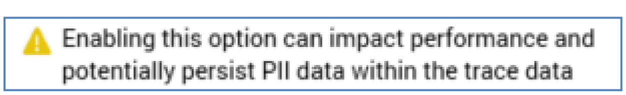
The following Channel Specific fields are shown for Alchemer channels:

- API key: mandatory.
- API secret key: also mandatory.
- Alchemer Data Import section: this section initially exposes two checkboxes: Import respondent data and Import survey data, each of which is documented separately.
- Import respondent data: a checkbox, unchecked by default. This setting controls whether the channel will import respondent data from Alchemer. When checked, the Respondent table name field is displayed.
- Respondent table name: this field is shown when Import respondent data is checked. It is mandatory when displayed and allows you to define the name of the database table into which respondent details will be imported. The value provided can be a maximum of 50 characters in length and must be database-compatible.
- Import survey data: a checkbox, unchecked by default. This setting controls whether the channel will import survey data from Alchemer. When checked, the Survey table name field is displayed.
- Survey table name: this field is shown when Import survey data is checked. It is mandatory when displayed and allows you to define the name of the database table into which survey details will be imported. The value provided can be a maximum of 50 characters in length and must be database-compatible.
- Data import batch size: defines the import batch size prior to records being committed to the database.
- API result page size: defines the page size of results returned by API request calls.
- Non-Complete survey status check interval: this integer property, which accepts a range of values from 1 to 48, and which defaults to 24, allows you to define the length of time, in hours, between checks for surveys changing status from Patrial to Disqualified or Deleted.

The following Advanced fields are shown for Alchemer channels:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.

6.8.43 Reddit

The following channel-specific fields are shown for Reddit channels:

- Client ID: represents the unique ID of the account used to log into Reddit. A mandatory field that can be a maximum of 100 characters in length.
- Client secret: used in conjunction with Client ID to log into Reddit. A password-masked mandatory field that can be a maximum of 100 characters in length.
- Redirect URL: a mandatory textbox that can be a maximum length of 4096 characters in length.
- Authorization: a label advises of the channel's authorization status:
  - When the channel has yet to be authorized, the label states 'The connection to Reddit is not authorized' (this is the channel's initial status).
  - When the channel has been authorized successfully, the labels states 'The connection to Reddit has been authorized'.

  A button accompanies the label.

  - When the channel has yet to be authorized, its text reads 'Click here to authorize RPI'. Invocation opens you default web browser, in which is displayed a Reddit authorization page.

    You can enter a Reddit username or email and password in the Login section. Having done so, click login; another Reddit interface is displayed. Clicking the Allow button launches the redirect URL.

    Copy the URL and return to RPI, where a Verification URL property will now be displayed.

    Paste in the URL you copied and click the Get access token button. The Reddit channel will now be authorized.

  - Following authorization, the button text is set to 'Click here to reset the authorization token'. Invocation resets the channel's authorization status to not authorized.

6.8.44 RSS

The following channel-specific fields are shown for RSS channels:

- Web publish site: you must select a web publish site with which to configure the RSS channel. The property initially displays the text 'Choose publish location'. You can click the property to choose a web publish site or folder therein using the Choose Publish Location dialog.
- Account name: this mandatory property represents the name of the account that will be used to log into FeedPress. Note that FeedPress is used to track the count of the subscriptions to and reads of the RSS document. This is done by replacing the document's links with tracking links when the original RSS URL is passed to FeedPress. By using the feed alias, RPI can request subscriber and read counts from FeedPress.
- API key: also mandatory, this property is used to persist the API key generated by FeedPress.
- Authorization: an RSS channel must be authorized by FeedPress before being able to be used. A read-only label displays one of the following:
    - If the channel has yet to be authorized successfully, 'The connection to FeedPress is not authorized' (this is the initial status).
    - If the channel has been authorized successfully, 'The connection to FeedPress has been authorized'.

  A button is also displayed.

    - 'Click here to authorize RPI' button enabled when mandatory fields and well-formed Redirect URI are provided.
    - When the RSS channel has yet to be authorized successfully, its text is 'Click here to authorize RPI'. Invocation opens you default web browser, in which is displayed a FeedPress authorization page.

      You can enter a FeedPress username and password in the Login section. Having done so, click login; redirect URI is displayed.

      Copy the URL and return to RPI, where a Verification URL property will now be displayed.

      Paste in the URL you copied and click the Get access token button. The RSS channel will now be authorized.
    - When the RSS channel has been authorized successfully, its text is 'Click here to reset the authorization token'. Invocation resets the RSS channel's authorization status to Not authorized and changes the button text to Click here to authorize RPI. If you elect to authorize the channel again, you may not have to provide credentials if having done so successfully previously.

6.8.45 Twilio SMS

The following channel-specific fields are shown for Twilio SMS channels:

- Recipient phone: this attribute defines the field in which a contact's cellphone number is stored. Provision of Recipient phone is mandatory, and the attribute's data type must be string. You can browse for an attribute using the recent items chooser or File System Dialog. You can also drag an attribute from the toolbox and drop it directly onto the field. Once selected, you can clear the attribute, or view its details in the File Information dialog.
- Account SID: a 34-character string ID that identifies the Twilio account or subaccount. This text field is mandatory.
- Authorization token: the authorization token that accompanies the channel's Account SID for security purposes. A password-masked mandatory text field, the token may be a maximum of 100 characters in length.
- Twilio number: the Twilio phone number from which messages will be sent. Long and short codes are supported. A mandatory text field that can be 100 characters in length.
- Use numbers pool: this checkbox is unchecked by default. If checked, the Twilio number field is disabled, and the Service ID field is enabled (and vice versa).
- Service ID: this text property is mandatory when enabled and accepts a maximum of 34 characters. It represents the ID of the Twilio messaging service at which the Co-pilot feature will be used to send messages using a numbers pool, rather than a single number.
- Auto-suppress: checking this checkbox ensures that, at SMS channel execution, any individuals whose cellphone numbers are registered in the SMS suppression table are suppressed. By default, Auto-suppress is checked.
- Custom suppression table: checkbox, default unchecked. This field allows you to specify that the SMS channel is to use its own custom suppression table, rather than the default SMS suppression table (defined by system configuration setting SMSUnsubscribersTable). Checking the field enables Suppression table name.
- Suppression table name: this text field is enabled and mandatory when Custom suppression table is checked and can be a maximum of 50 characters. Any characters entered must be database-valid.
- Allow survey responses: this checkbox is unchecked by default. If checked, the receipt of custom survey responses through the channel will be supported by the channel.
- Maximum API call retry attempts: this numeric field allows you to specify the maximum number of attempts to retry a Twilio SMS operation when a failure occurs. It defaults to 10, and accepts a range of values from 1 to 100.
- Minimum API call retry delay: this numeric field allows you to specify the minimum number of seconds between API call retries. It defaults to 1, and accepts a range of values between 1 and 600.

- Maximum API call retry delay: this numeric field allows you to specify the maximum number of seconds between API call retries. It defaults to 10, and accepts a range of values between 1 and 600.

- Event import batch size: this property allows you to specify the number of SMS events to be processed each time the channel synchronization task runs. It defaults to 10,000.

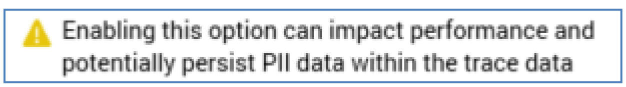
- Retrieval period window: this property consists of two controls - a mandatory numeric field, which defaults to 13, and which accepts a range of values from 0 to 10,000, and a dropdown field, which exposes values 'Months' (the default) and 'Days. It allows you to define a time period, across which RPI will retrieve previous subscription history prior to offer execution. Note that this does not affect existing records already within the Twilio suppression table.

- Email address: this optional string property allows you to define an email address, to which bulk export job notifications will be sent.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

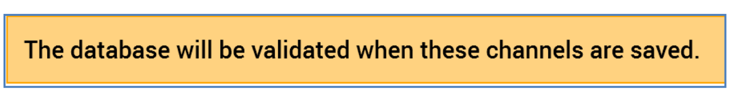
  Note the following message, displayed when the property is checked:



The following property is exposed at the Web Adapters tab:

- Web adapters: you can add a URL shortener adapter only to the channel.

When you create a new Twilio SMS channel, or when an existing Twilio SMS channel's Recipient phone field or suppression table details are changed, an orange message is displayed to top of the Twilio SMS channel interface:



When the message is displayed, at invocation of Save, a Validate channels job is created and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation. The message is removed immediately on saving.

6.8.46 Twilio Inbound SMS

The following channel-specific fields are shown for Twilio Inbound SMS channels:

- Account SID: a mandatory string ID that identifies the Twilio account or subaccount with which the channel is configured. Account SID can be a maximum of 34 characters in length.
- Authorization token: this property accompanies Account SID and is mandatory. It is provided using a password-masked field that accepts a maximum of 100 characters.

6.8.47 Vibes SMS

The following channel-specific fields are shown for Vibes SMS channels:

- Recipient phone: this attribute defines the field in which a contact's cellphone number is stored. Provision of Recipient phone is mandatory, and the attribute's data type must be string. You can browse for an attribute using the recent items chooser or File System Dialog. You can also drag an attribute from the toolbox and drop it directly onto the field. Once selected, you can clear the attribute, or view its details in the File Information dialog.
- Host URL: this mandatory text property can be a maximum of 1000 characters in length. It allows you to specify the host URL used to connect to Vibes services, and defaults to 'https://messageapi.vibesapps.com'.
- Username: this mandatory text property can be a maximum of 100 characters in length. It allows you to specify the username to be used to connect to Vibes services.
- Password: this mandatory, password-masked text field can be a maximum of 100 characters in length. It allows you to specify a password to accompany the supplied username.
- Message code: this mandatory text property can be a maximum of 100 characters in length. It allows you to specify the message code used to send SMS messages when using the channel.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

  > Enabling this option can impact performance and potentially persist PII data within the trace data

6.8.48 Amazon Pinpoint SMS

The following channel-specific fields are shown for Amazon Pinpoint SMS channels:

- Access key: this mandatory text property allows you to specify the access key to be used when connecting to Amazon Web Services (AWS). It accepts a maximum of 100 characters.
- Secret key: this password-masked mandatory text property allows you to specify the secret key to be used when connecting to AWS. It accepts a maximum of 100 characters.
- Region endpoint: this dropdown property allows you to specify the AWS region to be used when connecting to Amazon Pinpoint. It defaults to the value 'US East (N. Virginia)(us-east-1)'.
- Pinpoint application: clicking this button displays a dialog, in which you can choose the Amazon Pinpoint application to be used when sending SMS messages. Note that a validation error is raised if you click the button prior to provision of credentials. Specification of a Pinpoint application is mandatory.
- Segment role ARN: this mandatory text property allows you to specify the Amazon Resource Name (ARN) to be used to authorize Pinpoint to access an AWS S3 bucket folder. It accepts a maximum of 100 characters.
- Amazon S3 bucket folder: clicking this button displays a dialog, in which you can choose an AWS S3 bucket folder from within a list of existing external content providers. The selected bucket will be used when uploading CSV files. Specification of an Amazon S3 CSV bucket folder is mandatory.
- Max. recipients per file: this numeric property allows you to specify the maximum number of records to be exported per CSV file. It defaults to 10,000, and accepts a range of values from 10,000 to 200,000.
- Origination phone number: this optional text property accepts a maximum of 100 characters, and allows you to specify a phone number to be used as the message sender as displayed on receiving devices.
- Sender ID: this optional text property accepts a maximum of 20 alphanumeric and/or hyphen characters, and allows you to specify a sender ID to be used as the message sender as displayed on receiving devices.

Note that only one of Origination phone number or Sender ID may be provided.

6.8.49 LiveRamp Data Onboarding

The following channel-specific fields are shown for LiveRamp Data Onboarding channels:

- Service Credentials section, containing:
  - API base URL: this mandatory text property is set to the value 'https://api.liveramp.com' by default. It accepts a maximum of 100 characters. It represents the base URL used to connect to the LiveRamp Distribution API.
  - API key: this mandatory, password-masked field accepts a maximum of 100 characters and is used when connecting to the LiveRamp Distribution API.
  - File type: this dropdown property exposes the following values:
    - US PII (the default)
    - EU PII

    The property determines the file format to be used when generating export files using the channel. The export template provided must be appropriate for the selected file type.
  - Export template: you must select an export template to use at the channel. The template defines the attributes and format of the exported data. You can populate the property by browsing for an export template, or by using drag and drop. Having selected an export template, you can open its latest version in the Export Template Designer. You can also clear your selection.

    The export template provided must be suitable for use with the channel's selected File type. The following header row values are supported when File type is set to 'US PII'
    - CCID
    - FIRSTNAME
    - LASTNAME
    - ADDRESS1
    - ADDRESS2
    - CITY
    - STATE
    - ZIP
    - ZIP4
    - EMAIL1
    - EMAIL2

- EMAIL3
- PHONE1
- PHONE2

The following header row values are supported when File type is set to 'EU PII'

- CustomerID
- FIRSTNAME
- LASTNAME
- ADDRESS1
- ADDRESS2
- ADDRESS3
- ADDRESS4
- TOWN
- COUNTY
- POSTCODE
- EMAIL1
- EMAIL2
- EMAIL3
- MOBILE1
- MOBILE2
- LANDLINE1
- MD5EMAIL1
- MD5EMAIL2
- MD5EMAIL3
- SHA1EMAIL1
- SHA1EMAIL2
- SHA1EMAIL3
- SHA256EMAIL1
- SHA256EMAIL2

        - SHA256EMAIL3

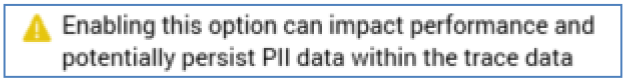
- SFTP Credentials section, containing:
    - SFTP server host address: this mandatory text field can be a maximum of 100 characters in length and is used to specify the LiveRamp SFTP server's host address.
    - SFTP username: this mandatory text field can be a maximum of 100 characters in length, and is used to specify the user name used to connect to the LiveRamp SFTP server.
    - SFTP password: this password-masked text field can be a maximum of 100 characters in length and is used in conjunction with SFTP username when connecting to the LiveRamp SFTP server.
    - SFTP folder path: this mandatory text field can be a maximum of 1000 characters in length and is used to specify the folder path to which LiveRamp onboarding files will be uploaded.
- Export Settings section: for further information on properties in this section, please see the Data Extract channel documentation. The section exposes the following properties:
    - Extract file name format: provision of a format for the names of files generated when offers are executed through this channel type is mandatory.
    - Allow duplicates on resolution: a checkbox, unchecked by default.
- Encryption Options: this section contains the following:
    - Use PGP encryption: this checkbox allows you to specify that extract files generated using the channel will be encrypted using a public key. It is unchecked by default. Checking it displays the Public key file property.

      When PGP encryption is configured at a data extract channel, full export files generated using the channel are encrypted. Sample and summary files are not encrypted. PGP encryption is also applied when files are generated in Test mode, and when file compression is enabled.
    - Public key file: this property is shown when Use PGP encryption is checked. It is mandatory when displayed. It allows you to select a public key file to be used by the channel's PGP encryption. You can browse the Windows file system for a public key file. Having selected a public key file, you can clear your selection.

The following properties are exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.

6.8.50 LiveRamp RampID Data Onboarding

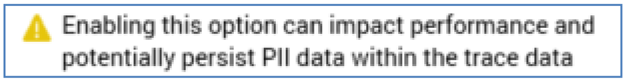
The following channel-specific fields are shown for LiveRamp RampID Data Onboarding channels:

- Service Credentials section:
    - API base URL: this mandatory text field can be a maximum of 100 characters in length. It defaults to the value 'https://api.liveramp.com' and allows you to specify the base URL used to connect to the LiveRamp distribution API.
    - API key: this password-masked text field can be a maximum of 100 characters in length. It allows you specify the API key that will be used to connect to the LiveRamp distribution API.
- SFTP Credentials section:
    - SFTP server host address: this mandatory text field accepts a maximum of 100 characters. It allows you to specify the LiveRamp SFTP server host address.
    - SFTP username: this mandatory text field accepts a maximum of 100 characters. It allows you to specify the username that will be used to connect to the LiveRamp SFTP server.
    - SFTP password: this mandatory, password-masked text field can be a maximum of 100 characters in length. It is used in conjunction with SFTP username when connecting to the LiveRamp SFTP server.
    - Folder path: this mandatory text field accepts a maximum of 1000 characters. It defaults to the value 'onboard-idl' and allows you to specify the folder path to which LiveRamp onboarding files will be uploaded.
- Export Settings section:
    - Export template: you must select an export template for the channel, which defines its attributes and data format. You can browse for one, or populate the property using drag and drop. Having done so, you can open the latest version of the selected template in the Export Template Designer. You can also clear your selection. The selected export template's header row values must contain the value 'RAMPID'.
    - Extract filename format: you can specify the format of the name of files generated using the channel using this property. The format is set using the Design Filename Format dialog, which is covered elsewhere in the documentation.
    - Allow duplicates on resolution: this checkbox is unchecked by default. If checked, and the selected export template contains cross-resolution attributes, multiple rows per resolution key are allowed.

The following properties are exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

- API call max. re-try: this integer property defaults to 10, and accepts a range of values from 5 to 60. It represents the number of retry attempts to be undertaken if a call to the provider's API fails.

6.8.51 Realtime Cache

The Realtime Cache channel allows you to retrieve data from the data warehouse, the structure of which is defined by a realtime cache offer and persist that data in the RPI realtime cache.

A Realtime Cache channel exposes the following channel-specific fields:

- Key attribute: this mandatory attribute must match the value define at the current RPI Realtime web.config file's Master Key Name (or one of its Master Key Alternative Names). Parameter and Exists in table attributes are not supported in this context. The property can be populated using drag and drop, or by browsing for an attribute. Having selected an attribute, you can view its details in the File Information Dialog. You can also clear the selected attribute.
- Number of import threads: allows definition of the maximum number of parallel threads that can be used to import data into the realtime cache.
- Insert batch size: controls the maximum record batch size to be used when importing data into the realtime cache.

6.8.52 Twilio Notify

The Twilio Notify channel allows RPI to create a connection to a Twilio account using the Notify feature, which orchestrates notifications over SMS, push, and messaging apps. The channel is used to carry out broadcasts to interested subscribers.

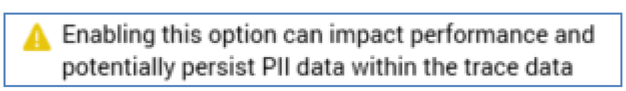
A Twilio Notify channel exposes the following channel-specific fields:

- Account SID: this mandatory text property allows you to specify a 34-character string ID, which identifies the Twilio account or subaccount that the channel will use.
- Authorization token: this mandatory text property allows you to specify the account SID's authorization token.
- Service ID: mandatory text property allows you to specify the Twilio Notify service ID to be used by the channel.
- Send msg as entire JSON payload: as Azure Notification channel.
- Notification lifetime: as Azure Notification channel.
- Tags: as Azure Notification channel.
- High priority: this checkbox, which is unchecked by default, allows you to define notifications as high priority. High priority notifications are sent immediately and can wake up sleeping devices.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



Note that calls made to the Twilio API use port 443.

6.8.53 Twilio Notify Direct

The Twilio Notify Direct channel allows RPI to create a connection to a Twilio account using the Notify feature, which orchestrates notifications over SMS, push, and messaging apps. The channel is used to send messages directly to specific message recipients.

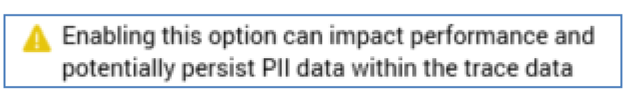
A Twilio Notify Direct channel exposes the following channel-specific fields:

- User's identity: an attribute, which contains data to uniquely identify message recipients. One of this property or Tags must be provided.
- User's tag: an attribute, which contains details of the tags to which a potential message recipient has subscribed. One of this property or User's identity must be provided.
- Account SID: this mandatory text property allows you to specify a 34-character string ID, which identifies the Twilio account or subaccount that the channel will use.
- Authorization token: this mandatory text property allows you to specify the account SID's authorization token.
- Service ID: mandatory text property allows you to specify the Twilio Notify service ID to be used by the channel.
- Send msg as entire JSON payload: as Azure Notification channel.
- Notification lifetime: as Azure Notification channel.
- High priority: as Twilio Notify channel.
- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



Note that calls made to the Twilio API use port 443.

6.8.54 Airship Push Direct

The following channel-specific properties are shown when configuring an Airship Push Direct channel:

- Audience ID: this attribute file property is optional. It represents the ID used to identify the device to receive notifications from Airship. You can select an attribute (using browse or drag and drop) from the RPI file system to match to a named Airship user, tag, device token or channel ID. Having selected an attribute, you can view its details in the File Information Dialog. You can also Clear your selection.
- Audience selector: this dropdown list allows you specify the type of audience to which notifications will be sent. The following values are available:
  - Named user (the default)
  - Tag
  - Device token
  - Channel ID

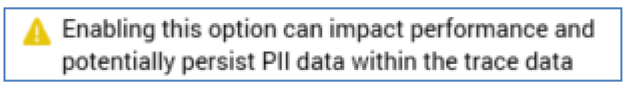
  Note that if you choose Device token, this will override any Targeted devices specified at the Airship offer, and messages will be sent to iOS devices only.
- Base URL: this mandatory text property represents the API service URL used to connect to Airship. It can be a maximum of 100 characters in length, and defaults to 'https://go.urbanairship.com'.
- Version syntax: this mandatory text property allows you to specify the API version to be used when connecting to Airship. It can be a maximum of 100 characters in length, and defaults to 'application/vnd.urbanairship+json; version=3;'.
- App key: this mandatory text property represents the App key used to connect to Airship. It can be a maximum of 100 characters in length.
- App master secret: this mandatory text property is used in conjunction with App key when connecting to Airship. It can be a maximum of 100 characters in length.
- Send msg as entire JSON payload: as Azure Notification channel.
- Notification lifetime: as Azure Notification channel.
- Targeted devices: six checkboxes accompany this property and allow you to target the types of devices to which push notifications will be sent. All are unchecked by default.
  - All: checking this checkbox removes the others from display.
  - iOS
  - Android

- Web
- Windows
- Amazon

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



6.8.55 Google Firebase

The Google Firebase channel allows RPI to send push messages using the Google Firebase provider.

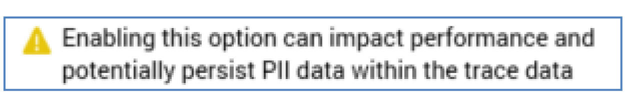
A Google Firebase channel exposes the following channel-specific fields:

- Project ID: this mandatory text property can be a maximum of 200 characters in length and represents the ID of the Google Firebase project.
- Client ID: this mandatory text property can be a maximum of 200 characters in length, and is used to capture the client ID, which will be used when making OAuth 2.0 access token requests.
- Client secret: this password-masked text property can be a maximum of 100 characters. It is used in conjunction with Client ID when making OAuth 2.0 access token requests.
- API key: this password-masked text property can be a maximum of 100 characters. It is used to specify the Google Firebase project's API key.
- Redirect URI: this mandatory text property can be a maximum of 200 characters in length, and is used to specify the authorized redirect URI associated with the client ID.
- Authorization: the channel must be authorized with Google before being used.
- Collapsible: this checkbox is unchecked by default. If checked, messages sent using the channel can be replaced by newer messages if they have yet to be delivered to a device.
- Send message as JSON payload: this checkbox is unchecked by default. When checked, messages sent via an offer using the channel will be delivered as a JSON-formatted payload.
- Notification lifetime: this property consists of an integer field (which defaults to 0) and a units dropdown, exposing values Hours (the default), Days and Weeks. It allows you specify the length of time for which the channel will attempt to resend messages when devices are unavailable.
- Tags: this property allows you to define a series of tags. When using the channel, messages will be sent to devices with the specified tags.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



6.8.56 Google Firebase Direct

The Google Firebase channel allows RPI to send push messages using the Google Firebase provider.

A Google Firebase channel exposes the following channel-specific fields:

- Registration token: you must select an attribute that will provide the channel's registration token, which is used to identify the device that will receive notifications from Google Firebase.
- Project ID: this mandatory text property can be a maximum of 200 characters in length and represents the ID of the Google Firebase project.
- Client ID: this mandatory text property can be a maximum of 200 characters in length, and is used to capture the client ID, which will be used when making OAuth 2.0 access token requests.
- Client secret: this password-masked text property can be a maximum of 100 characters. It is used in conjunction with Client ID when making OAuth 2.0 access token requests.
- API key: this password-masked text property can be a maximum of 100 characters. It is used to specify the Google Firebase project's API key.
- Redirect URI: this mandatory text property can be a maximum of 200 characters in length, and is used to specify the authorized redirect URI associated with the client ID.
- Authorization: the channel must be authorized with Google before being used.
- Collapsible: this checkbox is unchecked by default. If checked, messages sent using the channel can be replaced by newer messages if they have yet to be delivered to a device.
- Send message as JSON payload: this checkbox is unchecked by default. When checked, messages sent via an offer using the channel will be delivered as a JSON-formatted payload.
- Notification lifetime: this property consists of an integer field (which defaults to 0) and a units dropdown, exposing values Hours (the default), Days and Weeks. It allows you specify the length of time for which the channel will attempt to resend messages when devices are unavailable.
- Fail at no merge files: this checkbox is unchecked by default. If checked, execution of an offer via the channel will fail if no mail merge files are generated.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

⚠ Enabling this option can impact performance and potentially persist PII data within the trace data

6.8.57 Amazon Pinpoint

The following channel-specific properties are shown when configuring an Amazon Pinpoint channel:

- Access key: this mandatory text property accepts a maximum of 100 characters, and allows you to specify the access key to be used to connect to Amazon Web Services (AWS).
- Secret key: this mandatory, password-masked text property accepts a maximum of 100 characters, and allows you to specify a secret key to accompany the Access key.
- Region endpoint: this dropdown property allows you to specify the AWS region endpoint used to connect to Pinpoint. It defaults to the value 'US East (N. Virginia)(us-east-1)'.
- Pinpoint application: this button allows you to select a Pinpoint application to be used by the channel to send push notifications to subscribers. The property is mandatory. If both Access and Secret key have not been provided, a warning is thrown at invocation. Clicking the button displays the Pinpoint Applications dialog, in which you can select an application to be used by the channel, and click OK to confirm your choice. Clicking Cancel, or off the dialog, removes it from display. Have chosen an application, you can clear your selection.
- Registration token: you must select a database column attribute from which will be sourced device registration tokens, which will be used to uniquely identify message recipients.
- Endpoint ID: you must select a database column attribute from which will be sourced endpoint IDs, which will also be used to uniquely identify message recipients.
- Channel type: you must select a database column attribute from which will be sourced channel types, which will be used to identify the type of devices to which messages will be sent.
- Segment role ARN: this mandatory text property accepts a maximum of 100 characters, and allows you to specify the Amazon Resource Name (ARN) used to authorize Pinpoint to access the supplied AWS S3 bucket.
- Amazon S3 bucket folder: this button allows you to select an RPI external folder representing an AWS bucket, provision of which is mandatory. Clicking the button displays the Amazon S3 bucket folders dialog, in which are presented a list of all configured AWS external content providers. You can expand providers as required to select an external folder to which CSV files will be uploaded, and click OK to confirm your choice. Clicking Cancel, or off the dialog, removes it from display. Having selected a folder, you can clear your selection.
- Max. recipients per file: this numeric property defaults to 10,000, and accepts a range of values from 10,000 to 200,000. It allows you to specify the maximum number of recipients that will be exported per file.
- Send message as JSON payload: this checkbox is unchecked by default. When checked, messages are sent as JSON-formatted payloads.

- Notification lifetime: this numeric property defaults to 0, and accepts a range of values from 0 to 60. It allows you to specify the length of time, in seconds, for which the channel will attempt to resend messages when devices are unavailable.

The following property is exposed at the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:

  ⚠ Enabling this option can impact performance and potentially persist PII data within the trace data

6.8.58 Google Ads Customer Match Data Onboarding

The following channel-specific fields are shown for Google Ads Customer Match Data Onboarding channels:

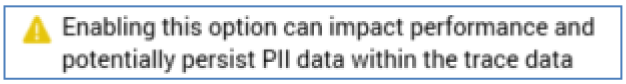
- Project ID: this mandatory text field represents the Google Ads project ID to be used by the channel. It can be a maximum of 100 characters in length.
- Client ID: this mandatory text field represents the client ID to be used when making OAuth 2.0 requests. It can be a maximum of 100 characters in length.
- Client Secret: this mandatory, password-protected field allows you to specify the client secret to be used when making OAuth 2.0 requests. It can be a maximum of 100 characters in length.
- API key: this mandatory, password-protected field allows you specify the API key of the Google Ads project. It can be a maximum of 100 characters in length.
- Customer ID: this mandatory text field represents the customer ID Customer ID of the Google Ads account. It can be a maximum of 100 characters in length.
- Developer token: mandatory, password-protected field allows you specify the Developer token of the Google Ads account. It can be a maximum of 100 characters in length.
- Redirect URI: this mandatory text field allow you to specify the authorized redirect URI associated with the Client ID. It can be a maximum of 200 characters in length.
- Pre-hashed data: this checkbox is unchecked by default. When checked, it indicates that the data warehouse is using pre-hashed data, and hashing should be skipped when uploading to Google Ads.
- Authorization: you must authorize the channel at Google Ads before it can be used.
- Save data files: this checkbox is unchecked by default. When checked, customer match files will be moved to the folder defined by cluster configuration setting GoogleAdsCustomerMatchDataFileFolderPath.
- Minimum API call retry delay: this mandatory integer field represents the minimum number of seconds between API call retries. It defaults to the value 1, and the maximum supported value is 99,999,999.
- Maximum API call retry delay: this mandatory integer field represents the maximum number of seconds between API call retries. It defaults to the value 10, and the maximum supported value is 99,999,999.
- Maximum API call retry attempts: this mandatory integer field represents the maximum number of attempts to retry a Google Ads operation in case of failure. It defaults to the value 10, and the maximum supported value is 999.
- Enable customer match logging: this checkbox is checked by default. When checked, successfully-uploaded customer match data will be written to data warehouse table

OfferHistory_GoogleAdsCustomerMatchTracking (SQL) or collection RedPointGoogleAdsCustomerMatch (NoSQL). If unchecked, customer match data will not be logged.

The following property is displayed in the Advanced tab:

- Enable trace: if checked, API requests and responses will be logged at offer execution using the channel.

  Note the following message, displayed when the property is checked:



6.8.59 Yahoo Data Onboarding

The following channel-specific fields are shown for Yahoo Data Onboarding channels:

- API Service: this dropdown property exposes a single value, set by default to 'Yahoo! Japan'. It represents the API used to connect to the Yahoo service.
- API Base URL: this mandatory property accepts a maximum of 1000 characters, and allows you to specify the base URL for the selected Yahoo service API.
- Client ID: this mandatory property accepts a maximum of 100 characters, and allows you to specify the client ID to be used to connect to the Yahoo service.
- Client Secret: this mandatory, password-masked property accepts a maximum of 100 characters, and allows you to specify the client secret that accompanies the supplied client ID when connecting to the Yahoo service.
- Redirect URL: this mandatory property accepts a maximum of 1000 characters, and allows you to specify the redirect URL to be used when connecting to the Yahoo service.
- Authorization: the channel must be authorized before use. Clicking the button opens a (Japanese) web page in your default browser, in which you can enter your Yahoo credentials. Successfully doing so presents a Verification URL property in RPI; enter the value provided by Yahoo, and click the Get access button to generate an authorization token. Having authorized the channel, you can click the button provided to reset the authorization token.
- Maximum API call retry attempts: this mandatory integer property defaults to 10, and accepts a range of values from 1 to 100. It represents the maximum number of attempts to retry an API call in the event of a failure occurring.
- Maximum Job Timeout: this mandatory integer property defaults to 60, and accepts a range of values from 1 to 100. It represents the maximum timeout for an import job (in minutes).
- Account ID: this mandatory property is enabled when API Service is set to 'Yahoo! Japan' (always currently the case). It accepts a maximum of 100 characters, and allows you to specify the account ID to be used to connect to the Yahoo service.
- Upload Type: this dropdown property is enabled when API Service is set to 'Yahoo! Japan' (always currently the case). It exposes the following values:
    - 'MAIL_ADDRESS' (the default)
    - 'IDFA'
    - 'AAID'
    - 'CUSTOM_UID_KEY'

  It allows you to specify the type of data to use when performing an upload.

6.8.60 Outbound Delivery

The Outbound Delivery channel type provides a generic channel format for the implementation of custom channel solutions to clients' requirements. An outbound delivery channel can optionally:

- Generate an export file.
- Support the provision of content.
- Allow for the import of channel state results using an RPDM job.
- Provide for the retrieval of state results via a web service.

When combined with a custom channel icon, the outbound delivery channel type provides great flexibility when integrating with bespoke channel contexts (e.g. Internet of Things, etc.).

The following channel-specific fields are shown for Outbound Delivery channels:

- Content Settings section: this section allows you to configure the channel to optionally support the delivery of content. It exposes the following properties:
  - Use content: this checkbox is unchecked by default. When checked, the External folder, Recipient address key, Start tag and End tag properties are displayed.
  - External folder: this mandatory property is displayed when Use content is checked. It represents an external folder, to which embedded images will be uploaded during outbound delivery channel execution. Clicking the button allows you to choose an external folder using the External Folders dialog.

    The folder lists currently-configured external content providers. You can select a folder and click OK to update the property. Clicking Cancel removes the dialog from display (clicking off the dialog has the same effect).
  - Recipient address key: this optional property allows you to specify an attribute, which can be used to uniquely identify an outbound delivery offer recipient. You can browse for an attribute or drag one in from the toolbox. Once an attribute has been selected, you can view its details in the File Information Dialog. You can also clear your selection.
  - Start tag: this mandatory property, which represents the start delimiter tag to be used when authoring content for delivery through the channel. It defaults to the value '{{' and can be a maximum of 10 characters in length.
  - End tag: this mandatory property, which represents the end delimiter tag to be used when authoring content for delivery through the channel. It defaults to the value '}}' and can be a maximum of 10 characters in length.
- Extract Settings section: the properties within this section are identical to their equivalents at the Data Extract channel (unless otherwise documented). Please see that channel's details for further information.

- Generate export file: this checkbox is checked by default. It defines whether an export file will be generated at channel execution. If checked, the following channel properties are displayed:
  - Export template: mandatory if shown.
  - Location type
  - Use custom name format
  - Custom name format
  - Suppress sample file
  - Suppress summary file
  - Allow duplicates on resolution

- Channel States section: exposing the following properties:
  - Import state results via DM: this checkbox, which is checked by default, allows you define whether an RPDM project will be used to import state results. If checked the RPDM Repository path and State results folder path properties are shown. If unchecked, the State import table property is displayed.
  - RPDM Repository path: this property is only displayed when Import state results via DM is checked. It represents the full path of the project in the RPDM repository that is to be used to import channel state results data. Its provision is mandatory.
  - State results folder path: this property is only displayed when Import state results via DM is checked. It represents the server folder path or share where state results data will be placed for processing by the import job. Its provision is mandatory.
  - State import table: this property is only displayed when Import state results via DM is unchecked. It represents the name of the database table in which delivery state results will be stored.
  - Delivery states: this property allows you to define optional states that can be reported as channel results and acted on by downstream activities. It consists of a toolbar and a grid.
    - Toolbar: exposing the following:
      - Add new Delivery State: clicking this button adds new a new delivery state to the bottom of the list. Its Name is set to 'New state', and Database field name to 'Newstate' (both can be incremented to ensure uniqueness).
      - Move selected Delivery State up: this button is enabled when a delivery state other than the first in the list is selected. Clicking it moves the selected delivery state up one position in the list.
      - Move selected Delivery State down: this button is enabled when a delivery state other than the last in the list is selected. Clicking it moves the selected delivery state down one position in the list.

    - Remove selected Delivery State: clicking this button removes the currently-selected delivery state. An Are You Sure? dialog is not shown.
  - Grid: containing the following writeable columns:
    - Name: provision of a name for the delivery state is mandatory, and the supplied value can be a maximum of 100 characters in length. It must be unique within the channel.
    - Database Field Name: provision of a database field name is also mandatory. The value supplied must also be unique within the channel and can be a maximum of 50 characters.
    - Negative State: this checkbox, which is unchecked by default, allows you to define a delivery state as the negative of another through the specification of the same Database Field Name. When the channel's sync task runs, negative states are counted as the 'opposite' of state results. For example:
      - Total count = 100
      - Opened = 10
      - Not opened (negative state) = 90
- Web service URL: this optional text property allows you to define a callback service URL that will be used to collect the channel's delivery state results. It is only shown when Import state results via DM is unchecked. The property accepts a maximum length of 1000 characters.

  POST requests made to the Web service URL are collated in the State import table. The web service itself is available in the RPI deployment files at:

  DeploymentFiles\Plugins Services\OutboundDeliveryCallbackService

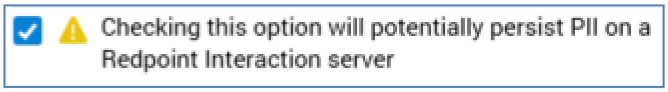
  The body of a POST request to the web service must adhere to the following format:

```
{
"cid": "[CLIENTID]",
"cxid": "[CHANNELEXECUTIONID]",
"rpid": "[RPCONTACTID]",
"statename": "[DELIVERYSTATE_DATABASEFIELDNAME]",
"statedetails": "[DELIVERYSTATE_DETAILS]",
"eventdate": "[DELIVERYSTATE_EVENTDATE]"
}
```

  Please note the following:

  - The value provided for [DELIVERYSTATE_DATABASEFIELDNAME] must match any of the channel's Delivery states' Database Field Names.
  - The statedetails and eventdate parameters are optional.
  - The Content-type of the POST request must be "application/json".

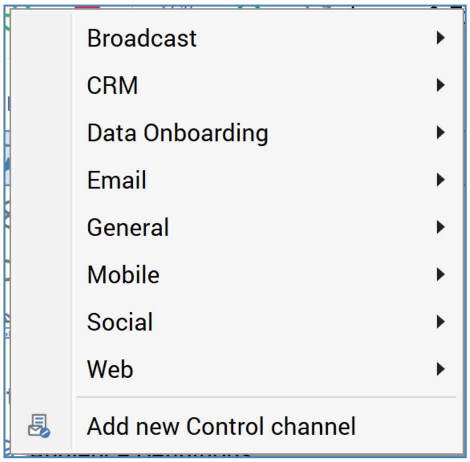
- Save event files: this checkbox is unchecked. When checked, at execution, Outbound delivery event files will be moved to a '[Client ID]\Processed' folder. The following warning message is displayed when the property is checked:



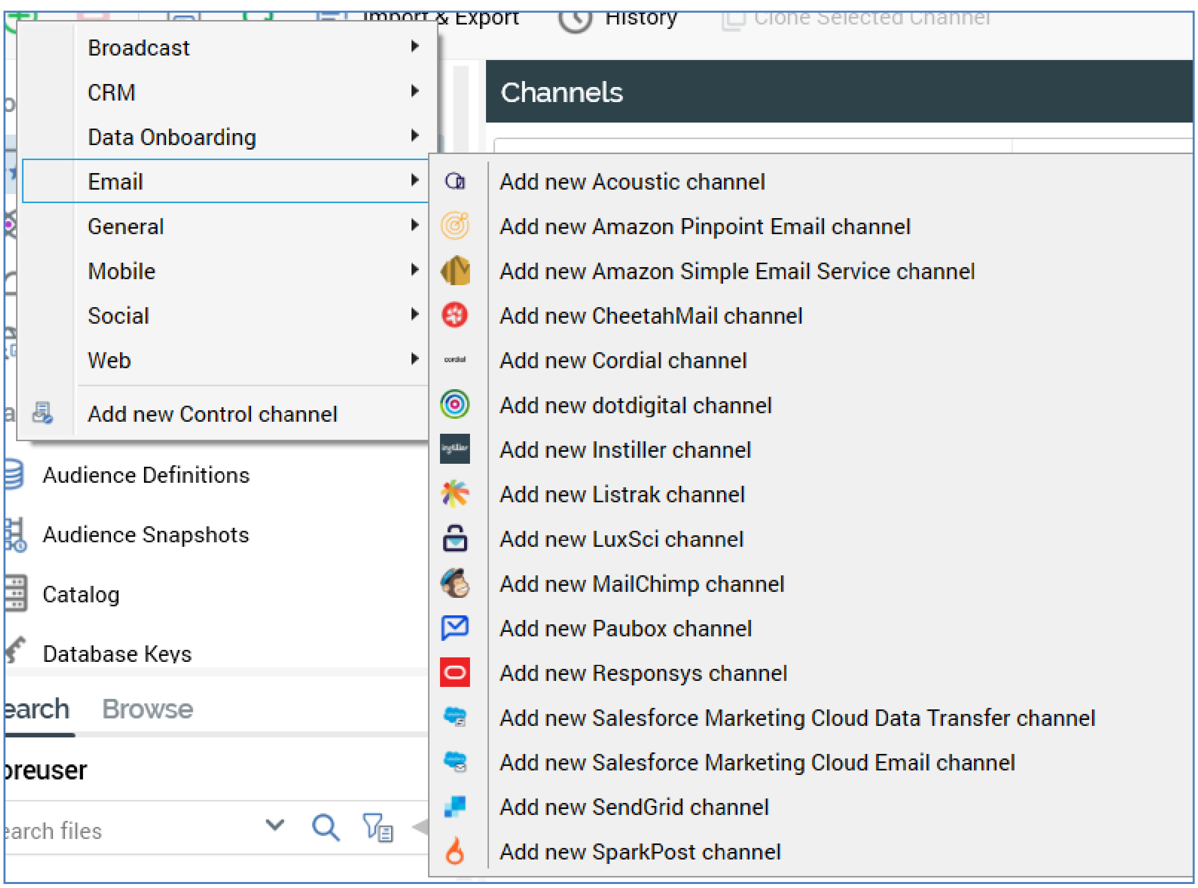
6.8.61 Create New Channel

This is carried out using the Create new Channel toolbar button.

Upon invocation, an initial sub-menu is shown, allowing you to choose the category of channel you wish to create:



Clicking a category allows you to select the specific type of channel to be created:



The new channel is added to the channels list at the appropriate alphabetical ordinal position. Its name is New [Type] Channel; if New [Type] Channel already exists, its name is New [Type] Channel 2. Note that this number can be incremented accordingly.

The new channel's Delivery method is accordant with the channel type, its State upon creation is Added and its row is selected.

When adding a channel in NoSQL mode, the following channel types are available at invocation of Create new Channel:

- CRM
    - Microsoft Dynamics CRM
- Data Onboarding
    - Facebook Audience
    - Google Ads Customer Match
    - LiveRamp
    - LiveRamp RampID
    - Realtime Cache
- Email
    - Acoustic
    - Amazon Pinpoint Email
    - Amazon Simple Email Service
    - CheetahMail
    - Cordial
    - Dotdigital
    - Instiller
    - Listrak
    - LuxSci
    - Responsys
    - Salesforce Marketing Cloud Data Transfer
    - Salesforce Marketing Cloud Email
    - SendGrid

    - SparkPost
- General
    - Data Extract
    - Outbound Delivery
- Mobile
    - Google Firebase
    - Google Firebase Direct
    - Twilio Notify
    - Twilio Notify Direct
    - Twilio SMS
- Social
    - Facebook
    - Twitter
    - Twitter Direct
- Web
    - Alchemer

If you attempt to create a new channel, and the number of configured channels is the same as system configuration setting MaxChannels, a warning is displayed, advising that the maximum number of channels that can be configured has been reached. Note that this setting is set by default to value 50, and accepts a minimum value of 10, and a maximum value of 1000.

6.8.62 Configure Existing Channel

This is carried out in the simple fields in Selected Channel Details. You can select an existing channel to view its details. If multiple channels are selected, a message is displayed:

> Please choose one of the Channels above to make changes

When you make changes to a previously-saved channel and its State is set to Edited

6.8.63 Delete Selected Channels

This is carried out using the Delete selected Channels toolbar button. A deleted channel's State is set to Deleted, and its row text color to red. You are no longer able to select a deleted row. Note that you can delete multiple channels concurrently.

6.8.64 Save Changes to Channels

This is carried out in the toolbar. When invoked, the changes you have made are validated. Any validation errors are advised in a dialog. You are not able to proceed with Save until you have resolved them. Following a successful save, channels are displayed in alphabetical order. All channels' States are updated to Unchanged. Any Deleted channels are removed from display.

6.8.65 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.8.66 Clone Selected Channel

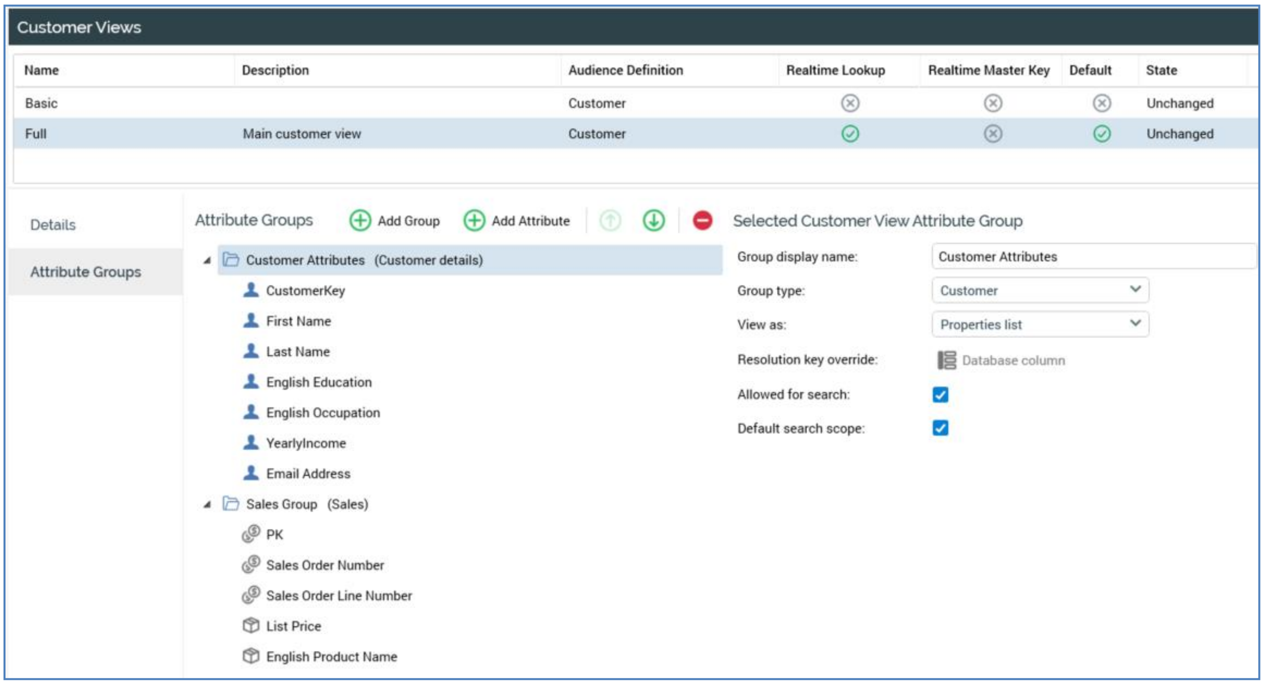
This option is only available when a single channel is selected. Invocation creates a copy of the selected channel. Its name is set to that of the original channel, to which an integer is appended to ensure uniqueness (this value can be incremented if required). Its initial state is Added, and its other properties are as per the original channel. It is listed immediately after the original channel and is selected.

Note that, if you clone a default channel, the newly-created clone is not marked as a default.

Note also that, if you attempt to create a new channel, and the number of configured channels is the same as system configuration setting MaxChannels, a warning is displayed, advising that the maximum number of channels that can be configured has been reached.

6.9 Configuring Customer Views

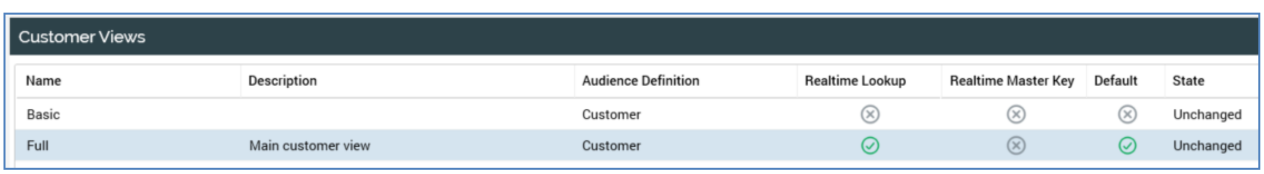
Customer Views are used to define the set of properties to be shown in respect of a record (typically a customer) in the Single Customer View Interface. Configuration of customer views is carried out in the Customer Views configuration interface.



The Customer Views configuration interface contains the following elements:

6.9.1 Customer Views

A grid is displayed, listing all existing customer views:



Within the grid, the following read-only columns are displayed:

- Name: the unique name that identifies a customer view.
- Description
- Audience Definition
- Realtime Lookup: a tick or cross.
- Realtime Master Key: a tick or cross.

- Default: a tick or cross.
- State: one of Added, Edited, Deleted or Unchanged.

When no customer views have been configured, an advisory message is displayed.

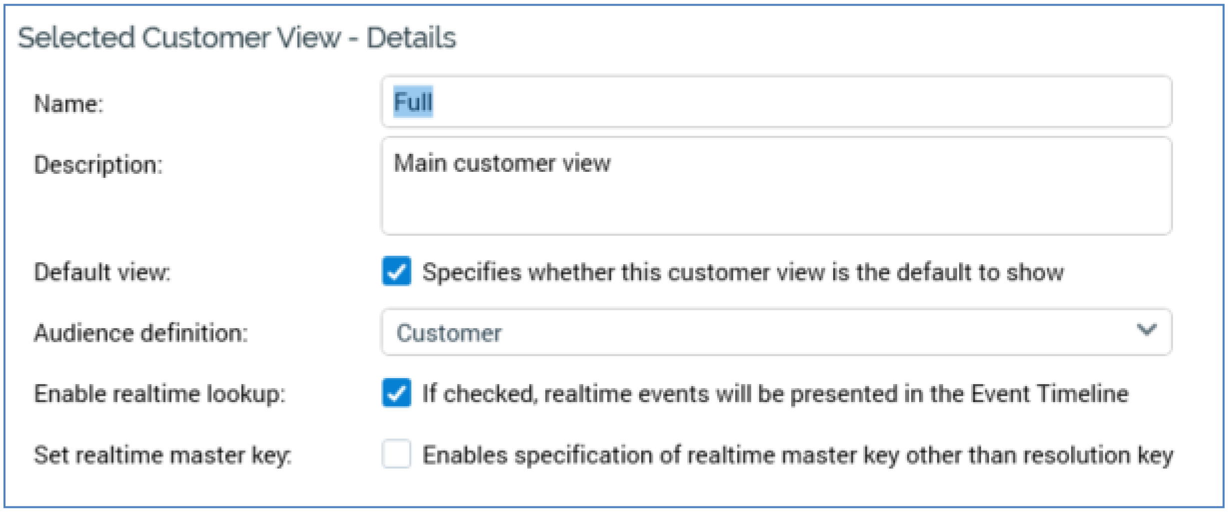
6.9.2 Tabset

Two tabs are shown below the list:

- Details
- Attribute Groups

6.9.3 Details

This tab displays the principal details of the currently-selected customer view.

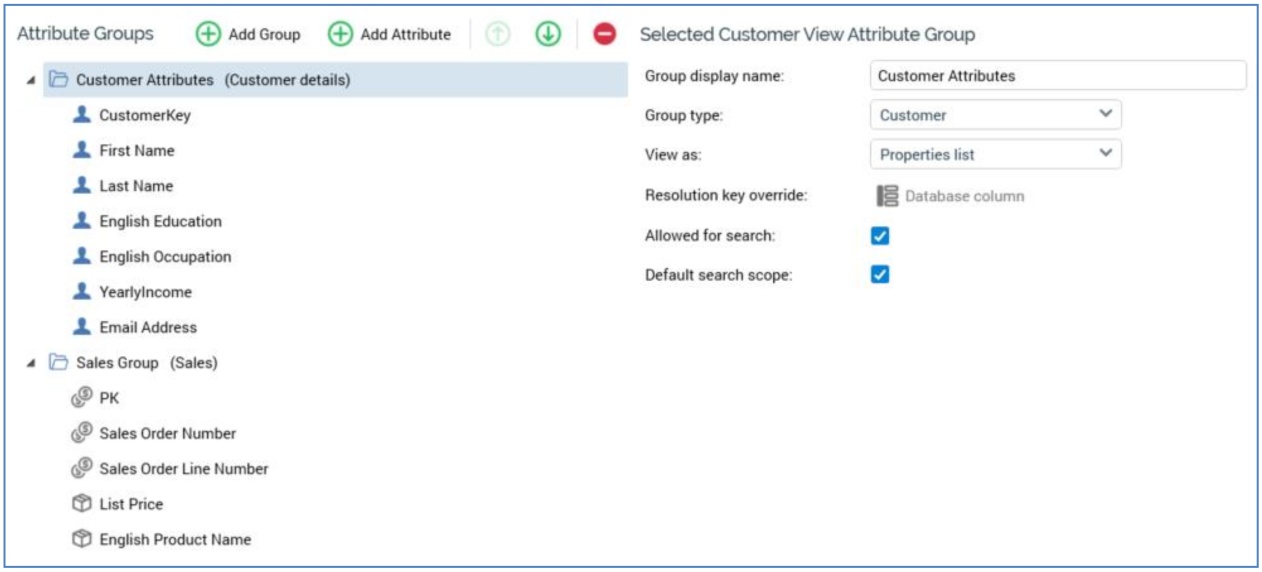


It contains the following:

- Name: a mandatory property. Name must be unique and can be a maximum of 100 characters in length.
- Description: an optional property, which can be a maximum of 1000 characters in length.
- Default view: this checkbox specifies whether the current customer view is to be shown by default within the Single Customer View's Search overlay. It is unchecked by default.
- Audience definition: a mandatory dropdown. Note that this property is replaced by a mandatory NoSQL offer history definition dropdown if configuring customer views in a NoSQL environment.
- Enable realtime lookup: a checkbox, which, when checked, ensures that realtime events are presented in the Single Customer View's Event timeline. The property is unchecked by default. When checked, the Set realtime master key property is shown.
- Set realtime master key: a checkbox, which is unchecked by default. Checking it facilitates specification of a realtime master key other than the selected audience definition's resolution key and displays the Realtime master key property.
- Realtime master key: this property facilitates retrieval of realtime history (e.g. page visits, realtime decision results) using a key other than the selected audience definition's resolution key. It is mandatory if displayed and is shown when Set realtime master key is checked. you can populate the property by browsing for an attribute, or by using drag and drop. You cannot select an Exists in table or Parameter attribute. Having selected an attribute, you can view its details in the File Information Dialog. You can also clear your selection.

6.9.4 Attribute Groups

This tab allows you to define the customer view's attribute groups.



It contains the following:

- Attribute Groups: this property allows you define sets of attributes to be shown in the Single Customer View. It consists of a toolbar and a treeview.
  - Toolbar: exposing the following options:
    - Add Group: clicking this button adds a new group to the treeview. Its default Group display name is 'New group' (an incrementing integer can be added to ensure the name's uniqueness), Group type is Other, and its View as property is set to Properties list.
    - Add Attribute: clicking this button adds a new attribute to the currently-selected attribute group, automatically expanding the same at the treeview. When an attribute is added in this way, its Attribute property is initially empty.
    - Move selected item up: this button is enabled when an attribute group or attribute that is not the first in the list is selected. Clicking it moves selected the item up one position in the treeview (any expanded attribute groups are rolled up in the process).
    - Move selected item down: this button is enabled when an attribute group or attribute that is not the last in the list is selected. Clicking it moves selected the item down one position in the treeview (any expanded attribute groups are rolled up in the process).
    - Remove selected item: clicking this button removes the currently-selected item from the treeview. An 'Are You Sure?' dialog is not displayed.
- Treeview: the Attribute Groups treeview lists all of the customer view's attribute groups, in the order in which they are to be shown in the Single Customer View. Each customer has an initial

attribute group, with a Group display name of 'New group'. Its Group type is set to Customer Details.

Attribute groups are displayed as folder nodes within the treeview. For each, the following are displayed:

- Group name (Group type)

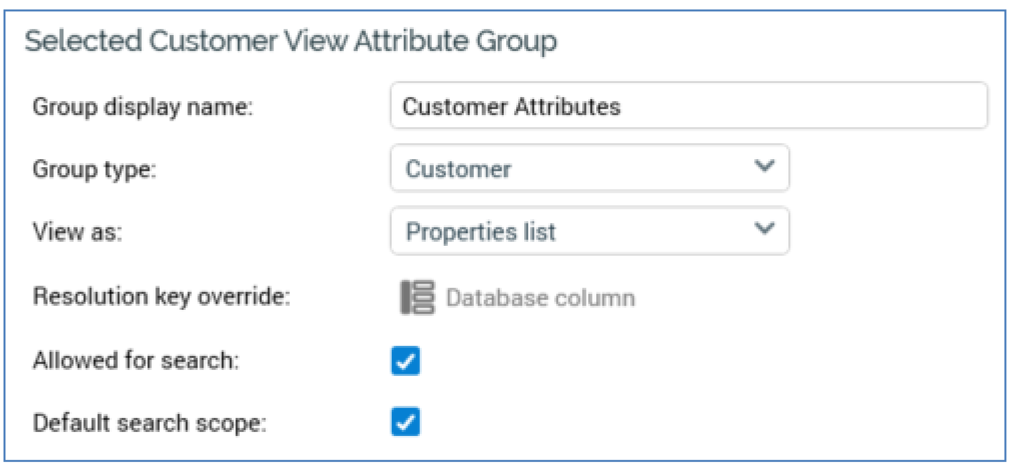
Attributes are shown as leaf nodes within attribute groups. For each, the following are displayed:

- Icon
- Attribute name

You can drag an attribute from the toolbox onto an attribute group within a treeview to add it. The use of array attributes is not supported in this context.

Note that it is mandatory for a customer view to contain at least one attribute group. It is also mandatory for an attribute group to contain at least one attribute.

- Selected Customer View Attribute Group: the following properties are displayed to the right of the Attribute Groups treeview, when an attribute group is selected in that context.



  - Group display name: this mandatory property can be a maximum of 100 characters in length and must be unique within the customer view.
  - Group type: a dropdown field, which allows you to classify the attribute group. It exposes the following values: Address, Customer (the default), Orders, Products, Sales, Transaction and Other.
  - View as: this dropdown allows you to specify whether the attribute group will be displayed as a simple list of properties, or as a table. Typically, you would use the latter to display a list of related records – e.g. a customer’s transactions. A dropdown field, it exposes the values Properties list (the default) and Table.

    - Resolution key override: if required, you can choose a resolution key to be used by the attribute group other than the key associated with the chosen Audience definition. To do so, set this property to the required database column using the Choose Database Item dialog.

      You might do so:

      - To make queries more efficient (e.g. using a Customer Key directly from a Sales table, rather than forcing an unnecessary join to a Customer table).

      - To facilitate searching for related records at an auxiliary database.

      Having chosen an override, you can Clear your selection.

    - Allowed for search: this checkbox, which is checked by default, allows you to define that the attribute group will be available in the Scope dropdown in the Single Customer View's Search overlay.

    - Default search scope: this checkbox is checked by default. It allows you to define one attribute group only as that upon which the set of available search field displayed in the Single Customer View's Search overlay will be based. This property is only displayed when Allowed for search is checked.

    - Maximum number of rows: allows you to define the maximum number of related records that can be displayed in a table.

- Selected Customer View Attribute: the following properties are displayed to the right of the Attribute Groups treeview, when an attribute is selected in that context.

    - Attribute: a mandatory RPI attribute file, which can be populated using browse or drag and drop. Once populated, you can view the attribute's details in the File Information Dialog. You can also clear the property. You cannot select an Exists in table or Parameter attribute in this context. Note that you can only include the same attribute once within an attribute group.

    - Display name: this property is set by default to the value 'Using attribute name'. You can overwrite the default Display name or specify one if required (a maximum of 100 characters are supported in this context).

    - Order table by attribute: this checkbox, which is unchecked by default, is only displayed at attributes within a table attribute group. It allows you to specify one attribute within the group by which the group's records will be ordered. Checking the checkbox displays the Order by direction property.

- Order by direction: this dropdown field is displayed when Order table by attribute is checked. It exposes values Ascending (the default) and Descending.

6.9.5 Create New Customer View

This is carried out in the toolbar. On clicking the Create New… button, a new customer view is added to the grid, and placed in an appropriate alphabetical position.

Its Name is 'New Customer View' (an incrementable integer can be added to this name to ensure its uniqueness).

6.9.6 Configure Existing Customer View

This is carried out in the tabset. If you configure a customer view that has been saved previously, its State is set to Edited.

6.9.7 Delete Selected Customer View

This is carried out in the toolbar. A deleted customer view's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.9.8 Save Changes to Customer Views

Save is carried out using the Save changes to Customer Views toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

Following a successful save, customer views are displayed in alphabetical order. All lists' states are updated to Unchanged. Any deleted lists are removed from display.

6.9.9 Cloning a Customer View

You can make a cloned copy of an existing customer viewing by clicking the Clone Selected Customer View button, which is displayed in the main Configuration Workbench toolbar when a single, Unchanged customer view is selected. Clicking the button creates an exact copy of the selected customer view. An integer is appended to the new view's name to ensure its uniqueness (the value can be incremented if required). If the cloned view was the default, the new customer view's Default view property is unchecked.

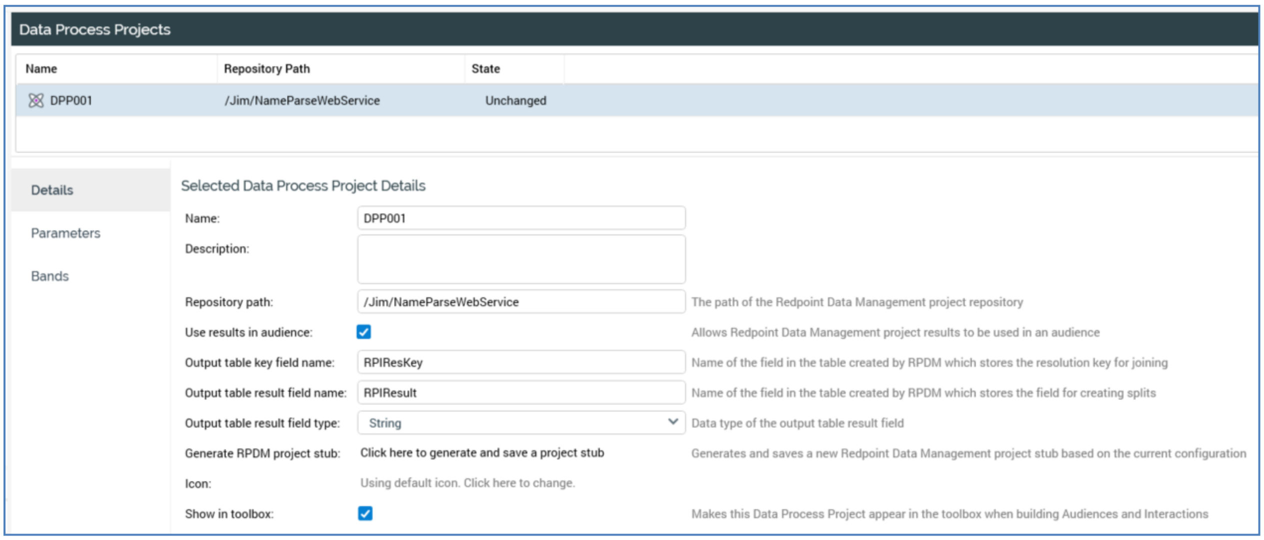
6.9.10 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.10 Configuring Data Process Projects

Data process projects allow you to create references to Redpoint Data Management projects in RPI. A data process project can then be called during execution of an interaction's Data Process activity, or an audience's Data Process block.

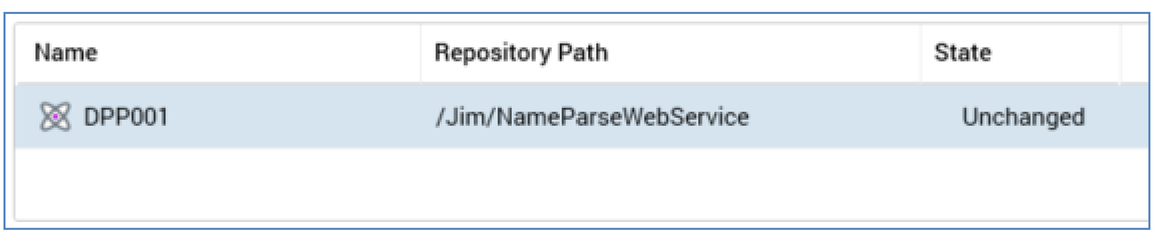
Configuration of data process projects is carried out in the Data Process Projects configuration interface.



The Data Process Projects configuration interface contains the following elements:

6.10.1 Data Process Projects

A grid is displayed, listing all existing data process projects:



Within the grid, the following read-only columns are displayed:

- Name: the unique name that identifies a data process project.
- Repository path: the RPDM Repository path where the project is located.
- State: one of Added, Edited, Deleted or Unchanged.

When no data process projects have been configured, an advisory message is displayed.

6.10.2 Tabset

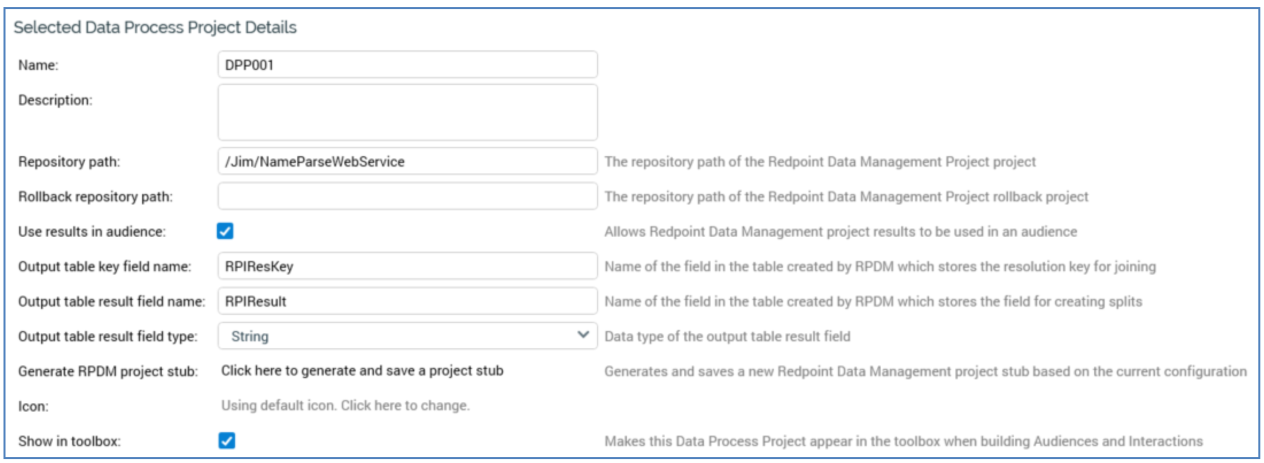
A tabset is shown below the Data Process Projects list. It contains the following tabs:

- Details
- Parameters
- Bands

Each is documented separately.

6.10.3 Selected Data Process Project Details Tab

This tab is shown by default. It displays the details of the data process project selected currently in the list.



If no data process projects have been configured, an advisory message is displayed.

The tab contains the following properties:

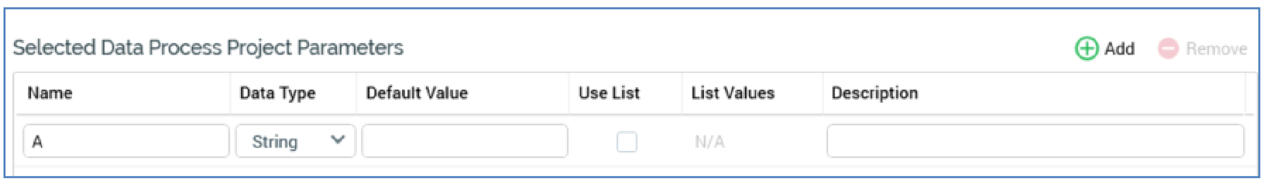
- Name: the unique name used to identify the data process project. Name is mandatory, can be a maximum of 100 characters in length, and must be unique across all data process projects.
- Description: an optional property that can be a maximum of 1000 characters in length.
- Repository path: this mandatory property represents the path of the RPDM project repository where the Data Management project wrapped by the data process project is persisted. The value provided can be a maximum length of 1000 characters.
- Rollback repository path: this property allows you to specify the repository path of an RPDM project that will be executed in the event of the rollback of an interaction workflow including an audience containing a data process block, or a data process activity, which leverages the current data process project.

- Use results in audience: this property determines whether the results of execution of a data process project can be leveraged in an RPI workflow. A checkbox, it is unchecked by default. When checked, the following properties are displayed and enabled:
  - Output table key field name
  - Output table result field name
  - Output table result field type
- Output table key field name: this mandatory property represents the name of the field, in the table created during execution of the RPDM project, which stores the resolution key to facilitate joining to other data warehouse tables. It defaults to the value 'RPIResKey'. The field might be used e.g. to store the customer key of each customer record processed by the project. The value supplied can be a maximum of 50 characters in length and must be database-compatible.
- Output table result field name: this mandatory property represents the name of the field, in the table created during execution of the RPDM project, which stores the field to in which the result of the project's execution is stored. For example, it might be used to store a model score to be assigned to each customer record processed by the project. It defaults to the value 'RPIResult'. The value supplied can be a maximum of 50 characters in length and must be database-compatible.
- Output table result field type: this property represents the data type of the output table result field. A dropdown, it exposes the following values:
  - BigInteger
  - Bool
  - Date
  - DateTime
  - Decimal
  - Integer (the default)
  - Money
  - String
  - Time
- Generate RPDM project stub: this button allows you to generate and saves a new RPDM project stub based on the current data process project configuration. On invocation, if the current data process project's State is not Unchanged, a warning is displayed. If the data process project is Unchanged, the Save Data Management Project As Windows file system dialog is shown, allowing you to save the project stub. Its name defaults to that of the data process project, and its file type is set to 'Redpoint Data Management Project'.

- Icon: by default, the text 'Using default icon' is displayed at this property. 'Click here to change' is shown at a button. Clicking the button displays the Choose Data Management Project Icon Windows file system dialog. The dialog is limited to display image files only. You can select an image file to replace the default icon. Having done so, the new image is displayed at the Icon property, and instead of the default icon at the Data Process Projects list. Having elected to use a non-default icon, you can click the image again to change it. You can also revert to using the default icon by clicking the Clear custom icon button.
- Show in toolbox: this checkbox, when checked, allows the current data process project to be displayed in the Interaction and Audience Designers' toolboxes. The checkbox is unchecked by default.

6.10.4 Selected Data Process Project Parameters Tab

This tab displays the details of the data process project's parameters.



If no data process project parameters have been configured, an advisory message is displayed.

The tab contains a list of data process project parameters, which consists of a toolbar and a grid.

The toolbar exposes the following options:

- Add new Project Parameter: clicking this button adds a new project parameter to the grid. Its default name is 'New parameter' (this value can be incremented to ensure uniqueness).
- Remove selected Project Parameter: clicking this button removes the selected project parameter from the grid. An 'Are You Sure?' dialog is not displayed.

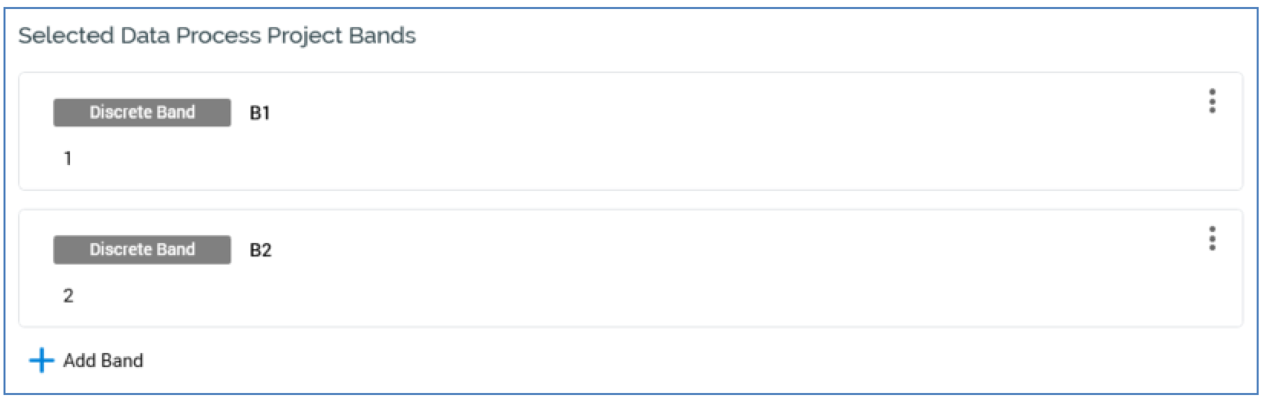
The grid contains the following writeable columns:

- Name: provision of a project parameter name is mandatory; the value provided must be unique within the data process project and can be a maximum of 100 characters in length.
- Data Type: this dropdown property exposes the following values:
  - DateTime
  - Decimal
  - Integer
  - String (the default)

- Default Value: provision of a default value for the project parameter is optional. However, the property is mandatory if Use list is checked (in which case the value provided must be present in the supplied List Values). The field is supplied with an input mask that is accordant with the parameter's selected Data Type. The property's value is reset if the parameter's Data Type is changed.
- Use List: this checkbox is only enabled when Data Type is set to String. If checked, the List Values field is enabled.
- List Values: this property is enabled when Use List is checked. You can click it to display the Manage List Values dialog. It is mandatory to provide at least one list value.
- Description: an optional field, which supports a maximum length of 1000 characters.

6.10.5 Selected Data Process Project Bands Tab

This tab displays the details of the data process project's bands, which are used to classify the results generated by execution of the data process project. Note that provision of bands in the context of a data process project is optional.



If no data process project bands have been configured, an advisory message is displayed.

The tab contains a list of all of the data process project's bands. Functionally, it is equivalent to the interface used to configure a Banding Attribute. For further details, please refer to the Attributes documentation. Note that discrete band values must be specified manually, rather than being selected from a list.

Note that a validation error is raised at Save in the event of the Bands tab containing a Relative Date band, when the data process project's Output table result field type property is set to a value other than Date or DateTime.

6.10.6 Create New Data Process Project

This is carried out in the toolbar. On clicking the Create New… button, a new data process project is added to the grid and placed in an appropriate alphabetical position.

Its Name is 'New Project' (this value can be incremented to ensure uniqueness).

6.10.7 Configure Existing Data Process Project

This is carried out in the tabset. If you configure a data process project that has been saved previously, its State is set to Edited.

6.10.8 Delete Selected Data Process Project

This is carried out in the toolbar. A deleted data process project's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.10.9 Save Changes to Data Process Projects

Save is carried out using the Save changes to Data Process Projects toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

Following a successful save, data process projects are displayed in alphabetical order. All projects' states are updated to Unchanged. Any deleted projects are removed from display.

6.10.10 Refresh

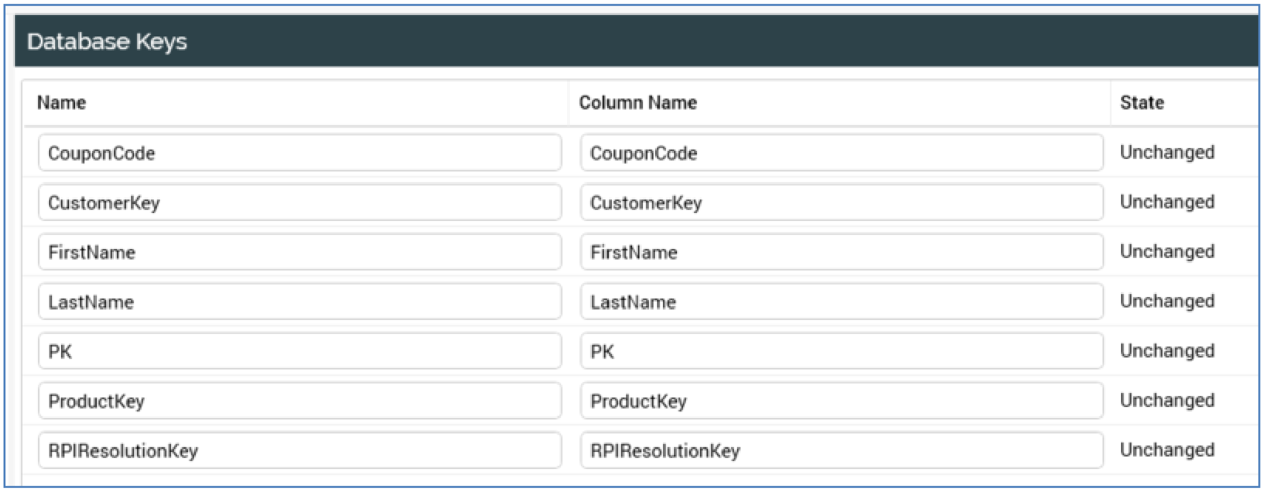
This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.10.11 Clone Selected Project

This option is enabled when a single data process project is selected in the list. Clicking it creates a cloned copy of the selected project, named as per the original, with an incrementable integer appended to ensure uniqueness.

6.11 Configuring Database Keys

Database keys are used throughout RPI to define the manner in which records are deduplicated. configuration of database keys is carried out in the Database Keys configuration interface.



The interface contains:

6.11.1 Database Keys List

All existing database keys are presented in alphabetical order by name. The following editable columns are displayed:

- Name: the name of the database key, by which it is referenced throughout RPI. Name is a text field, may be a maximum of 100 characters and is mandatory. Name must be unique across all database keys.
- Column Name: the name of the database column that is referenced by the database key. Column name is a text field, may be a maximum of 100 characters and is mandatory. It may not contain any characters that are unsuitable for database use.
- State: one of Unchanged, Added, Edited or Deleted.

6.11.2 Create New Database Key

This is carried out using the Create new Database Key toolbar button. A new database key is added to the bottom of the list of existing database keys. Its name is New Key. If New Key exists already, its name is New Key 2 (the number can be incremented accordingly). Column Name is set to the value Not configured. Its State is Added. Having added a database key, it is selected automatically.

6.11.3 Configure Existing Database Key

This is carried out inline in the grid. When you make changes to a previously-saved key its State is set to Edited.

6.11.4 Delete Selected Database Keys

This is carried out in the toolbar. A deleted key's State is set to Deleted, and its row text color to red. You are no longer able to select a deleted row. When you delete a newly-Added database key, it is removed from display immediately. Note that you can delete multiple database keys concurrently. You cannot delete a database key when it is being used in a resolution level.

6.11.5 Save Changes to Database Keys

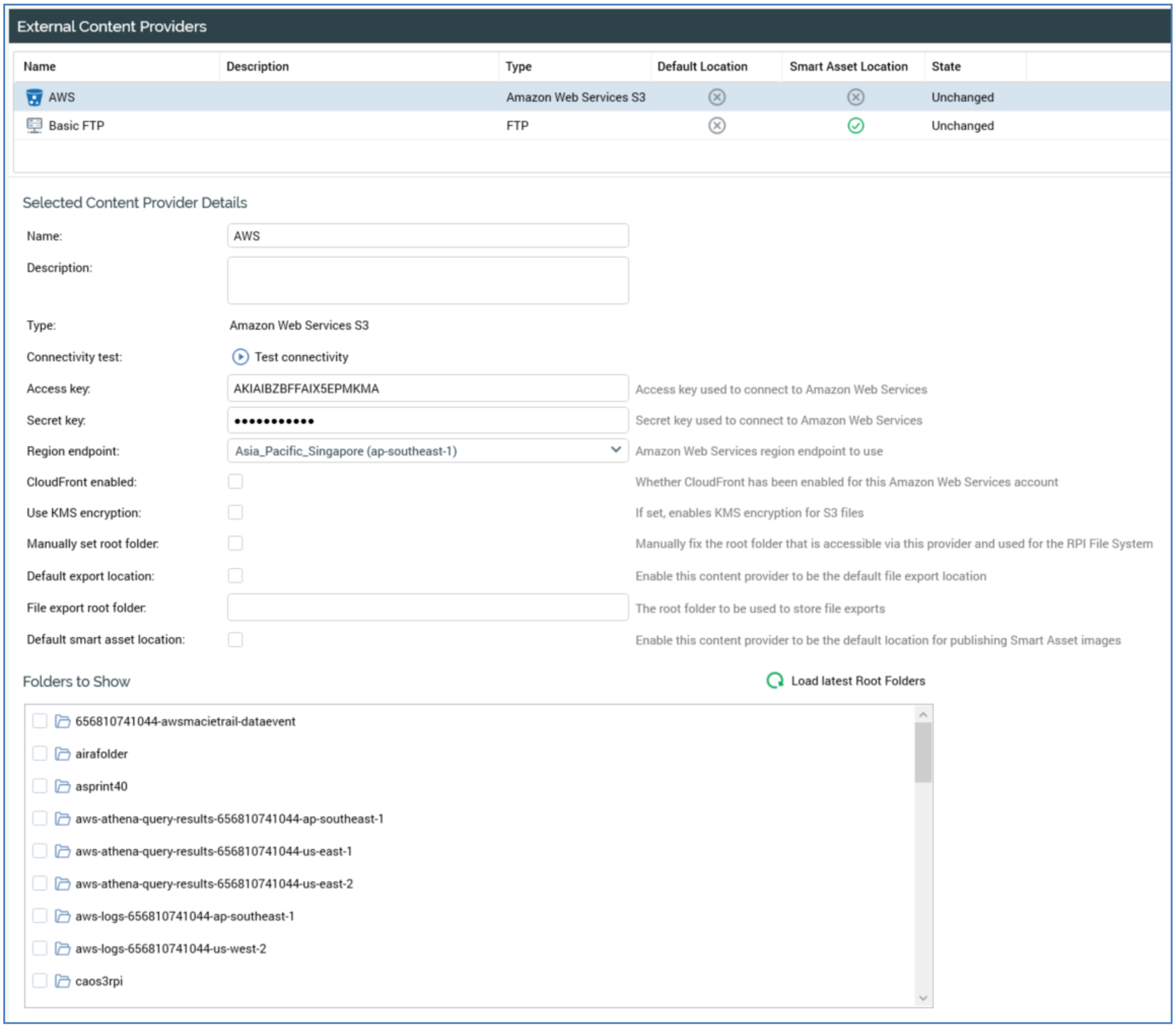
Save is carried out using the Save changes to Database Keys toolbar button. When invoked, the changes you have made are validated. Any validation errors are advised in a dialog. You are not able to proceed with Save until you have resolved them. Following a successful save, database keys are displayed in alphabetical order. All keys' States are updated to Unchanged. Any Deleted database keys are removed from display.

6.11.6 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.12 Configuring External Content Providers

External content providers allow you to expose external file repositories within the RPI file system. External Content Providers are managed in their own dedicated Configuration interface.



When configuring an external content provider, you can choose external folders to which the provider will provide access. You can then access the external files contained within these folders as assets. As an example, you might choose to host your email images in an external file store; you could then create an external content provider to access the contents thereof, and include the images persisted there within your email offers.

You can also upload local files to folders exposed by an external content provider, and download files stored there, either saving them to your local network or creating local RPI file system representations of them as assets.

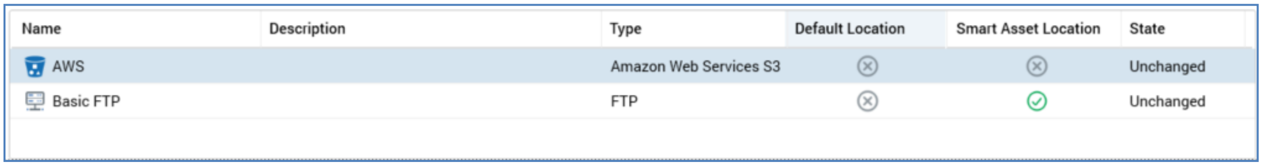
The following external content provider types are currently supported by RPI:

- Amazon Web Services (AWS) S3
- Azure Storage
- Box
- Cloudinary
- Concrete5
- Contentful
- Drupal
- FTP
- Google Cloud Storage
- Google Drive
- Magento
- Onedrive
- Razuna
- Salesforce Marketing Cloud Portfolio
- SharePoint
- SharePoint Online
- Umbraco
- WebDAM
- WebDAV

Details of each are provided separately.

6.12.1 External Content Providers

A grid lists all existing external content providers, which are presented in alphabetical order.



Within the grid, the following read-only columns are displayed:

- Name
- Description
- Type
- Default location: a tick is displayed if the Default export location property is checked at a provider.
- Smart Asset Location: a tick is displayed if the Default smart asset location property is checked at a provider.
- State

6.12.2 Selected Content Provider Details – Shared Properties

The following properties are common to all external content providers:

- Name: a mandatory, textual field that may be a maximum of 100 characters in length. Name must be unique across all external content providers.
- Description: an optional text field that can be a maximum of 1000 characters in length.
- Type: read-only.
- Connectivity test: a button (‘Test connectivity’) allows you to check that the connection to the provider has been configured correctly. The button is disabled when unsaved changes are present (in which case the button’s text is changed to ‘Save this provider to test connectivity’. Clicking the button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.
- Manually set root folder: this checkbox, unchecked by default, allows you to manually specify the external content provider’s root folder in the accompanying Root folder property. Checking it displays Root folder.
- Root folder: this property is shown (and mandatory) when Manually set root folder is checked. It allows you to manually specify the provider’s root folder name.

- Select folders to show: this property allows you select the root folders that are to be exposed by the external content provider. Once a provider has been saved, a Load latest root folders button is displayed at the toolbar above. Clicking the button displays a list of the folders to which the supplied credentials have access. Each is represented by a folder icon and is accompanied by a checkbox. A context menu, exposing Select All and Select No options, is displayed when you right click the folders list. You can choose the folders to be exposed by the provider by checking the required list entries.

- Default export location: this checkbox is unchecked by default. It allows you to define a single external content provider to serve as the default file export location. On save, a validation error is raised if the property is checked at more than one provider. Checking the checkbox enables the File export root folder. This property is not supported at Concrete5, Drupal, Magento and Salesforce providers.

- File export root folder: this property represents a root folder which will be used to store any generated file exports (if RPI is configured to export files to an external content provider). The property is enabled when Default export location is checked and is mandatory when enabled. The maximum supported value length is 100 characters. Note that no other validation is performed in respect of the value supplied. This property is not supported at Concrete5, Drupal, Magento and Salesforce providers.

- Default smart asset location: this checkbox is unchecked by default. It allows you to specify the default external content provider to be used when publishing local images used in smart assets for use in a realtime in outbound context. For information, please see the Smart Asset Designer documentation. When checked, the Smart asset image root folder property is displayed.

- Smart asset image root folder: this text property, which is mandatory when displayed, allows you to specify a default external folder to be used to host realtime in outbound smart asset content. The value provided can be a maximum of 100 characters in length.

6.12.3 Amazon Web Services S3

This section allows you to configure details of the AWS S3 external content provider selected currently in the grid.

It contains the following specific properties :

- Access key: provision of this property is mandatory.
- Secret key: provision of this property is also mandatory.
- Region endpoint: select the endpoint appropriate to your region using this dropdown property.
- CloudFront enabled: this checkbox is unchecked by default. If a bucket is configured appropriately at the AWS S3 repository, by checking this property you can ensure that content persisted therein is made available across the Amazon CloudFront content delivery network.
- Use KMS encryption: this checkbox is unchecked by default. It allows you to enable KMS encryption for files stored at the provider. Note that the storage of image files using KMS encryption will result in the images not being rendered properly.
- KMS encryption key: this mandatory password-masked field is only displayed when Use KMS encryption is checked. It accepts a maximum of 100 characters and allows you to specify the KMS encryption key used to encrypt and decrypt S3 files.

6.12.4 Selected Content Provider Details – SharePoint

This section allows you to configure details of the SharePoint external content provider selected currently in the grid. Note that the SharePoint external content provider does not support integration with Office 365 or SharePoint Online – please use the SharePoint Online external content provider for connection to these.

It contains the following specific properties:

- Server URL: provision of this property is mandatory.
- Site suffix: provision of this property is mandatory.
- Domain: this property is mandatory if Authentication mode is set to System user credentials, otherwise is hidden.
- Username: this property is mandatory if Authentication mode is set to System user credentials or Forms authentication, otherwise is hidden.
- Password: this property is mandatory if Authentication mode is set to System user credentials or Forms authentication, otherwise is hidden.
- Authentication mode: a dropdown field, listing the following values:
    - Current user credentials (the default value)
    - System user credentials
    - Forms authentication

6.12.5 Selected Content Provider Details – SharePoint Online

This section allows you to configure details of the SharePoint Online external content provider selected currently in the grid. This provider is used to connect to Office 365 SharePoint and SharePoint Online instances.

It contains the following:

- Server URL: this mandatory text property can be a maximum of 100 characters in length. It represents the SharePoint service's URL.
- Site suffix: this mandatory text property can be a maximum of 100 characters in length.
- Client ID: this mandatory property, which accepts a maximum of 100 characters, allows you to specify a client ID to be used to connect to SharePoint Online.
- Client secret: this mandatory, password-masked property, which accepts a maximum of 100 characters, allows you to specify a client secret to accompany the provided Client ID.

6.12.6 Selected Content Provider Details – Salesforce Marketing Cloud Portfolio

This section allows you to configure details of the Salesforce Marketing Cloud Portfolio external content provider selected currently in the grid.

It contains the following specific properties:

- API service: a dropdown field, exposing the following values:
  - Standard
  - S4 (the default)
  - S6
  - Custom
- Web service address: a mandatory text field that can be a maximum length of 256 characters. The field is read-only and set automatically when an API service other than Custom is selected. If a Custom API service is to be used, its address defaults to 'https://webservice.xxx.exacttarget.com/Service.asmx', and can be customized as required.
- Service username: provision of a username with which to connect to the Salesforce Marketing Cloud web service is mandatory. The value entered can be a maximum of 100 characters in length.
- Service password: provision of a password to accompany the service username is mandatory. The field is password-masked, and the value entered can be a maximum of 50 characters in length.
- SFTP host: a mandatory text field that can be a maximum length of 256 characters. The field is read-only and set automatically when an API service other than Custom is selected. If a Custom API service is to be used, SFTP host defaults to 'ftp.xxx.exacttarget.com', and can be customized as required.
- SFTP username: provision of a username with which to connect to the Salesforce Marketing Cloud FTP host is mandatory. The value entered can be a maximum of 100 characters in length.
- SFTP password: provision of a password to accompany the SFTP username is mandatory. The field is password-masked, and the value entered can be a maximum of 50 characters in length.

6.12.7 Selected Content Provider Details – FTP

This section allows you to configure details of the FTP external content provider selected currently in the grid.

It contains the following specific properties:

- Hostname: the name of the FTP server. A mandatory text field, Hostname can be a maximum of 256 characters in length.
- Port: a mandatory integer field that defaults to the value '21'.
- Username: this field is mandatory if the Log on anonymously field is unchecked and is disabled when it is checked (when it is set to the value 'Anonymous'). Username can be a maximum of 100 characters in length.
- Password: this field is mandatory if the Log on anonymously field is unchecked and is empty and disabled when it is checked. Password can be a maximum of 50 characters in length.
- Protocol: this dropdown exposes the following values:
    - SFTP (the default)
    - FTP
    - FTPS
- Encryption type: this dropdown property exposes the following values:
    - None (the default)
    - Explicit
    - Implicit

  It is enabled when Protocol is set to one of 'FTP' or 'FTPS', and allows you to specify the encryption type to be used when connecting to the FTP/FTPS server.
- Log on anonymously: a checkbox, unchecked by default. The checkbox is enabled when the Use basic FTP checkbox is checked. When Log on anonymously is checked, Username and Password are disabled, with the former property being set to the value 'Anonymous'.
- Root folder path: a mandatory field that can be a maximum of 4096 characters in length.
- Public URL: a mandatory field that can be a maximum of 4096 characters in length. You may need to specify the URL's protocol (e.g. 'http') in this context.

6.12.8 Selected Content Provider Details – Drupal

This section allows you to configure details of the Drupal external content provider selected currently in the grid.

It contains the following specific properties:

- Server URL: a mandatory field, which can be a maximum of 4096 characters in length.
- Username: a mandatory field, which can be a maximum of 50 characters in length.
- Password: a masked mandatory field, which can be a maximum of 100 characters in length.
- Service name: a mandatory field, which can be a maximum of 50 characters in length.
- Public folder: a mandatory field, which can be a maximum of 500 characters in length.

6.12.9 Selected Content Provider Details – Umbraco

This section allows you to configure details of the Umbraco external content provider selected currently in the grid.

It contains the following specific properties:

- Server URL: a mandatory field, which can be a maximum of 4096 characters in length.
- Username: a mandatory field, which can be a maximum of 50 characters in length.
- Password: a masked mandatory field, which can be a maximum of 100 characters in length.

6.12.10 Selected Content Provider Details – Google Drive

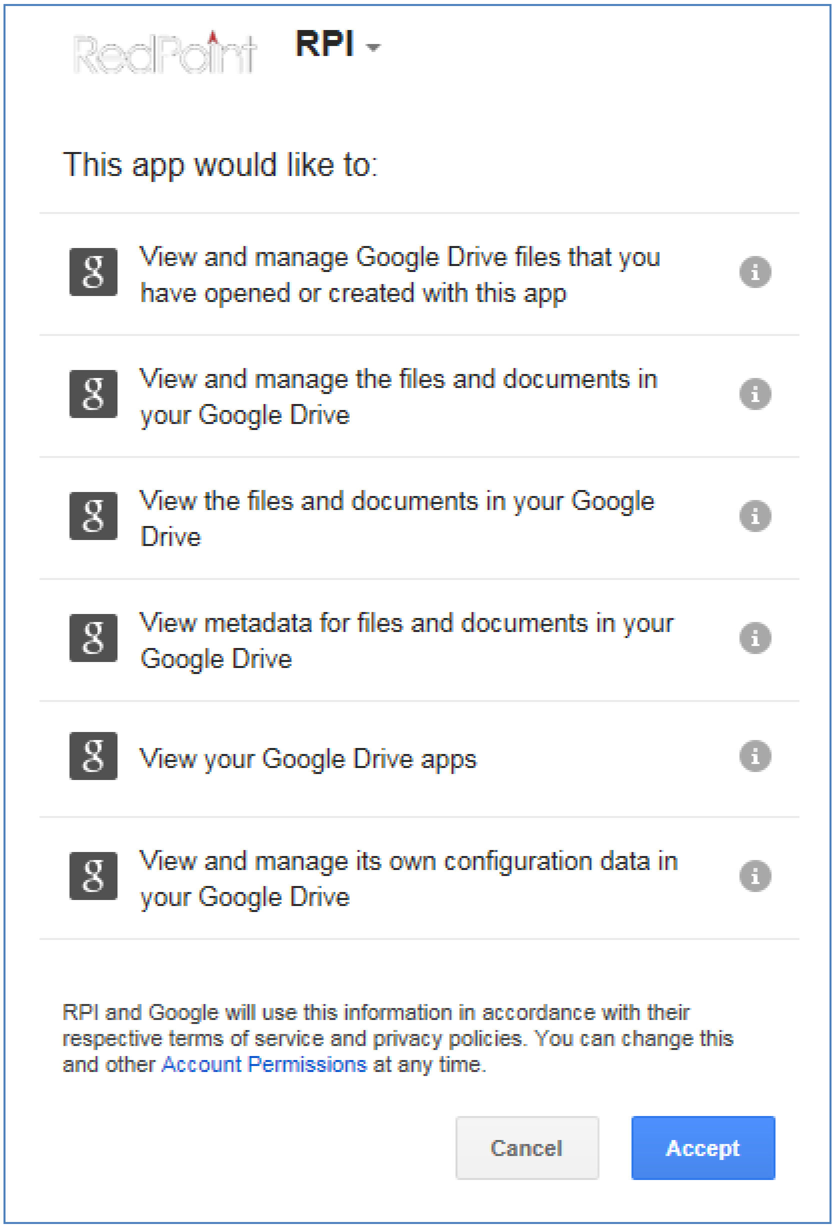
This section allows you to configure details of the Google Drive external content provider selected currently in the grid.

It contains the following updateable fields:

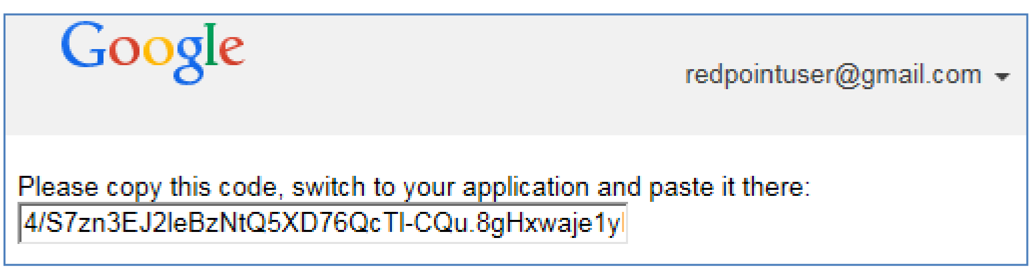
- Client ID: this property is mandatory and can be a maximum of 1024 characters in length.
- Client secret: this property is mandatory and can be a maximum of 256 characters in length.
- API key: this property is mandatory and can be a maximum of 256 characters in length.
- Authorization: you must authorize a Google Drive external content provider before it can be saved.

  A 'Click here…' button is enabled on provision of a Client ID, Client secret and API key. Clicking it displays a web browser panel.

  Having logged into Google, you are asked to confirm RPI's requests to undertake a series of activities.



Click Accept to proceed. At the next interface, a code is provided.



Copy the code and click Close Browser.

On returning to RPI, a Code field is displayed at the property. Paste the copied code into the field and click the Submit button. The Google Drive provider will then have been successfully authorized.

6.12.11 Selected Content Provider Details – Google Cloud Storage

This section allows you to configure details of the Google Cloud Storage external content provider selected currently in the grid.

It contains the following:

- Project ID: this mandatory text field accepts a maximum of 100 characters. It represents the unique ID of the Google Cloud Storage project.
- Client ID: this mandatory text field accepts a maximum of 200 characters. It represents the client ID that will be used when making OAuth 2.0 access token requests.
- Client secret: this mandatory, password-masked field accepts a maximum of 100 characters, and is used in conjunction with Client ID.
- API key: this mandatory text field accepts a maximum of 100 characters. The property identifies the application trying to access public data from Cloud Storage. It also enforces additional application and API security not provided by Client ID & Secret.
- Redirect URI: this mandatory text field accepts a maximum of 200 characters. It represents the authorized redirect URI associated with the Client ID.
- Authorization: the external content provider must be authorized by Google before it can be used.

6.12.12 Selected Content Provider Details – OneDrive

This section allows you to configure details of the OneDrive external content provider selected currently in the grid.

It contains the following specific properties:

- Client ID: this property is mandatory and can be a maximum of 1024 characters in length.
- Client secret: this property is mandatory and can be a maximum of 256 characters in length.
- Redirect URI: this property is mandatory and can be a maximum of 1000 characters in length. Provision of a valid URI is required to complete the authorization process.
- Authorization: you must authorize a OneDrive external content provider before it can be saved.

  A 'Click here…' button is enabled on provision of a Client ID, Client secret and Redirect URI. Clicking it displays your default web browser. Provide your Microsoft account credentials, and click Sign in. Having successfully signed in, the provider will be authorized.

6.12.13 Selected Content Provider Details – Concrete5

This section allows you to configure details of the Concrete5 external content provider selected currently in the grid. Note that only connections to Concrete5.6.3.2 and lower are currently supported.

It contains the following updateable fields:

- Username: a mandatory field, which can be a maximum of 50 characters in length.
- Password: a masked mandatory field, which can be a maximum of 50 characters in length.
- Server URL: a mandatory field, which can be a maximum of 4096 characters in length.

6.12.14 Selected Content Provider Details – Magento

This section allows you to configure details of the Magento external content provider selected currently in the grid.

It contains the following updateable fields:

- Consumer key: this mandatory text property represents the consumer key used to connect to the Magento web service. It accepts a maximum length of 100 characters.
- Consumer secret: this mandatory, password-masked property is used in conjunction with Consumer key when connecting to the Magento web service. It also accepts a maximum length of 100 characters.
- Server URL: a mandatory field, which can be a maximum of 4096 characters in length.
- Callback URL: this mandatory text property allows you to specify the Magento web service callback URL. It accepts a maximum length of 1000 characters.
- Authorization: the Magento provider must be authorized before use.

  When not authorized, 'The connection to Magento is not authorized' is shown, and a Click here to authorize RedPoint Interaction button is displayed. The button is enabled when all mandatory fields and well-formed Server and Callback URLs are provided.

  Clicking the button sets the provider's authorization status to 'Waiting authorization', launches the web browser, and opens Magento the admin authentication page, in which you can enter your credentials. After successful authentication, copy the URL from the browser, as it will be required at the Verification URL property.

  When the provider is Waiting authorization, a Verification URL text property is shown. You can enter the aforementioned URL at the same and click the accompanying Get access token button.

  Clicking the button processes the URL to get an access token, and sets the provider's authorization status to 'Authorized'.

  After authorization, you can click the Click here to reset the authorization token button to reset the authorization status to 'Not authorized'.

6.12.15 Selected Content Provider Details – Razuna

This section allows you to configure details of the Razuna external content provider selected currently in the grid.

It contains the following updateable fields:

- Server URL: a mandatory field, which can be a maximum of 4096 characters in length.
- API Key: a mandatory field, which can be a maximum of 50 characters in length.
- Host ID: a mandatory field, which can be a maximum of 5 characters in length. When Host ID is changed, a warning message is displayed, advising that the Razuna server must be restarted for changes to take effect.

6.12.16 Selected Content Provider Details – WebDAV

This section allows you to configure details of an external content provider that supports the WebDAV standard.

It contains the following updateable fields:

- Username: a mandatory field, which can be a maximum of 50 characters in length.
- Password: a mandatory, password-masked field, which can be a maximum of 50 characters in length.
- Server URL: a mandatory field, which can be a maximum of 4096 characters in length.

6.12.17 Selected Content Provider Details – Azure Storage

This section allows you to configure details of the Azure Storage external content provider selected currently in the grid.

It contains the following updateable fields:

- Access key: this mandatory property can be a maximum length of 4096 characters and represents a unique access key that is used to connect to the provider.
- Storage account: this mandatory property can be a maximum length of 50 characters and represents the account name used to connect to the provider.
- Enable CDN: this checkbox is unchecked by default. When checked, the Blob service endpoint and CDN endpoint fields are enabled. It allows you to specify that the provider should make use of the Azure CDN (content delivery network). Note that any previously-embedded content is unaffected by the setting of this property.
- Blob service endpoint: this text property is enabled when Enable CDN is checked. It is mandatory when enabled. It accepts a maximum of 1000 characters. It represents the storage account's primary blob service endpoint, from which the CDN will pull content.
- CDN endpoint: this text property is enabled when Enable CDN is checked. It is mandatory when enabled. It accepts a maximum of 1000 characters. It represents the hostname of the CDN profile endpoint to be used by the provider.

Should you wish to switch on CDN support at an existing Azure storage provider, you should make sure to refresh its root folder at the File System Dialog before using any external content persisted at the provider to build RPI content.

6.12.18 Selected Content Provider Details – WebDAM

This section allows you to configure details of the WebDAM external content provider selected currently in the grid.

It contains the following updateable fields:

- Client ID: this mandatory text property represents the Client ID used to connect to a WebDAM repository. It can be a maximum of 4096 characters in length.
- Client secret: this mandatory property is used in conjunction with Client ID to establish a connection to a WebDAM repository. It can be a maximum of 4096 characters in length.
- Subdomain: this mandatory property can be a maximum of 100 characters in length.
- Username: credentials to be used when connecting to WebDAM. Username is mandatory and can be a maximum of 50 characters long.
- Password: this mandatory masked field accompanies Username and can be a maximum of 100 characters in length.

6.12.19 Selected Content Provider Details – Box

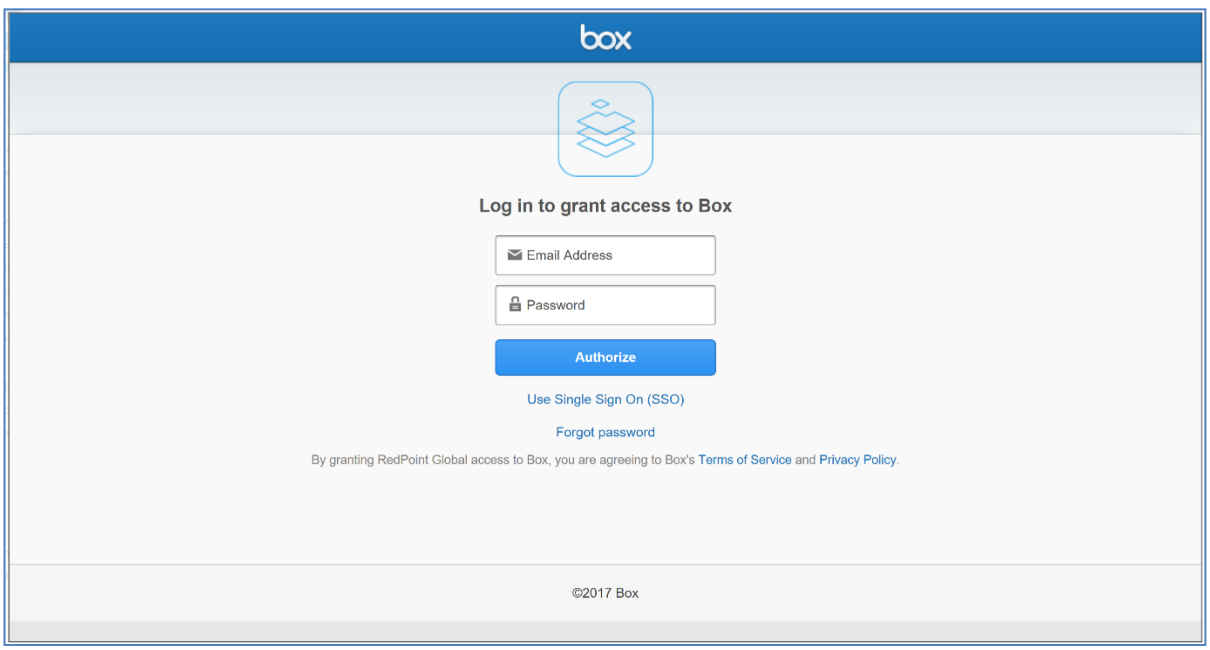
This section allows you to configure details of the Box external content provider selected currently in the grid.

It contains the following updateable fields:

- Client ID: this mandatory text field supports a maximum length of 1024 characters. It represents the client ID that will be used when making an access token request to Box.
- Client secret: this mandatory, password-masked field supports a maximum length of 256 characters. It is used in conjunction with Client ID when making an access token request to Box.
- Redirect URI: this mandatory text field supports a maximum length of 1000 characters. It is used to capture the URL used when authorizing the content provider.
- Authorization: you must authorize a Box external content provider before it can be saved.

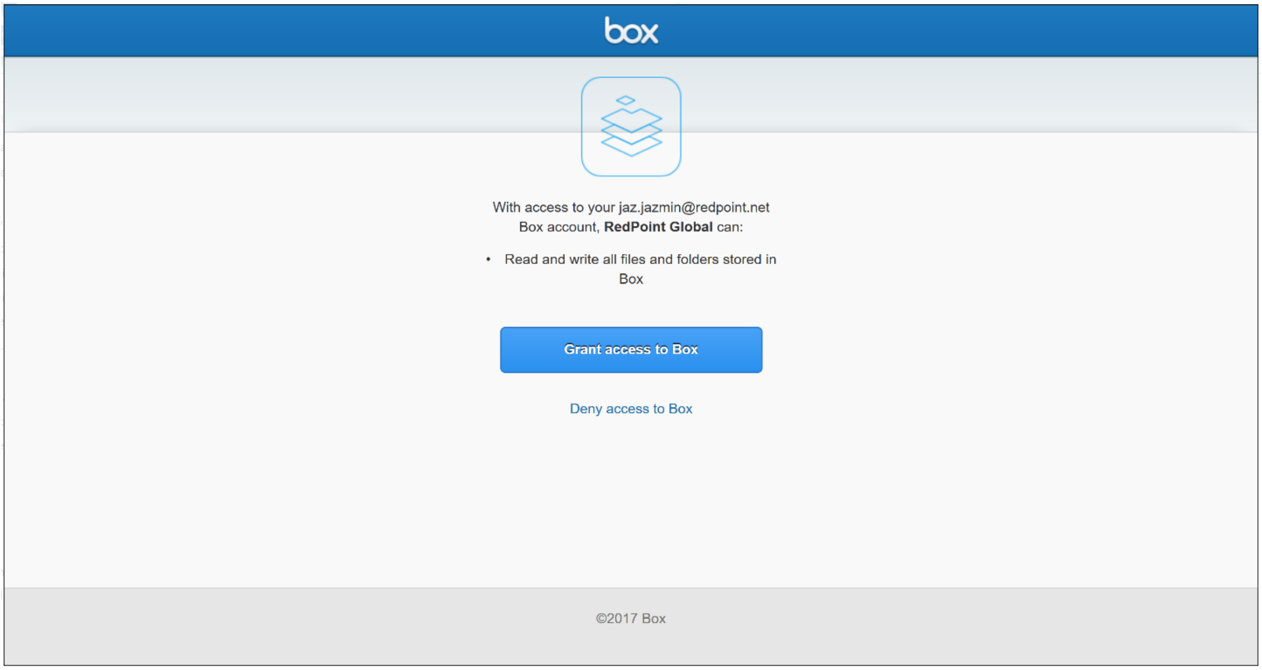
  A 'Click here…' button is enabled on provision of a Client ID, Client secret and Redirect URI. Clicking it displays your default web browser.

  Start the authorization process by logging into Box:

  Enter your registered email address and password and click Authorize.

Having logged into Box, you are asked to confirm the activities undertaken therein by RPI:



Click Grant access to Box. A redirect URI will be displayed. Copy this value and return to RPI, where a Verification URL property will now be shown. Paste in the copied and click the Get access token button. The Box ECP will now be authorized.

If required, you can click the 'Click here…' button to reset the authorization token.

6.12.20 Selected Content Provider Details – Cloudinary

This section allows you to configure details of the Cloudinary external content provider selected currently in the grid.

It contains the following updateable fields:

- Service URL: this mandatory text property can be a maximum of 4096 characters in length. It allows you to specify the API service URL used to connect to the Cloudinary service.
- Cloud name: this mandatory text property can be a maximum of 1024 characters in length. It represents the name of the Cloudinary account to use.
- API key: this mandatory text property can be a maximum of 100 characters in length. It represents the API key used to connect to the Cloudinary service.
- API secret: this mandatory, password-masked field accepts a maximum of 100 characters and accompanies API key.

6.12.21 Selected Content Provider Details – Contentful

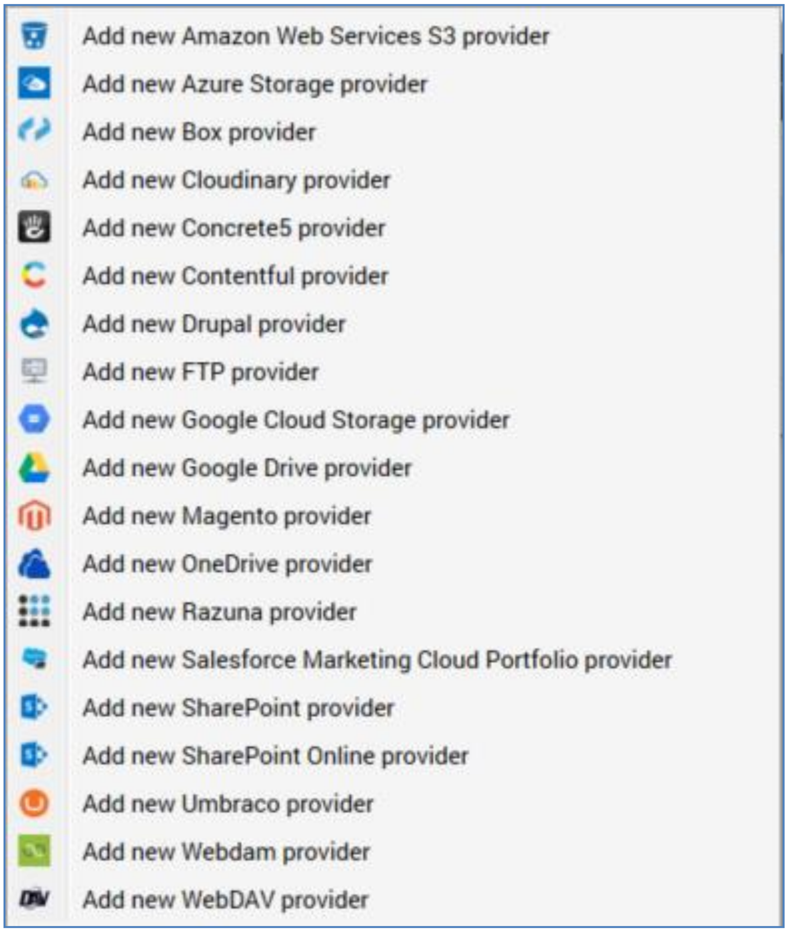
This section allows you to configure details of the Contentful external content provider selected currently in the grid.

It contains the following updateable fields:

- Access token: this mandatory password-masked text property accepts a maximum of 100 characters. It represents the personal access token used to connect to a Contentful space.
- Space ID: this mandatory text property accepts a maximum of 50 characters. It represents the ID of the Contentful space to be used.

6.12.22 Create New External Content Provider

Invocation of Create new External Content Provider at the Configuration Workbench toolbar displays a submenu, allowing you to select the type of provider to create:

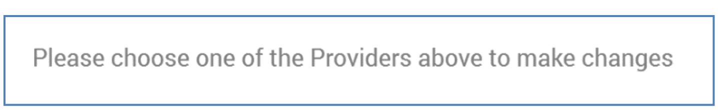


Upon selecting an option, a new provider is added to the grid, and placed in an appropriate alphabetical position. Its Name is 'New [External Content Provider Type] Provider'. An incrementing integer can be appended to the default name to ensure uniqueness.

All of a new provider's properties, other than its Name, are blank, and its State is Added. The new provider is selected automatically.

6.12.23 Configure Existing External Content Provider

This is carried out in the simple fields in the Selected Content Provider Details section, by selecting an existing provider. If multiple providers are selected, a message is displayed:



If you make changes to a provider that has been saved previously, its State is set to Edited.

6.12.24 Delete Selected External Content Providers

This is carried out in the toolbar. A deleted provider's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row. You can delete multiple providers concurrently.

6.12.25 Save Changes to External Content Providers

Save is carried out using the Save changes to External Content Providers toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, providers are displayed in alphabetical order. All providers' states are updated to Unchanged. Any deleted providers are removed from display.

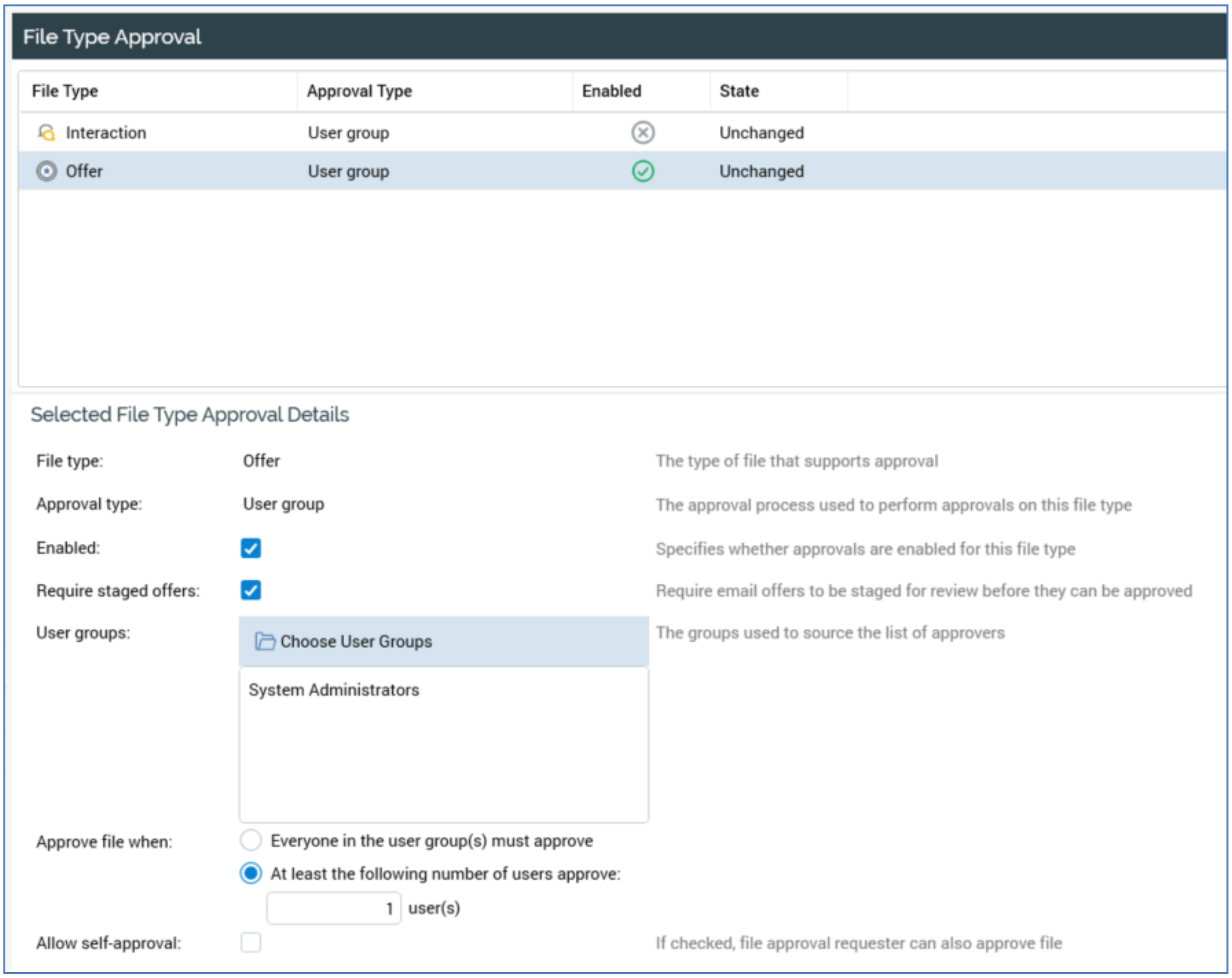
6.12.26 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.13 Configuring File Type Approval

RPI currently supports approvals for two types of file: interactions and offers. When interaction approval is enabled, an interaction must meet the approval criteria defined for its file type before it can be executed in production mode. When offer approval is enabled, when an offer is executed in a production interaction, an approved version thereof must exist.

Enabling and disabling of interaction and offer approval, and definition of the approval criteria for each file type, is carried out in the File Type Approval configuration interface.



The interface contains the following:

6.13.1 File Types Grid

The file types that support approval are listed in alphabetical order.

File Type	Approval Type	Enabled	State
Interaction	User group		Unchanged
Offer	User group		Unchanged

The following file types support approval:

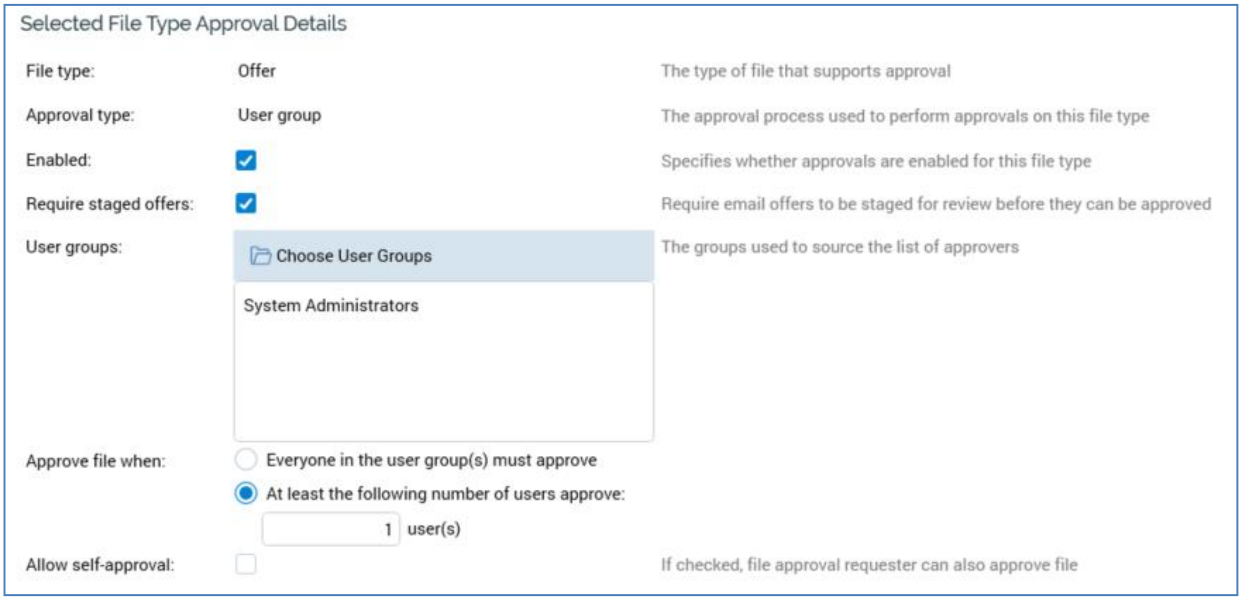
- Interaction
- Offer

The following read-only columns are shown in the grid:

- File Type: one of Interaction or Offer. Each is accompanied by an icon.
- Approval Type: set to 'User group' (currently the only supported approval type, in which a user's ability to approve files is controlled by his or her user group membership).
- Enabled: this flag indicates whether approval is supported for the file type; if enabled, a tick is shown, if disabled, a cross.
- State: one of Unchanged or Edited.

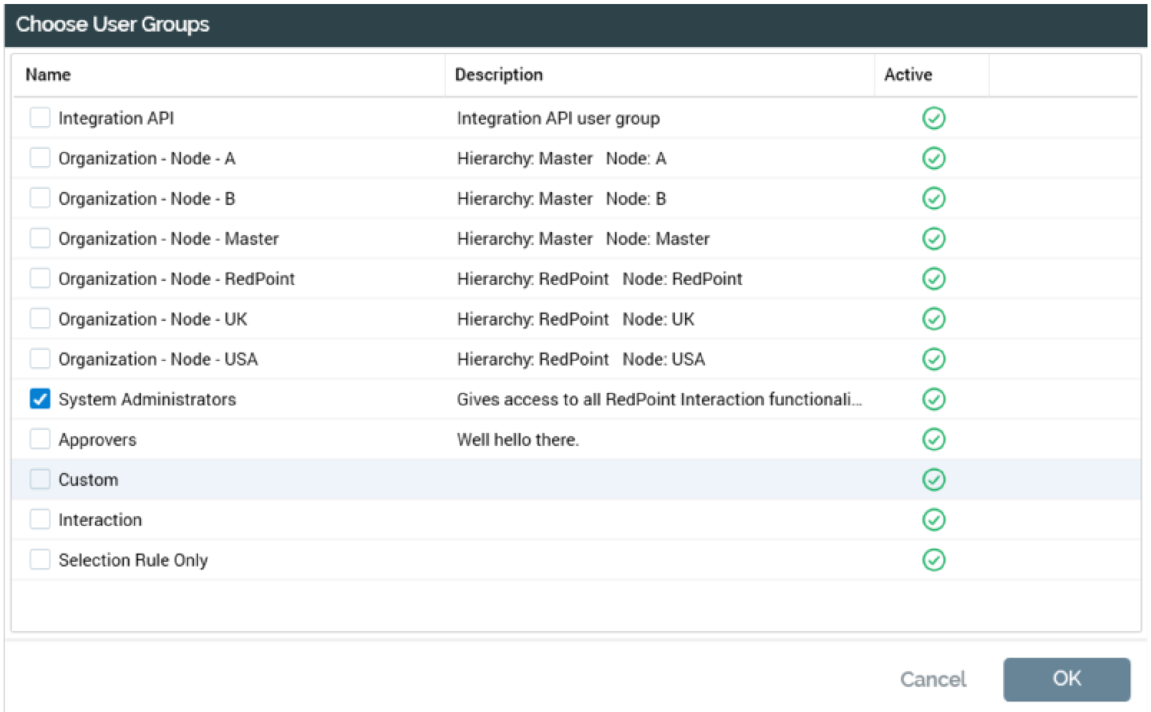
6.13.2 Selected File Type Approval Details

This section allows to you to manage approval for the file type selected in the grid.



The following properties are shown:

- File type: read-only; one of 'Interaction' or 'Offer'.
- Approval type: read-only and set to 'User group'
- Enabled: a checkbox, unchecked by default. Checking this property enables approval for the file type.
- Require staged offers: this checkbox is only displayed for Offer file type approval. It is unchecked by default. If checked, email offers will need to be staged for review before being approved. For more information, please see the Offer Designer documentation.
- User groups: lists the user groups associated with the file type's approval. In order to be recognized as an approver for the selected file type, a user must be a member of at least one of the listed groups, as well as being associated with the File System – Approve File functional permission. The list exposes a toolbar with a single option:
    - Choose User Groups: invocation displays the Choose User Groups dialog.



The dialog allows you to select the user groups to associate with approval of the current file type.

A Remove button is shown when you hover over a user group in the list. Clicking it removes the user group from list; an 'Are You Sure?' dialog is not shown. Note that at least one user group must be present in the list if approval is enabled for the current file type. In addition, any selected user groups must be associated with at least one user. However, a validation error is not raised if none of the selected user groups is associated with the File System – Approve File functional permission; this validation is carried out when file approval is requested.

- Approve file when: the radio buttons that appear alongside this property allow you to define the file type's approval criteria. Two radio buttons are shown:

  - Everyone in the user group(s) must approve: by default, this radio button is unselected. If selected, for approval of a file of the current file type to be granted, all users in all of the associated user groups must grant approval.

  - At least the following number of users approve: this radio button is selected by default. It allows you to specify a minimum number of users, from the pool defined by the associated user groups, who must grant approval in order for a file of the current file type to be approved.

    When selected, the accompanying user(s) field is enabled.

- users(s): this integer field, with a minimum value of 1, is mandatory when enabled. It allows you to define a minimum number of users who must grant approval in order for a file of the current file type to be approved.

- Allow self-approval: in an organization with a small user community, where file approval is enabled, there may arise a situation where an approver user is not available to perform an urgent file approval.

  To alleviate this problem, the Allow self-approval checkbox (unchecked by default), facilitates, on a file type-by-file type basis, an approval-requesting user to also serve as approver for the same file (note that he user in question must be a member of a user group associated with the Approve File functional permission). This prevents having to wait for the approver to become available, or inappropriate sharing of login credentials. Note that it is incumbent on the organization's business processes to ensure appropriate use of this option.

6.13.3 Save File Type Approval Changes

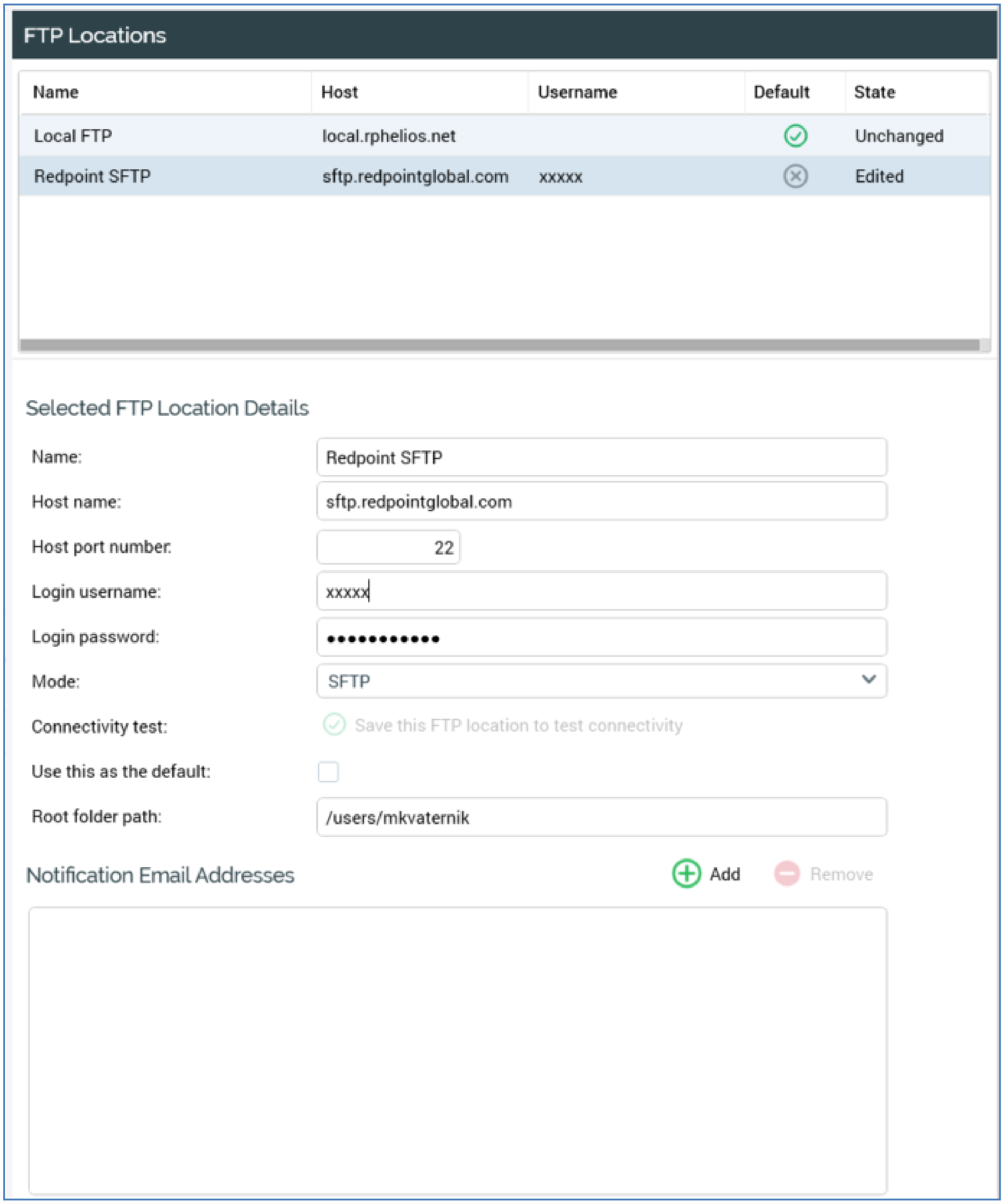
Saving file approval changes is carried out using the Save toolbar button. When invoked, the changes you have made are validated. Any validation errors are advised in a dialog. You are not able to proceed with Save until you have resolved them. Following a successful save, file type approvals are displayed in alphabetical order. All file types' States are updated to Unchanged.

6.13.4 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.14 Configuring FTP Locations

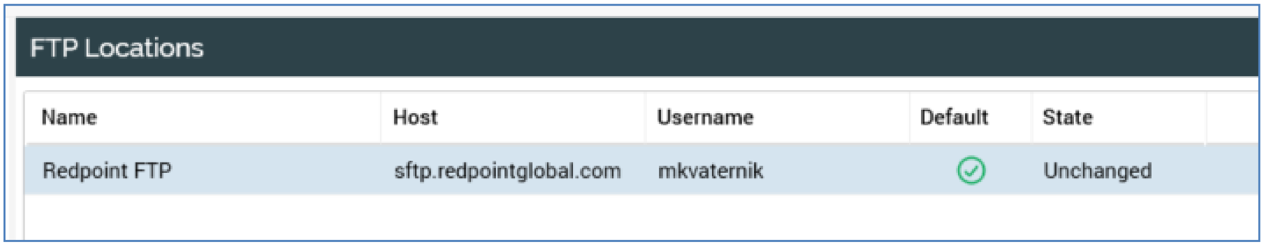
FTP locations are used when configuring data extract channels and interaction export activities. Configuration of FTP locations is carried out in the FTP Locations configuration interface.



The interface contains the following elements:

6.14.1 FTP Locations

A grid lists all existing FTP locations, which are presented in alphabetical order.

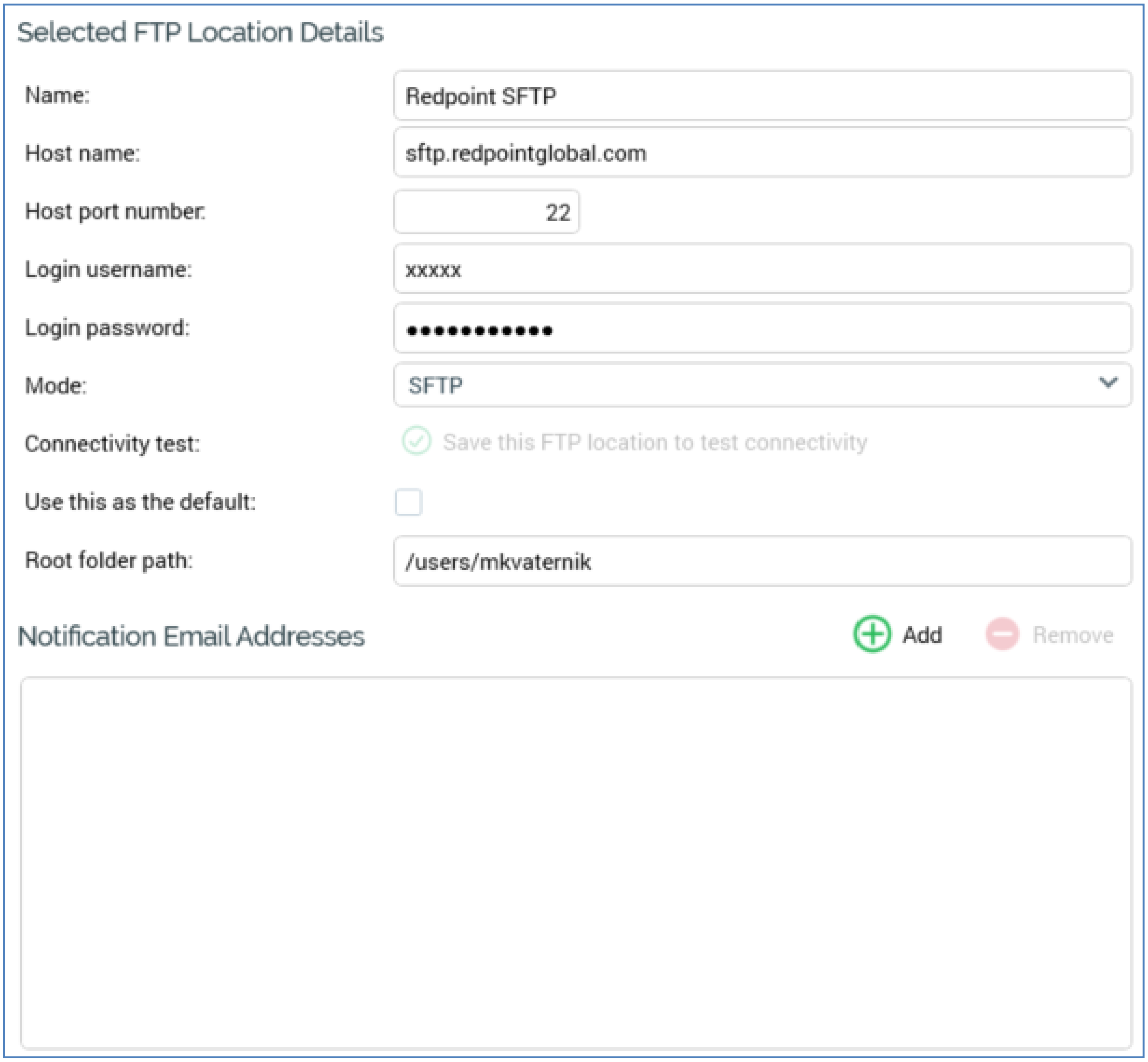


Within the grid, the following read-only columns are displayed:

- Name
- Host
- Username
- Default
- State

6.14.2 Selected FTP Location Details

This section allows you to configure details of the FTP location selected currently in the grid.



The Selected FTP Location Details section contains the following updateable fields:

- Name: a mandatory field that may be a maximum length of 100 characters. Name must be unique across all FTP locations.
- Host name: a mandatory field that may be a maximum length of 100 characters
- Host port number: this property is optional. It defaults to a blank value. You can stipulate that the FTP location use a specific host port number by providing an integer between 1 and 9999.
- Login username: a mandatory field that may be a maximum length of 100 characters

- Login password: a mandatory field that may be a maximum length of 100 characters. Login password is encrypted when stored.
- Mode: this dropdown field exposes the following values:
  - SFTP (the default)
  - FTP/FTPS

  Note that an unsecured FTP connection can only be used to access output files if running the RPI client application on the same machine as the server.
- Connectivity test: accompanied by a Create new job to test this FTP location button, which is only available when no outstanding FTP location changes exist.

  Clicking the button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.
- Use this as the default: a checkbox, unchecked by default. It is only possible to select a single default FTP location.
- Root folder path: an optional string property, which accepts a maximum value length of 1000 characters.
- Notification email addresses: you can optionally specify one or more email addresses to which an alert email will be sent on upload of a file to the FTP site. The Notification email addresses property consists of a toolbar and a list of email addresses.

  The toolbar exposes the following options:
  - Add: invocation adds a new, unconfigured email address to the list.
  - Remove: this option is available when an email address is selected. Invocation removes the selected email address from the list.

  Within the list of email addresses, it is mandatory to provide a unique email address, with a maximum length of 100 characters, for every entry.

  When one or more email addresses is provided, an alert email is sent on upload of a file to the FTP site during rule export or production export/data extract offer activity execution. One email is sent to each address per file. Alerts are not sent at FTP upload of a sample or summary file at export/data extract offer execution.

  The alert email contains the following:
  - Title: 'File uploaded to FTP location'
  - Message body:

'The following file has been uploaded via FTP from RPI.'

In a border:

- FTP Location
- User Name
- File Name
- Folder

'You are receiving this email because you are currently registered to receive FTP upload notifications. To stop receiving these notifications, please contact your RPI system administrator.'

6.14.3 Create New FTP Location

This is carried out in the toolbar. Invocation of this option adds a new FTP location to the grid. Its name is 'New Location' (if a location with that name already exists, an integer is appended and can be incremented if required)). Its State is Added. The new FTP location is selected automatically.

6.14.4 Configure Existing FTP Location

This is carried out in the simple fields in the Selected FTP Location Details section, by selecting a single existing FTP location. If you configure an FTP location that has been saved previously, its State is set to Edited.

6.14.5 Delete Selected FTP Locations

This is carried out in the toolbar. If you delete an FTP location that has been saved previously, its State is set to Deleted, and its row's text color set to red. You may no longer select a deleted row. If you delete a location that is yet to be saved, it is removed from display. You can delete multiple FTP locations concurrently. Delete is not protected by an 'Are You Sure?' dialog.

Note that, if you attempt to delete an FTP location in use in another context (e.g. by a Data Extract channel), a Validation Issues dialog will be presented at Save, and you will not be able to proceed with the deletion.

6.14.6 Save Changes to FTP Locations

Save is carried out using the Save changes to FTP Locations toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

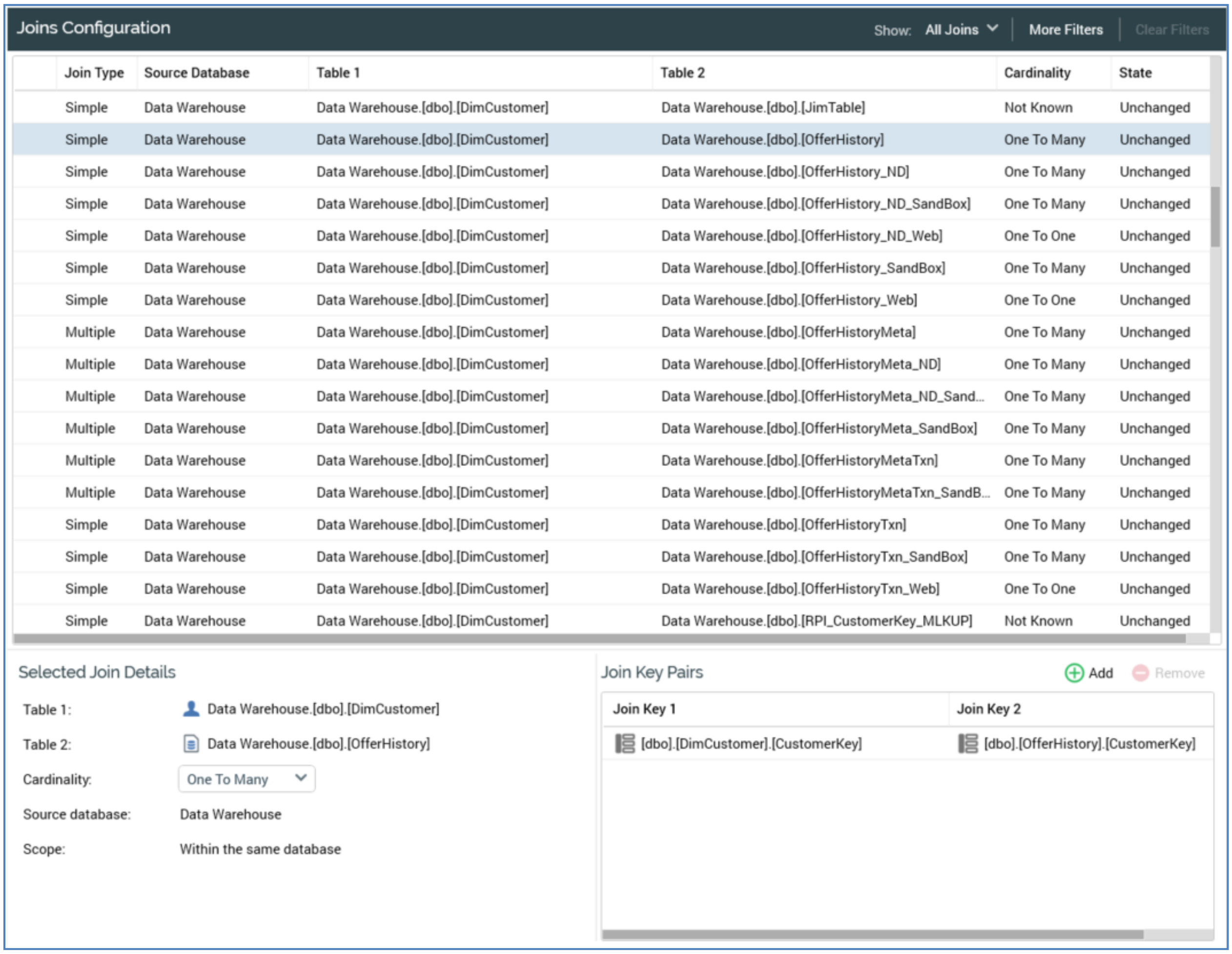
Following a successful save, FTP locations are displayed in alphabetical order. All locations' states are updated to Unchanged. Any deleted FTP locations are removed from display.

6.14.7 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.15 Configuring Joins

An RPI join defines how two database tables in the data warehouse and/or an auxiliary database are related to one another. Configuration of RPI joins is carried out in the Joins configuration interface.



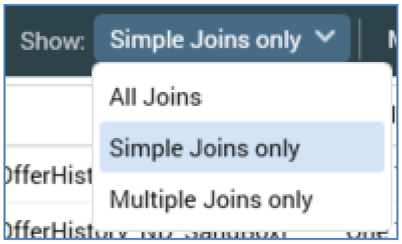
The interface contains:

6.15.1 Filter Toolbar

A toolbar above the joins list allows you to filter its contents.

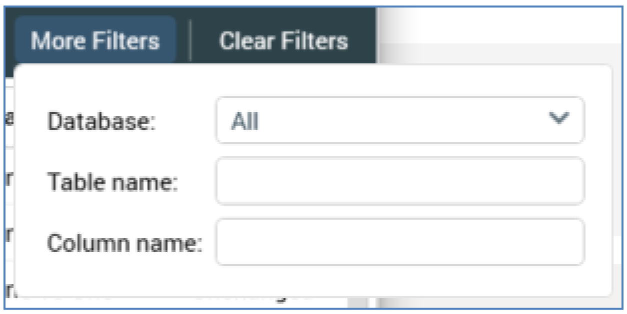
The following filter options are available:

- Show: this dropdown exposes the following values:



It allows you to filter the list to display only joins of the selected type.

- More Filters: this toggle button controls the display of a dialog:



The following additional filters are available:

- Database: this dropdown exposes the following values:
  - All (the default)
  - Data Warehouse
  - [For each configured auxiliary database: Auxiliary Database Name]

  It allows you to filter the list to display only joins with a Source Database property that matches the selected value.

- Table name: this property allows you to filter the list to show only joins including a table with the supplied string value in its name.

- Column name: this property allows you to filter the list to show only joins including a column with the supplied string value in its name.

Having specified a filter, it is applied automatically. Selection of more than one filter applies the results of all thereof cumulatively.

When Table and/or Column name is/are provided, only simple joins containing tables and/or columns matching the filters supplied, or multiple joins containing such simple joins, are listed. If you provide a Table name and a Column name filter, only joins containing tables that match the Table name filter and join key columns that match the Column name filter, are shown.

Note that multiple joins are not displayed if a Column name filter is applied.

- Clear Filters: clicking this button clears any applied filter criteria and redisplays all of the joins. It is only enabled when one or more filters has been applied.

Note that any column sortation applied will be preserved when joins are filtered.

6.15.2 Joins List

A list of all existing joins is displayed.

Join Type	Source Database	Table 1	Table 2	Cardinality	State
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistory_ND]	One To Many	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistory_ND_SandBox]	One To Many	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistory_ND_Web]	One To One	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistory_SandBox]	One To Many	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistory_Web]	One To One	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistoryTxn]	One To Many	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistoryTxn_SandBox]	One To Many	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[OfferHistoryTxn_Web]	One To One	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[RPI_CustomerKey_MLKUP]	Not Known	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[Suppression_Email]	Many To One	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimCustomer]	Data Warehouse.[dbo].[Suppression_SMS]	Many To One	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimDepartmentGroup]	Data Warehouse.[dbo].[FactFinance]	Not Known	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimEmployee]	Data Warehouse.[dbo].[FactResellerSales]	Not Known	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimEmployee]	Data Warehouse.[dbo].[FactSalesQuota]	Not Known	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimGeography]	Data Warehouse.[dbo].[DimCustomer]	Not Known	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimGeography]	Data Warehouse.[dbo].[DimReseller]	Not Known	Unchanged
Simple	Data Warehouse	Data Warehouse.[dbo].[DimOrganization]	Data Warehouse.[dbo].[FactFinance]	Not Known	Unchanged

The following read-only columns are shown:

- Add this Join to the current Multiple Join's list of Simple Joins: this button is only displayed against simple joins, and only when a multiple join is selected. The button allows you to add a simple join to the current multiple join's joins list.
- Join type: one of Simple or Multiple.
- Source database: if the current join is not cross-database, this property displays the name of database from which the join's tables are sourced. If a cross-database join, it displays the auxiliary database's name
- Table 1: the first table to be joined. When one or more auxiliary databases have been configured at the current RPI client, table names are qualified with the database to which they belong.
- Table 2: the second table to be joined. When one or more auxiliary databases have been configured at the current RPI client, table names are qualified with the database to which they belong.
- Cardinality
- State: one of Unchanged, Added, Edited or Deleted.

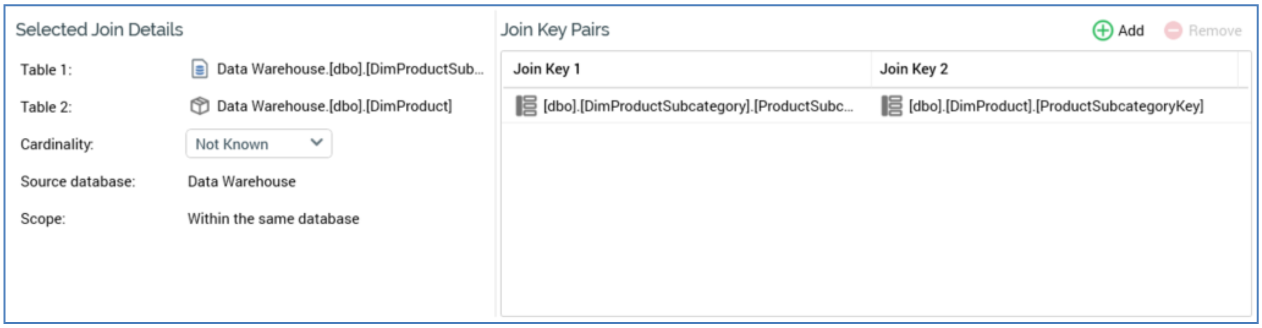
You can click on a column header to order the list of joins in accordance with that column's values (clicking on the initial column has the effect of sorting by Join Type).

6.15.3 Selected Join Details

Join configuration is carried out in this section, the contents of which differ in accordance with the type of join selected. Simple joins and Multiple Joins are discussed separately.

6.15.4 Simple Join

If the join is a simple join, the following fields are displayed:



- Table 1 and Table 2: both populated by selecting a recently-used table, or by using the Choose Database Item dialog.

  A Filter field is provided at the top of the interface, which allows you to enter characters to limit the items displayed in the list to only those with names containing the supplied string.

  If one or more auxiliary databases has been configured at the current RPI client, the Choose Database section is displayed. This allows you to specify the context from which databases will be listed. Databases that do not support joins (currently only Cassandra) are not listed.

  Choose Database is not shown if no auxiliary databases have been configured at the current RPI client.

  All tables from the selected context are shown. You must select both Table 1 and Table 2. Tables 1 and 2 must be different.

  You can select tables from within a single database, or you can select a data warehouse and auxiliary table to create a join between databases.

  When one or more auxiliary databases have been configured at the current RPI client, table names are qualified with the database to which they belong.

  Changing a table removes all existing join keys from the Join key details grid (it is therefore necessary to specify the join's tables before its join key pair(s)).

  Note that, when creating a cross-database join to an anonymous auxiliary database, you can join to a suppression table only.

- Cardinality: this property is only enabled for simple joins and is disabled for multiple joins. A simple join's cardinality defines the relationship between records in one of the join's tables and records in the other…for example, Customer and Orders tables might have a One to Many cardinality (a given customer might have several orders). Cardinality is set using a dropdown that exposes the following values:

  - Not Known (the default value)
  - One to One
  - One to Many
  - Many to One
  - Many to Many

  Cardinality is used during the execution of selection rules, audiences and fulfillment activities. An incorrectly-set join cardinality can result in a failure at audience execution (e.g. when Customer to Order is defined as Many to One).

- Source database: if the current join is not cross-database, this read-only property displays the name of database from which the join's tables are sourced. If a cross-database join, it displays the auxiliary database's name

- Scope: this read-only property is set on selection of both Table 1 and 2, and provides an indication of the nature of the join, being set to one of two values:

  - Within the same database
  - From auxiliary database to data warehouse

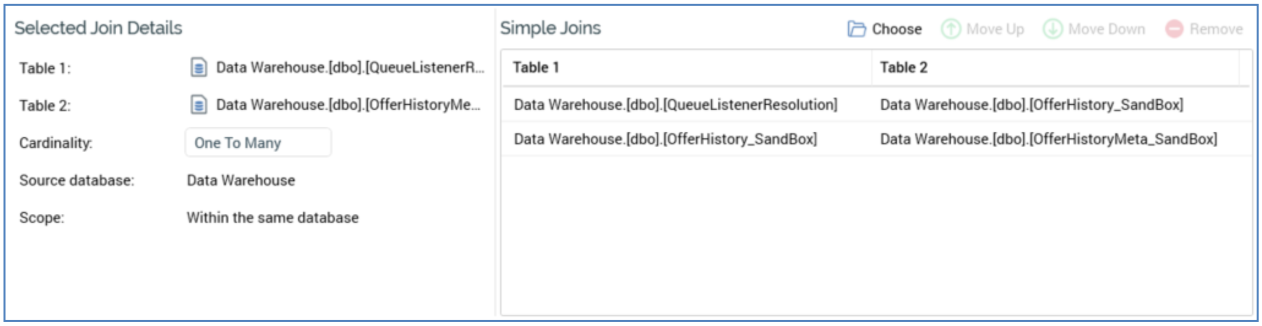
- Join Key Pairs: a separate grid listing existing join key pairs. It contains two columns (Join keys 1 and 2).

  A new join key pair is added automatically upon selection of Table 1 and Table 2. Table 1's Join key is set to the table's primary key. If no primary key exists, the first column (alphabetically) is selected instead. Table 2's Join key is set to the same column name as Table 1's (if it exists), else to its primary key, or the first column (alphabetically) in the absence of a primary key.

  You can also add a new join key pair manually. The new join key pair's Join keys 1 and 2 default to the first columns (alphabetically) in the respective tables. You can also configure an existing join key pair. Again, the Choose Database Item dialog is used to specify columns (this time it lists only columns from the relevant table). You can remove one or more existing join key pairs. Finally, at least one join key pair must be specified.

6.15.5 Multiple Join

If the join is a multiple join, the following is displayed:



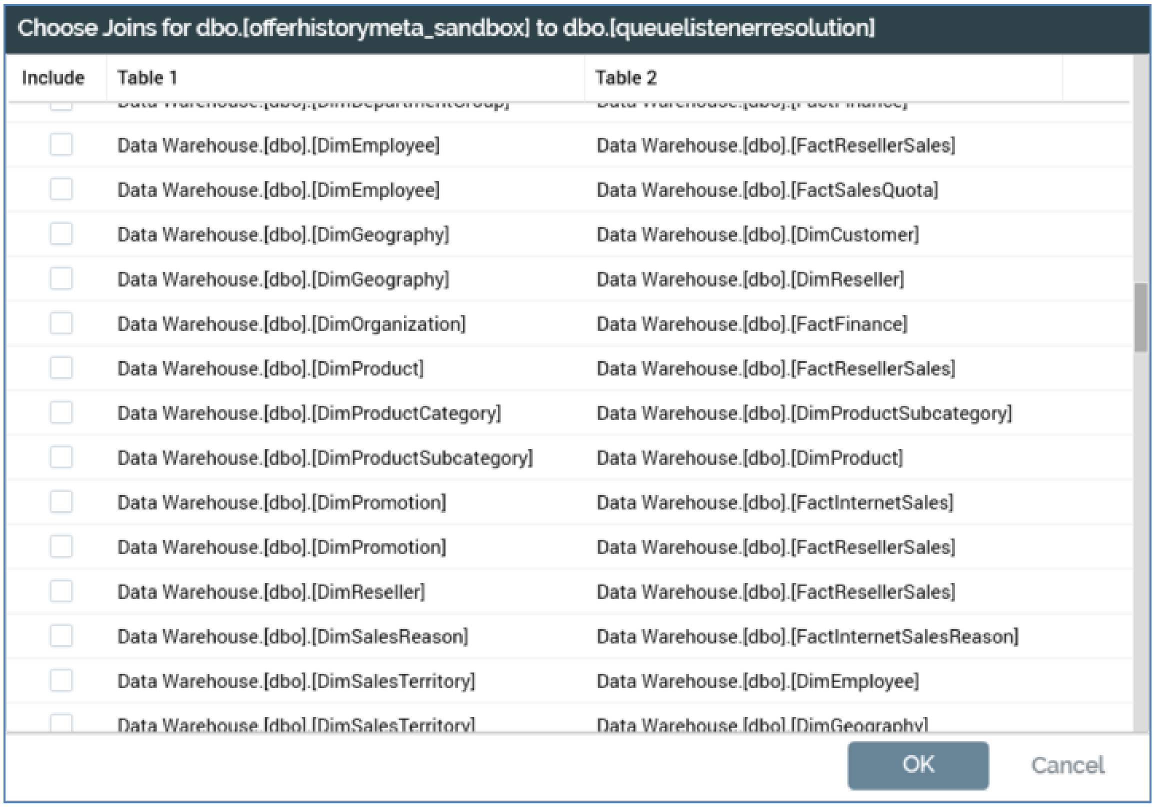
A multiple join consists of a series of simple joins, which can be traversed in sequence to create a join between Table 1 and Table 2.

When a new multiple join is created, and no simple joins have been added to the list thereof, RPI automatically identifies a series of traversable simple joins between Tables1 and 2 (if such exists), and adds them to the Simple Joins list.

Simple joins can also be added using the Simple Joins list's Choose button (see below), or the Add this Join… button displayed in the Joins List (documented separately).

The following properties are shown for multiple joins:

- Selected Join Details: as for a simple join. Note that Cardinality is disabled for multiple joins.
- Simple Joins toolbar: exposes the following:
    - Choose: allows you to choose simple joins to associate with the multiple join. Invocation displays the Choose Joins for [Table 1] to [Table 2] dialog.



The dialog displays a grid listing all simple joins. You can click on a column header to order the grid's contents by the column in question. The following columns are shown:

- Include: a checkbox, the checked state of which reflects the simple join's presence in the multiple join's Simple Joins list. Checking a simple join adds it to the list on invocation of Accept Changes.
- Table 1: the first of the simple join's tables. When one or more auxiliary databases have been configured at the current RPI client, table names are qualified with the database to which they belong.
- Table 2: the second of the simple join's tables. When one or more auxiliary databases have been configured at the current RPI client, table names are qualified with the database to which they belong.
- Accept Changes: invocation of this option reflects the simple join selection in the dialog in the multiple join's Simple Joins list. The dialog is removed from display and newly-added simple joins are appended to the end of the list.
- Cancel: invocation of this option removes the dialog from display without changing the multiple join's Simple Joins list.

- Move Up: only available if a simple join other than the first in the list is selected. Invocation moves the join up one position in the list.

- Move Down: only available if a simple join other than the last in the list is selected. Invocation moves the join down one position in the list.
- Remove: removes the join from the list. Not protected by an 'Are You Sure?' dialog.

- Simple Joins list: lists simple joins that collectively make up the multiple join. You can add a simple join to the list by clicking the button in the first column in the main Joins grid. Doing so updates the state of the multiple join to Edited. It is not possible to add the same simple join to the list more than once. You can remove one or more joins from the list. Note that at least one simple join must be selected. Finally, it must be possible to navigate from Table 1 to Table 2 using the specified simple joins list.

The following rules must be observed before a multiple join can be saved:

- Table 1 must be contained in the multiple join's first simple join
- Table 2 must be contained in the multiple join's last simple join
- It must be possible to navigate the multiple join's simple joins. Navigation is effected from top to bottom. One table within a following simple join must be present within its preceding simple join.

Cross-database multiple joins are supported. A validation error is raised at saved in the event of a multiple join's configuration containing a schema mismatch.

6.15.6 Create New Join

This action is carried out using the Create new Join toolbar button. You can select the type of join to add from either Simple join or Multiple join. The new join is added to the top of the list of existing joins and is selected automatically.

If you add a join when a filter is applied, and the new join does not match the supplied filter criteria, it will be visible when in an Added state, but will disappear from view when you click Save.

6.15.7 Configure Existing Join

This is carried out in the simple fields in Selected Join Details. You can select a join to view its details. If you update a previously-saved join, its State is set to Edited.

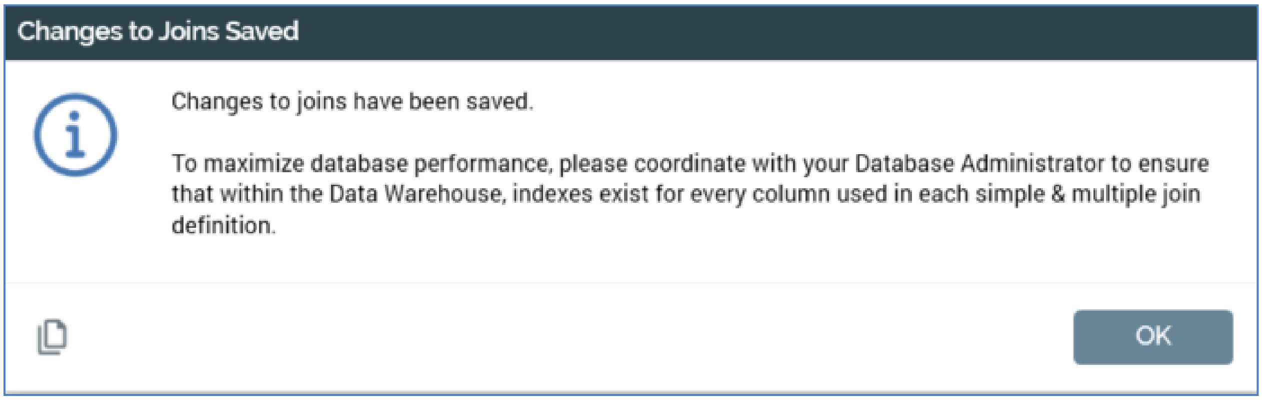
6.15.8 Delete Selected Joins

This is carried out in the toolbar. The State(s) of the join(s) are set to Deleted, and the row text color to red. You can no longer select a deleted row.

6.15.9 Save Changes to Joins

This is done using the Save changes to Joins toolbar button. Any changes are validated (e.g. it is not possible to create more than one identical simple or multiple join). Any validation errors are advised via a dialog and you may not proceed with Save until they are fixed. Following a successful save, all join States are updated to Unchanged. Any deleted joins are removed from display.

The following message is shown when saving joins:

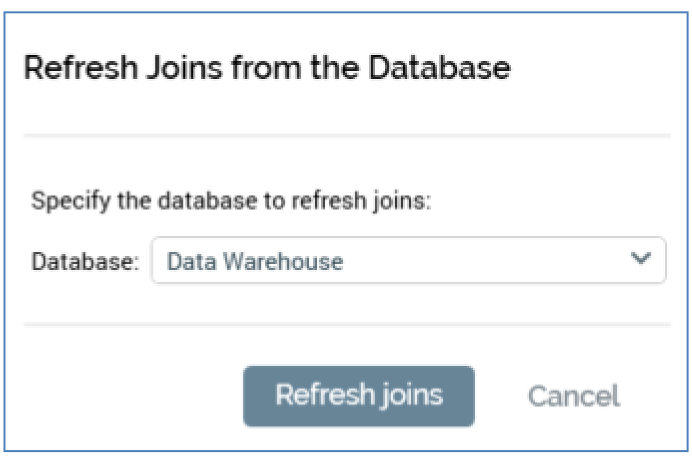


6.15.10 Refresh Joins from the Database

You can refresh your RPI joins by automatically creating them based on existing joins in the data warehouse or an auxiliary database. This is carried out by clicking the Refresh Joins from the Database button in the Joins interface.

If no auxiliary databases are configured at the current RPI client, an 'Are you sure?' dialog is displayed. Proceeding with the refresh creates a Joins refresh job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation. On completion, the data warehouse's joins will have been refreshed. Existing joins are unaffected when you refresh joins; only new joins are appended during refresh.

If one or more auxiliary databases are configured at the local RPI client, a dialog allows you to select the database in respect of which to initiate the joins refresh.



You can select the database using the dropdown, and then click Refresh Joins to proceed with the refresh (after confirming your intention at the 'Are You Sure?' dialog).

6.15.11 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.15.12 Export Joins

Invocation of this option displays the Save Join Details As Windows file system dialog. The file name defaults to 'Redpoint Joins [date].txt', and type to 'Text (tab delimited) (*.txt)]'. Clicking Save exports details of the joins to a file in the specified location and closes the dialog. Clicking Cancel closes the dialog without saving.

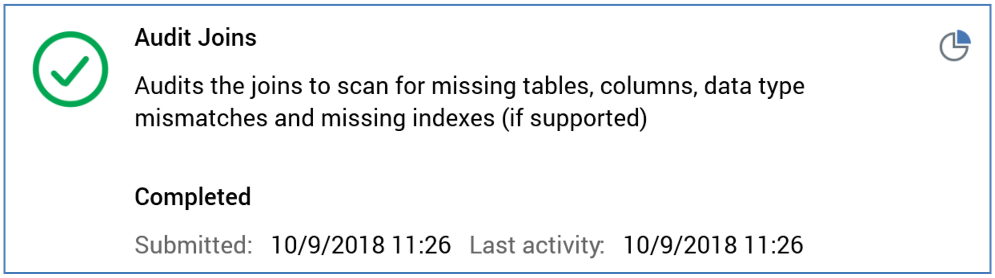
The resultant tab-delimited file lists all joins (simple and multiple), irrespective of any filters applied in the Joins interface. The file contains the following:

- 'RPI Joins'
- 'Server: [external server name] (v[major].[minor] (Build [build]))'
- 'Exported: [date/time]'
- 'Simple Joins ([no.])'
  - For each simple join:
    - Table 1
    - Table 2
    - Key Pairs: '[Table 1.Key] to [Table 2.Key] and [Table 1.Key 2] to [Table 2.Key 2]]...'
    - State
- 'Multiple Joins ([no.])'
  - For each multiple join:
    - Table 1
    - Table 2
    - Table Joins: '[Table 1] to [Table 2], [Table 2 to Table n]'
    - State

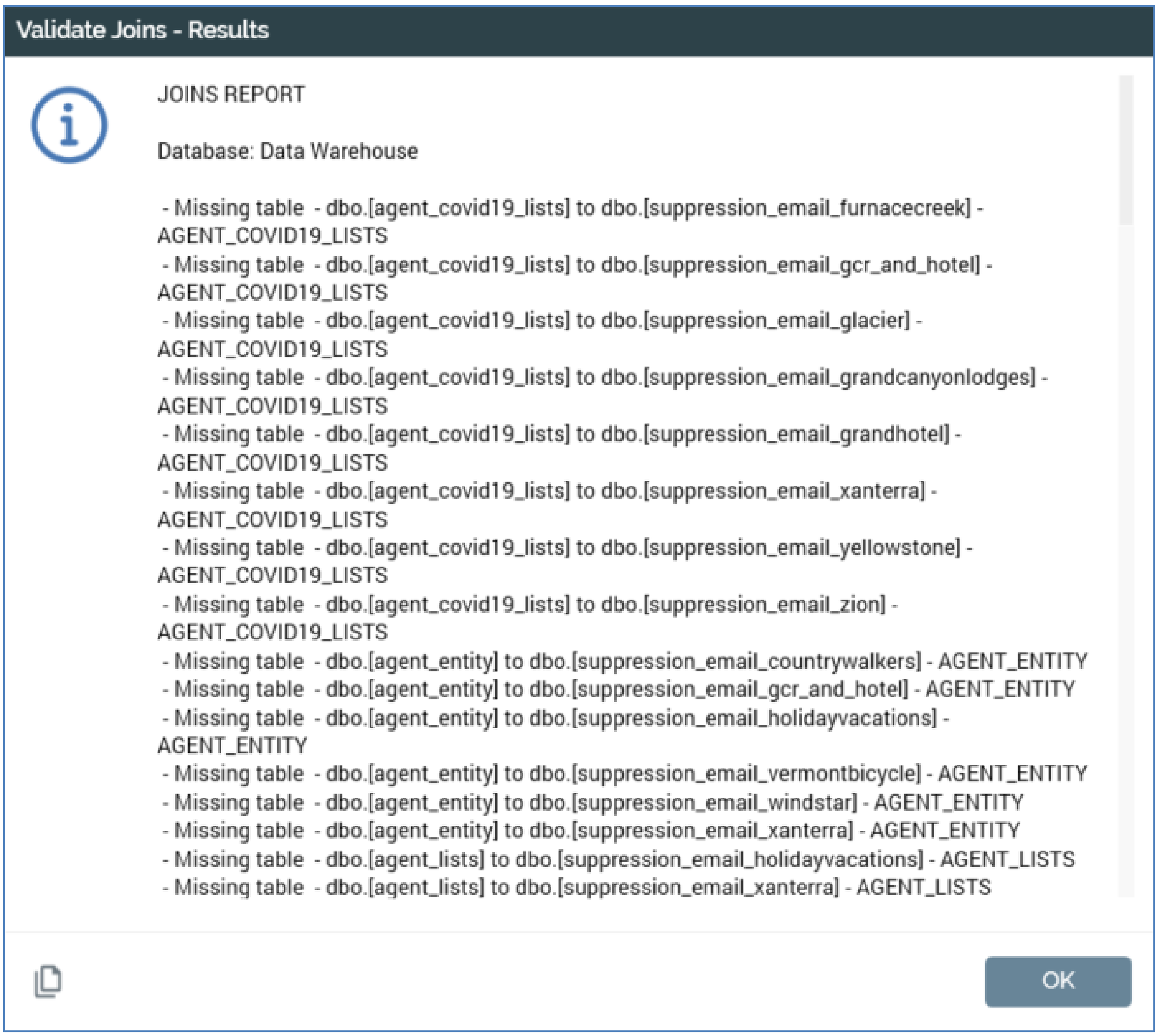
Note that Export Joins should not be confused with the generic ability to export (for later import purposes) configuration collections (including Joins) from the Configuration Workbench.

6.15.13 Audit Joins

Clicking this button creates an Audit Joins job and displays it in the My Jobs dialog.



When the job completes, a View Results button is shown. Clicking it displays the Validate Joins – Results dialog.



A Joins Report is displayed therein, documenting the following:

- Missing tables
- Missing columns
- Data type mismatches
- Missing indexes (SQL Server only)

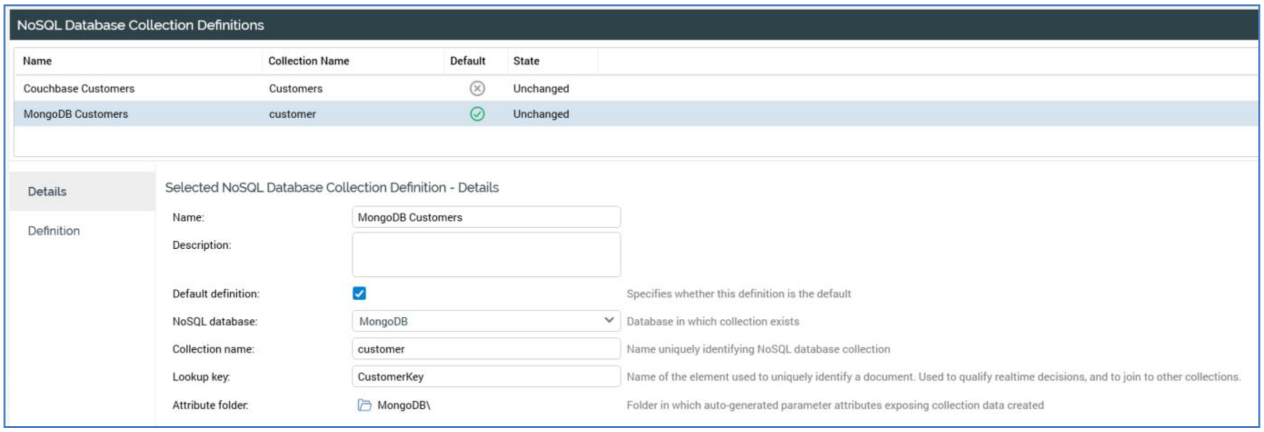
A Copy Results to Clipboard button is available at the bottom of the dialog.

Some pointers on interpreting the results of a joins audit:

- Missing table: recommended to delete the RPI join, thereby removing the orphan.
- Data type mismatch: even if the left & right joins are indexed, there is a high risk of implicit conversions, index scan and table scans. Recommended to ensure that columns on the right and left of joins are indexed and have same data type and length.
- No index found: highly likely to result in table scans. Recommended to ensure that columns on the right and left of joins are indexed and have same data type and length.

6.16 Configuring NoSQL DB Collection Definitions

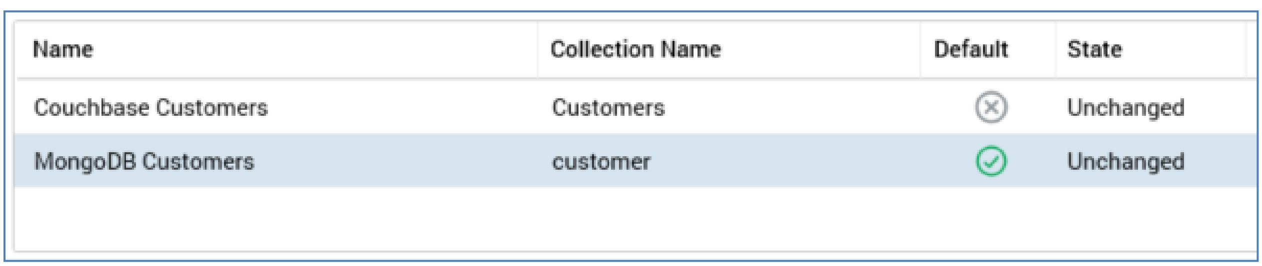
If using a NoSQL data warehouse or auxiliary database, one or more NoSQL Database Collection Definitions must be set up, using a dedicated configuration interface. A Collection Definition describes the structure of the NoSQL database collection to be used by RPI, including the attributes that will be available when making decisions based on the data therein.



The NoSQL database collection configuration interface contains the following elements:

6.16.1 NoSQL Database Collection Definitions

A grid is displayed, listing all existing NoSQL database collection definitions:



Within the grid, the following read-only columns are displayed (see below for property details)

- Name
- Collection Name
- Default
- State: one of Added, Edited, Deleted or Unchanged.

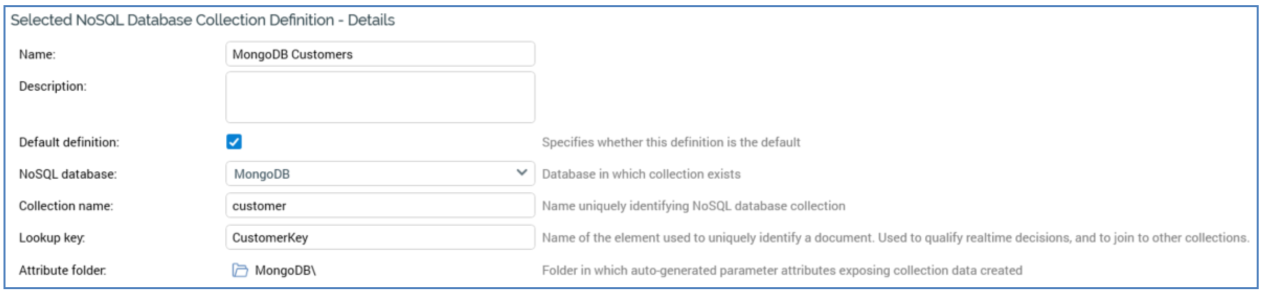
When no NoSQL database collection definitions have been configured, an advisory message is displayed.

6.16.2 Selected NoSQL Database Collection Definition Details

This section displays the details of the NoSQL database collection definition selected currently in the list. If no definitions have been configured, an advisory message is displayed.

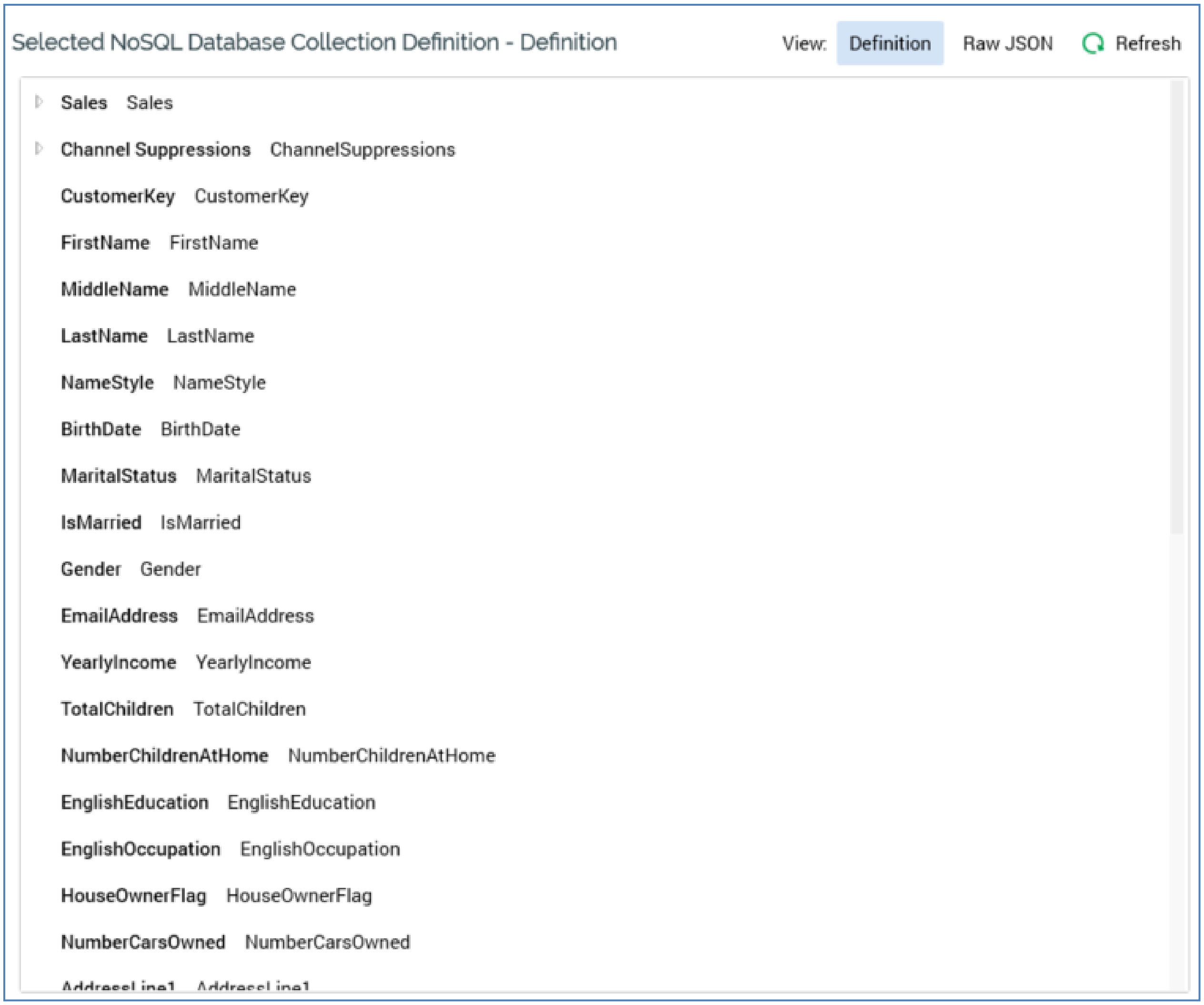
The sections contains a tabset, which contains Details and Definition tabs.

The Details tab contains the following properties:



- Name: the unique name used to identify the definition. Name is mandatory, can be a maximum of 100 characters in length, and must be unique across all definitions.
- Description: an optional property that can be a maximum of 1000 characters in length.
- Default definition: this checkbox is unchecked by default. It allows you to define one of the definitions as default. When creating a new NoSQL selection rule, its NoSQL definition property will be set automatically to the default NoSQL collection definition.
- NoSQL database: this dropdown property allows you to select a NoSQL database within which the collection referred to by the definition exists.
- Collection name: this mandatory 100-character text field allows you to uniquely identify the NoSQL database collection.
- Lookup key: this mandatory 100-character text field allows the name of the element used to uniquely identify a NoSQL entity within the collection to be provided. Lookup key is used to qualify realtime decisions, and when joining to other collections. Note that the value supplied must exist as a field name in the specified definition.
- Attribute folder: provision of an RPI file system folder is mandatory in this context. The folder provided is used to store parameter attributes to expose the collection's data elements when the definition is saved.

The Definition tab contains the following properties:



- Toolbar: exposing the following:
  - View: two toggle buttons are shown:
    - Definition: displays the treeview when selected.
    - Raw JSON: displays a raw representation of the collection's JSON when selected.
  - Refresh: this button is enabled when a NoSQL database and Collection name have been provided. Clicking it populates the treeview and JSON definition with a best guess of the collection's schema. Note that, when manual changes have been made to the DisplayName or IsHidden properties, any such changes are not lost at invocation of Refresh.
- Treeview: this property provides a read-only overview of the contents of the writeable JSON property.

  After invocation of Refresh, the following are presented (in order):

- Any nested collections within the main collection. You can expand collections to view the attributes therein.
- Channel Suppressions collection: exposing the following attributes:
  - Suppression Name
  - Suppression Reason
  - Channel Execution ID
  - Suppression Date
- Top-level collection attributes

For each attribute, the following are shown:

- Display name (shown in bold)
- Name
- If the attribute is hidden, an icon is displayed to its right, and it appears in gray.

Any changes made in the JSON property are reflected at the treeview.

When hovering over an element within the treeview, an informational tooltip listing its properties, as sourced from the JSON document, is displayed.

- Raw JSON: a writeable summary of the collection's contents.


```
{
  "Id": "de0b9cd0-d338-45fd-84a3-6009bd478333",
  "DisplayName": "customer",
  "Name": "customer",
  "Elements": [
    {
      "Id": "5cf0da5f-87ee-424a-b773-c92eb2fb2838",
      "DisplayName": "xxx",
      "Name": "_id",
      "DataType": "String",
      "Length": 24,
      "IsHidden": true
    },
    {
      "Id": "441ed678-fe09-43da-8834-ab21d57e2084",
      "DisplayName": "AddressLine1",
      "Name": "AddressLine1",
      "DataType": "String",
```


You can remove or rename attributes as required. If an attribute is renamed, its new name is reflected when creating a criterion based on the attribute within a NoSQL selection rule.

List values are shown within an attribute if number thereof is less than or equal to system configuration setting AttributeValueListSize. You can add, update and remove list values as required.

An IsHidden property provides control over whether attributes can be used to create decision criteria within a NoSQL selection rule. The DisplayName property can be shown instead of an attribute’s Name when adding criteria.

The collection's definition is validated on invocation of Save. If the JSON is not valid, a validation error is displayed.

Parameter attributes defined by the definition are created and updated within the definition's Attribute folder. Any list values are refreshed at the same. Manual name changes are not reflected at parameter attributes, but changes to data type/length are.

Any nested collections' attributes are persisted in sub-folders created within the Attribute folder. A Channel Suppressions folder is also created in the same context (containing attributes as per the list above).

Note that when using a MongoDB NoSQL data warehouse, the collection’s ID column must be of data type ObjectID.

6.16.3 Create New NoSQL Database Collection Definition

This action is carried out using the Create new NoSQL Database Collection Definition toolbar button. The new definition’s name is ‘New NoSQL DB Collection Definition’ (an incrementable integer can be appended to ensure uniqueness).

6.16.4 Configure Existing NoSQL Database Collection Definition

This is carried out in the Selected NoSQL Database Collection Definition Details section. If you configure a definition that has been saved previously, its State is set to Edited.

6.16.5 Delete Selected NoSQL Database Collection Definition

This is carried out in the toolbar. A deleted definition's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.16.6 Save Changes to NoSQL Database Collection Definitions

Save is carried out using the Save changes to NoSQL Database Collection Definitions toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

Following a successful save, definitions are displayed in alphabetical order. All states are updated to Unchanged. Any deleted definitions are removed from display.

6.16.7 Refresh

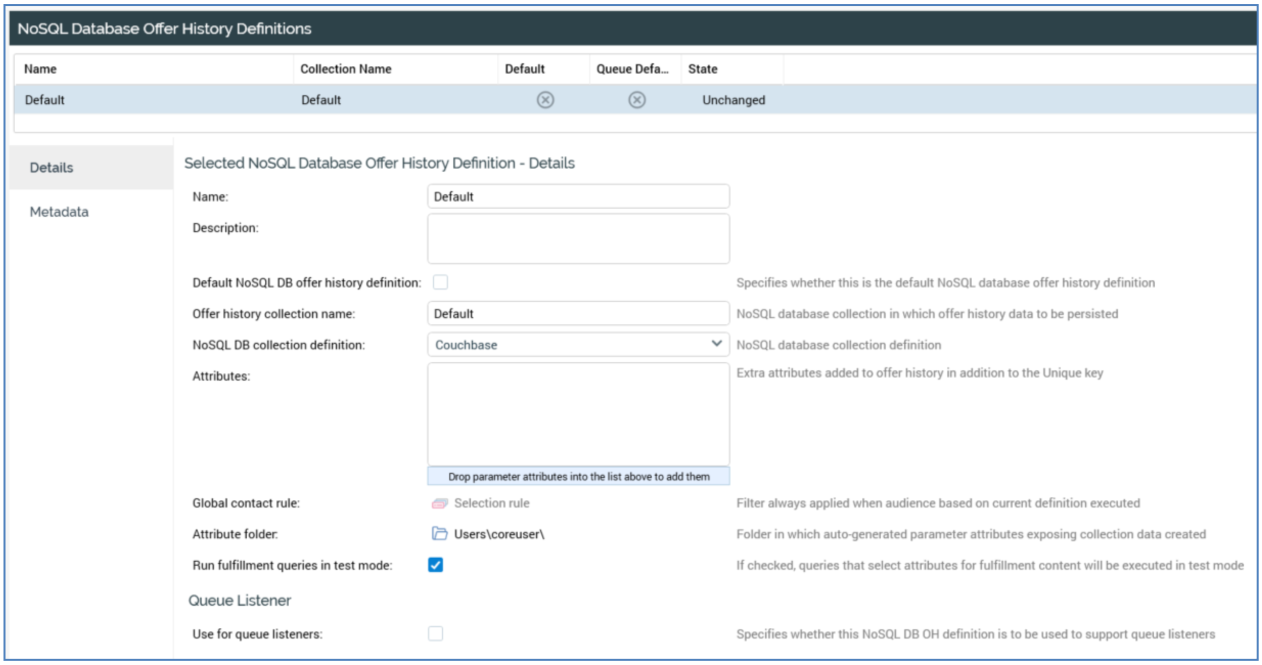
This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.16.8 Couchbase Joins and Aggregates

RPI supports the use of Joins and Aggregates at the Couchbase NoSQL database provider; however, setup of the same is not supported in a configuration interface and must be undertaken in conjunction with Redpoint Support.

6.17 Configuring NoSQL DB Offer History Definitions

If using a NoSQL data warehouse, one or more NoSQL Offer History Definitions must be set up, using a dedicated configuration interface. These represent the equivalence of Audience Definitions when using a SQL data warehouse, and provide for definition of the NoSQL database collection within which RPI offer history is to be stored, the attributes to be persisted therein, and any metadata to be captured in the collection at interaction workflow execution.

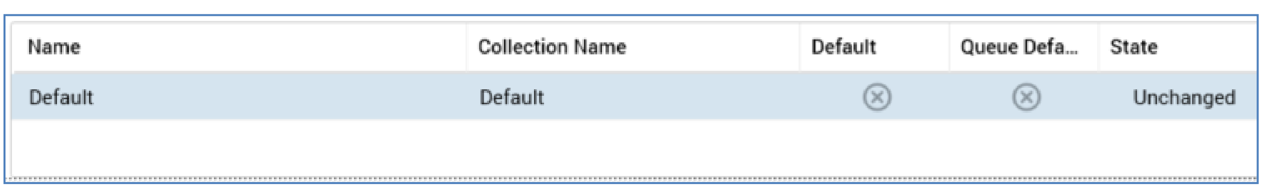


Note that this configuration interface is not available when running against a SQL data warehouse.

The NoSQL database collection configuration interface contains the following elements:

6.17.1 NoSQL Database Offer History Definitions

A grid is displayed, listing all existing NoSQL database offer history definitions:



Within the grid, the following read-only columns are displayed (see below for property details)

- Name
- Collection Name

- Default
- Queue Default
- State: one of Added, Edited, Deleted or Unchanged.

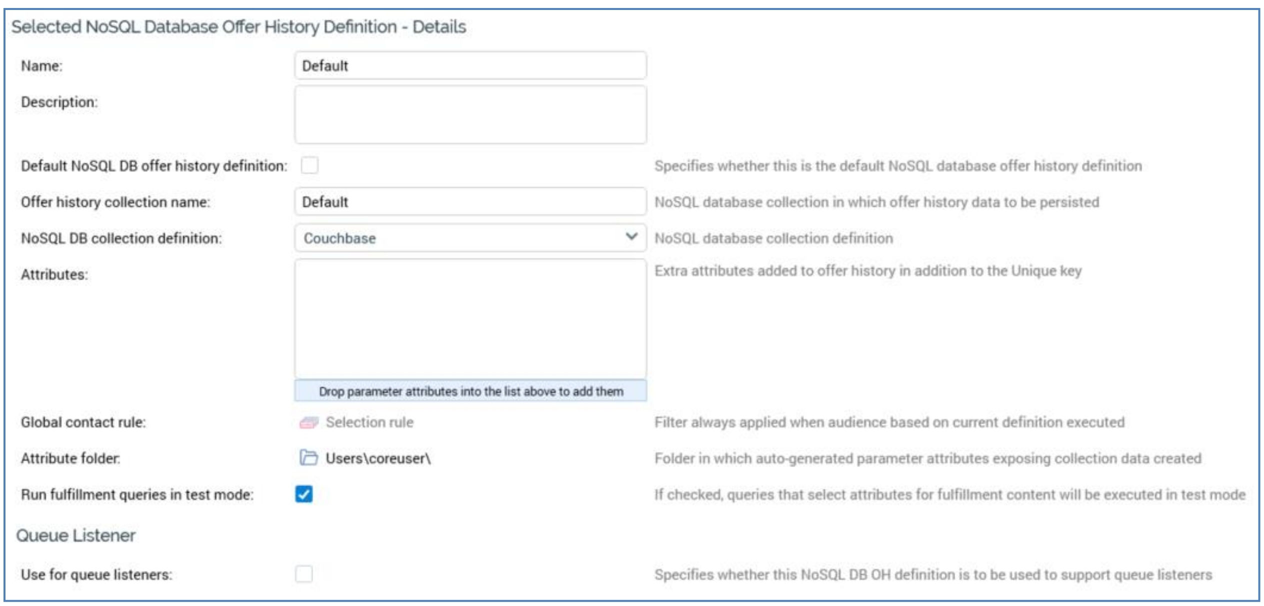
When no NoSQL database offer history definitions have been configured, an advisory message is displayed.

6.17.2 Selected NoSQL Database Offer History Definition Details

This section displays the details of the NoSQL database offer history definition selected currently in the list. If no definitions have been configured, an advisory message is displayed.

The sections contains a tabset, which contains Details and Metadata tabs

The Details tab contains the following properties:



- Name: the unique name used to identify the definition. Name is mandatory, can be a maximum of 100 characters in length, and must be unique across all definitions.
- Description: an optional property that can be a maximum of 1000 characters in length.
- Default NoSQL DB offer history definition: this checkbox allows you to specify whether the current definition is the default. The default NoSQL database offer history definition is selected automatically when creating an audience in a NoSQL environment. The checkbox is unchecked by default. Only one definition can be selected as the default.
- Offer history collection name: this mandatory, 100-character text field represents the name of the NoSQL database collection in which offer history data is to be persisted.

- NoSQL DB collection definition: this dropdown property lists all existing NoSQL database collection definitions, and allows you create a link between the offer history definition (which defines data to be written at execution) and the collection definition (which defines from where data is sourced for targeting purposes). By default, no value selected, and selection of a value in this context is mandatory.
- Attributes: this property allows you to define extra attributes added to be added to the offer history collection in addition to a unique key. You can drag parameter attributes only from the toolbox and add them to the list. A warning is thrown if you attempt to add the same attribute more than once. Also, a validation error is raised at Save if you attempt to add a non-top-level attribute in this context.
- Global contact rule: this property represents a filter that is always applied when an audience based on the current definition is executed. In this way, you can ensure consistency of targeting by limiting your global audience scope in accordance with the selected rule's configuration. The property is set using a NoSQL selection rule only, and its provision is optional. Auxiliary NoSQL selection rules are supported. You can populate the property using browse or drag and drop. You can also initiate the creation of a new NoSQL selection rule with which to configure the property. Once populated, you can open the latest version of the NoSQL selection rule in the Rule Designer. You can also clear your selection.
- Attribute folder: this RPI folder is used to persist automatically-generated parameter attributes which expose the data stored in the collection. At save, offer history attributes are created in the selected folder, in accordance with their definition in the Metadata tab. A States subfolder is created within the same context, containing the following attributes:
  - Metric Value
  - State Detail
  - State Name
  - Timestamp

  These are used to persist channel state information, as returned by the channel sync task.
- Run fulfilment queries in test mode: a checkbox, which is unchecked by default. If the property is checked, when the current definition is used during interaction workflow execution in Test mode, all queries that select attributes for fulfilment content will be executed. This will provide a more accurate impression of the time that might be expected to be taken at Production workflow execution. When checked, 'Testing fulfilment queries' entries will appear in the workflow's query trace.
- Queue Listener section: containing the following properties:
  - Use for queue listeners: this checkbox allows you to specify whether the definition is to be used to support queue listeners. It is unchecked by default. When checked, the following properties are hidden:
    - NoSQL DB collection definition

    - Attributes
    - Global contact rule

    The following property shown is shown instead:

    - Listener collection name

  - Listener collection name: this mandatory text property accepts a maximum of 100 characters and allows you to specify the name of the NoSQL database collection in which queue listener data is to be persisted.

The Metadata tab is only shown if Use for queue listeners is unchecked.

It is behaviorally identical to the equivalent tab in the Audience Definition configuration interface. For more information, please see that interface's documentation.

6.17.3 Create New NoSQL Database Offer History Definition

This action is carried out using the Create new NoSQL Database Offer History Definition toolbar button. The new definition's name is set to 'New NoSQL DB Offer History Definition' by default (an incrementable integer can be appended to ensure uniqueness).

6.17.4 Configure Existing NoSQL Database Offer History Definition

This is carried out in the Selected NoSQL Database Offer History Definition Details section. If you configure a definition that has been saved previously, its State is set to Edited.

6.17.5 Delete Selected NoSQL Database Offer History Definition

This is carried out in the toolbar. A deleted definition's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.17.6 Cloning a NoSQL Database Offer History Definition

This is carried out using the Clone Selected Definition toolbar button. Clicking the button creates a clone of the selected definition (an incrementable integer is appended to its name to ensure uniqueness). The clone's Offer history collection name and Attribute folder properties are not set.

6.17.7 Save Changes to NoSQL Database Offer History Definitions

Save is carried out using the Save changes to NoSQL Database Offer History Definitions toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

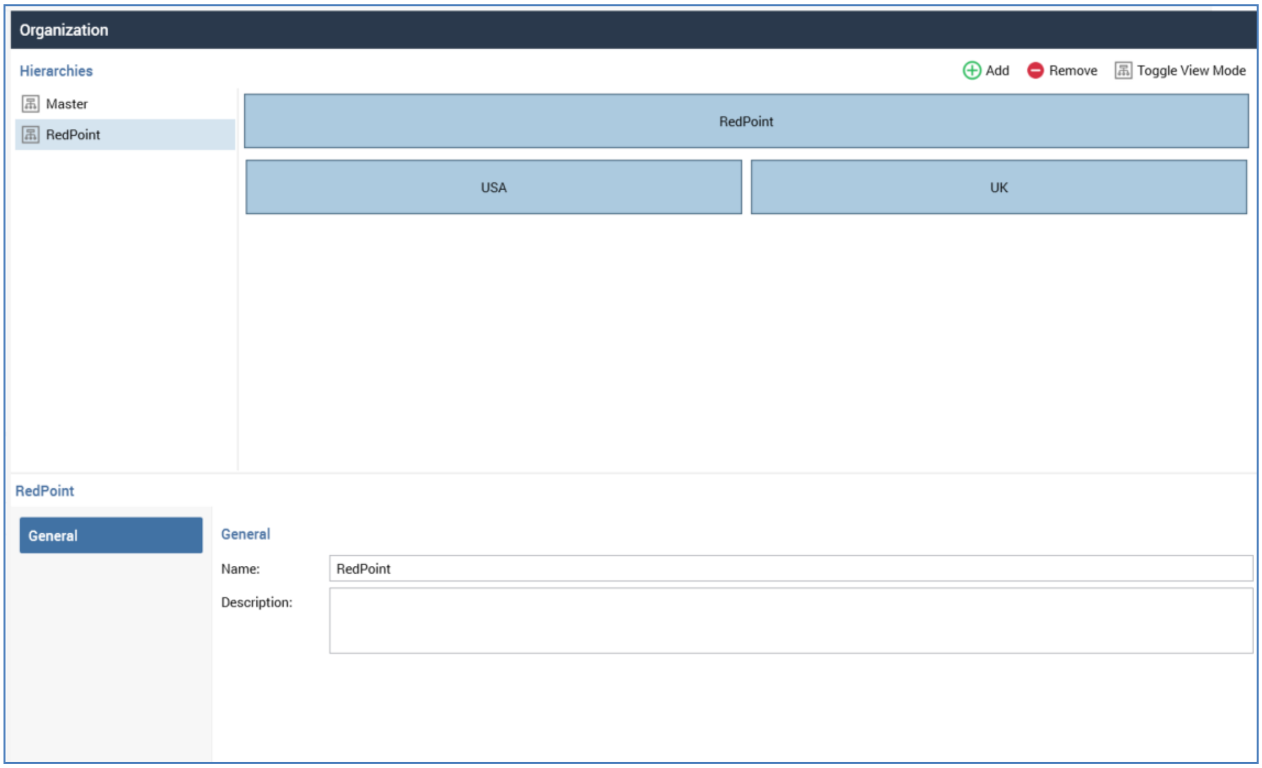
Following a successful save, definitions are displayed in alphabetical order. All states are updated to Unchanged. Any deleted definitions are removed from display.

6.17.8 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.18 Configuring the Organization

Configuration of the Organization is carried out in the Organization configuration interface.



The interface is composed of the following elements:

6.18.1 Hierarchies

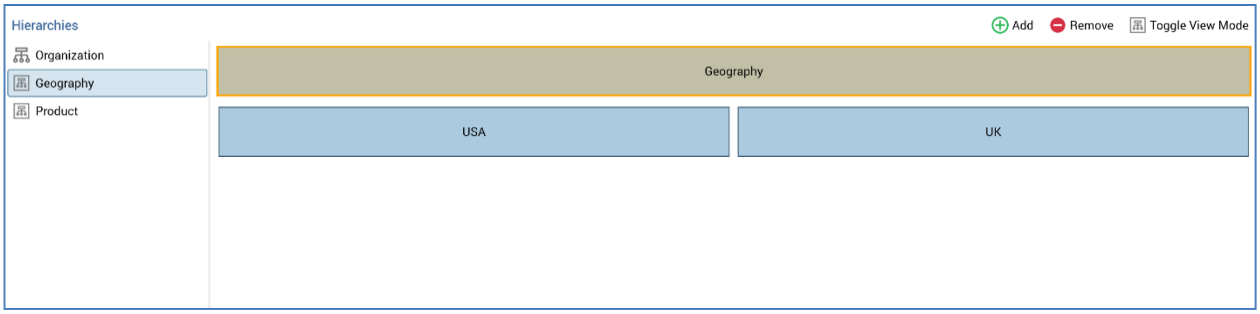
Typically, there will be several ways to describe the hierarchical structure of an organization. Some common hierarchy types include:

- Geography: subdividing the organization by geographical location – e.g. North America and EMEA; within North America, USA and Canada.
- Product/Service Line: subdividing the organization by the types of product or service that it offers: for example, Banking and Insurance; within Banking, Savings Accounts and Credit Cards.

Note that, in RPI's implementation of organizational hierarchies, the elements they contain are known as 'nodes' (e.g. 'USA' is a node in the Geography hierarchy).

It is possible to link an interaction to one or more hierarchy nodes.

The Hierarchies section occupies the top of the Organization configuration interface.



It contains the following elements, each of which is discussed separately.

- Toolbar
- Hierarchies list
- Hierarchy details panel

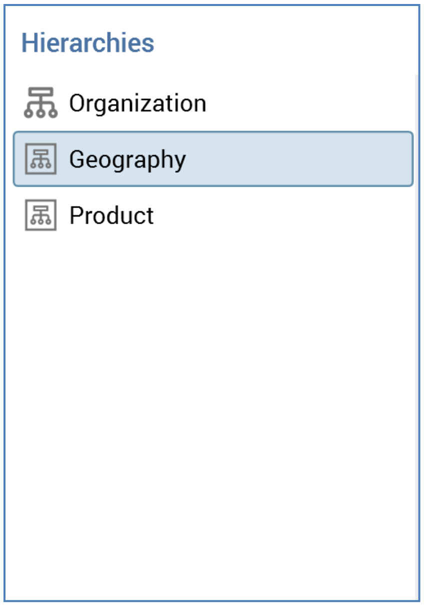
6.18.2 Toolbar

The hierarchies toolbar contains the following:

- Add: invocation of this option adds a new hierarchy to the bottom of the hierarchies list. The new hierarchy's default name is 'New Hierarchy'. If 'New Hierarchy' already exists, it is named 'New Hierarchy 2' (note that this number can be incremented if required). The new hierarchy is selected automatically and its default structure displayed in the hierarchy details panel:
    - Top Level Node
        - Node
        - Node 2
    - Remove: invocation of this option removes the selected hierarchy from the hierarchies list. It is protected by an 'Are you sure?' dialog.
    - Toggle View Mode: if the hierarchy structure displayed in the hierarchy details panel is shown in hierarchy mode, invocation of this option switches display to treeview mode. If the hierarchy structure is displayed in treeview mode, invocation switches its display to hierarchy mode.

6.18.3 Hierarchies List

The hierarchies list is shown below the hierarchies toolbar, and to the left of the hierarchy details panel.



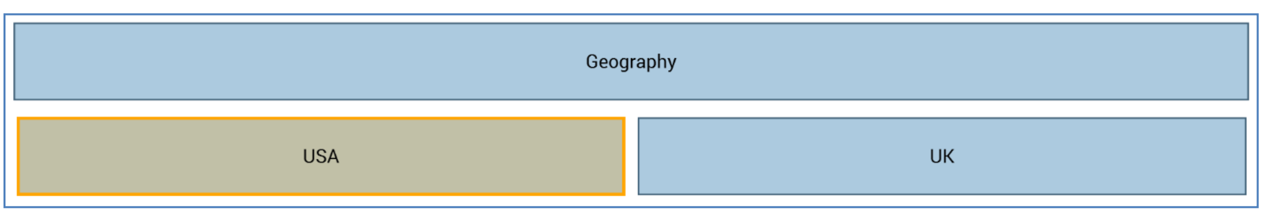
It contains the following list entries:

- 'Organization': this list entry, the first shown, represents the organization as a whole. You can select it to gain access to organization-level properties in the configuration tabset. Selecting Organization clears the hierarchy details panel and replaces its contents with an informational message ('Currently configuring the Organization'). The Organization list entry is differentiable from hierarchies via the use of a distinct icon.
- All existing hierarchies are listed below the Organization. Selecting a hierarchy displays its details in the hierarchy details panel. The overrideable hierarchy (within which customization of the organization's base settings can be carried out) is denoted by display of a 'star' icon vs. the list entry.

6.18.4 Hierarchy Details Panel

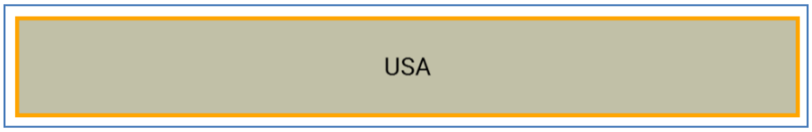
The hierarchy details panel displays details of the hierarchy selected currently in the hierarchies list. Its contents are displayed in one of two modes:

- Hierarchy mode: this is the default mode.

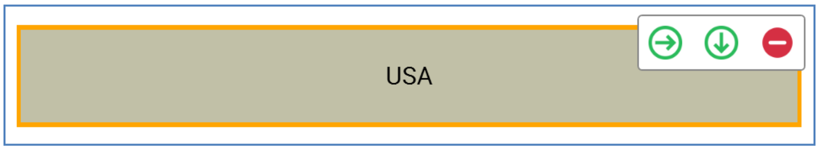


Display of the hierarchy details panel in hierarchy mode is only available when the number of leaf nodes shown is less than or equal to 8. If the number of leaf nodes exceeds this limit, an informational message is shown, and you are advised to switch to treeview mode.

Each hierarchy node is shown as a block. Child nodes are shown below their parent. A selected node is shown as follows:

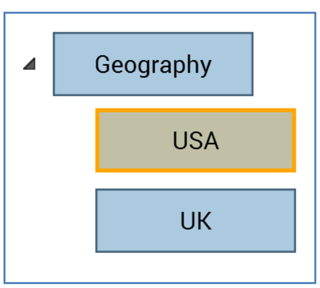


When you hover over a selected node, a toolbar is displayed:



- Add Sibling Node: this option is not available at the top node in the hierarchy. Invocation creates a node to the right hand side of the selected node at the current hierarchy level. The new node is named 'Node'. If 'Node' already exists anywhere within the organization, it is named 'Node 2'. Note that this numerical value can be incremented if required.
- Add Child Node: creates a new child node at the right hand side of the hierarchy level below the selected node. The new node is named 'Node'. If 'Node' already exists anywhere within the organization, the new node is named 'Node 2'. Note that this numerical value can be incremented if required.
- Remove Current Node: this option is not available at the top node in the hierarchy. Invocation is protected by an 'Are you sure?' dialog and removes the selected node and all its children. If an interaction is linked to the removed node, a new link is created between the interaction and the removed node's parent.

- Treeview mode: this mode displays nodes as 'metallic' blocks in an otherwise traditional treeview style.



Within the tree, parent nodes contain child nodes. All parent nodes are shown as expanded by default. You can roll up an expanded node if required (you can also expand a rolled up node).

When you hover over a node, a toolbar is displayed to its right:

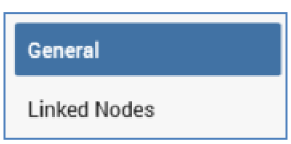
- Add Sibling Node: this option is not available at the top node in the hierarchy. Invocation creates a node at the same level of the hierarchy as, and immediately below, the current node. The new node is named 'Node'. If 'Node' already exists anywhere within the organization, the new node is named 'Node 2'. Note that this numerical value can be incremented if required.
- Add Child Node: creates a new child node at the hierarchy level below the selected node, after all existing child nodes. The new node is named 'Node'. If 'Node' already exists anywhere within the organization, the new node is named 'Node 2'. Note that this numerical value can be incremented if required.
- Remove Current Node: not available at the top node in the hierarchy. Invocation of this option is protected by an 'Are you sure?' dialog and removes the selected node and all of its children. If an interaction is linked to the removed node, a link is created between the interaction and the removed node's parent. If you remove a leaf node such that number of leaf nodes displayed is less than or equal to 8, you are then able to switch display of the hierarchy details panel to hierarchy mode.

6.18.5 Configuration Tabset

The configuration tabset is displayed below the hierarchies list and hierarchy details panel. It is named in accordance the currently-selected hierarchy or node. The tabs shown are accordant with the item selected:

- Hierarchy:

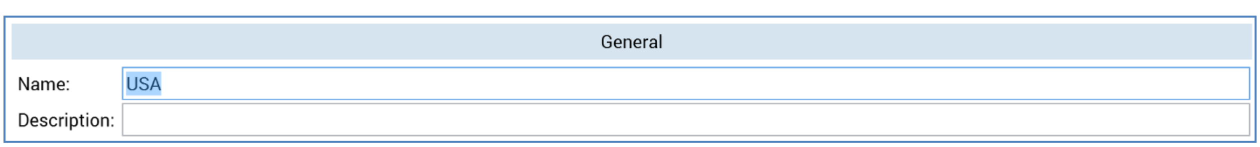
- Node:



Each tab is described in detail below.

6.18.6 General Tab

The General tab facilitates configuration of the selected item’s Name and Description.



It is displayed when a hierarchy is selected in the hierarchies list, or when a node is selected in the hierarchy details panel.

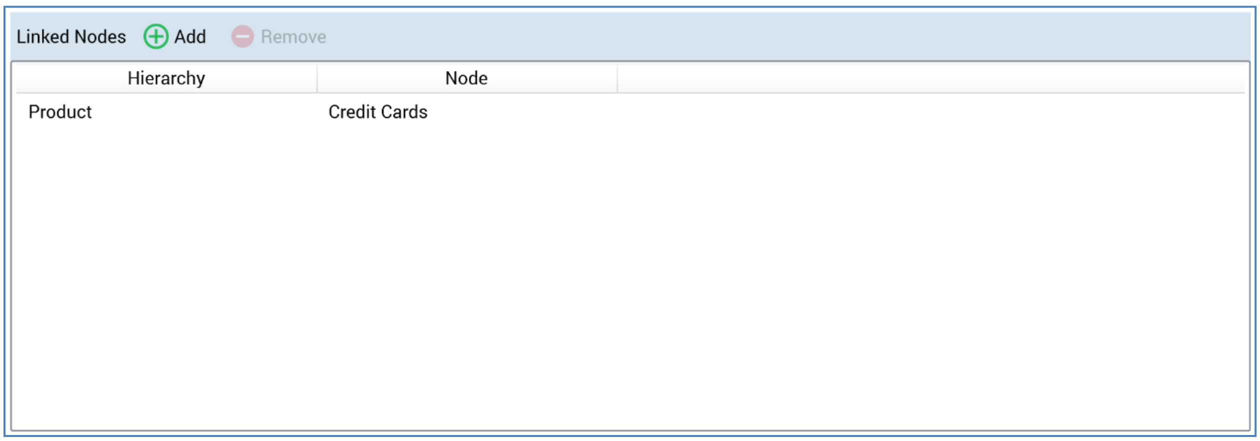
The General tab contains the following fields when displayed for both a hierarchy and a node:

- Name: mandatory, and a maximum of 100 characters. The name of a hierarchy or node must be completely unique within the organization. This rule does not apply in respect of a hierarchy's top-level node, which is always the same as the name of the hierarchy itself.

- Description: optional, and a maximum of 1000 characters.

6.18.7 Linked Nodes Tab

The Linked Nodes tab allows you define relationships between nodes in different hierarchies.



Take an example of an organization with Geography and Product/Service Line hierarchies:

- Geography: subdividing the organization by geographical location – e.g. North America and EMEA; within North America, USA and Canada.

- Product/Service Line: subdividing the organization by the types of product or service that it offers: for example, Banking and Insurance; within Banking, Savings Accounts and Credit Cards.

By default, an interaction that is attached to the USA node will also be able to be attached to both the Savings Accounts and Credit Cards nodes. However, if an explicit link is created to Savings Accounts from USA, it will no longer be possible to attach the interaction to the Credit Cards node.

It is possible to associate users with organizational hierarchy nodes using organization node user groups; using this mechanism it is possible to restrict access to financial information as per the previous example. Please see the User Groups configuration documentation for further information.

The Linked Nodes tab is only displayed when a node is selected in the hierarchy details panel.

The Linked Nodes tab contains the following:

- Toolbar: the toolbar exposes the following options:
  - Add a new Linked Node: invocation of this option displays the 'Link Hierarchy Nodes' Hierarchy Explorer.

    The Explorer contains the text 'Link nodes to [CurrentNodeName] From the [CurrentHierarchy] hierarchy'.

    A treeview representation of the organization's hierarchies is displayed (the current node's hierarchy is not shown, as it is not permitted to link a node to another node within the same hierarchy). Within the treeview, each hierarchy is shown as a separate tree. Hierarchies are displayed horizontally across the Explorer.

    By default, all hierarchy nodes are shown as expanded. You can roll up and expand nodes as required.

    Having selected the node to which you wish to link the current node, you can invoke OK; this adds a new linked node to the bottom of the grid.

    If you attempt to add a node that is already present in the grid, a message is displayed ('This node has already been linked. Please select a different node to link before clicking OK.').

    You can also invoke Cancel, which removes the Hierarchy Explorer from display.
  - Remove the selected Linked Node: this option is only available when a linked node is selected in the grid. Its invocation is protected by an 'Are you sure?' dialog and removes the selected node from grid.
- Grid: the grid contains the following columns:
  - Hierarchy: a read-only representation of the hierarchy from which the node was sourced.
  - Node: a read-only representation of the name of the linked node.

When saving, a validation error is raised if a link has been created from the current node to a node from another hierarchy and one or more ancestor or descendent nodes from the other hierarchy.

Once a link has been created from the current node to a node in another hierarchy, it is necessary to define explicitly all other nodes in the other hierarchy to which the current node links.

If there are no links from the current node to another hierarchy then no restrictions will be imposed in linking an interaction linked to the current node to nodes within the other hierarchy.

6.18.8 Save Changes To Organization

This is carried out in the toolbar. Invocation of this option persists any changes you have made to the organization within the operational database. Any outstanding validation issues are reported in a dialog and you may not proceed with the save until they have been resolved.

If the organization contains any changes to its hierarchy nodes, parallel organization node user groups are created, modified or deleted to ensure that one user group per hierarchy node exists within the system. Such user groups are named ‘Organization – Node – [Node Name]’. They exist to allow users to be linked to specific organizational hierarchy nodes, thereby limiting access to objects associated with that set of nodes (or linked nodes, if applicable).

For further information please see the User Group configuration documentation.

6.18.9 Refresh

This is carried out in the toolbar. Invocation of Refresh re-loads the organization as persisted in the operational database. Refresh is protected by a ‘Save Changes?’ dialog. If you proceed with the Refresh, any unsaved changes you made to the organization are lost.

6.19 Configuring Queue Providers

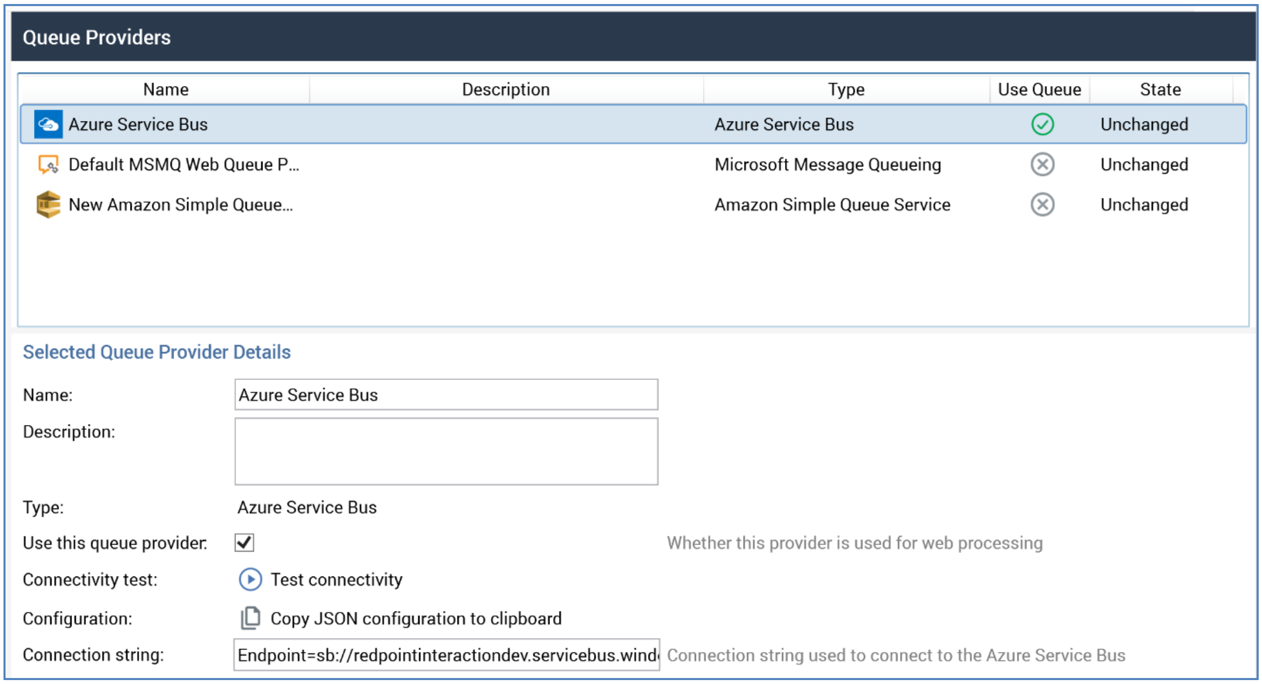
Queue Providers are used to provide RPI with message queuing capabilities. Message queues are used when:

- Retrieving web events state data
- Submitting web forms
- Populating the realtime cache

The following queue technologies are currently supported by RPI:

- Microsoft Message Queue
- Microsoft Azure Service Bus
- Microsoft Azure Event Hubs
- Amazon Web Services Simple Queue Service
- Apache ActiveMQ
- Google Cloud Pub/Sub
- IBM MQ
- RabbitMQ
- Kafka

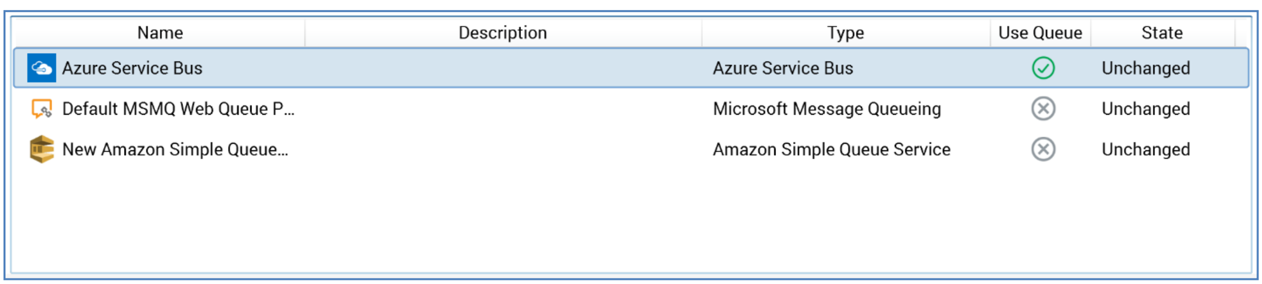
Configuration of queue providers is carried out in the Queue Providers configuration interface.



The Queue Providers configuration interface contains the following elements:

6.19.1 Queue Providers List

A grid is displayed, listing all existing queue providers:



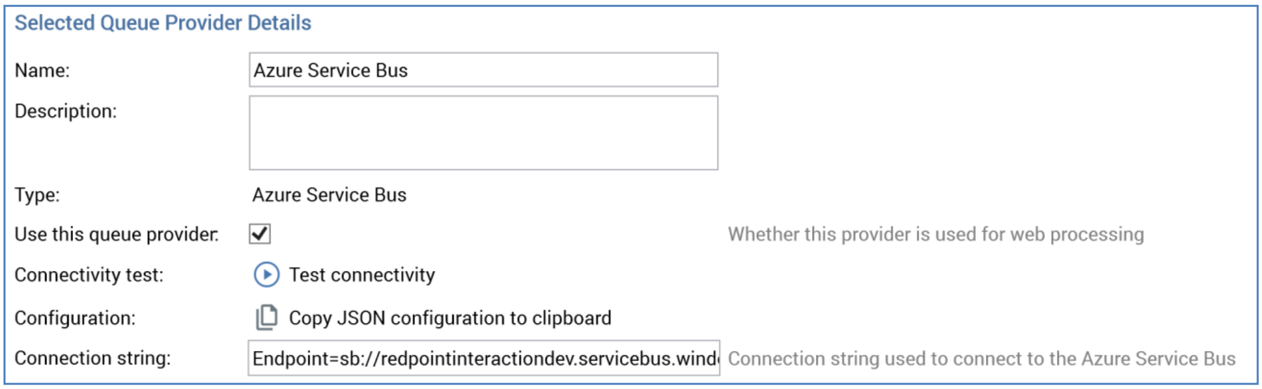
Within the grid, the following read-only columns are displayed:

- Name
- Description
- Type
- Use Queue: a tick is displayed at the queue provider that is currently being used. A cross is shown at all other queue providers.
- State: one of Unchanged, Added, Edited or Deleted.

A single queue provider – Default MSMQ Web Queue Provider – is provided at a newly-installed RPI instance. Its Use Queue property is checked by default. Note that you can delete the default queue provider if it is not required.

6.19.2 Selected Queue Provider Details

When a queue provider is selected in the list, its details are shown in the Selected Queue Provider Details section.



The following common properties are shared by all queue provider types:

- Name: this mandatory property must be unique and can be a maximum of 100 characters in length.
- Description: this optional property can be a maximum of 1000 characters in length.
- Type: this read-only property is defined at the queue provider's creation, and is set to one of the following values:
    - Amazon Simple Queue Service
    - Apache ActiveMQ
    - Azure Service Bus
    - Azure Event Hubs
    - Google PubSub
    - Microsoft Message Queuing
    - IBM MQ
    - RabbitMQ
    - Kafka
- Use this queue provider: this checkbox is unchecked by default at a newly-created queue by default. A validation error is raised at invocation of Save if the property is checked at more than one queue provider.

- Configuration: the accompanying button displays the text Copy JSON configuration to clipboard. Clicking it copies to the clipboard a JSON snippet, which must be inserted at the 'ClientQueueSettings' element at the RPI Realtime website's appsettings.json file. The snippet is structured as per the following example:


```
{"Assembly":"RedPoint.Resonance.AzureQueueAccess","Type":"RedPoint.Resonance.AzureQ
ueueAccess.AzureServiceBusQueueFactory","Settings":[{"Key":"ConnectionString","Valu
e":"Endpoint=sb://redpointinteractiondev.servicebus.windows.net/;SharedAccessKeyNam
e=RootManageSharedAccessKey;SharedAccessKey=EcWsxCsX+xOLQCdt0H6kScI1bR252V+WGljpou5
MjwQ=","Values":null}]}
```


An informational message confirms that the text has been copied to the clipboard.

6.19.3 Amazon Simple Queue Service

The following additional properties are displayed at Amazon Simple Queue Service queue providers:

- Connectivity test: when the queue provider's current state is anything other than Unchanged, this button is disabled, and its text reads 'Save this provider to test connectivity'.

  When the provider is Unchanged, the button's text is set to 'Test Connectivity'. On clicking it, a 'Test '[provider name]' provider connectivity' job is created and displayed in the My Jobs Dialog. Full details of the job can be found in that interface's documentation.

- Access key: this property is required to connect to Amazon Web Services, and its provision is mandatory.
- Secret key: another property that is required to connect to Amazon Web Services; also mandatory.
- Region endpoint: this dropdown allows you to specify the endpoint that will be used to connect to Amazon Web Services. It is set by default to 'US_East_Virginia'.
- Visibility timeout: this numeric property allows you to specify a period of time, in seconds, within which processing of a message will be prevented. It defaults to 300, and accepts a range of values from 0 to 43,200.

Note that queue names are case-sensitive at Amazon SQS queue providers. The value provided must exactly match the name of the queue as configured at Amazon, the realtime API web.config file and queue path system configuration settings.

6.19.4 Apache ActiveMQ

The following additional properties are displayed at Apache ActiveMQ queue providers:

- Connectivity test: as Amazon Simple Queue Service (see above).
- Connection string: the connection string that used to connect to Apache ActiveMQ is mandatory and can be a maximum length of 1000 characters.

6.19.5 Azure Service Bus

The following additional properties are displayed at Azure Service Bus queue providers:

- Connectivity test: as Amazon Simple Queue Service (see above).
- Queue type: this dropdown allows you to specify the type of queue to be use. It exposes the values ‘Service Bus’ (the default) and ‘Storage’.
- Connection string: a connection string must be supplied in order to connect to the Azure queue. Provision of a value for this property is mandatory.
- API call max. retry: this integer property is shown when Queue type is set to ‘Service Bus’. It allows you to specify the number of attempts to be made when an API call fails. It defaults to 10, and supports a range of values from 5 to 30.
- Receive timeout: this integer property is shown when Queue type is set to ‘Service Bus’. It allows you to specify the time, in seconds, for which the activity will wait for receiving messages to complete. It defaults to 1, and supports a range of values from 1 to 10.
- Send batch size: this integer property is shown when Queue type is set to ‘Service Bus’. It allows you to specify the maximum number of messages to be sent at a time to Azure.
- Send visibility timeout: this integer property is shown when Queue type is set to ‘Storage’. It allows you to specify a timeout value, in minutes, for which a message will remain in the queue when processing fails.
- Receive visibility timeout: this integer property is shown when Queue type is set to ‘Storage’. It allows you to specify a timeout value, in minutes, for which a message will remain in the queue when processing fails.

6.19.6 Azure Event Hubs

The following additional properties are displayed at Azure Event Hubs queue providers:

- Event hubs name: this mandatory text field may be a maximum of 100 characters in length.
- Connection string: the string used to connect to the selected Azure Event Hubs is mandatory and can be a maximum of 1000 characters in length.
- Storage container name: this mandatory text field may be a maximum of 100 characters in length.
- Storage connection string: the string used to connect to the specified Azure storage account is mandatory and can be a maximum of 1000 characters in length.

6.19.7 Google Cloud PubSub

A single additional property is displayed at Google Cloud PubSub queue providers:

- Project ID: this mandatory text property can be a maximum of 100 characters in length. It represents the queue's project ID, as defined at Google.

6.19.8 IBM MQ Queueing

The following additional properties are displayed at IBM MQ queue providers:

- Queue manager name: this mandatory text field may be a maximum of 100 characters in length.
- Host name: this mandatory text field may also be a maximum of 100 characters in length and represents the host name used to connect to the specified queue manager.
- Port: this mandatory field represents the port number that will be used to connect to the specified queue manager. It defaults to the value '1414'.
- Channel name: this mandatory text field may be a maximum of 100 characters in length. It defaults to the value 'SYSTEM.ADMIN.SVRCONN' and represents the channel to be used within the specified queue manager.
- Use credentials: this checkbox, which is unchecked by default, allows you to specify whether the queue provider's connection requires a username and password.
- Username: this 100-character text field is enabled (and mandatory) when Use credentials is checked.
- Password: this 100-character password-masked field is enabled (and mandatory) when Use credentials is checked.

6.19.9 RabbitMQ

The following additional properties are displayed at RabbitMQ queue providers:

- Hostname: this mandatory text property is used to capture the host name of the RabbitMQ server. It accepts a maximum of 100 characters.
- Virtual host: this mandatory text property is used to specify the virtual host to be used to connect to RabbitMQ. It accepts a maximum of 100 characters, and defaults to the value '/'.
- Username: this mandatory text property is used to specify the user name to be used to connect to RabbitMQ. It accepts a maximum of 100 characters.
- Password: this mandatory password-protected textbox is used to specify the password to be used when connecting to RabbitMQ. It accepts a maximum of 100 characters.

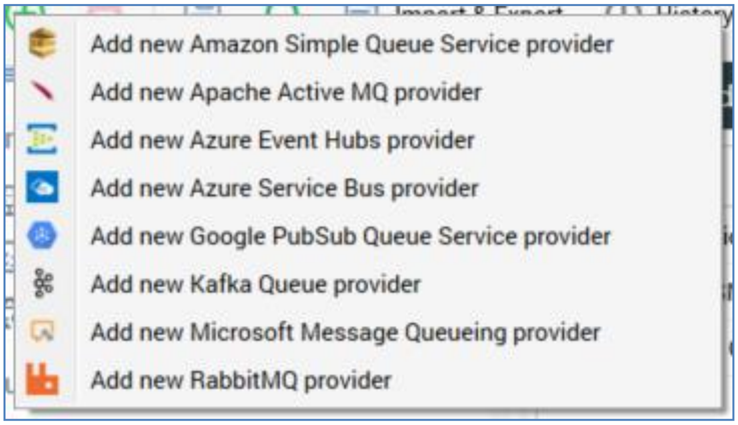
6.19.10 Kafka

The following additional properties are displayed at Kafka queue providers:

- Bootstrap servers: this mandatory property, which can be a maximum of 4000 characters in length, allows you to specify a comma-separated list of host names and ports used to connect to a Kafka cluster.
- Acknowledgment: this dropdown field exposes values 'None' (the default), 'Leader' and 'All'. It represents the ACK-value of partition replicas that must receive a record before a write is considered successful.
- Compression type: this dropdown field exposes values 'None', 'Gzip', 'Snappy' (the default), 'Lz4' and 'Zstd'. It allows you to define the type of compression algorithm used for data generated by the producer
- Max. retry attempts: this numeric property allows you to specify the number of attempts to be made if there is a server error. The property accepts a range of values from 0 to 30. Setting it to 0 means that no retries are performed.
- Batch size: this numeric property accepts values from 0 to 2,000,000, and defaults to 1,000,000. It allows you to specify the size of messages, in bytes, to be sent as a batch to the same partition. Setting to 0 means batching is not used.
- Linger time: this numeric property accepts values from 0.00 (the default) to 1000.00. It represents the minimum time, in milliseconds, to wait for additional messages before sending the current batch. Setting the property to 0 means no waiting occurs.

6.19.11 Create New Queue Provider

This is carried out in the toolbar, by clicking the Create new Queue Provider button. When you do so, a sub-menu is displayed:



A new queue provider of the selected type is added to the grid and placed in an appropriate alphabetical position.

Its Name is 'New [Provider Type] Provider' (if this value already exists, its name is 'New [Provider Type] Provider 2' (note that this number can be incremented if required)). The new queue provider is selected automatically.

6.19.12 Configure Existing Queue Provider

This is carried out in the simple fields in Selected Queue Provider Details. You can select a queue provider to view its details. If you update a previously-saved queue provider, its State is set to Edited.

6.19.13 Delete Selected Queue Providers

This is carried out in the toolbar, using the Delete selected Queue Providers button.

A previously-saved deleted queue provider's State is set to Deleted, and its row text color is set to red. You may no longer select a deleted row. You can delete multiple queue providers concurrently.

Any unsaved deleted queue providers are removed from display immediately.

6.19.14 Save Changes to Queue Providers

Save is carried out using the Save changes to Queue Providers toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, queue providers are displayed in alphabetical order. All providers' states are updated to Unchanged. Any deleted providers are removed from display.

6.19.15 Refresh

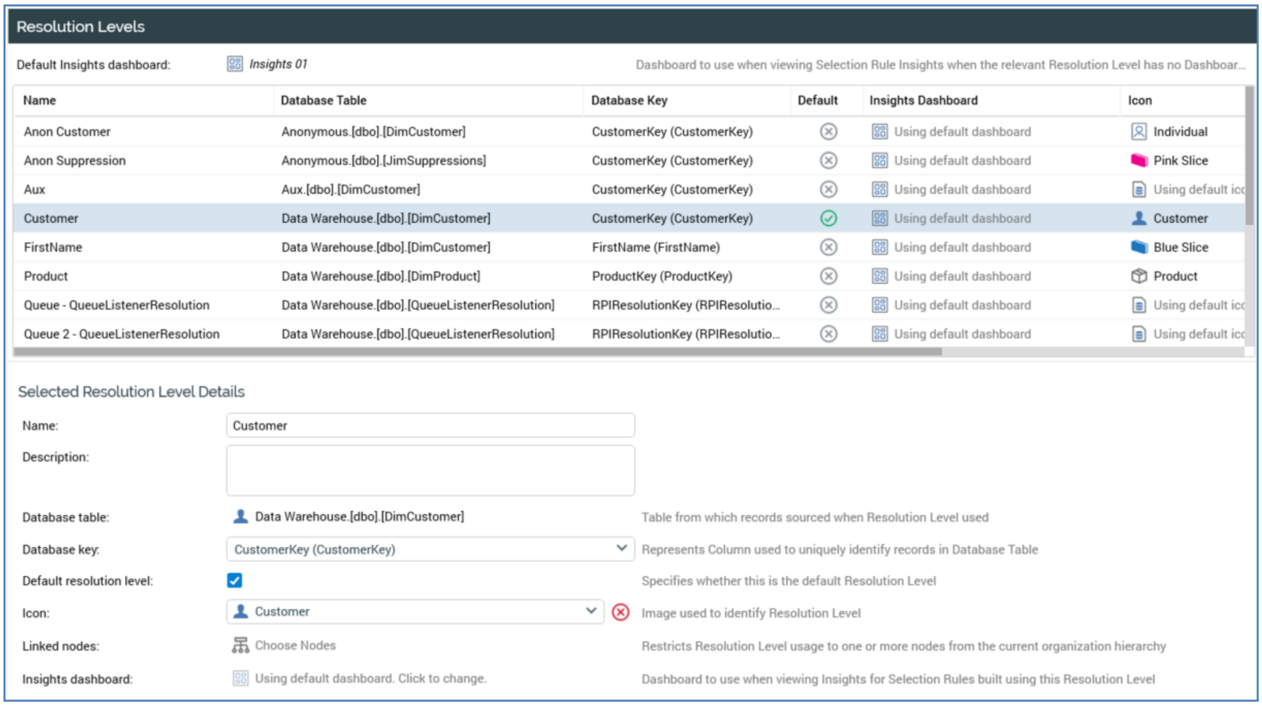
This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.20 Configuring Resolution Levels

Resolution levels define the data warehouse or auxiliary database table from which records are to be selected when a selection rule is run.

When configured with a data warehouse table, they can also define from where records are to be selected when an audience instance is executed, and the default level at which records retrieved from that table are to be deduplicated.

Configuration of resolution levels is carried out in the Resolution Levels configuration interface.



The Resolution Levels configuration interface contains the following elements:

6.20.1 Resolution Levels

The Resolution Levels configuration interface contains the following:

- Default Insights dashboard: this optional property allows you to select a dashboard to be displayed when viewing selection rule insights in the Insights Window when the rule's resolution level has no dashboard specified (for more information, please see the Standard Selection Rule documentation).

  You can select a dashboard file, which must contain at least one Chart or Count Results widget. You can populate the property by browsing for a dashboard or by using drag and drop. Once populated, you can open the latest version of the dashboard in the Dashboard Viewer. You can also clear your selection.

A grid is displayed below the Default Insights dashboard property, listing all existing resolution levels (including those created automatically when a queue listener audience definition is saved). Within the grid, the following read-only columns are displayed:

- Name
- Database Table
- Database Key
- Default
- Insights Dashboard: if set specifically at a resolution level, the name of the Insights dashboard, else 'Using default dashboard'.
- Icon
- Linked Nodes
- State

Details of the currently-selected resolution level are displayed in the Selection Resolution Level Details section, shown below the grid. A message is displayed prior to a resolution level being selected:

The following updateable properties are shown:

- Name: a mandatory field that can be a maximum of 100 characters in length, and which must be unique across all resolution levels.

- Database table: specification of the data warehouse or auxiliary database table from which records are to be retrieved when using the resolution level is mandatory. You can browse for a database table using the Choose Database Item dialog. When you do so, a list of database tables is displayed in the Choose Item section. Select the required database table and click OK. Note that you cannot select a PII vault database.

  If one or more auxiliary databases have been configured at the current RPI client, you can use the Choose Database selector to select the database from which the list of tables is retrieved. If auxiliary databases are available, the table is displayed in the grid as '[Database name].[Schema].[Table name]'.

  For more information on using the Choose Database Item dialog, please see the RPI Framework documentation.

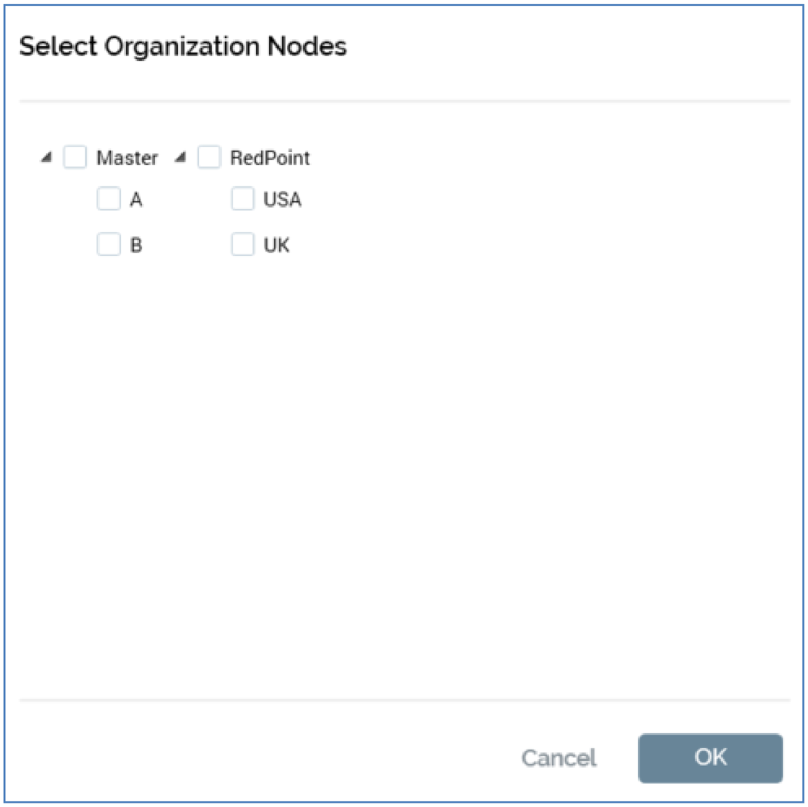
- Database key: this property defines the key level at which records are to be selected when using the resolution level. It is mandatory, and can be chosen using the dropdown provided, which list all existing database keys.

- Default resolution level: this checkbox (unchecked by default) allows you to define which of the current resolution levels is to serve as the default (and which will be selected automatically in contexts where a resolution level property can be set). Note that only one resolution level can be defined as the default.

- Icon: provision of an icon, to be displayed in contexts where a resolution level property can be set, is optional. If required, an icon can be chosen using the dropdown provided. Having specified an icon, you can clear the property.

- Linked Nodes: this property allows you to associate the resolution level with one or more nodes from the current client's organization hierarchies. When a resolution level is tied to organization node(s) in this way, and configuration setting EnableOrgNodeConfigUserControl is set to true, a user not associated with at least one of the nodes in question will be unable to make use of the resolution level at runtime. Full details of such restrictions can be found in relevant contexts elsewhere in the documentation.

  On the property's initial display, the button text 'Choose nodes' is shown. Clicking the button displays the Select Organizational Nodes dialog:



Each organization hierarchy, and the tree of nodes that it contains, are displayed. Each is accompanied by a checkbox (unchecked by default). You can check the nodes to be associated with the resolution level, and then click the OK button to confirm your selection. You can also click Cancel to remove the dialog from display.

- Insights dashboard: this property allows you to choose a specific dashboard to be displayed when viewing insights for selection rules built using the currently-selected resolution level. For more information, please see the Default Insights dashboard property, above.

6.20.2 Create New Resolution Level

This is carried out in the toolbar. A new resolution level is added to the grid and placed in an appropriate alphabetical position.

Its Name is New Resolution Level (if New Resolution Level exists, its name is New Resolution Level 2 (note that this number can be incremented if required)). Its Database table and Database Key values are blank, its Default setting is unchecked, it is associated with no organizational nodes and its State is Added. The new resolution level is selected automatically.

6.20.3 Configure Existing Resolution Level

This is carried out inline within the Resolution Levels grid. If you configure a resolution level that has been saved previously, its State is set to Edited.

6.20.4 Delete Selected Resolution Levels

This is carried out in the toolbar. A deleted resolution's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row. You can delete multiple resolution levels concurrently.

6.20.5 Save Changes to Resolution Levels

Save is carried out using the Save changes to Resolution Levels toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, resolution levels are displayed in alphabetical order. All resolution levels' states are updated to Unchanged. Any deleted resolution levels are removed from display.

6.20.6 Refresh

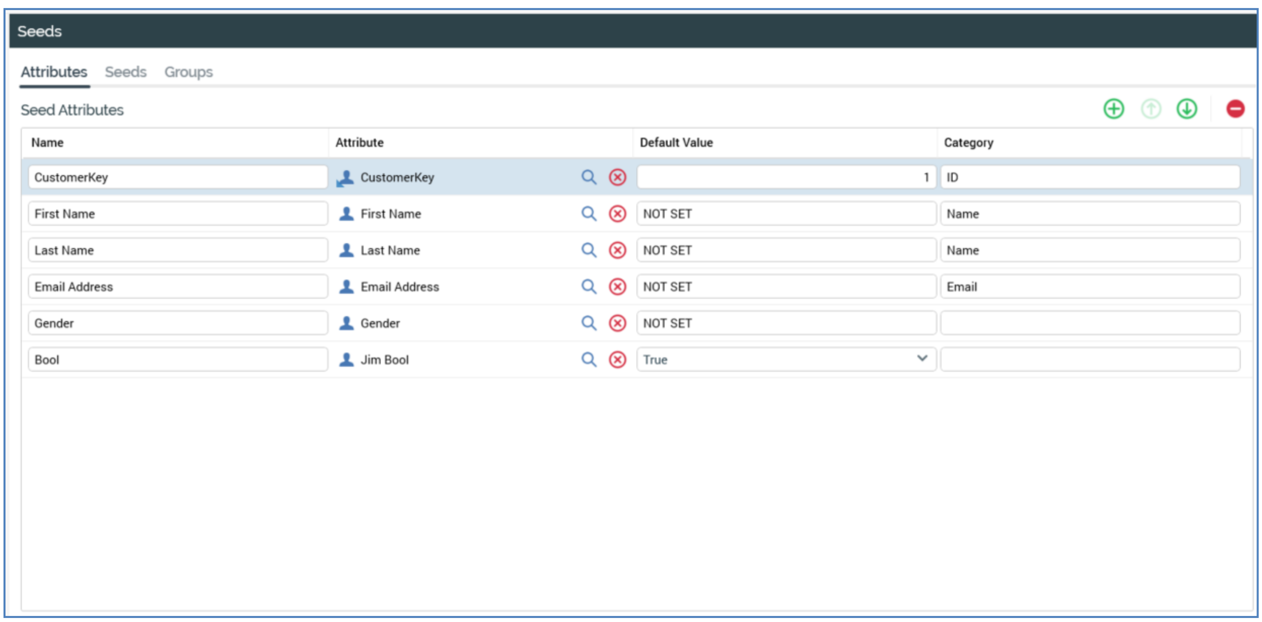
This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.21 Configuring Seeds

Seeds are used primarily to ensure that interaction offer messages are delivered in accordance with expectations. A seed is an individual whose details are captured in the Seeds configuration interface. The details in question are defined by the range of seed attributes that have been configured. Having created a seed and configured its attributes, it can then be assigned to one or more seed groups. Seed groups may then in turn be assigned to offer channels in the Offer Activity Configuration dialog in the Interaction Designer. Upon interaction execution, the channel's outputs are 'peppered' with the seeds. In this way it is possible, for example, to send a production interaction email to a test email address, thereby verifying channel deliverability and message appropriateness.

Seeds can also be used when sending test email or SMS messages from the Offer Designer. Selection of one or more seed groups during, for example, test email execution ensures that the email in question is sent to the email addresses with which the seeds in the selected groups are configured.

Configuration of Seeds is carried out in the Seeds configuration interface.



The interface contains the following elements:

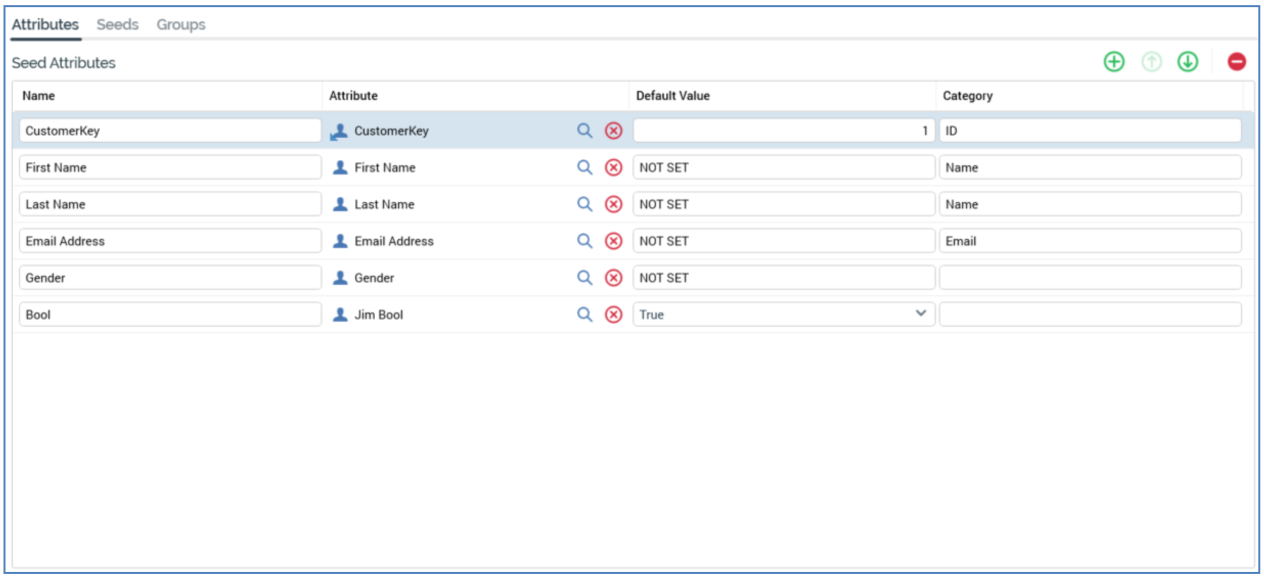
6.21.1 Tabset

Three tabs are available in the Seeds configuration interface:

Each of these is discussed separately.

6.21.2 Attributes Tab

The Seeds configuration interface's Attributes tab contains the following:



- Toolbar, exposing the following options:
  - Add: invocation adds a new attribute to the bottom of the grid. Its default name is 'Seed Attribute'. If 'Seed Attribute' already exists, it is named 'Seed Attribute 2'. This value can be incremented if required.
  - Move the selected seed attribute up: only available if an attribute other than the first in the grid is selected. Invocation moves the attribute up one position in the list of attributes.
  - Move the selected seed attribute down: only available if an attribute other than the last in the grid is selected. Invocation moves the attribute down one position in the list of attributes.
  - Remove: this option is only available if an attribute is selected in the grid. Invocation removes the attribute from the grid and is not protected by an 'Are You Sure?' dialog.
- Seed attributes grid, containing the following columns:
  - Name: a mandatory updateable text field that can be a maximum length of 100 characters.

- Attribute: the RPI attribute that corresponds to the seed attribute. Provision thereof is mandatory. You can browse for an attribute using the recent items chooser or File System Dialog, or you can drag an attribute from the toolbox and drop it directly onto the field. Having chosen an attribute, you can clear it or view its details in the File Information Dialog. Note that, if mapping an email address or cellphone number, be sure to use the correct attribute (failure to do so will cause a run-time error). Note also that you can only use a given attribute once in the list.

- Default Value: provision of a default value for the attribute is mandatory. Prior to choosing an Attribute, the text 'Choose an attribute first' is displayed in the field. The default value provided must be of an appropriate data type; if a string, its maximum length is 100 characters.

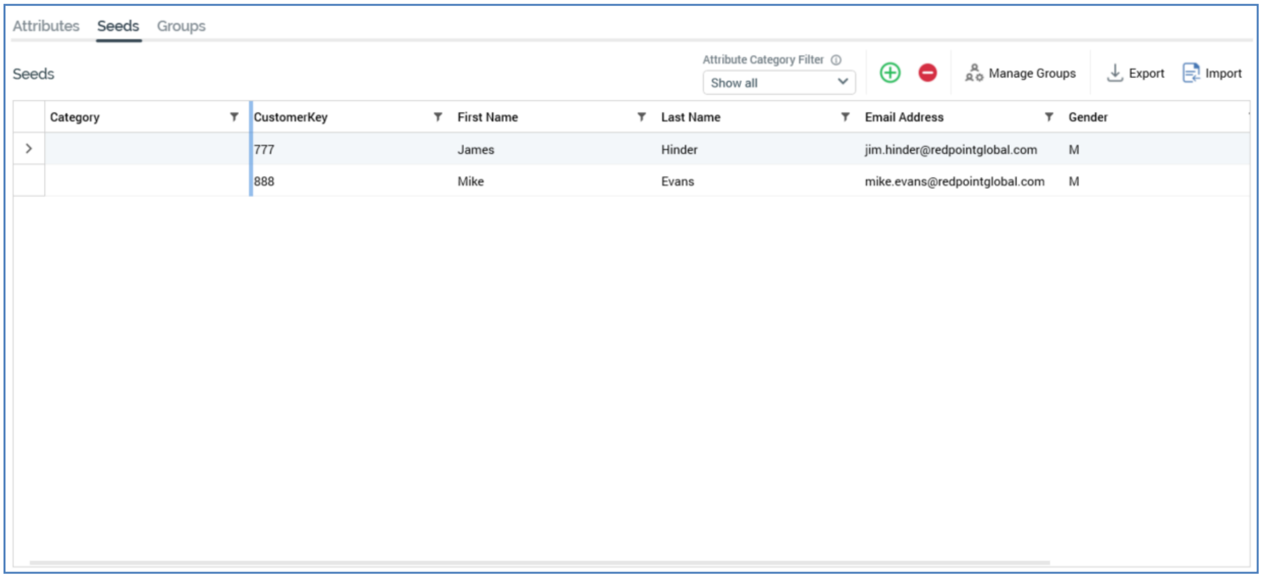
- Category: an optional property, which can be a maximum of 100 characters in length.

The grid is sortable.

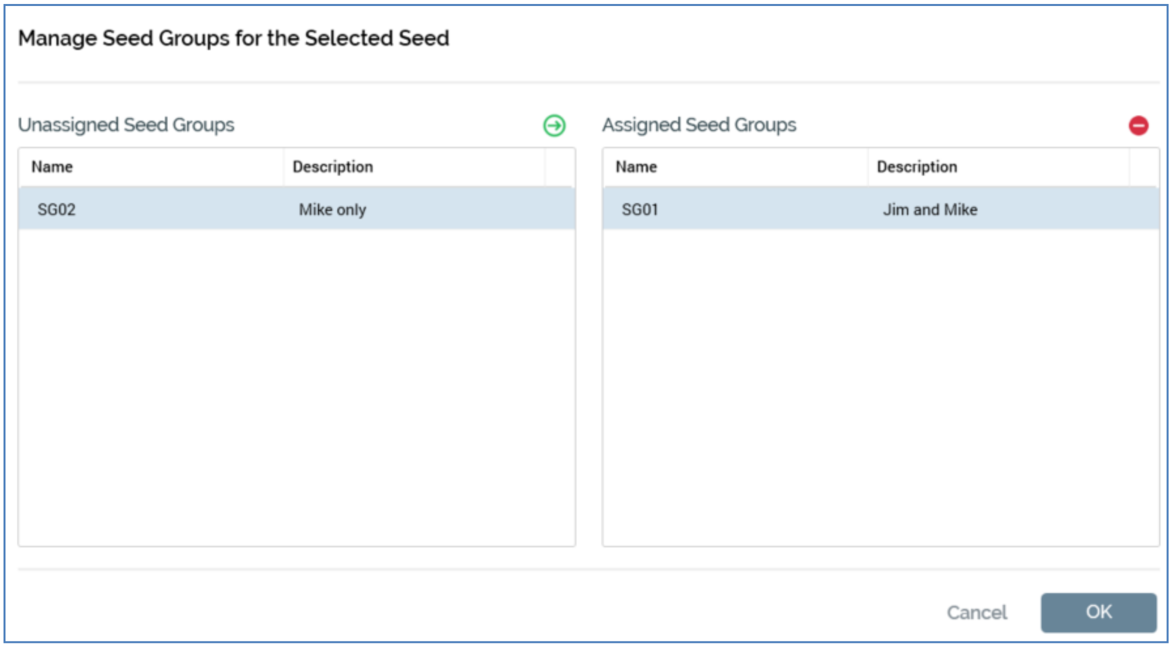
You can also add seed attributes by dragging one or more from the toolbox and dropping them onto the grid. When you do so, the resultant seed attributes are named in accordance with the name(s) of the attribute(s), and their Attribute properties are set appropriately. Note that if an attribute is already present in the grid it is not added.

6.21.3 Seeds Tab

The Seeds configuration interface's Seeds tab contains the following:



- Toolbar, exposing the following options:
  - Attribute Category Filter: this dropdown property allows you to only display seed attributes that match the selected category. It exposes a 'Show all' value by default, as well as a list of distinct Category values as defined at the Attributes tab. You can select a value to limit the attributes displayed in the table to only those matching your selection. Note that changing the selected value removes any applied table filters or sortation.
  - Add: invocation adds a new seed to the bottom of the grid. All of the new seed's attribute values are set to their defaults.
  - Remove: this option is only available if one or more seeds are selected in the grid. Invocation removes the seed(s) from the grid and is not protected by an 'Are You Sure?' dialog.
  - Manage Groups: clicking this button displays the Manage Seed Groups for the Selected Seed dialog.



It contains two lists:

- Unassigned Seed Groups: this list includes all configured seed groups not associated with the current seed. It is accompanied by an Assign selected Seed Groups to Seed toolbar button.
- Assigned Seed Groups: this list includes all configured seed groups associated with the current seed. It is accompanied by Unassign selected Seed Groups from Seed toolbar button.

You can use the buttons provided to assign and unassign seeds to and from seed groups as required.

- Export: this button is disabled when no seeds are present in the list. Invocation displays the Export Seeds Windows file system dialog, in which the default File name is set to 'Seeds [yyyy]-[mm]-[dd].txt'. A Save as type dropdown allows you to specify the type of file to be generated at export – one of Text (Tab delimited) (the default), Text (Pipe delimited) and CSV.

  You can click Save to save the file in the specified format. Having performed the export, the system displays a confirmatory message.

  The resultant file is tab-delimited, and contains the following columns:

  - SeedGUID: a system-generated unique identifier.
  - SeedCategory: as per the Category column.
  - [Seed attributes]: one column is displayed per defined seed attribute. Columns are ordered as per the attributes' definition in the Attributes tab.

- Import: invocation of this option displays the Import Seeds Windows file system dialog. You can select a file to import, and then click Open to initiate the import of seeds data. You can also define the type of file to be imported.

  If you attempt to import a mismatched file type, a warning is raised, and a '[file name]_warnings.txt' file is generated, which contains details of why the import failed.

  On successful completion of the import, a confirmatory message advises of the number of seeds newly-imported and/or updated.

  At import, if a seed has a matching SeedGUID (meaning that it was exported as an existing seed record), any updated seed attribute values are reflected at the Seeds tab. If the system was unable to update seed attribute values due to a data type mismatch, a message advises:

  'Seeds imported from [Path\File] with warnings. See Seeds [Seeds file]_warnings.txt file for details'

  If an incorrect SeedGUID was present in an imported file, the attempted import fails. If the same SeedGUID was present more than once, the latest (in terms of the record's position in the file) attribute values are imported.

  At import, if a new seed, without a SeedGUID, is present, a new seed record is created.

  If you import a previously-exported file within which one or more seed records have been removed, the seeds in question are not deleted.

  Note that not all seed attributes need be present in import file for a successful import to take place. Also, any seed attributes in file that do not match names of configured seed attributes are ignored.

  If created, the aforementioned [Seeds file]_warnings.txt file contains, for each data type mismatch or missing attribute:

  '[Seed number] Unable to parse [data type] value for parameter [attribute name]'

  Note that the presence of a SeedCategory column in the imported seed file is optional.

- Seeds grid: when empty, a 'No seeds to display' message is displayed. When populated with one or more seeds, the grid contains the following:

  - Category: an optional, updateable column, initially to the left of the table. A splitter is shown to the column's right (columns to left of the splitter remain static when the table is scrolled horizontally; columns can be repositioned as required).

  - [One column per seed attribute]: each attribute's default value is displayed initially. You can provide attribute values for seeds, with updateable, type-specific fields provided for this purpose. The maximum length for string seed attribute is 100 characters.

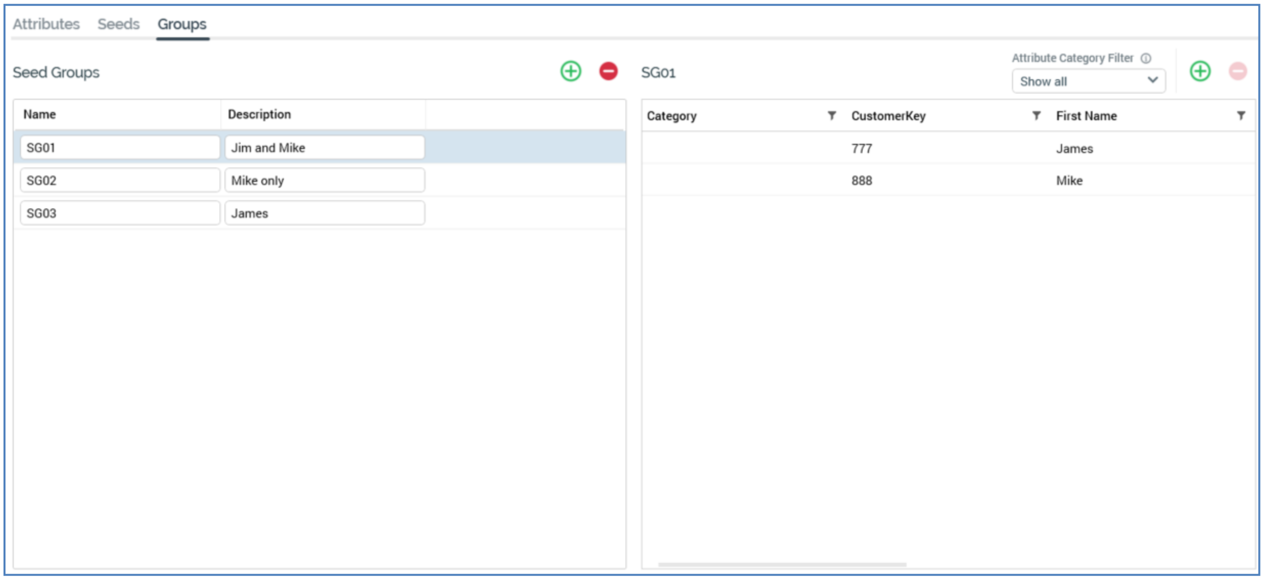
Having updated a seed attribute value, a Remove the override… button is displayed to the right of the field in question. Clicking it reverts the attribute to its default value.

Note that provision of a seed attribute value is optional.

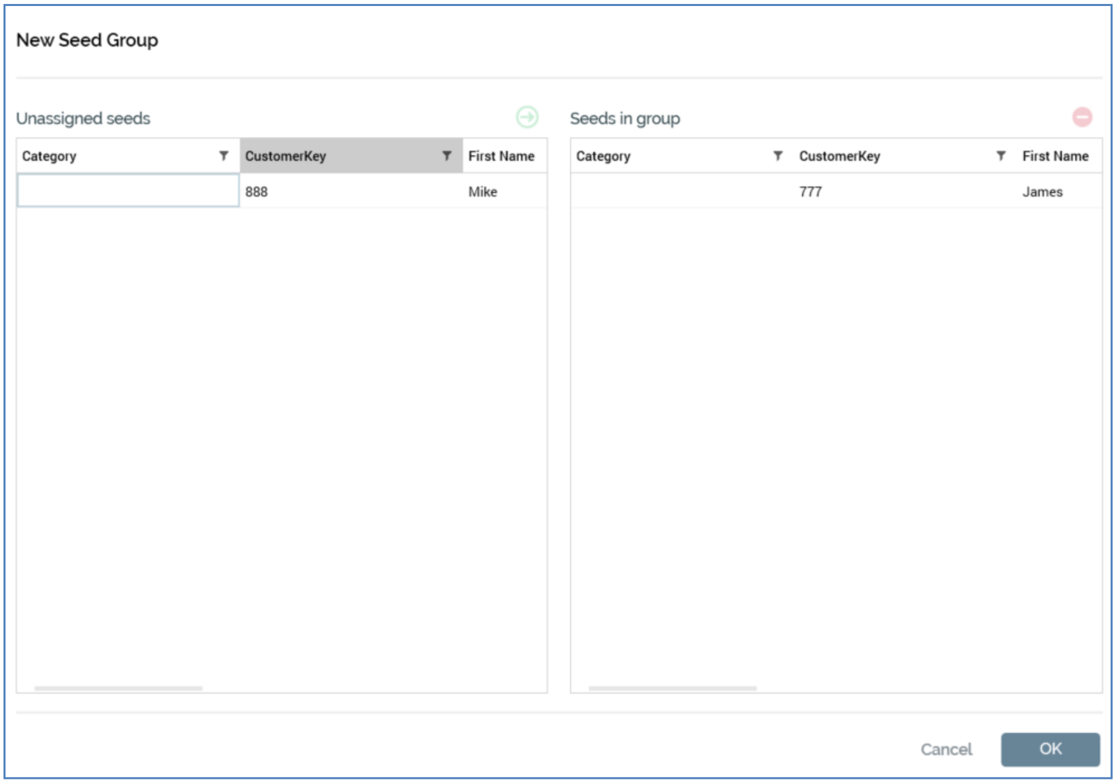
You can sort the grid by any column. You can also filter columns as required

6.21.4 Groups Tab

The Seeds configuration interface's Groups tab contains the following:



- Seeds Groups section, containing:
  - Toolbar, exposing the following options:
    - Add: invocation adds a new seed group to the bottom of the grid. Its name is 'New Seed Group'. If 'New Seed Group' already exists, it is called 'New Seed Group 2'. This value can be incremented if required.
    - Remove: this option is only available if a seed group is selected in the grid. Invocation removes the seed group from the grid and is not protected by an 'Are You Sure?' dialog.
  - Seeds Groups grid, containing the following columns:
    - Name: mandatory, and a maximum length of 100 characters. A seed group's name must be unique across all seed groups.
    - Description: optional, and a maximum length of 1000 characters
- [Seed Group] section, containing:
  - Title: set to 'No seed group selected' when a seed group is not selected in the Seed Groups grid. Set to the name of the seed group when a seed group is selected.
  - Toolbar, exposing the following options:
    - Attribute Category Filter: this dropdown allows you to filter the seed attributes displayed in the right-hand list. It functions as per its equivalence in the Seeds tab.
    - Add: this option is enabled when a seed group is selected. Invocation displays a dialog, in which you can add seeds to, or remove them from, the seed group.



The dialog contains the following:

- Unassigned seeds grid: this grid lists all existing seeds not assigned to the current seed group. For each, a Category column and seed attribute values are displayed. The grid is sortable, and you can apply filters as required. You can also reorder the columns shown therein.

  The grid is accompanied by a toolbar, exposing:

  - Assign the selected seeds to the seed group: only displayed and enabled when row(s) are selected in the grid. Invocation adds the seeds selected in the Unassigned seeds grid to the Seeds in group grid, and also removes the same seeds from the Unassigned seeds grid.

- Seeds in group grid: lists all seeds assigned to the current seed group. For each, a Category column and seed attribute values are displayed. The grid is sortable, and you can apply filters as required. You can also reorder the columns shown therein.

  The grid is accompanied by a toolbar, exposing:

  - Remove the selected seeds from the seed group: only displayed and enabled when row(s) are selected in the grid. Invocation removes the selected seeds from the Seeds in group grid and reinstates them within the Unassigned seeds grid.

- OK button: invocation applies the changes made in the dialog, displaying the results in the Groups tab, and also closes the dialog.

- Cancel button: invocation removes the dialog from display without applying changes. Clicking off the dialog has the same effect

▪ Remove: this option is enabled when a seed is selected in the Seeds in group grid. Invocation removes the seed from the seed group and is not protected by an 'Are You Sure?' dialog.

o [Seed Group name] Grid: lists all seeds assigned to the current seed group. For each, a Category column and seed attribute values are displayed (in accordance with the selected Attribute Category Filter value). The grid is sortable, and you can apply filters as required.

Note that a seed group must contain at least one seed.

6.21.5 Save

Save is carried out using the Save changes to Seeds toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

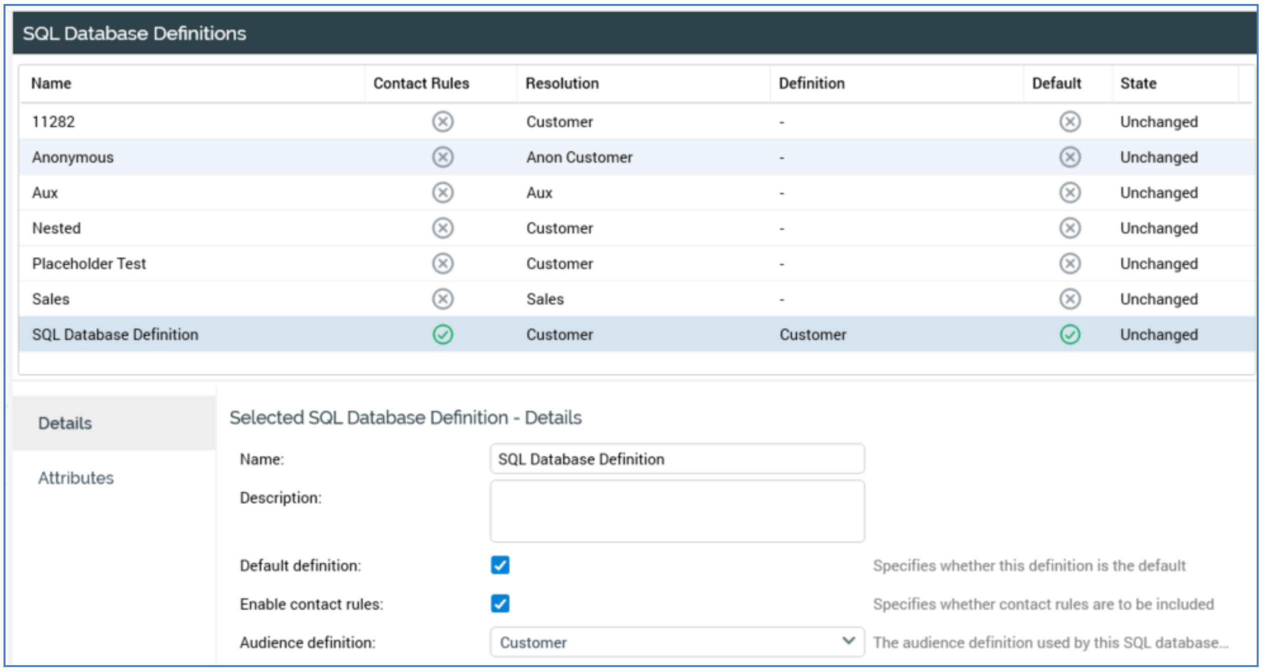
Following a successful save, all changes made within the Seeds configuration interface are persisted to the operational database.

6.21.6 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.22 Configuring SQL Database Definitions

SQL Database definitions are used to define the criteria available when building basic selection rules.

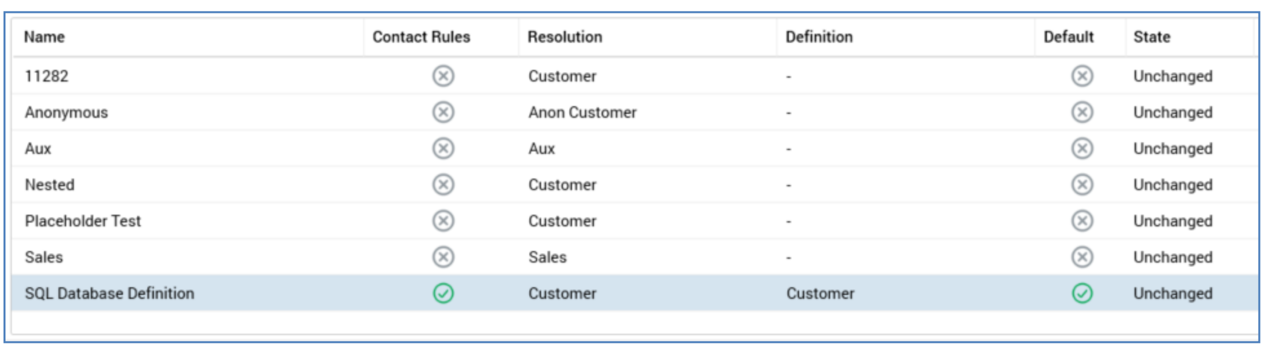


Name	Contact Rules	Resolution	Definition	Default	State
11282	✗	Customer	-	✗	Unchanged
Anonymous	✗	Anon Customer	-	✗	Unchanged
Aux	✗	Aux	-	✗	Unchanged
Nested	✗	Customer	-	✗	Unchanged
Placeholder Test	✗	Customer	-	✗	Unchanged
Sales	✗	Sales	-	✗	Unchanged
SQL Database Definition	✓	Customer	Customer	✓	Unchanged

The SQL Database Definition configuration interface is available at clients with a SQL data warehouse, or at least one SQL auxiliary database. It contains the following elements:

6.22.1 SQL Database Definitions

A grid is displayed, listing all existing SQL database definitions:



Name	Contact Rules	Resolution	Definition	Default	State
11282	✗	Customer	-	✗	Unchanged
Anonymous	✗	Anon Customer	-	✗	Unchanged
Aux	✗	Aux	-	✗	Unchanged
Nested	✗	Customer	-	✗	Unchanged
Placeholder Test	✗	Customer	-	✗	Unchanged
Sales	✗	Sales	-	✗	Unchanged
SQL Database Definition	✓	Customer	Customer	✓	Unchanged

Within the grid, the following read-only columns are displayed (see below for property details)

- Name
- Contact Rules: tick or cross

- Resolution
- Definition: audience definition
- Default: tick or cross
- State: one of Added, Edited, Deleted or Unchanged.

When no SQL database definitions have been configured, an advisory message is displayed.

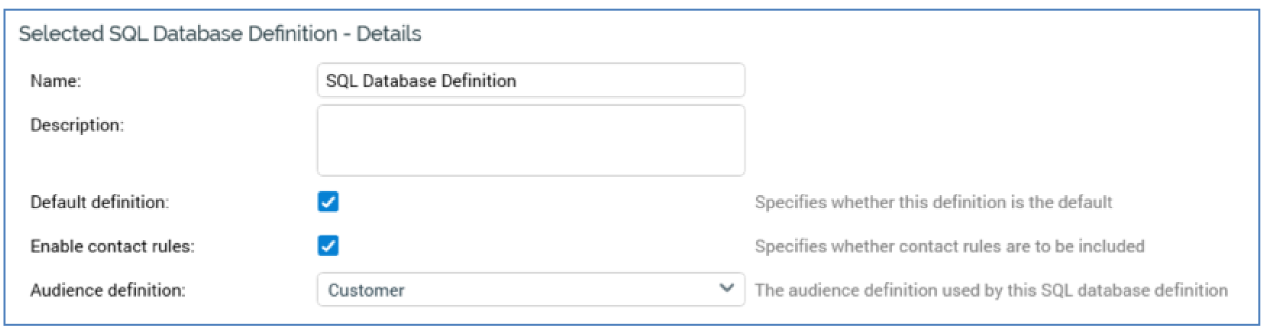
SQL database definitions are listed alphabetically by name.

6.22.2 Selected SQL Database Definition Details

This section displays the details of the SQL database definition selected currently in the list. If no definitions have been configured, an advisory message is displayed.

The sections contains a tabset, which contains Details and Attributes tabs.

The Details tab contains the following properties:

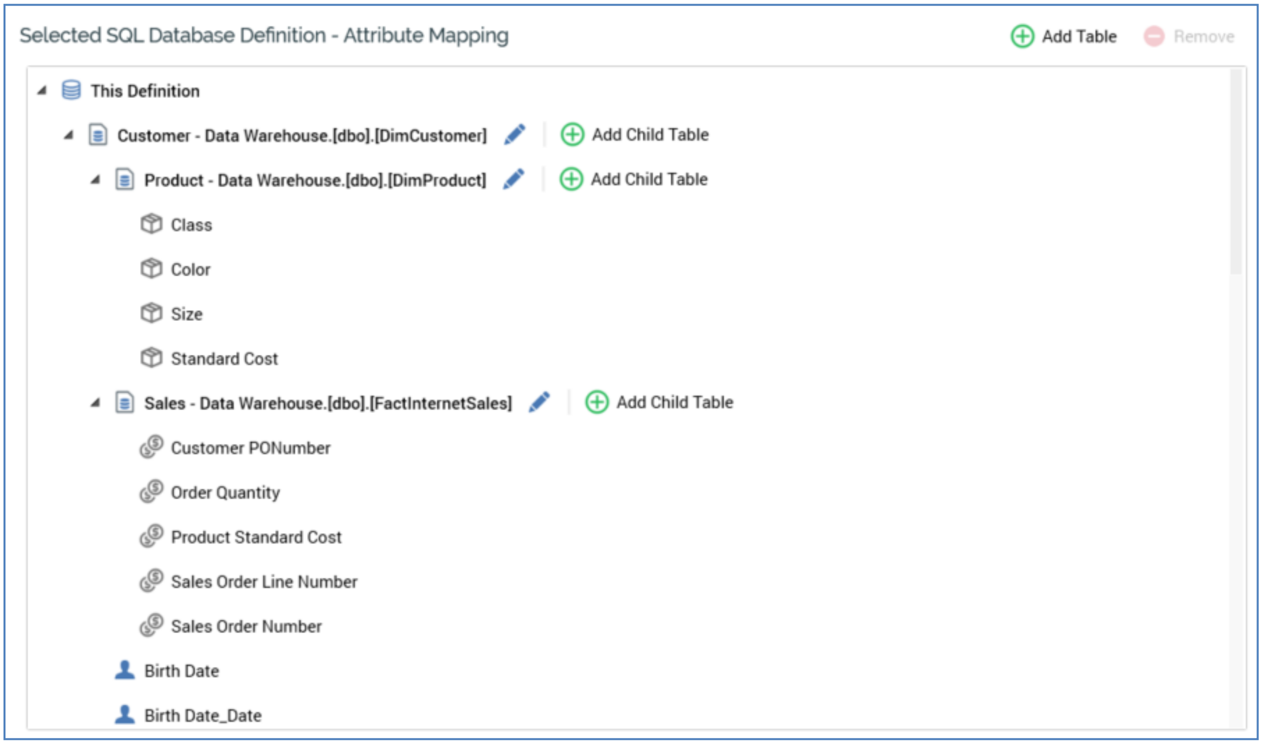


- Name: the unique name used to identify the definition. Name is mandatory, can be a maximum of 100 characters in length, and must be unique across all definitions.
- Description: an optional property that can be a maximum of 1000 characters in length.
- Default definition: this checkbox is unchecked by default. It allows you to define one of the definitions as default. When creating a new basic selection rule, its Database Definition property will be set automatically to the default SQL database definition.
- Enable contact rules: this checkbox, which is checked by default, allows you to specify whether contact rules are to be made available at basic selection rules using the current definition. Contact rules allow you to target on the basis of an individual having previously been contacted via RPI. When the property is unchecked, a Resolution level property replaces Audience definition. Note this property is not shown when configuring SQL database definitions in a NoSQL data warehouse/SQL auxiliary database environment.
- Resolution level: this dropdown is shown when Enable contact rules is unchecked. It lists all resolution levels configured at the current RPI client. The default resolution level is selected automatically. Note that selection of a resolution level is mandatory if the property is shown.

- Audience definition: this dropdown is shown when Enable contact rules is checked. It lists all audience definitions configured at the current RPI client. The default audience definition is selected automatically. Note that selection of an audience definition is mandatory if the property is shown.

The Attributes tab allows you to define a hierarchical tree structure of the tables and attributes that are to be mapped within the current SQL Database Definition. Any attributes mapped in this context will be available to be added as criteria with a basic selection rule. Tables are used to organize criteria. For more information, please see the basic selection rule documentation.

The Attributes tab contains the following:

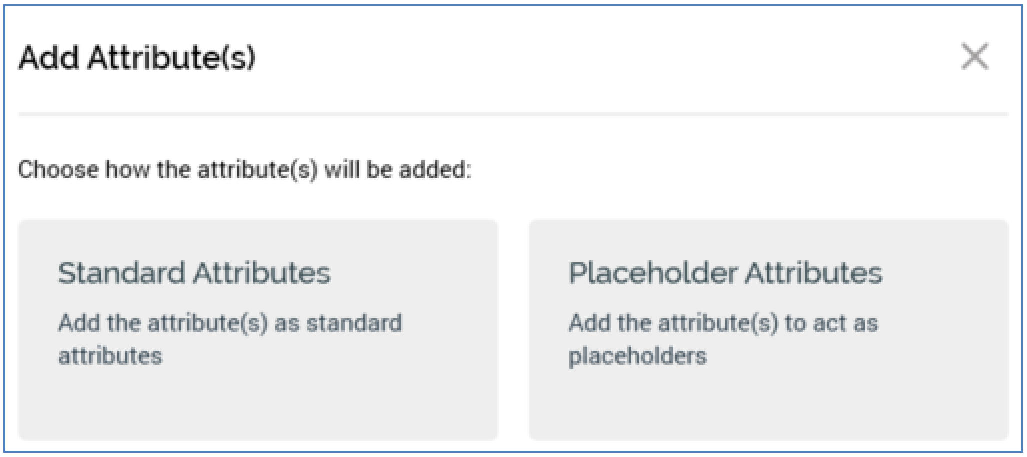


- Toolbar: exposing the following:
  - Add Table: clicking this button adds a new, unconfigured table to the treeview. The new table is presented in Edit mode and is added after any existing child tables.
  - Remove: this button is enabled when a table or attribute is selected in the treeview. Invocation removes the selected item without displaying an 'Are You Sure?' dialog. Any child tables and/or attributes are also removed.
- Treeview: the treeview is used to define the hierarchical structure of tables and attributes within the SQL database definition. A new definition contains a single top-level node called 'This Definition'.

  You can add tables to This Definition, and nest tables within tables, using the Add Table button. You can roll up or expand tables as required.

You can add attributes to This Definition, or tables within the treeview, by dragging them from the toolbox and dropping them in an appropriate position (onto This Definition, an existing table or onto the list of attributes within This Definition or a table.

When you drop one or more attributes, the following dialog is displayed, allowing you to specify whether the attributes are to be added as standard attributes, or as placeholders.



For more information on using placeholder attributes in basic selection rules, please see the Basic Selection Rules documentation.

You cannot include Model Project, Exists in table or Parameter attributes. An informational tooltip is shown on hovering over an attribute.

It is optional for This Definition to contain tables and/or attributes. A definition without tables or attributes can be used to enable contact rules only at a basic selection rule.

It is mandatory for a table to contain at least one nested table or attribute.

The treeview is ordered with tables displayed first, in alphabetical order, with attributes, also in alphabetical order, afterwards. The same ordering applies within a table.

Tables can be shown in display or edit modes. When in display mode, the following are shown at a table:

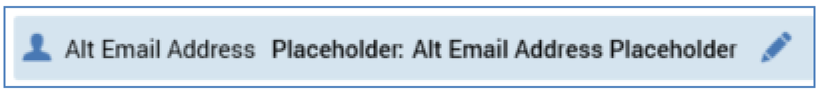
- Display name: read-only; if not provided, '[No name]' is shown.
- Database table: read-only; if not provided, '[No table chosen]' is shown.
- Edit: clicking this inline button places the table into edit mode.
- Add child Table: clicking this inline button adds a child table to the current table. The new table is presented in edit mode.

When in edit mode, the following are shown at a table:

- Display name: this mandatory text field can be a maximum of 100 characters in length and must be unique within This Definition.
- Database table: you must browse for a table using the Choose Database Item dialog (or select a recently-used table from the list).
- Exit edit mode: clicking this inline button returns the table to display mode. Dragging an attribute from the toolbox onto the table has the same effect.
- Add child Table: clicking this inline button adds a child table to the current table. The new table is presented in edit mode.

Placeholder attributes can also be shown in read-only or edit mode.

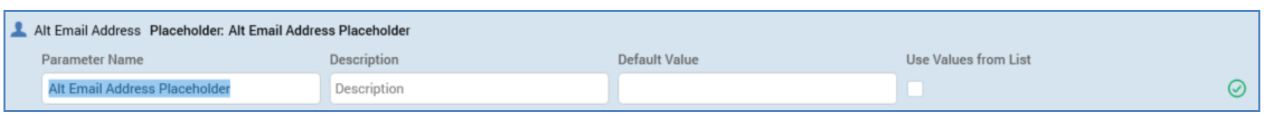
When in read-only mode, a placeholder attribute is shown as per the following example:



An Edit button allows you to place the attribute into edit mode. Only single placeholder att can be in edit mode at a time.

A Remove button is shown when hovering over the placeholder attribute. Clicking it removes the attribute without displaying an 'Are You Sure?' dialog.

When a placeholder attribute is displayed in edit mode, the following are shown:



- '[Attribute Name] 'Placeholder:' [Parameter Name]'
- Parameter Name: this mandatory, updateable text field defaults to the value '[Attribute name] Placeholder'. Parameter Name must be unique within the current SQL database definition.
- Description: optional.
- Default Value: optional; set using a data type-specific control.
- Use Values from List: this checkbox is only displayed if the attribute's data type is String. A checkbox, it is unchecked by default. When checked, the [List] dropdown is shown.
- [List]" this dropdown is shown when Use Values from List is checked. It lists all currently-configured local string Value Lists. When displayed, selection of a list is mandatory.
- Exit edit mode button: clicking this button returns the placeholder attribute to read-only mode.

6.22.3 Create New SQL Database Definition

This action is carried out using the Create new SQL Database Definition toolbar button. The new definition's name is 'New SQL Database Definition' (an incrementable integer can be appended to ensure uniqueness). Contact rules are enabled automatically at a new SQL database definition.

6.22.4 Configure Existing SQL Database Definition

This is carried out in the Selected SQL Database Definition Details section. If you configure a definition that has been saved previously, its State is set to Edited.

6.22.5 Delete Selected SQL Database Definitions

This is carried out in the toolbar. A deleted definition's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row. If required, you can delete multiple definitions at the same time.

6.22.6 Save Changes to SQL Database Definitions

Save is carried out using the Save changes to SQL Database Definitions toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

Following a successful save, definitions are displayed in alphabetical order. All states are updated to Unchanged. Any deleted definitions are removed from display.

6.22.7 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.23 Configuring State Flows

Following execution of an interaction, transactional data is often received indicating how a recipient responded to an offer. For example, upon receipt of a credit card offer, an individual might apply for the card; upon being directed to a retail site, a purchase may then be made.

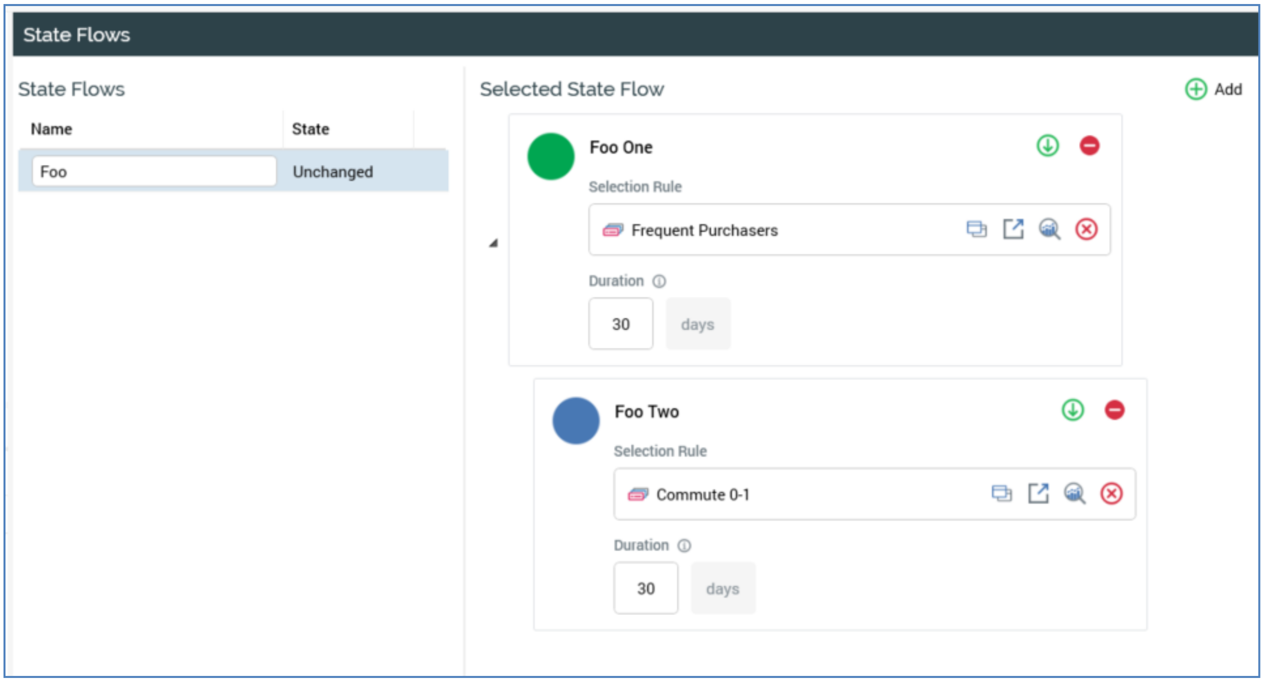
In both such cases, it is likely that transactional data will be received indicating the outcome of the post-offer activity. It is also likely that you might wish to engage further with the offer recipient depending on the nature of the outcome…for example, if the credit card application was successful, you might want to send a welcome email outlining the new card's benefits; if unsuccessful, you might follow up with the offer of another type of credit card more attuned to the applicant's personal circumstances.

Upon receipt of such transactional data it is possible to identify those persons who fall within the groups with whom you wish to maintain dialog using state flows.

Following on from one of the previously-quoted examples, let us consider a credit card state flow. An initial state, Applied, is followed by two child states, Accepted and Rejected. Within the Accepted state might exist another two child states – Active (indicating that the successful application activated and began using the card) and Canceled (indicating that the card was canceled before activation).

RPI facilitates the creation, edit and removal of state flows in the State Flows configuration interface. Access to the interface is controlled by the Configuration-State Flow functional permission.

The State Flows interface contains two sections: State Flows and Selected State Flow.



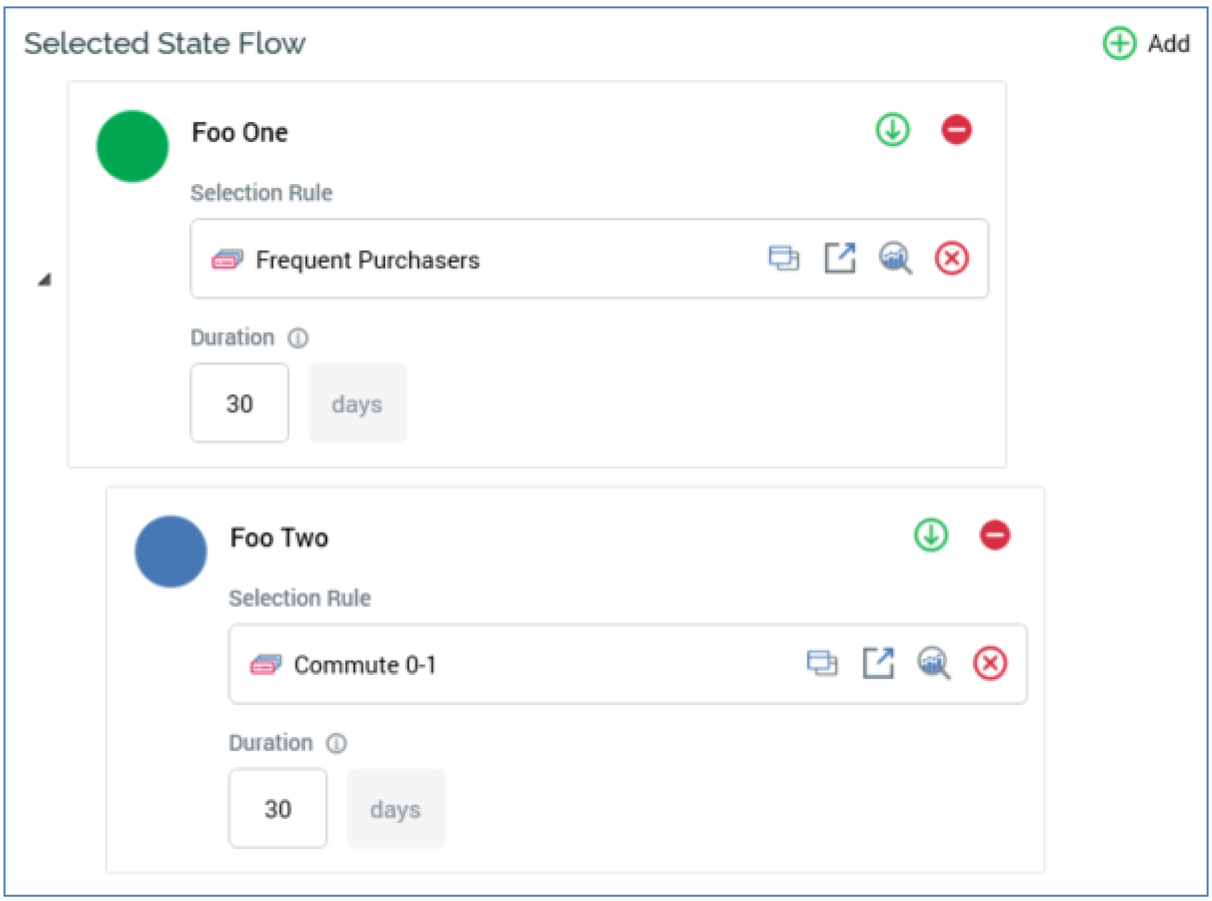
6.23.1 State Flows

The State Flows list displays all state flows configured for the current RPI client. For each, the following are displayed:

- Name: provision of a name for the state flow is mandatory. The value can be a maximum length 100 characters and must be unique across state flows.
- State: this read-only value can be one of Unchanged, Added, Edited or Deleted.

6.23.2 Selected State Flow

This section displays details of the states within the currently-selected state flow.



It consists of a toolbar and treeview.

- Toolbar: the Selected State Flow toolbar exposes the following options:
  - Add: clicking this button adds a new initial state below all existing top-level states within the state flow. Its default name is ‘New initial state’ (an incrementing integer can be added to ensure uniqueness). Its selection rule property is not set by default.

- Treeview: the Selected State Flow treeview displays the hierarchy of states within the currently-selected state flow.

  The treeview is displayed in expanded format by default. For each state in the state flow, the following are displayed:

  - Positive/Negative/Transitional state icon: on hovering over the icon, a menu is displayed, allowing you to change the property. Note that the definition of a state as Positive, Negative or Transitional is purely to add comprehensibility to the state flow, having no functional impact.
  - Name: each state within a state flow must have a name, which can be a maximum of 100 characters in length. Each state's name must be unique within the state flow.
  - Selection rule: you must associate the state with a selection rule, which you can populate by browsing the RPI file system, or by using drag and drop. You cannot choose a selection rule with an auxiliary database resolution level.

    Having chosen a selection rule, you can Open its latest version in the Rule Designer. You can also Clear the property if so desired.
  - Duration: this property defines the length of time, in days, after channel execution within which the state can be assumed.

  A mini toolbar is at a state within the treeview, exposing the following options:

  - Add a new Child State: invocation of this option adds a new child state at the end of the list of the current state's child states. The new state is Positive by default and has a default name of 'New child state' (an incrementing integer can be added to ensure uniqueness amongst the list of children) and has no selection rule.
  - Remove State: invocation of this option is protected by an 'Are You Sure?' dialog and removes the current state and all of its descendent states.

6.23.3 Create New State Flow

This is carried out in the toolbar. A new state flow is added to the list and placed in an appropriate alphabetical position. Its Name is New State Flow (if New State Flow exists, its name is New State Flow 2 (note that this number can be incremented if required)). Its State is Added. The new state flow is selected automatically.

6.23.4 Delete Selected State Flow

This is carried out in the Configuration Workbench toolbar. A deleted state flow's State is set to Deleted (and is shown in red). You may no longer select a deleted state flow. Note that you cannot delete a state flow that is in use at a channel.

6.23.5 Save Changes to State Flows

Save is carried out using the Save changes to State Flows toolbar button, which is displayed in the Configuration Workbench toolbar. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

Following a successful save, state flows are displayed in alphabetical order, and are all shown as Unchanged. Any deleted state flows are removed from display.

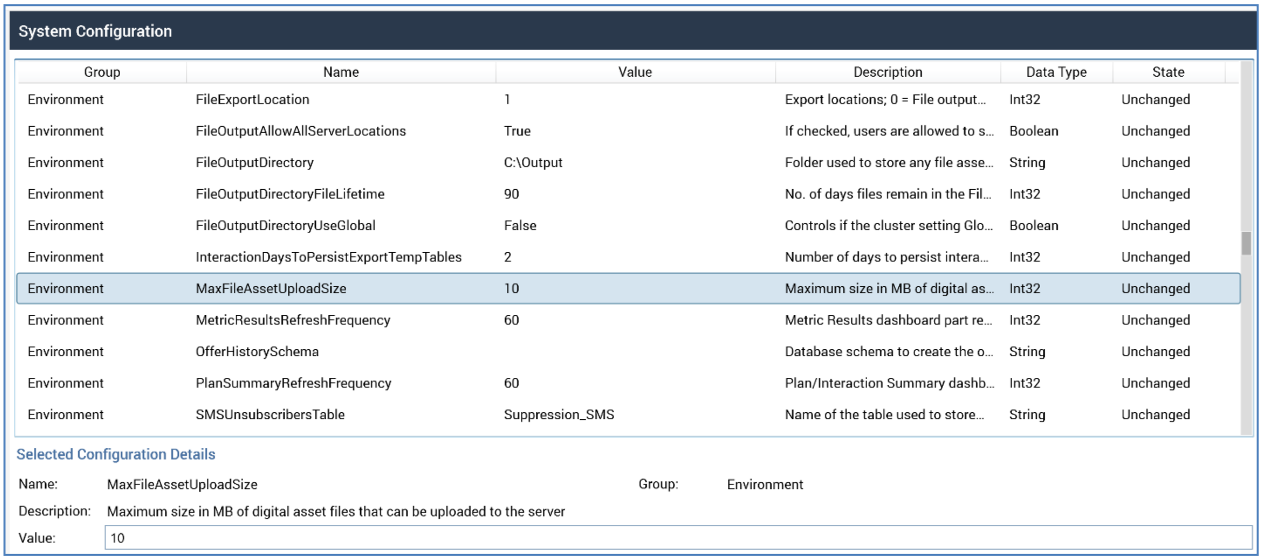
6.23.6 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.24 Configuring System Configuration Settings

RPI exposes a number of configuration settings that can be used to tune the system to your precise requirements. The Configuration Workbench provides a facility to allow values to be assigned to these settings.

Management of configuration settings is carried out in the System Configuration interface.



The interface contains the following elements:

6.24.1 Configuration Settings Grid

The grid lists a read-only representation of all system configuration settings in alphabetical ordered by group, then name.

System Configuration

Group	Name	Value	Description	Data Type	State
Environment	AutomatedMLAPIAddress	http://10.10.12.4:8910	Automated Machine Learning web service address	String	Unchanged
Environment	AutomatedMLCredentials	AML API credentials	The credentials used to access Automated Machine Learning	Credentials	Unchanged
Environment	DataManagementCredentials	Data management credentials	The credentials used to sign in to Data Management	Credentials	Unchanged
Environment	DataManagementDataConnection	AdventureWorksDW	Data Connection to use for any RPI data management jobs	String	Unchanged
Environment	DataManagementExecutionServer		Optional setting to force RPI triggered data management jobs to run o...	String	Unchanged
Environment	DataManagementIntegrationType	0	Data Management integration type; 0 = Client DLL (v8 or less), 1 = DM...	Int32	Unchanged
Environment	DataManagementOAPIWebServiceAddress		Data Management Operational API web service address	String	Unchanged
Environment	DataManagementOverrideNetworkRootDirectory	False	If set, overrides RPDM directories in Linux UNC path	Boolean	Unchanged
Environment	DataManagementProjectFolder		Folder path used to create any new RPDM projects created by RPI for i...	String	Unchanged
Environment	DataManagementServerName	localhost	Data Management server	String	Unchanged
Environment	DataManagementServerPort	20410	Data Management port number	Int32	Unchanged
Environment	DataManagementUploadDirectory	C:\DataManagement	Upload directory path for any RPI data management jobs	String	Unchanged

Configuration settings are system-defined – you may not add a new or delete a configuration setting. For each configuration setting, the following properties are displayed:

- Group: one of Data Intake, Environment, Personalization or Web.
- Name
- Description
- Value
- Data Type
- State: one of Unchanged or Edited

If the configuration setting's value is a file, rather than a simple data type, you can navigate to the file in question directly from the setting. When you do so, the file in question is displayed in an appropriate designer in a new tab (or receives the focus if already open).

Each group's configuration settings are listed separately.

Note that you cannot sort the grid by Value.

6.24.2 Group: Data Intake

Name	Description
AnalyzeEveryNLines	After the NumberFirstLinesToRead are read, 1 in N records are read.
AuditDatabaseSchema	Schema to use for processing engine to write back logging information
AuditDatabaseSourceName	Connection string to use for processing engine to write back logging information
DataIntakeArchiveDirectory	File directory used to archive files post load
DataIntakeLandingDirectory	Folder to which Data Intake files uploaded
DataIntakeProcessingDirectory	Folder used to process Data Intake files
DataIntakeProcessingDirectoryDataManagement	Folder used to process Data Intake files
DataProjectExpiryAlertEmailAddresses	List of email addresses to which Data Project expiry emails to be sent
DataProjectExpiryAlertEmailSubject	Data Project expiry email alert 'subject line'
DataProjectNumberOfDaysBeforeExpiry	Number of days before the Data Project will expire
DataProjectTablePrefixDefault	Data Project default table prefix
DefaultFieldNames	Default field name prefix used when field names not provided
DefaultFillerFieldNames	Default filler field name prefix used when field names provided but specific field name(s) missing
ExcelConnectionReplaceString	The string to be replaced with the filename in the excel connectionstring
FieldAnalysisTokenCount	Location of token counts file for advanced field analysis
FieldAnalysisTokenFile	Location of token file for advanced field analysis
FileAnalysisDelimiters	List of delimiters that will be used to attempt to parse delimited files
FileAnalysisDelimitersSeparator	Delimiter that will be used to parse FileAnalysisDelimiters configuration value
FixedWidthSpaceThreshold	Percentage of lines that must have a space at a given location to be considered a division
MacroPath	Path where macro is stored
MainDatabaseSchema	Data Intake data warehouse schema
MainDatabaseSourceName	Data Intake data warehouse connection string
MaximumLinesToReadForFixedWidth	Number of lines to read in a file to determine if the file is fixedwidth.
MaximumPercentAnalyzeFailures	Percentage of Analyze failures that will cause the project to fail
MaximumPercentValidationFailures	Percentage of validation failures that will cause the project to fail
MinimumNumberOfAnalyzeFailures	Minimum number of Analyze failures that must occur before analyze will fail
NonOpenXMLConnectionString	The connection string for Excel 97-2003 version
NumberFirstLinesToRead	Indicates how many of the first lines in a file to read
NumberOfPreviewRows	Number of rows returned in the file preview
OpenXMLConnectionString	The connection string for Office 2007 version
PercentageOfFileToAnalyze	Indicates percentage of file to analyze
SchemaValidationPath	Path where macro schema validation is stored
TableSampleCount	Number of rows of sample data returned for the table preview after a data intake load
TokenDifference	Token difference for File Analysis
WarningPercentValidationFailures	Percentage of validation failures that will invoke a warning message
ZipPassword	Password used to decrypt any password protected zip files
ZipPath	Path to zip executable
ZipTimeout	Timeout for zip process (seconds)

6.24.3 Group: Database

Name	Description
AWSPerformCOPYFromS3	Indicates whether COPY command will be issued when importing records
AWSRedshiftDistributionStyle	If set, DISTSTYLE is used for all RPI-generated tables. Values are 0=AUTO, 1=EVEN, 2=KEY, ALL=3
AWSRetainCOPYGeneratedFilesInS3	Indicates whether files (*.gz) generated for COPY bulk import will be retained
AWSSourceS3BucketName	Fully qualified name of AWS S3 external content provider and bucket name to use
AzureSQLDWDistributionType	If set, offer history tables will be created either ROUND_ROBIN=0 or HASH=1
AzureSQLDWDropStatisticsOnTempTables	If set, statistics will be dropped on all temp tables created
DatabaseInsertBatchLimit	Insert batch size limit used by specific databases when inserting and updating rows
DatabaseSpecificRetryableErrorEnabled	Controls if query execution can be retried when 'Invalid object name' database error has occurred
DB2RunStatsEnabled	If set, enables RUNSTATS on all generated tables and indexes
DisableDatabaseObjectQualification	Indicates whether to fully qualify database object names
GoogleBigQueryUseInformationSchema	If set, the INFORMATION_SCHEMA will be used to retrieve tables and views
OracleAudienceTempTablesIndexDisabled	If set, disables indexing on all audience temp tables
OracleDegreeOfParallelism	Indicates the DOP for single database or cluster configurations
OracleDMLSessionParallelismEnabled	If set, enables DML session parallelism
OracleOptimizerDynamicSamplingLevel	Overrides the level [0 - 8] of optimizer_dynamic_sampling configuration at a session level
OracleRunTableStats	If set, run statistics on tables
OracleTempTablesParallelismEnabled	If set, enables parallelism on all temporary tables
OracleTempTablesPKConstraintDisabled	If set, disables the primary key constraint on all Dataflow_XXX temp tables
OracleUseDirectPathInsert	If set, direct-path hint will be appended into INSERT-SELECT queries on all audience temp tables
OracleUseHashEnabled	If set, enables USE_HASH hint on all sub-queries
PostgresUseReplicaIdentity	If set, REPLICA IDENTITY is used to create all RPI-generated audience tables
SQLServerDisableRowLockHint	If set, ROWLOCK will be disabled from INSERT, DELETE and UPDATE queries on all RPI-generated tables
SQLServerIndexTempTables	Controls if indexes are created on temporary audience tables
SQLServerUseColumnStoreIndexTempTables	Controls if clustered column store indexes are created on temporary audience tables
SQLServerUseCountBig	If set, queries will use the Count_Big statement instead of Count
SQLServerUseCreateTableInsert	If set, CREATE TABLE and INSERT is used to create all RPI-generated audience tables
SQLServerUseIdentityTempTables	If set, identity is used to generate unique id for temporary audience tables
SQLServerUseSelectIntoOverUpdate	If set, SELECT INTO query is used to update records from a temporary audience table
SQLServerUseTabLockHint	If set, TABLOCK hint will be appended into INSERT-INTO queries on all RPI-generated temporary tables
SQLServerUseTempFlagTables	Uses intermediate tables in SQL Server when creating attribute flag fields
TeradataIndexTempTables	Controls if indexes are created on temporary audience Teradata tables
TeradataUsePrimaryIndex	If set, PRIMARY INDEX is used for all RPI-generated tables. Otherwise, PRIMARY KEY will be used

TeradataUseTableCharacterSet	RPI-generated tables character set; 1 = UNICODE, 2 = LATIN, or 0 = Don't specify the constraint
YellowbrickDistributionType	If set, DISTRIBUTE is used for all RPI-generated tables. Values are 0=COLUMN, 1=REPLICATE, 2=RANDOM

6.24.4 Group: Environment

Name	Description
AttributeRefreshColumnsOnly	If set, the attribute value catalog task will only refresh database column attributes
AttributeRefreshInterval	Number of days between attribute value count refreshes
AudienceAuditDaysToPersistTempTables	Number of days to persist audience temp tables for auditing
AudienceTestTimeout	Timeout for activating audience tests (seconds)
AutomatedMLAPIAddress	Automated Machine Learning web service address
AutomatedMLCredentials	The credentials used to access Automated Machine Learning
CallbackServiceProcessorNumReaders	The number of queue readers used by the callback service task processor
CallbackServiceQueuePath	The path of the queue to pick up email event data waiting to be processed
DataManagementCredentials	The credentials used to sign in to Data Management
DataManagementDataConnection	Data Connection to use for any RPI data management jobs
DataManagementExecutionServer	Optional setting to force RPI triggered data management jobs to run on a specific execution server
DataManagementIntegrationType	Data Management integration type; 0 = Client DLL (v8 or less), 1 = DM Operational API (v8 or higher)
DataManagementOAPIWebServiceAddress	Data Management Operational API web service address
DataManagementOverrideNetworkRootDirectory	If set, overrides RPDM directories in Linux UNC path
DataManagementServerName	Data Management server
DataManagementServerPort	Data Management port number
DataManagementUploadDirectory	Upload directory path for any RPI data management jobs
DataManagementVersionMajor	The major version of RPDM instance
DefaultSchema	Default database schema the system will point at
EmailCheckerSandboxSwitch	Switches on/off the sandbox mode for email checking. 0 = Checks will be paid for; 1 = Free test mode
EmailTestCredentials	The credentials used to sign in to the Email test provider`s API
EmailTestTimeout	The email test timeout in minutes
EmailUnsubscribersTable	Name of the table used to store email address that have been unsubscribed
EnableOrgNodeConfigUserControl	Enables organization nodes to be used to control access to specific configuration items
FileExportLocation	Export locations; 0 = File output directory, 1 = Default FTP location, 2 = External Content Provider
FileOutputAllowAllServerLocations	If checked, users are allowed to specify any server location for data extract and export activities
FileOutputDirectory	Folder used to store any files exported via Redpoint Interaction
FileOutputDirectoryFileLifetime	No. of days files remain in the FileOutputDirectory before deletion. Zero will turn off housekeeping
FileOutputDirectoryUseGlobal	Controls if the cluster setting GlobalFileOutputDirectory is used
InactiveSessionTimeout	Timeout for signing out users due to inactivity (minutes). If set to zero, no timeout will be used
InteractionDaysToPersistExportTempTables	Number of days to persist interaction export temp tables for auditing
MaxFileAssetUploadSize	Maximum size in MB of asset files that can be uploaded to the server
OfferHistorySchema	Database schema to create the offer history tables in. If blank, the default schema will be used
SMSUnsubscribersTable	Name of the table used to store SMS phone numbers that have been unsubscribed
VendorID	Vendor ID
WebContentMaxNumberSlots	Maximum number of web content slots available for publishing via a web channel

6.24.5 Group: Personalization

Name	Description
AlertEmailSubjectPrefix	Optional subject prefix to be applied to all alert emails
AnalysisPanelMapPageSize	Size of pages returned by the map analysis functionality
AnalysisPanelMaxResultsPerAttribute	Maximum number of values per attribute for the pivot table or crosstab panels
AnalyzePageSize	Size of page returned by the analysis panel functionality
AnalyzeResultSetSize	Total size of the result set persisted by the analysis panel functionality
AttributeValueListSize	Number of distinct values cached and displayed for an attribute
AttributeValueTableLevel	Switches value counts to be at the table level. If off, counts will be at the resolution level
AudienceOutputValidationSize	The sample size for audience output validation files
AuditAudienceFieldUsage	Indicates if all field/table usage within audiences should be audited
ButtonImageFacebookLike	Image asset to use as the Facebook like button image
ButtonImageFacebookVisit	Image asset to use as the Facebook visit button image
ButtonImageForwardToFriend	Image asset to use as the forward to a friend image
ButtonImageLine	Image asset to use as the Line button image
ButtonImageQuora	Image asset to use as the Quora button image
ButtonImageReddit	Image asset to use as the Reddit button image
ButtonImageAlchemer	Image asset to use as the Alchemer button image
ButtonImageSurveyMonkey	Image asset to use as the SurveyMonkey button image
ButtonImageTwitterFollow	Image asset to use as the Twitter follow button image
ButtonImageTwitterTweet	Image asset to use as the Twitter tweet button image
CatalogRPITempTables	Show RPI generated temporary audience and interaction tables in the database catalog
ChartQueryTimeout	The query timeout in seconds for executing chart widget queries
DataVisualizationNoRows	Maximum number of rows displayed by the data visualization interface
DaysToRetainStagedContent	Number of days staged email content is retained for review purposes
DefaultWikiPage	Wiki Page that is displayed when the Wiki Browser is invoked
DiagnosticsTelemetryTimespan	Number of days of general telemetry to capture with workflow diagnostics
EnableNonNestedStyleWaterfallReport	If checked, selection waterfall reports will revert to the non-nested format
EnablePulseMessages	Enables Pulse messaging functionality within the client
EnableTrainingAids	Enables Training Aids functionality within the client
InteractionFailureAlertsAttachZip	If set, the interaction failure alerts will include an attachment of diagnostic files
LongQueryTraceLimit	The time in seconds to wait before a SQL trace log is added for long running queries
LongRunningActivityThreshold	The number of minutes an activity can execute before a long running activity alert is sent
LongRunningTaskThreshold	The number of minutes a system task can execute before a long running task alert is sent
MaxActivitiesPerInteraction	Maximum number of activities that can be added to an interaction
MaxBlocksDisplayedPerWorkspace	Maximum number of blocks that will be displayed in the audience designer
MaxCellListTemplateCells	Maximum number of cells that can be added to a cell list
MaxChannels	Maximum number of channels that can be configured
MaxDashboardApprovalFiles	Maximum number of files shown by the approval widget
MaxDashboardWidgets	Maximum number of widgets allowed per dashboard
MaxEmailImageSize	Maximum file size of an image that may be utilized in an email template (size in kilobytes)
MaxFileSearchPageSize	Maximum number of searches returned for a single file search page
MaxNoGeofencePoints	Maximum number of points permitted for a geofence

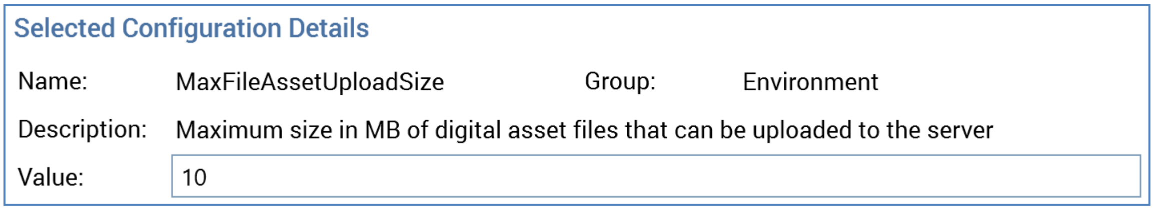
MaxItemsPerWorkspace	Maximum number of items that can be added to a designer workspace
MaxNoDynamicContentInstances	Maximum number of dynamic content variations that can be viewed and tracked for each offer
MaxNoDynamicTestSendEmails	Maximum number of dynamic content variations sent during a test email send
MaxPulsesInList	Maximum number of pulses shown in the list
MaxTableSearchRows	Maximum number of rows returned by a table search
MaxTabsPerClientSession	Maximum number of tabs that can be open at once within a client's session
MaxTriggersPerInteraction	Maximum number of triggers that can be added to an interaction
MaxValuesCompareToList	Maximum number of values allowed when comparing an attribute to a list
MaxValuesDatabaseManagedList	Maximum number of values to return for a database managed list
OfferHistoryDetailsSandboxEnabled	If set, test runs of interactions will write to a sandbox version of the offer history details table
OperationsWikiPageID	Wiki Page that is available from the Operations Page
PulseRefreshFrequency	Pulse list refresh frequency (seconds)
RealtimeTrackerPageSize	The page size used in the background to load the realtime tracker results
RuleTimezoneOverride	The timezone used by rule criteria. Defaults to the server timezone if left blank
SingleViewAlternativeConnectionString	The connection string to use for querying the single customer view offer history tables
SingleViewDisableTimeline	If set, the event timeline will not be shown with the single customer view
SingleViewUseAlternativeOfferHistoryDB	If set, the SingleViewAlternativeConnectionString will be used to query the offer history timeline
SQLPerformanceCountersEnable	If checked, SQL Server performance counters will be displayed in System Health
UsersFolderID	Folder which contains all user folders
WidgetCountDailyRefreshInterval	Minimum number of minutes between the refreshes of the count widget`s daily total
WidgetTimezoneOverride	The timezone used by widgets, defaults to the server timezone if left blank
WordCloudExclusions	A list of exclusion words to be applied to all word cloud results

6.24.6 Group: Web

Name	Description
EnableRPIRealtimeServices	Adds RPI realtime scripts to landing pages and sends relevant metadata to the realtime services
FormSubmissionPersistFieldsAsJSON	If set, form data will be persisted in a single JSON field
FormSubmissionProcessingURL	The web URL used to submit web form. If blank, default is /RPIFormValidation/WebFormProcessor.aspx
FormSubmissionQueuePath	The path of the queue to pick up web form submissions waiting to be processed
LandingPageJavascriptLibraryURL	The website containing the landing page javascript libraries. If blank, the default relative path is used
MaxRowsPerCachedTable	Max # rows permitted for cached attribute list when persisted as table in realtime cache
QueueReaderTaskBatchSize	The maximum batch size read from a task queue per request
RealtimeAPIAddress	The server address for the RPI realtime API
RealtimeAPICredentials	The credentials used to access the Realtime API
RealtimeAPIKey	Realtime API service access key
RealtimeAPIPublishAddresses	If supplied, assets will be published to each listed address instead of the RealtimeAPIAddress
RealtimeAPIUseCredentials	If set, the Realtime API must be configured to use OAuth using the 'RealtimeAPICredentials'
RealtimeAuditEmailAddresses	Email addresses to which the realtime audit information will be sent
RealtimeAuditEnabled	If set, realtime audit information will be emailed on a monthly basis
RealtimeAuditPeriodEndDay	The day of the month the audit period ends. Emails will be sent the following day
RealtimeAuditReference	Reference string to be included as an identifier in the audit email
RealtimeContentPlugins	The list of realtime content plugins
RecommendationQueuePath	The path of the queue to pick up recommendation lookup results waiting to be processed
WebCacheDataNumReaders	The number of queue readers used by the web cache data importer
WebCacheOutputEventData	Output realtime event data to the database or file
WebCacheOutputToDatabase	Load web visitor data from the cache to the database
WebCacheOutputToFile	Load web visitor data from the cache to file
WebCacheOutputToFilePath	The target folder path for exporting the web cache data
WebCacheQueuePath	The path of the queue to pick up web cache data waiting to be processed
WebEventProcessorNumReaders	The number of queue readers used by the web event processor
WebEventProcessorQLThreads	The number of queue listener sender threads used by the web event processor
WebEventQueuePath	The path of the queue to pick up web events
WebFormDefaultStyleScripts	Style or script elements to be added to landing pages containing web form assets

6.24.7 Selected Configuration Setting Details

Details of the selected configuration setting are displayed within the simple fields at the bottom of the Configuration Settings configuration interface.



The following fields are displayed:

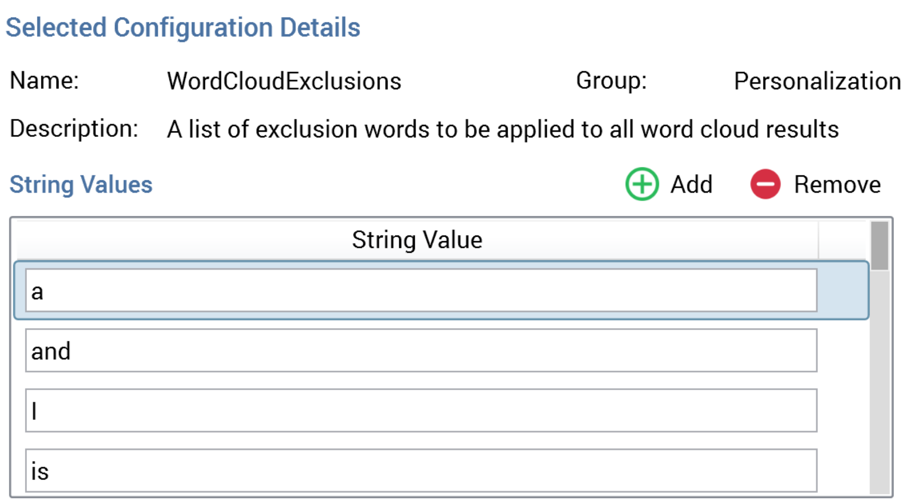
- Name
- Group
- Description
- Value

All are read-only apart from Value; when updating this field, any applicable validation rules must be observed.

6.24.8 WordCloudExclusions Setting

The WordCloudExclusions setting is a list of string values, representing words that will be excluded from all word cloud results (for more information on the word cloud analysis panel, please see the Analysis Panels documentation).

The setting's Values property consists of a toolbar and a list.



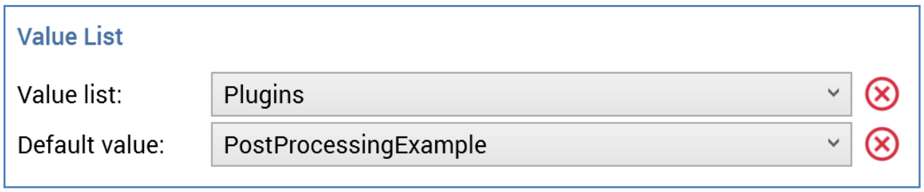
- Toolbar: exposing two options:
    - Add: clicking this button adds a new value to the bottom of the list. The new value's default text is 'New String Value' (if this value already exists, an incrementable integer is added to ensure uniqueness).
    - Remove: clicking the button removes the currently-selected value from the list.

- List: a series of common word values is provided by default (e.g. ‘a’, ‘and’, ‘I’, etc.).

6.24.9 RealtimeContentPlugins Setting

The RealtimeContentPlugins setting is used to define an optional list of plugins that can be used to perform post-processing upon content selected during execution of a smart asset.

The setting’s Value property appears as follows:



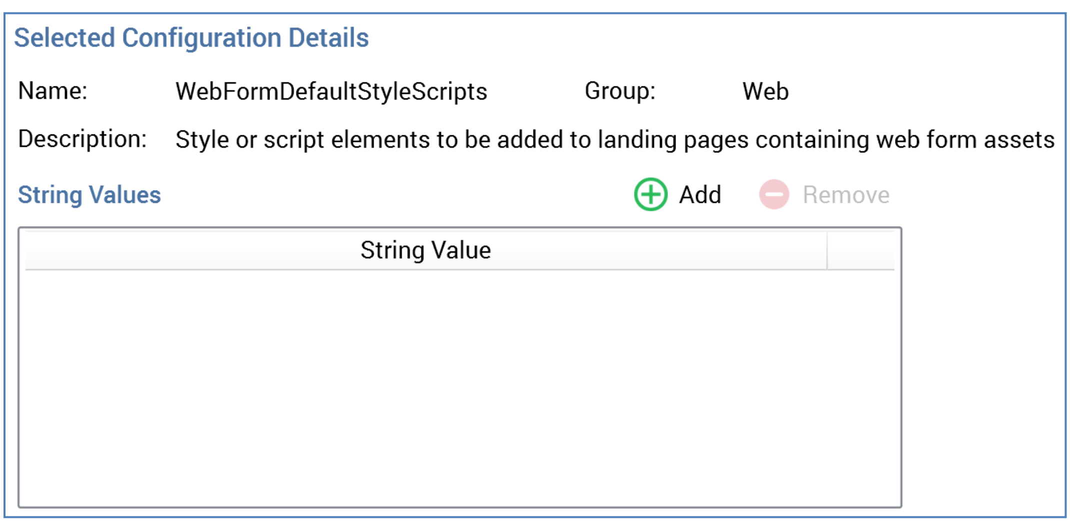
Two properties are shown:

- Value list: this optional dropdown field lists all existing local value lists. It is blank by default. Having chosen a Value list, a Clear button is displayed, which you can use to clear your selection.
- Default value: prior to selection of a Value list, the text 'Select a value list' is displayed at this property. On selection of a value list, a dropdown is displayed, listing the selected value list's values. No value is selected by default. Having chosen a default value, a Clear button is displayed, which you can use to clear your selection.

6.24.10 WebFormDefaultStyleScripts Setting

The WebFormDefaultStyleScripts setting is a list of string values, representing style or script elements to be added to all landing pages containing web form assets.

The setting’s Values property consists of a toolbar and a list.



- Toolbar: exposing two options:
  - Add: clicking this button adds a new value to the bottom of the list. The new value's default text is 'New String Value' (if this value already exists, an incrementable integer is added to ensure uniqueness).
  - Remove: clicking the button removes the currently-selected value from the list.
  - List: each entry must utilize the same format as the web form asset's Style and script HTML elements property, e.g.:

```
<link href="http://sitename.com/Publish/CustomScripts/customstyles.css/>"
rel="stylesheet" type="text/css" />
```

6.24.11 Tokenized Values

You can use tokenized values when specifying configuration settings' values. RPI resolves tokenized values, expanding them after saving to show the full literal system configuration value. There are two types of tokenized value that you can use:

- You can nest a system configuration setting within another. This is done by placing the nested setting in parentheses as follows: ({ConfigSetting }).
- You can embed a server host name in the same parentheses: ({ServerHostName}).

Note that it is not possible to nest tokenized configuration settings.

6.24.12 Save Changes to System Configuration

Save is carried out using the Save changes to System Configuration toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, system configuration settings' states are updated to Unchanged.

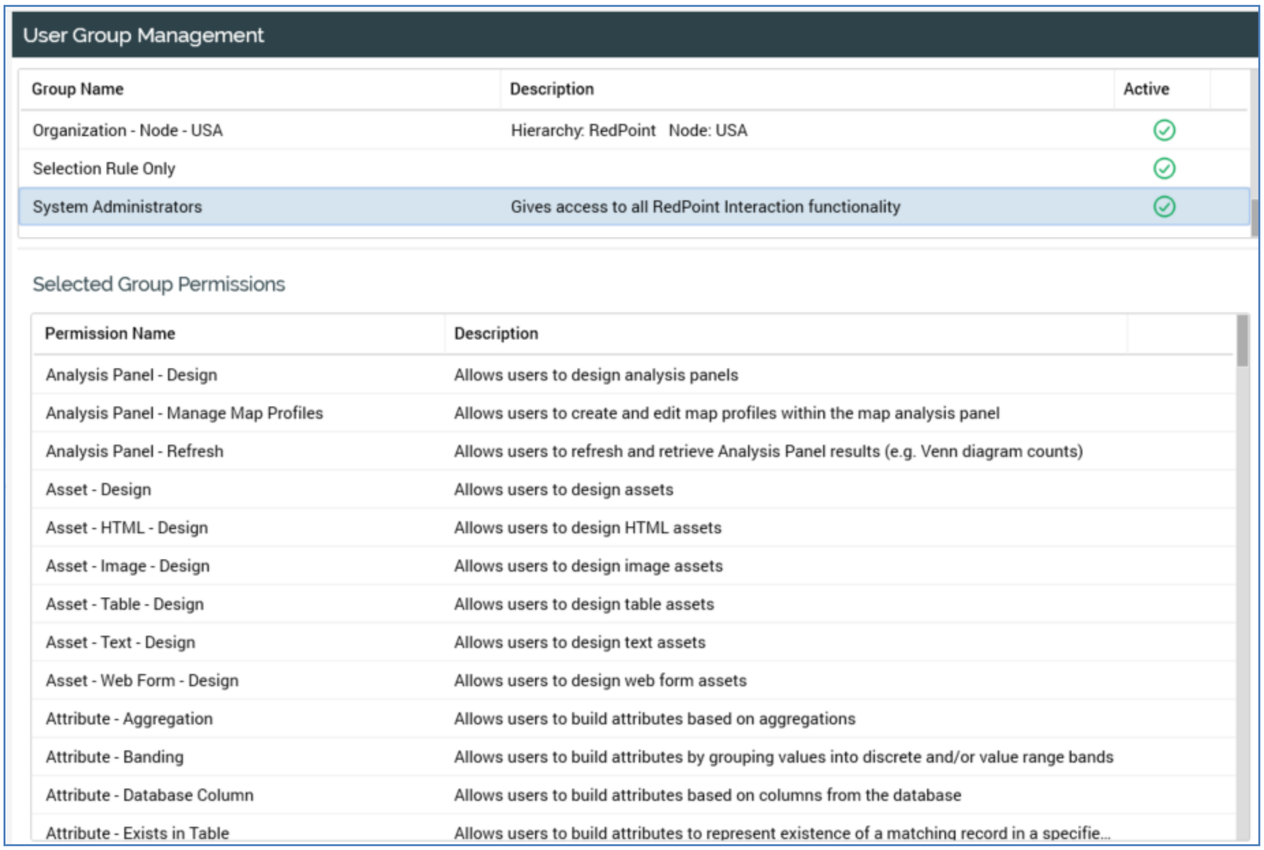
6.24.13 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.25 Configuring User Groups

User groups are used within RPI to collate groups of functional permissions. Rather than assign permissions directly to users, they are assigned to user groups. In this way, a user can be associated with one or more user groups and inherit those groups' functional permissions.

User group configuration is carried out in the User Group Management interface, which may be accessed from the Configuration Workbench.



The User Group Management interface contains the following elements:

6.25.1 Existing User Groups List

Existing user groups are displayed alphabetically in a grid.

Group Name	Description	Active
Approvers	Well hello there.	✓
Custom		✓
Everyone	Basic user group assigned to all users	✓
Integration API	Integration API user group	✓

For each user group, the following read-only properties are displayed:

- Group name
- Description
- Active: indicated via a tick or cross.

6.25.2 Selected Group Permissions

The selected user group's associated permissions are listed in alphabetical order within a grid at the bottom of the interface.

Selected Group Permissions

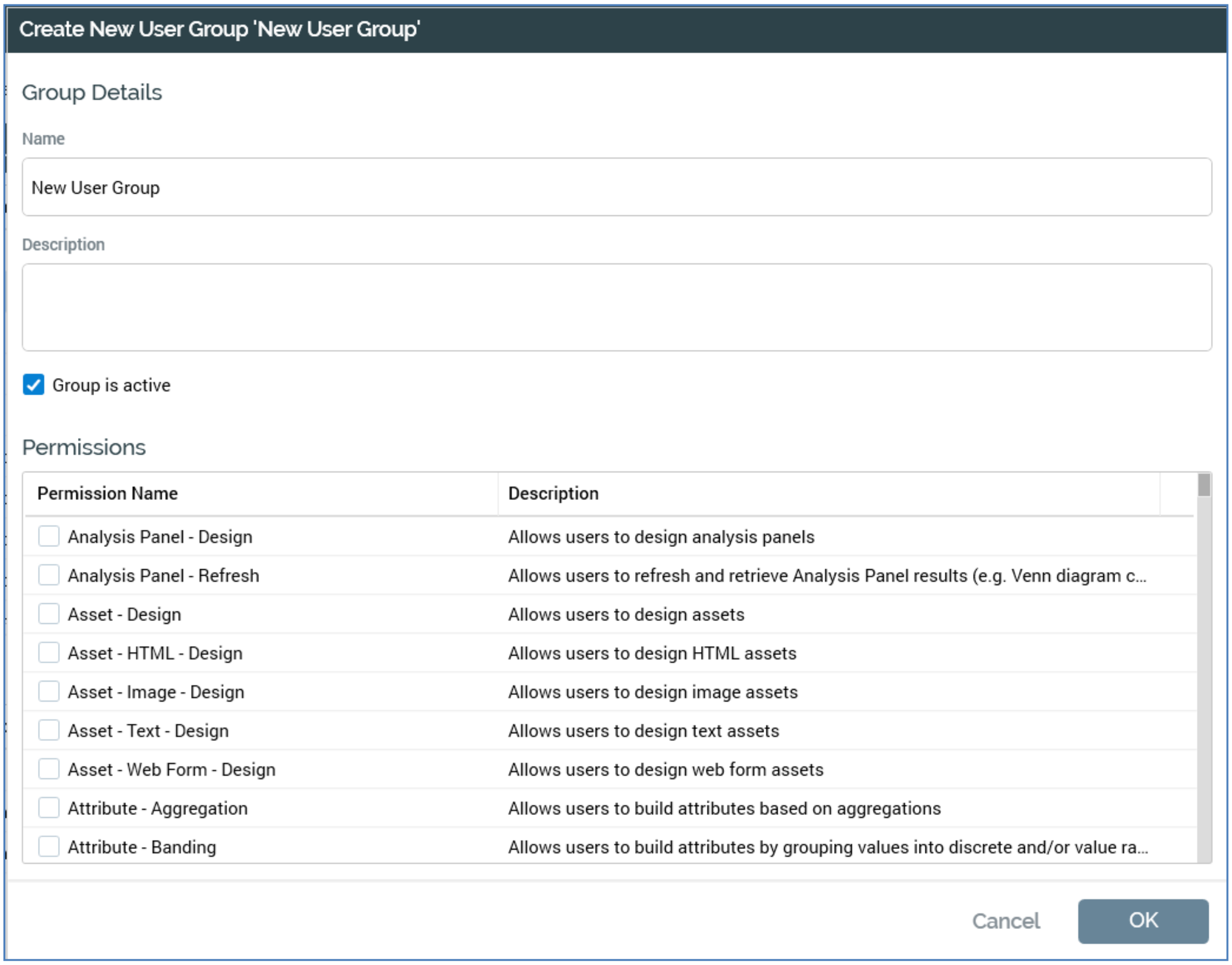
Permission Name	Description
Analysis Panel - Design	Allows users to design analysis panels
Analysis Panel - Manage Map Profiles	Allows users to create and edit map profiles within the map analysis panel
Analysis Panel - Refresh	Allows users to refresh and retrieve Analysis Panel results (e.g. Venn diagram counts)
Asset - Design	Allows users to design assets
Asset - HTML - Design	Allows users to design HTML assets
Asset - Image - Design	Allows users to design image assets
Asset - Table - Design	Allows users to design table assets
Asset - Text - Design	Allows users to design text assets
Asset - Web Form - Design	Allows users to design web form assets
Attribute - Aggregation	Allows users to build attributes based on aggregations
Attribute - Banding	Allows users to build attributes by grouping values into discrete and/or value range bands
Attribute - Database Column	Allows users to build attributes based on columns from the database

The following read-only properties are displayed for each permission:

- Permission name
- Description
- Active: indicated via a tick or cross. Inactive permissions are displayed using red text.

6.25.3 Create New User Group

You can initiate the creation of a new user group by clicking Create new User Group in the Configuration Workbench toolbar. Creation of a new user group is carried out in the Create New User Group modal dialog.



The dialog displays the following user group properties:

- Name: the new user group's name defaults to New User Group. Name is mandatory, must be unique and may be a maximum of 100 characters.
- Description: optional, and a maximum of 1000 characters.
- Group is active: a checkbox that indicates whether the group is active immediately upon its creation. A user may only be assigned to active user groups. Default is checked.

A grid lists all functional permissions defined within the system in alphabetical order. A full list of functional permissions is provided in the Framework documentation.

The following properties are displayed for each permission (in read-only format unless otherwise specified):

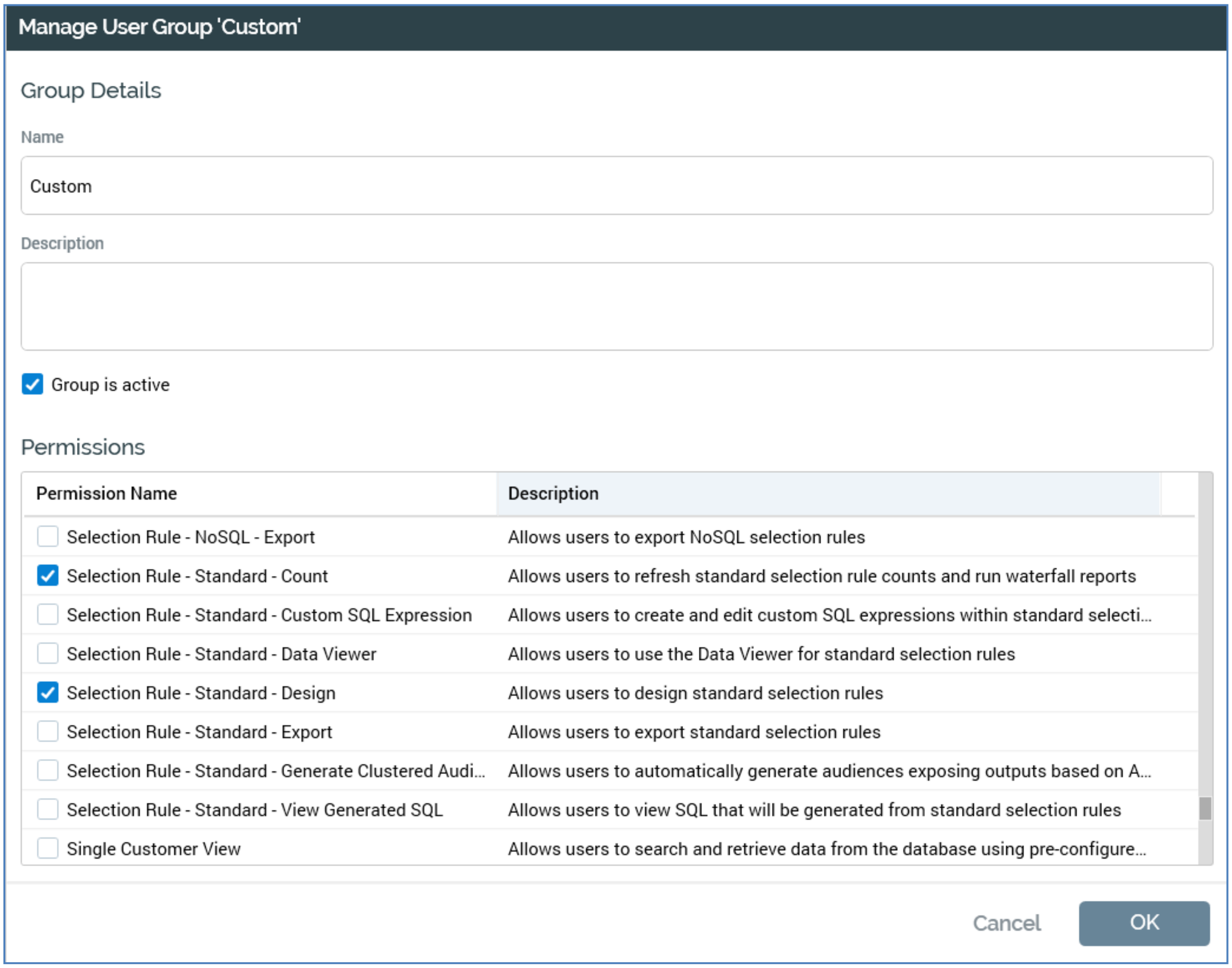
- [Untitled selected checkbox]: the checkbox is updateable and defines whether the permission is to be associated with the user group. By default, the checkbox is unchecked. You can select all, or no, permissions using a context menu displayed when right-clicking the grid. Selection of (a) user group(s) is optional.
- Permission name
- Description
- Active: true/false flag that defines whether the permission is currently active. Access to RPI functionality is limited in accordance with active functional permissions with which a user is associated through his or her user groups.

You can click OK to finish creation of a new user group. Doing so causes the data you have entered to be validated; if any validation issues exist, they are displayed as warnings and you must resolve them before the user group can be created. If no validation errors are present, the new user group is saved to the operational database (note the contrast with other configuration interfaces, within which the Save button is used to persist changes). The new user group is added to the user group list as displayed within the User Group Management interface.

You may also cancel creation of the new user group. Doing so removes the Create New User Group dialog from display immediately.

6.25.4 Manage Existing User Group

You can initiate the management of an existing user group by double-clicking it in the existing user groups list. Management of an existing user group is carried out in the Manage User Group modal dialog.



The dialog displays the following user group properties:

- Name: is mandatory, must be unique and can be a maximum of 100 characters.
- Description: is optional and can be a maximum of 1000 characters.
- Group is active: checkbox that indicates whether the group is active. Any of a user's functional permissions that are associated via an inactive group are disregarded when determining permission-based access to system functionality.

The dialog also lists and allows assignment of permissions to the user group. See Create New User Group for details.

You can click OK to finish management of a user group. Doing so causes the data you have entered to be validated; if any validation issues exist, they are displayed as warnings and you must resolve them before the user group can be updated. If no validation errors are present, changes to the user group are saved to the operational database (note the contrast with other configuration interfaces, within which the Save button is used to persist changes). Updates to the user group are reflected within the User Group Management interface.

You may also cancel managing the user group. If you cancel having made changes to the user group, a dialog is displayed, which queries whether you wish to save the changes you made to the user group:

- Yes saves changes made to the user group and closes the dialog.
- No loses changes made to the user group and closes the dialog.
- Cancel retains display of the dialog.

If you elect to manage a predefined user group (System Administrators/Everyone), the Manage User Group dialog is displayed in read-only format.

6.25.5 Delete Existing User Group

You can delete the selected user groups by clicking Delete in the Configuration Workbench toolbar. You may only delete a user group if no users are associated with the group. Deletion of user groups is protected by an ‘Are you sure?’ dialog.

Note that you cannot delete the Everyone or System Administrators user groups. The same applies at organization node user groups.

6.25.6 Clone User Group

You can make a cloned copy of an existing user group using the Clone Selected User Group toolbar button. The button is enabled when a single user group is selected in the list. Clicking the button creates and saves a copy of the selected user group. A confirmatory message is displayed thereafter. The new user group is named 'Clone of [user group]', and is presented in the correct alphabetical position within the list. Note that an integer can be appended to the name to ensure uniqueness, and incremented if required. The new user group inherits the properties and selected group permissions from the group from which cloned.

6.25.7 Predefined User Groups

RPI supplies two predefined system user groups: System Administrators and Everyone. Predefined groups are read-only and may not be deleted.

The System Administrators group is associated with all functional permissions. The Everyone group is associated with no functional permissions.

You cannot add a user group with the same name as a predefined user group.

By default, a newly-created user is added automatically to the Everyone user group. It is not possible to remove a user's membership of the Everyone user group.

6.25.8 Organization Node User Groups

When you save changes to the organization's hierarchy nodes, RPI creates, modifies or deletes parallel organization node user groups to ensure that one such user group exists for each hierarchy node.

Organization node user groups cannot be added, edited or deleted from the User Group configuration interface.

An organization node user group follows the naming convention 'Organization – Node – [Node Name]'. It description is set to 'Hierarchy: [Hierarchy Name] Node: [Node Name]'.

By associating a user with an organization node user group, you effectively limit the user's access to interactions to only those that are linked to the parallel hierarchy node(s) (or linked nodes).

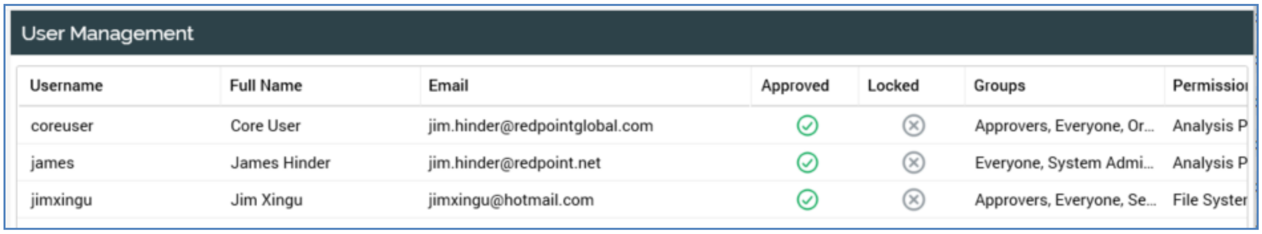
When a user linked to one or more organization node user groups creates an interaction, that file is linked automatically to the matching organization hierarchy nodes.

Non-accessible interactions are visible within the File System Dialog; however, an attempt to open such a file results in a warning message. In addition, organization node user groups can be used in the same way as any other user groups to restrict access to RPI file system folders using the Folder Permissions dialog. For further information please see the RPI Framework documentation.

The System Administrators group has complete access to all organization node user groups. Similarly, linkage to organization node user groups does not compromise a configuration user's ability to manage the structure of the organization.

6.26 Configuring Users

Configuration of RPI users is carried out in the User Management interface, which is accessible from the Configuration Workbench.


User Management

Username	Full Name	Email	Approved	Locked	Groups	Permissio
coreuser	Core User	jim.hinder@redpointglobal.com			Approvers, Everyone, Or...	Analysis P
james	James Hinder	jim.hinder@redpoint.net			Everyone, System Admi...	Analysis P
jimxingu	Jim Xingu	jimxingu@hotmail.com			Approvers, Everyone, Se...	File Syster

Note that a user may also configure certain elements of his or her own user account via RPI's Manage Profile feature.

If you logged into a client when connecting to the RPI server, only those users associated with the client are listed.

Note also that, to manage a user's group assignment, a user must be granted the master Configuration permission, or Configuration – Users as well as Configuration – User Groups permissions.

The interface contains the following elements:

6.26.1 Existing Users List

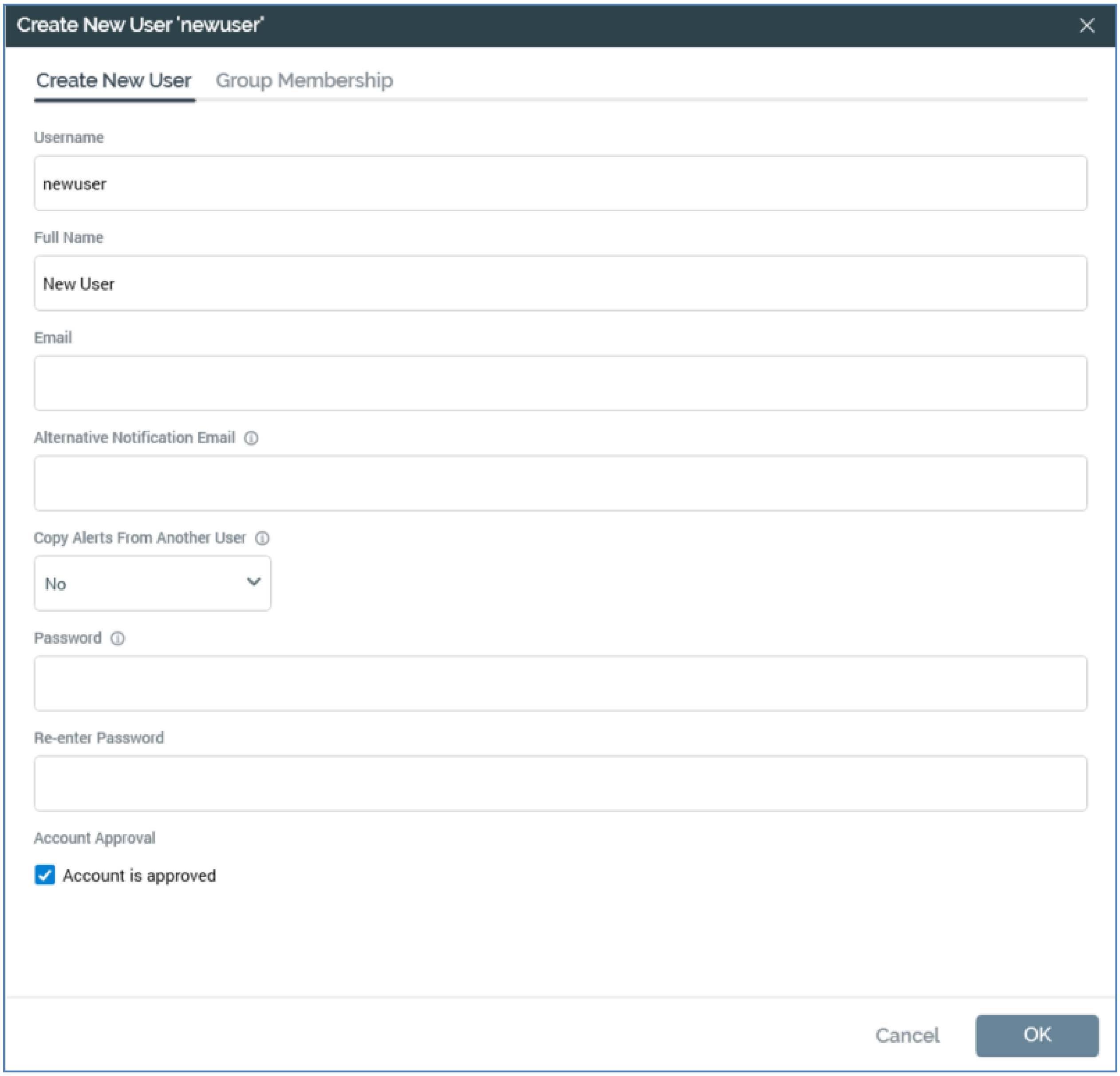
The User Management interface displays a list of existing RPI users, ordered alphabetically by username. For each user, the following read-only properties are displayed:

- Username: the user's unique ID, used when signing into RPI.
- Full Name: the user's full name.
- Email: the user's email address.
- Approved: a true/false flag that indicates whether the user is approved, displayed as a tick or cross. Unapproved users may not sign into RPI.
- Locked: a true/false flag that indicates whether a user account has been locked, displayed as a tick or cross. A user's account is locked following a series of failed login attempts.
- Groups: a comma separated, concatenated list of user groups of which the user is a member.
- Permissions: a comma separated; concatenated list of functional permissions inherited via the user's group membership.

6.26.2 Create New User

You can initiate the creation of a new user by clicking Create new User in the Configuration Workbench toolbar. Note that you cannot create a new user if configuration setting UsersFolderID is not set.

Creation of a new user is carried out in the Create New User modal dialog.



The dialog contains a tab set, within which are displayed two tabs – Create New User and Group Membership.

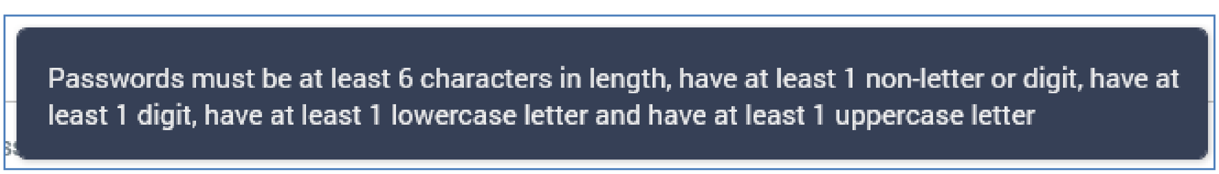
The Create New User tab allows you to specify the following user properties:

- Username: defined at user creation and may not be amended afterwards. It is the mechanism by which a user is identified within RPI; as such, it is mandatory and must be unique across all clients. Username may be a maximum of 256 characters. Its value defaults to newuser.
- Full Name: the user's full name. Full name defaults to New User, is mandatory and may be a maximum of 256 characters.
- Email: the email address to be used when sending messages to the user. The value supplied must be a valid email address, is mandatory, must be unique within the RPI server installation (across all clients hosted there) and may be a maximum of 200 characters.
- Alternative Notification Email: this property allows you to specify an optional email address, to which alert notifications will be sent instead of to the address supplied at the Email property. The same restrictions apply as at Email, and, in addition, the same email address cannot be specified at both properties.
- Copy Alerts from Another User: this dropdown allows you to optionally copy the alert preferences configured for an existing user to the new user. It exposes values 'No' (the default) and 'Yes'. When set to 'Yes', the User field is displayed to the right of the property. On creation of a user having copied alerts, on logging in as the same, the user's alert preferences are the same as the user from whom they were copied.
- User: this dropdown property is displayed when Copy Alerts... is set to 'Yes'. It allows you to select an existing user from whom to copy alert preferences to the new user. The property is blank by default, and lists all users configured at the current RPI client. For each, the following are displayed:

  '[username] ([Full Name], [Email])'

  When the property is shown, selection of a user is mandatory. If not selected, the following warning is displayed at the top of the Create New User dialog:

- Password: must comply with the current password policy. An information icon is shown to the right of the property label; hovering over it displays a synopsis of the current policy in a tooltip:

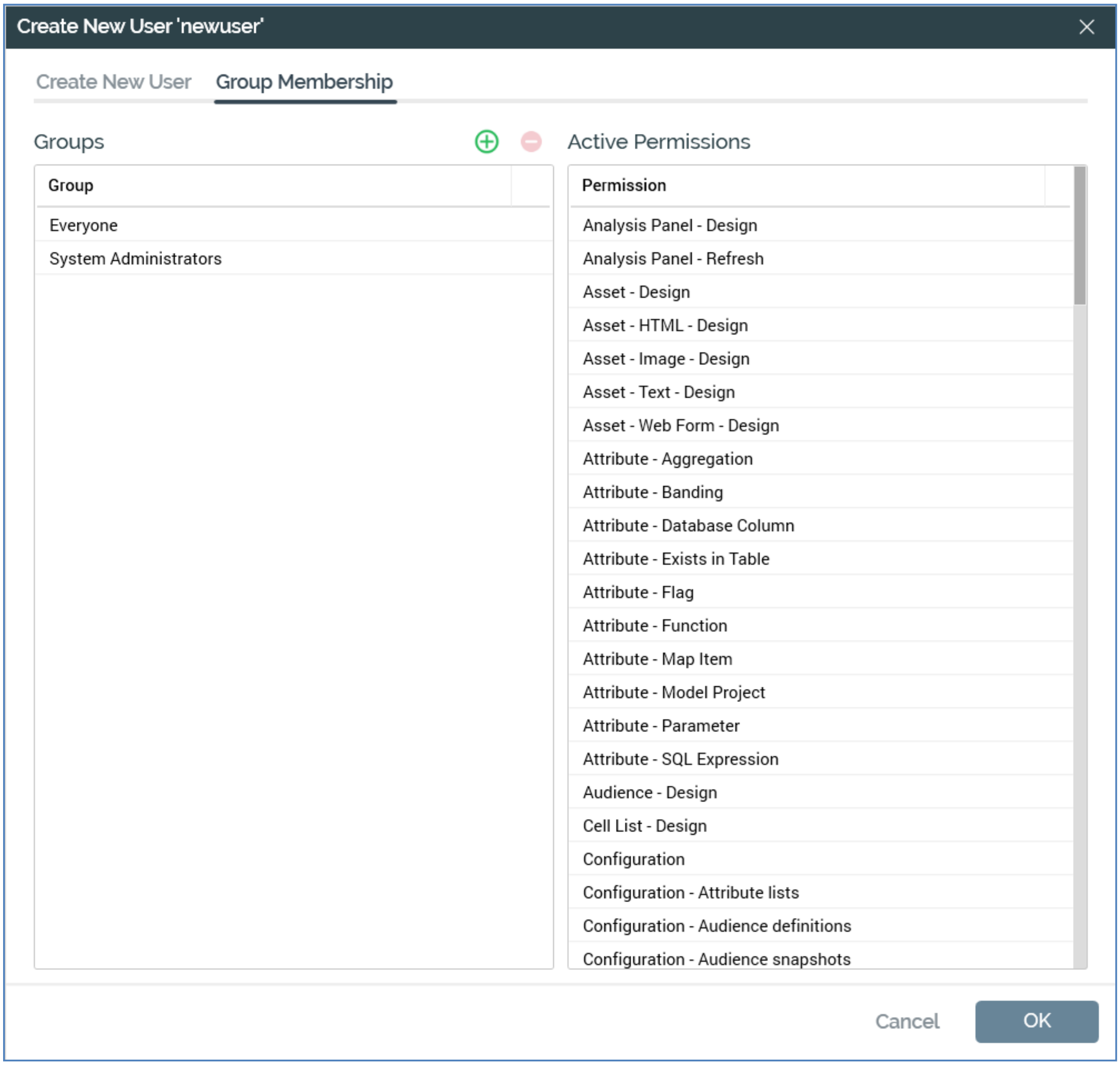


  If the supplied password does not match the policy, a warning is raised.

- Re-enter password: must match the supplied Password.

- Account is approved: checkbox that enables or disables the user account. A user may not sign in if his or her account is not approved. By default, an account is approved.

The Group Membership tab allows you to select the user groups to which you wish to attach the user:

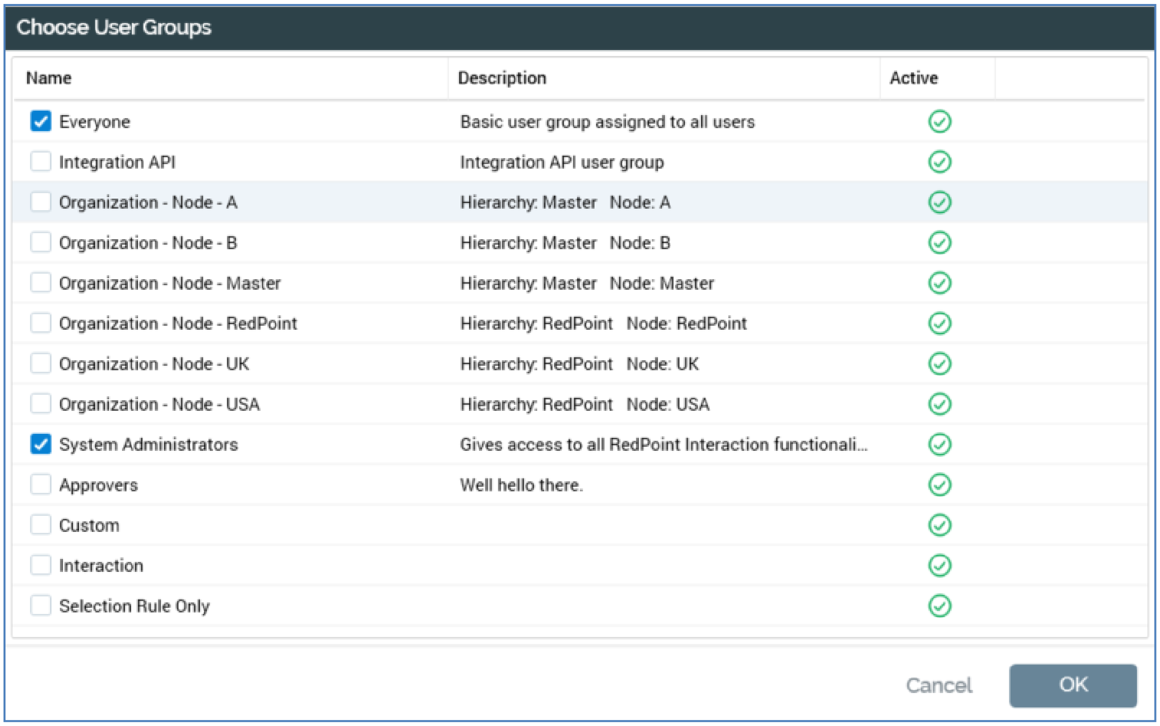


- The Member of Groups list displays the user groups with which the user is associated in alphabetical order.

  By default, all users are associated with the Everyone user group.

  A toolbar within the list gives access to the following options:

  - Add user to group: invokes the Choose User Groups dialog.



The dialog lists all user groups alphabetically in a grid and facilitates their selection.

Note that you can only add a user to the System Administrators group if you yourself are a system administrator.

For each user group, the following properties are displayed. All are read-only unless otherwise indicated.

- Selected indicator: an updateable checkbox. Its checked state reflects whether the user is associated with the group.
- Name
- Description
- Active

You can click OK to associate the user with the selected user groups. Afterwards, the selected user groups are listed in alphabetical order in the Groups list in the Create New User dialog. Note that you may also cancel the Choose User Groups dialog.

- Remove user from selected groups: this option is available when one or more groups are selected in the Groups list. Clicking it removes the groups from the user. Note that you cannot remove the Everyone user group.

- The Active Permissions list displays all permissions associated with the user.

You can click OK to finish creation of a new user. Doing so causes the data you have entered to be validated; if any validation issues exist, they are displayed as warnings and you must resolve them before the user can be created. If no validation errors are present, the new user is saved to the operational database (note the contrast with other configuration interfaces, within which the Save button is used to persist changes).

Following its creation, the new user is displayed, in an appropriate alphabetical position, within the existing user list in the User Management interface.

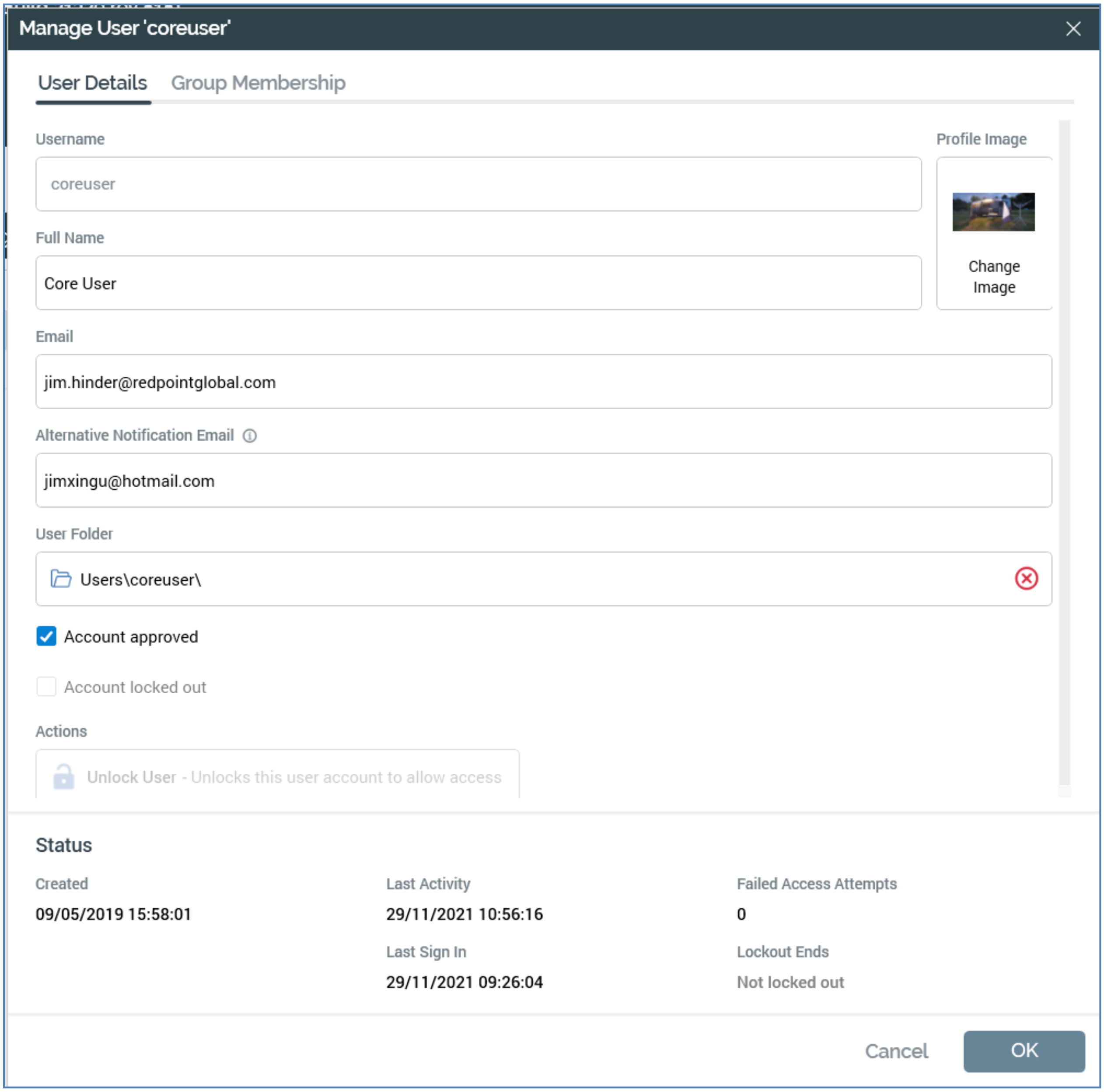
Following the new user's creation a folder is created within the Users folder in the RPI file system (itself defined via a configuration setting (UsersFolderID)) and is named in accordance with the supplied username. If such a folder exists already, a parenthesized integer is appended to the new folder’s name (if necessary, this integer can be incremented). The new folder inherits the user group folder permissions of its parent folder.

A new user is automatically assigned membership of the Everyone user group.

You may also cancel creation of the new user. Doing so removes the Create New User dialog from display (displaying an ‘Are You Sure?’ dialog first, if you set any of the new user’s properties).

6.26.3 Manage Existing User

You can initiate the management of an existing user by double-clicking a user in the existing users list. Management of an existing user is carried out in the Manage User modal dialog.



The dialog contains a tab set, which contains two tabs – User Details and Group Membership – and a Status panel at the bottom.

The User Details tab displays a user's properties.

All properties are writeable unless otherwise advised.

- Username: read-only; a user's username is defined at creation and, once chosen, cannot be updated.
- Full Name
- Profile Image: you can assign an image to an existing user. The image is displayed in the default Home Page and is used when displaying pulses in pulses widgets and the Pulses Window. A default user image is shown initially. You can change this image: this displays the Choose Profile Image Windows file system dialog (only image files are shown by default). You can select an image (an attempt to select a non-image file results in display of a warning message). You can cancel the dialog, which retains the original image. Following selection of an image, it is displayed in the Manage User dialog, and is resized automatically to icon size.
- Email
- Alternative Notification Email
- User Folder: as created alongside the user. The full file system path is shown. If desired, you can overwrite the default folder by browsing for another via the Choose Folder dialog; if you do so, only folders to which you have access are shown. If you select a folder to which the user being managed does not have access, a warning message is displayed. You can also clear the user folder. User folder is mandatory.
- Account approved
- Account locked out: read-only; a user's account must be unlocked using the Unlock user button.
- Actions: exposing an Unblock User button, which is enabled if a user's account is locked. Clicking this button unlocks the user's account.

Please see Create New User for details of the Group Membership tab.

A read-only Status panel is displayed at foot of the dialog, and displays the following:

- Created: the date and time of the user's creation.
- Last activity: the date and time at which activity by the user was last recorded.
- Last login: the date and time at which the user last logged into RPI.
- Failed access attempts: a count of the number of failed attempts to sign in by a user is maintained. This count is set to 0 when a user successfully logs in, or when he or she is locked out.
- Lockout ends: if a user enters incorrect credentials more than the number of times defined by cluster configuration setting MaxFailedAccessAttemptsBeforeLockout, her or his account is locked out for a time period defined by setting DefaultAccountLockoutTimeSpan. After this period the account is unlocked, and the user may sign in once again. The Lockout ends property displays the date and time at which a locked out user’s account is scheduled to be unlocked.

You can click OK to finish updating the user's record. Doing so causes the data you have entered to be validated; if any validation issues exist, they are displayed as warnings and you must resolve them before the user can be updated. If no validation errors are present, the user's details are updated within the operational database (note the contrast with other configuration interfaces, within which the Save button is used to persist changes). The user's updated details are displayed within the users list in the User Management interface.

You may also cancel updating the user. If you cancel having made changes, a dialog queries whether wish to save the changes made to the user.

- Yes saves changes made to the user and closes the Manage User dialog.
- No loses changes made to the user and closes the Manage User dialog.
- Cancel retains the Manage User dialog on display.

6.26.4 Delete User

You can select a single user in the users list and invoke its deletion using the Delete Configuration Workbench toolbar button.

Delete is protected by an ‘Are you sure?’ dialog.

If the deleted user has access only to the current RPI client, deleting removes their user record from RPI permanently.

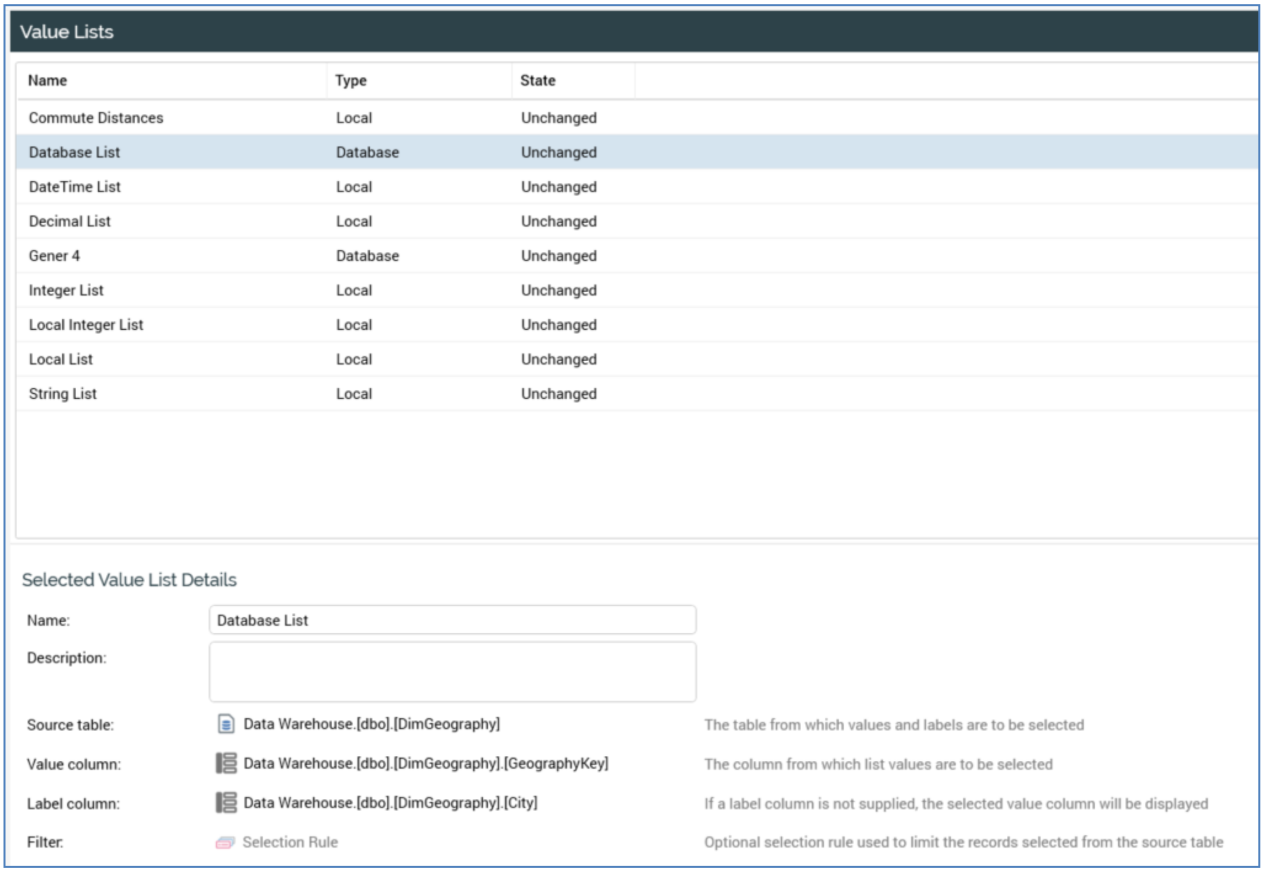
If the deleted user has access to more than one RPI client, deleting only removes access to the current client, and does not delete the user’s record.

Note that you cannot delete the currently-logged in user.

6.27 Configuring Value Lists

Value lists allow you to define lists of values, either provided manually or sourced from a data warehouse table. These lists can then be used to provide constrained sets of values that can be leveraged when building metadata attributes in an audience definition.

Configuration of value lists is carried out in the Value Lists configuration interface.



The Value Lists configuration interface contains the following elements:

6.27.1 Value Lists

A grid is displayed, listing all existing value lists:

Name	Type	State
Commute Distances	Local	Unchanged
Database List	Database	Unchanged
DateTime List	Local	Unchanged
Decimal List	Local	Unchanged
Gener 4	Database	Unchanged
Integer List	Local	Unchanged
Local Integer List	Local	Unchanged
Local List	Local	Unchanged
String List	Local	Unchanged

Within the grid, the following read-only columns are displayed:

- Name: the unique name that identifies a value list.
- Type: one of Database or Local.
- State: one of Added, Edited, Deleted or Unchanged.

When no value lists have been configured, an advisory message is displayed.

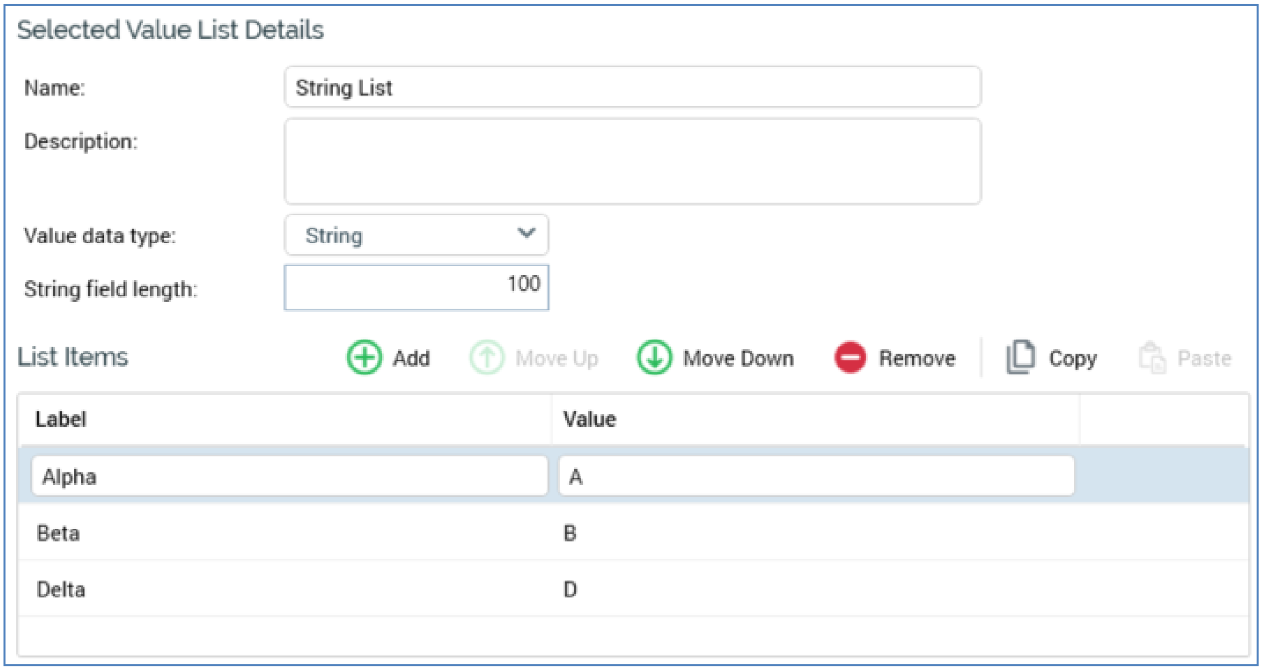
6.27.2 Selected Value List Details

This section displays the details of the value list selected currently in the list. If no value lists have been configured, an advisory message is displayed.

The section contains the following properties:

- Name: the unique name used to identify the value list. Name is mandatory, can be a maximum of 100 characters in length, and must be unique across all value lists.
- Description: an optional property that can be a maximum of 1000 characters in length.

The following properties are shown if a local value list is selected:



- Value data type: this dropdown field exposes the following values:
  - DateTime
  - Decimal
  - Integer
  - String (the default)
- String field length: this property is only displayed when Value data type is set to String. An integer field, it defaults to 100, and accepts a minimum value of 1 and a maximum value of 1000.
- List items: this property consists of a toolbar and a list.
  - Toolbar: exposing the following:
    - Add new List Item: invocation of this option adds a new list item to the list. Its default Label is 'Label' (this value can be incremented to ensure uniqueness), and its default Value blank.
    - Move selected List Item up: this button is enabled when a single list item other than the first in the list is selected. Clicking it moves the list item up one position in the list.
    - Move selected List Item down: this button is enabled when a single list item other than the last in the list is selected. Clicking it moves the list item down position in the list.
    - Remove selected List Items: clicking this button removes the currently-selected list items from the list. An 'Are You Sure?' dialog is not shown.

    - Copy List Items to clipboard: this button is enabled when one or more list items is present in the list. Invocation copies the list items to the clipboard. Names and values are tab-delimited.

    - Paste List Items from clipboard: this button is enabled when the clipboard is populated with text. Clicking it displays a submenu:

        - Replace existing values

        - Append to existing values

      If the clipboard values are of the correct tab-delimited structure, names and values are pasted into the list in accordance with the selected option. If the clipboard contents are not of the correct tab-delimited structure, a warning message is displayed.

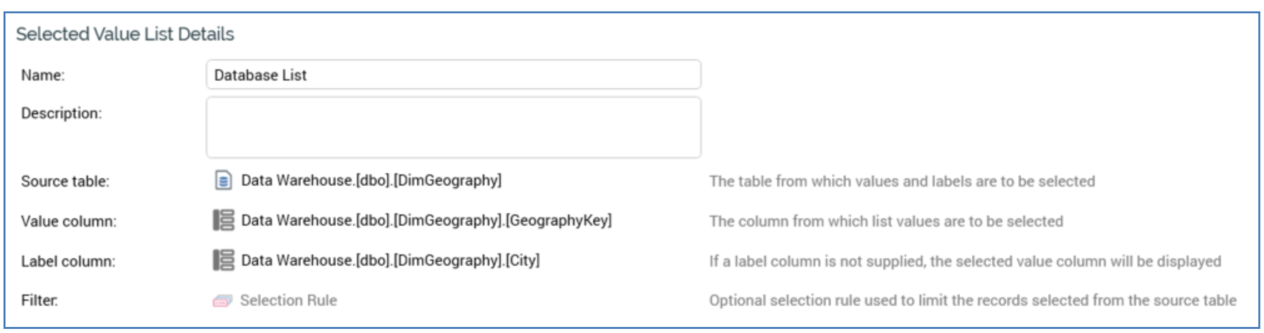
  - List: containing updateable Label and Value columns. On creating a new local list, a single list item is present therein. Its Label property is set to ‘Label’ (this can be incremented to ensure uniqueness). Its Value is blank. At least one list item must be defined.

    - Label: this column is optional. All supplied labels must be unique within a list. If blank, the text Blank label is displayed.

    - Value: this column is also optional. If a String list, Value is set automatically to the same string as its corresponding Label, and the length of the Value provided must not exceed the list's String field length.

      Note that, when using a value list at an audience definition metadata attribute, Value will be displayed if a Label is not provided.

The following properties are shown if a database value list is selected:



- Source table: this property represents the table from which values and labels are to be selected. A database table must be selected using the Choose Database Item dialog. Selection of a table enables the Value and Label column properties. Changing Source table clears any existing column properties.

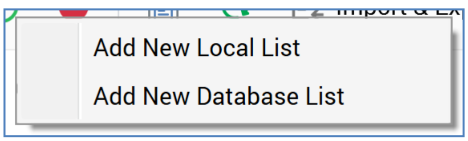
- Value column: this property represents the column from which list values are to be selected. It is disabled until a Source table is selected. The property must be set to a database column from the Source table, using the Choose Database Item dialog. You can Clear the property once selected.

- Label column: this optional property represents a label to be shown instead of the corresponding value. If a label column is not supplied, the selected value column is displayed instead. It is disabled until a Source table has been selected. The property can set to a database column from the Source table, using the Choose Database Item dialog. You can Clear the property once selected. A Validation error is raised when saving value lists if the Value and Label columns are set to the same column.

- Filter: this property represents an optional selection rule used to limit the records selected from the source table. You can browse for a selection rule, or populate the property using drag and drop. Having populated the Filter, you can open its latest version in the Rule Designer. You can also Clear your selection. Note that the selection rule you choose must be compatible with the selected Source table; if not, a Failed to load values message will be displayed at a metadata attribute based on the list (hovering over the same displays the error details in a tooltip).

6.27.3 Create New Value List

This is carried out in the toolbar. A submenu is shown on clicking the Create new… button:



On selection of an option, a new value list of the selected type is added to the grid and placed in an appropriate alphabetical position.

Its Name is 'New [database/local] list' (this value can be incremented to ensure uniqueness).

6.27.4 Configure Existing Value List

This is carried out in the Selected Value List Details section. If you configure a value list that has been saved previously, its State is set to Edited.

6.27.5 Delete Selected Value List

This is carried out in the toolbar. A deleted value list's State is set to Deleted. Its row text color is set to red. You may no longer select a deleted row.

6.27.6 Save Changes to Value Lists

Save is carried out using the Save changes to Value Lists toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them.

A Refresh Value List(s) job is created on saving value lists. Full details of this job can be found in the My Jobs Dialog documentation.

Following a successful save, value lists are displayed in alphabetical order. All lists' states are updated to Unchanged. Any deleted lists are removed from display.

6.27.7 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.28 Configuring Web Adapters

RPI supports the following types of web adapter:

- Google Analytics adapters allow you to collate metrics gathered by Google based on the behavior of a contact witnessed at a website. Navigation to such a website must be effected from a hyperlink in a communication received via an email, Facebook, Twitter or LinkedIn channel associated with a Google Analytics adapter. The metrics thus collected can then be viewed as results at the Results Window.

  Google Analytics adapters allow you to specify metrics and goals using Google Analytics keywords. Results gleaned by Google in accordance with website visitors' behaviors can be tracked and then returned to RPI. Note that Google Analytics provides its own user interface, within which it is necessary to undertake certain configuration activities separately (see below for further information). Bear in mind when utilizing the Google Analytics adapter that provision of Google Analytics results can take a period of time of up to a few hours. Note also that Google Analytics results are augmented with RPI campaign information when a website visitor was directed to a site via an RPI communication.

  You can also attach a Google Analytics adapter to a landing page. This allows you to gather Google Analytics results in respect of the page.

- Web Events adapters are similar, but collation of metrics is carried out by scripts at a website.

  Web events adapters allow you to specify metrics and states that match tags configured on your website. The restrictions enforced by the Google Analytics vocabulary are not enforced – tags can be customized to your own needs. Provision of web events results is typically much quicker than via a Google Analytics adapter.

  You can attach a web events adapter to a channel, allowing any URLs present in content delivered through that channel to be customized through the addition of URL parameters that identify recipients.

  You can then use web events-provided custom states and metrics, as well as a suite of standard state values, to react to recipients' actions at the website. For example, if you have attached a web events adapter to an email channel, and executed an email offer containing a hyperlink, you can then configure a downstream follow-up email to be sent on when a recipient submits a form in the web page to which she navigated via the link.

  You can also attach web events adapters to a landing page. When you do so, the necessary script to manage the collation of web events states and metrics is automatically added to the landing page. Note that a web events adapter must be attached to a landing page for it to be used with web events.

- PURL adapters allow you to personalize hyperlinks in an email delivered via an email channel associated with a PURL adapter.

- Bitly adapters can be associated with an SMS, Twitter, Facebook or LinkedIn channel, and allow URLs contained in content to be shortened using a Bitly shortening service account. They can also be used to invoke the manual shortening of URLs at Twitter offer content.

- Matomo adapters, when associated with landing pages, add script to the pages that allows you to track behaviors by visitors to a website. Such visitors may be anonymous or be directed to the site via an RPI marketing message (e.g. an email – see below). Details of website behaviors can be monitored in a Matomo dashboard, in the Visitors.Visitor Log tab (the dashboard itself is beyond the scope of RPI).

  A Matomo adapter can also be attached to an outbound RPI channel. In this situation, querystring parameters are added to URLs in offer content executed via the channel. These parameters can then be referenced in the Matomo dashboard, with ChannelExecutionID and (in some contexts) RPContentID being displayed at Visitors.Visitor Log, allowing determination in that context of those visitors directed to the site by RPI.

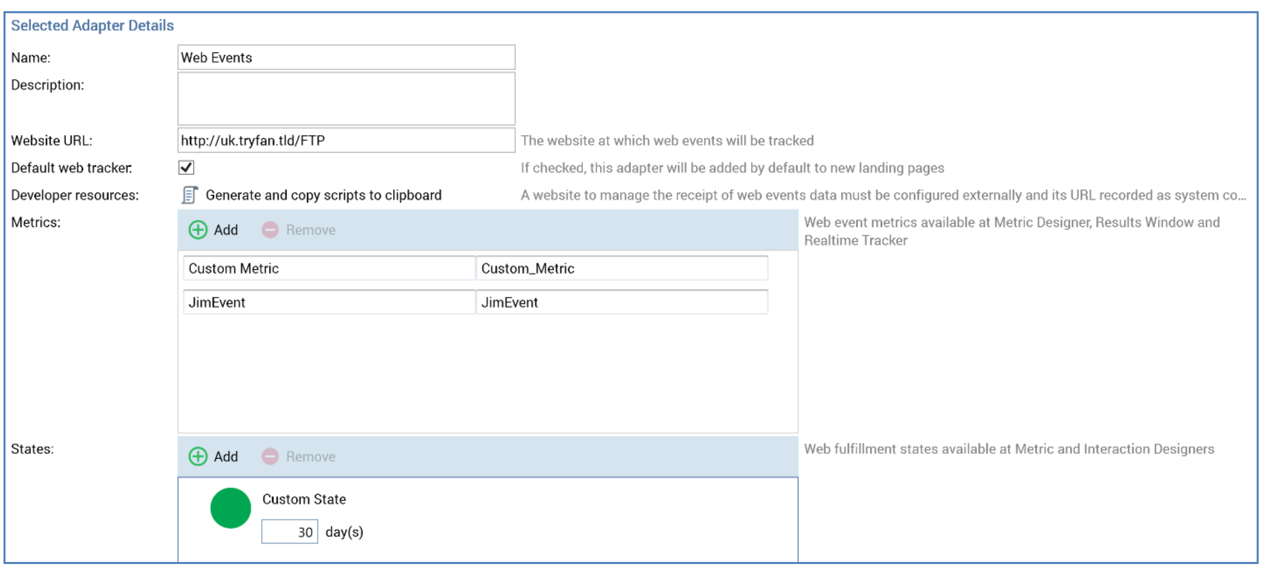
- Kissmetrics adapters are similar to Google Analytics adapters, in that they allow you to collate metrics based on website visitors' behaviors. However, this collation is carried out by the Kissmetrics external provider, rather than by Google.

- Rebrandly adapters are similar to Bitly adapters, and allows you to shorten message content.

- The Generic web adapter allows you to add custom script declarations consistently within landing pages.

A web adapter can be associated with one or more email, Facebook, LinkedIn or Twitter channels (note that Facebook, LinkedIn and Twitter channels cannot be associated with PURL adapters).

Configuration of web adapters is carried out in the Web Adapters configuration interface.



The interface contains the following elements:

6.28.1 Web Adapters

A grid is displayed, containing all existing web adapters.

Name	Description	Type	State
Generic		Generic web adapter	Unchanged
Web Events		Web events adapter	Unchanged

Within the grid, the following read-only columns are displayed:

- Name
- Description
- Type: one of Google analytics, Web events, PURL, Bitly, Matomo, Kissmetrics or Generic adapter
- State: one of Unchanged, Added, Edited or Deleted

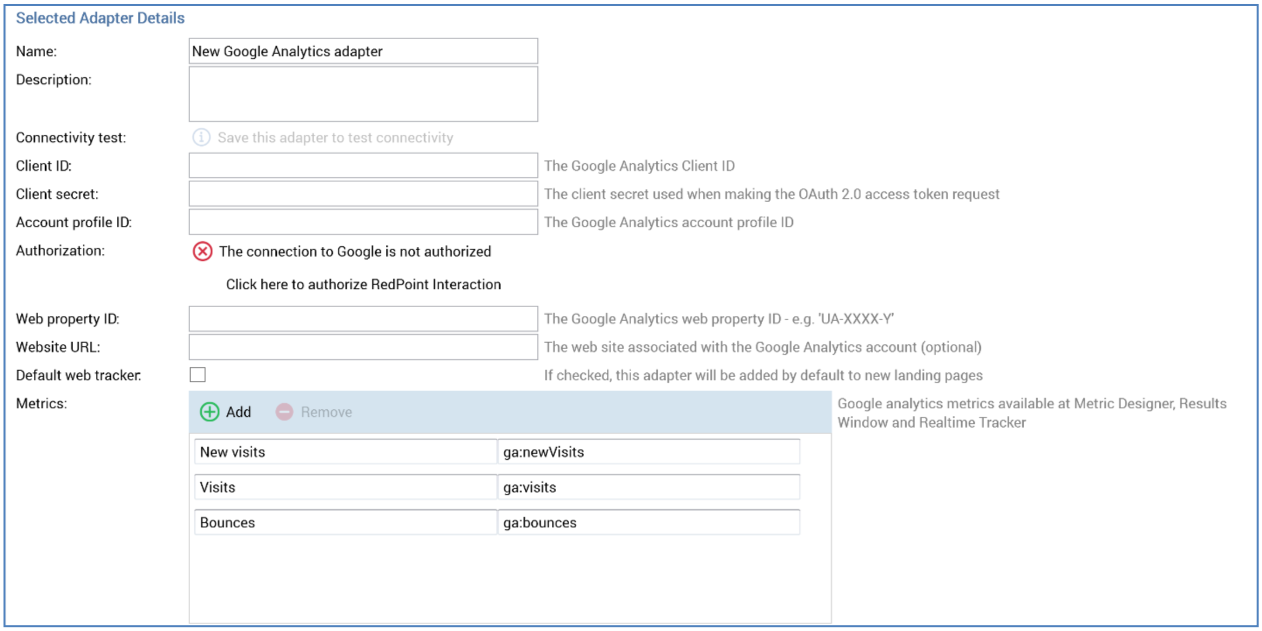
A single Web Events adapter – 'Default web tracker' is provided out-of-the-box at a newly-installed RPI client.

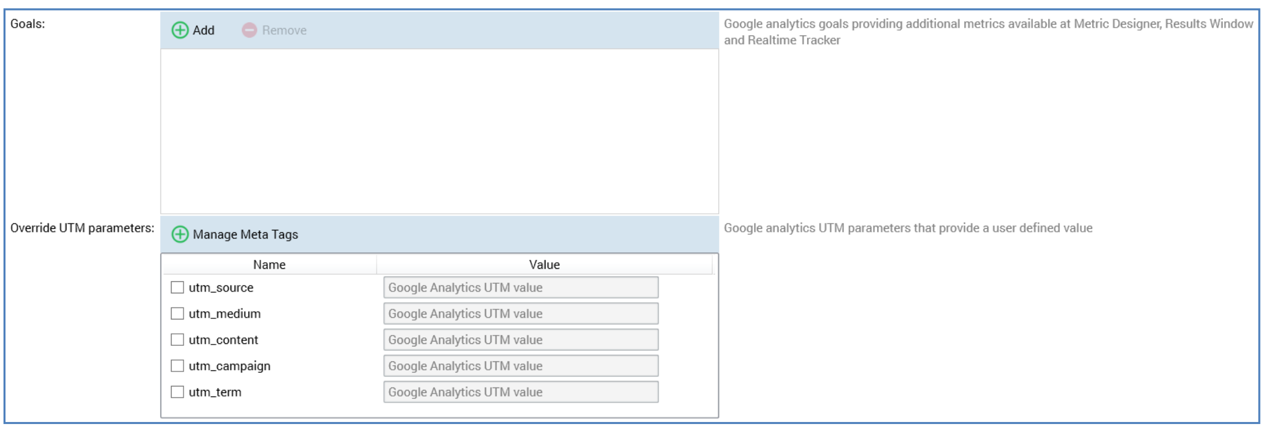
6.28.2 Selected Web Adapter Details

This section allows you to configure details of the web adapter selected currently in the grid. Its contents are dependent on the type of adapter selected (each is documented separately).

6.28.3 Google Analytics Adapter Details

When a Google Analytics adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:





- Name: a mandatory, textual field that may be a maximum of 100 characters in length. Name must be unique across all web adapters.

- Description: an optional field that may be a maximum of 1000 characters.

- Connectivity Test: this button facilitates determination of valid combinations of Google Analytics metrics. If any unsaved changes exist, the button is disabled, and its text reads 'Save this adapter to test connectivity'. If no unsaved changes are present, the button is enabled, and its text reads 'Create new job to test this adapter'.

  Clicking the button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

- Client ID: this mandatory property represents the client's unique Google Analytics ID.

- Client secret: this mandatory property is used to capture the client's Google Analytics secret, which is used to when making the access request to Google.

- Account profile ID: the Google Analytics account profile ID. The field is mandatory and can be a maximum of 100 characters.
- Authorization: for a Google Analytics adapter to be used by RPI, it must be authorized.

  A label displays the adapter's current authorization state. It is accompanied by a button as follows:

  - Prior to the adapter's being authorized, the button displays the text 'The connection to Google is not authorized'. You can click the button to display a Google Sign in page in your default web browser. On entering valid Google credentials and clicking Sign in, select the requires access permission and click Continue at the next interface.

    An authorization code will then be displayed, which you can copy to the clipboard. Having obtained an authorization code from Google, a Code field is displayed at the property, accompanied by a Submit code button.

    Paste the code into the field provided and click Submit code. If the code is correct, the Google Analytics adapter is deemed to have been authorized.

  Following the adapter's authorization, the text 'The connection to Google has been authorized' is displayed. The adapter has now been authorized and can be saved (note that it is not possible to save an unauthorized Google Analytics adapter).

- Web property ID: provision of this Google-supplied value, with a format of 'UA-XXXXXXXX-1', is mandatory.
- Web site URL: the web site associated with the Google Analytics account. Provision of this value is optional, and the field supports a maximum of 1000 characters. If set, the Google Analytics parameter is attached to URLs in an email offer that contain the specified sequence of characters. If not set, the parameter is attached to all URLs in the email content. Note that the [space], ? and & characters are prohibited in this field.
- Default web tracker: a checkbox, unchecked by default. If checked, the adapter will be automatically added to any newly-created landing pages. A validation error is raised at save if more than one default web tracker of a given type of web adapter has been defined.
- Metrics: this grid allows you specify the subset of Google Analytics metrics that will be made available at the Results Window.

  The grid contains the following:

  - Toolbar:
    - Add: invocation of this option adds a new metric to the grid. Its default name is 'New metric'. If this value already exists, an integer is appended to ensure uniqueness (this number can be incremented if required). The new metric's default Google Analytics name is 'ga:'.

- Remove: this option is only available if a metric is selected. Invocation removes the metric from the grid.

- Columns:

  - Name: mandatory, and a maximum 100 characters. The metric's name must be unique within the Google Analytics adapter.

  - Google Analytics Name: mandatory, and a maximum of 100 characters. The metric's Google Analytics name must be unique within the Google Analytics adapter, and must begin with 'ga'. Note that it is not valid to specify the 'ga:visitors' metric. The value supplied must consist only of alphabetic and/or numerical characters.

  - [Remove button]: this button is displayed when hovering over a metric. Invocation removes the metric from the grid.

Three default metrics are provided to get you started:

- New visits/ga:newVisits

- Visits/ga:visits

- Bounces/ga:bounces

It is mandatory to provide at least one metric or goal within a Google Analytics adapter.

- Goals: Google Analytics goals represent just that – demonstrable outcomes that may occur during a visit to a website. Typically, goals are associated with a sales funnel; a landing page may be followed by a sequence of informational and interrogative pages before ending with a goal – for example, confirmation that a purchase has been made successfully. Each page in such a sequence can be assigned a unique identifier within the Google Analytics interface, and the reference numbers utilized within a Google Analytics adapter's goals to represent outcomes achieved during a website visit. Each such goal provides three metrics that can then be accessed at the Results Window:

  - starts (indicating that a visitor embarked upon the sales funnel journey)

  - completions (indicating successful completion of the journey)

  - value (a financial amount determined by multiplying the number of successful completions by a value configured directly within Google Analytics' own interface)

  Google Analytics goals are managed in a grid. The grid contains the following:

  - Toolbar:

    - Add: invocation of this option adds a new goal to the grid. Its default name is 'New goal'. If this value exists already, an integer is appended to ensure uniqueness. This number can be incremented if required. The new goal's default Goal Index is 1.

        - Remove: this option is only available if a goal is selected. Invocation removes the goal from the grid. Remove is not protected by an 'Are You Sure?' dialog.

    - Columns:

        - Name: a mandatory field that can be a maximum of 100 characters in length. A goal's name must be unique within the Google Analytics adapter.

        - Goal Index: a mandatory field, Goal index must be an integer, and must be greater than 0. It must also be unique within the Google Analytics adapter.

        - [Remove button]: This button is displayed inline when hovering over a goal. Invocation removes the goal from the grid. Remove is not protected by an 'Are You Sure?' dialog.

    In contrast to metrics, default goals are not provided.

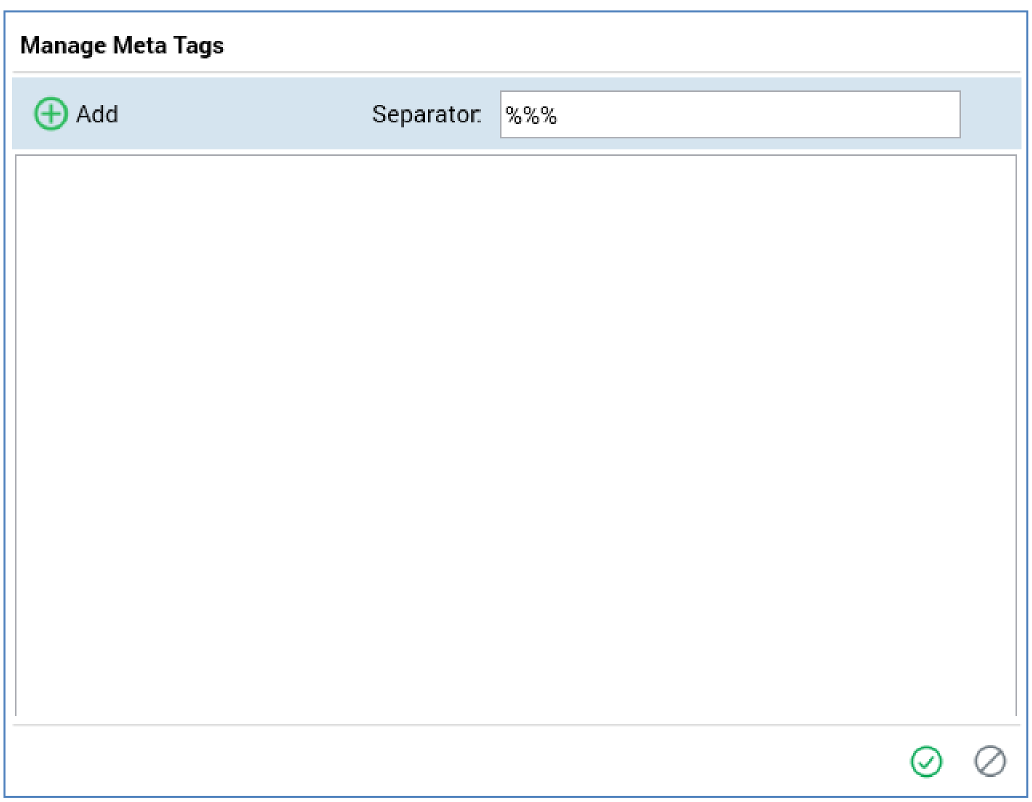
    It is mandatory to provide at least one metric or goal within a Google Analytics adapter.

- Override UTM parameters: this property allows you to override the names of the standard Google UTM parameters, which are added to tracked URLs by Google Analytics.

    The property consists of a toolbar and a list.

    The toolbar exposes a single button:

    - Manage Meta Tags: when this button is clicked, the Manage Meta Tags dialog is shown.



The dialog allows you to manage meta tags, which can later be assigned to UTM parameters in the Override UTM parameters list.

The popup contains a toolbar, list and buttons.

- Toolbar: exposing the following:
    - Add: clicking this button adds a new, unconfigured meta tag to the list.
    - Separator: this mandatory text field allows you to define a sequence of characters that will be used to separate meta tags. It defaults to the value '%%%'.
- List: each defined meta tag is displayed in the list. For each meta tag, a Meta Tag Name and Meta Tag Value must be defined. An inline Remove button is shown on hovering over a meta tag; clicking it removes the meta tag without displaying an 'Are You Sure?' dialog.
- OK: clicking this button saves changes to meta tags and closes the dialog.
- Cancel: clicking this button abandons changes and closes the dialog. Clicking off the dialog has the same effect.

The list presents a list of UTM parameters. Each is accompanied by a checkbox. If you check a UTM parameter, its accompanying Value field is enabled. The field is mandatory and accepts a value of up to 128 characters in length.

If UTM parameters are overridden, the values provided are substituted at runtime for their 'utm_' equivalents (e.g. 'utm_campaign=123' becomes 'Custom_value=123').

'utm_term' is only included in URLs when overridden.

Meta tags can be managed at a UTM parameter using inline Select and Clear buttons shown to the right of each selected UTM parameter on hover.

- Add: clicking this button displays the Select Meta Tags dialog. The dialog lists all configured meta tags. You can select meta tags by checking the checkboxes to the left. OK and Cancel buttons are provided at the bottom of the dialog. On selecting meta tags, they are displayed at a UTM parameter's Value as '[Tag Name 1][Separator][Tag Name 2]...'.
- Clear: you can use this button to clear any meta tags assigned at a UTM parameter.

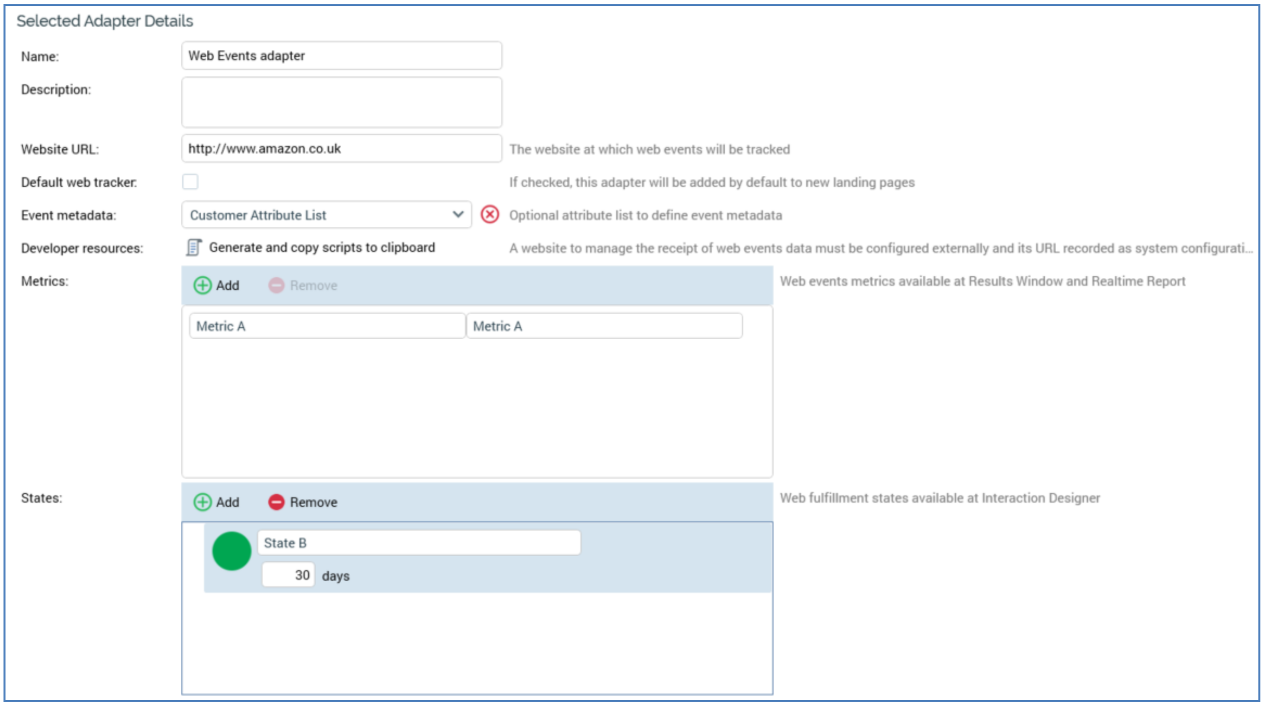
If UTM parameters are not overridden, the default values provided at runtime are as follows:

- utm_source: RPI
- utm_medium: channel's delivery method name e.g. Email
- utm_content: channel execution ID. If a test send, the default value is 0.

- utm_campaign: offer activity name

6.28.4 Web Events Adapter Details

When a web events adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:



- Name: a mandatory text field that can be a maximum of 100 characters in length.
- Description: an optional text field that can be a maximum of 1000 characters in length.
- Website URL: this mandatory field can be a maximum of 1000 characters in length. Web Events parameters are attached to all instances of the specified URL within the offer channel content (matching when the string as stated is found in the URL). Note that the following characters are forbidden: [space], '?' and '&'.
- Default web tracker: a checkbox, unchecked by default. If checked, the adapter will be automatically added to any newly-created landing pages. A validation error is raised at save if more than one default web tracker of a given type of web adapter has been defined.
- Event metadata: this property allows you to optionally select an attribute list, which can be used when configuring Event Metadata criteria in a Web realtime decision. A dropdown property, it lists all configured non-Placeholder attribute lists. Nothing is selected by default. Having chosen an attribute list, you can clear your selection.
- Developer resources: clicking the Generate and copy scripts to clipboard allows a web developer to generate scripts that can then be inserted at appropriate positions in an external website. Note that a website to manage the receipt of web events data needs to be configured externally, and its URL recorded as system configuration setting WebEventTrackingAddress. The button is not available until the web adapter is saved.

Two scripts are created and copied to the clipboard:

- Set Cookie Script: this script sets cookies on the machine of the person viewing the website, which are based on the URL parameters appended to the URL which he or she traversed to browse to the site.
- Send Metric Script: this script is used to call the web events website to advise of metric or state updates.

A confirmatory message is displayed post-copy. Note that a warning is displayed if WebEventTrackingAddress has not been set.

- Metrics: these represent cumulative numerical values collated at the website, even across several visits; for example, Total Sales Value. Web event adapter metrics are listed in a grid, above which is displayed a toolbar that exposes the following options:
  - Add: invocation of this option adds a new metric to the grid. Its default name is 'New metric'. If a metric of that name exists already, an integer is appended, and may be incremented if required. The new metric's default Web parameter name is blank.
  - Remove: this option is only available if a metric is selected. Invocation removes the metric from the grid.

  The Metrics grid, contains the following columns:

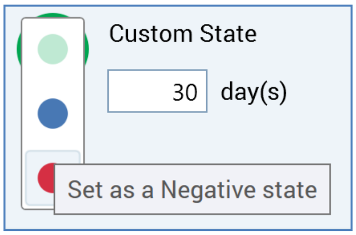
  - Name: a metric's name is mandatory and may be a maximum of 100 characters. The name must be unique within the web events adapter.
  - Web parameter Name: mandatory, and a maximum of 100 characters. The web parameter name must match a value configured within a tag at the website, is case sensitive and must be unique within the web events adapter.
  - [Remove button]: displayed when hovering over a metric. Invocation removes the metric from grid.
- States: a state represents the number of visitors that assume a given state at the website – for example, 'Made a Purchase'. States are displayed in a treeview, above which is displayed a toolbar exposing the following options:
  - Add: invocation adds a new, unconfigured top-level state to the bottom of the top level in the treeview. Its default name is 'New initial state'. If 'New initial state' already exists, an integer is appended and may be incremented if required. The newly-added state appears as restored.
  - Remove: this button is enabled when a state is selected in the treeview. Invocation removes the selected state from the list. Any descendent states are also removed.

  The States treeview may contain multiple top-level states. States are shown as treeview nodes. Initial states can contain child states; however, there are no functional ramifications for parent/child relationships, and they are provided to allow you to organize states in a logical manner. You can nest multiple levels of child state if you wish.

When the interface is displayed initially, existing initial states are shown as rolled up. All states' details are hidden. You can expand or roll up states as required. When expanded, child states are shown as indented. When a state is selected, the cursor occupies full available treeview width.

A state contains the following:

- Positive/Negative/Transitional state icon: on hovering over the icon, a menu is displayed, allowing you to change the property:

  Note that the definition of a state as Positive, Negative or Transitional is purely to add comprehensibility, having no functional impact.

- Name: mandatory, and a maximum of 100 characters. A state's name must be unique within a web events adapter.

- Duration: the length of time after channel execution within which the state can be assumed.

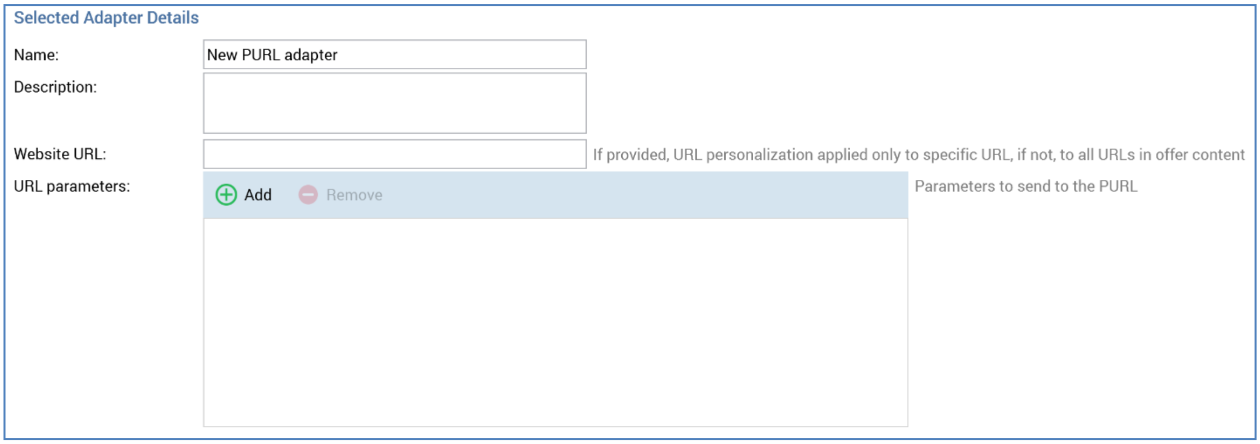
- Add a new Child State: this button is shown to the right of the state at hover. Invocation adds a new, child state to the bottom of the list of the current state's children. The new child state's default name is 'New child state'. If 'New child state' already exists, it is called 'New child state 2'. This number may be incremented if required.

- Remove: this button is shown to the right of the state at hover. Clicking it removes the state from the adapter.

On save, if a state has been added, or an existing state's database field has changed, a Validate Audience Definitions job is created, and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation. When complete, this job adds database field columns to all audience definitions' offer history tables as appropriate.

6.28.5 PURL Adapter Details

When a PURL adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:



- Name: a mandatory text field that can be a maximum of 100 characters in length. Set by default to 'New PURL Adapter' (an integer can be appended to ensure uniqueness).
- Description: an optional text field that can be a maximum of 1000 characters in length.
- Web site URL: an optional text field that can be a maximum of 1000 characters in length. If a web site URL is provided, the parameters appended to any URLs within a message's content are applied only to instances of the specified URL. The value provided must be a valid URL.
- URL parameters: this list allows you to define the adapter's parameters. Note that it is mandatory to provide at least one URL parameter.

  A toolbar is shown at the top of the list, exposing the following options:

  - Add: invocation adds a new URL parameter to the grid. Its attribute is not set, and its default name is set to 'NewParameter' (an integer can be appended to ensure uniqueness).
  - Remove: invocation removes the selected parameter, without displaying an 'Are You Sure?' dialog.

  The list itself displays two columns:

  - Attribute: provision of an attribute to map to the parameter is mandatory. You can provide an attribute using drag and drop, or you can browse for one using the recent items chooser or File System Dialog. Parameter attributes are supported.

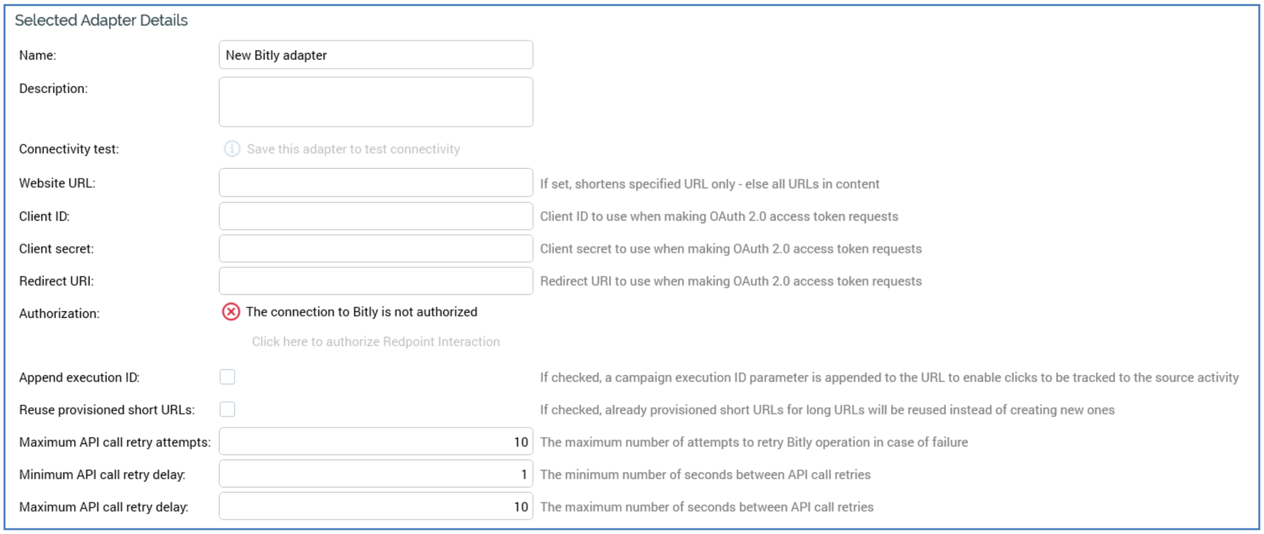
    Once an attribute has seen selected for the parameter, you can invoke View Information (to view its details in the File Information dialog). You can also Clear the selected attribute.

- Parameter name: provision of a name for the parameter is mandatory, and the value can be up to 100 characters long. The name provided must be unique within the adapter.
- Default Value: this optional property supports a maximum of 100 characters. It can be used to provide a default value, to be substituted in the event of a null attribute value.

When you hover over a URL parameter a Remove button is displayed to the right; invocation thereof removes the parameter without displaying an ‘Are You Sure?’ dialog.

6.28.6 Bitly Adapter Details

When a Bitly adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:

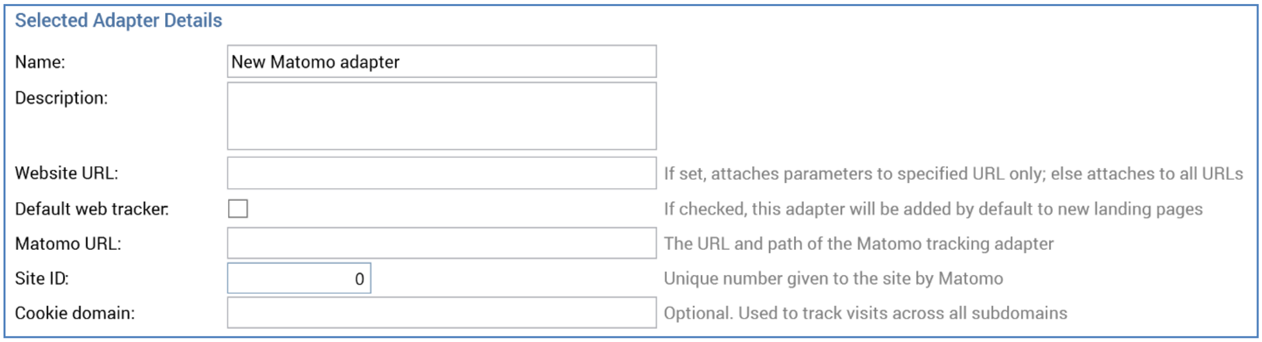


- Connectivity test: clicking this button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.
- Website URL: if a URL is provided, only URLs based on the provided value are shortened. The property is optional; if not provided, all URLs in the content are shortened. The field is blank by default and can be a maximum length of 1000 characters. If a value is provided, it must be a well-formed URL.
- Client ID: this mandatory text field represents the client ID used when making OAuth 2.0 access token requests.
- Client secret: this password-masked field is used in conjunction with Client ID when making OAuth 2.0 access token requests.
- Redirect URI: this mandatory text field represents the redirect URI used when making OAuth 2.0 access token requests.
- Authorization: the web adapter must be authorized by Bitly before it can be used.
- Append execution ID: if this checkbox is checked, a campaign execution ID parameter is appended to the URL to enable clicks to be tracked to the source activity. It is unchecked by default.
- Reuse provisioned short URLs: this checkbox is unchecked by default. If checked, any short URLs already provisioned at Bitly will be substituted for long URLs, avoiding the unnecessary creation of new ones.

- Maximum API call retry attempts: this numeric property allows you to specify the maximum number of retry attempts to be undertaken in case of a call to the Bitly service resulting in a failure. It defaults to 10, and accepts a range of values from 1 to 100.
- Minimum API call retry delay: this numeric property allows you to specify the minimum number of seconds between API call retries. It defaults to 1, and accepts a range of values from 1 to 600.
- Maximum API call retry delay: this numeric property allows you to specify the maximum number of seconds between API call retries. It defaults to 1, and accepts a range of values from 1 to 600.

6.28.7 Matomo Adapter Details

When a Matomo adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:



- Web site URL: when the Matomo adapter is attached to an outbound channel, if this optional property is set (to a well-formed URL), querystring parameters are appended to all URLs in offer content that match this property value. If the property is not set, querystring parameters are attached to all URLs in offer content.

  The querystring parameters are as follows:

  - ClientID (clid)
  - ChannelExecutionID (exid)
  - RPContactID (rpcid) is appended at Email and Twitter Direct offer content only

  Web site URL can be a maximum of 1000 characters.

- Default web tracker: a checkbox, unchecked by default. If checked, the adapter will be automatically added to any newly-created landing pages. A validation error is raised at save if more than one default web tracker of a given type of web adapter has been defined.

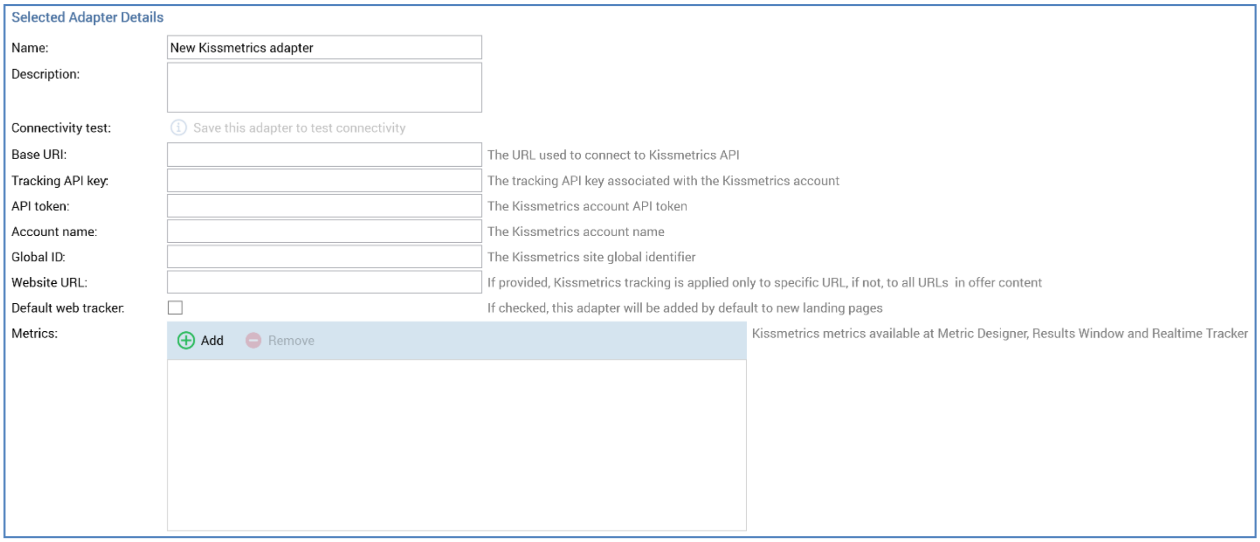
- Matomo URL: this property represents the URL and path of the Matomo tracking adapter. Its provision is mandatory, and it can be a maximum length of 1000 characters.

- Site ID: this is a unique integer value that is assigned to the website being tracked by Matomo. It is mandatory and must be greater than 0.

- Cookie domain: optional. Facilitates tracking of visits across subdomains.

6.28.8 Kissmetrics Adapter Details

When a Kissmetrics adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:

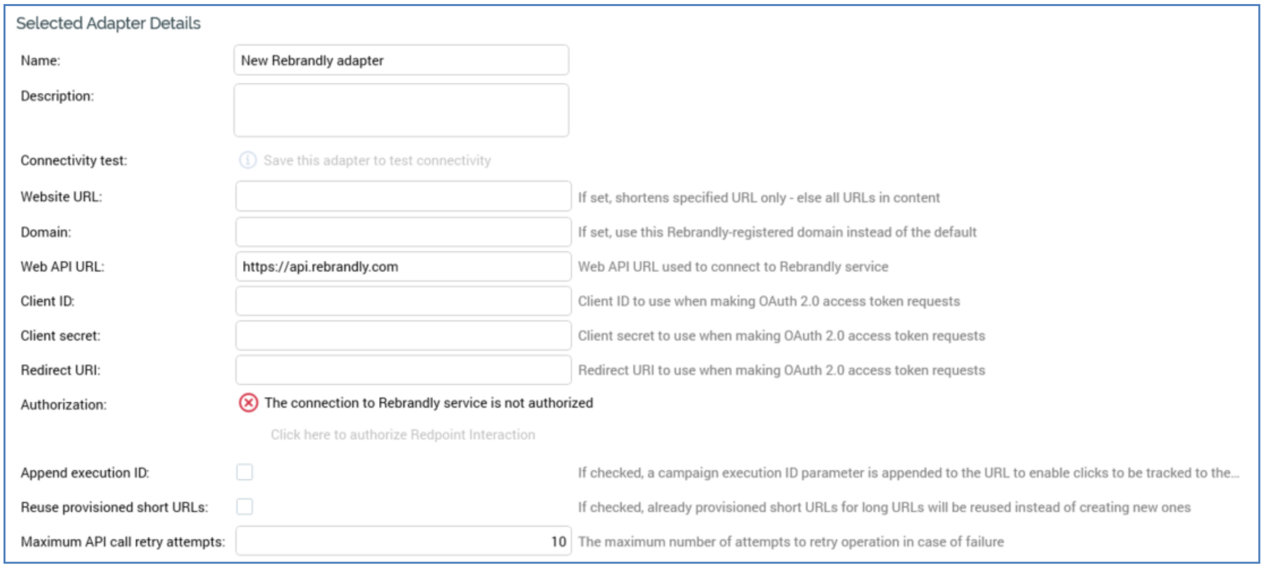


- Connectivity test: Clicking this button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.
- Base URI: this mandatory property is a maximum of 1000 characters in length. It represents the base URI for Kissmetrics API endpoints and is used for all Kissmetrics API requests.
- Tracking API key: this mandatory property can be a maximum of 50 characters in length.
- API token: this mandatory property can be a maximum of 100 characters in length.
- Account name: this mandatory property can be a maximum of 100 characters in length.
- Global ID: this mandatory property can be a maximum of 100 characters in length.
- Web site URL: this optional property can be a maximum of 1000 characters in length. If provided, Kissmetrics tracking is applied only to the specific URL, if not, to all URLs in offer content.
- Metrics: this grid allows you specify the metrics that are to be tracked by the Kissmetrics web adapter. The grid contains the following:
    - Toolbar:
        - Add: invocation of this option adds a new metric to the grid. Its default name is 'New metric'. If this value already exists, an integer is appended to ensure uniqueness (this number can be incremented if required).
        - Remove: this option is only available if a metric is selected. Invocation removes the metric from the grid.

- Columns:
  - Name: mandatory, and a maximum 100 characters. The metric's name must be unique within the Kissmetrics adapter.
  - Metric: mandatory, and a maximum of 100 characters. Metric must be unique within the Kissmetrics adapter and represents the metric's name as configured at the Kissmetrics account.
  - [Remove button]: this button is displayed when hovering over a metric. Invocation removes the metric from the grid.

6.28.9 Rebrandly Adapter Details

When a Rebrandly adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:



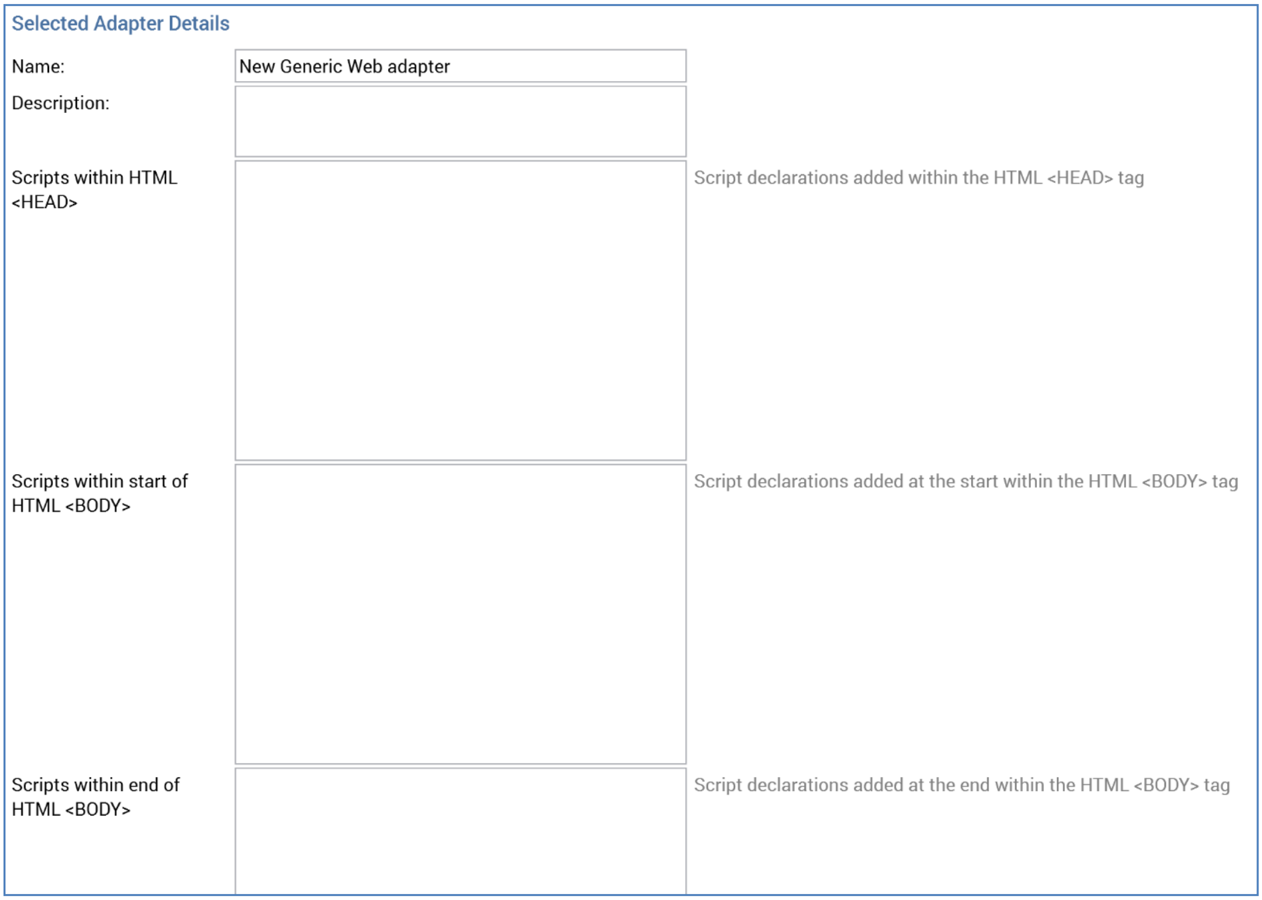
- Connectivity test: clicking this button creates a Connectivity test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.
- Website URL: if a URL is provided, only URLs based on the provided value are shortened. The property is optional; if not provided, all URLs in the content are shortened. The field is blank by default and can be a maximum length of 1000 characters. If a value is provided, it must be a well-formed URL.
- Domain: this optional property can be a maximum of 200 characters in length. If set, the Rebrandly-registered domain supplied will be used instead of the default.
- Web API URL: this mandatory, updateable text field can be a maximum of 1000 characters in length. It allows you to specify the Web API URL that will be used to connect to the Rebrandly service.
- Client ID: this mandatory, updateable text field can be a maximum of 100 characters in length. It allows you to specify the client ID to use when making OAuth 2.0 access token requests.
- Client Secret: this password-masked text field can be a maximum of 100 characters in length. It allows you to specify the client secret to use when making OAuth 2.0 access token requests.
- Redirect URI: this mandatory, updateable text field can be a maximum of 200 characters in length. It allows you to specify a redirect URI, to be used when making OAuth 2.0 access token requests.
- Authorization: a Rebrandly adapter must be authorized before it can be used. On clicking the button supplied, a web browser is launched, in which Rebrandly login credentials can be

entered. On successful authorization, a Verification URL must be supplied; on clicking the Get access token button, an access token is generated.

- Append execution ID: this checkbox allows you to specify that a campaign execution ID parameter should be appended to the Rebrandly-generated URL, facilitating click tracking.
- Reuse provisioned short URLs: this checkbox already provisioned short URLs will be reused instead of creating new ones.
- Maximum API call retry attempts: this property allows you to specify the number of retries that should be made in the event of a call to Rebrandly failing.

6.28.10 Generic Web Adapter Details

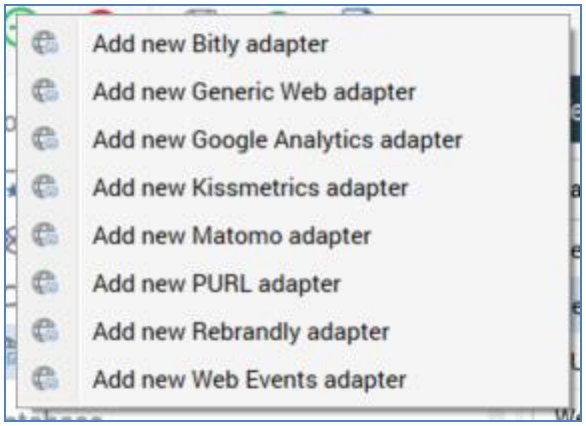
When a generic web adapter is selected in the web adapters list, the Selected Adapter Details section contains the following updateable fields:



- Name: a mandatory, textual field that may be a maximum of 100 characters in length. Name must be unique across all web adapters.
- Description: an optional field that may be a maximum of 1000 characters.
- Scripts within HTML <HEAD>: this mandatory, multiline text field is blank by default. It accepts a maximum length of 5000 characters. It allows you to specify script declarations to be added within the HTML <HEAD> tag.
- Scripts within start of HTML <BODY>: this mandatory, multiline text field is blank by default. It accepts a maximum length of 5000 characters. It allows you to specify script declarations to be added at the start within the HTML <BODY> tag.
- Scripts within end of HTML <BODY>: this mandatory, multiline text field is blank by default. It accepts a maximum length of 5000 characters. It allows you to specify script declarations to be added at the end within the HTML <BODY> tag.

6.28.11 Create New Adapter

This is carried out in the toolbar. Invocation of this option displays a sub-menu that exposes the following options:



Selecting an option adds a new adapter of the appropriate type to the grid. Its Name is 'New [adapter type] adapter' (if an adapter with that name already exists, an integer is appended and can be incremented if required)). Its State is Added. The new adapter is selected automatically.

6.28.12 Configure Existing Web Adapter

This is carried out in the simple fields in the Selected Adapter Details section, by selecting an existing adapter. If you configure an adapter that has been saved previously and its State is set to Edited.

6.28.13 Delete Selected Web Adapters

This is carried out in the toolbar. If you delete an adapter that has been saved previously, its State is set to Deleted, and its row text color set to red. You may no longer select a deleted row. If you delete an adapter that is yet to be saved, it is removed from display. You can delete multiple adapters concurrently. Delete is not protected by an 'Are You Sure' dialog. You cannot delete an adapter that is associated with one or more channels.

6.28.14 Save Changes to Web Adapters

Save is carried out using the Save changes to Adapters toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, adapters are displayed in alphabetical order. All adapters' states are updated to Unchanged. Any deleted adapters are removed from display. You cannot save a Deleted adapter when it is in use by one or more channels.

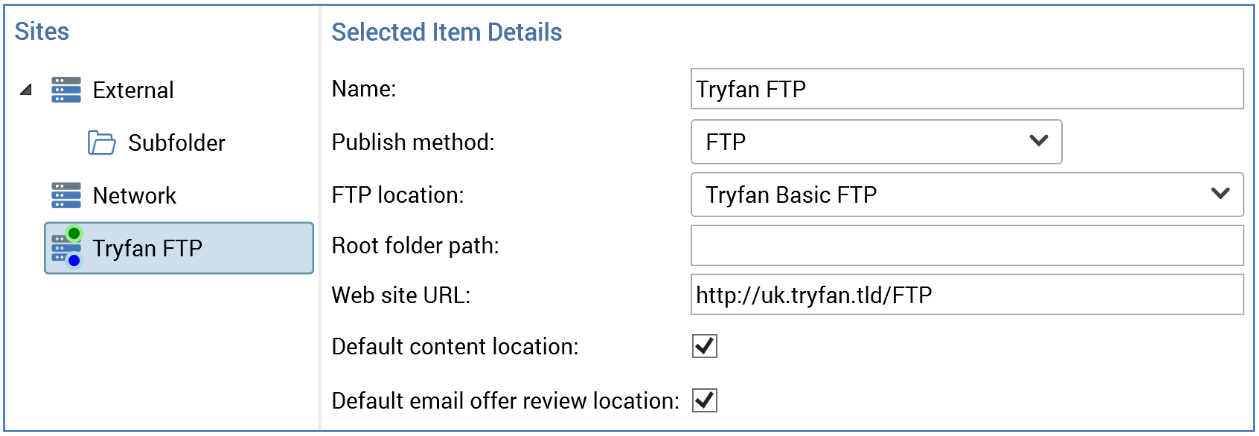
6.28.15 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a ‘Save Changes?’ dialog is shown.

6.29 Configuring Web Publish Sites

Web Publish Sites allow you to create a representation of a web site as a tree of network folders and/or FTP locations. These can then be used when publishing landing pages and smart assets.

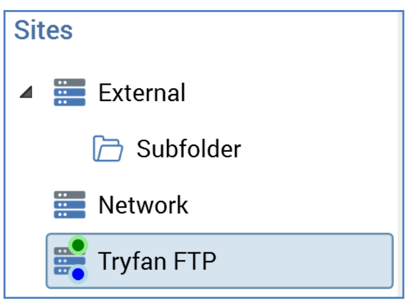
Configuration of web publish sites is carried out in the Web Publish Sites configuration interface:



The interface contains the following elements:

6.29.1 Web Publish Sites

A treeview to the left lists all existing web publish sites and the folders that they contain.



The default content location (if defined) is indicated by the presence of a green circle at its icon.

6.29.2 Selected Item Details

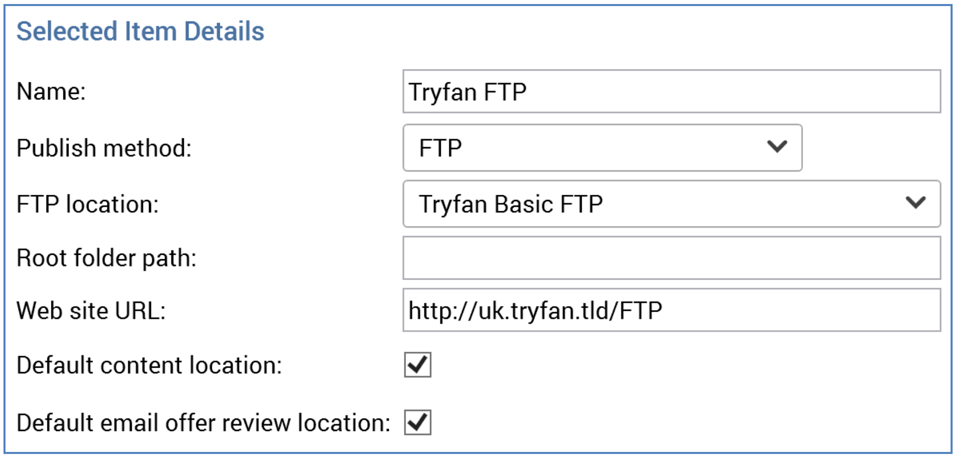
The section to the right allows you to configure details of the web publish site or folder selected currently in the treeview. Its contents are dependent on whether a site or folder is selected.

If nothing is selected in the treeview, an informational message advises such.

6.29.3 Selected Item Details – Web Publish Site

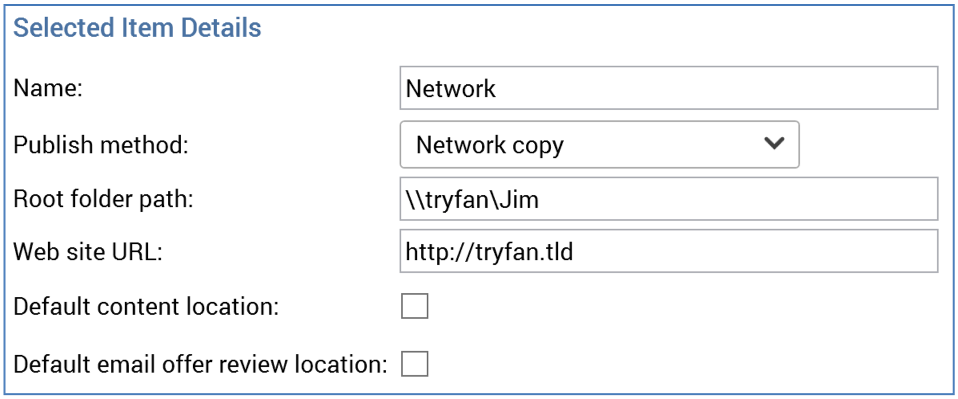
This section describes the contents of the Selected Item Details in the event of a web publish site being selected in the treeview.

If an FTP web publish site is selected, the following fields are shown:



- Name: a mandatory, textual field that may be a maximum of 100 characters in length. Name must be unique across all web publish sites.
- Publish method: a dropdown field exposing values FTP (the default), Network copy and External content provider.
- FTP location: a dropdown field that is blank by default. All existing FTP locations are available.
- Root folder path: when Publish method is set to FTP, this property is optional, and cannot contain illegal characters (e.g. ! @ # $). Root folder path has a maximum length of 1000 characters.
- Web site URL: this property is mandatory and can be a maximum length of 1000 characters. It must be a well-formed URL.
- Default content location: this checkbox is unchecked by default. When checked, any newly-created smart assets will automatically have their Publish location property set to the current provider. A validation error is raised at save when multiple default content locations have been defined. Note that definition of a default content location is optional.
- Default email offer review location: this property allows you to define a web publish site or folder as the default location to which email offer content will be staged for review. When it is selected, the location's matching treeview node icon is augmented with a blue circle at its bottom right. A validation error is raised at save if you attempt to set more than one Default email offer review location.

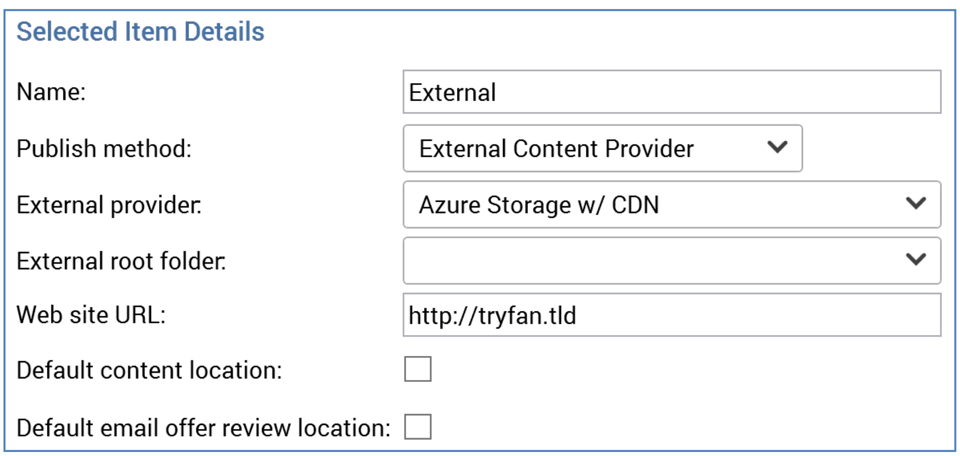
If a network folder web publish site is selected, the following properties are displayed:



- Root folder path: when Publish method is set to Network copy, this property is mandatory, and must be set to a valid share format, i.e. '\\server\...'. Root folder path has a maximum length of 1000 characters.

Note that the account under which the RPI Windows services run must have full permission access to the Root Folder Path.

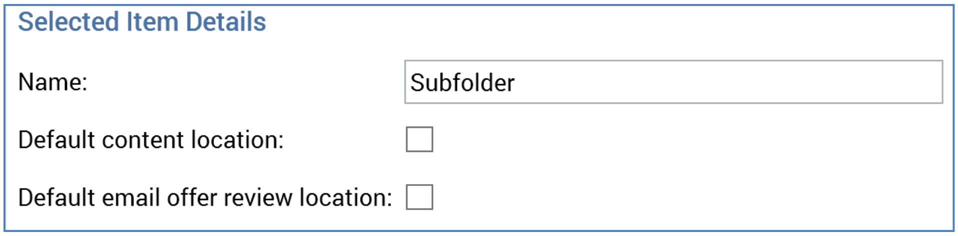
If an external content provider web publish site is selected, the following properties are displayed:



- External provider: this dropdown field lists Amazon Web Services S3, FTP, Rackspace, SharePoint, Razuna, WebDAV and Cloudinary external content providers, in alphabetical order. Selection of a provider is mandatory.
- External root folder: this combo field is populated with a list of the root folders sourced from the selected external content provider. Selection or specification of a folder is mandatory.
- Web site URL: this mandatory property can be a maximum length of 1000 characters. The value provided must be a well-formed URL.

6.29.4 Selected Item Details – Folder

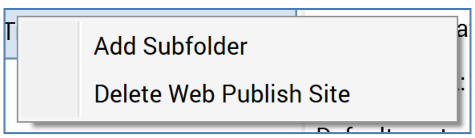
If a folder is selected in the treeview, the Selected Item Details section contains the following:



- Name: this property is mandatory and can be a maximum length of 100 characters. It must be unique within its parent folder and cannot contain illegal characters.
- Default content location
- Default email offer review location

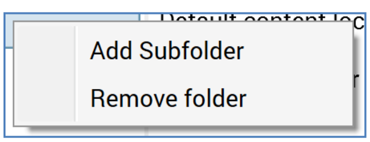
6.29.5 Treeview Context Menus

When you right-click a web publish site in the treeview, the following context menu is displayed:



- Add subfolder: invocation of this option adds 'New folder' below the web publish site. Name uniqueness is ensured by the addition of an incrementing integer if a sibling folder with the same name already exists.
- Delete Web Publish Site: invocation of this option results in the deletion of the web publish site. Please see the documentation below for further details.

When you right-click a folder in the treeview, the following context menu is displayed:



- Add subfolder: invocation of this option adds 'New folder' below the current folder. Name uniqueness is ensured by the addition of an incrementing integer if a sibling folder with the same name already exists.
- Remove folder: invocation of this option removes the current folder without display of an ‘Are You Sure?’ dialog.

6.29.6 Create New Web Publish Site

This is carried out in the toolbar. Invocation of this option adds a new web publish site to the treeview. Its Name is ‘New web publish site’ (if a site with that name already exists, an integer is appended and can be incremented if required)). The text '(Added)' is shown to the right of the new site's name. The new site is selected automatically.

6.29.7 Configure Existing Web Publish Site/Folder

This is carried out in the Selected Item Details section. When a web publish site is in an Edited state, the text '(Edited)' is shown to the right of the site's name in the treeview.

6.29.8 Delete Selected Web Publish Site

This is carried out in the toolbar (and is also available in the context menu shown when right-clicking a web publish site).

If you delete a site that has been saved previously, its representation in the treeview is shown in red, and the text '(Deleted)' is appended to its name.

If you delete a site that is yet to be saved, it is removed from display.

Note that Delete is not protected by an 'Are You Sure' dialog.

6.29.9 Save Changes to Web Publish Sites

Save is carried out using the Save changes to Web Publish Sites toolbar button. Any changes you have made are validated, and any validation errors are advised in a dialog. You may not proceed with the Save until you have resolved them. Following a successful save, the treeview's contents are displayed in alphabetical order. Any deleted sites are removed from display.

6.29.10 Refresh

This option reloads the contents of the interface from the operational database. If changes have been made, a 'Save Changes?' dialog is shown.

6.30 The Configuration Workbench and NoSQL Databases

The following sections document ramifications for the Configuration Workbench when working in a NoSQL environment.

6.30.1 NoSQL Databases Only Mode

When running in a NoSQL-only environment, the following apply at the Configuration Workbench:

- Audience Definitions: not available.
- Audience Snapshots: not available.
- Cached Attribute Lists:
  - The Create Parameter Attributes button is not shown.
  - Decision Attributes are set using parameter attributes.
- Catalog: not available.
- Channels: only the following channel types are supported:
  - CRM:
    - Microsoft Dynamics CRM
  - Data Onboarding:
    - Facebook Audience
    - LiveRamp
    - LiveRamp Identity Link
    - Realtime Cache
  - Email:
    - Amazon Pinpoint
    - CheetahMail
    - Cordial
    - Dotdigital
    - Acoustic
    - Instiller
    - Listrak

    - LuxSci
    - Responsys
    - Salesforce Marketing Cloud Data Transfer
    - Salesforce Marketing Cloud Email
    - SendGrid
    - SparkPost
  - General:
    - Data Extract
      - Allow duplicates on resolution is not shown.
    - Outbound Delivery
      - State import table represents a collection into which state results will be imported.
  - Mobile:
    - Google Firebase
    - Google Firebase Direct
    - Twilio Notify
    - Twilio Notify Direct
    - Twilio SMS
  - Social:
    - Facebook
    - Twitter
    - Twitter Direct
  - Web:
    - Alchemer

  Note that a channel's Filter property is provided using a NoSQL selection rule when in NoSQL mode.

- Data Process Projects:
  - The Use results in audience property is hidden.
  - Ditto the Bands tab.

- Database Keys: not available.
- Joins: not available.
- Value Lists:
  - You cannot create database value lists.
- Resolution Levels: not available.
- State flows: NoSQL selection rules are used to define states.
- User Groups: certain functional permissions are not supported. Please see the RPI Framework documentation for more details.

6.30.2 NoSQL Data Warehouse with SQL Auxiliary Databases Mode

When running against a NoSQL data warehouse with one or more SQL auxiliary databases, only the following configuration interfaces are available:

- Catalog: note that you cannot select the Data Warehouse at the Database dropdown, as only SQL databases are supported in this context.
- Channels: restrictions as NoSQL databases only, above.
- Joins
- Database Keys
- Resolution Levels

6.30.3 SQL Data Warehouse with NoSQL Auxiliary Databases

When running against a SQL data warehouse with one or more NoSQL auxiliary databases, the following considerations apply:

- Catalog: you cannot select a NoSQL database at the Database dropdown.
- Cached Attribute Lists: you can configure a cached attribute list at both the data warehouse and NoSQL auxiliary databases. All Decision Attributes must be from same the same database as the selected Lookup key. If all Decision Attributes are parameter attributes, the Create Parameter Attributes button is disabled.
- Joins: you cannot select a NoSQL database auxiliary database at the Choose Database Item dialog when configuring a simple join.
- NoSQL DB Collection Definitions: interface available.
- NoSQL DB Offer History Definitions: interface not available.

6.31 Appendix A – Facebook Error Codes

This appendix documents error codes that may be received from Facebook during usage of RPI Facebook channels.

6.31.1 Facebook, Facebook Marketing, Facebook Custom Audience, and Facebook Offline Events Error Codes

Error Code	Description
1	API Unknown:Possibly a temporary issue due to downtime. Wait and retry the operation. If it occurs again, check you are requesting an existing API.
2	API Service: Temporary issue due to downtime. Wait and retry the operation.
4	API Too Many Calls: Temporary issue due to throttling. Wait and retry the operation or examine your API request volume.
17	API User Too Many Calls: Temporary issue due to throttling. Wait and retry the operation or examine your API request volume.
10	API Permission Denied: Permission is either not granted or has been removed. Handle the missing permissions.
200-299	API Permission (Multiple values depending on permission): Permission is either not granted or has been removed. Handle the missing permissions.
341	Application limit reached. Temporary issue due to downtime or throttling. Wait and retry the operation or examine your API request volume.
368	Temporarily blocked for policies violations. Wait and retry the operation.
506	Duplicate Post: Duplicate posts cannot be published consecutively. Change the content of the post and try again.
1609005	Error Posting Link: There was a problem scraping data from the provided link. Check the URL and try again.

6.31.2 Facebook Marketing and Facebook Custom Audience Error Codes

Error Code	Description
200, subcode 1870034	Custom Audience Terms Not Accepted: You'll need to agree to the Custom Audience terms before you can create or edit an audience or an ad set. See Facebook, Custom Audience Terms
200, subcode 1870047	Audience Size too Low: You cannot remove users from this audience because it will result in a low audience size and may result in under-delivery or non-delivery of your ads.
294	Managing advertisements requires the extended permission ads_management and an application that is whitelisted to access the Marketing API
2607	The given currency is invalid for usage with ads.
2654	Failed to create custom audience.
1359036	Ad Create Failed - Too Many Ads: The account {account_id} has reached the maximum number of ads {max}

1487007	Campaign Ended: You can't edit ads in a campaign that has ended. Please create a new ad within this campaign, update the campaign end time, pick another campaign, or create a new campaign.
1487010	Ad Bid Too High: Your bid is above the maximum for its type and placement. Please try again with a value below the maximum if you would like to raise your bid.
1487013	Bid Too Low: Your bid is below the minimum for its placement and type. If you don't want your ad to run at the minimum bid rate, please pause it. Otherwise, please increase the bid to be within the suggested range.
1487014	Campaign budget was too low. Please increase the daily budget to at least 2 times the amount of the highest CPC ad bid, which is at least {minimum_budget}. You bid {bid}.
1487108	Invalid Cities: Please check that the format in which you are specify the cities is correct, and if you specify ids, that they are of the correct type (not, for example, the id of the page for the city; city ids are returned by, e.g., graph.facebook.com/search?type=adcity).
1487211	Invalid URL For Creative Destination: Creative must have a valid destination URL, and if attached object is page, destination must match page.
1487225	Ad Creation Limited By Daily Spend: The number of ads you can create in a given period of time has a limit determined by your daily spend level. Higher spend levels allow creation of more ads. Increase your daily spend limit or create fewer ads per time period.
1487256	Targeting declined due to policy: Invalid ads targeting. The targeting spec was declined due to policy restrictions.
1487301	Custom Audience Unavailable: The custom audience you're trying to use hasn't been shared with your ad account. Please create or choose a different custom audience or ask the owner of the custom audience to let you use it.
1487366	Custom Audience Has Been Deleted: Cannot use deleted custom audience. Please choose another audience.
1487391	Cannot Use Syndicated Audiences From Multiple Partners: When specifying partner-created custom audiences for an ad, all audiences must be from the same provider.
1487477	Conversion Tracking Pixel Permission Error: The conversion tracking pixel you're trying to use is owned by another user and hasn't been shared with you. Please use a tracking pixel that's been shared with you or create a new one.
1487506	The new budget value is too low: The new budget value of {new_budget} is too low. The minimum acceptable is {minimum_budget}.
1487742	There have been too many calls from this ad-account. Wait a bit and try again.
1487756	You have overlapping locations specified in the geo_locations field. Your broader option will override the narrower option, please remove one to proceed.

7 Attributes

Attributes are the medium by which RPI gives you access to the data in the data warehouse or an auxiliary database. Attributes simplify data by giving you and your colleagues control over how it is displayed and used. Thanks to attributes, you do not need to be a database expert in order to harness the power of your data when using RPI.

7.1 Attribute Types

A number of types of attribute are supported by RPI. Each is summarized below.

7.1.1 Database Column Attribute

This attribute type exposes a specific column in a table within the data warehouse or an auxiliary database.

7.1.2 Exists in Table Attribute

The Exists in table attribute represents that a matching record exists in a joined table in the data warehouse or an auxiliary database. Typically, exists in table attributes are used to exclude records that exist within suppression tables. For example, if a selection rule's resolution level is set to customer, an Exists in table attribute representing customers' existence in a suppression table could be added to the rule as a criterion and set to be excluded. When the rule is run, customers that exist within the suppression table are not counted. The specifics of how the customer and suppression tables are linked are defined by a join.

7.1.3 Flag Attribute

The flag attribute type exposes a Y/N flag. Determination of whether the flag is set to Y or N for a particular record is carried out by checking whether the record in question is counted by an associated selection rule.

For example, suppose a selection rule – 'Bought this year' – is created that counts only those customers who have bought a product this year. To make life easier, you might choose to create a 'Purchased recently' flag attribute with a Customer target table. By associating the flag attribute with the 'Bought this year' rule, you create a Y/N indicator on the customer's record that is set to Y if he or she has made a purchase this year, or N if not.

7.1.4 Aggregation Attribute

An aggregation attribute allows data related to a record to be aggregated and treated as if a field within that record.

For example, assume that we have a customer table, and a related order table. Order is related to customer – a single customer, with a record in the customer table, may have several orders, each of which is represented by a record in the order table. An aggregation attribute can be used to aggregate the customer's order data against the customer record – a 'Number of orders' attribute could be created to count the number of orders placed by each customer. Equally, a ‘Total orders value’ or ‘Average order value’ attribute could be created.

7.1.5 Function Attribute

A function attribute enables a function to be applied to an existing data item. The resultant attribute may then be used when creating a criterion.

For example, take a function attribute that performs the Month function on a customer’s date of birth to obtain just the month component of that data item. The function attribute could then be used to retrieve only those customers with a birthday in a given month

7.1.6 Banding Attribute

A banding attribute allows you to expose an existing attribute as a series of discrete or value range bands. For example, you might choose to expose an existing raw Income attribute as a banding attribute, thus:

- $0 - $20,000: Low income
- > $20,000 and < $70,000: Medium income
- >= $70,000: High income

7.1.7 Map Item Attribute

A Map item attribute allows you to access data within an element contained within a map field value and indexed via a key.

As an example, consider the following map field value:

‘{'Map1': 1, 'Map2': 4}’

A Map Item attribute allows exposure of e.g. the data element indexed above using the key ‘Map2’. In the preceding example, this would result in the value ‘4’.

7.1.8 SQL Expression Attribute

A SQL expression attribute allows you to expose a valid SQL expression as an attribute. For example, you might want to concatenate existing First Name and Last Name attributes into a Full Name, thus:

FirstName + ' ' + LastName

7.1.9 Model Project Attribute

A model project attribute provides access to the outputs of a model project. Model project attributes can be used in content and file exports, but cannot be used to build criteria in selection rules.

7.1.10 Parameter Attribute

A parameter attribute allows you to personalize content, e.g. within an email offer, using parameters posted in a JSON package to a queue listener. Another context in which parameter attributes can be passed to RPI is at the submission of a web form that has been configured with an interaction and queue listener.

For more information, please see the Interaction and Asset Designer documentation.

7.2 Target Table

All attributes support the concept of a ‘target table’. This represents the database table upon which the attribute is based. Target table is defined in accordance with the attribute’s type:

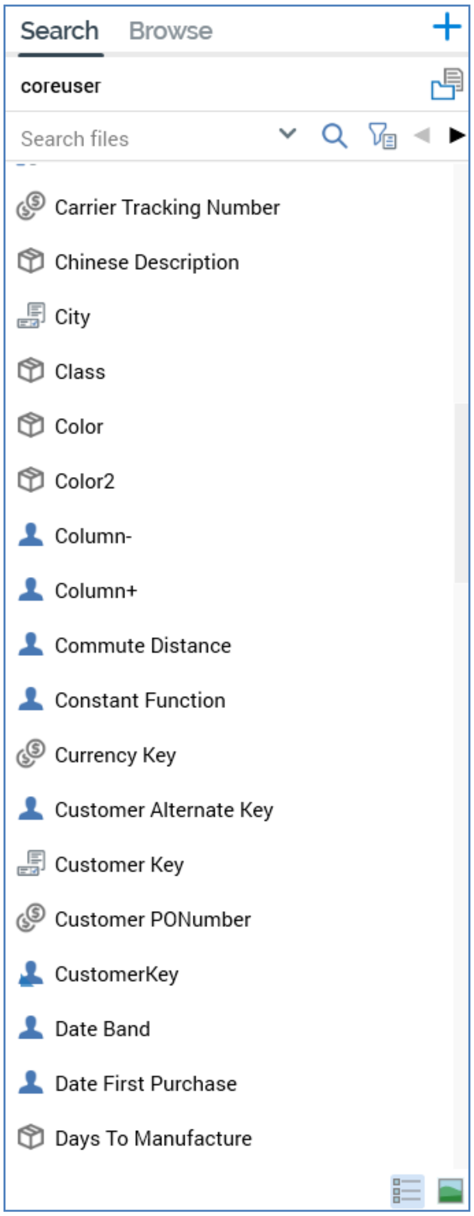
- Database column: target table is the table in which the column exposed by the attribute is to be found.
- Exists: target table is specified when creating the attribute; for example, in an ‘Exists in Orders Table’ attribute, the target table might be defined as Customers and the linked table as Orders.
- Flag: target table is defined as the table associated with the attribute’s selection rule’s resolution level.
- Aggregation: target table is specified when creating the attribute; for example, when creating a ‘Max Order Amount’ aggregation attribute, target table might be defined as Customers and aggregation table as Orders.
- Function: target table is specified when creating the attribute; for example, an ‘Uppercase Surname’ function attribute might have its target table set to Customer (from which the surname attribute was sourced).
- Banding: a banding attribute’s target table is inherited from the target table of the Banding attribute with which it is configured.
- SQL expression: a SQL expression attribute’s target table is defined when creating the attribute and represents the table against which the Expression configured in the attribute is to be run.

Note that if one or more auxiliary databases have been configured at the current RPI client, you can select a target table from such a context.

7.3 Accessing Attributes

As with other RPI file types, attributes are persisted in the RPI file system.

In the Rule, Audience, Cell List, Export Template, Offer, Subscription Group, Landing Page, Model Project, Asset and Smart Asset Designers, Data Connectors interface and Configuration Workbench, by default, any attributes saved to your user folder are shown automatically in the toolbox's folder search component (other file types also persisted in the same folder may be shown alongside the attributes, depending on the context of invocation).



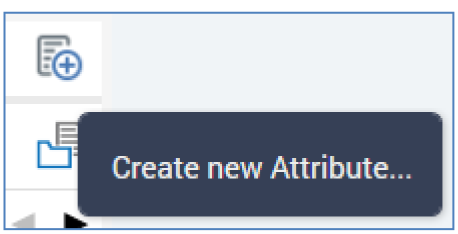
Full details of using the toolbox are provided in the Framework documentation.

7.4 Creating Attributes

You can initiate the creation of attributes from the RPI toolbox when in the following interfaces:

- Rule Designer
- Cell List Designer
- Export Template Designer
- Audience Designer
- Offer Designer
- Landing Page Designer
- Asset Designer
- Smart Asset Designer
- Model Project Designer
- Subscription Group Designer
- Data Connectors Interface
- Configuration Workbench

You can start the process of creating a new attribute by clicking the Create new Attribute… button. The button is shown to the top right of the folder search component in the toolbox in the designers listed above.

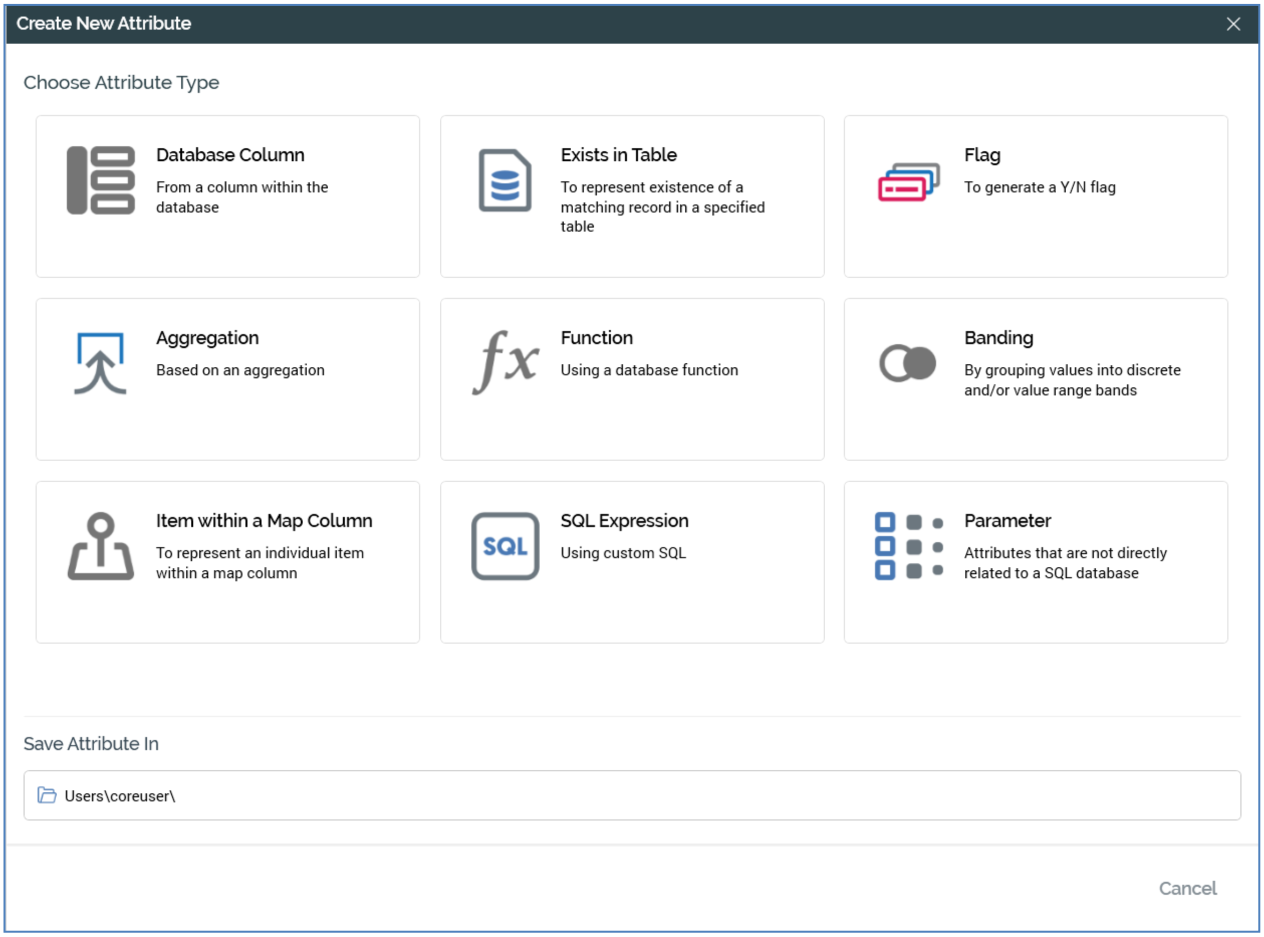


When you click the Create new Attribute… button, the system displays the Attribute Builder, which you can use to create your new attribute.

After finishing configuration of your new attribute, a message is displayed ('The new attribute was created successfully'). Clicking Search in the toolbox refreshes its contents (displaying the newly created attribute, if saved to a visible folder).

7.5 Attribute Builder

Creation and configuration of attributes is carried out using the Attribute Builder. The Attribute Builder is presented as a wizard-style dialog.



When creating a new attribute, the Attribute Builder allows you to select the type of attribute you wish to build. Having done so, the Attribute Builder is customized in accordance with the type of attribute with which you are working to allow you to capture its specific properties.

The Attribute Builder also allows you to configure an existing attribute. In this case, you may not define the type of the attribute.

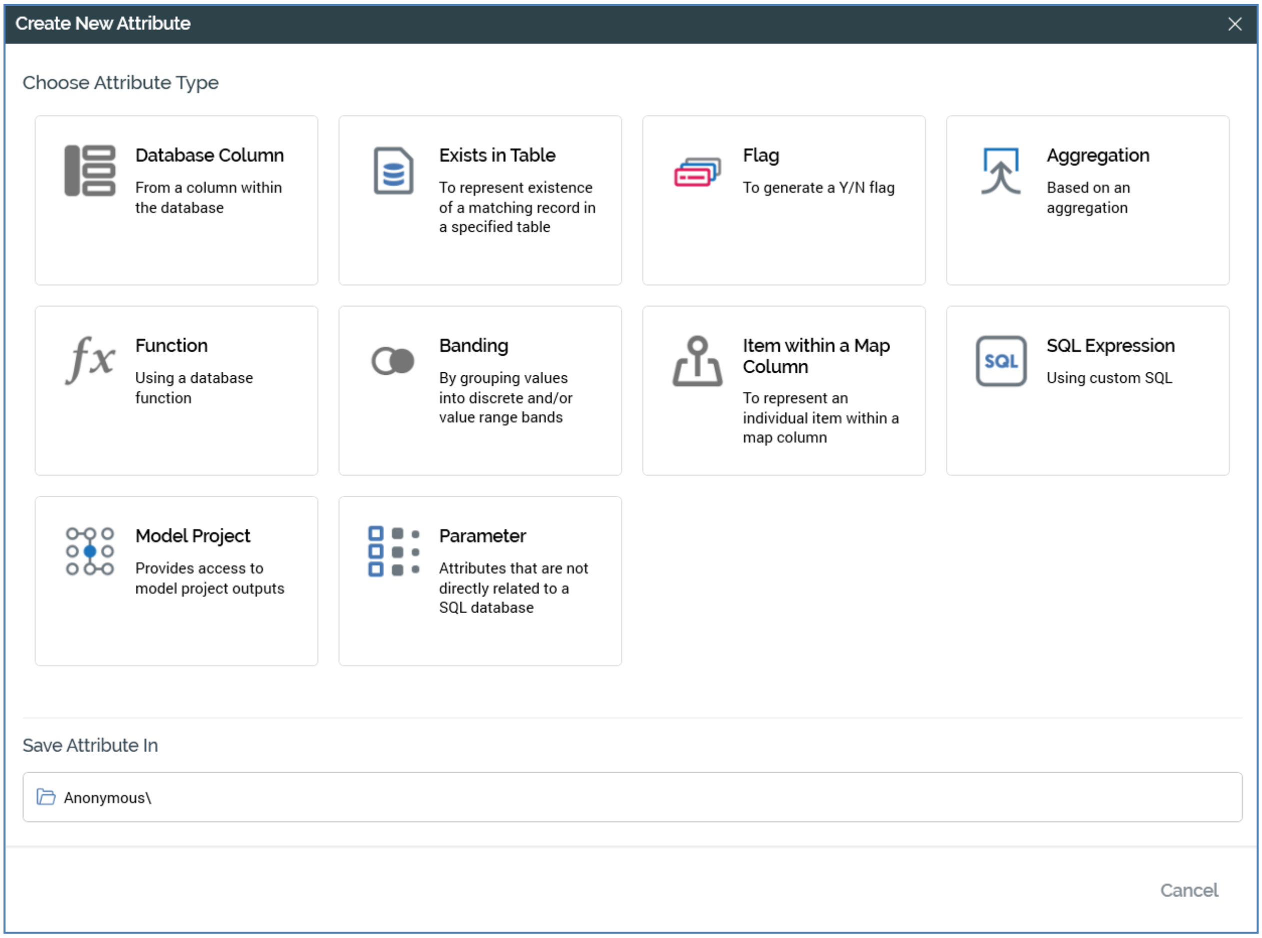
In both cases, the Attribute Builder allows you to record details of a number of generic properties, shared by all attribute types.

When you have finished specifying the attribute's properties, you may Finish the Attribute Builder wizard. Doing so saves details of the new or updated attribute to the RPI file system. New attributes are created within a folder of your choosing.

You may also cancel the Attribute Builder, in which case any changes that you have made are lost.

7.5.1 Initial Interface

The initial Attribute Builder interface is only displayed when creating a new attribute.



The interface contains:

- Attribute Type: selected by clicking on the appropriate icon. You can create the following attribute types:
  - Database Column
  - Exists in Table
  - Flag
  - Aggregation
  - Function

- Banding
- Item within a Map Column
- SQL Expression
- Model Project
- Parameter

Note that only attribute types that you have permission to create are listed.

- Save attribute in: this field defaults initially to your user folder, and thereafter to the most recent folder you accessed. If you wish, you can change the folder to which the attribute will be saved by clicking Browse…. This displays the folders in the RPI file system to which you have access in the Choose Folder dialog. Note that if you select a folder to which you cannot write, a warning message is displayed when you try to save the attribute.

7.5.2 Attribute-specific Interfaces

Following stipulation of a new attribute's type and folder, an interface tailored to the attribute type is displayed in the Attribute Builder wizard.

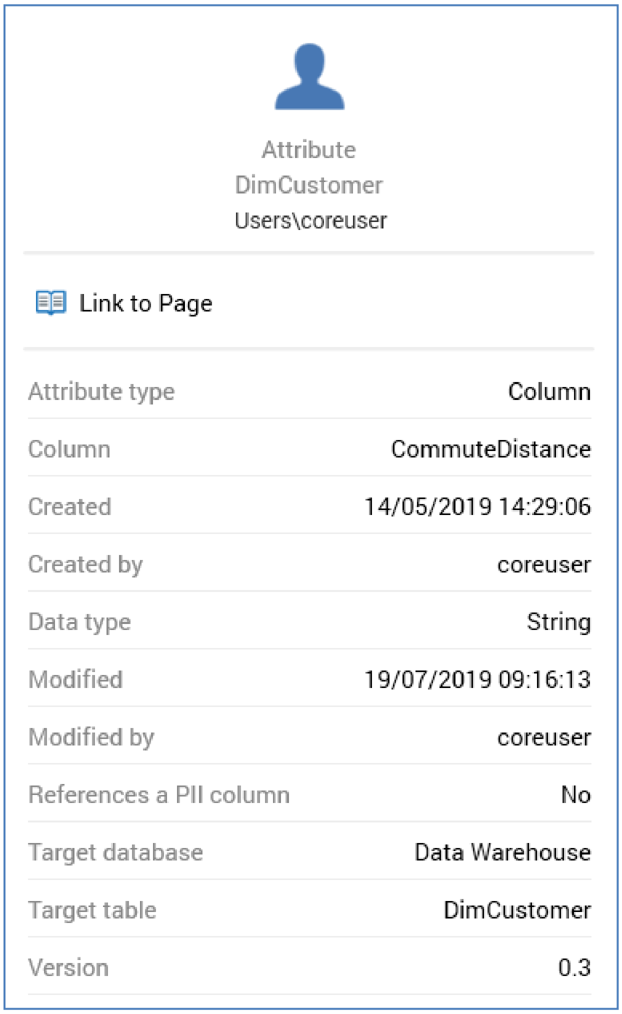
The type-specific interface is displayed immediately upon configuration of an existing attribute. In this case, it is augmented with an information panel.

All attribute-specific interfaces, irrespective of attribute type, allow you specify generic attribute properties:

- Name: mandatory. Must be unique amongst attributes within the folder in which saved. May be a maximum of 100 characters.
- Description: optional. May be a maximum of 1000 characters.

7.5.3 Information Panel

The Attribute Builder information panel is similar to its equivalent within the File System Dialog. It is displayed to the right-hand side of attribute-specific Attribute Builder wizard interfaces only when configuring an existing attribute.



It displays properties currently saved values. Note that changes made to an attribute are not reflected in the information panel until they are saved.

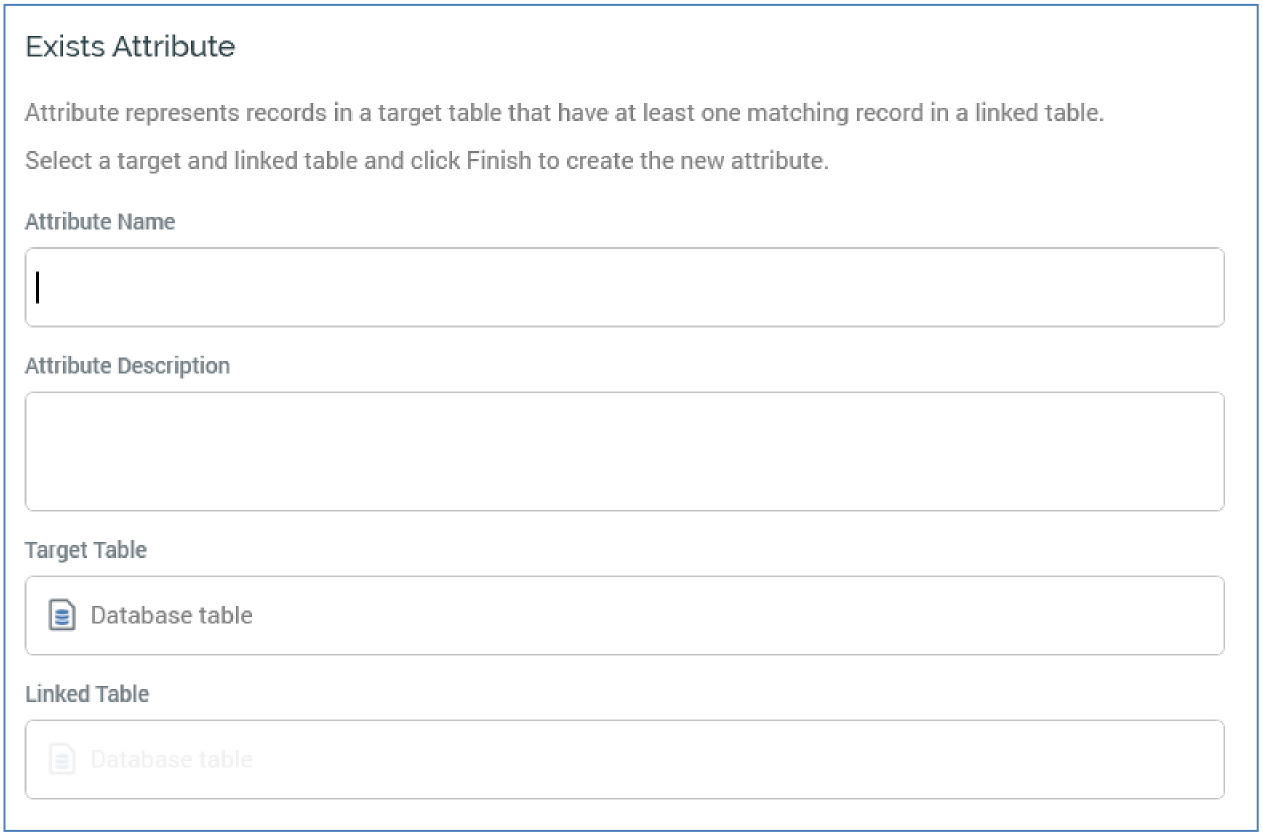
The information panel contains the following elements (read-only unless indicated otherwise):

- Icon
- 'Attribute'
- Target table
- Folder

- Linked page button
- Attribute type
- [Type-specific properties]
- Created: the date and time of the asset's creation.
- Created by: the username of the user who created the asset.
- Datatype
- Modified: the date and time at which the asset was last modified.
- Modified by: the username of the user who last modified the asset.
- References a PII column
- Target database
- Target table
- Version

7.5.4 Exists in Table Attribute Properties

The following interface is displayed when configuring an Exists in table attribute:



An exists in table attribute has the following specific properties:

- Target Table: you must browse for a Target table using the Choose Database Item dialog. When you do so, a list of database tables is displayed in the Choose Item section. Select the required database table and click OK.

  If one or more auxiliary databases have been configured at the current RPI client, you can use the Choose Database selector to select the database from which the list of tables is retrieved. If auxiliary databases are available, the table is displayed at the property as '[Database name].[Schema].[Table name]'.

  If the attribute's Linked table was selected prior to its target table, and you choose a Target table from a different database, on invocation of Finish, a warning is displayed and you may not proceed with completing the attribute's creation.

  For more information on using the Choose Database Item dialog, please see the RPI Framework documentation.

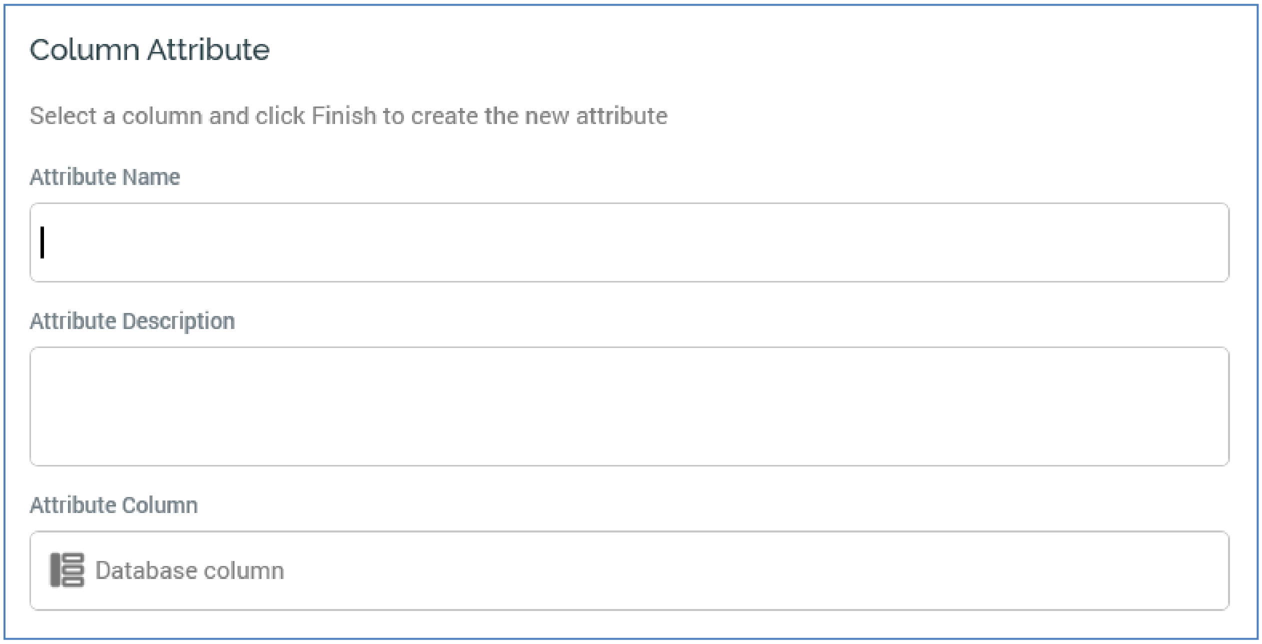
- Linked Table: this property represents the table to be checked for matching records…for example, you might create an 'Exists in Sales Table' attribute with a Customer Target table and Sales linked table.

  You must browse for a Linked table using the Choose Database Item dialog. When you do so, only those tables that join to the Target table are listed. The Choose Database section is not shown.

  If auxiliary databases are available, the table is displayed at the property as '[Database name].[Schema].[Table name]'.

7.5.5 Database Column Attribute Properties

The following interface is displayed when configuring a database column attribute:



A database column attribute has a single specific property:

- Attribute Column: you must specify the column that the attribute will expose. You can do so by clicking the Database column button. When you do so, the Choose Database Item dialog is displayed. Select the required database column from within its parent table and click OK. If one or more auxiliary databases have been configured at the current RPI client, you can use the Choose Database selector to select the database from which the list of tables (and the columns therein) is retrieved.

  For more information on using the Choose Database Item dialog, please see the RPI Framework documentation.

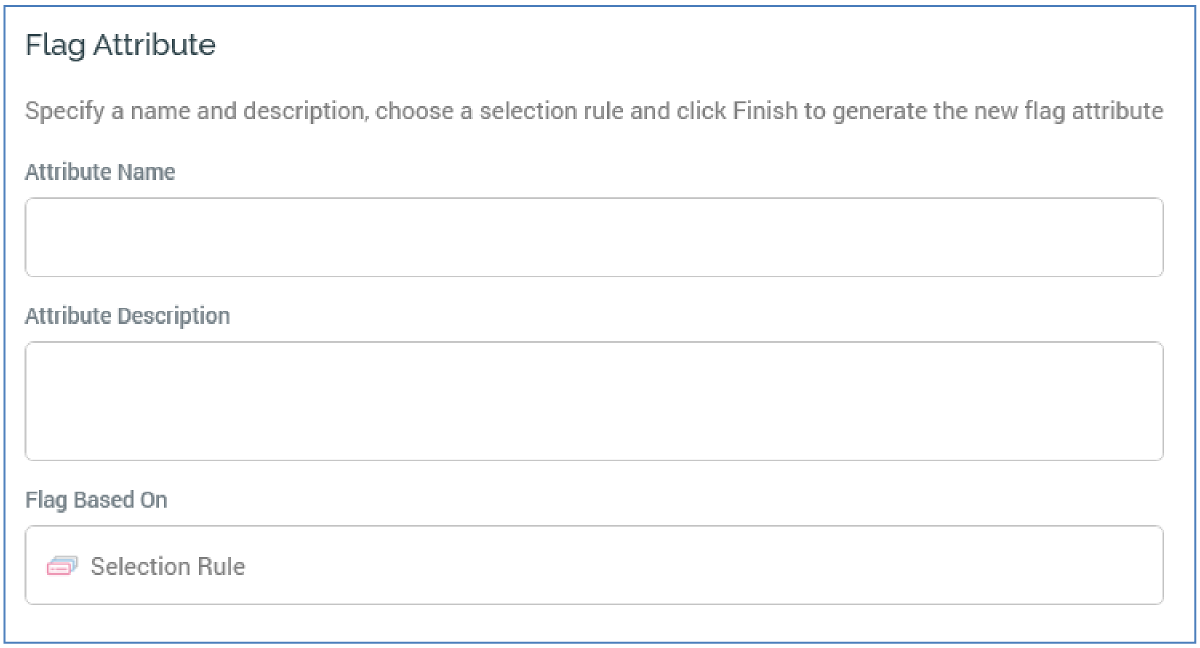
  When you select a column for the first time the attribute's name is set to that of the column (if not already explicitly provided). If you select a column with a CamelCase name, its default name is separated into a series of words in accordance with the case used – i.e. 'Camel Case'.

  Note that selection of a column implicitly defines the attribute's target table as the table from which the column was selected.

7.5.6 Flag Attribute Properties

A flag attribute allows you to ‘wrap’ a selection rule up and present it as an attribute that exposes two distinct values (‘Y’ and ‘N’). Records that satisfy the rule’s criteria are selected when the criterion’s value is set to ‘Y’; records that do not are selected when the criterion’s value is set to ‘N’.

The following interface is displayed when configuring a flag attribute:



A flag attribute has a single specific property:

- Flag Based On: you can browse the RPI file system to choose an existing standard or basic selection rule to link to the flag attribute. You can also drag a selection rule from the toolbox.

  The link between a flag attribute and its selection rule is dynamic. When you run a selection rule containing a criterion based upon a flag attribute, the most recently saved version of the linked rule is run.

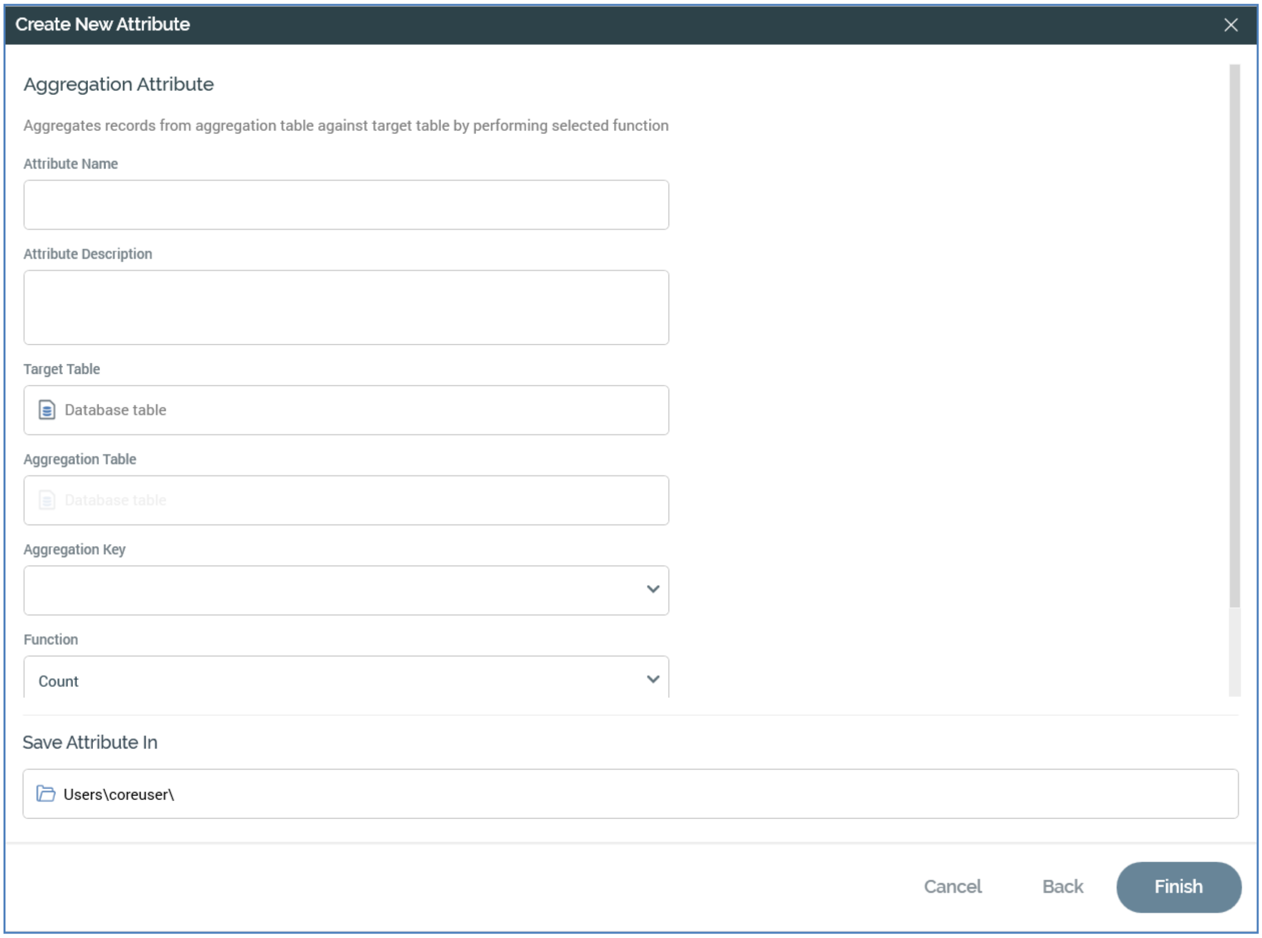
  The attribute’s target table is defined as the resolution table of the selection rule upon which it is based. Note that choosing a selection rule with an auxiliary database resolution level is supported.

  You can navigate to the linked selection rule by clicking Open latest version. If a Rule Designer is already open, the rule is shown there. If the Designer is not open, it is displayed in a new instance.

  You can also clear the attribute’s selection rule.

7.5.7 Aggregation Attribute Properties

The following interface is displayed when configuring an aggregation attribute:



An aggregation attribute has the following specific properties:

- Target Table: you must browse for a Target table using the Choose Database Item dialog. When you do so, a list of database tables is displayed in the Choose Item section. Select the required database table and click OK.

  If one or more auxiliary databases have been configured at the current RPI client, you can use the Choose Database selector to select the database from which the list of tables is retrieved. If auxiliary databases are available, the table is displayed at the property as '[Database name].[Schema].[Table name]'.

  For more information on using the Choose Database Item dialog, please see the RPI Framework documentation.

- Aggregation Table: this property represents the table within which the data to be aggregated is to be found...for example, if adding all of a customer's sales to create a Total Customer

Sales attribute, choose the Sales table. Selection of the same Target and Aggregation table is supported.

You must browse for an Aggregation table using the Choose Database Item dialog. When you do so, only the Target table and those tables that join to it are listed. The Choose Database section is not shown.

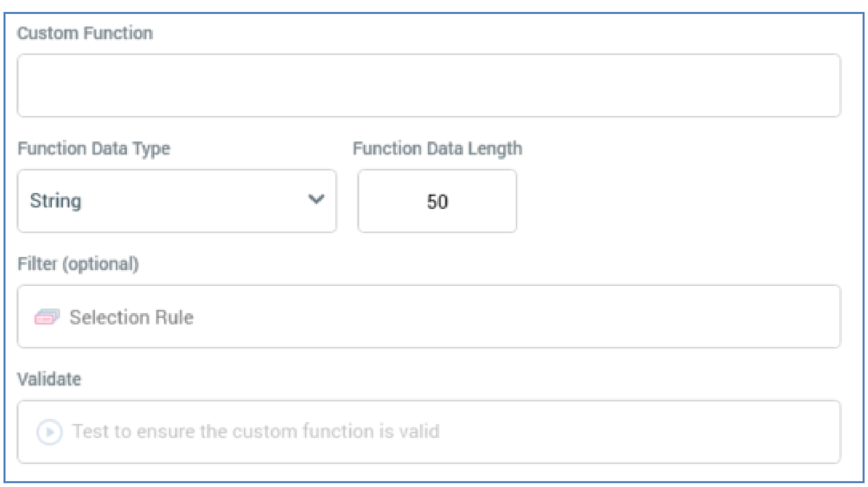
If auxiliary databases are available, the table is displayed at the property as '[Database name].[Schema].[Table name]'.

Note that you cannot select an Aggregation table until the Target table has been specified.

- Aggregation Key: populated with the list of database keys compatible with the Target table.
- Function: selected from a drop-down list containing the following values:
  - Count
  - Minimum
  - Maximum
  - Sum
  - Average
  - Custom

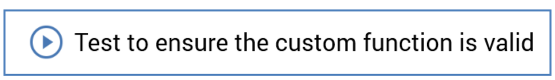
  In the Total sales example, you would choose Sum from this list.

  When value Custom is selected, the following additional properties are shown:

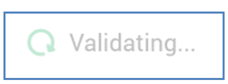


  - Custom Function: you must supply a valid custom function with which to configure the attribute. Use of the string '{alias}' to represent the aggregation table within the function is supported and is recommended to avoid any possible issues with column ambiguity at SQL execution.

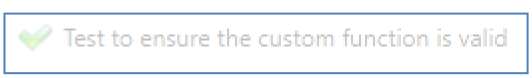
- Function Data Type: this dropdown field allows you to define the custom aggregation attribute's data type. The following values are available:
  - BigInt
  - Date
  - DateTime
  - Decimal
  - Integer
  - String
- Function Data Length: this mandatory integer property is only displayed when Function is set to Custom, and Function data type is set to String. It defaults to 50. It is used to default the attribute's Length property when it is used in an export template.
- Validate: the custom function provided must be validated successfully before the attribute can be saved. A button is provided for this purpose. Its initial text reads:

  The button is enabled when a Custom function has been supplied. When the button is clicked, its text changes to:

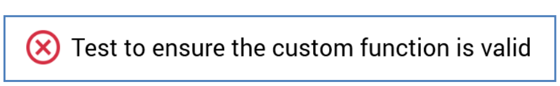
  

  When validation is complete, the Results field is populated, and the button appears as follows if the function supplied is valid:

  The button is re-enabled when the Custom function is changed.

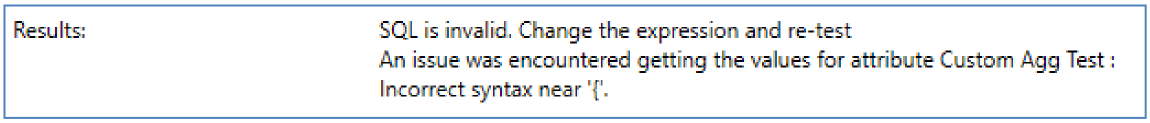
  The button appears as follows if the function supplied is invalid:

- Results: this read-only property is displayed having validated the supplied Custom function. If the function is valid, Results displays:

The Finish button is also enabled.

If the function is invalid, error details are also displayed:



A warning is displayed if you subsequently attempt to Finish attribute creation.

  - Example: a read-only example of data to which the supplied Custom function has been applied is displayed after the function's successful validation.

- Function Column: this property is shown when Function is set to any value other than Custom. It is required when any function other than Count is selected. It represents the column upon which the selected Function will be executed. For example, having chosen function Sum, you could select Sales Amount from the Sales table. When aggregated at the customer level, this attribute would expose the Total Sales Value on a customer-by-customer basis.

  You can browse for a Function column using the Choose Database Item dialog. When you do so, columns within the selected Aggregation table are listed. The Choose Database section is not shown.

  Note that you cannot select a string or date Function column when using the Average function.

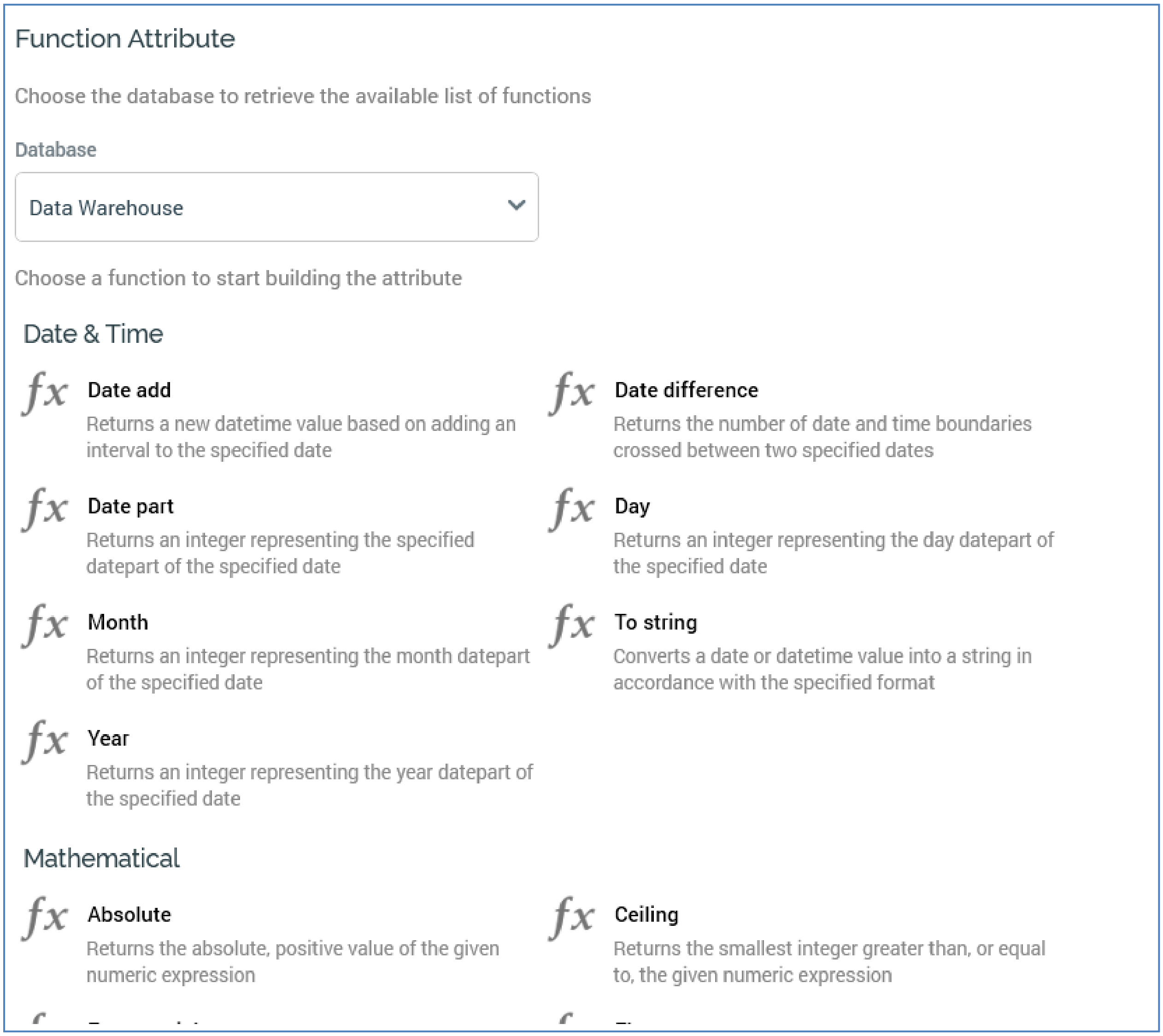
- Filter: optional. You may choose an existing standard or basic selection rule to act as a Filter. A Filter allows the records upon which the Function is performed to be limited. In our example, if the Sales table contains both internet and store sales, and you want to total only internet sales, create a selection rule that counts only internet sales, with a resolution level of Sales. Use the rule as a filter when building the aggregation and the resultant attribute will expose total internet sales on a customer-by-customer basis.

  You can navigate to the filter selection rule by clicking Open latest version. If a Rule Designer is already open, the rule is shown there. If the Designer is not open, it is displayed in a new instance. You can also Clear the property.

  Use of an auxiliary database-resolving selection rule in this context is not supported.

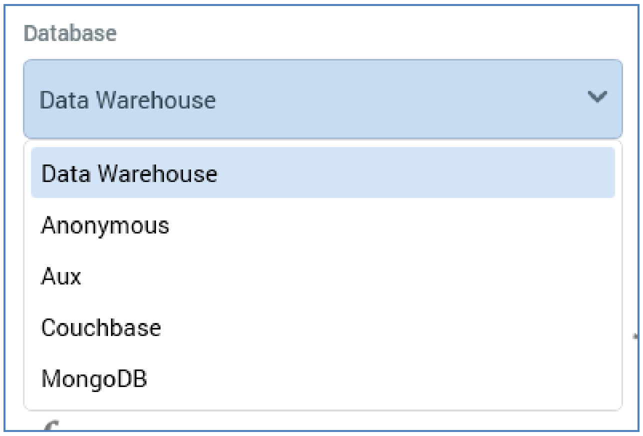
7.5.8 Function Attribute Properties

The following initial interface is displayed when creating a function attribute.



The interface is used to select the function upon which the attribute is to be based.

If creating a function attribute at an RPI client in which one or more auxiliary databases has been configured, you must first choose the Database in respect of which to create the function attribute.



Choose the database… is not displayed if creating a function attribute at a client at which no auxiliary databases have been configured.

The list of functions available to you when building a function attribute differs based on the type of database in respect of which the attribute is to be created.

SQL Server/SQL Server PDW

Function Name	Description
Date & Time Functions	
Date Add(Date Part, Number of Date Parts to Add, Date)	Returns a new datetime value based on adding an interval to the specified date.
Date Difference(Date Part, Start Date, End Date)	Returns the number of date and time boundaries crossed between two specified dates.
Date Part(Date Part, Date)	Returns an integer representing the specified date part of the specified date.
Day(Date)	Returns an integer representing the day date part of the specified date.
Month(Date)	Returns an integer representing the month date part of the specified date.
To string (Date)	Converts a date or datetime value into a string in accordance with the specified format (see http://msdn.microsoft.com/en-us/library/ms187928.aspx for a list of valid formats).
Year(Date)	Returns an integer representing the year date part of the specified date.
Mathematical Functions	
Absolute(Number)	Returns the absolute, positive value of the given numeric expression.
Ceiling(Number)	Returns the smallest integer greater than, or equal to, the given numeric expression.
Exponential(Number)	Returns the exponential value of the given float expression.
Floor(Number)	Returns the largest integer less than or equal to the given numeric expression.
Random(Number, Number)	Returns a random integer value
String Functions	
Difference(String, String)	Returns the difference between the SOUNDEX values of two character expressions as an integer.
Left(String, Number of Characters)	Returns the left part of a character string with the specified number of characters.
Left trim(String)	Returns a character expression after removing leading blanks.
Length(String)	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks.
Lower case(String)	Returns a character expression after converting uppercase character data to lowercase.
Replace(Original String, Start Position, Length, String to Insert)	Deletes a specified length of characters and inserts another set of characters at a specified starting point.
Reverse string(String)	Returns the reverse of a character expression.
Right(String, Number of Characters)n	Returns the right part of a character string with the specified number of characters.
Right trim(String)	Returns a character string after truncating all trailing blanks.

String concatenation (2 strings)	Concatenates two string values
String concatenation (3 strings)	Concatenates three string values
String concatenation (4 strings)	Concatenates four string values
String concatenation (5 strings)	Concatenates five string values
SubString(String, Start Position, Length)	Returns part of a character, binary, text, or image expression.

Netezza

Function Name	**Description**
Date & Time Functions	
Date part	Returns an integer representing the specified datepart of the specified date
Date difference	Returns the interval between two dates
Add months	Adds a number of months on to date
Months between	Returns the number of months between two dates
To timestamp	Converts an attribute value into a timestamp type
To date	Converts an attribute value into a date type
To time	Converts an attribute value into a time type
To time2	Converts an attribute value into a time type
To interval	Converts an attribute value into interval type
Mathematical Functions	
Absolute(Number)	Returns the absolute, positive value of the given numeric expression.
Ceiling(Number)	Returns the smallest integer greater than, or equal to, the given numeric expression.
Exponential(Number)	Returns the exponential value of the given float expression.
Floor(Number)	Returns the largest integer less than or equal to the given numeric expression.
To numeric	Converts an attribute value into a numeric type
To numeric2	Converts an attribute value into a numeric type
To numeric3	Converts an attribute value into a numeric type
To real	Converts an attribute value into a real type
To double	Converts an attribute value into a double type
To Boolean	Converts an attribute value into a Boolean type
To integer	Converts an attribute value into an integer type
String Functions	
Length	Returns the length of the specified string
Lower case	Returns a character expression after converting upper case character data to lower case
Upper case	Returns a character expression after converting lower case character data to upper case
Capitalize	Returns a character expression after capitalizing the initial letter
Trim blanks	Returns a character expression after removing leading and trailing blanks
Left trim blanks	Returns a character expression after removing leading blanks
Right trim blanks	Returns a character string after truncating all trailing blanks
Trim characters	Returns a character expression after removing leading and trailing characters
Left trim characters	Returns a character expression after removing leading characters

Right trim characters	Returns a character string after truncating all trailing characters
Left pads	Returns a character string of the desired length after padding the existing string to the left
Right pads	Returns a character string of the desired length after padding the existing string to the right
SubString	Returns part of a character, binary, text, or image expression
Position	Returns the location of a substring in a string
String concatenation (2 strings)	Concatenates two string values
String concatenation (3 strings)	Concatenates three string values
String concatenation (4 strings)	Concatenates four string values
String concatenation (5 strings)	Concatenates five string values
To string (char)	Converts an attribute value into a string type
To string (char(n))	Converts an attribute value into a string type
To string (Unicode char)	Converts an attribute value into a Unicode string type
To string (Unicode char(n))	Converts an attribute value into a Unicode string type
To string (varchar(n))	Converts an attribute value into a string type
To string (Unicode varchar(n))	Converts an attribute value into a Unicode string type

Oracle

Function Name	**Description**
Date & Time Functions	
Date add	Returns a new datetime value based on adding an interval to the specified date
Mathematical Functions	
Absolute(Number)	Returns the absolute, positive value of the given numeric expression.
Ceiling(Number)	Returns the smallest integer greater than, or equal to, the given numeric expression.
Exponential(Number)	Returns the exponential value of the given float expression.
Floor(Number)	Returns the largest integer less than or equal to the given numeric expression.
String Functions	
Left(String, Number of Characters)	Returns the left part of a character string with the specified number of characters.
Left trim(String)	Returns a character expression after removing leading blanks.
Length(String)	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks.
Lower case(String)	Returns a character expression after converting uppercase character data to lowercase.
Reverse string(String)	Returns the reverse of a character expression.
Right(String, Number of Characters)n	Returns the right part of a character string with the specified number of characters.
Right trim(String)	Returns a character string after truncating all trailing blanks.

Teradata

Date & Time Functions	
Year	Returns an integer representing the year datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Day	Returns an integer representing the day datepart of the specified date
Date Part	The part of date (a date or time value) for which an integer will be returned
Date Difference	Returns the number of date and time boundaries crossed between two specified dates
Mathematical Functions	
Absolute	Returns the absolute value of an argument
Exponential	Returns the power value of an argument
Natural Log	Returns the natural logarithm of an argument
Log10	Returns the base 10 logarithm of an argument
Square Root	Returns the square root value of an argument
Ceiling	Returns the ceiling value of an argument
Round	Returns the rounding value of an argument
String Functions	
Length	Returns the length of input text
Lower	Returns a character string identical to the input text, except that all uppercase letters are replaced by their lowercase equivalents
Upper	Returns a character string identical to the input text, except that all lowercase letters are replaced by their uppercase equivalents
Trim	Returns the trimmed input text
Index	Returns the position in string1 where string2 starts
Position	Returns the position in string2 where string1 starts
Right	Returns the text from the right position of the input text
Left	Length of characters to be extracted from the left position of input text
Substring	The length of the text to be extracted

GreenPlum Database

Function Name	Description
Date & Time Functions	
Date Difference	The part of the start date and end date that specifies the type of boundary crossed
String Functions	
Capitalize	Returns a character expression after capitalizing the initial letter
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Upper case	Returns a character expression after converting lower case character data to upper case

MySQL

Function Name	Description
Date & Time Functions	
Add days	Adds a number of days to date
Add months	Adds a number of months to date
Date Add	Adds an interval to a date
Date Difference	Returns the interval between two dates
Mathematical Functions	
Absolute	Return the absolute value
Ceiling	Return the smallest integer value not less than the argument
Exponential	Raise to the power of
Floor	Return the largest integer value not greater than the argument
String Functions	
Left	Returns a character expression after removing leading blanks
Left pads	Returns a character string of the desired length after padding the existing string to the left
Left trim blanks	Returns a character expression after removing leading blanks
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Position	Returns the location of a substring in a string
Right	Returns the rightmost number of characters as specified
Right pads	Returns a character string of the desired length after padding the existing string to the right
Right trim blanks	Returns a character expression after removing trailing blanks
SubString	Returns part of a character, binary, text, or image expression
Trim blanks	Returns a character expression after removing trailing blanks
Upper case	Returns a character expression after converting lower case character data to upper case

AWS RedShift

Function Name	Description
Date & Time Functions	
Add Months	Adds the specified number of months to a given date expression
Date Compare	Returns an integer. 0 if identical, -1 if first date is less than second date & 1 if first date is greater than second date
DateTime Compare Date	Returns an integer. 0 if identical, -1 if datetime is less than date and 1 if datetime is greater than date
Date Compare DateTime	Returns an integer. 0 if identical, -1 if date is less than datetime and 1 if first date is greater than datetime
Year	Returns the year of the specified date expression
Date Add	Returns the datetime
Date Difference	Returns the difference between datetime expressions
Date Part	Returns decimal number represents the datepart
Date Truncate	Returns datetime
Extract	Returns the datepart
Interval Compare	Returns an integer. 0 if identical, -1 if first interval is less than second interval and 1 if first interval is greater than second interval
Isfinite DateTime	Returns Boolean
Mathematical Functions	
Absolute	Returns the absolute value of the specified numeric expression
Ceiling	Returns the ceiling value of the specified numeric expression
Floor	Returns the ceiling value of the specified numeric expression
Exponent	Returns the exponential value of the specified numeric expression
Power	Returns the exponential value of the specified numeric expression raised by the second numeric expression
Round	Rounds numbers to the nearest integer or decimal
String Functions	
Length	Returns the length of the specified text
Quote Identifier	Returns equivalent quoted identifier
Quote Literal	Returns equivalent quoted literal
Repeat	Repeats text the specified number of times
Replace	Returns all occurrences of the replaced text
Right Trim	Returns the trimmed text
Reverse	Returns the reversed text
String Position	Returns integer representing the position of the second text in the first text expression
Substring	Returns the extracted text from the specified text expression
Trim	Returns the trimmed text

Sybase IQ

Function Name	Description
Date & Time Functions	
Date Part	Returns the value of part of a datetime value
Add Months	Adds a number of months on to date
Months Between	Returns the number of months between two dates
String Functions	
Length	Returns the number of characters in a string. Trailing white space characters are included in the length returned.
Lower Case	Returns a character expression after converting upper case character data to lower case
Upper Case	Returns a character expression after converting upper case character data to upper case
Trim Blanks	Removes leading and trailing blanks from a string
Left Trim blanks	Returns a character expression after removing leading blanks
Right Trim blanks	Returns a character string after truncating all trailing blanks
Left Trim characters	Returns a character expression after removing leading characters
Left Pads	Returns a character string of the desired length after padding the existing string to the left
Right Pads	Returns a character string of the desired length after padding the existing string to the right
Substring	Returns part of a character, binary, text, or image expression
Position	Returns the location of a substring in a string
Math Functions	
Absolute	Returns the absolute value of the given numeric expression
Exponential	Returns the exponential value of the given float expression
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Floor	Returns the largest integer less than or equal to the given numeric expression

PostgreSQL

Function Name	Description
Date & Time Functions	
Date truncate	Returns a truncated timestamp to a specified precision
Extract	Returns the extracted timestamp
Date Part	Returns the date part of the given date and time expression
Year	Returns the Year part of the given date and time expression
Month	Returns the Month part of the given date and time expression
Day	Returns the day part of the given date and time expression
String Functions	
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Upper case	Returns a character expression after converting lower case character data to upper case
InitCap	Returns a character expression after capitalizing the initial letter
Left	Returns the left part of a character string with the specified number of characters
Right	Returns the right part of a character string with the specified number of characters
Right trim	Remove all characters from right position of a specified character expression
Left trim	Remove all characters from left position of a specified character expression
Substring	Returns a character expression based on the specified starting position and length
Concatenate	Concatenates string expressions
Math Functions	
Absolute	Returns the absolute (positive) value
Floor	Returns the largest integer not greater than given argument
Ceiling	Returns the smallest integer not less than the given argument
Power	Returns the exponential value of a numeric expression raised to the specified power
Exp	Returns e raised to the power of the specified number

DB2

Function Name	Description
Date & Time Functions	
Date Difference	Returns the difference between two timestamps
Add Days	Adds a number of days to a given datetime expression
Add Months	Adds a number of months to a given datetime expression
Add years	Adds a number of years to a given datetime expression
Day	Returns an integer representing the day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Year	Returns an integer representing the year datepart of the specified date
String Functions	
Length	Returns the number of characters
Left	Returns the left part of a character string with the specified number of characters
Right	Returns the right part of a character string with the specified number of characters
Lower case	Returns a character expression in which all the characters have been converted to lower case characters
Upper case	Returns a character expression in which all the characters have been converted to upper case characters
Left trim	Remove all characters from left position of a specified character expression
Right trim	Remove all characters from right position of a specified character expression
Replace	Replaces all found characters with specified source string
Substring	Returns a character expression based on the specified starting position and length
Locate in string	Returns the position of a character expression
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Exponential	Returns the exponential value of the given float expression
Power	Returns the base to the exponent power
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Floor	Returns the largest integer less than or equal to the given numeric expression

Splice Machine

Function Name	Description
Date & Time Functions	
Add Months	Adds months
Month Between	Returns the number of months between two dates
Date Difference	Returns the difference between two timestamps, in terms of the specified interval
Date Add	Adds the value of an interval to a timestamp value and returns the sum as a new timestamp
Day	Returns the day part of the given date value
Last Day	Returns the date of the last day of the month
Next Day	Returns the date of the next specified day of the week
Minute	Returns the minute part
Minute2	Returns the minute part
Month	Returns the month part
Year	Returns the year part
String Functions	
Trim	Returns the string resulting from trimming spaces from both sides
Left Trim	Returns the string resulting from trimming spaces from left-hand side
Right Trim	Returns the string resulting from trimming spaces from right-hand side
Length	Returns the length of the string
Lowercase	Returns the lowercase equivalent of the string
Uppercase	Returns the uppercase equivalent of the string
InitCap	Converts the first letter of each word in a string to uppercase, and converts any remaining characters in each word to lowercase
Instr	Returns the index of the first occurrence of a substring in a string
Substring	Extracts and returns a portion of a character string
Locate	Used to search for a string
Concatenate	Concatenates string expressions
Replace	Replaces all occurrences of a substring within a string and returns the new string
Math Functions	
Absolute	Returns the absolute value
Exp	Returns e raised to the power of the specified number
Ceiling	Returns the smallest number that is greater than or equal to the specified number
Floor	Returns the largest number that is less than or equal to the specified number
Modulus	Returns the remainder (modulus)
Pi	Returns PI

Hive

Function Name	Description
Date & Time Functions	
Year	Returns the year part of a date or timestamp
Month	Returns the month part of a date or timestamp
Day of month	Returns the day part of a date or timestamp
Week of year	Returns the week number of a timestamp
Hour	Returns the hour part of a timestamp
Minute	Returns the minute part of a timestamp
Second	Returns the second part of a timestamp
DateAdd	Adds number of days to start date
DateSub	Subtract number of days to start date
Date difference	Returns the number of date boundaries crossed between two specified dates
Unix Timestamp	Converts date to Unix timestamp
String Functions	
Length	Returns the length of the string
Left Trim	Returns the string resulting from trimming spaces from left-hand side
Right Trim	Returns the string resulting from trimming spaces from right-hand side
Trim	Returns the string resulting from trimming spaces from both sides
Reverse	Returns the reversed string
Uppercase	Returns the uppercase equivalent of the string
Lowercase	Returns the lowercase equivalent of the string
Space	Returns the number of spaces generated
Repeat	Returns the repeated string
Concatenate	Combines first and second string values
Concatenate with separator	Combines first and second string values to specified separator
Left padding	Returns left-padded string
Right padding	Returns right-padded string
Substring	Returns the extracted string
Substring2	Returns the extracted string
Instring	Returns the position of the searched string
Locate	Returns the position of the searched string
Math Functions	
Absolute	Returns the absolute value
Floor	Returns the maximum value that is <= to the evaluated value
Ceil	Returns the maximum value that is >= to the evaluated value
Random	Returns random number based on the specified seed
Exponential	Returns the exponential value of the evaluated value
Round	Returns the rounded value
Round2	Returns the rounded value
Power	Returns the power of the base value

MongoDB

Function Name	Description
Date & Time Functions	
Date difference	Returns the number of date and time boundaries crossed between two specified dates
Current time	Returns the current time
Day name	Returns the name of the day
Day of month	Returns the Day of the month
Day of week	Returns the Day of the week
Day of year	Returns the Day of the year
Year	Returns the year part of a date or timestamp
Hour	Returns the Hour portion of the timestamp
Minute	Returns the Minute portion of the timestamp
Second	Returns the Second portion of the timestamp
Quarter	Returns the quarter number of the timestamp
Week	Returns the week number of the timestamp
Extract	Returns the extracted field portion of the source timestamp
String Functions	
Length	Returns the length of the string
Right Trim	Returns the string resulting from trimming spaces from right-hand side
Left Trim	Returns the string resulting from trimming spaces from left-hand side
Lowercase	Returns the lowercase equivalent of the string
Uppercase	Returns the uppercase equivalent of the string
Soundex	Returns a character string containing the phonetic representation of the string
Space	Returns the number of spaces generated
Concatenate	Combines first and second string values
Left	Returns the leftmost count of characters of the string
Right	Returns the rightmost count of characters of the string
Repeat	Returns the repeated string
Locate	Returns the starting position of the first occurrence of the searched string
Position	Returns the position of the searched string
Replace	Returns the replaced equivalent string
Substring	Returns the extracted string
Replace	Returns the inserted string
Math Functions	
Absolute	Returns the absolute value
Floor	Returns the maximum value that is <= to the evaluated value
Ceil	Returns the maximum value that is >= to the evaluated value
Exponential	Returns the exponential value of the evaluated value
Round	Returns the rounded value
Power	Returns the power of the base value
Mod	Returns the remainder (Modulus)

SparkSQL

Function Name	Description
Date & Time Functions	
Year	Returns the year part of a date or timestamp
Month	Returns the month part of a date or timestamp
Day of month	Returns the day part of a date or timestamp
Week of year	Returns the week number of a timestamp
Hour	Returns the hour part of a timestamp
Minute	Returns the minute part of a timestamp
Second	Returns the second part of a timestamp
DateAdd	Adds number of days to start date
DateSub	Subtract number of days to start date
Date difference	Returns the number of date boundaries crossed between two specified dates
Unix Timestamp	Converts date to Unix timestamp
String Functions	
Length	Returns the length of the string
Left Trim	Returns the string resulting from trimming spaces from left-hand side
Right Trim	Returns the string resulting from trimming spaces from right-hand side
Trim	Returns the string resulting from trimming spaces from both sides
Reverse	Returns the reversed string
Uppercase	Returns the uppercase equivalent of the string
Lowercase	Returns the lowercase equivalent of the string
Space	Returns the number of spaces generated
Repeat	Returns the repeated string
Concatenate	Combines first and second string values
Concatenate with separator	Combines first and second string values to specified separator
Left padding	Returns left-padded string
Right padding	Returns right-padded string
Substring	Returns the extracted string
Substring2	Returns the extracted string
Instring	Returns the position of the searched string
Locate	Returns the position of the searched string
Math Functions	
Absolute	Returns the absolute value
Floor	Returns the maximum value that is <= to the evaluated value
Ceil	Returns the maximum value that is >= to the evaluated value
Random	Returns random number based on the specified seed
Exponential	Returns the exponential value of the evaluated value
Round	Returns the rounded value
Round2	Returns the rounded value
Power	Returns the power of the base value

Salesforce.com Database

Function Name	**Description**
Date & Time Functions	
Current Date	Returns the current date
Current Time	Returns the current time
Date Difference	Returns the count of units of time elapsed from start date to end date
Hour	Returns the Hour portion of the timestamp
Minute	Returns the Minute portion of the timestamp
Month	Returns the Month portion of the timestamp
Month Name	Returns the Month name of the timestamp
Second	Returns the Second portion of the timestamp
Week	Returns the week number of the timestamp
Year	Returns the year part of a date or timestamp
Current Timestamp	Returns the current timestamp
String Functions	
Concat	Returns the string that results from concatenating two strings
Difference	Returns an integer value from 0 to 4 that indicates the difference between the values returned by the SOUNDEX function for S1 and S2. A value of 4 indicates that S1 and S2 are the same, while a value of 0 indicates that the values have no similarity
Left	Returns the leftmost count of characters of the string. If the string requires double quoting, use SUBSTRING( ) instead
Length	Returns the number of characters in the string
Left Trim	Removes all leading blanks in the string
Replace	Returns first string with all occurrences of second string replaced with third string
Right	Returns the right-most count of characters of the string
Right Trim	Removes all trailing spaces in the string
Substring	Returns the substring starting at start (1=left) with length (count)
Ucase	Converts string to uppercase
Lowercase	Converts string to lowercase
Uppercase	Converts string to uppercase
Math Functions	
Absolute	Returns the absolute value of a double value
Ceiling	Returns the smallest integer that is not less than the value
Floor	Returns the largest integer that is not greater than the value
Power	Returns a raised to the power of b
Random	Returns a random number x bigger or equal to 0.0 and smaller than 1.0

Azure SQL Database

Function Name	Description
Date & Time Functions	
Date add	Returns a new datetime value based on adding an interval to the specified date
Date difference	Returns the number of date and time boundaries crossed between two specified dates
Date part	Returns an integer representing the specified datepart of the specified date
Day	Returns an integer representing the day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
To string	Converts a date or datetime value into a string in accordance with the specified format
Year	Returns an integer representing the year datepart of the specified date
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Exponential	Returns the exponential value of the given float expression
Floor	Returns the largest integer less than or equal to the given numeric expression
Random	Returns a random integer value
String Functions	
Difference	Returns the difference between the SOUNDEX values of two character expressions as an integer
Left	Returns the left part of a character string with the specified number of characters
Left trim	Returns a character expression after removing blanks
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Replace	Deletes a specified length of characters and inserts another set of characters at a specified starting point
Reverse string	Returns the reverse of a character expression
Right	Returns the right part of a character string with the specified number of characters
Right trim	Returns a character string after truncating all trailing blanks
String concatenation (2 strings)	Concatenates two string values
String concatenation (3 strings)	Concatenates three string values

String concatenation (4 strings)	Concatenates four string values
String concatenation (5 strings)	Concatenates five string values
SubString	Returns part of a character, binary, text, or image expression
Upper case	Returns a character expression after converting lower case character data to upper case

Vertica

Function Name	Description
Date & Time Functions	
Date Difference	Returns the difference of start date and end date
Date Difference 2	Returns the difference of start time and end time
Add Months	Returns an added date and timestamp
Date Part	Returns the date part of the given date and time expression
Year	Returns the Year part of the given date and time expression
Month	Returns the Month part of the given date and time expression
Day	Returns the day part of the given date and time expression
String Functions	
Length	Returns the length of the string
Lower case	Returns the lower case equivalent of the string
Upper case	Returns the upper case equivalent of the string
InitCap	Returns a capitalize first letter of the string and puts the rest in lowercase
Left	Returns the specified characters from the left side of the string
Right	Returns the specified characters from the right side of the string
Right trim	Returns the string resulting from trimming spaces from the right-hand side
Left trim	Returns the string resulting from trimming spaces from the left-hand side
Trim	Returns the string resulting from trimming spaces from both sides
Substring	Returns a value representing a substring of the specified string at the given position, given a value, a position, and an optional length
Concat	Concatenates string expressions
Replace	Replaces all occurrences of a substring within a string and returns with the new string
RPad	Returns string value representing a specific length filled on the right with specific characters
LPad	Returns string value representing a specific length filled on the left with specific characters
Split	Splits a string and returns a location of the beginning of the field
Math Functions	
Absolute	Returns the absolute (positive) value
Floor	Rounds the returned value down to the next whole number
Ceiling	Rounds the returned value up to the next whole number
Modulus	Returns the remainder of a division operation
Exponential	Returns e raised to the power of the specified number

MarkLogic

Function Name	Description
Date & Time Functions	
Year	Returns the added date and time
Month	Returns the month part of date and time expression
Day	Returns the day part of date and time expression
Date Add	Returns the added date and time
Date difference	Returns the difference of start date and end date
Date Part	Returns part of date and time expression
String Functions	
Length	Returns the length of the character(s)
Left Trim	Removes leading spaces from a character expression
Right Trim	Removes the trailing spaces from a character expression
Upper	Returns the uppercase characters
Lower	Returns the lowercase characters
Left	Returns leftmost characters
Right	Returns rightmost characters
Substring	Returns a character string
Charindex	Returns the position of the character(s) to be found
Replace	Replaces all occurrences of specified character string value to another string value
Math Functions	
Absolute	Returns the absolute (positive) value
Floor	Returns the largest integer smaller than the given numeric expression
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Power	Returns the exponential value of a numeric expression raised to the specified power

MariaDB

Function Name	Description
Date & Time Functions	
Add days	Returns a new datetime value based on adding a day interval to the specified date
Add months	Returns a new datetime value based on adding a month interval to the specified date
Date Add	Returns a new datetime value based on adding an interval to the specified date
Date difference	Returns the number of day interval between two specified dates
String Functions	
Left	Return the leftmost number of characters as specified
Left pads	Returns a character string of the desired length after padding the existing string to the left
Left trim blanks	Returns a character expression after removing leading blanks
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Position	Returns the location of a substring in a string
Right	Return the rightmost number of characters as specified
Right pads	Returns a character string of the desired length after padding the existing string to the right
Right trim blanks	Returns a character expression after removing trailing blanks
Substring	Returns parts of a character, binary, text, or image expression
Trim blanks	Returns a character expression after removing leading and trailing blanks
Upper case	Returns a character expression after converting lower case character data to upper case
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater that, or equal to, the given numeric expression
Exponential	Returns the exponential value of the given float expression
Floor	Returns the largest integer less than or equal to the given numeric expression
Random	Returns a random integer value

SAP HANA

Function Name	Description
Date & Time Functions	
Day Of Year	Returns an integer representing the day datepart of the specified date
Week	Returns an integer representing the week datepart of the specified date
Week Day	Returns an integer representing the week day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Year	Returns an integer representing the year datepart of the specified date
Days between	Returns an integer representing the number of days between two dates
String Functions	
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Left	Returns the left part of a character string with the specified number of characters
Right	Returns the right part of a character string with the specified number of characters
Lower case	Converts all characters in string to lowercase
Upper case	Converts all characters in string to uppercase
Left trim	Returns string trimmed of all leading spaces
Right trim	Returns string trimmed of all trailing spaces
SubString	Returns part of a character, binary, text, or image expression
Replace	Replaces a substring in a string with a new value
Concatenate	Concatenates two string values
Math Functions	
Absolute	Returns the absolute value of the numeric argument 'n'
Ceiling	Returns the first integer that is greater than or equal to the value of 'n'
Floor	Returns the largest integer that is not greater than the numeric argument n
Power	Calculates the base number b raised to the power of an exponent e
Random	Returns a pseudo-random value in the range of 0 to less than 1.0

Azure Cosmos DB

Function Name	**Description**
Date & Time Functions	
Date Part	Returns an integer representing the specified datepart of the specified date
Day	Returns an integer representing the day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Year	Returns an integer representing the year datepart of the specified date
String Functions	
Concatenate	Combines first and second string values
Left	Returns the leftmost count of characters of the string
Left Trim	Returns the string resulting from trimming spaces from left-hand side
Length	Returns the length of the string
Lowercase	Returns the lowercase equivalent of the string
Replace	Returns the replaced equivalent string
Right	Returns the rightmost count of characters of the string
Right Trim	Returns the string resulting from trimming spaces from right-hand side
Substring	Returns the extracted string
Uppercase	Returns the uppercase equivalent of the string
Math Functions	
Absolute	Returns the absolute value
Ceiling	Returns the maximum value that is >= to the evaluated value
Exponential	Returns the exponential value of the evaluated value
Floor	Returns the maximum value that is <= to the evaluated value

Azure Database for MySQL

Function Name	Description
Date & Time Functions	
Add days	Adds a number of days to date
Add months	Adds a number of months to date
Date Add	Adds an interval to a date
Date difference	Returns the interval between two dates
String Functions	
Left	Return the leftmost number of characters as specified
Left pads	Returns a character string of the desired length after padding the existing string to the left
Left trim blanks	Returns a character expression after removing leading blanks
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Position	Returns the location of a substring in a string
Right	Return the rightmost number of characters as specified
Right pads	Returns a character string of the desired length after padding the existing string to the right
Right trim blanks	Returns a character expression after removing trailing blanks
Substring	Returns parts of a character, binary, text, or image expression
Trim blanks	Returns a character expression after removing leading and trailing blanks
Upper case	Returns a character expression after converting lower case character data to upper case
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater that, or equal to, the given numeric expression
Exponential	Returns the exponential value of the given float expression
Floor	Returns the largest integer less than or equal to the given numeric expression
Random	Returns a random integer value

Azure Database for PostgreSQL

Function Name	Description
Date & Time Functions	
Date Part	Return the part of a data and time
String Functions	
Length	Returns the number of characters in string
Position	Return the location of a substring within a specified string
Left	Return the n number of characters specified in the argument from the left of a given string
Right	Return the n number of characters specified in the argument from the right of a given string
Substring	Returns the location of a substring in a string
Lower	Return the string to lower case
Upper	Return the string to upper case
Trim	Remove the longest string containing only the characters (a space by default) from the start/end/both ends of the string
Ltrim	Remove the longest string containing only characters from characters (a space by default) from the start of string
Rtrim	Remove the longest string containing only characters from characters (a space by default) from the end of string
Replace	Replace all occurrences in string of substring from with substring to
Strpos	Location of specified substring (same as position (substring in string), but note the reversed argument order)
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceil	Return the nearest integer greater than or equal to argument
Ceiling	Return the nearest integer greater than or equal to argument (same as ceil)
Power	Returns the exponential value of a numeric expression raised to the specified power
Floor	Returns the largest integer less than or equal to the given numeric expression

Amazon Athena

Function Name	Description
Date & Time Functions	
Date	Returns the current date as of the start of the query
Time	Returns the current time as of the start of the query
Timestamp	Returns the current timestamp as of the start of the query
Timezone	Returns the current timezone in the format defined by IANA
String Functions	
Char	Returns the Unicode code point of the argument 'n' as a single character string
Concat	Returns the string that results from concatenating two string
Length	Returns the length of string 'n' in characters
Left Trim	Removes leading white space from string 'n'
Lower	Converts string to lowercase
Remove	Removes all instances of 'b' from string 'e'
Replace	Replaces all instances of 'b' with 'c' in string 'e'
Reverse	Returns string 'n' with the characters in reverse order
Right Trim	Removes trailing whitespace from string 'n'
Substring	Returns a substring from string 'b' from the starting position 'e'
Substring with Length	Returns a substring from string 'b' of length 'c' from the starting point 'e'
Trim	Removes leading and trailing whitespace from string 'n'
Upper	Converts string 'n' to uppercase
Math Functions	
Absolute	Returns the absolute value of the numeric argument 'n'
Cube Root	Returns the cube root of the numeric argument 'n'
Ceiling	Returns the value of 'n' rounded up to the nearest integer
Degrees	Returns the radians value of 'n' to degrees
Exp	Returns the Euler's number raised to the power of 'n'
Floor	Returns the numeric argument 'n' rounded down to the nearest integer
Natural Logarithm	Returns the natural logarithm of 'n'
Base 2 Logarithm	Returns the base 2 logarithm of 'n'
Base 10 Logarithm	Returns the base 10 logarithm of 'n'
Logarithm	Returns the base 'b' logarithm of 'e'
Modulus	Returns the modulus (remainder) of 'b' divided by 'm'
Power	Returns 'b' raised to the power of 'e'
Radians	Returns the converted angle of the argument 'n' in degrees to radians
Random	Returns a pseudo-random number between 0 and the argument 'n'
Round	Returns 'n' rounded to the nearest integer
Round To	Returns 'b' rounded to 'e' decimal places
Sign	Returns the signum function of 'n'
Square Root	Returns the square root of the argument 'n'

Truncate	Returns 'n' rounded to integer by dropping digits after decimal point.
Arc Cosine	Returns the arc cosine of the argument 'n'
Arc Sine	Returns the arc sine of the argument 'n'
Arc Tangent	Returns the arc tangent of the argument 'n'
Arc Tangent 2	Returns the arc tangent of 'b'/'e'
Cosine	Returns the cosine of the argument 'n'
Hyperbolic Cosine	Returns the hyperbolic cosine of the argument 'n'
Sine	Returns the sine of the argument 'n'
Tangent	Returns the tangent of the argument 'n'
Hyper Tangent	Returns the hyperbolic tangent of the argument 'n'
Is Finite	Determines if argument 'n' is finite
Is Infinite	Determines if argument 'n' is infinite
Is Not a Number	Determines if argument 'n' is not-a-number

Amazon RedShift Spectrum

Function Name	Description
Date & Time Functions	
Add Months	Adds the specified number of months to a given date expression
Date Add	Returns the datetime
Date Compare	Returns an integer. 0 if identical, -1 if first date is less than second date & 1 if greater than the second date
Date Compare DateTime	Returns an integer. 0 if identical, -1 if date is less than datetime and 1 if first date is greater than datetime
Date Difference	Returns the difference between datetime expressions
Date Part	Return decimal number
Date Truncate	Returns datetime
DateTime Compare Date	Return an integer. 0 if identical, -1 if datetime is less than date and 1 if datetime is greater than date
Extract	Returns the datepart
Interval Compare	Returns an integer. 0 if identical, -1 if first interval is less than second interval and 1 if first interval is greater than second interval
Year	Returns the year of the specified date expression
Math Functions	
Absolute	Returns the absolute value of the specified numeric expression
Ceiling	Returns the ceiling value of the specified numeric expression
Exponent	Returns the exponential value of the specified numeric expression
Floor	Returns the ceiling value of the specified numeric expression
Power	Returns the exponential value of the specified numeric expression raised by the second numeric expression
Round	Rounds numbers to the nearest integer or decimal
String Functions	
Length	Returns the length of the specified text
Quote Identifier	Returns equivalent quoted identifier
Quote Literal	Returns equivalent quoted literal
Repeat	Repeats text the specified number of times
Replace	Returns all occurrences of the replaced text
Reverse	Returns the reversed text
Right Trim	Returns the trimmed text
String Position	Returns integer representing the position of the second text in the first text expression
Substring	Returns the extracted text from the specified text expressions
Trim	Returns the trimmed text

Google Big Table

Function Name	Description
Date & Time Functions	
Datetime difference	Returns the number of whole specified part intervals between two Datetime object
Extract	Returns the value corresponding to the specified date part
Math Functions	
Absolute	Returns the absolute value of a double value
Ceiling	Returns the smallest integer that is not less than the value
Exponential	Returns the exponential value of the given float expression
Power	Returns a raised to the power of b
String Functions	
Character Length	Returns the length of the STRING in Characters
Left trim	Returns a character expression after removing leading blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Replace	Replaces all occurrences of from value with to value in original value
Reverse string	Returns the reverse of a character expression
Right trim	Returns a character string after truncating all trailing blanks
String concatenation (2 strings)	Concatenates two string value
SubString	Returns a substring of the supplied value
SubString (position and length)	Returns a substring of the supplied value of position and length
Trim	Removes all leading and trailing characters that match value2
Upper case	Returns a character expression after converting lower case character data to upper case

Google Spanner

Function Name	Description
Date & Time Functions	
Date Add	Returns a new datetime value based on adding an interval to the specified date
Date Difference	Returns the number of date and time boundaries crossed between two specified dates
Date Part	Returns an integer representing the specified date part of the specified date
Day	Returns an integer representing the day date part of the specified date
Month	Returns an integer representing the month date part of the specified date
Time Difference	Returns the number of time boundaries crossed between two specified dates
To String	Converts a date or datetime value into a string in accordance with the specified format
Year	Returns an integer representing the year date part of the specified date
Mathematical Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Exponential	Returns the exponential value of the evaluated value
Floor	Returns the largest integer less than or equal to the given numeric expression
Power	Returns the base to the exponent power
String Functions	
Concat	Concatenates two string values
Left Trim	Remove all characters from left position of a specified character expression
Length	Returns the number of characters
Lower case	Returns a character expression based on the specified starting position and length
Replace	Replaces all found characters with specified source string
Right Trim	Remove all characters from right position of a specified character expression
SubString	Returns a character expression based on the specified string position and length
Upper case	Returns a character expression in which all the characters have been converted to upper case characters

Presto

Function Name	Description
Date & Time Functions	
Date difference	Returns the number of date and the time boundaries crossed between two specified dates
Day	Returns an integer representing the day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Year	Returns an integer representing the year datepart of the specified date
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Exponent	Returns the exponential value of the given float expression
Floor	Returns the largest integer less than or equal to the given numeric expression
String Functions	
Left Trim	Returns the string resulting from trimming spaces from left-hand side
Length	Returns the length of the string
Lowercase	Returns the lowercase equivalent of the string
Replace	Returns the replaced equivalent string
Right Trim	Return the string resulting from trimming spaces from right-hand side
Substring	Returns the extracted string
Trim	Returns the string resulting from trimming spaces from both sides
Uppercase	Returns the uppercase equivalent of the string

Amazon Aurora

Function Name	Description
Date & Time Functions	
Date add	Returns a new datetime value based on adding an interval to the specified date
Date difference	Returns the number of date and time boundaries crossed between two specified dates
Date part	Returns an integer representing the specified datepart of the specified date
Day	Returns an integer representing the day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Year	Returns an integer representing the year datepart of the specified date
String Functions	
Left	Returns the left part of a character string with the specified number of characters
Left trim	Returns a character expression after removing leading blanks
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
Lower case	Returns a character expression after converting upper case character data to lower case
Replace	String replacement
Reverse string	Returns the reverse of a character expression
Right	Returns the right part of a character string with the specified number of characters
Right trim	Returns a character string after truncating all trailing blanks
String concatenation (2 strings)	Concatenates two string values
String concatenation (3 strings)	Concatenates three string values
String concatenation (4 strings)	Concatenates four string values
String concatenation (5 strings)	Concatenates five string values
Substring	Returns part of a character or text
Upper case	Returns a character expression after converting lower case character data to upper case
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Exponential	Returns the exponential value of the given float expression
Floor	Returns the largest integer less than or equal to the given numeric expression
Random	Returns a random integer value

Apache Drill/MapR DB

Function Name	Description
Date & Time Functions	
Date Add	Returns the added date and time
Date Difference	Returns part of date and time expression
Date Part	Returns part of date and time expression
String Functions	
Char Index	Returns the position of the character(s) to be found
Left Trim	Removes leading spaces from a character expression
Length	Returns the length of the character(s)
Lower	Returns the lowercase characters
Right Trim	Removes trailing spaces from a character expression
Substring	Returns a character string
Upper	Returns the uppercase characters
Math Functions	
Absolute	Returns the absolute (positive) value
Ceiling	Returns the smallest integer greater than, or equal to, the given numeric expression
Floor	Returns the largest integer smaller than the given numeric expression
Power	Returns the exponential value of a numeric expression raised to the specified power

Google BigQuery

Function Name	Description
Date & Time Functions	
Datetime difference	Returns the number of whole specified part intervals between two Datetime objects
Extract	Returns the value corresponding to the specified date part
Datetime Add	Returns a new datetime value based on adding an interval to the specified date
String Functions	
Character Length	Returns the length of the STRING in characters
Left Trim	Returns a character expression after removing leading blanks
Right Trim	Returns a character string after truncating all trailing blanks
Trim	Removes all leading and trailing characters that match value2
Lowercase	Returns a character expression after converting upper case character data to lower case
Uppercase	Returns a character expression after converting lower case character data to upper case
Reverse string	Returns the reverse of a character expression
SubString(position and length)	Returns a substring of the supplied value of position and length
Substring	Returns a substring of the supplied value
Replace	Replaces all occurrences of from_value with to_value in original_value
String concatenation (2 strings)	Concatenates two string values
Math Functions	
Absolute	Returns the absolute value of a double value
Exponential	Returns the exponential value of the given float expression
Ceiling	Returns the smallest integer that is not less than the value
Power	Returns e raised to the power of b

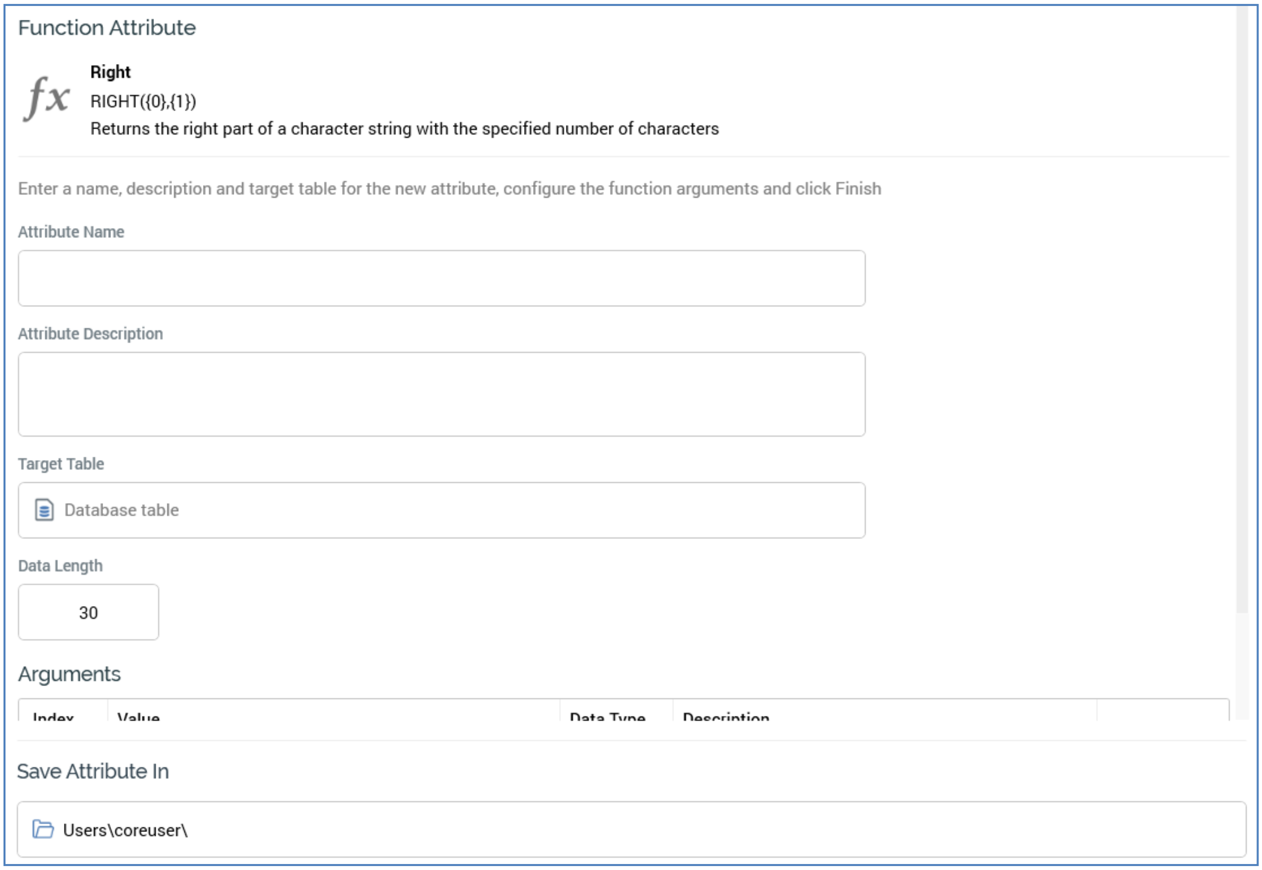
Snowflake

Function Name	Description
Date & Time Functions	
Date add	Returns a new date value based on adding an interval to the specified date
Date difference	Returns the number of date boundaries crossed between two specified dates
Date part	Returns an integer representing the specified datepart of the specified date
Day	Returns an integer representing the day datepart of the specified date
Month	Returns an integer representing the month datepart of the specified date
Year	Returns an integer representing the year datepart of the specified date
String Functions	
Left	Return the leftmost number of characters as specified
Left pads	Returns the left-padded string
Length	Returns the number of characters in the string
Position	Returns the location of a substring in a string
Right	Return the rightmost number of characters as specified
Right pads	Returns a character string of the desired length after padding the existing string to the right
String concatenation (2 strings)	Concatenates two string values
String concatenation (3 strings)	Concatenates three string values
Substring	Returns a character expression based on the specified starting position and length
Math Functions	
Absolute	Returns the absolute, positive value of the given numeric expression
Ceiling	Returns the smallest integer greater that, or equal to, the given numeric expression
Exponential	Returns the exponential value of the given float expression
Floor	Returns the largest integer less than or equal to the given numeric expression

Yellowbrick

Function Name	Description
Date & Time Functions	
Date Part	Returns the date part of the given date and time expression
Date Truncate	Returns a truncated timestamp to a specified precision
Extract	Returns the extracted timestamp
Year	Returns the Year part of the given date and time expression
Month	Returns the Month part of the given date and time expression
Day	Returns the day part of the given date and time expression
Date Add	Returns the datetime
Date difference	Returns the difference between two timestamps
String Functions	
Length	Returns the number of characters, rather than the number of bytes, of the given string expression, excluding trailing blanks
InitCap	Returns a character expression after capitalizing the initial letter
Left	Return the n number of characters specified in the argument from the left of a given string
Right	Return the n number of characters specified in the argument from the right of a given string
Substring	Returns a character expression based on the specified starting position and length
Lowercase	Returns a character expression after converting upper case character data to lower case
Uppercase	Returns a character expression after converting lower case character data to upper case
Left Trim	Remove all characters from left position of a specified character expression
Right Trim	Remove all characters from right position of a specified character expression
Concatenate	Concatenates string expressions
Math Functions	
Absolute	Returns the absolute (positive) value
Floor	Returns the largest integer not greater than given argument
Ceiling	Returns the smallest integer not less than the given argument
Power	Returns the exponential value of a numeric expression raised to the specified power
Exponential	Returns e raised to the power of the specified number

Having selected a function, a second function attribute-specific interface is shown (note that this interface is displayed immediately if configuring a function attribute; the information panel shown to the right is only displayed when configuring an existing attribute):



The interface is used to configure the following specific properties:

- Target Table: you must browse for a Target table using the Choose Database Item dialog. A list of tables within the currently specified database context is shown. Select the required table and click OK.

  For more information on using the Choose Database Item dialog, please see the RPI Framework documentation.

- Data Length: only displayed for function attributes that return a string value, this property allows you to define the attribute's maximum data length. It defaults to 30.

- Arguments list: the specific arguments to be provided are dependent on the function chosen. The function's argument signature is displayed to the right of the interface. For each argument, the following columns are displayed:

  - Index: (read-only) a zero-based number that refers to the ordinal position of the argument within the function - note that a summary of the function is displayed to the top right of the interface, and index is used to indicate the position of the argument within the function.

- Value: (updateable): for each argument in a function, you can specify whether its value is to be supplied as an attribute or constant. The default is attribute. You can toggle between Attribute and Constant.

  If Constant is selected, you can type a constant value directly into the updateable field.

  If Attribute is selected, you can drag and drop an attribute from the toolbox or browse for an attribute using the recent items chooser or File System Dialog. Note that you cannot:

  - Use a model project, exists in table or parameter attribute in this context.
  - Configure a function attribute using itself.
  - Select an attribute with a Target table from a database different to the new function attribute's Target table's database.

  In addition, if an argument is of a date/time data type, you can also specify that its value be the 'Current Time'. If used when configuring a function attribute, the attribute cannot be used to build a list comparison criterion.

  Note that if a value with an invalid data type is supplied for the argument, a warning message is displayed.

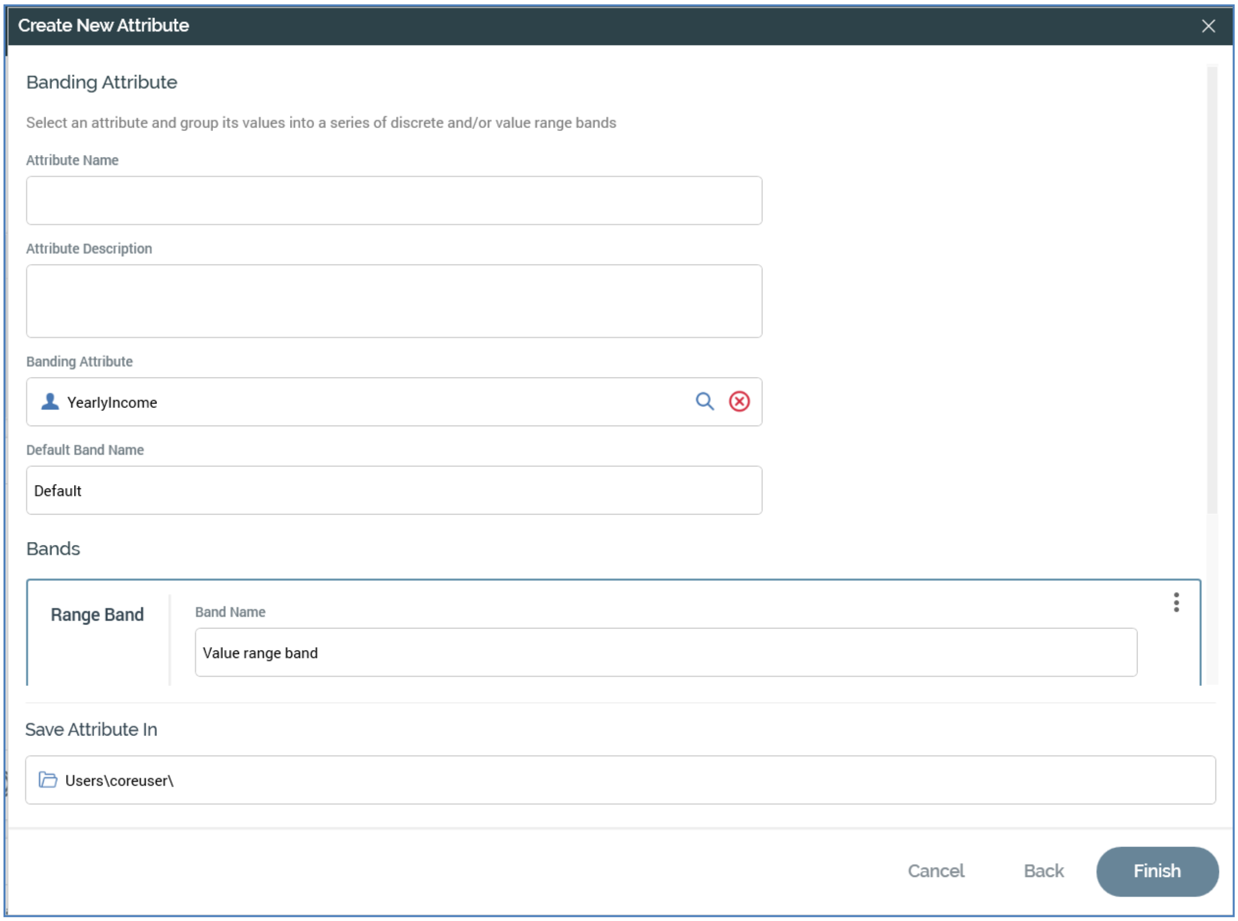
  You can also view the File Information Dialog if an attribute is specified.

- Data type: (read-only) one of: string, integer, decimal, date/time.

- Description: (read-only) a textual description of the role played by the argument within the function.

7.5.9 Banding Attribute Properties

The following interface is displayed when configuring a banding attribute:



A banding attribute allows you to expose an existing attribute as a series of discrete and/or value range bands.

A banding Attribute has the following specific properties:

- Banding Attribute: provision of an attribute upon which to base the banding attribute is mandatory. You can populate the property using Browse, or by using drag and drop. You cannot configure this property with a parameter, model project or exists in table attribute. Selection of an attribute with an auxiliary database Target table is supported. Once populated, you can View Information about the attribute, and also Clear it.

  When you change the Banding attribute and one or more bands have already been configured, any existing bands are removed from the Bands list.

- Default Band Name: provision of a name for a default band, into which values not explicitly assigned to other bands will be placed, is optional (the default name is 'Default'). Its maximum length is 100 characters.

- Bands list: listing the bands exposed by the attribute.

  The following properties are displayed at each selected band:

  - Type: one of ‘Discrete Band’, ‘Range Band’ or ‘Relative Date Band’. Read-only.
  - Name: a mandatory field, with a maximum length of 100 characters. Note that the same band name can be used multiple times within the attribute.

  The following property is displayed for discrete bands only:

  - Values list: initially set to '[No values]'. You can Browse for one or more values using the Choose Database Values dialog. It is mandatory to supply at least one value.

  The following properties are displayed for value range bands only:

  - [Operator 1]: a dropdown, which exposes values 'No lower limit', 'More than' (the default) and 'More than or equal to'.
  - [Value 1]: data entry in this mandatory field is constrained in accordance with the Banding attribute's data type. The field is not displayed if Operator 1 is set to 'No lower limit'.
  - [Operator 2]: a dropdown, which exposes values 'No higher limit', 'Less than' and 'Less than or equal to' (the default).
  - [Value 2]: data entry in this mandatory field is constrained in accordance with the Banding attribute's data type. The field is not displayed if Operator 2 is set to 'No higher limit'.

    When a band in the list is not selected, it is displayed as follows in specific circumstances:

  - 'No lower limit' and 'No higher limit' are not displayed.
  - If Operator 1 is set to 'No lower limit' and Operator 2 to 'No higher limit', the band is shown as 'Any value'.

  The following properties are displayed for relative date bands only:

  - [From]: a dropdown field, exposing the following values:
    - before now

- now
- after now
- whenever (the default)

- [To]: a dropdown field, exposing the same values as [From]. The default value is now.

Selection of before now or after now displays additional properties to the left of either context:

- [Value]: a mandatory integer field, that accepts a range of values from 1 (the default) to 999.
- [Units]: a dropdown field, exposing the following values:
  - seconds
  - minutes
  - hours
  - days (the default)
  - months
  - years
  - days (ignore time)

On changing the [From] or [To] [Units] [Value], the other [Value] is changed to ensure it is synchronized.

A relative date band must have a lower and/or a higher date limit.

The following [From]/[To] combinations are not supported:

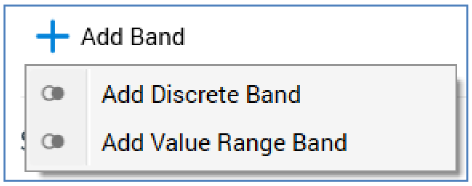
- From now To now
- From now To before now
- From after now To now
- From after now To before now
- From whenever to whenever

Other illogical [From]/[To] combinations are also not supported - e.g. ‘From 4 years after now To 1 year after now’.

An inline Options menu is available at each band within the list, exposing the following options:

- Move up
- Move down
- Remove

An Add Band button is shown at the bottom of the list. Clicking it displays a sub-menu, which allows you to choose the type of band you wish to add:

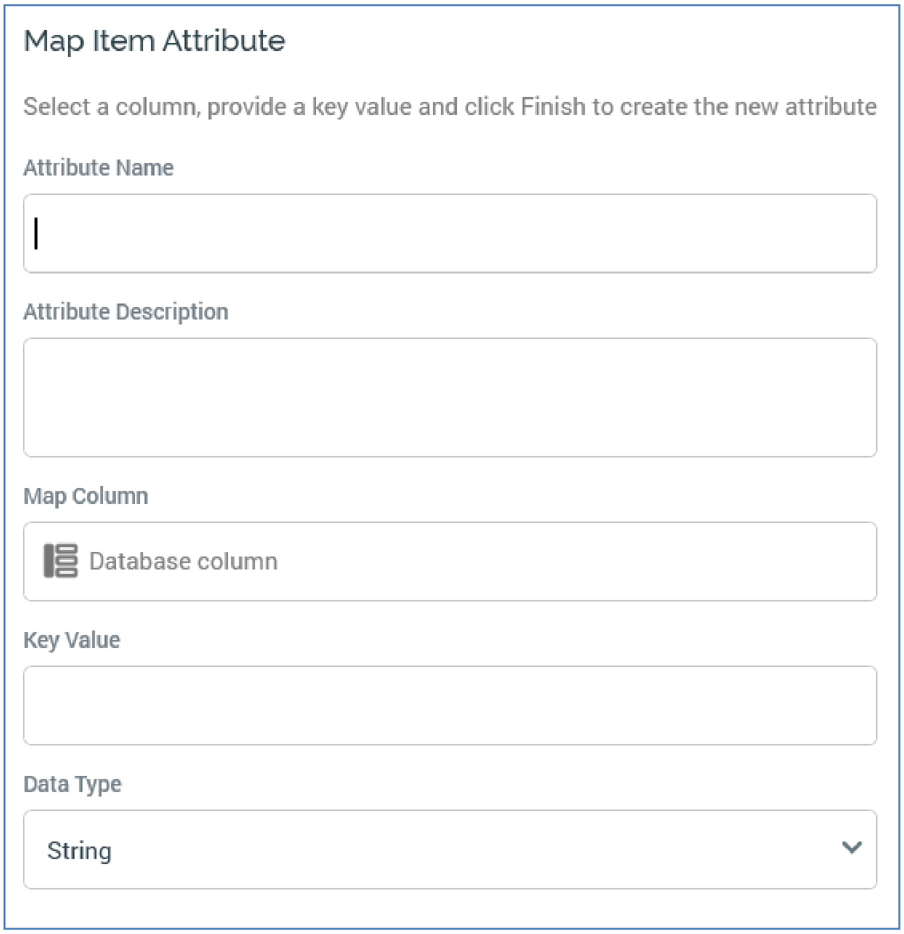


No validation of band values (e.g. multiple value use, overlap) is carried out. Any given value exposed by the underlying Banding attribute is exposed within the first band within which it qualifies.

When a banding attribute is used, e.g. in building a list criterion, all values not assigned explicitly to a band fall into the Default band. In addition, multiple bands that share the same name are presented once, with any values exposed by one such band shown within the single, concatenated, band.

7.5.10 Map Item Attribute Properties

The following interface is displayed when configuring a Map Item attribute:



A Map item attribute allows you to access data within an element contained within a map value and indexed via a key.

A Map item attribute has the following specific properties:

- Map Column: a mandatory database column, which contains the map data.
- Key Value: a mandatory key, which is used to access a specific element within the map data. Key value can be a maximum of length 100 characters in length.
- Data Type

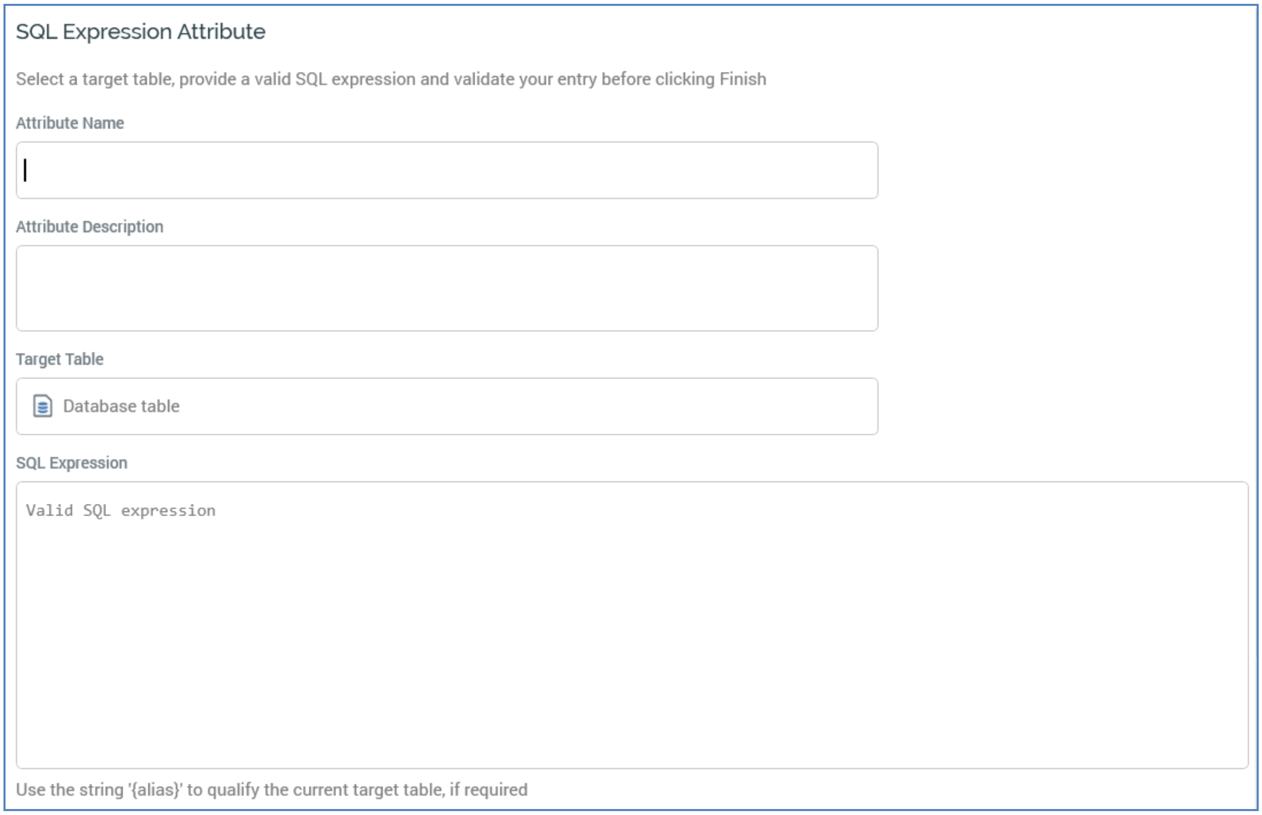
Map Item attributes can reference data persisted as JSON. This feature is supported at the following database platforms:

- AWS Redshift
- Amazon Aurora (v5.7.x)

- Azure PostgreSQL
- Azure Database MySQL
- Azure SQL Database
- Cassandra (Compare to List criteria not supported)
- DB2
- MySQL
- MariaDB
- Oracle (v12.x)
- PostgreSQL
- Snowflake
- SQL Server (2016+ only)
- Teradata (v15)
- Vertica

7.5.11 SQL Expression Attribute Properties

The following interface is displayed when configuring a SQL expression attribute:



A SQL expression attribute allows you to expose a valid SQL expression as an attribute.

A SQL expression attribute has the following specific properties:

- Target Table: you must browse for a Target table using the Choose Database Item dialog. When you do so, a list of database tables is displayed in the Choose Item section. Select the required database table and click OK.

  If one or more auxiliary databases have been configured at the current RPI client, you can use the Choose Database selector to select the database from which the list of tables is retrieved. If auxiliary databases are available, the table is displayed at the property as '[Database name].[Schema].[Table name]'.

  For more information on using the Choose Database Item dialog, please see the RPI Framework documentation.

- Expression: a valid SQL statement, provision of which is mandatory. Expression has no practicable length limit. Note that, when building a SQL expression attribute, you can use the string '{alias}' to represent an alias to the attribute's Target table.

- Data Type: a dropdown, exposing values BigInt, Date, DateTime, Decimal, Integer and String (the default). A validation error will be raised if the selected value is incompatible with the Expression provided. Note that Data type is used when creating temporary tables; if you wish to be prescriptive about the data type of the values the attribute is to expose, you will need to configure manually within the SQL expression using your own casting/converting logic.
- Data Length: this property is only enabled for the String data type. It is an integer and must be greater than 0 if supplied. Its default value is 50. A warning is displayed at validation results if the length provided results in truncation of sample data. However, if you wish, you may proceed with attribute creation, and no run-time truncation of attribute values will take place. Note that Data length is used when creating temporary tables; if you wish to be prescriptive about the data length of the values the attribute is to expose, you will need to configure manually within the SQL expression using your own casting/converting logic.
- Validate: a button with text set to 'Test to ensure the SQL for this attribute is valid'. Clicking the button creates a Validate SQL Expression job, which checks that the expression entered:
    - Is valid
    - Does not contain one or more of the following illegal strings:
        - ;
        - insert
        - delete
        - drop
        - -
        - truncate
        - update
        - %3B
        - union
        - create
- Results: one of:
    - SQL is valid
    - SQL is invalid. Change the expression and re-test.

      (Any error details are also displayed).
- Example: if the SQL expression is valid, an example of the results of its execution is displayed.

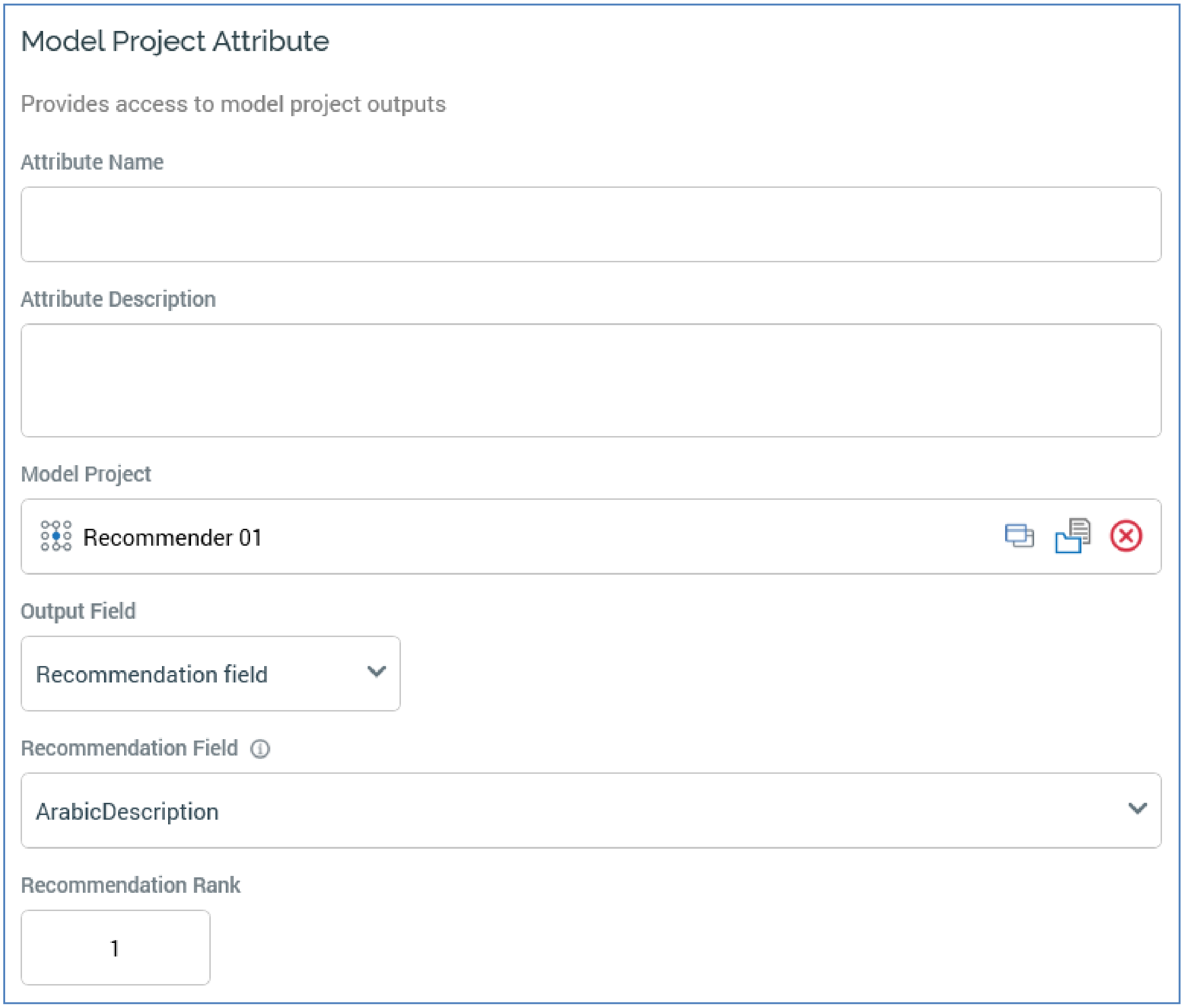
On invocation of Finish, a warning message is displayed if the SQL expression has not been validated.

When used in a selection rule or another context of execution, the attribute's expression is evaluated inline in a SQL statement. Note that you will need to ensure that you fully qualify any columns contained therein if the expression contains any cross-table references.

Note that the ability to create a new or configure an existing SQL expression attribute is controlled by the 'Attribute SQL Expression' functional permission.

7.5.12 Model Project Attribute Properties

The following interface is displayed when configuring a Model Project attribute:



A model project attribute has the following specific properties:

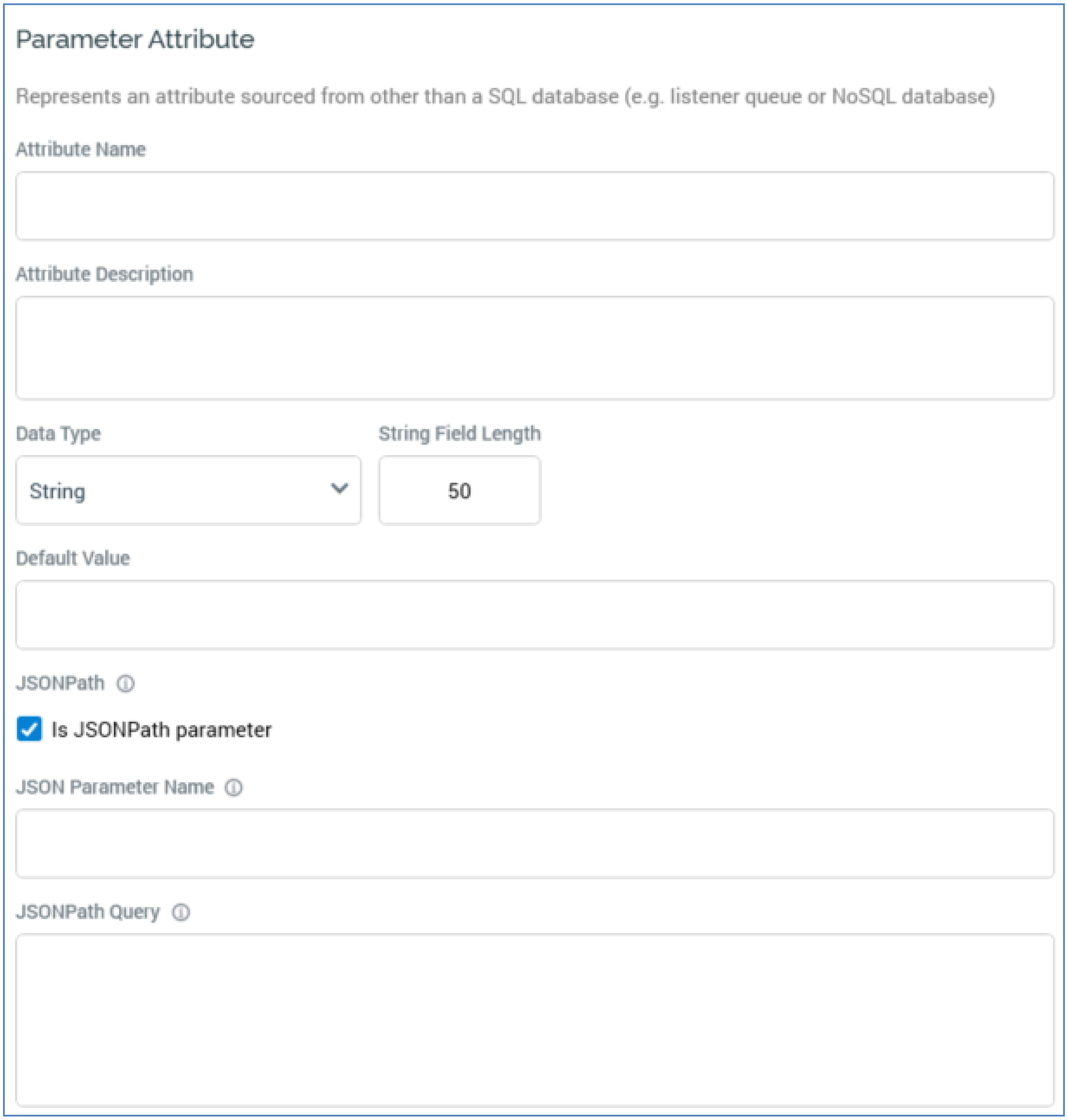
- Model Project: you can browse for a model project file from which the attribute will source its data. You can also initiate the creation of a new model project. Provision of a model project is mandatory, and the selected model project must be valid.
- Output Field: this dropdown property exposes the values 'Band' (the default), 'Score' and 'Recommendation field' (only shown when the model project is configured with an AML Recommender model). If 'Recommendation field' is selected, the Recommendation Field and Rank fields are displayed.
- Recommendation Field: this field allows you to choose a field sourced from the recommendation record returned by the model project, which will be output by the attribute.

It is shown when Output Field is set to 'Recommendation Field'. When the model project's Recommendation Lookup Type is set to 'Database Table', a list of fields from the selected Recommender model project's Database Lookup table is shown. When the Lookup Type is set to 'Value List' or 'No lookup required', this property is not displayed.

- Recommendation Rank: when a Recommender model returns a series of recommendation results, this property allows you to specify which of these, by default, should be output by the attribute.

7.5.13 Parameter Attribute Properties

The following interface is displayed when configuring a Parameter attribute:



A parameter attribute has the following specific properties:

- Data Type: a dropdown field, exposing the following values:
  - BigInt
  - Date

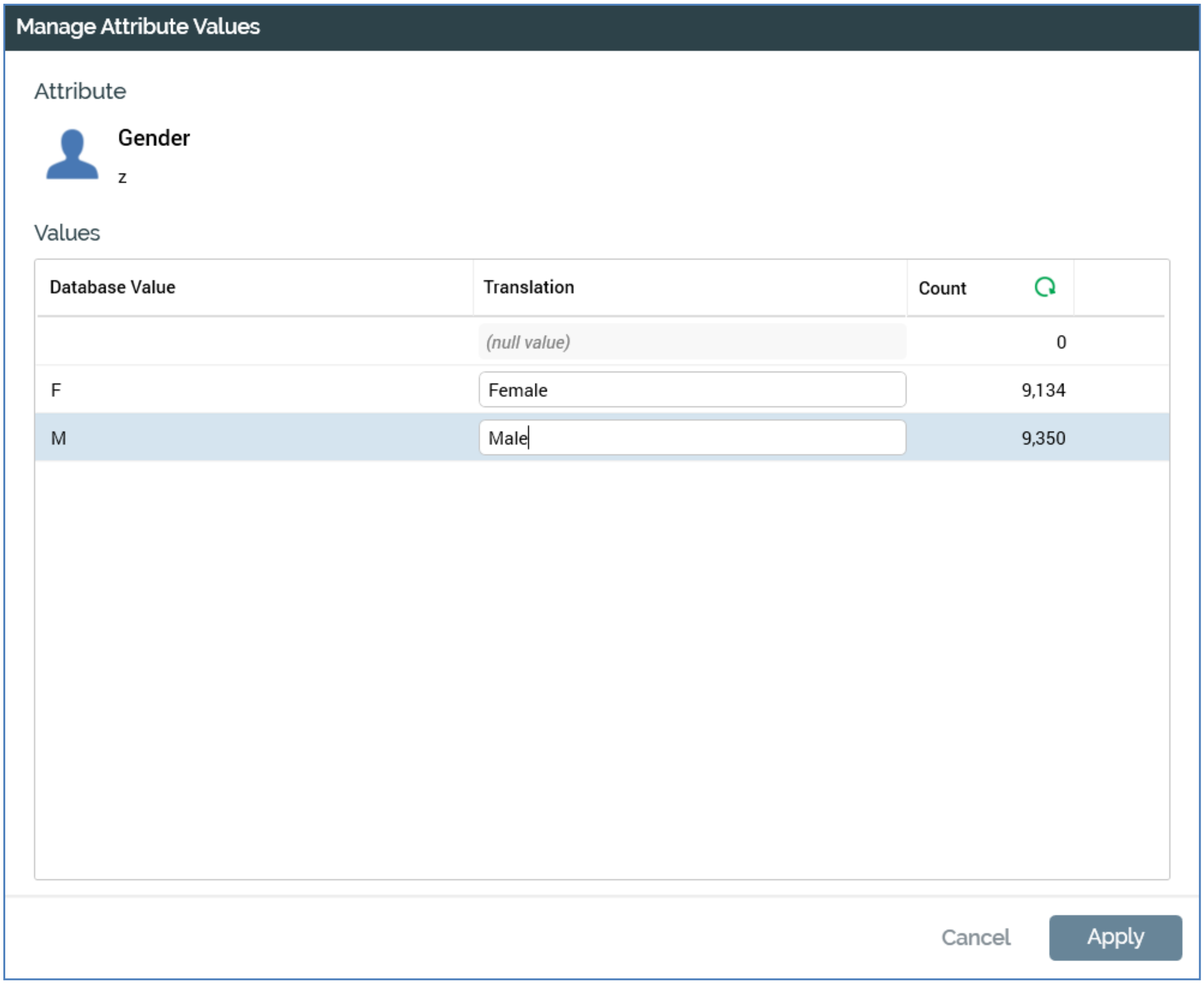
- DateTime
- Decimal
- Integer
- Money
- String (the default)

- String Field Length: this property is only displayed if Data type is set to String. Its default value is 50, and the value provided must be greater than 0. A validation error is raised if the length of a provided string Default value exceeds the String field length specified.
- Default Value: it is mandatory to provide a default value for a parameter attribute. A data entry mask, accordant with the selected Data type, is provided.
- JSONPath: this section allows you to specify that the parameter attribute should source its values from JSON using a JSONPath query.
- Is JSONPath parameter: check this checkbox to indicate that the parameter attribute is a JSONPath parameter. When checked, the JSON Parameter Name and Query properties are shown.
- JSON Parameter Name: this property represents a visitor parameter storing JSON, from which attribute's value is to be sourced. It is displayed when Is JSONPath parameter is checked. A text field, it is empty by default, and is mandatory when shown.
- JSONPath Query: this property allows you to specify a JSONPath query, which will be used to source the attribute's value from the supplied JSON parameter. It is displayed when Is JSONPath parameter is checked. A multi-line text field, it is empty by default, and is mandatory when shown.

Note that, if a parameter attribute references a collection, it returns by default the most frequent value within the same.

7.6 Managing Attribute Values

Management of an attribute’s translation values is carried out in the Manage Attribute Values modal dialog.



Translations are used when configuring list comparison criteria. If a translation exists for an attribute value, it is displayed instead of its database equivalent when building a list criterion.

An attribute’s distinct values are listed alphabetically by database value within the dialog. The most frequently occurring values are listed (up to a maximum number of values as defined by a system configuration setting (AttributeValueListSize)). If all values are not listed, a warning message is displayed.

You can provide a string translation for each displayed value. The translation may be a maximum of 100 characters. Attribute translations are specific to an attribute - translation values are not shared across database column attributes that share the same underlying database column. If you delete a translation the value reverts to the original database value.

A ‘Null value’ entry is always shown in the list. You cannot manage this value’s translation.

You can retrieve the latest attribute values and counts from the data warehouse or an auxiliary database by clicking the button shown in the Count column header. Any new values are added to the list (if permissible according to the number of values displayed in the list). When you do so, by default, new values’ Translations are set to the Database Value. Any existing translations are retained where the relevant rows are still present. This applies even if a translation had been provided in the past for a value that was no longer present at the point of refresh.

Note that you cannot manage values for decimal, money, date, parameter, exists in table, model project, parameter or map item attributes.

Note also that managed values are not output in export files generated from RPI. In such circumstances, raw data values are always output.

7.7 Automatic Attribute Cataloging

As well as providing the ability to manage the catalog manually, RPI also automatically catalogs values for any newly created attributes. This is carried out by the Task Manager service, which runs a scheduled task every 10 minutes.

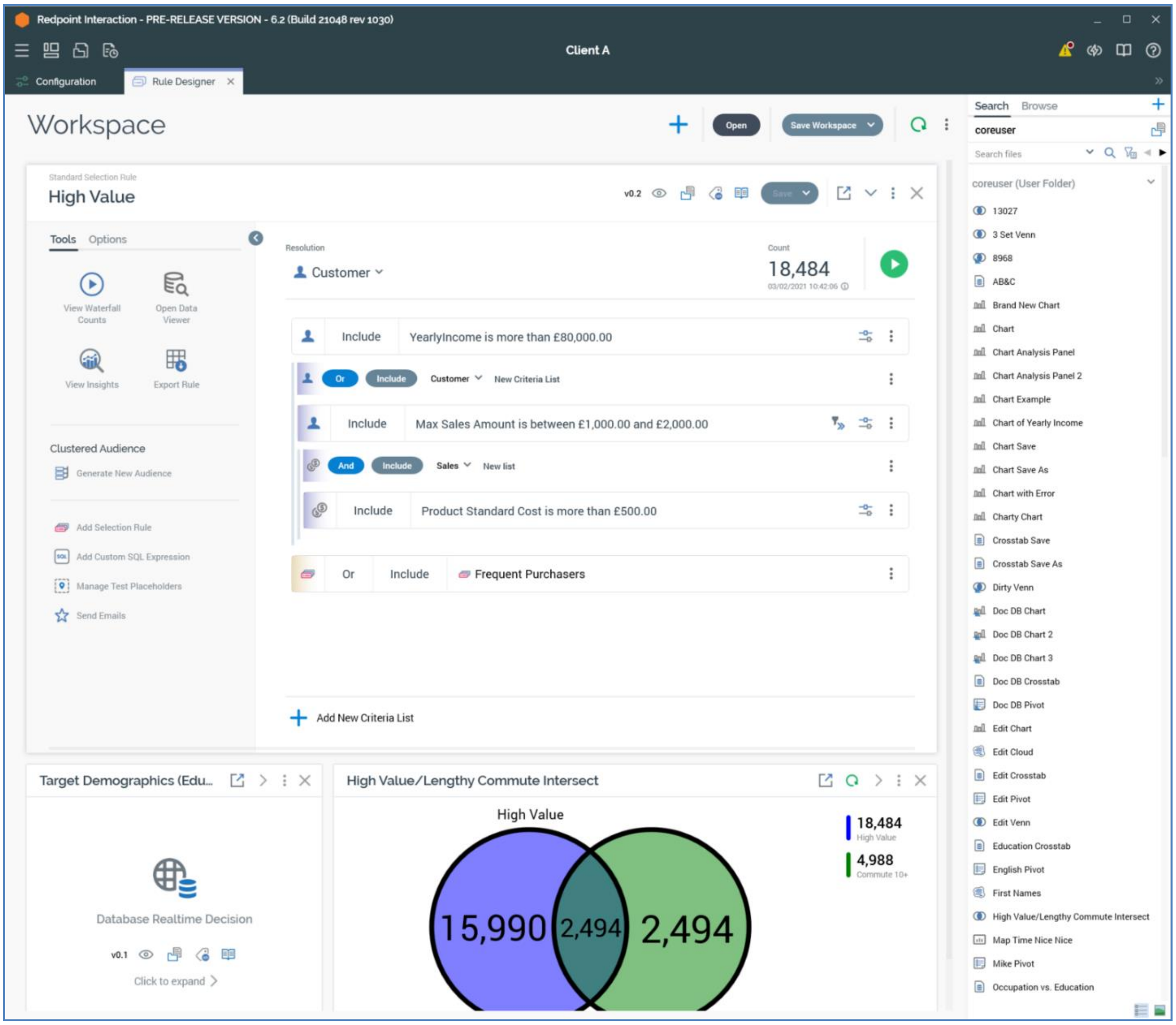
Following an attribute's initial cataloging, the frequency at which it is refreshed is controlled by system configuration setting AttributeRefreshInterval, which controls the number of days between refreshes. Every [n] (where [n] = AttributeRefreshInterval) days since an attribute's last refresh, attribute counts are refreshed automatically.

These features ensure that any disruption experienced while building selection rules due to having to wait while attribute values are cataloged is kept to a minimum.

Note that auto-cataloged attribute counts are only available once you log off and back into RPI.

8 Rule Designer

The Rule Designer is used to manage a number of types of RPI file:



- Selection rules: three types of selection rule are supported:
  - Standard selection rules: the most feature-rich selection rule, used to target records in a SQL database. Available when running against a SQL data warehouse, or when at least one SQL auxiliary database is configured at the current RPI client.
  - Basic Selection Rules: easier to use that Standard Selection Rules but offering less functionality. Also used to target records in a SQL database. Available when Available when running against a SQL data warehouse, or when at least one SQL auxiliary database is configured at the current RPI client, and when at least one SQL database definition exists.

  - NoSQL Selection Rules: using a similar user interface to Basic Selection Rules, NoSQL Selection Rules are used to target records in a NoSQL database. Available when Available when running against a NoSQL data warehouse, or when at least one NoSQL auxiliary database is configured at the current RPI client.

- Analysis Panels: provide alternative tools to facilitate the building of selection rules. The following types of analysis panel are supported:
  - Chart
  - Crosstab
  - Pivot table
  - Venn diagram
  - Word Cloud

- Realtime Decisions: rules that facilitate determination of online content to be shown to a site visitor.

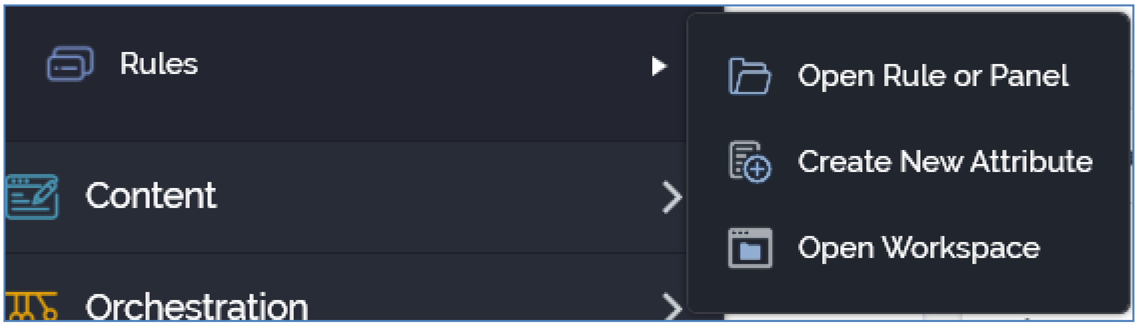
- Decision Scorecards: allow you to assign a weight value to a site visitor's fulfilling the criteria defined within a realtime decision. Further content personalization can then be carried out by leveraging scorecards in subsequent realtime decisions

Details of specific file types are covered separately with the documentation.

8.1 Invoking the Rule Designer

You can invoke the Rule Designer in the following ways:

- From the quick access menu's Rules menu. The menu exposes the following options:



- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.
- By double-clicking a rule file in the File System Dialog, or by highlighting a rule and clicking OK in the same context.
- By viewing the latest version of a file contextually – for example, from a filter in the Audience Designer.

Note that access to the Rule Designer is controlled via the following functional permissions:

- Analysis Panel – Design
- Realtime Decision – Design
- Selection Rule – Basic – Design
- Selection Rule – NoSQL – Design
- Selection Rule – Standard – Design

If you are associated with at least one of these permissions, you will be able to access the Rule Designer. The files you will be able to work with therein will depend on your user group membership – for example, if you have only the Analysis Panels – Design permission, you will only have access to the Analysis Panels section in the Rule Designer toolbox.

8.2 Rule Designer Basics

The Rule Designer is presented as an interface within the RPI application framework tab set.

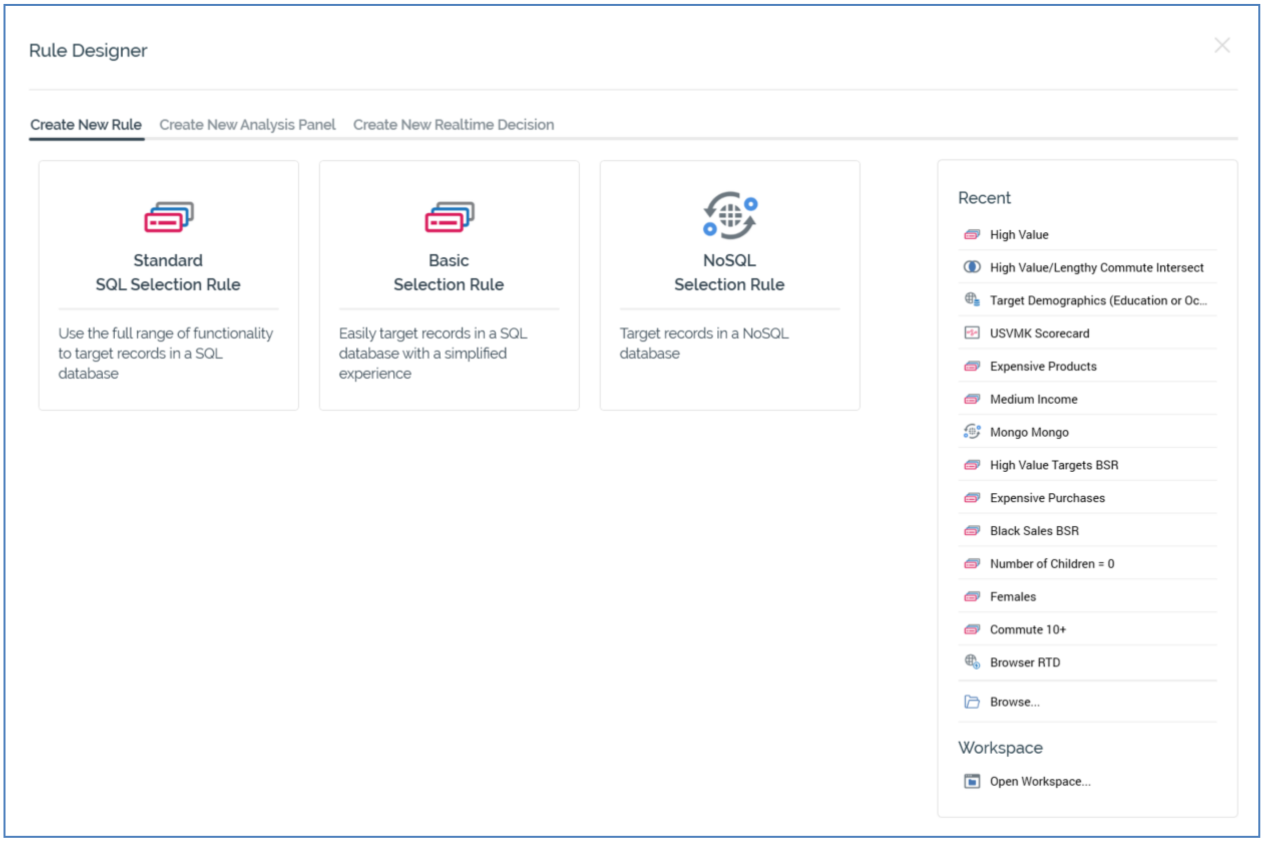
It contains the following elements:

- Toolbar
- Toolbox
- Workspace

When you close the Rule Designer, the tab within which it is shown is removed from display. If changes have been made in one or more files displayed in the Rule Designer, an ‘Are you sure?’ dialog is displayed for each changed rule, inquiring whether you wish to save the changes you have made. You may select Yes, No or Cancel. Yes saves the changes and closes the Rule Designer. No discards the changes and closes the Rule Designer. Cancel abandons closing the Rule Designer.

8.3 Start Page

The Rule Designer Start Page is shown upon invocation of Rules at the quick access menu, and also on clicking Add new Rule or Panel at the Rule Designer toolbar. It contains the following:



Three tabs facilitate the creation of new files:

- Create New Rule (options available as appropriate)
  - Standard SQL Selection Rule
  - Basic Selection Rule
  - NoSQL Selection Rule
- Create New Analysis Panel
  - Chart Analysis Panel
  - Crosstab Analysis Panel
  - Pivot Table Analysis Panel
  - Venn Diagram Analysis Panel

- Word Cloud Analysis Panel

- Create New Realtime Decision
  - Attribute List Realtime Decision
  - Database Realtime Decision
  - Decision Scorecard
  - Facebook Realtime Decision
  - JSON Realtime Decision
  - Model Score Realtime Decision
  - Orchestration Realtime Decision
  - Web Realtime Decision

The following additional options are also available:

- Recent: lists recently-accessed Rules, facilitating the opening of the same.
- Browse: displays the Open Rule File System Dialog, allowing you to select a rule to open.
- Workspace section: exposing a single option:
  - Open Workspace

A Close button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and displays the main Rule Designer interface.

8.4 Toolbar

The Rule Designer toolbar is displayed above the toolbox and workspace.

It contains the following:

- Workspace name: if the currently-displayed Rule Designer workspace has not been saved, the read-only text 'Workspace' is displayed to the left of the toolbar.

  If the Rule Designer contains a previously-saved workspace, its name is displayed instead. The name is updateable, mandatory and can be a maximum of 100 characters.

- Add new Rule or Panel to the current Workspace: clicking this button displays the Rule Designer Start Page, which is documented separately.

- Review: this button allows you to review the standard and/or basics selection rules displayed in the Rule Designer in a standalone Selection Rule Review Window. It is enabled when one or more rules or panels are displayed in the workspace. Invocation when one or more standard or basic selection rules are shown displays the Selection Rule Review non-modal Window, which is covered separately. If no standard or basic selection rules are shown, the Window is not displayed, and an advisory message is presented instead

- Open: clicking this button displays the Open Rule, Panel, Scorecard or Workspace File System Dialog. You can navigate accessible folders in the RPI file system to locate one or more files that you wish to open. Selection rule, analysis panel, realtime decision, decision scorecard and workspace files are shown. Having selected one or more files of a type other than workspace, you can click OK to open them in the Rule Designer. You can only open a single workspace at a time. You can also double click a file to open it. Clicking Cancel closes the File System Dialog without opening a file.

- Save Workspace: RPI allows you to treat a Rule Designer workspace as an autonomous object that can itself be saved to the RPI file system. By saving a workspace, you can open it at a later date and continue working with the files that were displayed there when it was saved, even if the files therein were not saved.

  Two options are supported at this button and its attendant dropdown menu:

  - Save the current Workspace: saves the current Rule Designer workspace contents as a file within the RPI file system. If the workspace has yet to be saved, Save behaves as Save As.

  - Save the current Workspace as...: displays the File System Dialog, allowing you to specify a folder within which to save the current Rule Designer workspace contents as a file within the RPI file system.

Workspaces are covered in more detail elsewhere in the Rule Designer documentation.

When a previously-saved workspace is shown in the Rule Designer, the following are also shown at the toolbar (for more information, please see the Framework documentation):

- File Version
- Follow File
- File Options
    - View File Information
    - Open File Location
- Linked Page Options
- Refresh Workspace: clicking this button gets counts or refreshes all appropriate rules and/or panels displayed in the workspace. Displayed files are not refreshed if invalid. Not that this option has no effect at realtime decisions and decision scorecards.
- Workspace Actions:
    - Expand All: clicking this button displays all rules or panels open in the current workspace in an expanded state.
    - Collapse All: clicking this button displays all rules or panels open in the current workspace in a collapsed state.

8.5 Toolbox

The Rule Designer toolbox contains a folder search component, which can be used to source files needed when building rules in the Rule Designer. The following file types are displayed:

- Analysis Panel
- Asset
- Attribute
- Decision Scorecard
- Export Template
- Model Project
- Offer
- Realtime Decision
- Selection Rule
- Smart Asset

8.6 Workspace

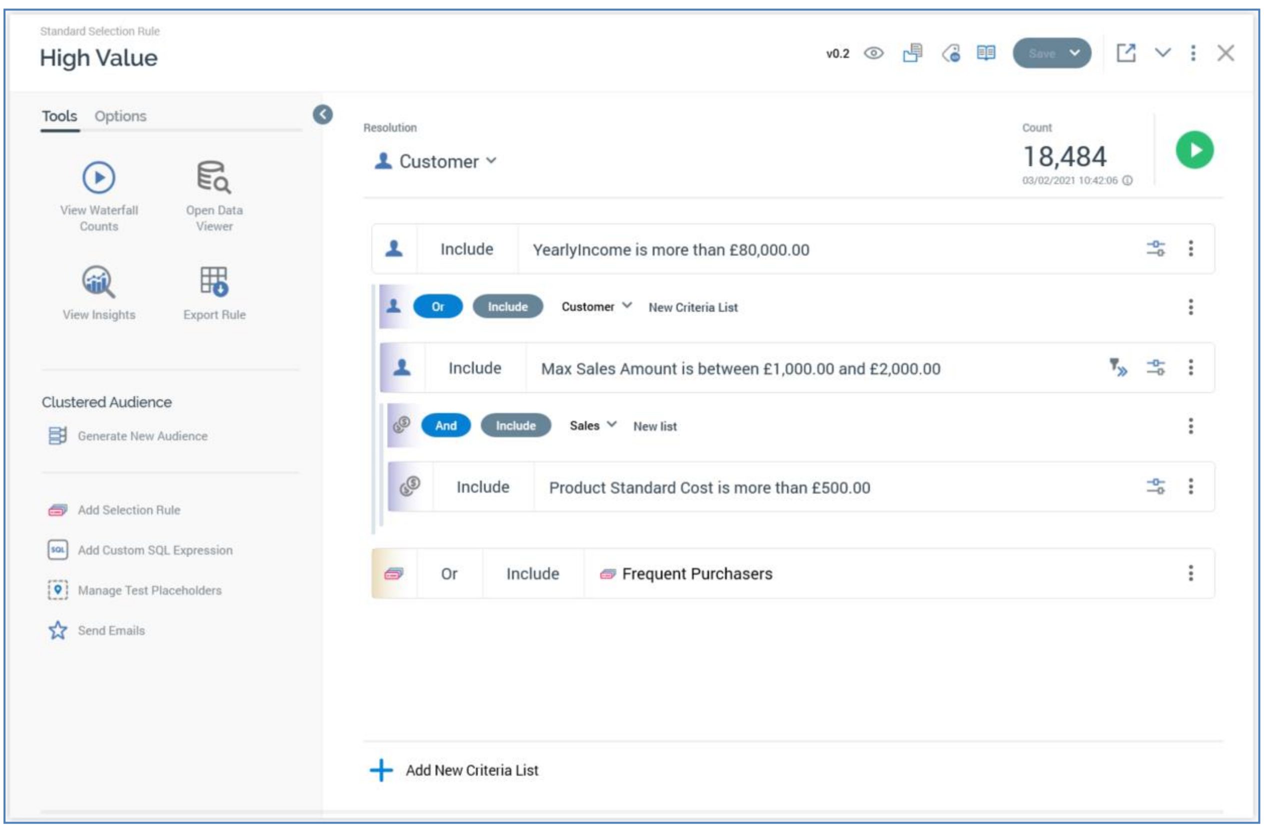
The Rule Designer workspace is a ‘canvas’ upon which you can design and build selection rules, analysis panels, realtime decisions and decision scorecards.

When the Rule Designer is empty, the following message is displayed:

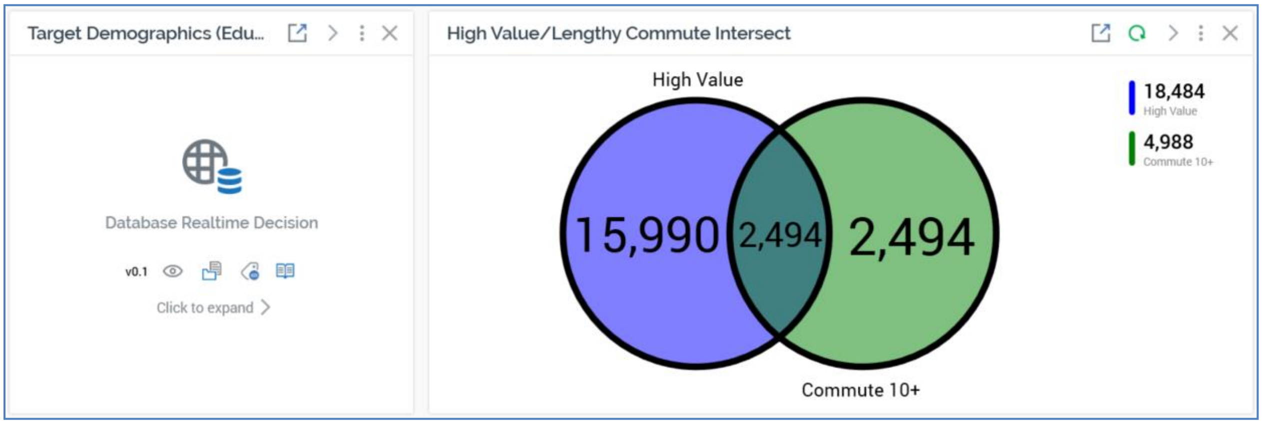
> Click the Add button to create a new Rule or Panel, or click Open to open existing files.

It is possible to work with, by default, a maximum of 20 files concurrently within the workspace (this value is defined by configuration setting MaxItemsPerWorkspace). These may be a combination of newly-created files and files that have been opened, having been saved previously. On attempting to exceed this number, either by adding a new or opening an existing file, a warning message is displayed.

Rules and panels displayed within the workspace can be shown as expanded:



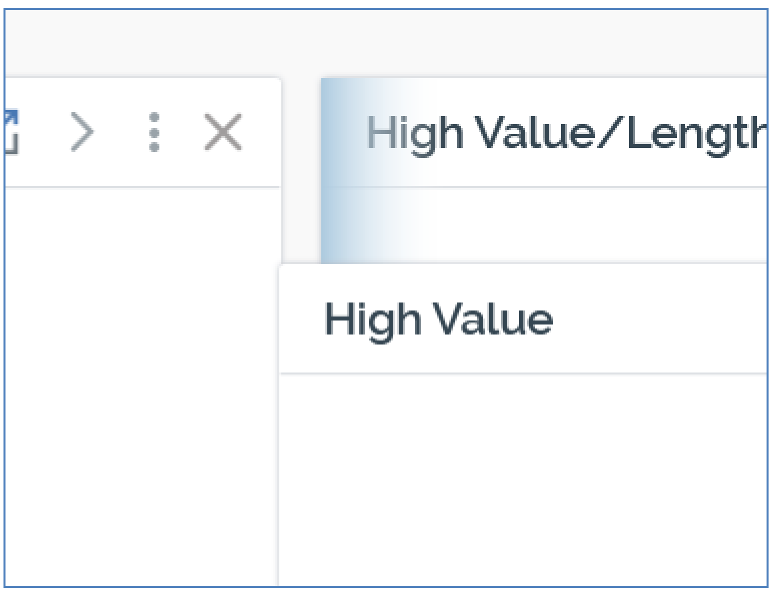
…or collapsed:



…using the button supplied at the rule or panel's header toolbar.

You can resize an expanded file vertically. When closed and re-opened, it is displayed with the same vertical height.

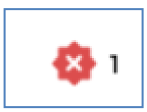
You can drag collapsed rules and panels to reposition them within the workspace. When you do, blue shading is displayed to indicate the position at which a dragged file will be dropped:



8.7 Expanded Rule/Panel – Common Features

The following features are common to the header at selection rules, analysis panels and realtime decisions when displayed in expanded mode in the Rule Designer:

- Panel type
- Name: an editable representation of the file's name is displayed at the left of its header. Name can be a maximum of 100 characters. When unsaved changes are present, an asterisk is displayed to the right of the file's Name.
- Validation issues: when the file is invalid, due e.g. to a mandatory property having not been configured, a validation errors indicator is displayed:

  Clicking the same displays details of the validation errors in a dialog.

  If the file is valid, the indicator is not shown.

  This property is not shown at standard selection rules.

- File Version
- Save: two options are available:
  - Save: when the file has been saved previously, invoking this option persists any changes to the current file in the RPI file system. When the file has yet to be saved, Save behaves like Save As.
  - Save As: selecting this option displays the RPI Fil System Dialog, allowing you to specify a name for the file, and a location to which it is to be saved.
- Pop Out/Snap Back: this button allows you to either pop the current file out of the Rule Designer, displaying it in its own independent, modeless Window, or, if already popped out, snaps it back into the Rule Designer (after all other files displayed therein, in an expanded state). Pop Out/Snap Back is described in detail elsewhere in this documentation.
- Collapse: clicking this button displays the file in a collapsed state.
- Actions: providing access to the following:

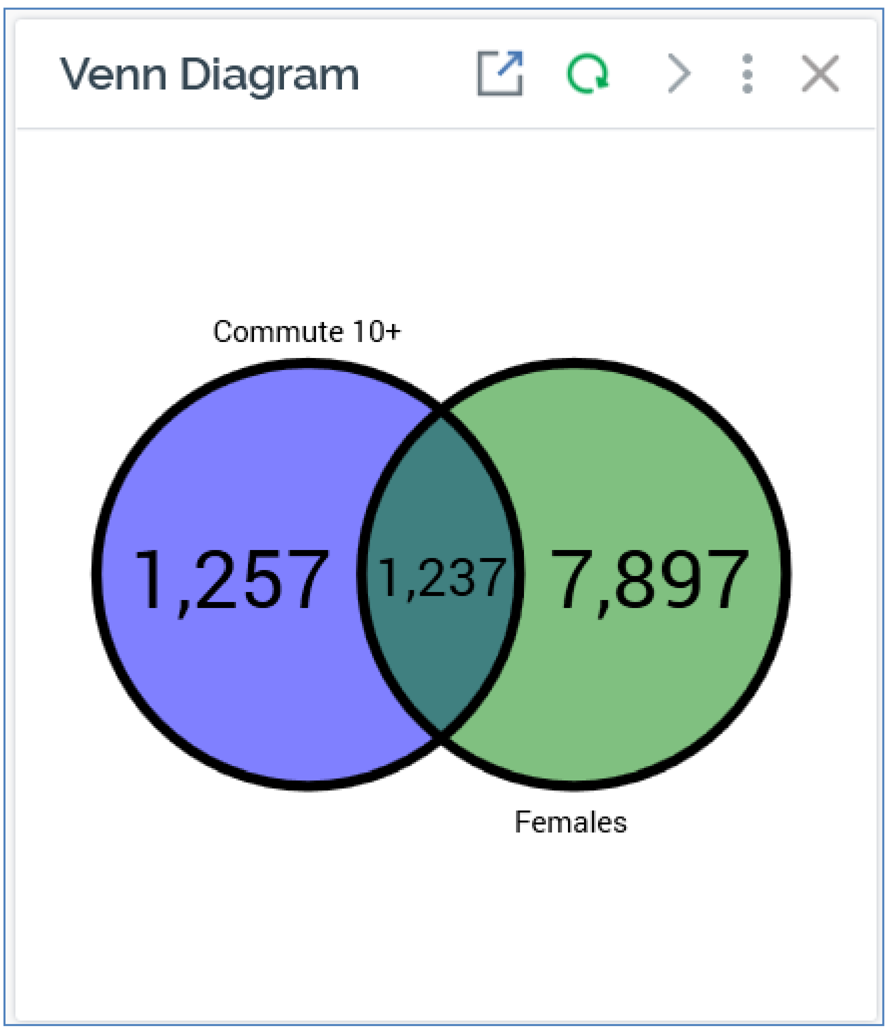
- File Version
- Follow this File
- File Options
- File Metadata
- Linked Page Options
- Copy Image to Clipboard

- Close: clicking this button closes the file, and removes it from the Rule Designer. If it contains unsaved changes, an ‘Are You Sure?’ dialog is shown.

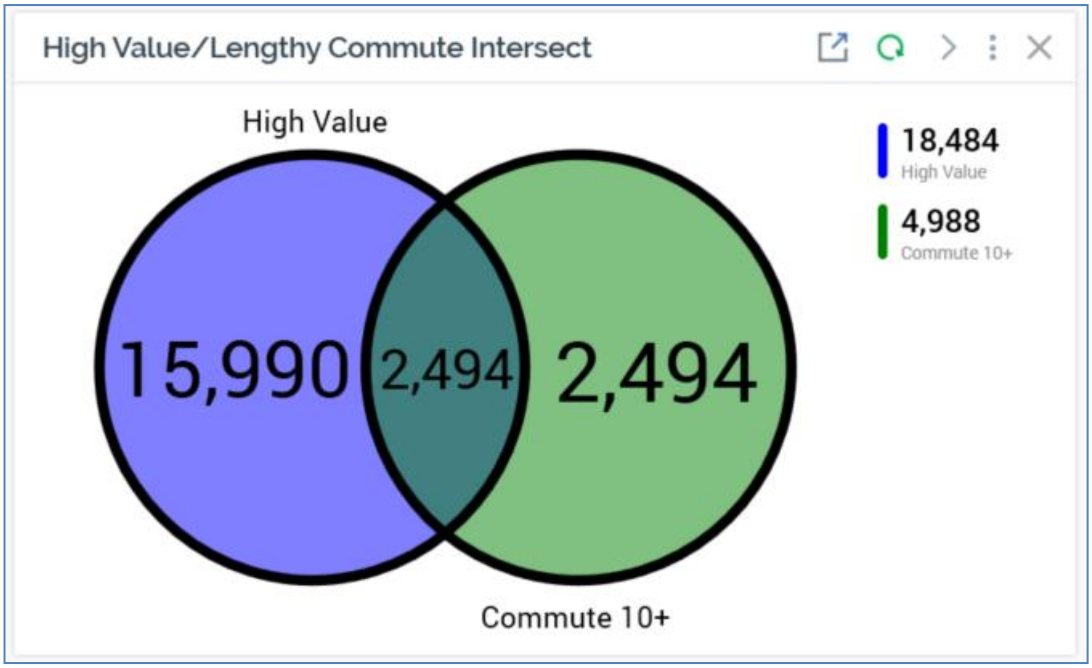
8.8 Collapsed Rule/Panel – Common Features

The following features are common to the header at selection rules, analysis panels and realtime decisions when displayed in expanded mode in the Rule Designer:

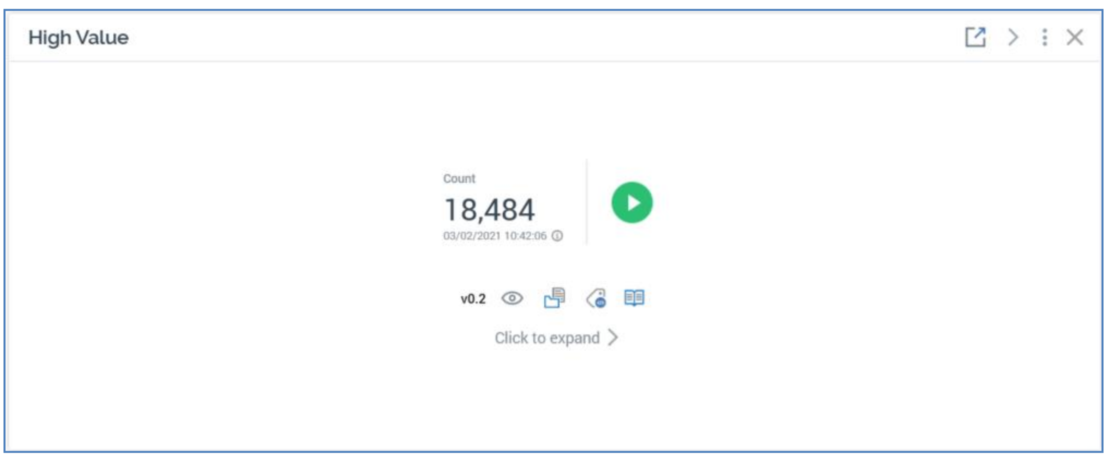
- Name: read-only
- Validation issues: as expanded mode
- Pop out: as expanded mode
- Expand and Configure: clicking this button displays the file in an expanded state.
- Actions:
    - Size: allowing you to choose how the collapsed file will be displayed in the Rule Designer (when not in side-by-side view).
        1. Normal:



2. Wide:



3. Fit to Width:

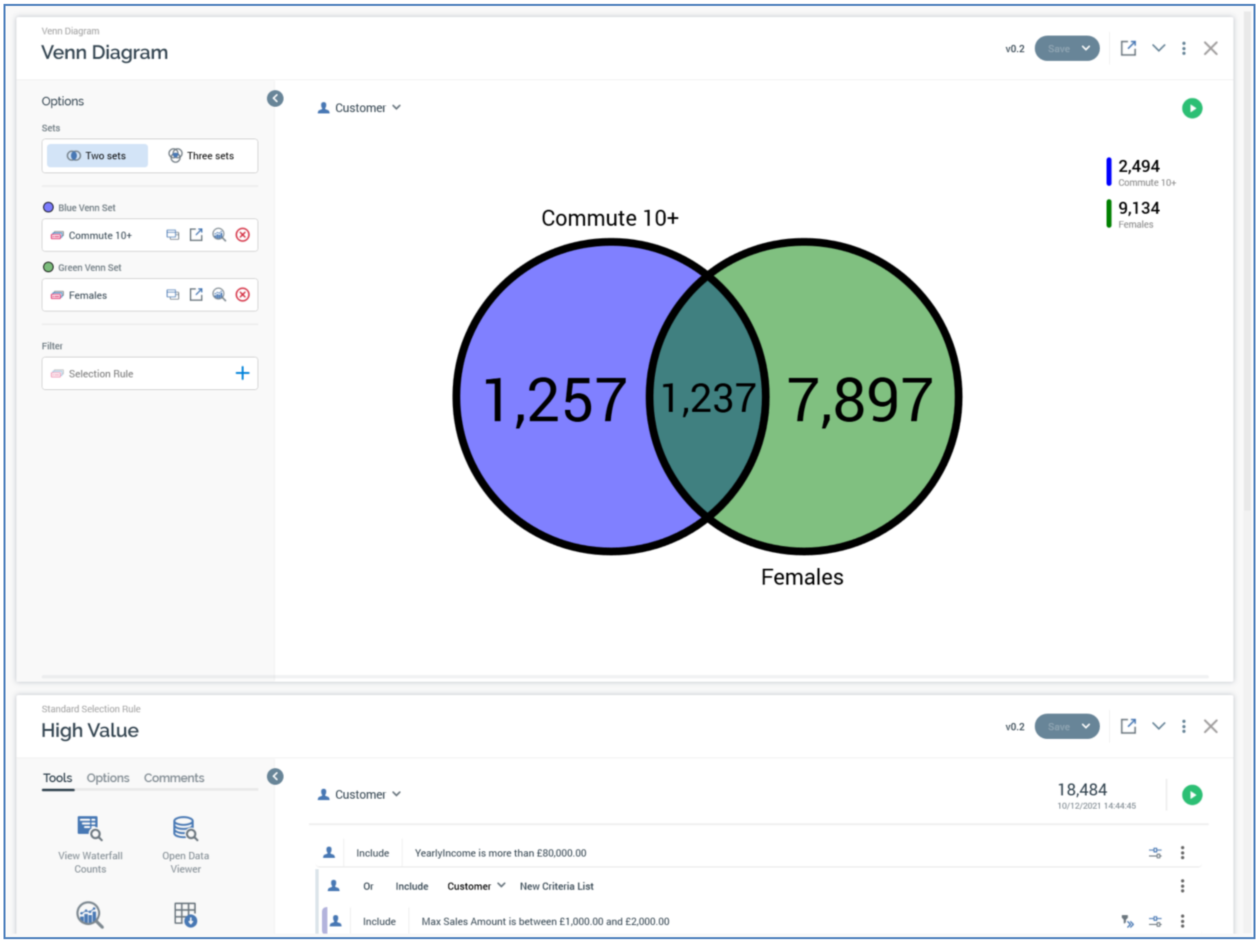


- Copy Image to Clipboard

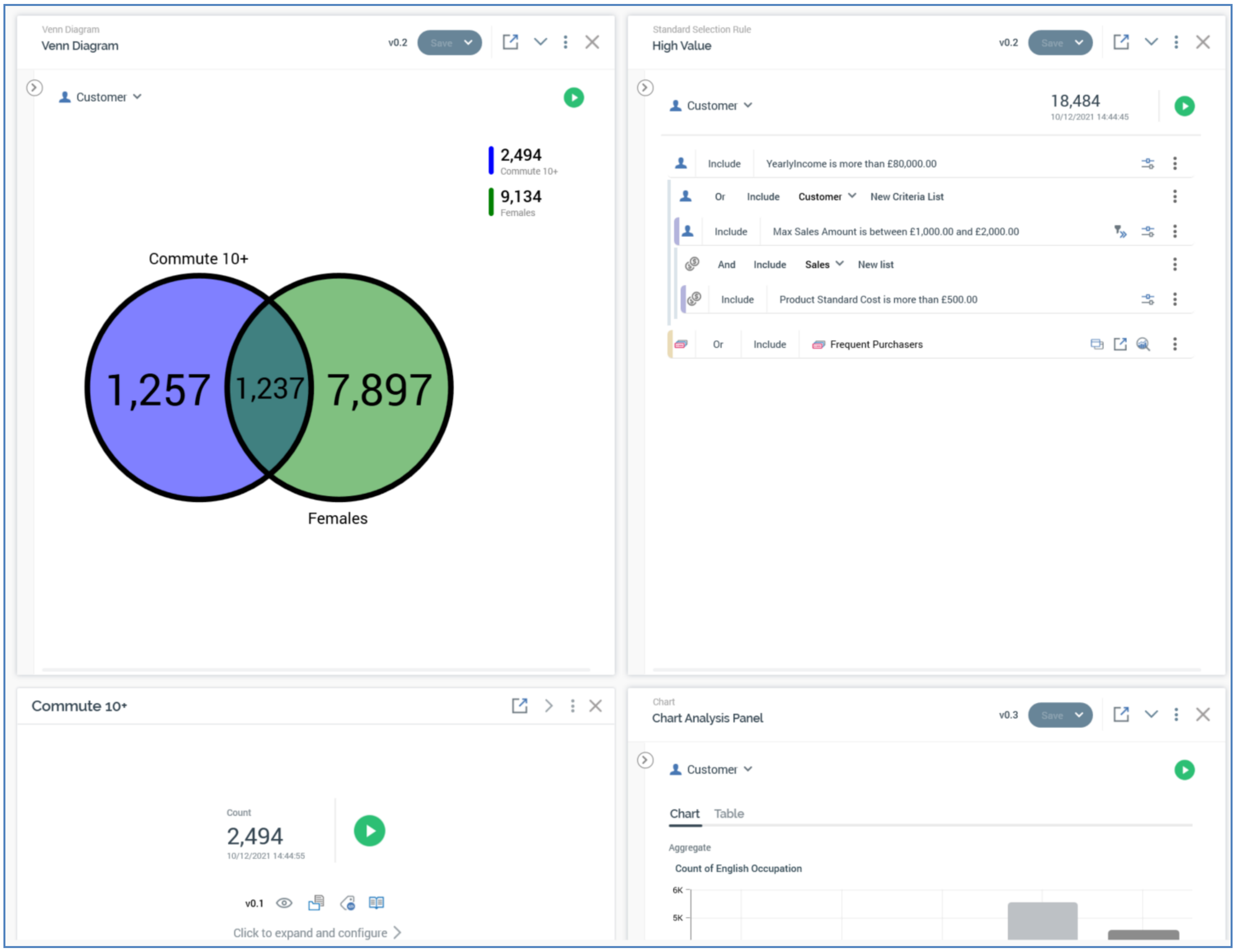
- Close: as expanded mode

8.9 Side-By-Side View and Compact Font

Rules and panels displayed within the Rule Designer can be shown in standard view:



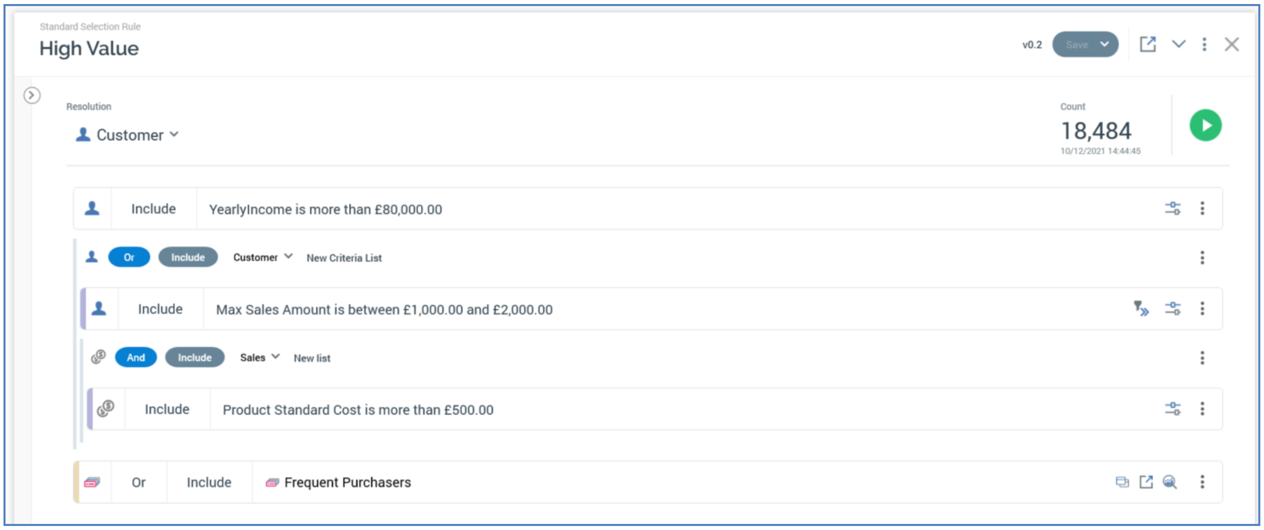
...or side-by-side view:



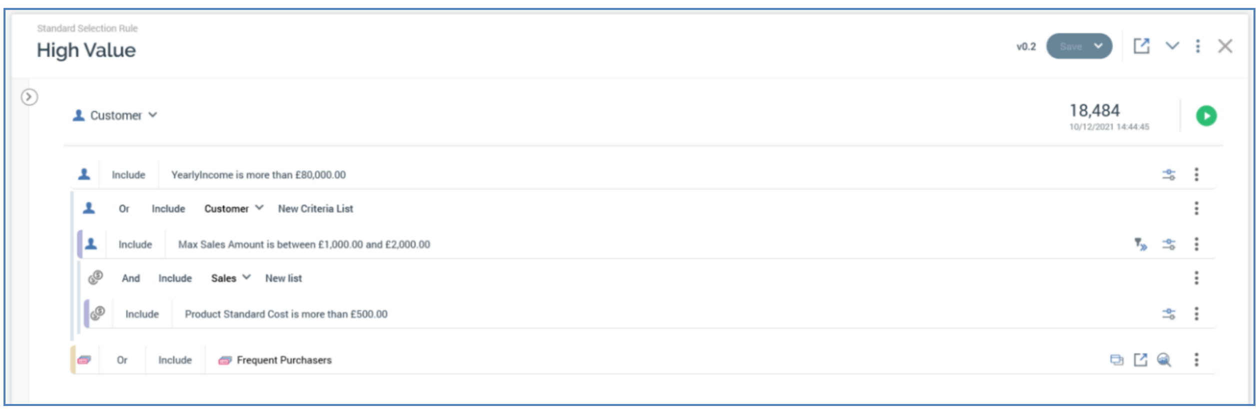
Note that, for panels to be displayed in side-by-side view, RPI must be running within an effective horizontal resolution of at least 1,500px.

The display of panels using side-by-side view is controlled using a setting in the Preferences tab within the User Preferences & Profile interface. More information is available in the Framework documentation.

Rules and panels can also be displayed using a standard font size:



...or compact font size:

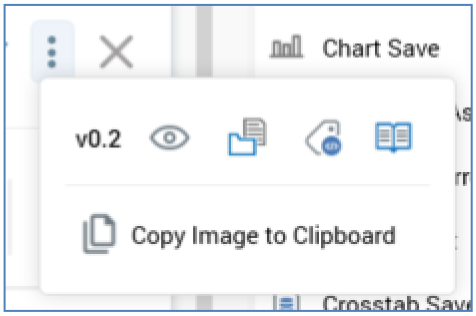


Note that, if side-by-side view is enabled, compact font is used automatically.

The usage standard or compact font is also controlled from the Preferences interface.

When compact font is enabled, the following apply:

- The Follow File, File Options, File Metadata and Linked Page Options are not displayed at the rule's header. Rather, they are shown at the Actions menu when the panel is expanded:



- Some labels are not shown (e.g. 'Resolution' and 'Count' at standard selection rules).
- Buttons are smaller
- Criteria are displayed using a smaller font.
- The Add New Criteria List button is not displayed below standard selection rule criteria.

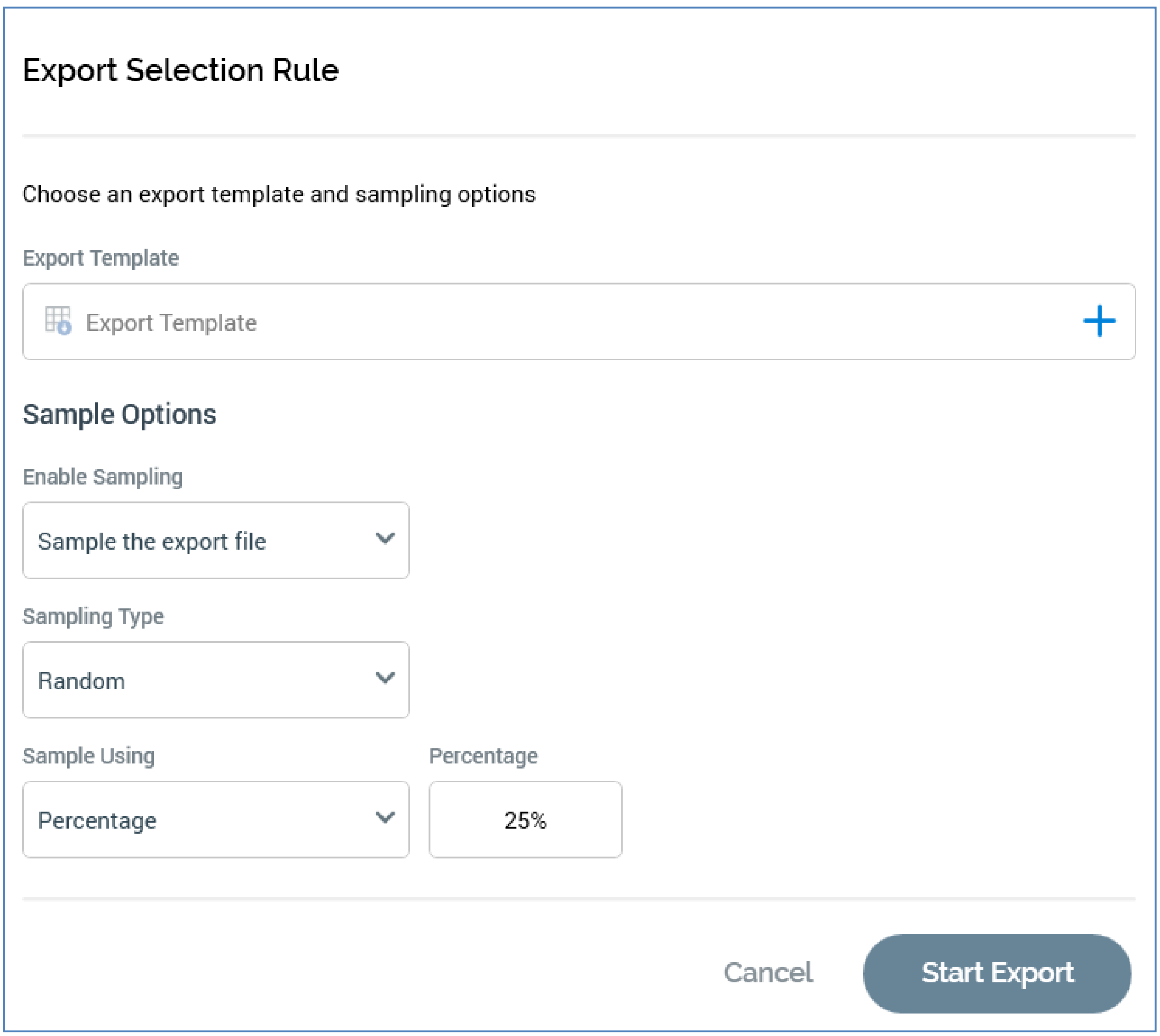
8.10 Selection Rule Export

The ability to export data is common to standard, basic and NoSQL selection rules.

A selection rule defines the criteria that must be met by records within a database in order for them to be counted by the rule. This is a very useful feature, but an obvious question arises – how do I get my hands on that data?

The Rule Designer provides a tool for generating export files containing records that match a selection rule. To access this feature, click the Export this rule option from a selection rule's toolbox.

The Export Selection Rule dialog is displayed:



The dialog contains the following:

- Text: ‘Choose an export template and sampling options’
- Export template: defines the structure of the file generated on running an export. No template is provided initially. You can populate the property by dragging in an export template from the toolbox, or for browsing for a template from the RPI file system. Having selected an export template, you can open its latest version. You can also clear the selected export template.

  Note that, if exporting a selection rule, the selected export template’s resolution level must match the database of the selection rule’s resolution level. If it does not, a warning message is displayed prior to creation of the export job.

  Note also that an export template must be valid to be used to perform an export, with a validation warning message being displayed if this is not the case.

  When exporting a selection rule, beware of using offer history attributes in the export template, as this may result in a Cartesian explosion.

Sample Options section, containing:

- Enable Sampling: this dropdown property exposes the following options:
  - Sample the export file: the default option. When selected, the Sampling Type, Sample Using and Percentage properties are displayed, and the number of records exported will be accordant with the sampling settings supplied.
  - Don't sample the export file: if this option is selected, all records targeted by the rule will be exported.
- Sampling Type: this dropdown field exposes the values ‘Random’ (the default), ‘Top’ (which selects the first records found, therefore having the potential to execute more quickly), ‘Ascending using attribute’ and ‘Descending using attribute’.

  The latter two selections enable the Attribute field; when selected, records within the export file are ordered in ascending or descending order, based on the values of the specified Attribute.
- Attribute: displayed when Sampling type is set to one of Ascending or Descending using attribute.
- Sample Using: two values are exposed at this dropdown property – ‘Percentage’ (the default) and ‘Volume’.
- Percentage: this field is displayed when Sample Using is set to ‘Percentage’. It is set to 25% by default and is mandatory if enabled. The value provided must be a valid percentage.
- Volume: this mandatory field is displayed when Sample Using is set to ‘Volume’. It is set by default to 1,000. The value provided must be an integer between 1 and 9,999,999.

On clicking Start Export, the Save Rule Export As… Windows file system dialog is shown. By default, the file's name is set to '[rule name] Export.txt'. Having specified a folder in which to save the export file, you can click Save to create an Export job which is displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

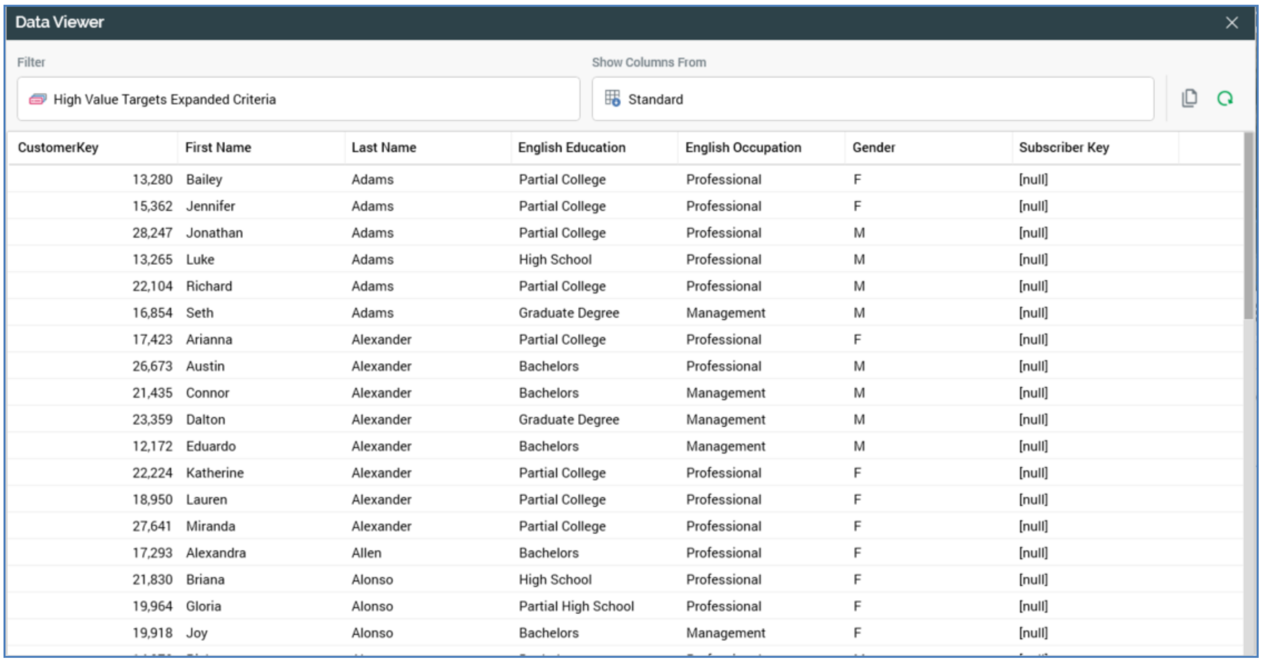
If you click Cancel, the dialog is removed from display and the export is abandoned.

If you attempt to run an export when a restricted resolution level has been selected, a Permission Denied dialog is displayed, and an error is thrown.

8.11 Data Viewer

The ability to view data is common to standard, basic and NoSQL selection rules.

The Data Viewer is used to view records targeted by a selection rule.



You must be associated with the Selection Rule – Data Viewer permission to use the Data Viewer.

A non-modal dialog, the Data Viewer contains the following:

- Toolbar: exposing the following options:
  - Filter: to view records in the Data Viewer, a Filter selection rule must be provided. The property is set automatically to the selection rule in the context of which the Data Viewer was invoked. You can populate the property using drag and drop, or by browsing for a rule of the appropriate type from the RPI file system. Once populated, you can open the latest version of the rule in the Rule Designer. You can also clear the property.
  - Template: you must choose an export template to view records in the Data Viewer. The chosen export template defines the columns that will be displayed. The property is set by default to the export template used most recently in the Data Viewer. You can populate the property using drag and drop, or by browsing for an export template from the RPI file system. You can also initiate the creation of a new export template. Once populated, you can open the latest version of the export template in the Export Template Designer. You can also clear the property. Note that the chosen export template must contain at least one attribute.

    If the selected export template contains the same attribute more than once, it is only shown a single time in the Data Viewer.

- Copy data to clipboard: this button is enabled when data is shown in the Data Viewer. Clicking it copies data to the clipboard for later pasting into e.g. Excel.
- Refresh: this button is enabled when Template and Filter are both populated. Clicking it refreshes the displayed results.
- Results: when a Template and/or Filter has not been provided, a message is displayed:

  Results are refreshed automatically on population of both properties.

  If preferences option ‘Refresh Data Viewer results automatically on invocation’ is checked, on Data Viewer invocation, the interface is populated with results automatically. If unchecked, the following message is shown at the Data Viewer:

  The interface must be refreshed manually for data to be displayed.

  Data Viewer results are read-only, and the columns shown, and records' order, are defined by the selected Template. Note that other export template settings are not used in this context.

  A refresh of Data Viewer results causes the creation and execution of a Retrieve data viewer results job. The My Jobs Dialog is not shown (please see that interface's documentation for more information).

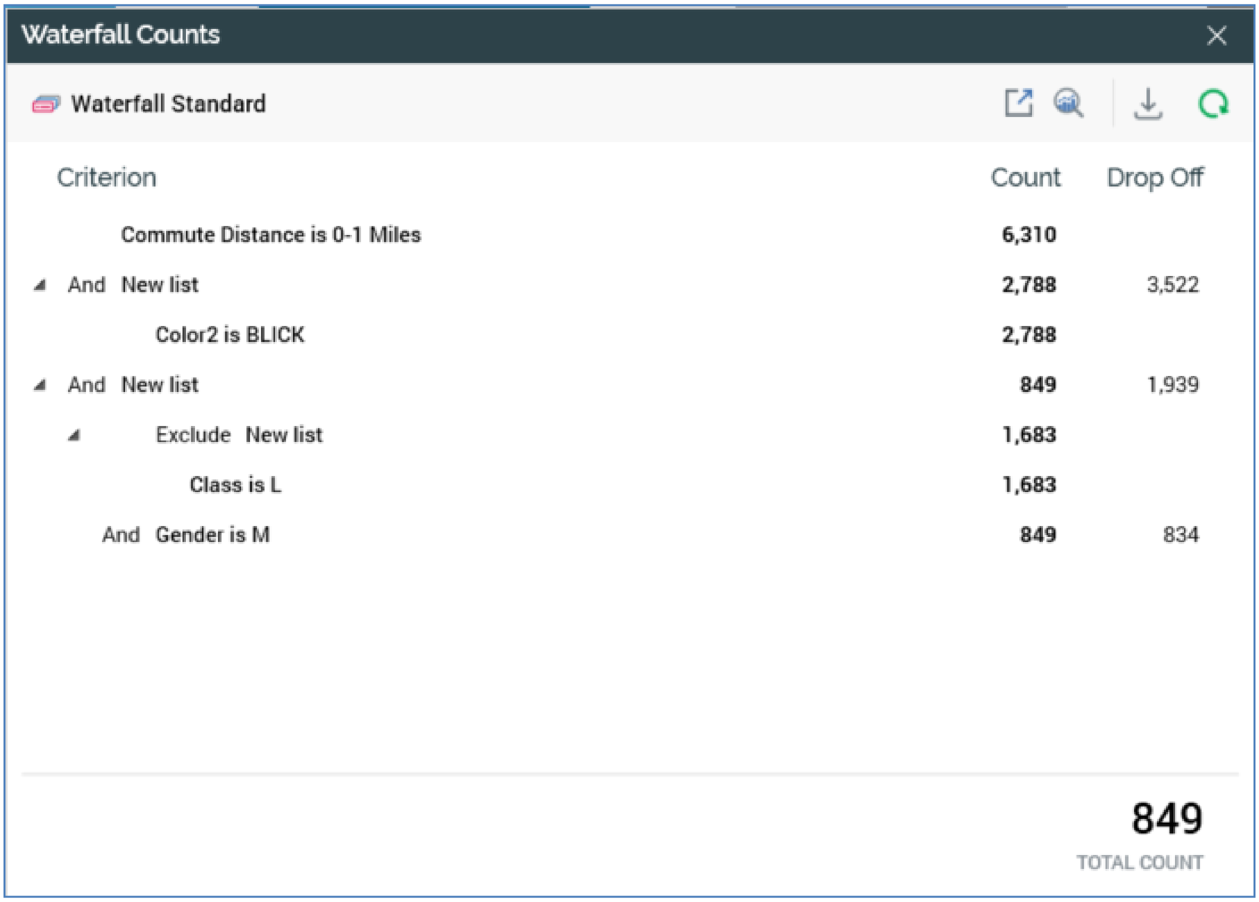
  The number of rows displayed in the Data Viewer is controlled by system configuration setting DataVisualizationNoRows.

When the Data Viewer is invoked from a standard or basic selection rule in which one or more placeholder attributes are used, the value provided at the Test Attribute Placeholders dialog is utilized at the Data Viewer's population. Note that placeholder values are unable to be used when the Data Viewer is opened from a selection rule displayed within a designer toolbox or the Home Page.

8.12 Waterfall Counts Window

The Waterfall Counts Window displays a waterfall count view of a standard or basic selection rule's criteria. Access to the Window is controlled by the Selection Rule – Basic/Standard - Count functional permissions.

The Window contains the following:



- Rule name (read-only)
- Toolbar, exposing:
  - Pop Out
  - View Insights
  - Save results as an Excel document
  - Refresh
- Treeview:
  - Criterion/Criteria lists (in which Criteria indented as required)

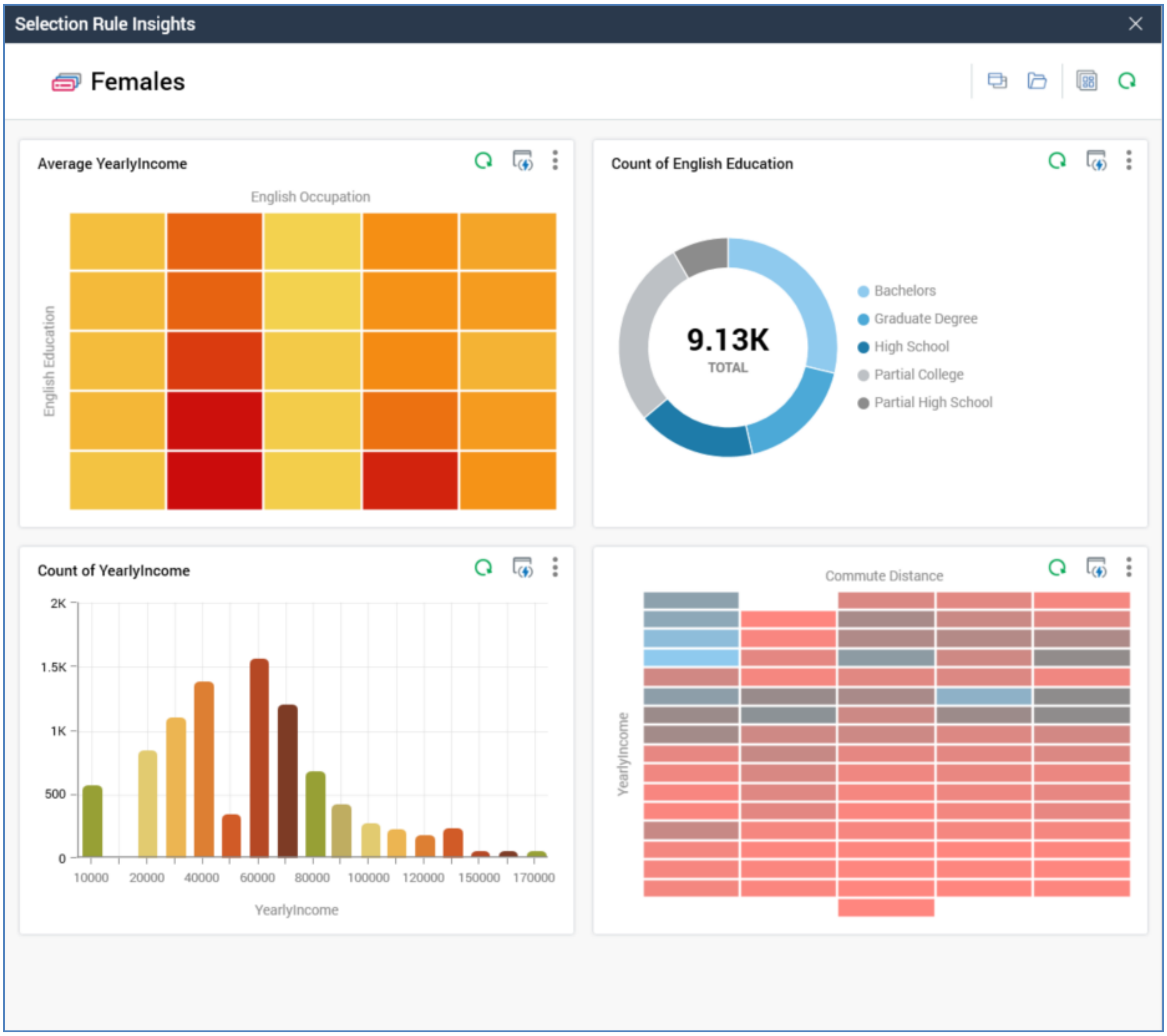
- Count
- Drop Off

- Footer:
  - Total Count

The maximum number of Waterfall Count Windows that can be displayed at the same time is 10.

8.13 Selection Rule Insights

The Insights Window is used to view insights related to a Standard or Basic selection rule.



It displays a configurable dashboard containing chart and/or count results widgets, against which the selection rule is applied as a filter. The Insights Window is shown at invocation of View Insights (in contexts listed below).

When you view selection rule insights, the Insights dashboard defined at the selection rule's resolution level is shown. If a specific Insights dashboard is defined at the resolution level, it is displayed. If a specific Insights dashboard is not defined, the Default Insights dashboard is shown. A message is shown when no Insights dashboard has been configured.

The Insights Window can be invoked from the following contexts:

- Selection rule toolbox
- Selection rule property (e.g. channel Filter) context menu
- Selection rule context menu at File System Dialog
- Selection rule displayed in File Information Dialog
- Selection rule at File Type Widget
- Selection rule in Send Emails Training Aid

The Insights Window is a non-modal Window, which contains the following:

- File icon
- File name
- Toolbar, exposing:
    - Open Latest Version
    - Open linked Page: displayed if a Wiki or external web page has been linked to the file.
    - Choose Another File to View Insights: clicking this button displays the Choose Selection Rule File System Dialog, facilitating the selection of another file in respect of which to view insights.
    - Copy Results to Clipboard as Image: clicking this button copies an image of the current state of the Insights Window to the clipboard and displays an advisory message to this effect. Everything displayed in the Window, other than the toolbar, is copied.
    - Refresh
- Dashboard: widgets configured at the Insights dashboard are displayed in accordance with their individual configuration. The current selection rule is applied as a filter to the results displayed in any Chart widgets, and also to the counts of rules displayed within any Count Results widgets.

Note that the maximum number of Insights Windows that can be displayed concurrently is five. Note also that any changes to an Insights dashboard saved when the Insights Window is open and displaying the same is not reflected at the Window until it is re-opened.

8.14 Placeholder Attributes

Placeholder attributes can be used for two purposes in selection rules, which are covered in the points below. For more information on the creation of placeholder attributes, please see the Attribute Lists section in the Configuration Workbench documentation.

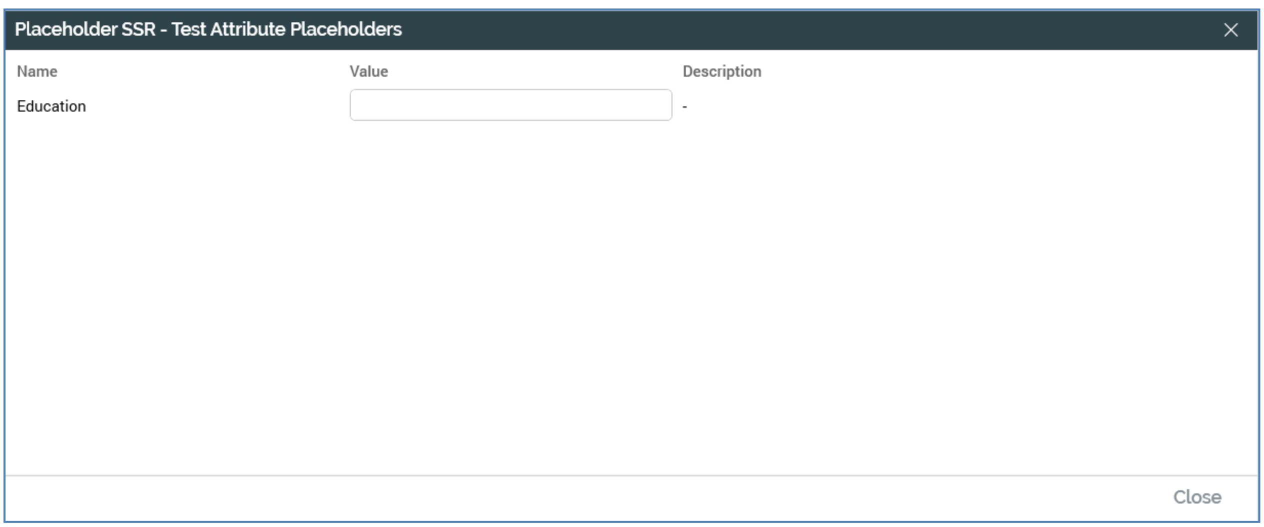
The primary use case is to use a placeholder attribute as the comparison attribute when creating a compare to attribute criterion. You can then specify a value for the placeholder attribute using the Attribute Placeholders Dialog (full details of which can be found in the Framework documentation). On executing the rule, the count of matching records is determined by comparing the 'left hand' attribute at the criterion to the value provided in the dialog.

As an example, consider this criterion:

'English Education' is a database column attribute, used to create a compare to attribute criterion.

'Education' is a placeholder attribute.

On clicking the Manage test placeholders button in a selection rule's toolbox, the [Selection Rule Name] - Test Attribute Placeholders dialog is displayed.



You can provide a value for Education in the Value column. In our example, the value 'Bachelors' is specified.

On getting the selection rule's count, records with an English Education value of ‘Bachelors’ are targeted by the selection rule.

The secondary use case is to create a criterion within a selection rule based on a placeholder attribute, and then use the value provided for the placeholder attribute to activate or deactivate an 'OR' statement within the rule.

The types of criteria that can be created when dragging a placeholder attribute from the toolbox into a selection rule to create criterion are dependent on the attribute's data type:

- String: Compare to Constant, String Search, Compare to Attribute, Compare to Range
- Integer: Compare to Constant, Compare to Attribute, Compare to Range
- Decimal: Compare to Constant, Compare to Attribute, Compare to Range
- DateTime: Compare to Constant, Compare to Attribute, Compare to Relative Date, Compare to Relative Date Range, Compare to Range

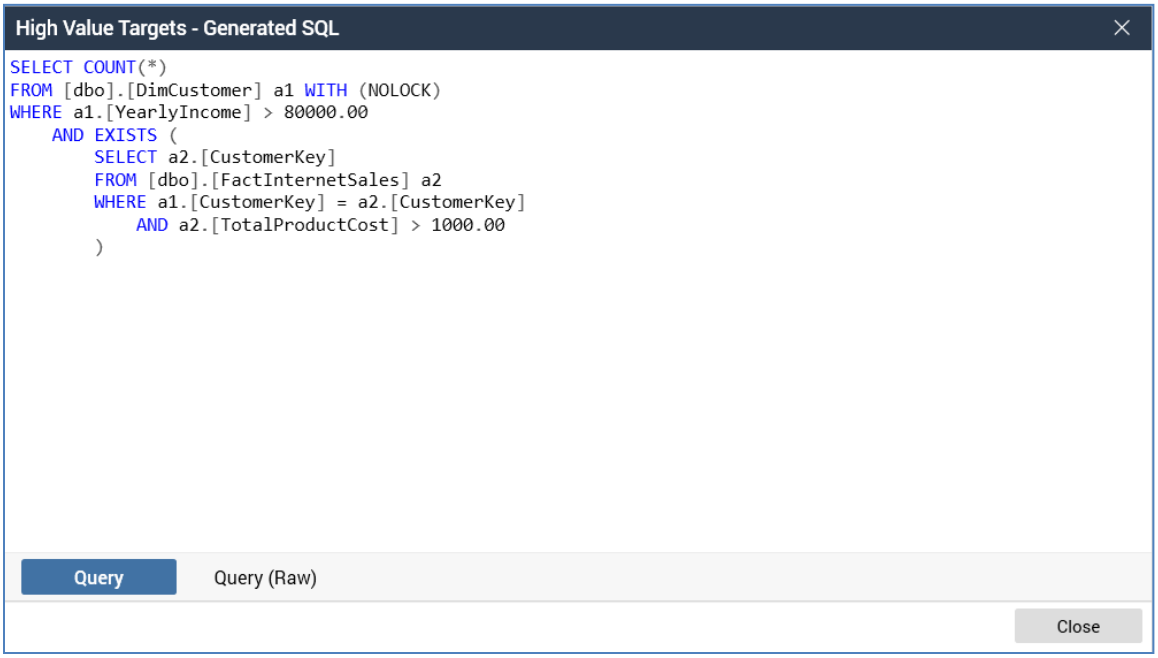
Note that all required placeholder attributes must be provided with values before a selection rule's count can be refreshed

In both cases, if a selection rule contains placeholder attributes, the Attribute Placeholders Dialog can be used at the Audience, Cell List and/or Interaction Designers to provide placeholder values for use during audience or interaction workflow execution.

Note that you cannot configure, or manage values for, placeholder attributes.

8.15 Generated SQL Dialog

The '[Rule name] - Generated SQL' modeless dialog allows you to view the SQL that will be executed on running a rule.



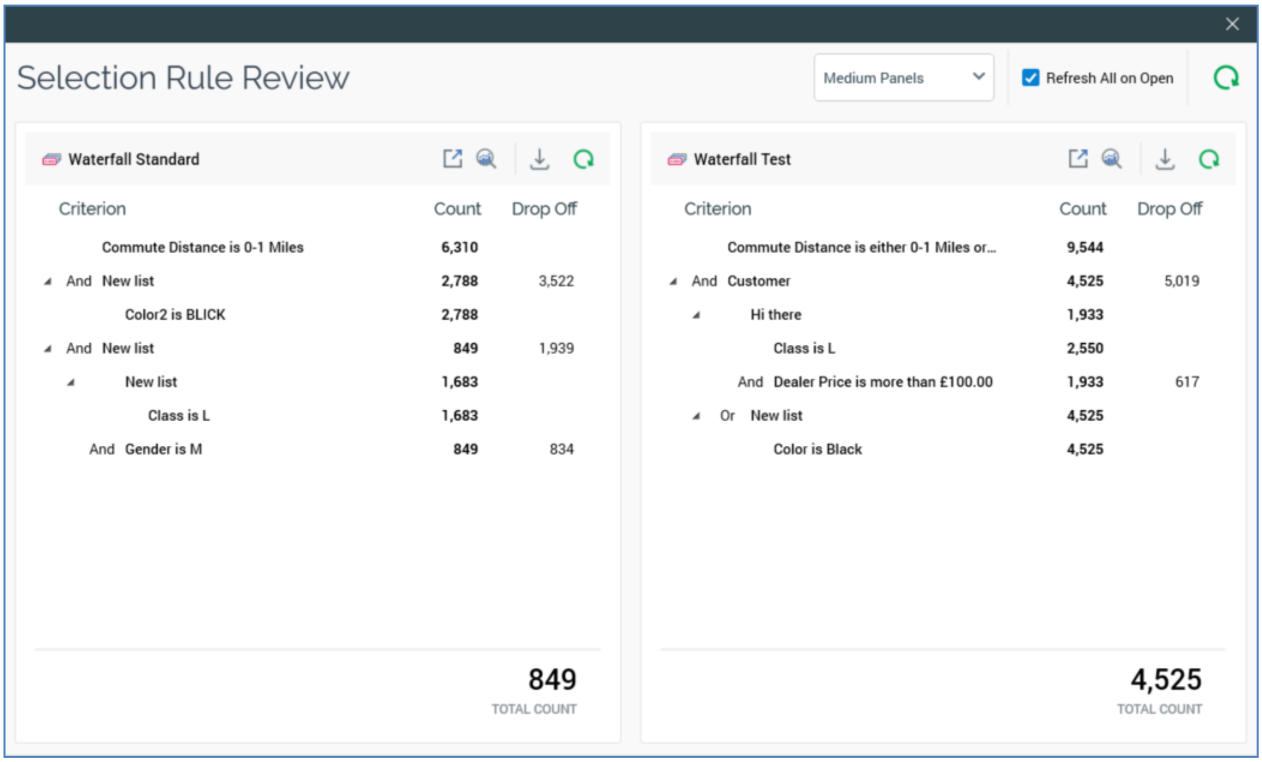
The feature is protected by the Selection Rule – Standard – View Generated SQL functional permission.

The dialog contains the following:

- Query tab: shown by default, this tab displays a formatted, read-only representation of the rule's SQL.
- Query (Raw) tab: this tab shows the same information in an unformatted style.
- OK: clicking this button closes the dialog.

8.16 Selection Rule Review Window

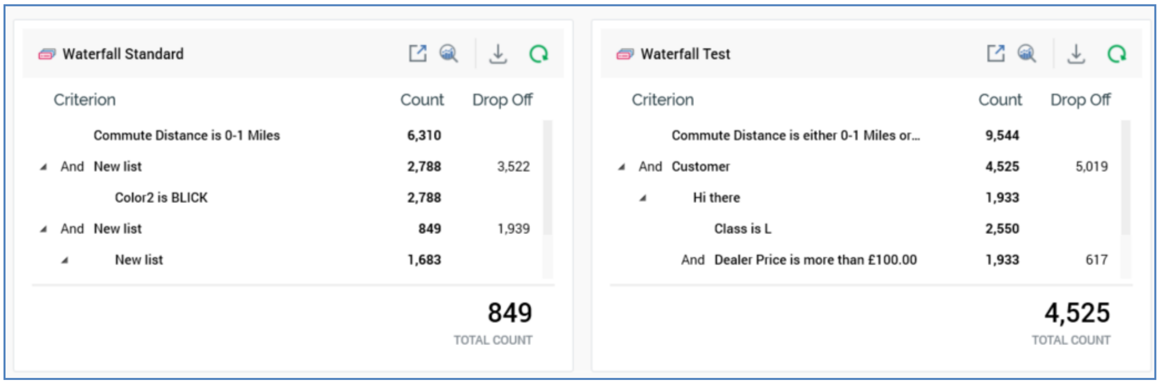
The Selection Rule Review Window is a non-modal Window, which is displayed on invocation of Review at the Rule Designer toolbar. It is used to compare selection rules' waterfall counts side-by-side.



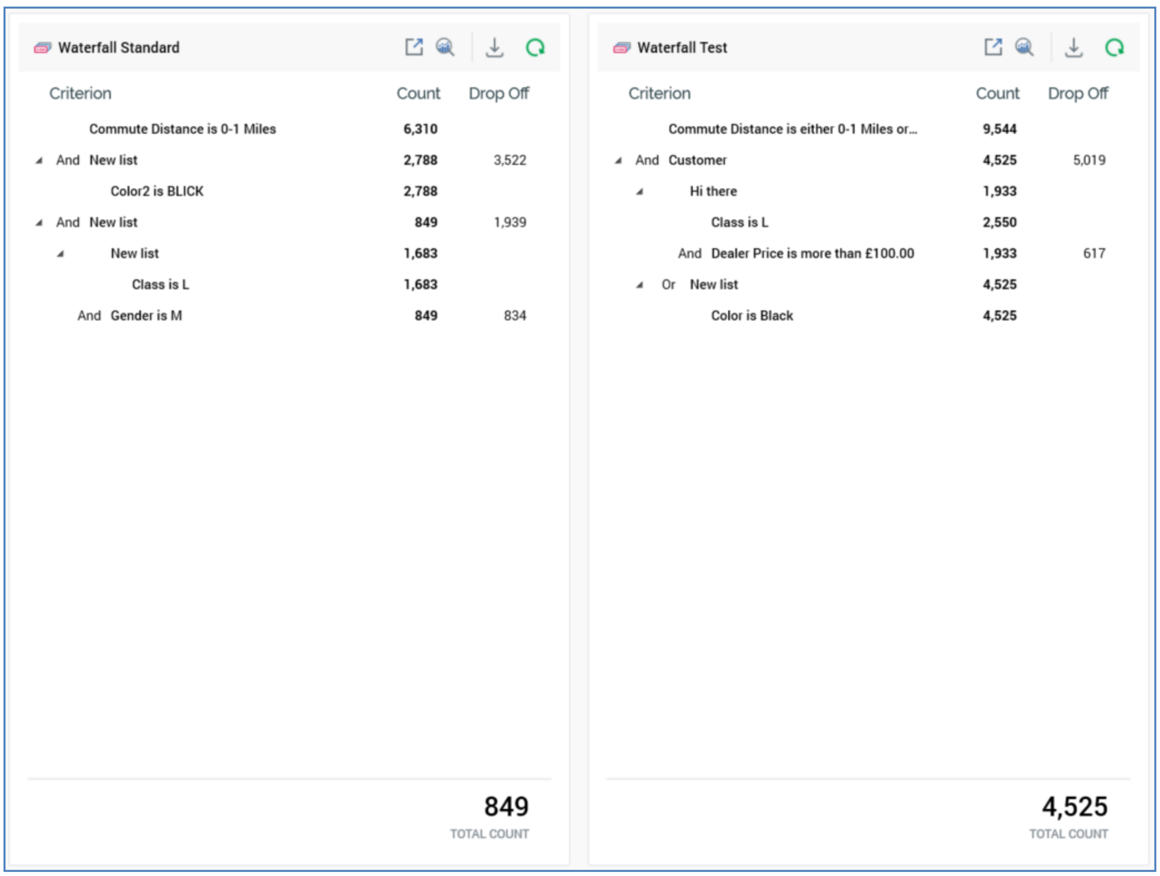
The Window contains the following:

- Toolbar, exposing the following:
  - [Panel size]: a dropdown, exposing the following values:
    - Short Panels
    - Medium Panels (the default)
    - Tall Panels

The property allows you to specify how tall panels shown in the Window should be...e.g. Short Panels:



...vs. Tall panels:



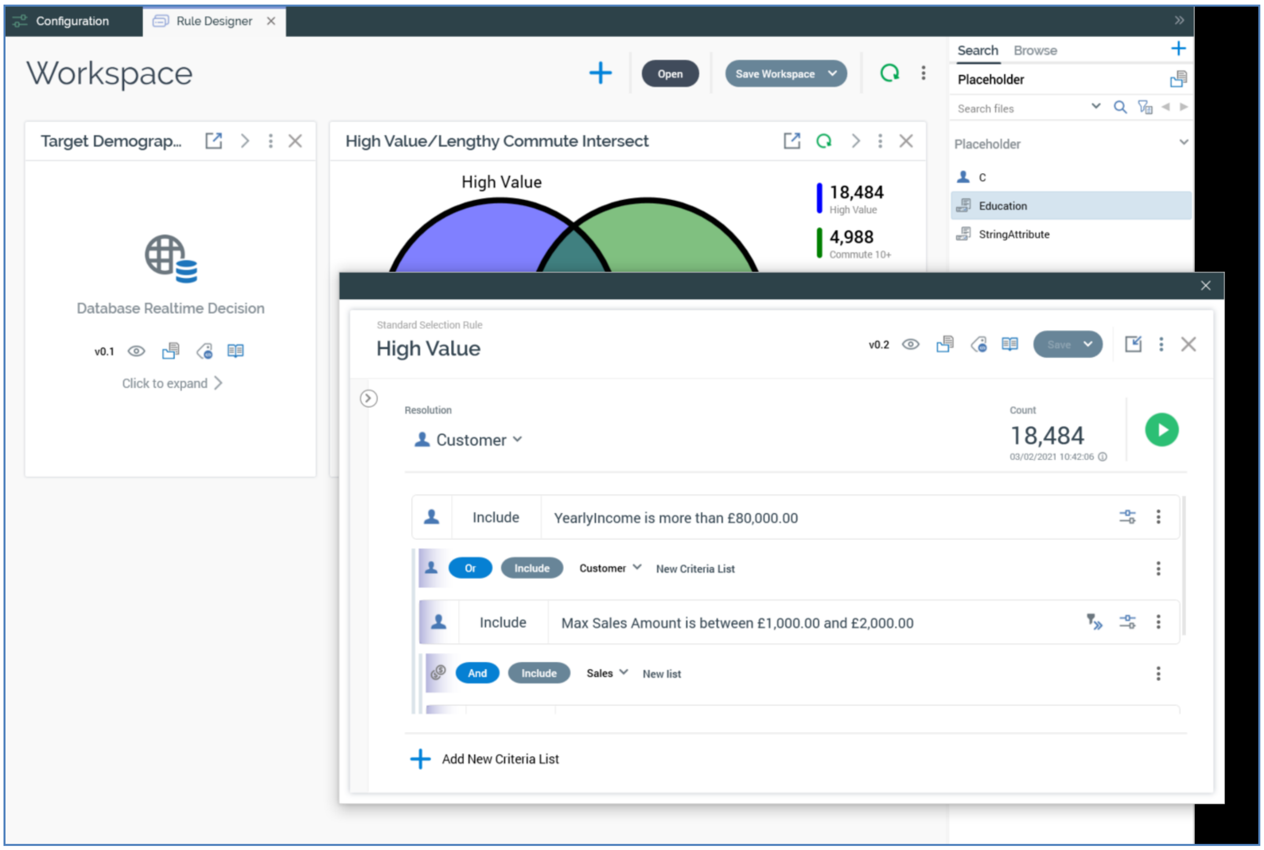
- Refresh All On Open: this checkbox is checked by default. When checked, all rules displayed in the Window are refreshed automatically on initial display. When unchecked, no counts are shown, and the following is displayed at the bottom of each rule:

- Refresh All: clicking this button refreshes counts at all rules displayed in the workspace.

- Rules: the standard and basic selection rules shown within the Rule Designer at the Window's invocation are displayed, with the panel size used accordant with the current selection. The following are displayed at each rule:
    - Name
    - Toolbar:
        - Pop Out
        - View Insights
        - Save results as an Excel document
        - Refresh
    - Waterfall Counts
    - Total Count

8.17 Pop Out/Snap Back

The Pop out into its own Window button is available at all rule and panel types when in expanded and collapsed modes. Clicking the button removes a rule or panel from display in the Rule Designer and displays it in an independent, modeless Window.



You can open multiple rules concurrently in separate Windows. The maximum number of Windows that can be shown is 10.

When popped out, a rule or panel is presented in expanded mode. The Window height reflects the height in which an expanded rule or panel was displayed in the Rule Designer. When popped out, and the Window's width is resized smaller, the rule or panel will assume a collapsed state at a certain width. Rule or panel functionality is the same as when displayed in the Rule Designer, other than the following:

- You cannot convert a basic to a standard selection rule when it is popped out.
- A message is shown advising you to snap back the current popped out rule or panel to use the following:
  - Export rule
  - Generate new clustered audience at standard selection rule.

A Snap back into the Main Application Window button is provided at a popped out rule or panel's toolbar. Clicking the button returns the rule or panel to the Rule Designer workspace, where it is displayed in expanded mode, after all other rules shown therein.

Note that popping out a panel from a saved workspace changes the workspace's persistence state to edited.

9 Standard Selection Rules

Standard Selection Rules are RPI's most feature-rich tool for targeting records in a SQL data warehouse or auxiliary database.

For example, you might wish to target female customers, aged between 40 and 45, who all share a common demographic code. By setting up a standard selection rule that contains criteria defining gender, date of birth and demographic code, and by setting its resolution level to customer, you can determine the count of records (and therefore customers) that match your criteria. You can then use the standard selection rule in the construction of audiences , which are the basis for the execution of audiences within an interaction. Standard selection rules also have a wide variety of applications elsewhere in RPI, each of which is covered separately.

Standard selection rules are managed, alongside analysis panels, realtime decisions and decision scorecards, in the Rule Designer. Only standard selection rules are covered in this documentation. All other file types are documented separately The Rule Designer itself is also documented independently.

Standard selection rules are available when running against a SQL data warehouse, or when at least one SQL auxiliary database is configured at the current RPI client.

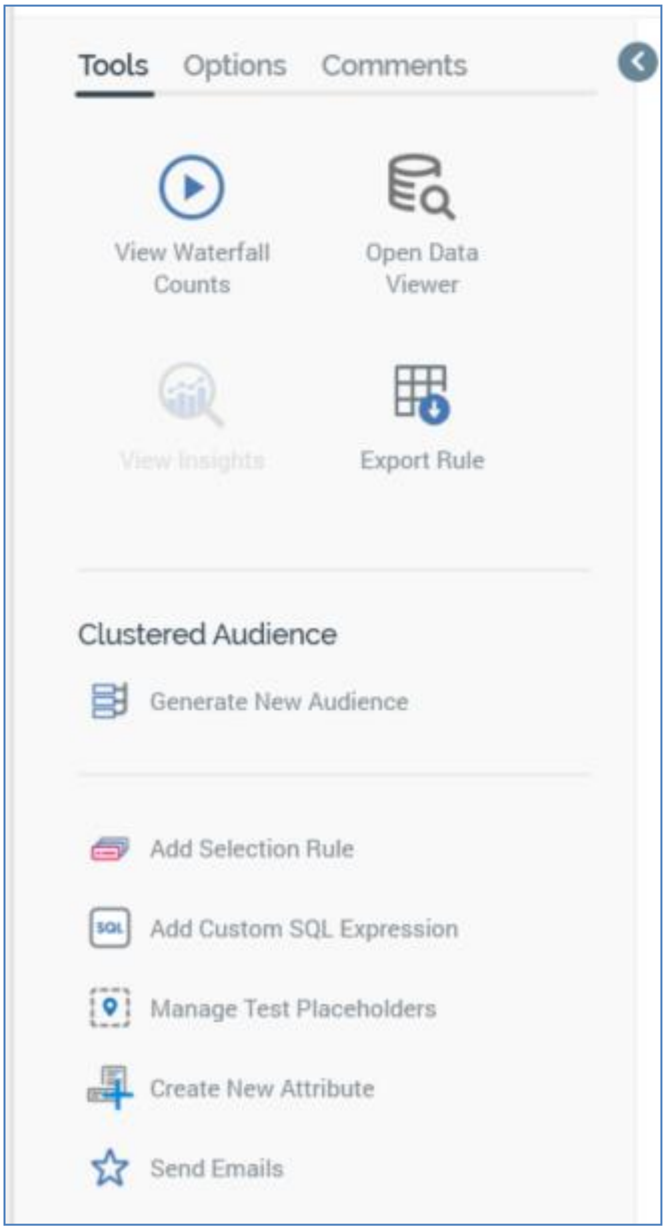
This document details features of standard selection rules that are specific to the file type. Details of features shared between standard selection rules and other files supported in the Rule Designer can be found in that interface's documentation.

9.1 Expanded Mode

The following features are available at a standard selection rule when it is displayed in expanded mode.

9.1.1 Toolbox

The standard selection rule's toolbox is shown to the left.

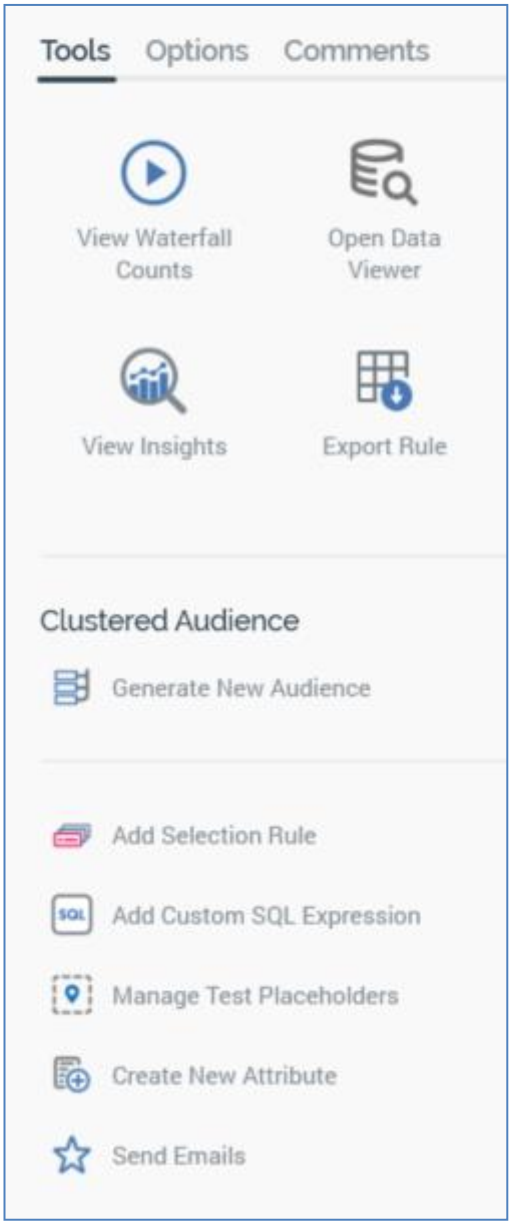


Its display is controlled using the Show/Hide Toolbox button. The toolbox is shown by default.

The toolbox contains three tabs – Tools, Options and Comments. Each is documented separately.

9.1.2 Toolbox – Tools Tab

The toolbox's Tools tab exposes the following:



- View Waterfall Counts: clicking this button displays the selection rule's waterfall counts in the Waterfall Counts Window, which is described in the Rule Designer documentation.
- Open Data Viewer: clicking this button displays the Data Viewer Window. The Data Viewer allows you to view a sample of the records targeted by the current standard selection rule. For more information, please see the Rule Designer documentation.

- View Insights: this button is available when a standard selection rule has been saved. Clicking it displays insights relating to the current standard selection rule in the Insights Window. For more information, please see the Rule Designer documentation.

- Export this Rule: allows you to export the records that match the standard selection rule's criteria to a file. For more information, please see the Rule Designer documentation.

  You can export data from an anonymous auxiliary database-resolving standard selection rule using an export template resolving to an anonymous auxiliary database. An error occurs at the resultant Export Rule job when you attempt to export an attribute with a column name not in the anonymous database's list of exportable keys, or when the number of records exported is fewer than the database's Minimum export count.

- Clustered Audience section: access to this section is controlled by the Selection Rule - Standard - Generate Clustered Audience functional permission. It is described in the Clustered Audiences section, elsewhere in this documentation.

- Add Selection Rule: allows you to choose an existing standard or basic selection rule from the RPI file system in order to link it to the current rule or create a criteria list in the current rule based upon it, using the Linked or Embed an existing Selection Rule dialog. This is described elsewhere in the standard selection rule documentation.

- Add Custom SQL Expression: this option allows you to add a custom, inline SQL expression to the standard selection rule, using the Add Custom SQL Expression dialog. This is described elsewhere in the standard selection rule documentation

- Manage Test Placeholders: clicking this button allows you to set placeholder attribute values to be used when the rule is run, using the [Selection Rule Name] - Test Attribute Placeholders dialog. Please see the Placeholder Attributes section in the Rule Designer documentation, and the Attribute Placeholders Dialog section in the Framework documentation, for more information.

- Create new Attribute: clicking this button initiates the creation of a new attribute using the Create New Attribute dialog. Please see the Attributes documentation for further information.

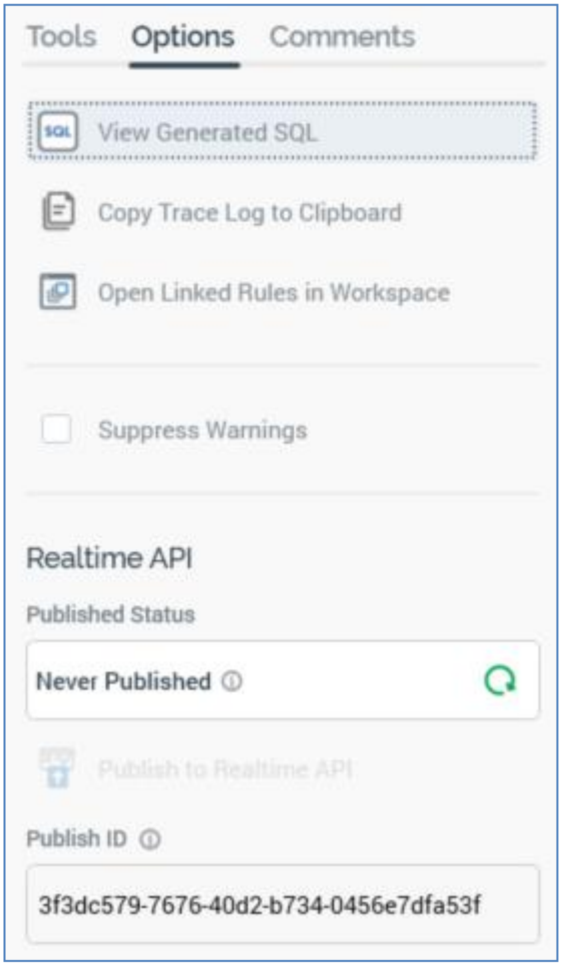
- Send Emails: this button is only displayed if training aids are configured to be shown within the RPI client (for details of how to turn training aids on or off, please see the Training Aids and Preferences documentation).

  If clicked when the current standard selection rule contains unsaved changes, a warning message is displayed.

  Clicking the button displays the Send Emails training aid, full details of which are provided in the Training Aids documentation.

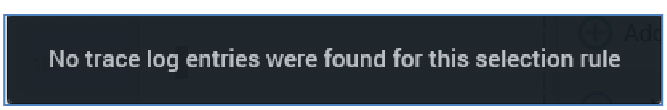
9.1.3 Toolbox – Options Tab

The toolbox's Options tab exposes the following:



- View Generated SQL: clicking this button allows you to view the SQL that will be executed on running a rule in the '[Rule name] - Generated SQL' dialog. For more information, please see the Rule Designer documentation.

- Copy Trace log to Clipboard: this option is always available, irrespective of as to whether the standard selection rule has been saved or contains outstanding changes. If the rule has not been run before, an informational message advises that:

  If the rule has been run, a message advises that the SQL trace log has been copied to the clipboard. The content contains the trace logs associated with the standard selection rule's count execution. A maximum of 100 log entries are copied to the clipboard.

The following are captured for each log entry:

- Execution type
- Context
- Query status
- Query result
- Started
- Ended
- Duration
- File
- Query string
- Error Message (if applicable)

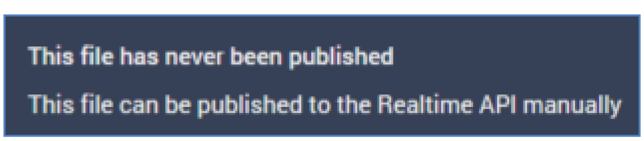
- Open Linked Rules in Workspace: upon invocation, all selection rules linked to the current rule are opened in the same Rule Designer instance. Linked rules are opened in collapsed mode. Any rules that are already open in the workspace are ignored. A message is displayed to advise of any rules that are already open in other Rule Designer instances. A message is also shown if no rules are found to open.

- Suppress Warnings: should you no longer wish to display 'exclusion confusion' and/or 'sibling selection' warning messages at a specific standard selection rule, you can check this option. Doing so removes any warning icons from display. Unchecking displays the warnings again. Note that this option is applied on a rule-by-rule basis.

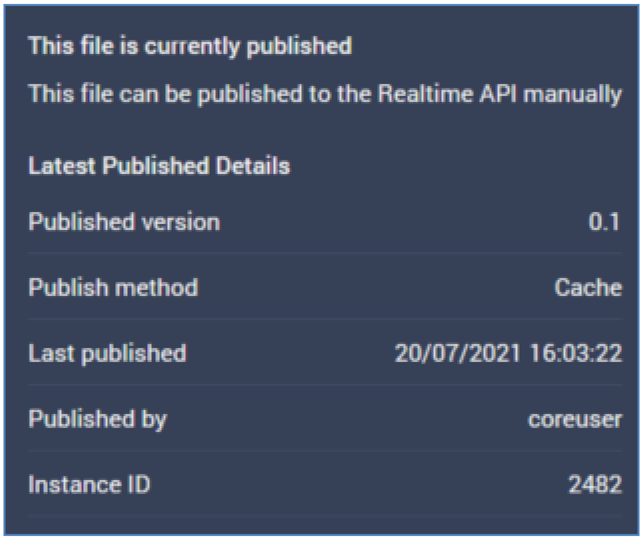
- Realtime API section: containing the following:

  - Published Status: read-only, and one of:

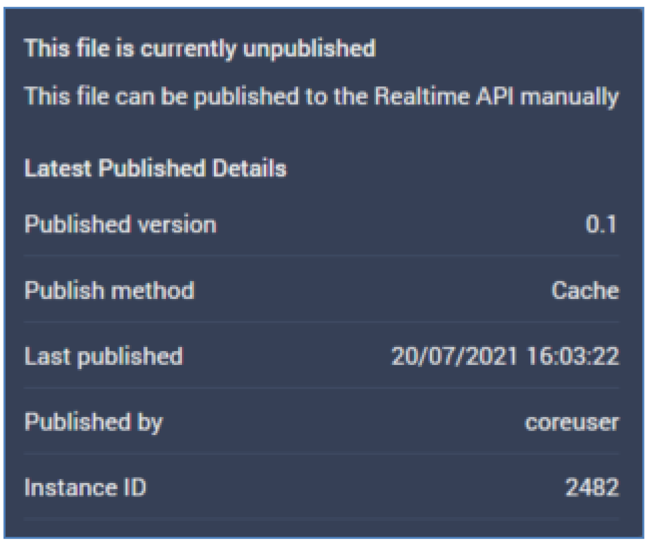
    - Never Published: the following information tooltip is provided:



    - Published: the following information tooltip is provided:



- Unpublished: the following information tooltip is provided:



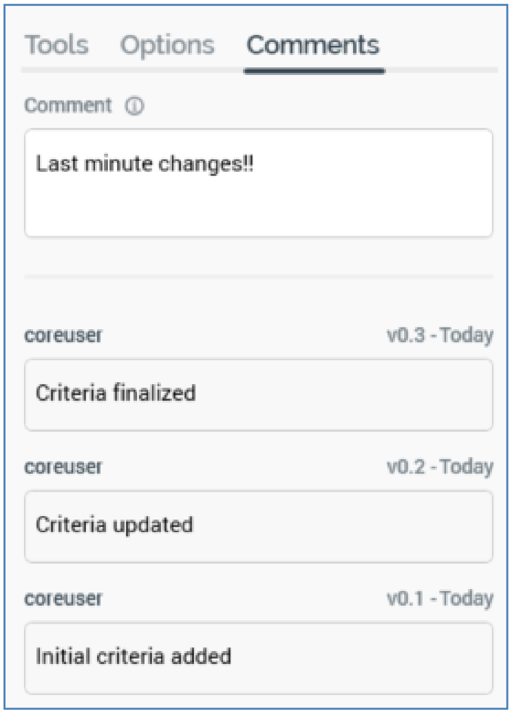
- Refresh: you must click this button to manually refresh the file's latest Published Status (published status changes are not displayed automatically).
- Publish to Realtime API: clicking this button allows you to publish the file for use with the RPI Realtime API. It is enabled when the file is valid, and contains no unsaved changes. Invocation creates a Publish job and displays it in the My Jobs dialog. Following a successful publish, the file's Published Status is set to Published, and the Unpublish from the Realtime API button is displayed.
- Unpublish from Realtime API: this button is displayed and enabled when a file is Published. Clicking it unpublishes the file, meaning it can no longer be used by the RPI Realtime API, and is protected by an 'Are You Sure?' dialog. Upon invocation, an Unpublish job is created and displayed in the My Jobs dialog. Following a successful unpublish, the file's Published Status is set to Unpublished, and the Unpublish from the Realtime API button is hidden.

- Publish ID: this read-only GUID is used to uniquely identify the rule during evaluation by the Realtime API. You can select it to copy it to the clipboard.

When a rule is evaluated using the Realtime API, if its criteria are satisfied, the returned ResultContent is true. If not satisfied, the returned ResultContent is false.

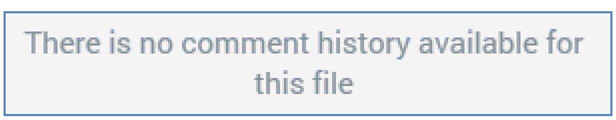
9.1.4 Toolbox – Comments Tab

The toolbox's Comments tab exposes the following:



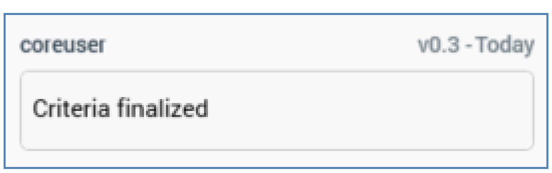
- Comment: you can add optionally add comments to the rule, which will be persisted with the new version of the file created when it is next saved. Comments are added using a multi-line text field, and can be a maximum of 1000 characters in length.

- Comment history: if no comments have been saved with the rule, a message is displayed:

  If comments have been saved, they are displayed in reverse chronological order.

  The following read-only information is displayed for each comment in the comment history:

  - Username
  - File version

- Date/time added
- Comment

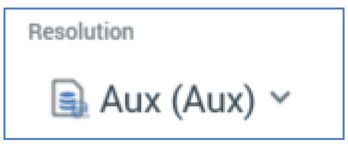
9.1.5 Resolution Level

A standard selection rule's resolution level defines the data warehouse or auxiliary database table from, and the key level at which, records are to be counted when the rule is run. It is set using a dropdown

The list contains those resolution levels that have been set up within the current RPI installation. A new standard selection rule's resolution level defaults to the value defined as default within the Resolution Levels configuration interface.

If any resolution levels have been configured against auxiliary databases, they are displayed with the name of the database in parentheses.

When you select an auxiliary database resolution level, it is differentiable through the augmentation of its icon with a 'database' image:



If you change a standard selection rule's resolution level to a value from another database, a warning is displayed at the rule. Hovering over the warning displays its details in a tooltip. You can click the warning button to copy its details to the clipboard via a context menu option.

If system configuration setting EnableOrgNodeConfigUserControl is set to true, and there exist any resolution levels to which you do not have access, a View restricted items button is shown at the bottom of the list of resolution levels.

Note that restricting access to specific resolution levels is carried out in the Resolution Levels configuration interface, in which you can link a resolution level to one or more organization nodes.

If your user account is linked to an organization node user group that matches a resolution level's linked organization node, you will have access to that resolution level. If a resolution level is associated with more than one organization node, a user need be associated with only one of the nodes to access the resolution level. If a resolution level is associated with a descendent node from an organization hierarchy, a user associated with an ancestor node may access the resolution level.

For more information, please see the Configuration Workbench documentation.

When you click the button, it is selected, and its text set to Hide restricted items. A list of restricted resolution levels is displayed at the bottom of the chooser.

You can select a restricted resolution level; however, on its display at the standard selection rule, it is accompanied by a warning indicator. A tooltip is shown when you hover over the warning icon

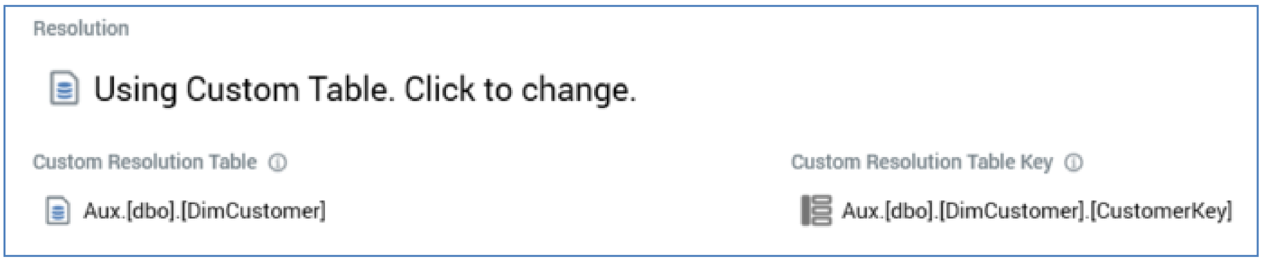
Restricted Items are hidden again on redisplay of the chooser. If no restricted resolution levels exist, the Restricted Items button is not shown.

If system configuration setting EnableOrgNodeConfigUserControl is set to false, Restricted Items are not shown, and access to all resolution levels is freely available, irrespective of any linked organization nodes.

9.1.6 Custom Table Resolution Levels

A Use Custom Table option is available at the bottom of the resolution level dropdown.

When selected, the standard selection rule's resolution level value is replaced with by the following:



Clicking the 'Using…' text displays the resolution level chooser again and reverts the property to the most-recently selected resolution level.

The following additional mandatory properties are displayed when Use Custom Table is selected:

- Custom Resolution Table: defaults to the default resolution level's database table. If no default resolution level has been defined, the property defaults to the first-created resolution level's database table. You can change the selected value using the Choose Database Item dialog, which lists all available database table names (you can choose a table from an auxiliary database if required). On selection of a table, the Column Name property is updated to reflect the selected table's primary key. If no primary key exists, the property defaults to the first column (alphabetically) in the table.

- Custom Resolution Table Key: this property defaults to the selected table's primary key as described above. You can click the property to change it using the Choose Database Item dialog, which lists the columns within the currently-selected database table.

Having elected to use a Custom Table, if you create a criterion within the rule based on an attribute with a resolution table matching the Custom Table, it is not created inside a criteria list. Otherwise a criterion is created inside a criteria list.

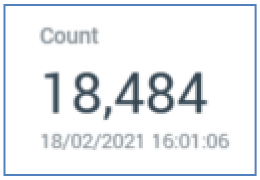
Note that, for a Custom Table standard selection rule to run correctly, joins must exist between the Custom Table and any standard resolution level attributes therein.

If a linked standard selection rule uses a Custom Table, if added within an automatically-created criteria list, the list is named as per the Custom Table. The linked rule's resolution level is set to the Custom Table name. On clicking the Change Resolution button at the linked rule's adorner menu, the table name is displayed to the right of the adorner and is grayed out/disabled.

You can use Custom Table standard selection rules in audiences and interaction workflows without restriction.

9.1.7 Count

A standard selection rule's count describes the number of records that matched the standard selection rule's criteria at the point in time when the count was last refreshed.



The date and time at which the count was generated is display immediately below the count itself.

When you open a selection rule, if a count had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. If the count is more than an hour old, an information icon is shown. A tooltip is shown on hovering over a previously-generated count:

9.1.8 Refresh Count

You can refresh a standard selection rule's count by clicking the button shown to the right of its count.

A Refreshing count… indicator is displayed while the system determines the number of records that match the rule's criteria.

The act of getting a standard selection rule count creates a Count job. The My Jobs Dialog is not shown automatically at such a job's creation. You can view count jobs that match the current filter settings within the Dialog. Details of the job and Dialog are provided in the My Jobs documentation.

If you attempt to get a standard selection rule's count when a restricted resolution level has been selected, a Permission Denied dialog is displayed, and an error is thrown.

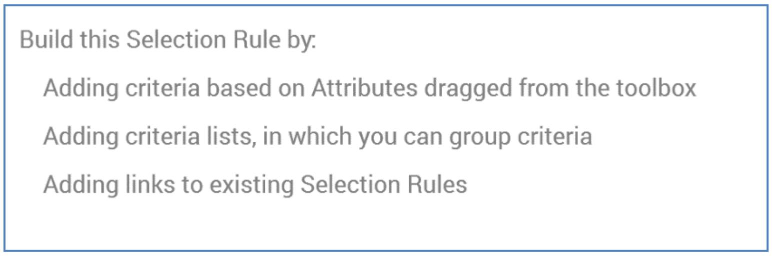
If an error occurs when refreshing a standard selection rule's count, exception details are written to the server and client logs.

When the current RPI installation is using a SQL Server data warehouse or auxiliary database, if the system is unable to connect when running a standard selection rule count (for example due to the database server not being found, the database login failing (due e.g. to the database being detached) or because of a deadlock), a series of attempts to reach the database are made (over a maximum of a 10-minute period). After this time the series of retries are abandoned. All retry details are logged to the server log.

Note that, if the SQL generated by a standard selection rule at count execution is not supported at the database against which the rule is being run, a 'Failed to refresh count' message will be displayed at the rule. Details as to why the count failed will be found in the Server Log.

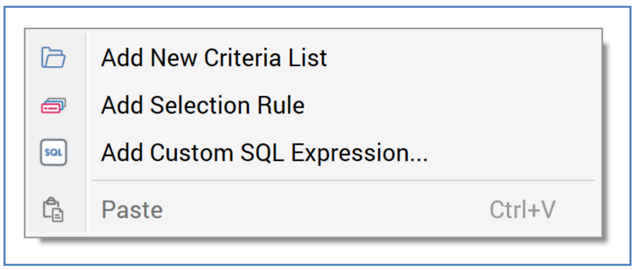
9.1.9 Canvas

The standard selection rule's canvas initially displays a message:



Criteria, criteria lists and linked selection rules are described elsewhere in this documentation.

The following options are available when you right click a standard selection rule's canvas:



- Add New Criteria List: adds a new, empty criteria list to the standard selection rule.
- Add Selection Rule: allows you to choose an existing standard or basic selection rule from the RPI file system in order to link it to the current rule or create a criteria list in the current rule based upon it, using the Linked or Embed an existing Selection Rule dialog. This is described elsewhere in the standard selection rule documentation.
- Add Custom SQL Expression: this option allows you to add a custom, inline SQL expression to the standard selection rule, using the Add Custom SQL Expression dialog. This is described elsewhere in the standard selection rule documentation.
- Paste: only available if the clipboard contains something that may legitimately be pasted into the rule (e.g. a criterion or criteria list).

9.1.10 Add New Criteria List

This button is displayed below the standard selection rule's canvas.

Clicking it adds a new, unconfigured criteria list to the standard selection rule. The criteria list is added to the root level of the currently-selected rule, after all existing criteria, criteria lists and linked selection rules.

Details on criteria lists are provided elsewhere in the standard selection rule documentation.

9.2 Criteria

Criteria are a key feature of a standard selection rule. Criteria allow you define how a standard selection rule can be used to target subsets of records within your data warehouse or an auxiliary database.

By default, if a standard selection rule contains no criteria, when it is run it counts all records in the table and at the key level defined by its resolution level. For example, assume a rule's resolution level is 'Customer Resolution', which defines that distinct Customer_Key values are to be counted in the Customer table. If an empty rule is run using Customer Resolution, all distinct Customer_Key values in Customer are counted.

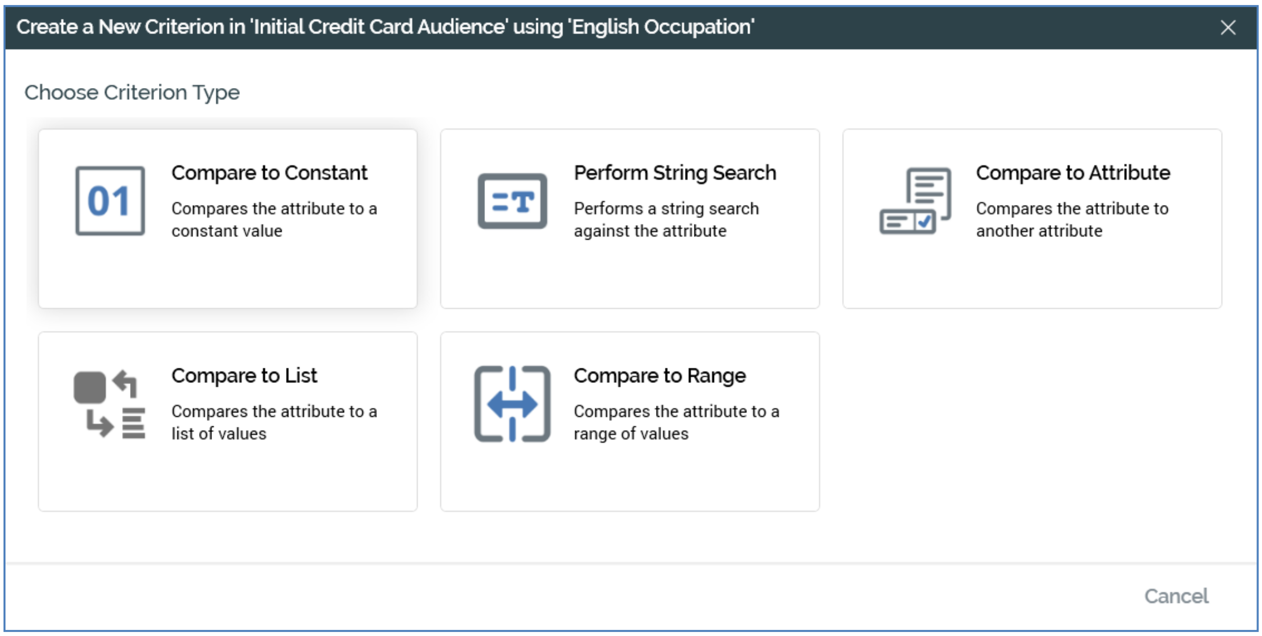
By introducing criteria into the standard selection rule you start to limit the records to be counted when the rule is run. For example, adding a 'Gender is female' criterion to the previous example causes only female customers to be counted.

Criteria are based on attributes – in the previous example, 'Gender' is the attribute, and 'Gender is female' a criterion based on that attribute.

9.2.1 Adding a New Criterion to a Standard Selection Rule

You can add a new criterion to a standard selection rule by dragging an attribute (other than a model project or parameter attribute) from the toolbox and dropping it onto the rule.

When you do so, for all supported attribute types other than Exists in Table, the Criterion Builder is displayed, allowing you to select the type of criterion and then define its other properties.



Having completed the Criterion Builder, the new criterion is displayed within the rule.

Its location within the rule is determined by where the attribute was dropped:

- If the attribute was dropped in the rule's canvas, the criterion is presented at root level within the rule, after all existing criteria, criteria lists and linked selection rules. By default, the relationship between a newly-added criterion and its preceding criterion, criteria list or linked rule is And.
- If the attribute was dropped directly onto a criteria list, the criterion is created within the list and is added to the list or rule after all other top-level child criteria and lists. If preceded by other criteria, criteria lists or linked rules within the list or linked rule, by default the new criterion's relationship to its siblings is And.
- If the attribute was dropped onto a criteria list when a positional indicator line was shown, the criterion is created at the position thus indicated. If preceded by other criteria, criteria lists or linked rules within the list or linked rule, by default the new criterion's relationship to its siblings is And.
- If the attribute was dropped onto the orange 'drop zone', displayed just above the rule's footer, the resultant criterion is created in a new, parent criteria list, which is placed at root level within the rule after all existing criteria, criteria lists and linked selection rules. Its relationship to any preceding siblings is And.
- If the attribute was dropped at root level within the standard selection rule, and the attribute's resolution table differs from the standard selection rule's resolution table, it is automatically created within a new criteria list. The new criteria list is named 'New Criteria List', and its resolution table is set to the attribute's resolution table.

By default, a new criterion's Include/Exclude property is set to Include.

A decimal criterion is shown within the standard selection rule in accordance with the number of decimal places entered in the Criterion Builder. Any trailing zeroes are removed. A maximum of 4 decimal places may be entered and can be displayed. This applies irrespective of how the criterion was created.

If you attempt to drop an attribute at an invalid position within the Workspace (e.g. not upon a standard selection rule), a criterion is not created.

If the current RPI client is configured with one or more auxiliary databases, all criteria within a standard selection rule must be based on attributes from the same database upon which the rule's resolution level is based. Cross-database criteria are not supported (however, cross-resolution criteria within the same database are supported if appropriate joins exist).

A warning message is displayed when attempting to create a criterion using a cross-database attribute, and the criterion is not created.

9.2.2 Adding an Existing Criterion to a Standard Selection Rule

You can drag and drop an existing criterion within a standard selection rule, or between standard selection rules. When dropped, an existing criterion is placed within the target rule in accordance with the same rules that govern the creation of a new criterion.

You can also paste an existing criterion that you have copied or cut from the same, or another, standard selection rule. Again, the same rules regarding the positioning of the rule are observed.

If the current RPI client is configured with one or more auxiliary databases, all criteria within a standard selection rule must be based on attributes from the same database upon which the rule's resolution level is based. Cross-database criteria are not supported (however, cross-resolution criteria within the same database are supported if appropriate joins exist).

A warning message is displayed when attempting to drag or paste an existing cross-database criterion into a standard selection rule.

9.2.3 Creating a New Criterion from an Exists in Table Attribute

When you drag an Exists in Table attribute from the toolbox and drop it onto a standard selection rule, no configuration information needs to be captured. The new criterion is displayed immediately within the standard selection rule, with the format:

'Is found in [Table]'

…where [Table] is the name of the table associated with the Exists in Table attribute.

You cannot create a cross-database exists in table criterion.

9.2.4 Criterion Properties

A criterion has the following properties:

- Resolution table icon: a criterion inherits its resolution table from that of the attribute upon which it is based. A criterion's resolution table is indicated using an icon displayed to its left (the icon can be defined in the Catalog configuration interface).

- And/Or: only displayed when the criterion is preceded by another criterion, criteria list or linked selection rule. And/Or allows you to define the nature of the relationship between the criterion and its preceding sibling.

  If no preceding siblings exist, And/Or is not shown (there is nothing to which the And or Or can apply). You can change the relationship between a criterion and its preceding sibling by clicking directly on And/Or to toggle its value.

  If And/Or is set to And, the records counted by the standard selection rule must satisfy the criteria defined by the preceding criterion, criteria list or linked selection rule, And the following criterion

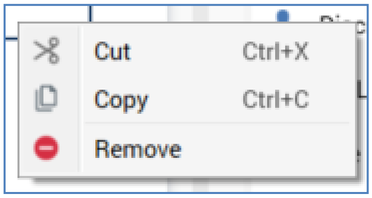
  If And/Or is set to Or, the records counted may satisfy the criteria defined either by the preceding criterion, criteria list or linked selection rule, Or the following criterion. Any criteria, criteria lists or linked selection rules that follow an Or are grouped together with the Or criterion. To make this easier to understand, groups are made clearly visible by the use of pastel colored backgrounds: all criteria, criteria lists and linked selection rules in the same group share the same colored background.

- Include/Exclude: you can define whether records that match the criterion are to be included or excluded from the rule's count. This is done by clicking directly upon Include/Exclude to toggle the displayed value.

- Description: this property is initially auto-generated at a criterion's being added to a rule, and is automatically updated if it subsequently changes.

Two buttons are displayed to the right of the criterion:

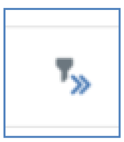
- Configure: clicking this button displays the Criterion Builder, allowing you to edit the criterion as required.
- Actions: clicking the button displays a context menu:



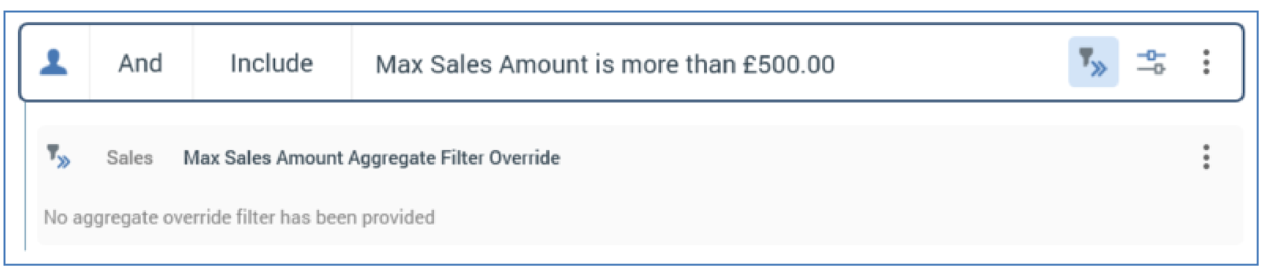
The options available are self-explanatory. Note that the same context menu is shown when you right-click a criteria list, with the addition of an extra Configure option.

9.2.5 Aggregate Filter Overrides

When an aggregation attribute is used to create a criterion within a standard selection rule, an extra button is displayed to the right of the criterion:

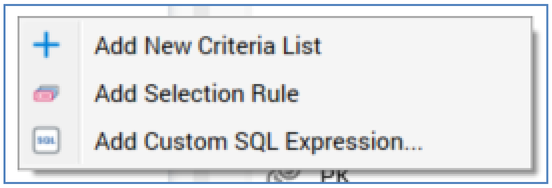


The button allows you to show or hide aggregate filter overrides for the criterion. When shown, a special criteria list is displayed.



You can build criteria and add criteria lists and embedded/linked selection rules within the aggregate filter override criteria list (including aggregate criteria with their own nested aggregate filter overrides). Standard AND/OR and INCLUDE/EXCLUDE logic apply.

The following context menu options are available at an aggregate filter override criteria list, both at the Actions button displayed to the right, and when right-clicking.



Note that you cannot remove an aggregate filter override criteria list from its parent aggregate criterion.

If a function attribute is configured with one or more aggregation attributes, one aggregate filter override per such attribute is displayed within a criterion based on the function attribute (e.g. if the function attribute was configured with two separate aggregation attributes, two aggregate filter overrides are shown within the function attribute-based criterion).

9.2.6 Criterion Keyboard Shortcuts

The following keyboard shortcuts are available at a criteria list:

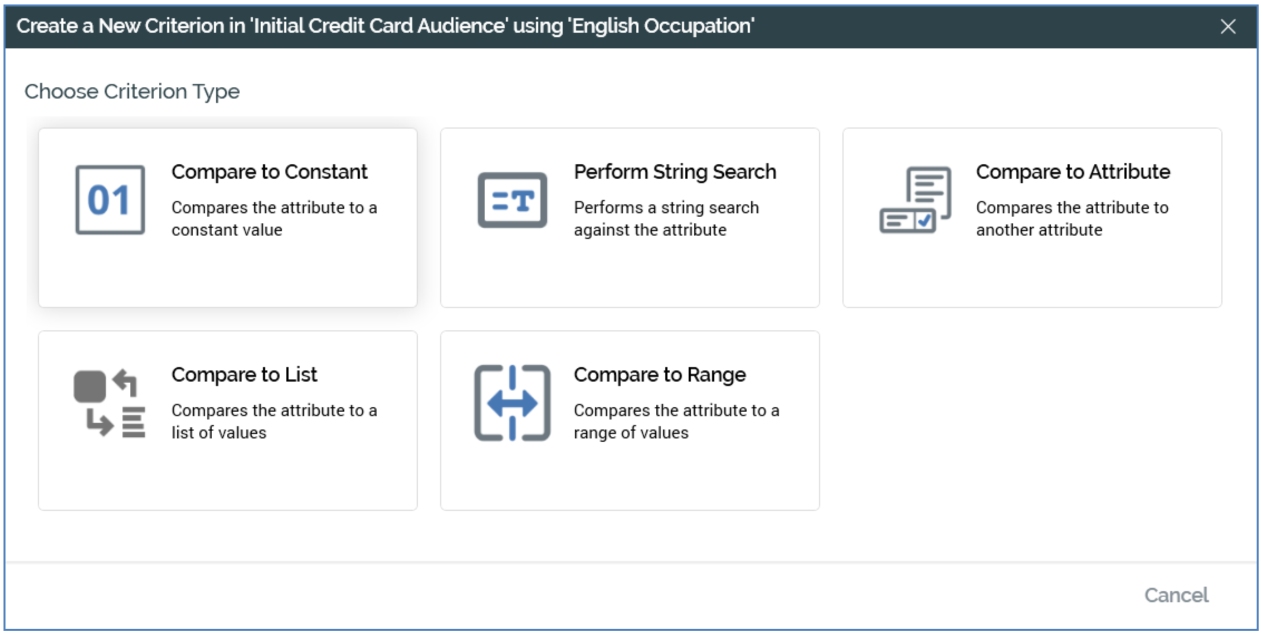
- F4: configure
- Ctrl-C: copy
- Ctrl-X: cut
- Delete: removes the criterion without displaying an ‘Are You Sure?’ dialog.

9.3 Criterion Builder

The Criterion Builder is used to create or configure criteria of any type other than Exists in table. It is a modal dialog, which is closed when you close the Rule Designer.

9.3.1 Specifying the Criterion Type

The first Criterion Builder interface allows you to choose the type of criterion to create.



You can only select the criterion type when creating a new criterion; if using the Criterion Builder to edit an existing criterion, this interface is not shown.

The following criterion types are available:

- Compare to Constant
- Perform String Search (available for string attributes only)
- Compare to Attribute
- Compare to Relative Date (available for date and date/time attributes only)
- Compare to Relative Date Range (available for date and date/time attributes only)
- Compare to List
- Compare to Range
- Exists in a List or Map

9.3.2 Common Criterion Builder Buttons

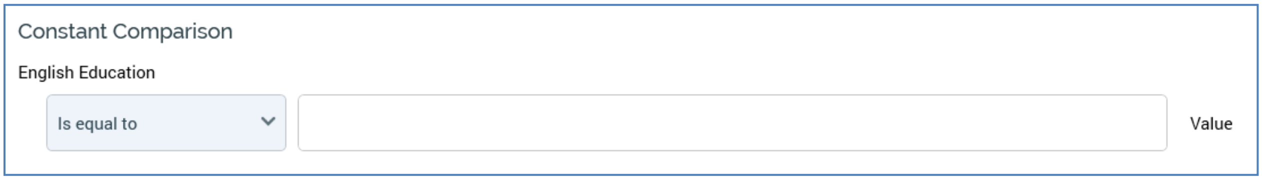
Each type of criterion requires a specialized interface within which you can configure its properties, and each is documented separately. However, there are a number of buttons that are common to all Criterion Builder interfaces:

- Cancel: aborts creation or edit of a criterion. Cancel is not protected by ‘Are you sure?’.
- Back: only available when creating a new criterion. Having selected the type of criterion you wish to create, you can invoke Go Back to return to the Criterion Type interface, where you may change the criterion’s type. Note that Go Back is not displayed when configuring an existing criterion.
- Finish: having specified the criterion’s properties, you can invoke Finish to complete its creation or configuration. If one or more mandatory properties has not been set, or there exist other validation errors, a warning message is shown.

  Note that a warning message is displayed on invocation of Finish when attempting to create a criterion based on a cross-database attribute.

9.3.3 Compare to Constant

The Compare to Constant criterion allows you to create a criterion that compares an attribute against a constant value that you provide.



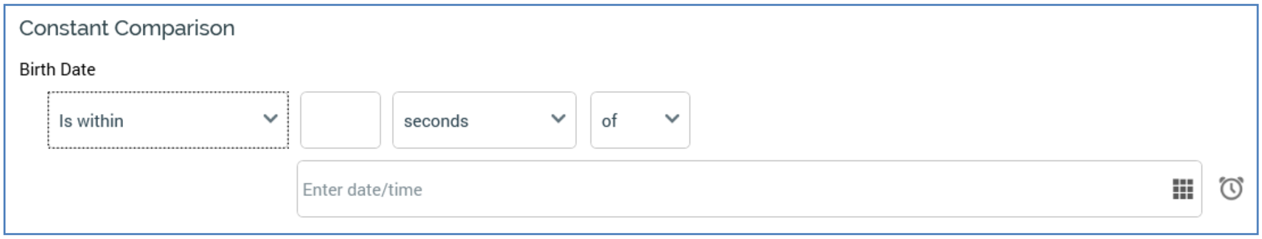
The following criterion properties must be defined:

- Operator: defined using a drop-down list that contains the following values:
  - is equal to
  - does not equal
  - is less than
  - is less than or equal to
  - is more than
  - is more than or equal to
- Value: you must provide a constant value against which to compare the attribute. The data type of the constant must be appropriate for the data type of the attribute upon which the criterion is based. Valid constants are:
  - String: all constants appropriate
  - Integer: only integer constants appropriate
  - Decimal: only numeric constants appropriate. Support is provided for 6 decimal points of precision.
  - Date/time: only date/time constants appropriate (a date picker control is provided if creating a criterion based on a date/time attribute).

  If you choose not to specify a constant, you are effectively supplying a blank value (this applies only to string attributes).

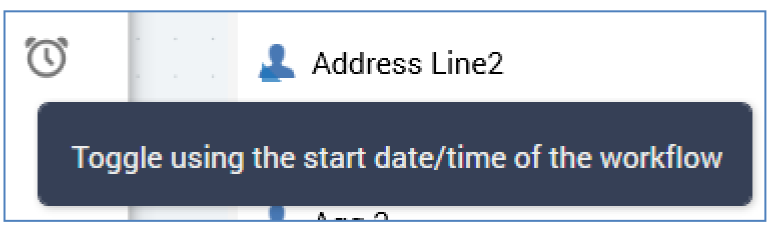
9.3.4 Compare to Constant – Date/time Attribute

When creating a constant comparison criterion in respect of a date/time attribute, an extra operator value (is within) is made available. The following fields are shown if it is selected:



- [value]: mandatory and integer only.
- [unit of time]: a drop-down list containing the values:
  - Seconds (the default)
  - minutes
  - hours
  - days
  - days (ignore time)
  - months
  - years
- [preposition]: a drop-down list containing the values:
  - of
  - before
  - after

In addition, an extra button (Toggle using the start date/time of the workflow) is displayed:



If this button is selected…

…[date/time] is removed from display and replaced with the label that reads 'the date/time the workflow starts'.

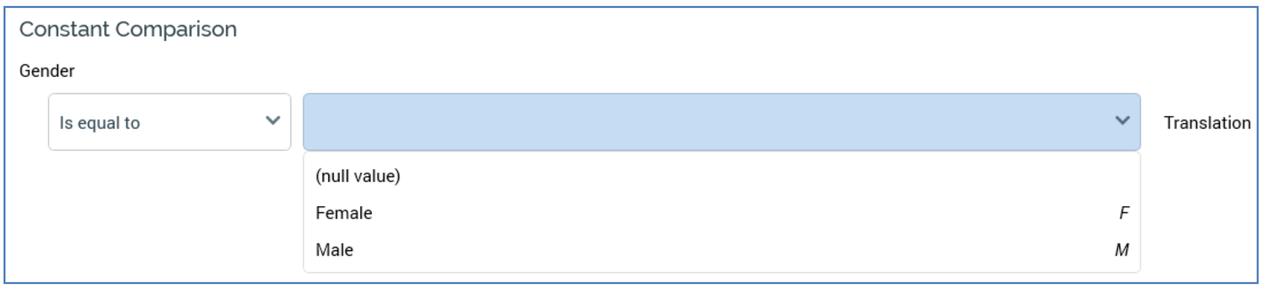
You can use this feature to target records with a value for a date/time attribute that is compared to a constant defined by the point at which an interaction workflow within which the standard selection rule is executed begins. For example, you might wish to only retrieve records where a purchase has been made within a month of a workflow commencing execution. When executed in the Rule Designer, the date/time value defaults to the current date and time.

9.3.5 Compare to Constant – Value/Translation

This option is only available if the attribute's data type is not date/time or decimal.

By default, when you specify a constant value when building a constant comparison criterion you are comparing that value against the raw data as stored in the data warehouse or auxiliary database.

When you click the Value button, its label is replaced with Translation, and the existing constant field is replaced with a drop-down list.



This list is populated with up to 100 of the most common distinct values for the field.

Population of the list is carried out by the RPI server, and the values are cached for subsequent use.

If you elect to use translation values, rather than supplying a constant directly, and the values list has not been cached at the server, the list is populated (which may take from a few seconds to several minutes, depending on the size of the underlying data warehouse or auxiliary database table).

If the attribute's values have already been cached, and the attribute has been used to create a constant or list comparison criterion in your current RPI session, the message is not shown and values are loaded instantaneously upon electing to use translations.

If the values have been cached, but you have not used the attribute to create a constant or list comparison criterion in your current RPI, the message is still shown, but values are loaded immediately upon electing to use translations.

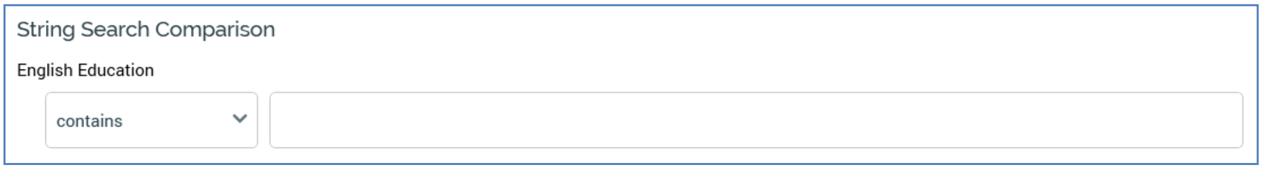
For each distinct value, the translation value is displayed to the left and its and raw value, italicized, to the right. If no translation value has been provided, the raw value is displayed instead. Values are listed alphabetically by translation.

When you choose a value from the list, if a translation was provided, it is displayed within the criterion within the standard selection rule.

Clicking the Translation button again reverts to the default Value display.

9.3.6 Perform String Search

This option is only available if creating a criterion in respect of a string attribute.



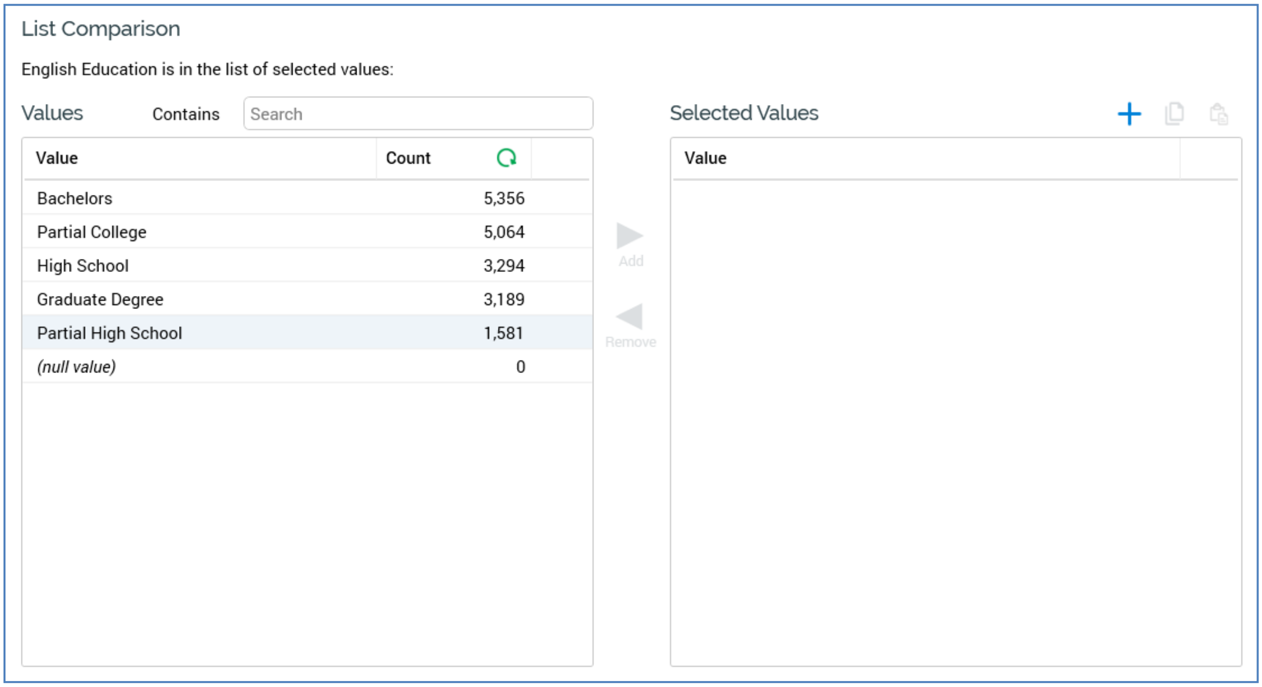
You can use it to check for the presence of a given string constant at the beginning, in the middle or at the end of a string.

The following criterion properties must be defined:

- Operator: defined using a drop-down list that contains the following values:
  - contains
  - starts with
  - ends with
- Value: you must provide a constant value against which to compare the attribute. Database-specific wildcard characters can be used, if desired.

9.3.7 Compare to List

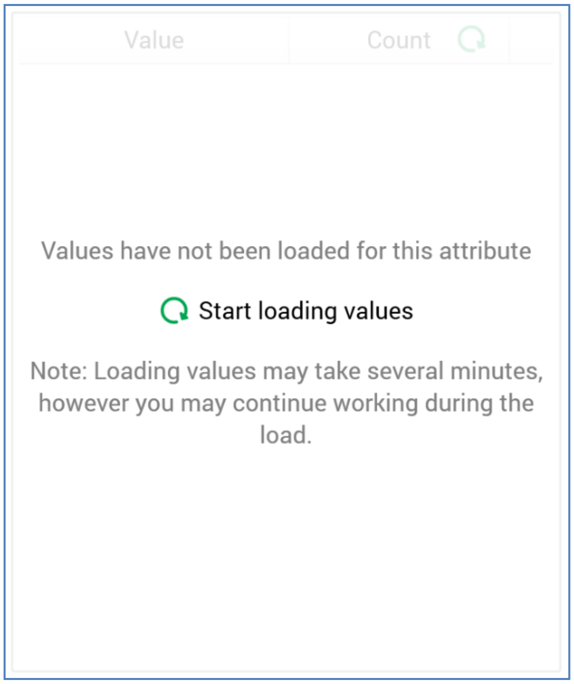
The Compare to List criterion allows you to create a criterion that compares an attribute against one or more values that you select from a list.



When creating a new or configuring an existing Compare to List criterion, the Criterion Builder contains:

- Label: '[AttributeName] is in the list of selected values:'
- Values: lists the distinct values that exist for the attribute, which have not yet been selected for inclusion within the criterion.

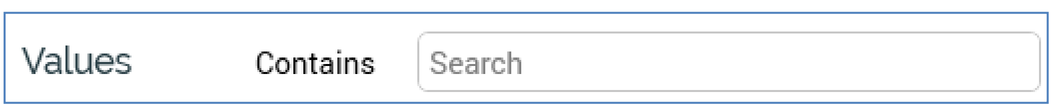
  Population of the list of available Values is carried out by the RPI server, and they are cached for subsequent use. If the Values list has not yet been cached at the server, the following is displayed:



The list is populated when you click Start loading values, which results in the creation of a Cache attribute values job (the My Jobs dialog is not shown). Execution of this job may take from a few seconds to several minutes, depending on the size of the underlying data warehouse or auxiliary database table.

If the attribute's values have already been cached, the message is not shown and Values are loaded instantaneously.

If you wish, you can limit the list of a string attribute's displayed Values by entering a search criterion in the field at the top:

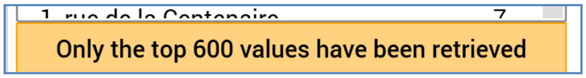


When you do so, the system displays values that contain the string supplied. The search is carried out against the locally-cached values. Having limited the displayed Values in this way, you can invoke Clear Search to redisplay the original values list.

Note that limiting the values displayed in this way is not available for attributes with translations.

The Values list contains a Count column alongside the Values column, which displays the number of occurrences of the value in question within the attribute. In addition, a button displayed to the right of the Count column allows you to retrieve an up-to-date count of the occurrences of values within the column:

The number of values listed is constrained by system configuration setting AttributeValueListSize. If the number of values displayed is less than the number of distinct values that exist, the top [n] values by frequency are shown. A message is displayed below the Values grid:

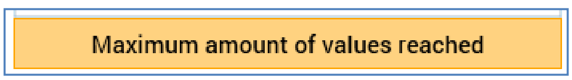


Note that the Null value is available for all attribute types other than aggregation and flag.

Blank string values are shown as e.g. '[1 space]'.

By default, values are sorted as per the most recent invocation of the list Criterion Builder. You can sort the Values by Value or Count by clicking on the appropriate column header. Clicking again reverses the sortation. Any sortation you apply continues to be maintained after entering a search criterion and limiting the Values displayed.

When the number of Selected Values reaches MaxValuesCompareToList, a message is displayed at the bottom:



In addition, the following buttons are disabled:

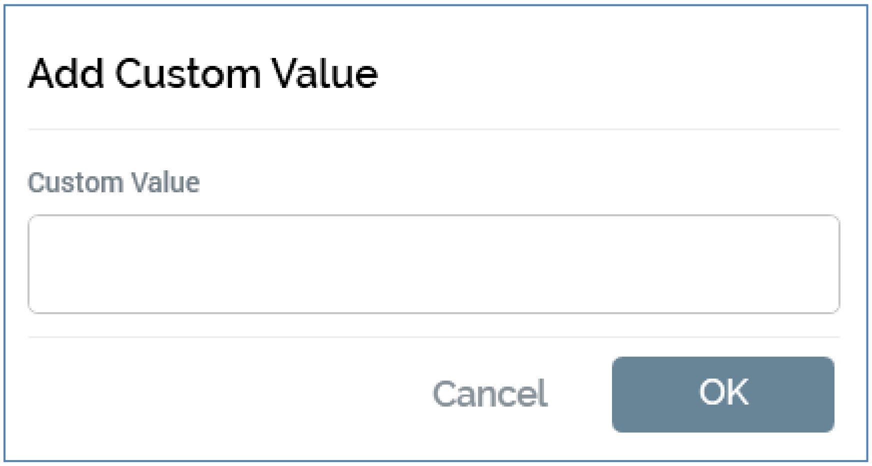
- Add new Custom Value
- Paste Values from Clipboard

If you paste in values such that number of Selected Values exceeds the configuration setting, only the permissible number of values are pasted, and an informational message is displayed.

Double-clicking a value in the Values list adds it to the Selected Values list. The value in question continues to be shown in the Values list; double-clicking it again has no effect.

- Add: the top of the two buttons displayed between the Values and Selected Values list is available when at least one value is selected in the Values list. Invocation adds the value(s) to the Selected Values list. Attempting to add a value already in Selected Values list has no effect.
- Remove: the bottom of the two buttons displayed between the Values and Selected Values list is available when at least one value is selected in the Selected Values list. Invocation removes the value(s) from the Selected Values list.
- Selected Values: this section consists of a toolbar and the selected values list itself.
  - Toolbar: exposing the following options:

- Add new custom value: clicking this button displays the Add Custom Value dialog:

  The dialog allows you to specify a custom value that is not shown in the Values list. Entry of the value is effected using a data-type specific control. Clicking Add the new value, at the bottom of the dialog, adds the custom value to the list of Selected Values. If the value specified is already present in the list, a warning is displayed. Clicking the Cancel button removes the dialog from display.

  Add new custom value is not available for Boolean attributes.

- Copy values to clipboard: this button is available when one or more selected values are present in the Selected Values list. Clicking it copies the values in question to the clipboard. Null values are not copied. Copy is not available at Boolean attributes.

- Paste values from clipboard: invocation of this option displays a submenu:

  - Replace existing Values: selecting this option removes the existing Selected Values, and replaces them, with values pasted from the clipboard.

  - Add to existing Values: selecting this option appends the contents of the clipboard to the Selected Values list. Values are pasted in appropriate alphabetical positions. Any existing or duplicate values are not added, and a warning message is displayed.

  Note that data pasted must be compatible with the criterion's attribute's data type. Paste is not available at Boolean attributes. Values pasted must be database values, not translations.

- List: the Selected Values list displays the values selected for the criterion. Where a translation exists for the value, the value is shown as '[Value]([Translation])'.

When you select a blank value, the selected value is shown as ‘(blank value)’. If the value actually contains one or more spaces, it is shown as ‘([n] spaces)’.

Values are listed in ascending alphabetical order, irrespective of the order in which they were added. Double-clicking a value in the Selected Values list removes it from the list. You must select at least one value for a list criterion.

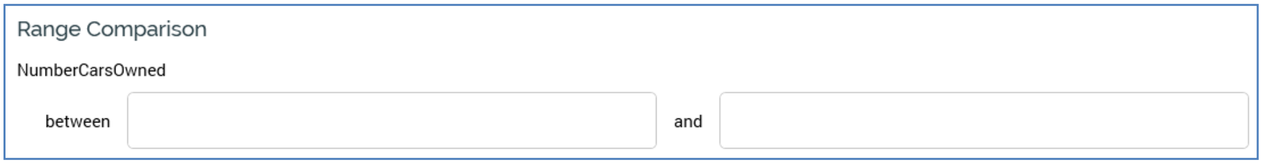
Note that you cannot create a compare to list criterion based on an attribute that references other attributes as arguments (e.g. a function attribute).

Note also that you cannot create a compare to list criterion based on a function attribute that references a constant.

Finally, compare to list criteria are not supported at JSON string attributes when running against a Teradata, DB2, Oracle, PostgreSQL, AzurePostgreSQL, AzureDatabaseMySQL or MySQL database.

9.3.8 Compare to Range

The Compare to Range criterion allows you to create a criterion that compares an attribute against a range of values.



The following criterion properties must be defined:

- 'From' and a 'to' values: the data type of the values must be appropriate for the data type of the attribute upon which the criterion is based:
  - String: all values appropriate
  - Integer: only integer values appropriate
  - Decimal: only numeric values appropriate
  - Date/time: only date/time values appropriate (note that date picker controls are provided if creating a criterion based on a date/time attribute).

  Note that range values are inclusive.

Note that, if running RPI against a Splice Machine data warehouse, that database's lexicographic ordering of strings has the potential to impact a standard selection rule's count results when performing a range comparison between numeric values stored as strings.

9.3.9 Compare to Attribute

The Compare to Attribute criterion allows you to create a criterion that compares an attribute against another attribute – for example, you might be interested in the first product a customer bought; this could be achieved by comparing a 'Purchase date' attribute to a 'Date became customer' attribute.

The following criterion properties must be defined:

- Operator: select an operator using a drop-down list that contains the following values:
  - is equal to
  - does not equal
  - is less than
  - is less than or equal to
  - is more than
  - is more than or equal to
  - is within (datetime attribute only)
- Attribute: either drag the attribute that you wish to compare against the first attribute into the field to the right of the dialog or browse for an appropriate attribute using the recent items chooser or File System Dialog. Note that the attribute you drag in must be compatible with the data type of the attribute that the new criterion is based upon – if it is not, a warning message is displayed and you will not be able to add it. Also note that you cannot compare an attribute to itself; nor can you compare an attribute to an Exists in Table or Aggregate attribute. It is, however, possible to compare attributes with different resolution tables (provided that the joins linking them are configured correctly).

  Having provided an attribute, you can view its details in the File Information dialog or clear it.

  A warning message is displayed if you attempt to select a cross-database Attribute in this context.

9.3.10 Compare to Relative Date

The Compare to Relative Date criterion is available only when creating a criterion based on a date or date/time attribute.

It allows you to create criteria that compare a date interval against the time at execution – for example, '[attribute] is 1 month before the current time' or '[attribute] is within 5 years of the current time'.

The following criterion properties must be defined:

- Operator: defined using a drop-down list that contains the following values:
    - Is equal to
    - Does not equal
    - Is within
    - Is less than
    - Is less than or equal to
    - Is more than
    - Is more than or equal to
    - Is

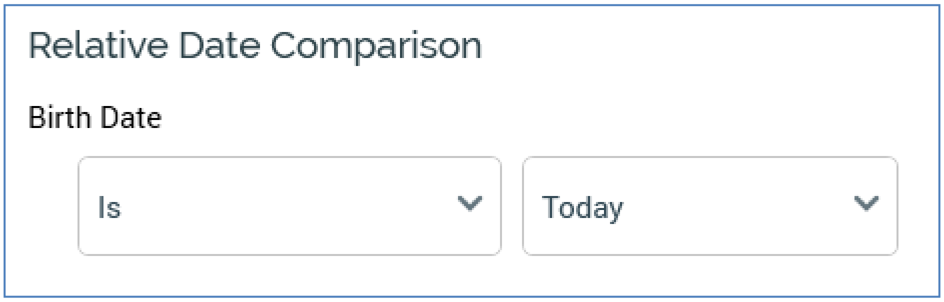
  If any value other than 'Is within' or 'Is' is selected, the label 'the current time' is displayed to the right hand side of the drop-down.

- If 'Is within' is selected, you must define the following additional properties:

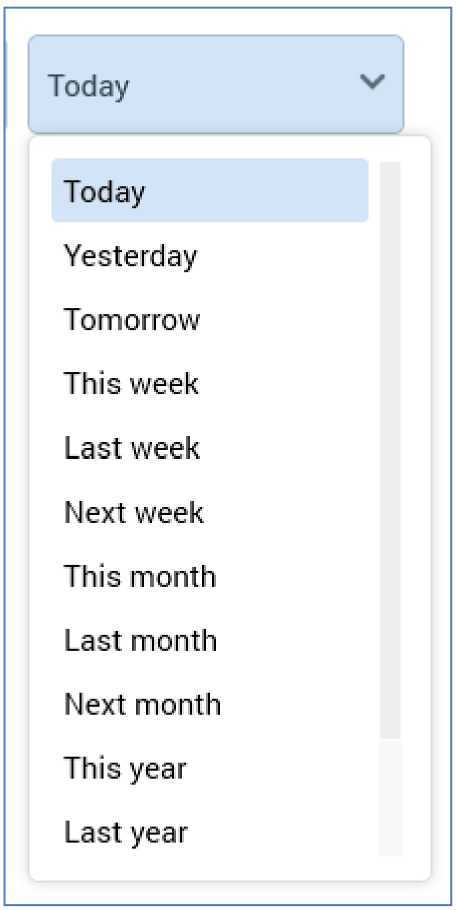
- [value]: a mandatory field that may be populated only with an integer value.
- [unit of time]: a drop-down list containing the values:
  - Seconds (the default; not supported when querying a Hive database)
  - minutes
  - hours
  - days
  - days (ignoring time): available at datetime attributes only
  - months and years
- [preposition]: a drop-down list containing the values of:
  - before
  - after

The label ‘the current time’ is displayed to the right hand side of [preposition]

- If ‘Is’ is selected, you must specify a value at an additional property:



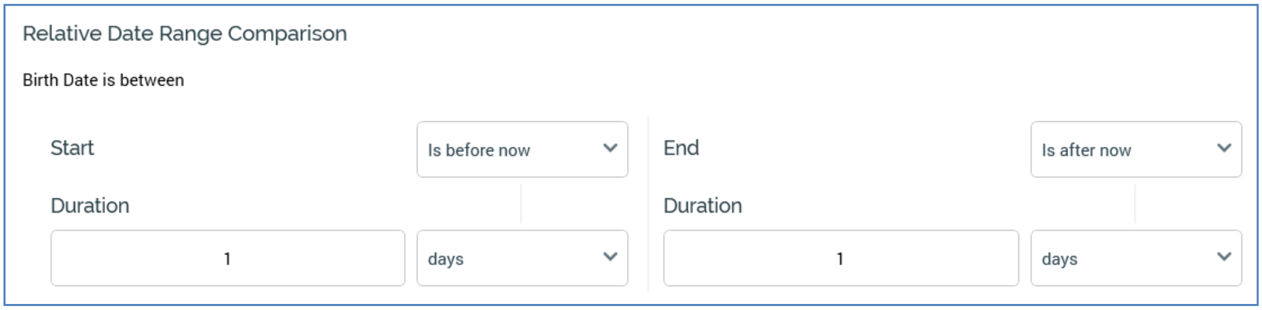
  - [unit of time]: a drop-down list exposing the following values:



If set, values are calculated using the time zone specified in system configuration setting RuleTimezoneOverride. If blank, the server time zone is used.

9.3.11 Compare to Relative Date Range

The Compare to Relative Date Range criterion is available only when creating a criterion based on a date or date/time attribute.



It allows you to create a criterion that specifies that matching attribute values are between a defined Start and End relative to the point of the rule's being run. The Relative Date Range Criterion Builder contains the following:

- Start section: containing the following
  - [Dropdown]: this dropdown field exposes the following values:
    - Is now
    - Is before now (the default)
    - Is after now
    - Has no limit
  - Duration: this integer property is only shown when [Dropdown] one of Is Before Now or Is After Now. It defaults to the value 1, and accepts a minimum value of 1, and a maximum value of 999,999.
  - [Units]: this dropdown field exposes the following values:
    - seconds
    - minutes
    - hours
    - days
    - months
    - years
- End section: containing the same properties as Start.

‘No limit’ values at Start and End are not supported concurrently. Any values configured at the criterion must make sense from a temporal perspective.

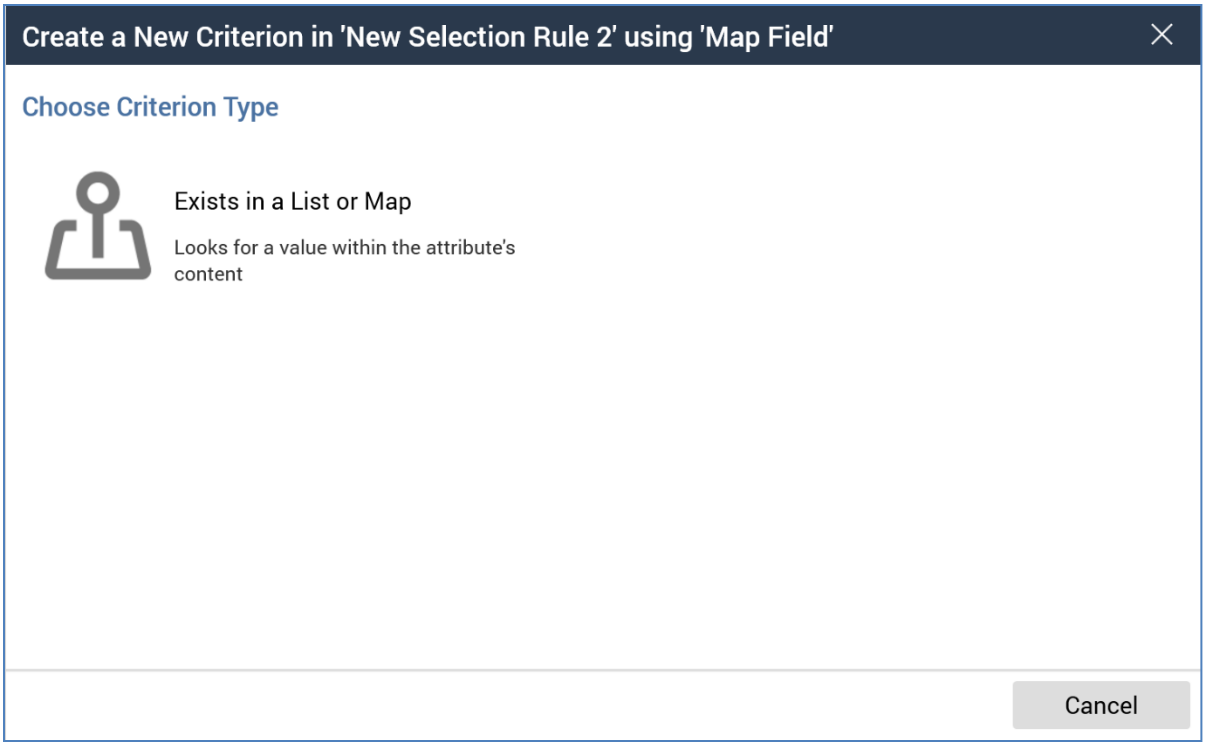
When a compare to relative date range criterion is shown at a standard selection rule, if reflects its configuration as defined in the Criterion Builder.

Note that this feature is not supported at the Apache SparkSQL, Google Big Table, Hive, Netezza, SAP HANA and SalesforceDB databases.

Note also that the Compare to Relative Date Range criterion is not supported at Google BigQuery when a date field's Mode property is set to 'Repeated'.

9.3.12 Exists in a List or Map

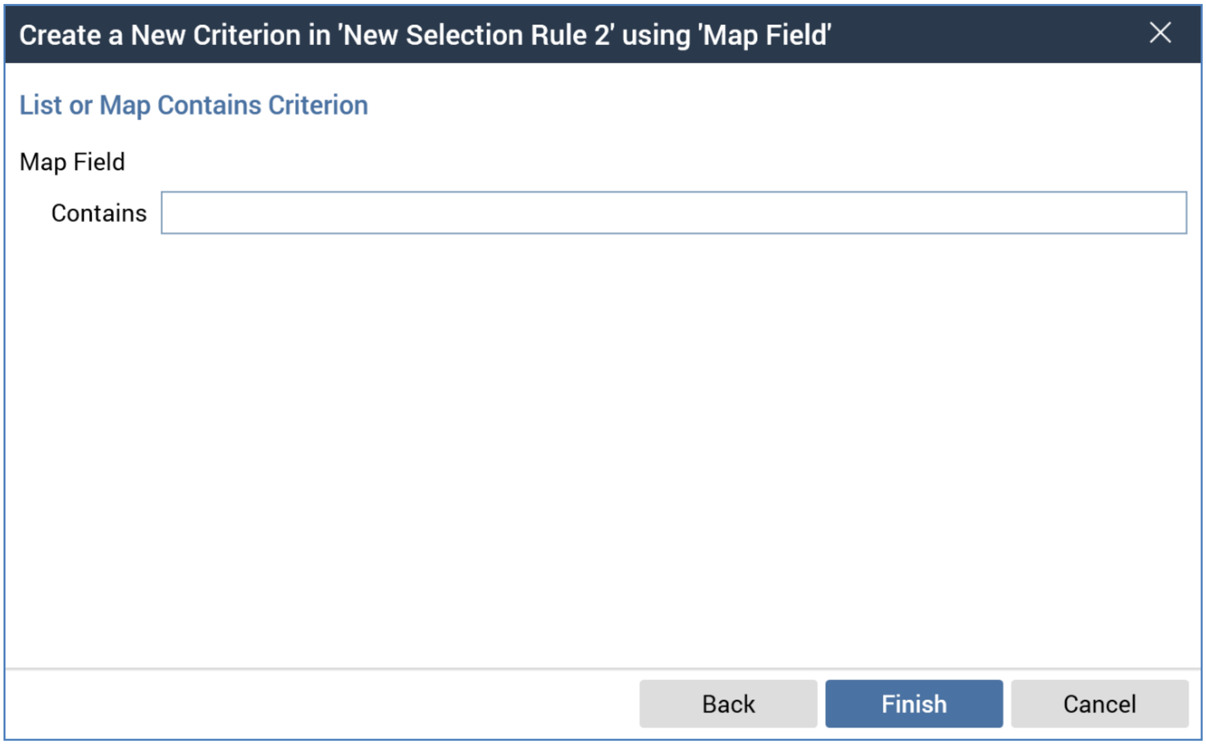
The Exists in a List of Map criterion is only available at database column attributes with a List or Map data type.



It allows you to specify a value to search for within the series of values listed within the attribute's value.

For example, at the following List field value: '[1, 2, 3, 4, 5]', provision of value '4' would satisfy the criterion. Similarly, at the following Map field value: '{'Map1': 1, 'Map2': 4}', provision of value '1' would satisfy the criterion.

When creating or configuring an Exists in a List or Map criterion, the Criterion Builder looks like this:



The [value] field is displayed using a control accordance with the attribute's data type. Provision of a value is optional; if you do not provide a value, a Null value is used.

Note that, if running a standard selection rule against a Cassandra auxiliary database, the RPI List data type encompasses both Cassandra List and Set data types.

Note also that tuple values are supported at the List and Map data types.

9.3.13 Configuring a Criterion using the Criterion Builder

You can configure an existing criterion using the Criterion Builder. Existing properties are displayed within the Builder, allowing you to make the changes you require. When configuring an existing criterion, it is not possible to change the criterion's type – to do so, you must delete the criterion and re-create it.

9.3.14 Tuple Data Type Support

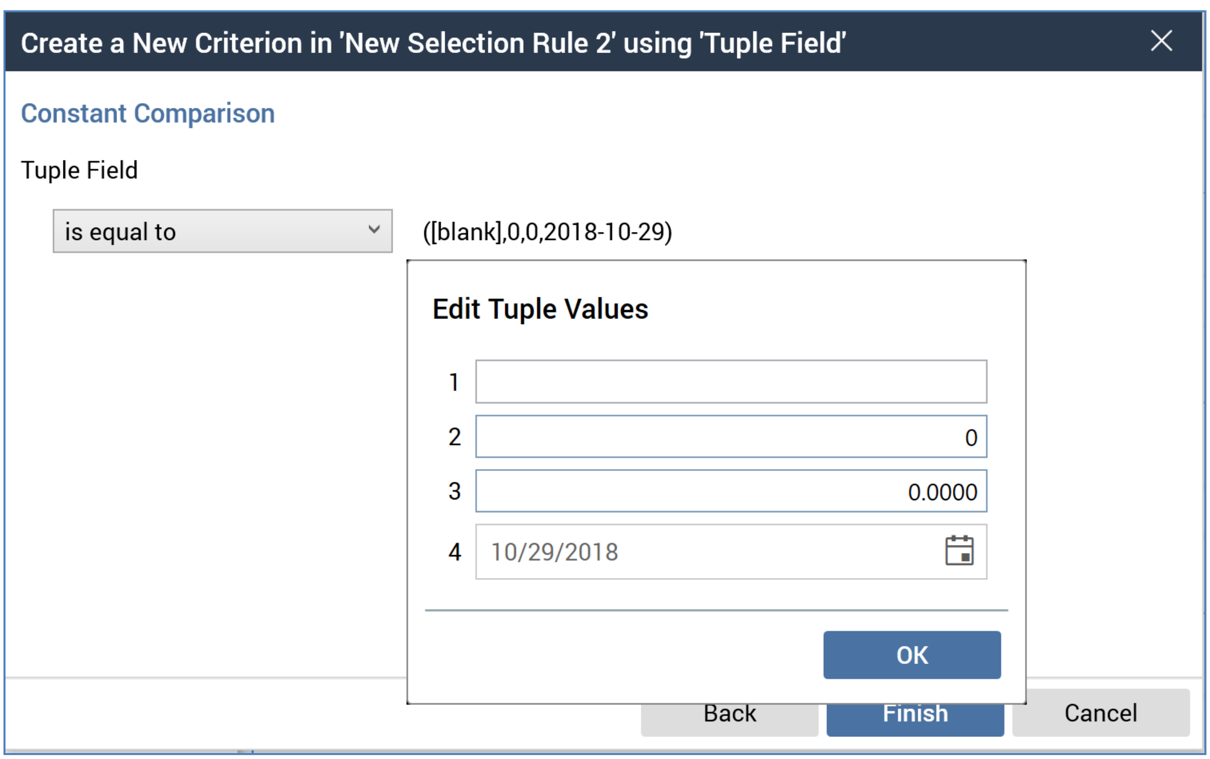
RPI supports a Tuple data type at database column attributes. A tuple is a sequence of elements with a specific structure. Here is an example of a tuple value, which might be stored in a database column attribute:

('SPAM',99,4.52,'2017-10-01')

When you drag in an attribute with the Tuple data type to create a standard selection rule criterion, the following criterion types are available:

- Compare to Constant
- Compare to Attribute (not supported at the Cassandra auxiliary database).

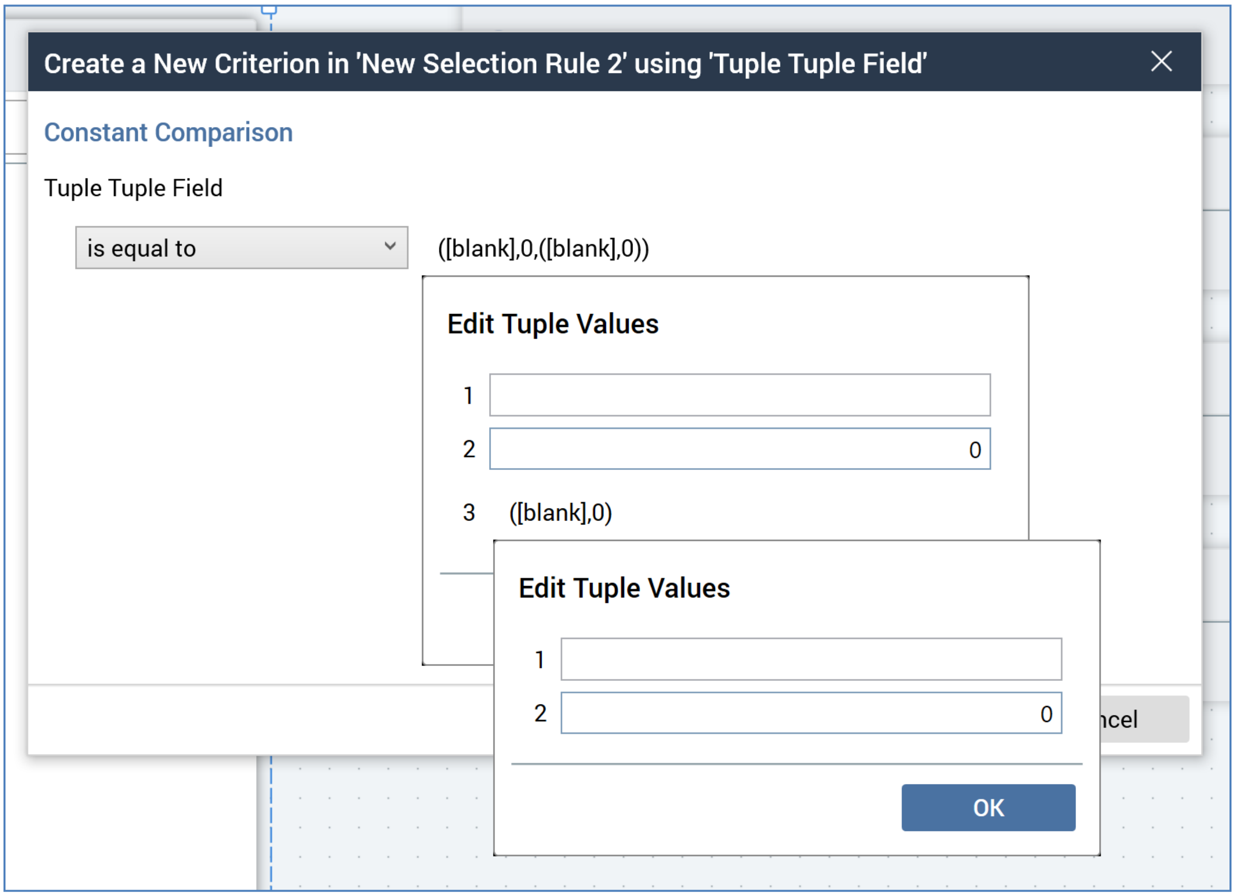
When building a Compare to Constant criterion, and specifying a tuple value, the Edit Tuple Values dialog is displayed:



Each tuple element is displayed in a numbered list, with a value displayed at each. Data type-specific controls (String, Integer, Decimal, Date) facilitate data entry at the same.

Tuples are also supported as elements within database column values with the following data types:

- Tuple: nested Edit Tuple Values dialogs are used to set values at the same.

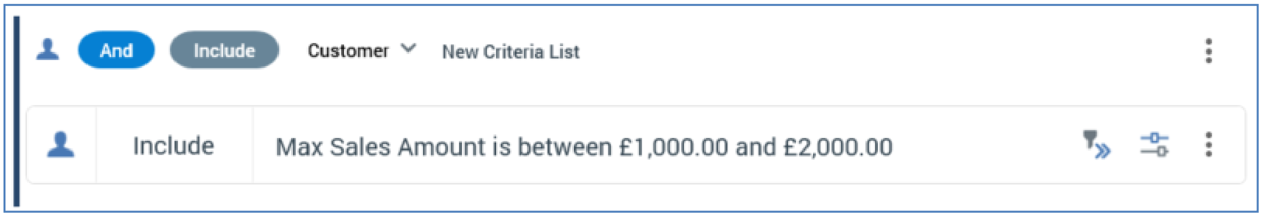


- List
- Map

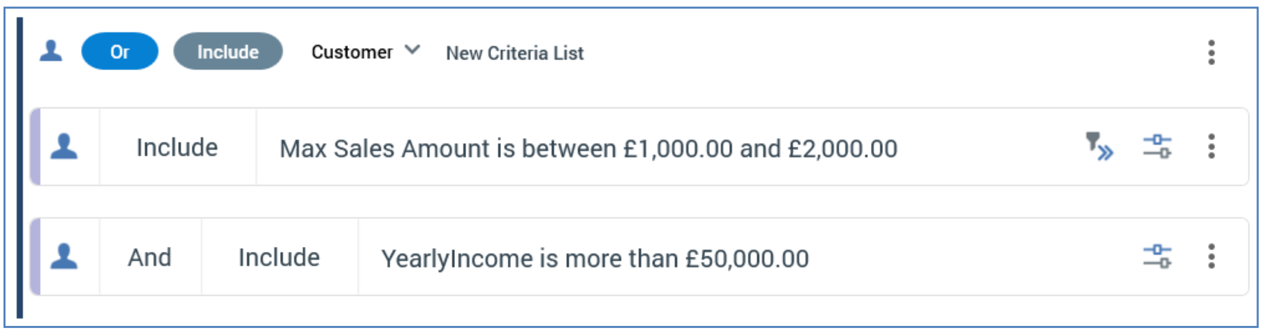
Note that the following operators are not supported when building a tuple criterion at a Google BigQuery database: >, >=, <, <=.

9.4 Criteria Lists

You can use criteria lists in a standard selection rule to group criteria. This can help you organize criteria within a complicated standard selection rule, making it easier to read.

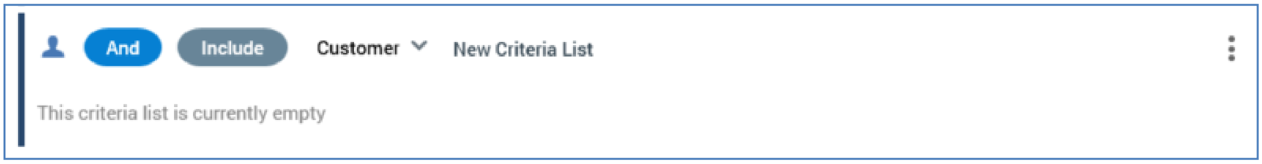


Also, having added criteria to a criteria list, you can then define 'Or' relationships within discrete lists of related criteria.



9.4.1 Criteria List Properties

A criteria list exposes the following properties:

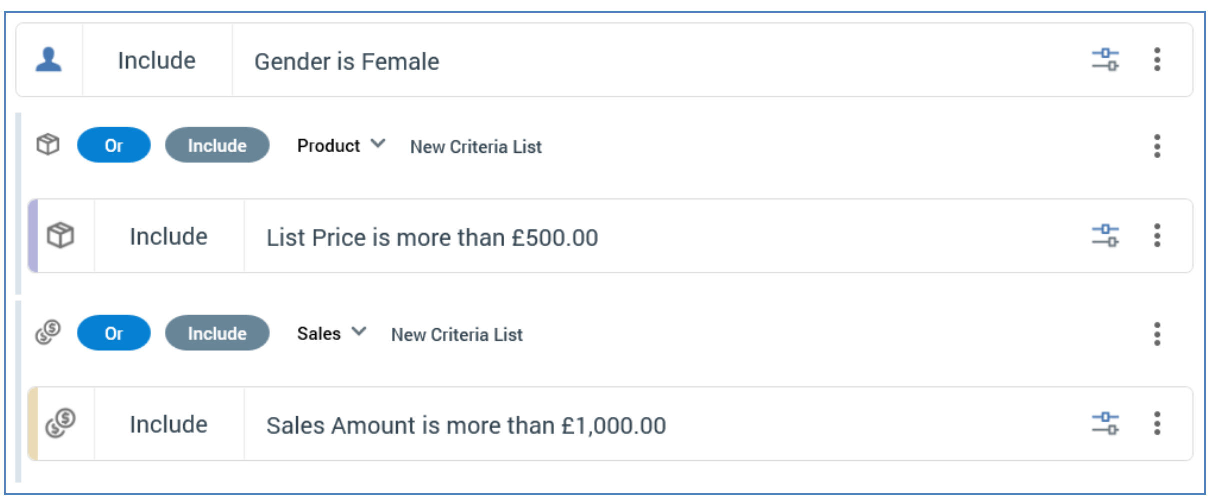


- Resolution table icon: accordant with the selected Resolution table; a custom icon can be shown when defined at the Catalog configuration interface.

- And/Or: this property is only displayed if a root-level criteria list is preceded by at least one other root-level criteria list, criterion or linked selection rule. The property is set by default to 'And'. If no predecessors exist, And/Or is not shown (there is nothing to which the And or Or can apply). You can change the relationship between a criteria list and its predecessors by clicking directly on And/Or to toggle its value. And/Or is supported at both criteria lists and linked selection rules.

  If And/Or is set to And, the records counted by the standard selection rule must satisfy the criteria defined by the preceding, And the following criterion, criteria list or linked selection rule.

  If And/Or is set to Or, the records counted may satisfy the criteria defined either by the preceding, Or the following, criterion, criteria list or linked selection rule. Any root criteria, criteria lists or linked selection rules that follow an Or are grouped together with the Or criteria list (or linked selection rule). To make this easier to understand, groups are made clearly visible by the use of pastel colored backgrounds: all criteria, criteria lists and linked selection rules in the same group share the same colored background.

- Include/Exclude: You can define whether records that match the criteria in a criteria list are to be included or excluded from the count of records returned by the rule. This is done by clicking directly upon Include/Exclude to toggle the displayed value.

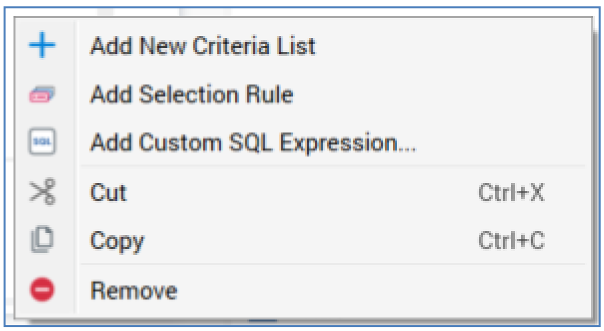
- Resolution table: criteria list's resolution table indicates the data warehouse or auxiliary database table against which the sub-query represented by the criteria list will be run (unless the criteria list was created by adding a criterion based on an attribute with a resolution table that differs from the standard selection rule's resolution table).

  If one or more auxiliary databases has been configured at the current RPI client, only tables from the database matching the standard selection rule's resolution level are displayed.

- Criteria list description: you can optionally add a description at a criteria list. The property defaults to 'New Criteria List' on criteria list creation, and can be a maximum of 1000 characters in length.

A button is displayed at the right of a criteria list:

- Actions: clicking the button displays a context menu:



  The options available are self-explanatory, or are described elsewhere in this documentation.

  Note that the same context menu is shown when you right-click a criteria list.

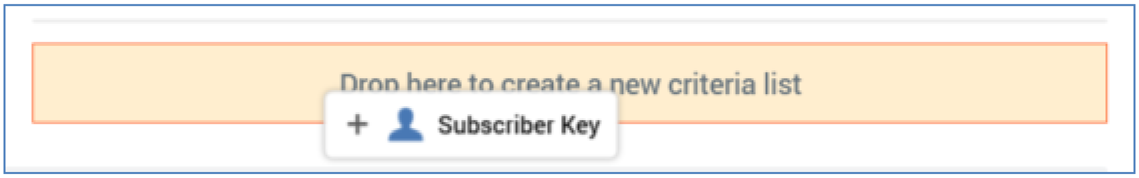
9.4.2 Adding an Empty Criteria List Manually

You can add a new, empty criteria list to a standard selection rule by clicking the Add New Criteria List button, displayed above its footer.

A new, empty criteria list, named New Criteria List, is added to the root level of the currently-selected rule after all existing criteria, criteria lists and linked selection rules. The new list's resolution table is set to the standard selection rule's resolution table.

9.4.3 Adding a Criteria List Using the Drop Zone

You can automatically create a criteria list as part of the process of creating a criterion by dropping an attribute onto the orange drop zone, which appears just above the standard selection rule footer.



Following configuration of the new criterion in the Criterion Builder, it is displayed within a new criteria list. The new list is named after the standard selection rule's resolution level, and its resolution table is set to the standard selection rule's resolution table.

9.4.4 Dragging and Dropping Criteria Lists

You can drag and drop an existing criteria list within a rule, or between rules. When dropped, an existing criteria list is placed within the target rule in accordance with the following rules:

- If the criteria list is dropped in the rule's canvas, it is presented at root level within the rule, after all existing criteria, criteria lists and linked selection rules.
- If the criteria list is dropped directly into an existing criteria list or linked selection rule, a nested criteria list is added to the list or rule after all other top-level child criteria and lists. Nested criteria lists are documented in more detail separately.
- If the criteria list is dropped into an existing criteria list or linked selection rule when a positional indicator line was shown, a nested criteria list is created at the position thus indicated.

You can also re-order criteria lists within a standard selection rule using drag and drop. The rules outlined above continue to apply.

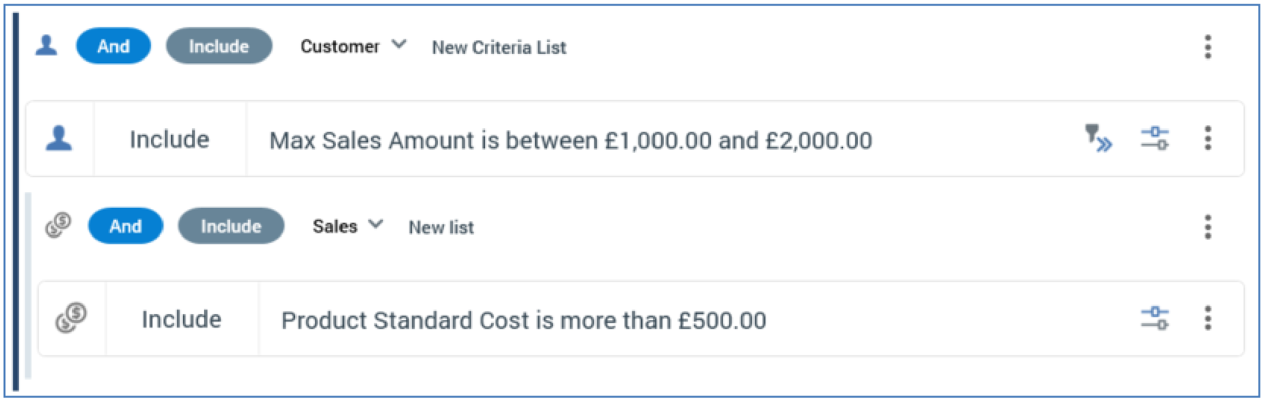
9.4.5 Pasting Criteria Lists

Having cut or copied a criteria list, you can paste it within the same standard selection rule, or within another standard selection rule. You can paste the criteria list into the rule's canvas, in which case it is added at root level after all existing criteria, criteria lists and linked selection rules. You can also paste the list into another criteria list, to create a nested criteria list, or within a linked selection rule.

If the current RPI client is configured with one or more auxiliary databases, a warning message is shown if you attempt to paste a criteria list with a resolution table from a database different to the current standard selection rule's resolution level.

9.4.6 Nested Criteria Lists

Nesting criteria lists within a standard selection rule allows you to group related criteria logically.



You can drag an existing criteria list and drop it into another criteria list within the same rule, or within another rule displayed in the workspace. You can also copy or cut an existing criteria list and paste it into another criteria list within the same rule, or within another rule displayed within the workspace. The dropped or pasted criteria list is placed inside the existing criteria list in accordance with standard Rule Designer behavior.

You cannot drag a criteria list to nest it within one of its own descendent criteria lists.

Upon being dropped or pasted within another criteria list, the nested criteria list is automatically rolled up.

If the current RPI client is configured with one or more auxiliary databases, a warning message is shown if you attempt to drop a criteria list with a resolution table from a database different to the current standard selection rule's resolution level.

9.4.7 Criteria List Keyboard Shortcuts

The following keyboard shortcuts are available at a criteria list:

- Ctrl-C: copy
- Ctrl-X: cut
- Ctrl-V: paste
- Delete: removes the criteria list without displaying an 'Are You Sure?' dialog.

9.5 Linked and Embedded Selection Rules

RPI provides the ability to allow dynamic links to other standard or basic selection rules to be created inside a standard selection rule.

When an outer standard selection rule is run, the criteria defined within the inner, linked selection rule are also executed and help define the records targeted by the outer rule.

The relationship between linked selection rules is dynamic: an outer rule always uses the most recently-saved version of an inner, linked rule. Changes made to the selection rule that was linked within the outer rule are reflected immediately within the linked rule. This change is propagated both ways: changes made within the linked rule are reflected within the rule from which the link was created. Linked selection rules allow a library of 'mini-rules' to be assembled that can then be linked within and shared between a variety of outer rules, helping to maintain consistency when targeting sections of your data warehouse or an auxiliary database (of particular significance when attempting to observe regulatory compliance).

You can also embed a standard selection rule within another rule. Embedding a rule effectively creates a new criteria list within the outer rule. Having embedded a selection rule, no dynamic link exists between the outer and the inner, embedded rule. Changes made to the selection rule that was embedded in the outer rule are not reflected within the embedded rule.

9.5.1 Linked Selection Rule Properties

The following are shown at a linked standard or basic selection rule:

- Selection rule icon
- And/Or: this property is shown if the linked selection rule is preceded within its parent context by another criterion, criteria list or linked selection rule. Its behavior is described elsewhere within this documentation.
- Include/Exclude
- Name: read-only

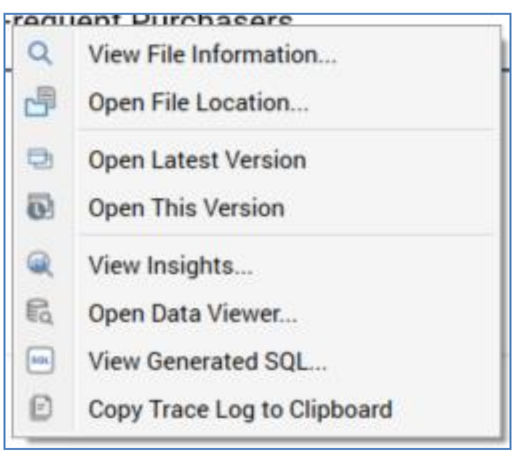
The following inline buttons are available at a linked rule:

- Open Latest Version
- Pop Out: for more information, please see the Rule Designer documentation
- View Insights: displays insights relating to the linked rule in the Insights Window (described elsewhere in this documentation).

An Actions button provides access to a single option via a context menu:

- Remove: removes the linked rule without display of an 'Are You Sure?' dialog.

This option is also available at a context menu when right-clicking the linked rule. In addition, standard file context menu options are available when right-clicking the linked rule file itself:



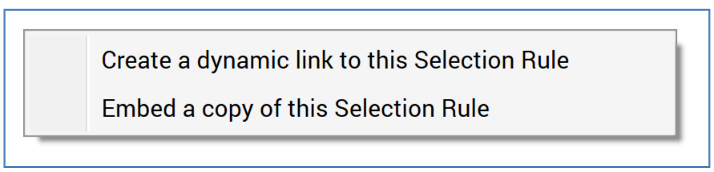
9.5.2 Linking and Embedding Rules Using Drag and Drop

You can drag a standard selection rule from the toolbox and drop it onto a standard selection rule in order to link or embed it within that rule. You can also drag in a basic selection rule – but, in this case, you will not be given the option to embed the rule as a criteria list.

You can drop a rule:

- Onto the target standard selection rule's canvas. The resultant linked rule or embedded criteria list is presented at root level within the rule, after all existing criteria, criteria lists and linked selection rules. If preceded at root level by at least one criterion, criteria list or linked selection rule, the linked rule or embedded criteria list is accompanied by an And/Or indicator (its relationship to its predecessor is, by default, set to And).
- Into an existing criteria list. The linked selection rule or embedded criteria list is added to the list or rule after all other top-level child criteria and lists.
- Into an existing criteria list when a positional indicator line is shown. The linked selection rule or embedded criteria list is created at the position thus indicated. If the rule is dropped before the first, or after the last, criterion or criteria list in an existing criteria list or linked rule, the length of the positional indicator lets you know whether the rule will be linked or embedded within, or at same level as, the existing criteria list or linked rule.

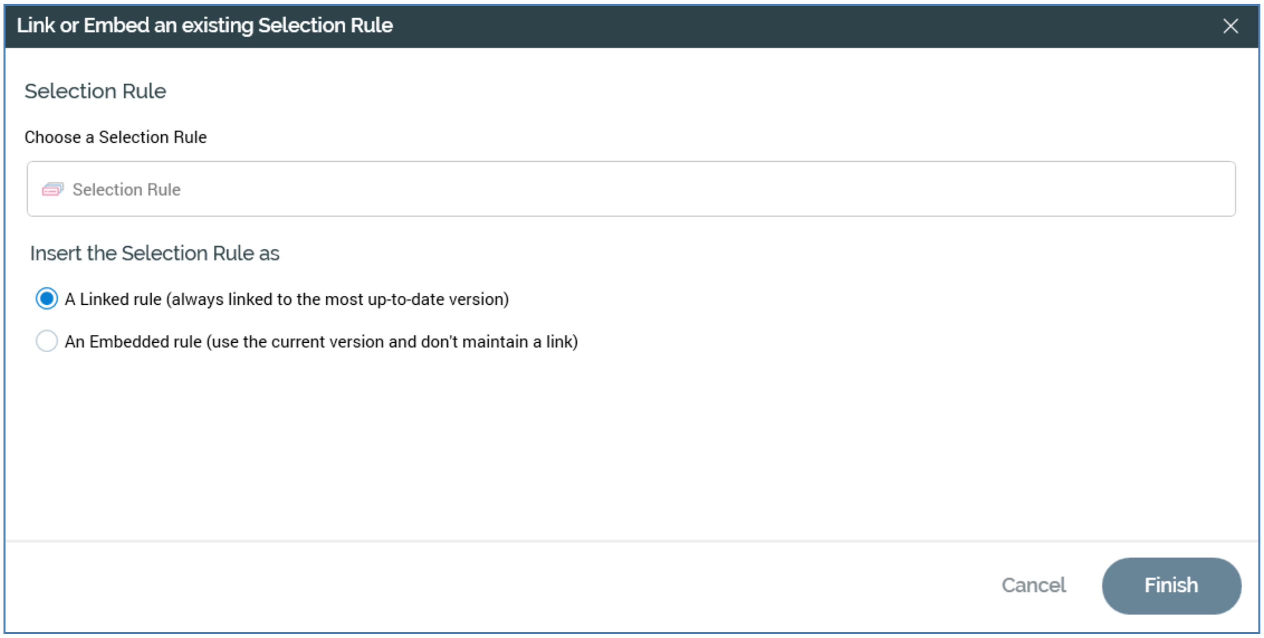
When you drop a standard selection rule, you can specify whether to create a linked selection rule or an embedded criteria list (basic selection rules are always linked dynamically).



If the current RPI client is configured with one or more auxiliary databases, a warning message is displayed if you attempt to link or embed a selection rule with a resolution level sourced from a different database to that of the current selection rule.

9.5.3 Adding a Selection Rule Using the Linked or Embed an Existing Selection Rule Dialog

Invoking Add Selection Rule, from e.g. the standard selection rule toolbox or a context menu, causes the Link or Embed an existing Selection Rule dialog to be displayed.



You can browse for an existing standard or basic selection rule using the File System Dialog. Only folders to which you have access are displayed, and only selection rule files are listed. You can also initiate the creation of a new standard selection rule to link or embed. Having chosen a selection rule, you can open its latest version or clear the property.

You must also choose to insert the selection rule as a linked or embedded selection rule, using the radio buttons provided.

Clicking Finish links or embeds the rule, which is created in accordance with the selected context (e.g. if a criteria list selected, the rule is linked or embedded within the list; if nothing is selected, the link or embedded criteria list is created at root level).

If the current RPI client is configured with one or more auxiliary databases, a warning message is displayed if you attempt to link or embed a selection rule with a resolution level sourced from a different database to that of the current standard selection rule.

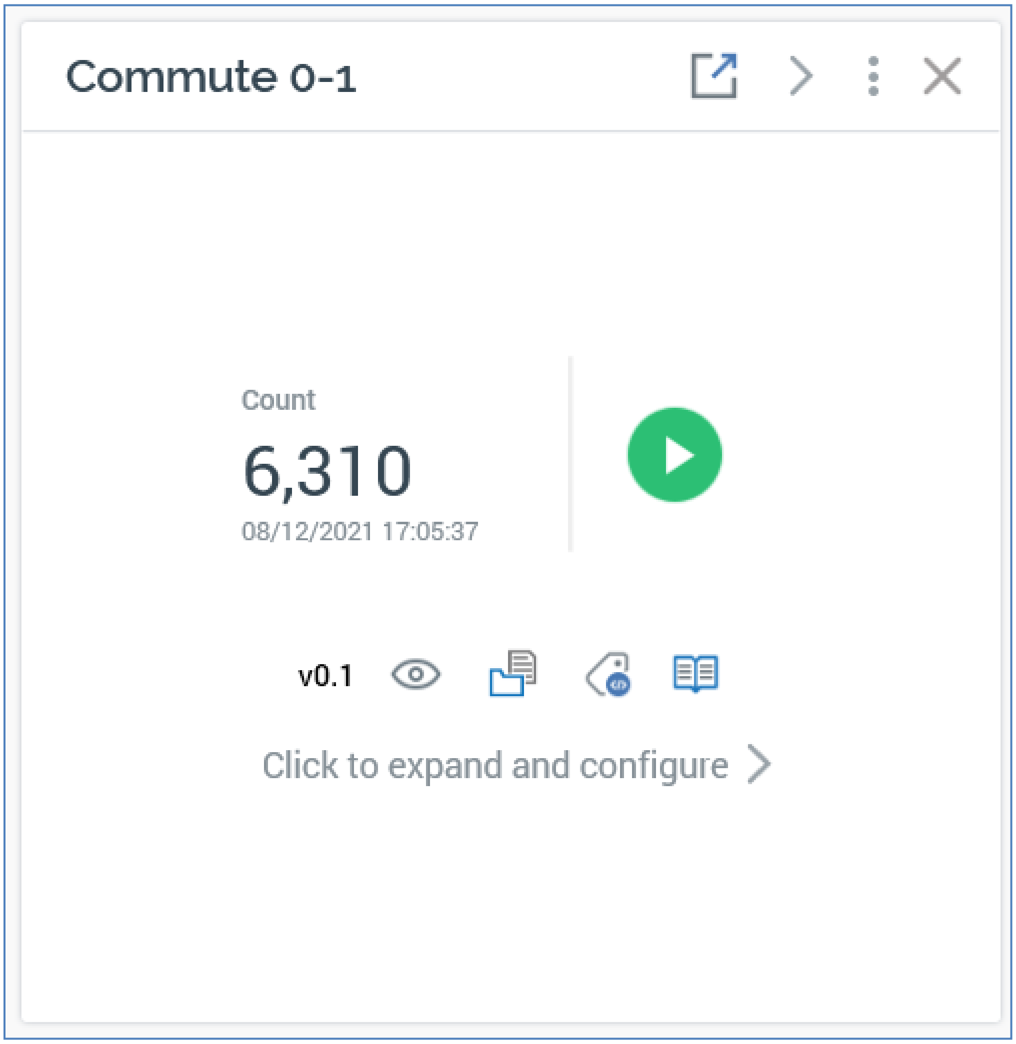
9.5.4 Linked Selection Rule Keyboard Shortcuts

The following keyboard shortcuts is available at a linked selection rule:

- Delete: removes the linked rule without displaying an 'Are You Sure?' dialog.

9.6 Collapsed Mode

The following is shown at a standard selection rule when in collapsed mode:



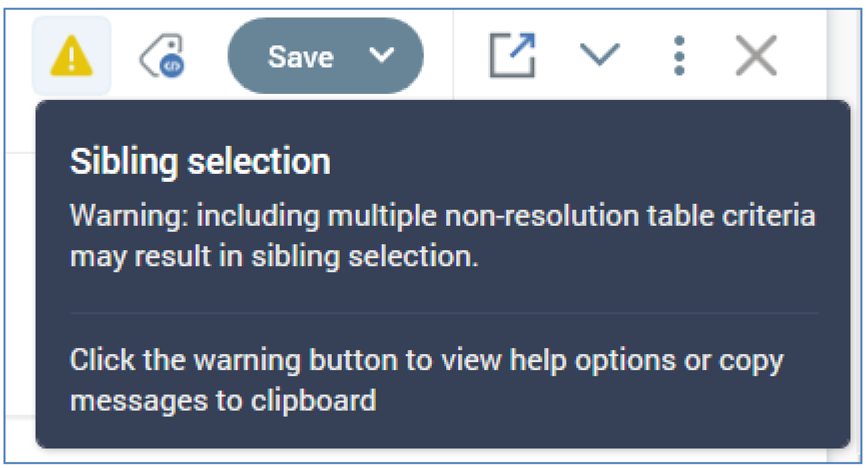
- Count
- Date/time of count generation
- Refresh
- File options
- Click to expand and configure: clicking this button displays the rule in expanded mode

9.7 Selection Rule Warnings

Experience has identified two specific, ambiguous scenarios that sometimes cause confusion to RPI users when building standard selection rules. These are colloquially known as 'exclusion confusion' and 'sibling selection'. Details of each are provided separately below.

When one or both of these situations arises, one or more warning indicators can be displayed to draw attention to the potential ambiguity. A warning is shown at the top of the standard selection rule…

Hovering over a warning displays a dialog, in which details of the issue(s)



Clicking a warning icon (at either rule or list level) displays a context menu. The following options are available:

- View help for [issue]: invocation displays the relevant section from the User Guide in a web browser.
- Copy all messages to clipboard: details of the current issues, as displayed at the dialog, are copied.

Should you no longer wish to display warning messages at a standard selection rule, you can check the Suppress Warnings option at the rule's toolbox. Doing so removes any warning icons from display. Unchecking the option displays the warnings again. Note that this option is applied on a rule-by-rule basis.

9.7.1 Exclusion Confusion

This scenario arises when:

- Either:
  - A criterion exists at standard selection rule root level, and the criterion's resolution table does not match the standard selection rule's resolution table.
  - A criterion exists at criteria list level, and the criterion's resolution table does not match the criteria list's resolution table.
- The criterion is excluded.

The potential ambiguity here revolves around the user's understanding of the manner in which RPI handles an exclusion at a mismatched resolution table. For example, will these rules exclude:

- Customers with one blue product, even if they have other, non-blue products?
- Customers who only have blue products.

The answer is the first option – these rules will exclude anybody with a blue product, even if they have products of other colors.

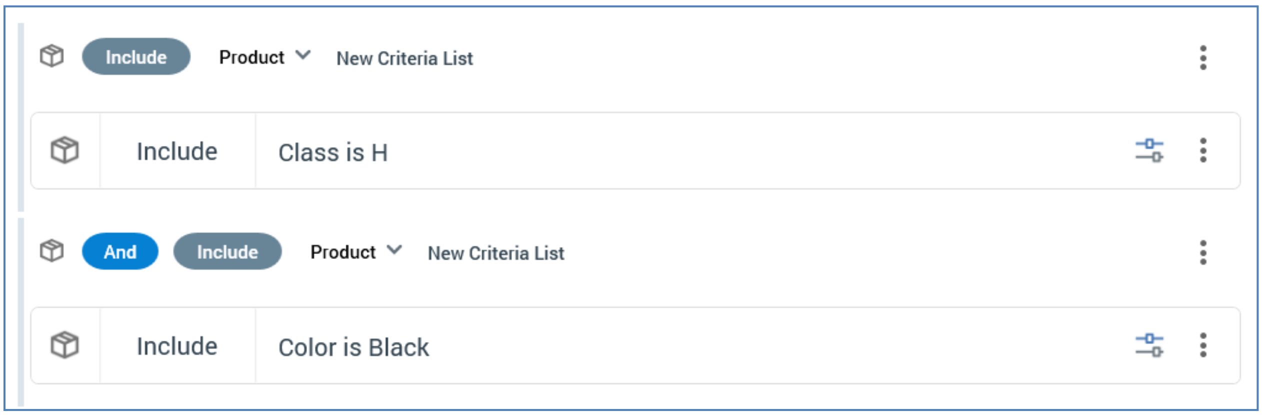
Note that creating this scenario is somewhat convoluted, as, by default, a criterion with a resolution table that differs from its parent rule's or list's resolution or resolution table will automatically be created in its own criteria list, with a resolution table matching that of the rule. As such, manual manipulation of resolution level or resolution table is required for the warning to be displayed in the first place.

9.7.2 Sibling Selection

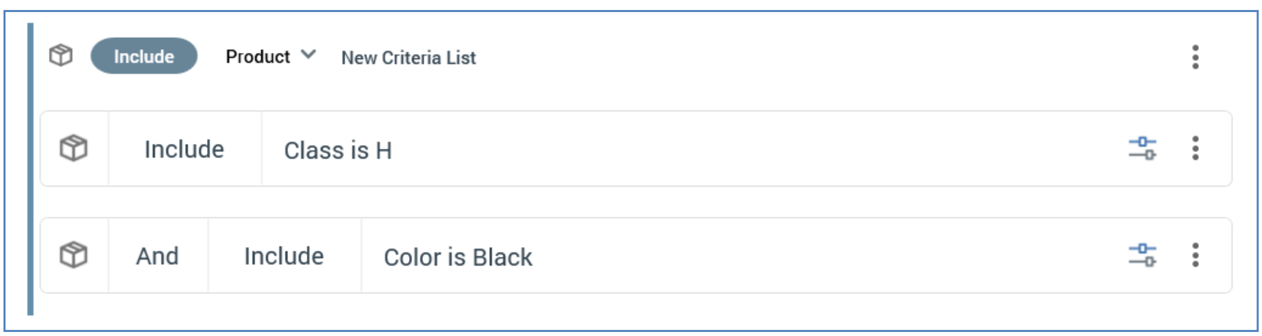
This scenario arises when a standard selection rule contains more than one criteria list with the same, non-resolution resolution table. Each criteria list in turn contains a criterion with a matching resolution table.

Here the potential confusion revolves around the manner in which RPI executes the standard selection rule.

In this example customers who qualify via both criteria lists are counted. However, this means that the rule may count a number of customers who bought products with class 'H', which were of a color other than black (and vice versa):



Compare this scenario to the count of the following rule, in which the criteria have been combined in a single criteria list, such that only those customers who bought black products with class 'H' are counted:



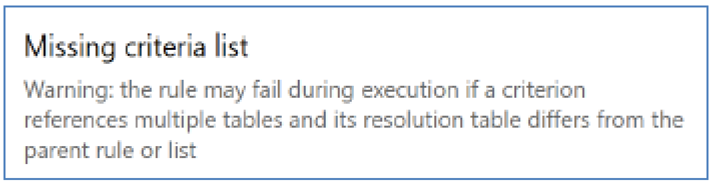
Now, it may legitimately be the case that you wish to communicate with the audience identified by the former standard selection rule. The display of the warning icon draws your attention to the potential confusion and you may choose to ignore or suppress as required.

9.7.3 Mismatched Resolution at Compare to Attribute

Scenario: a standard selection rule contains a compare to attribute criterion. The attributes therein are sourced from Table A and Table B.

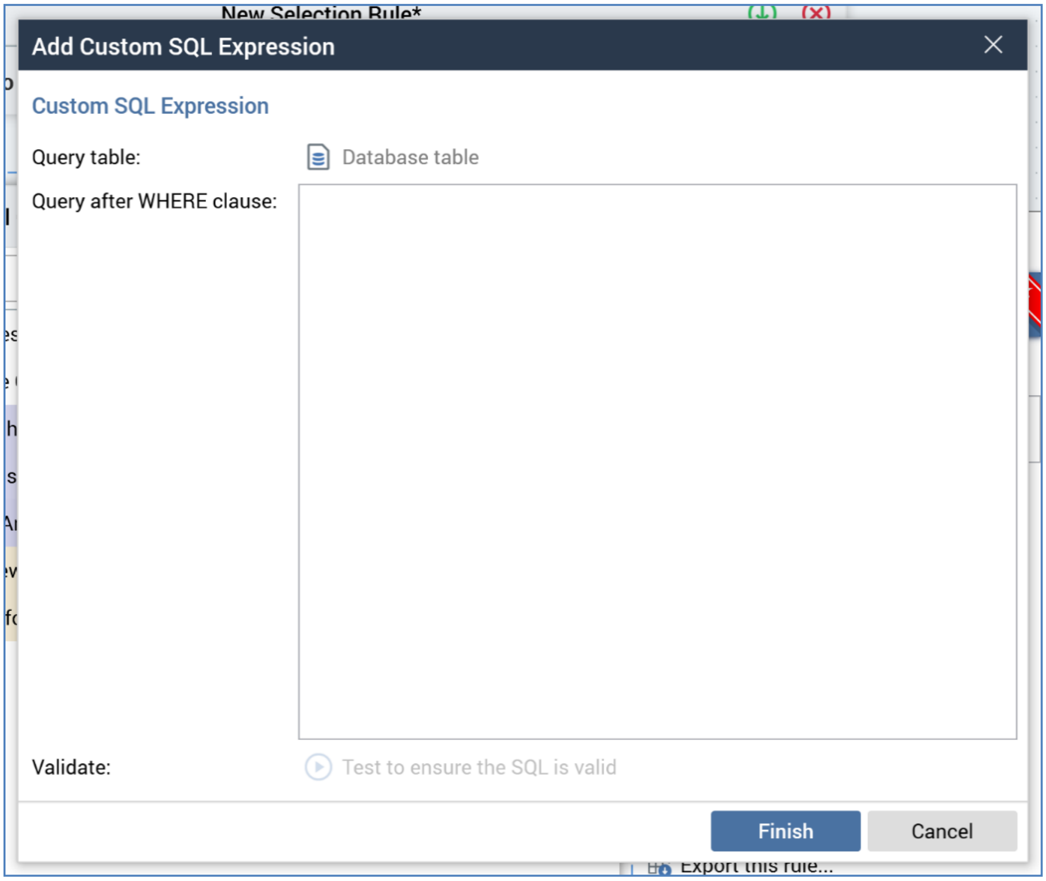
The rule's resolution level is set to table C.

The following warning is shown at the standard selection rule:



9.8 Custom SQL Expressions

A custom SQL expression can be added to a standard selection rule using the Add Custom SQL Expression dialog.



It contains the following:

- Query table: you must select the table against which the expression is to be executed, using the Choose Database Item dialog.

  If the current RPI client is configured with one or more auxiliary databases, the dialog lists only those tables within the database matching the current standard selection rule's resolution level.

- Query after WHERE clause: this multiline field allows you to define the SQL expression, provision of which is mandatory. The expression should take the form of a SQL WHERE clause (e.g. 'Gender = 'F"). The following reserved words and characters are not permitted within the expression:

  - ;
  - insert

- delete
- drop
- -
- truncate
- update
- %3B
- union
- create
- exec

You can use the following syntax within the Query to reference the Query table:

'{alias}.'

- Validate: this button allows you to test to ensure that the SQL you entered is valid. It is enabled when characters are present in Query after WHERE clause. When you click the button, it is initially disabled as it creates a Validate SQL Expression job (the My Jobs Dialog is not shown). If the SQL is valid, the property appears as follows:

Validate:	Test to ensure the SQL is valid
Validation results:	SQL is valid

If the SQL not is not valid, the following are shown:

Validate:	Test to ensure the SQL is valid
Validation results:	SQL is invalid. Change the expression and re-test An issue was encountered testing the SQL for criterion : Invalid column name 'CustomerKy'.

You can amend the SQL and click the button again to re-validate. Note that the SQL you enter need not be valid for you to click Finish.

On clicking Finish, the custom SQL expression is added to the standard selection rule at the context of invocation. It is displayed as 'Custom SQL Expression'.

If the selected Query table is not the same as the standard selection rule's resolution table, the expression is added within a criteria list.

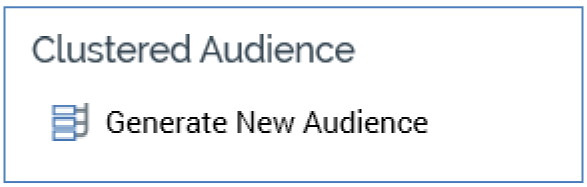
Having added a custom SQL expression, you can subsequently configure it to change its details.

Note that the ability to add a custom SQL expression is controlled by functional permission Selection Rule – Standard – Custom SQL Expression.

9.9 Clustered Audiences

A Clustered Audience can be generated from a standard selection rule. RPI uses Redpoint Automated Machine Learning (AML) to analyze a set of data, targeted by the rule, to identify within the same a series of discrete clusters. The clusters are then used as the basis for a new audience's outputs. The results of test execution of a newly-generated Clustered Audience are displayed for inspection within the Audience Insights Window.

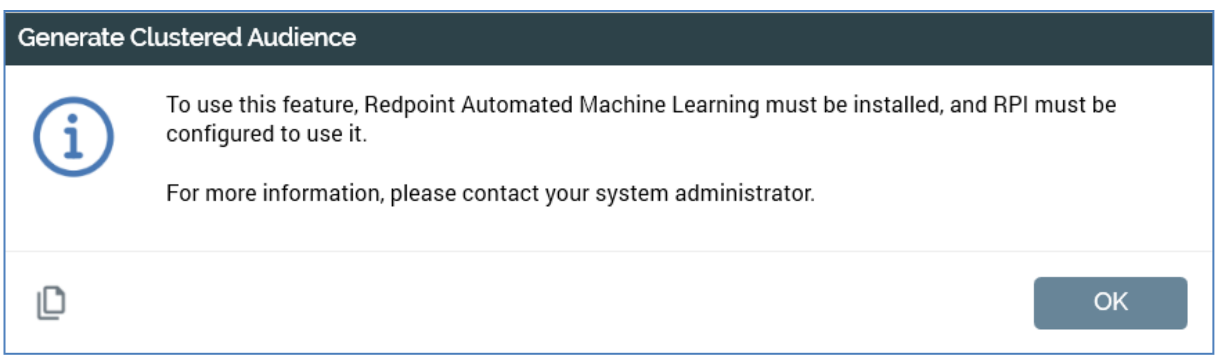
Clustered Audiences are created in the standard selection rule toolbox's Clustered Audience section:



When initially displayed, the section contains a s single option:

- Generate New Audience: this button allows you to automatically generate an audience exposing outputs based on Redpoint Automated Machine Learning (AML) clusters from the current selection rule. If you click the button when the rule contains unsaved changes, a warning is shown.

  If system configuration setting AutomatedMLAPIAddress has not been set, the following message is shown:

  Clicking the button displays the Generate Clustered Audience overlay (covered separately). If no training sets compatible with the rule's resolution level exist, a warning message is displayed and the overlay is not shown.

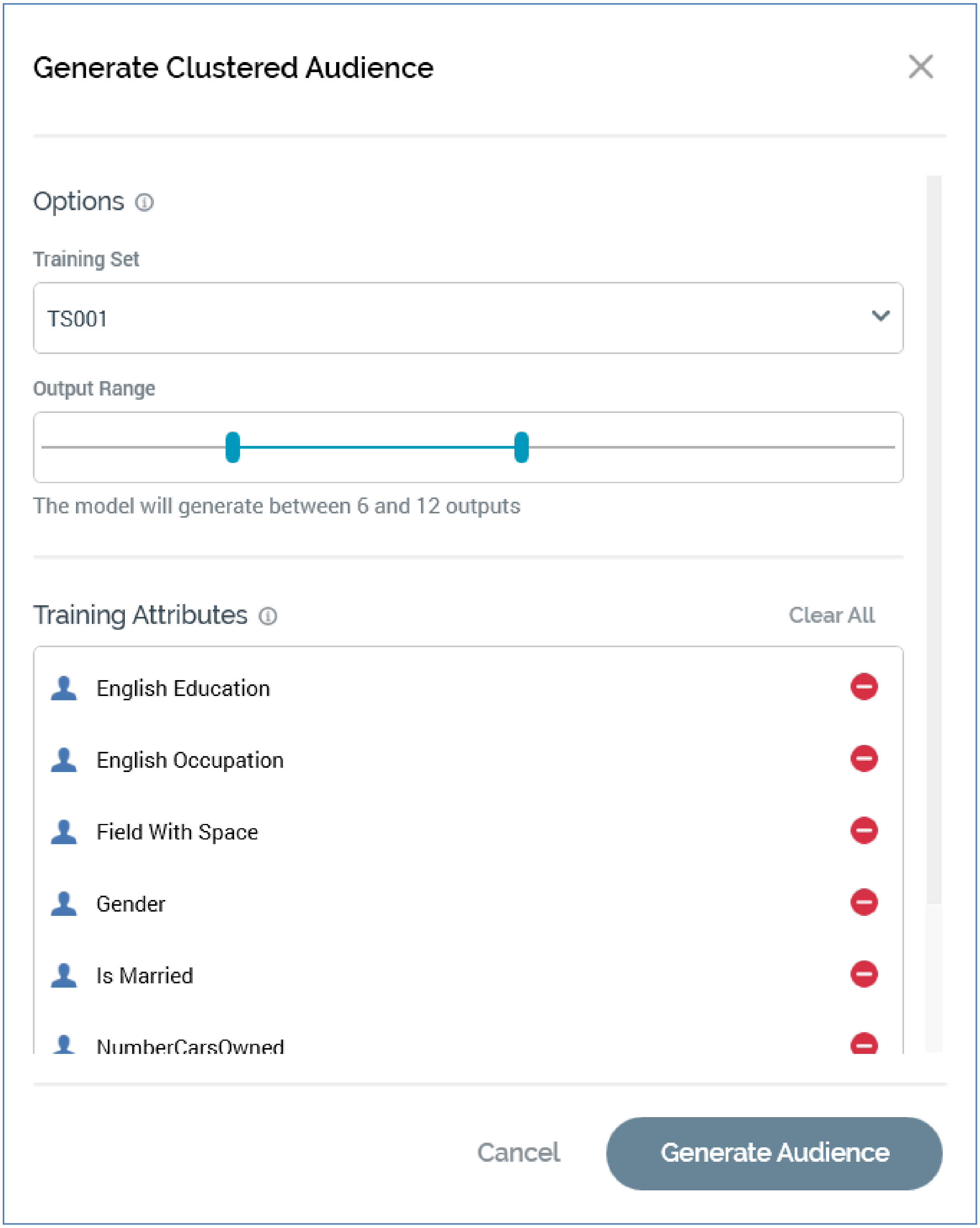
  After creation of a Generate Audience job, the button is disabled, and its text is updated to 'Generating Audience...'. The Job status is shown, consisting of an overall 'Waiting for Execution' or 'Executing' status, along a more detailed description of the current activity. Job status is shown when the Generate Audience job is complete.

When the Generate Audience job is complete, the button is re-enabled, and its text set to 'Generate Another Audience'. The Latest Generated Audience section is also shown (covered separately).

If audience generation fails, the following are shown below the button:

- 'The last job to generate an audience failed'
- Top-level error message
- Copy Error Log to Clipboard button

The Generate Clustered Audience overlay contains the following:



- Warning: if an audience generated from the current interaction has been used in a Test or Production interaction workflow, and its training set's Model project and audience files property is set to Re-use existing files each time this training set is used, a warning is shown at the top of the overlay.

- Options section:

    - Training Set: this dropdown is only shown if more than one training set can be sourced from audience definition's compatible with current rule's resolution level. The property lists training sets as described. Note that if only one such training set exists, the property is not shown and the training set in question is used automatically.

    - Output Range: a slider control can be used to define the audience's minimum and maximum number of outputs. The default minimum value is 6, and the default maximum value is 12. A range of 2 to 20 is supported, and a range of at least 3 values must be provided.

- Training Attributes section: this section is used to define the attributes used to source training data to build the cluster model.

  The property consists of a toolbar and list.

    - Toolbar: exposing a single option:

        - Clear All: this button is displayed when at least one training attribute is present in the list. Clicking it removes all attributes from the list. An 'Are You Sure?' dialog is not shown.

    - List: the initial list of attributes is provided by the chosen (or default) training set. Attributes are presented alphabetically. An inline Remove Attribute button is provided at each.

      When the list is empty, the following message is displayed:

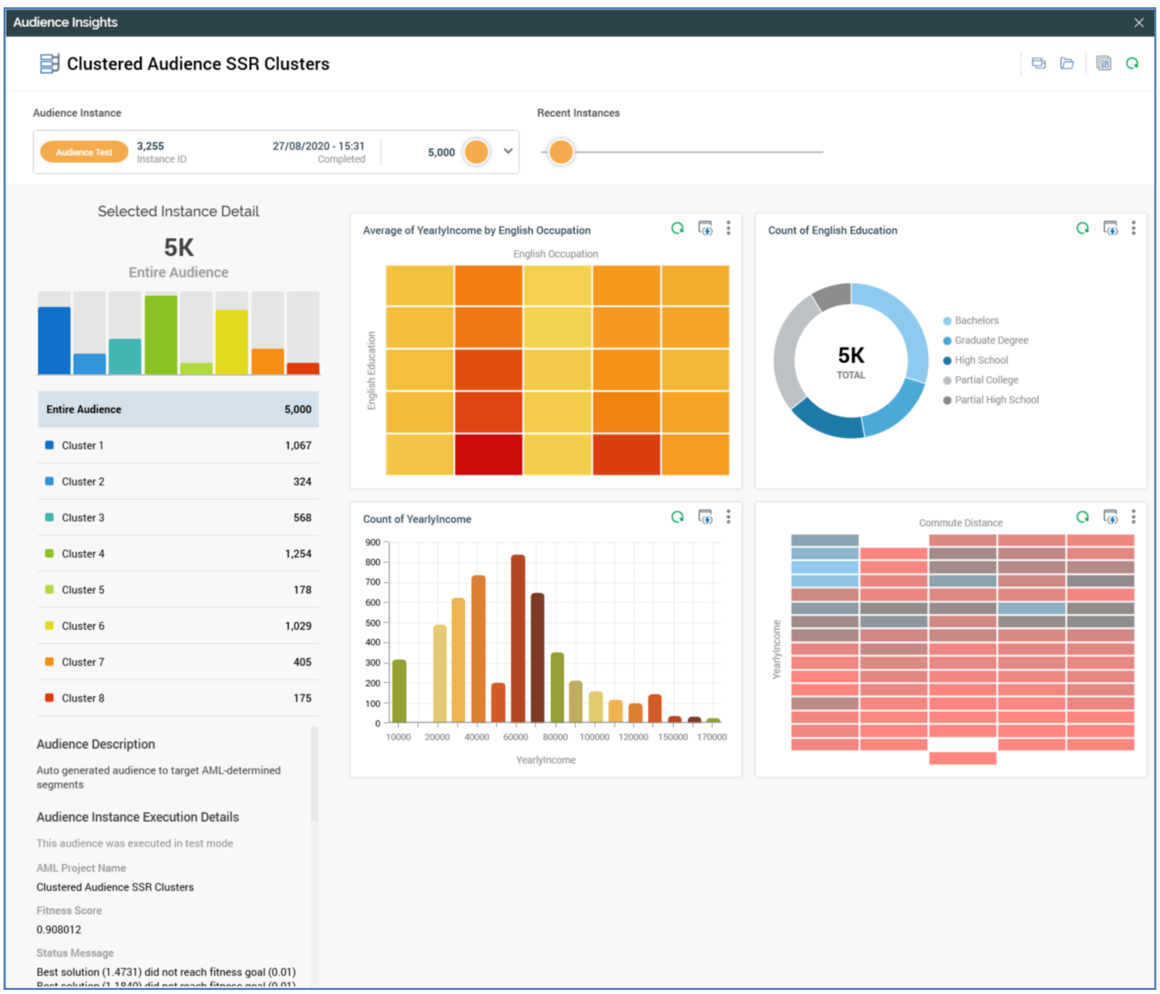
      You can add attributes to the list using drag and drop. An attribute cannot be added if already present in the list. You cannot add Exists in Table or Parameter attributes.

      You can also add the attributes from an export template using drag and drop. Dragging in a NoSQL export template has no effect. Note that changing the Training Set loses any changes made manually to the list of attributes.

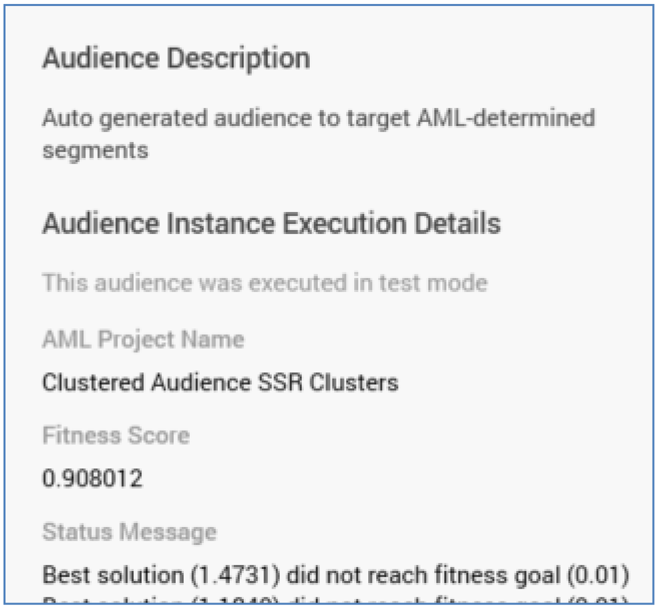
- Footer:
  - Cancel: clicking this button removes the overlay from display. Clicking off the overlay has the same effect.
  - Generate Audience: clicking this button creates a 'Generate Audience from [Rule Name]' job and closes the overlay. The job's description is 'AML Model Builder'. The My Jobs dialog is not displayed.

    Note that you can refresh a selection rule’s count while a clustered audience is being generated at the same.

    On the job's completion, a View Results button is available at the job when displayed in the My Jobs dialog. Clicking the button displays the Audience Insights Window, in which are displayed the newly-generated cluster audience's test execution details.

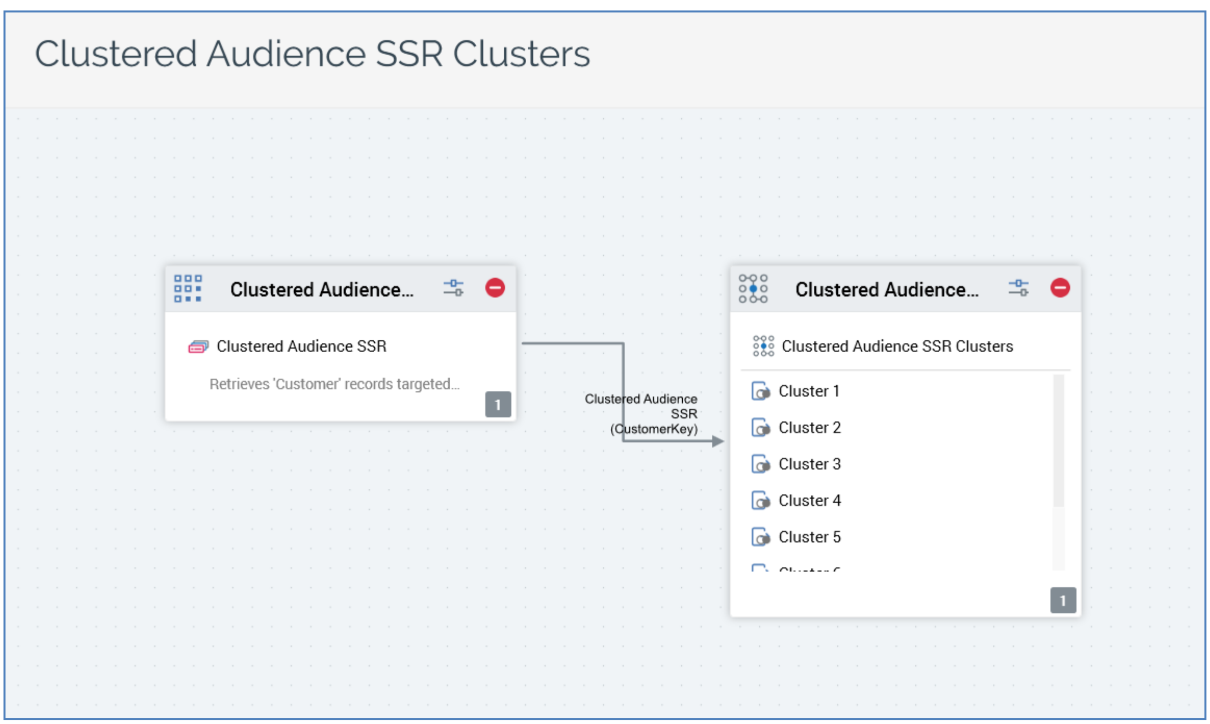


    Results are capped in accordance with the training set's Initial Audience Test Cap property. Additional properties provided by AML are shown below the Audience Instance Execution Details section:



The Latest Generated Audience section is displayed when a clustered audience has been generated from a selection rule. It contains the following:

- View Audience Insights: clicking this button displays the audience's details in the Insights Window. Please see above for more information.
- Open Audience: clicking this button open the clustered audience in the Audience Designer. A clustered audience contains the following:



- Name: set to '[Selection Rule name] Clusters'.
- Description: set to 'Auto-generated audience to target AML-determined segments'.
- Filter: named as per the selection rule, and configured with the standard selection rule from which generated.
- Model Scoring block: named as per the audience, as is the model project with which configured. Its outputs are automatically generated in accordance with the clusters identified by AML. Each output is named 'Cluster [n]', where [n] is an incrementing integer. Each output is associated with a band with the same name.

The model project generated by AML contains the following:

- Model name: set to '[Selection Rule name] Clusters'. Note that an incrementing integer can be appended to ensure uniqueness.
- Type: Clustering.
- Output field: 'Cluster'.
- Attributes: as passed from the selection rule.

Model Score bands are generated automatically based on the clusters identified by AML. Bands are named as per audience outputs (i.e. 'Cluster [n]'). Each band has a single assigned value, starting at 0 and incrementing upwards.

Audience and Model Project files are saved in a folder identified by the training set's Model project and audience folder property. If the training set's Re-use model project and audience files property is set to 'Re-use existing files each time this training set is used', the audience and model project files are overwritten each time a clustered audience is generated. If set to 'Create new files each time this training set is used', new audience and model project files are created each time a clustered audience is generated. '_[n]' appended to filenames to ensure uniqueness (where '[n]' is an incrementing integer).

9.10 Cassandra Limitations

If running a standard selection rule against a Cassandra auxiliary database, a number of features are not supported:

- Compare to attribute criteria
- Nested and multiple criteria lists using cross-resolution levels
- Functions
- Joins
- Exclude
- OR
- Full text string search

If you attempt to run a standard selection rule that contains one or more of the features listed above, a warning is displayed.

In addition, a warning is displayed when running a selection rule containing filter criteria when filtering has not been enabled and indexes not applied at the columns thus utilized within a Cassandra database.

10 Basic Selection Rules

Basic selection rules offer a simpler approach to the identification of records of interest (primarily for the purpose of selecting an audience to which messages are to be communicated). They can be used in a SQL environment, alongside, or as an alternative to, standard selection rules.

Basic selection rules can be used anywhere a standard selection rule can be used, with the exception of a Selection Rule criterion in an Orchestration realtime decision.

Basic selection rules are built in a similar manner to NoSQL selection rules, by selecting criteria from a slide-out panel, and then configuring them as required.

Basic selection rules are generally less feature-rich than standard selection rules, but they do support contact rules, which facilitate the selection of records that have previously been contacted via RPI.

To take advantage of the functionality available at standard selection rule within a basic selection rule, it will need to be converted to the former using the toolbox option provided. After conversion to a standard selection rule, any criteria are converted into standard attribute-based criteria, using attributes sourced from the rule's SQL database definition. Criteria lists within the converted rule are expanded or rolled up in accordance with the Selection Rules – Expand everything on load user preference option.

Note that, having converted a basic to a standard selection rule, it is not possible to convert it back.

The criteria available at a basic selection rule are specified at a SQL Database Definition. SQL database definitions are managed in a dedicated configuration interface. For more information, please see the Configuration Workbench documentation.

Basic selection rules are available in the Rule Designer toolbox when at least one SQL database definition has been configured.

Access to basic selection rule functionality is controlled by the following functional permissions:

- Selection Rule – Basic – Convert to Standard
- Selection Rule – Basic – Count
- Selection Rule – Basic – Data Viewer
- Selection Rule – Basic – Design
- Selection Rule – Basic – Export
- Selection Rule – Basic – View Generated SQL

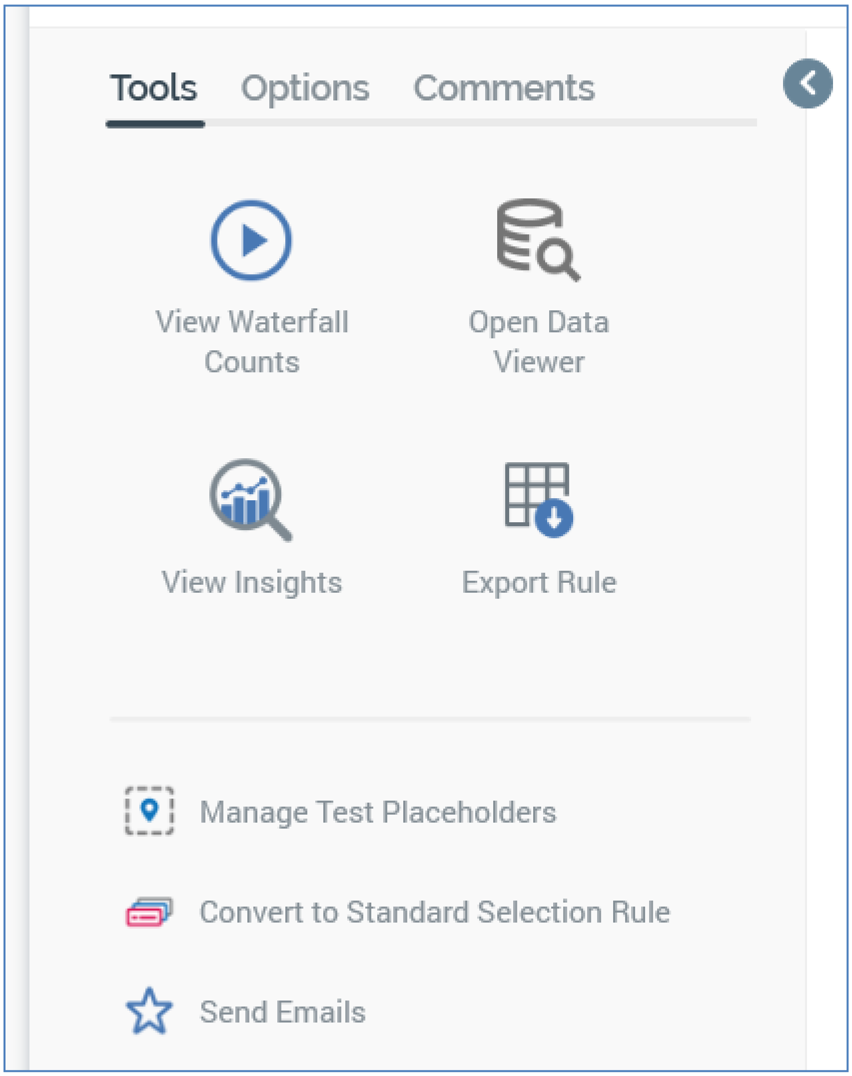
This document details features of basic selection rules that are specific to the file type. Details of features shared between basic selection rules and other files supported in the Rule Designer can be found in that interface's documentation.

10.1 Expanded Mode

The following features are available at a basic selection rule when it is displayed in expanded mode.

10.1.1 Toolbox

The basic selection rule's toolbox is shown to the left.

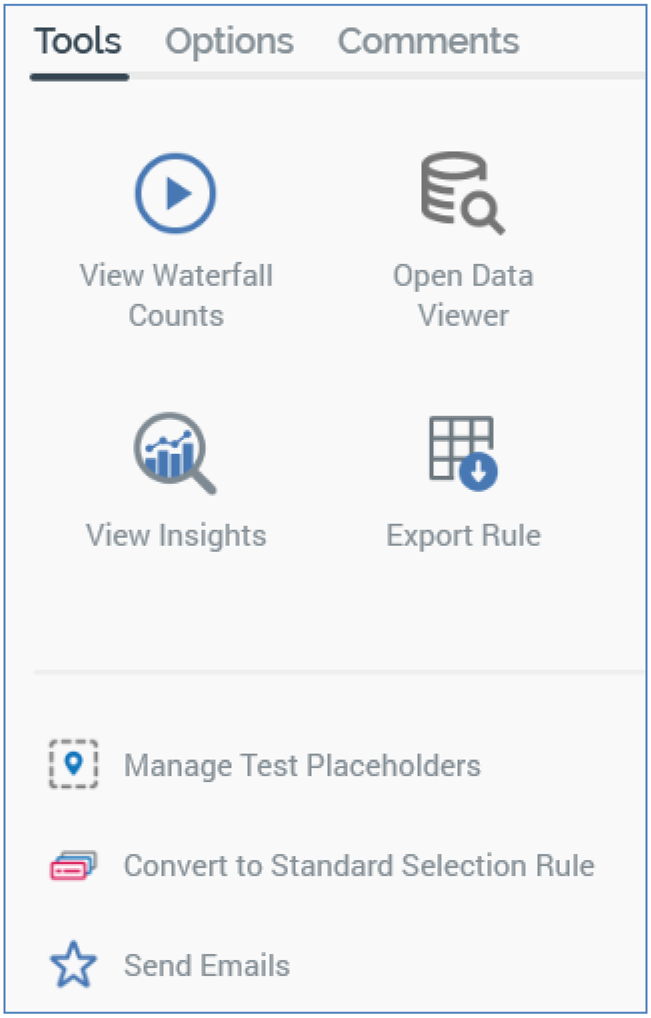


Its display is controlled using the Show/Hide Toolbox button. The toolbox is shown by default.

The toolbox contains three tabs – Tools, Options and Comments. Each is documented separately.

10.1.2 Toolbox – Tools Tab

The toolbox's Tools tab exposes the following:



- View Waterfall Counts: this button is enabled once a criterion has been added to a basic selection rule. Clicking it displays the selection rule's waterfall counts in the Waterfall Counts Window, which is described in the Rule Designer documentation.
- Open Data Viewer: clicking this button displays the Data Viewer Window. The Data Viewer allows you to view a sample of the records targeted by the current basic selection rule. For more information, please see the Rule Designer documentation.
- View Insights: this button is available when a basic selection rule has been saved. Clicking it displays insights relating to the current basic selection rule in the Insights Window. For more information, please see the Rule Designer documentation.
- Export this Rule: allows you to export the records that match the basic selection rule's criteria to a file. For more information, please see the Rule Designer documentation.

- Manage Test Placeholders: clicking this button allows you to set placeholder attribute values to be used when the rule is run, using the [Selection Rule Name] - Test Attribute Placeholders dialog. Please see the Placeholder Attributes section in the Rule Designer documentation, and the Attribute Placeholders Dialog section in the Framework documentation, for more information.

- Convert to Standard Selection Rule: this option allows you to convert the basic selection rule to a standard selection rule (thereby allowing you to take advantage of the latter's wider range of features - for further information, please see the Standard Selection Rule documentation). Access to Convert is controlled by the Selection Rule – Basic – Convert to Standard functional permission. Once you have converted to a standard selection rule, you cannot convert back to a basic selection rule. Invocation of the button is protected by an 'Are You Sure?' dialog:

  After conversion, the basic selection rule becomes a standard selection rule. Its subtype is changed appropriately, and its contents mirror those in the basic selection rule. Criteria are created using attributes sourced from the rule’s SQL database definition. Any linked basic selection rules are created as criteria within the standard rule. Note that you cannot convert if the basic selection rule contains one or more contact rules.

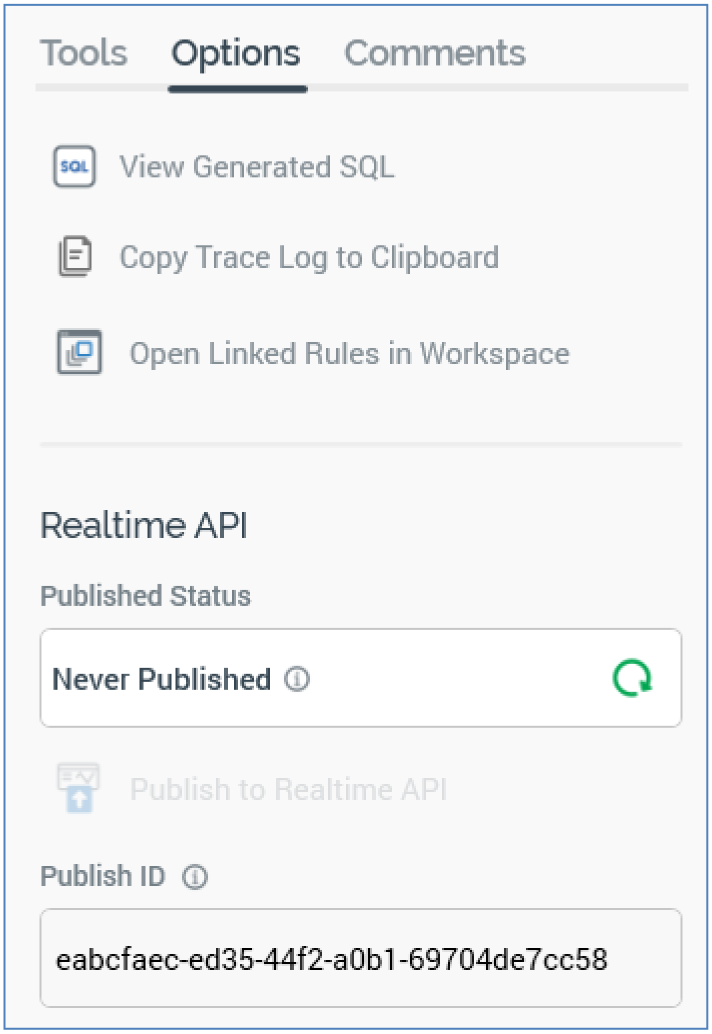
- Send Emails: this button is only displayed if training aids are configured to be shown within the RPI client (for details of how to turn training aids on or off, please see the Preferences documentation).

  If clicked when the current basic selection rule contains unsaved changes, or is invalid, a warning message is displayed.

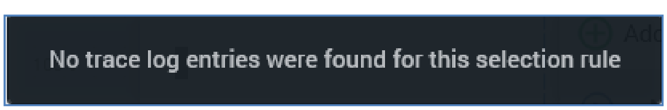
  Clicking the button displays the Send Emails training aid, full details of which are provided in the Training Aids documentation.

10.1.3 Toolbox – Options Tab

The toolbox's Options tab exposes the following:



- View Generated SQL: clicking this button allows you to view the SQL that will be executed on running a rule in the '[Rule name] - Generated SQL' dialog. For more information, please see the Rule Designer documentation.
- Copy Trace log to Clipboard: this option is always available, irrespective of as to whether the basic selection rule has been saved or contains outstanding changes. If the rule has not been run before, an informational message advises that:



If the rule has been run, a message advises that the SQL trace log has been copied to the clipboard. The content contains the trace logs associated with the basic selection rule's count execution. A maximum of 100 log entries are copied to the clipboard.

The following are captured for each log entry:

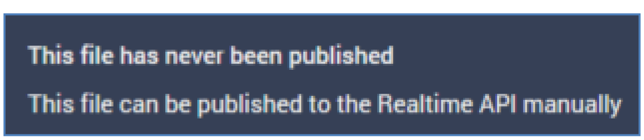
- Execution type
- Context
- Query status
- Query result
- Started
- Ended
- Duration
- File
- Query string
- Error Message (if applicable)

- Open Linked Rules in Workspace: upon invocation, all selection rules linked to the current rule are opened in the same Rule Designer instance. Linked rules are opened in collapsed mode. Any rules that are already open in the workspace are ignored. A message is displayed to advise of any rules that are already open in other Rule Designer instances. A message is also shown if no rules are found to open.

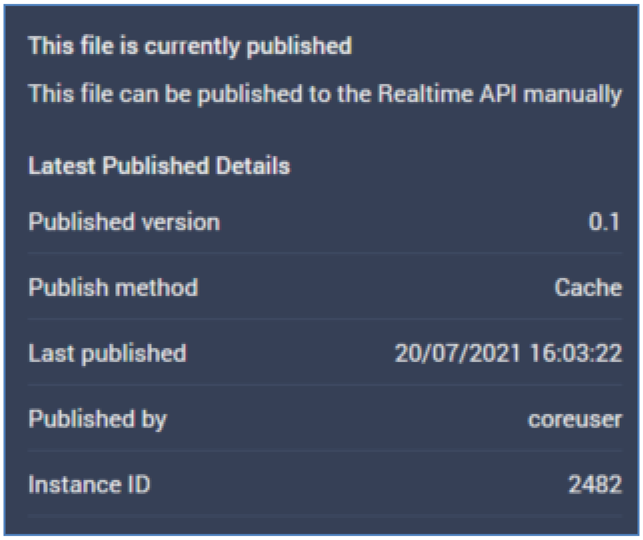
- Realtime API section: containing the following:

  - Published Status: read-only, and one of:

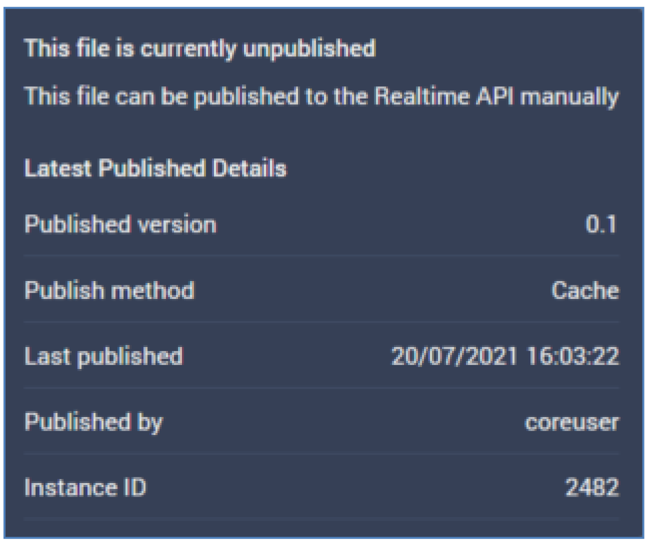
    - Never Published: the following information tooltip is provided:



    - Published: the following information tooltip is provided:



- Unpublished: the following information tooltip is provided:



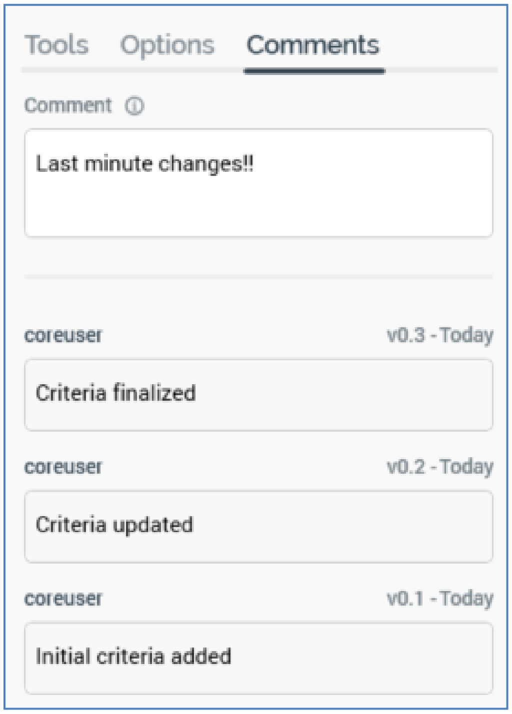
- Refresh: you must click this button to manually refresh the file's latest Published Status (published status changes are not displayed automatically).
- Publish to Realtime API: clicking this button allows you to publish the file for use with the RPI Realtime API. It is enabled when the file is valid and contains no unsaved changes. Invocation creates a Publish job and displays it in the My Jobs dialog. Following a successful publish, the file's Published Status is set to Published, and the Unpublish from the Realtime API button is displayed.
- Unpublish from Realtime API: this button is displayed and enabled when a file is Published. Clicking it unpublishes the file, meaning it can no longer be used by the RPI Realtime API, and is protected by an 'Are You Sure?' dialog. Upon invocation, an Unpublish job is created and displayed in the My Jobs dialog. Following a successful unpublish, the file's Published Status is set to Unpublished, and the Unpublish from the Realtime API button is hidden.

- Publish ID: this read-only GUID is used to uniquely identify the rule during evaluation by the Realtime API. You can select it to copy it to the clipboard.

When a rule is evaluated using the Realtime API, if its criteria are satisfied, the returned ResultContent is true. If not satisfied, the returned ResultContent is false.

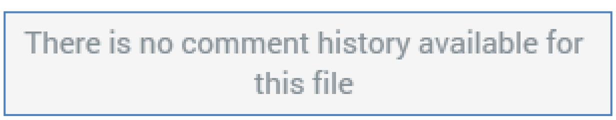
10.1.4 Toolbox – Comments Tab

The toolbox's Comments tab exposes the following:



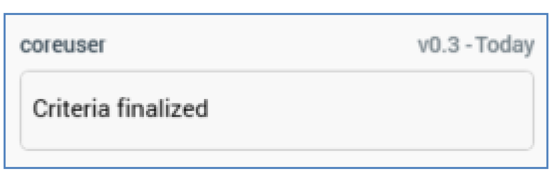
- Comment: you can add optionally add comments to the rule, which will be persisted with the new version of the file created when it is next saved. Comments are added using a multi-line text field, and can be a maximum of 1000 characters in length.

- Comment history: if no comments have been saved with the rule, a message is displayed:

  If comments have been saved, they are displayed in reverse chronological order.

  The following read-only information is displayed for each comment in the comment history:

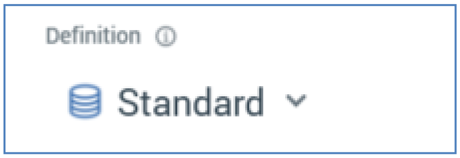
  

  - Username
  - File version

- Date/time added
- Comment

10.1.5 Definition

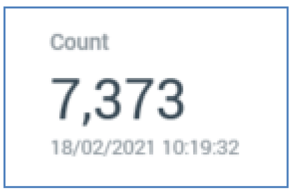
This dropdown allows you to select a SQL database definition, which defines the attributes available when building criteria, and well as optionally providing access to contact rules.



Selection of a definition is mandatory. If you change a rule's definition having added one or more criteria, any existing criteria are cleared without display of an 'Are You Sure?' dialog.

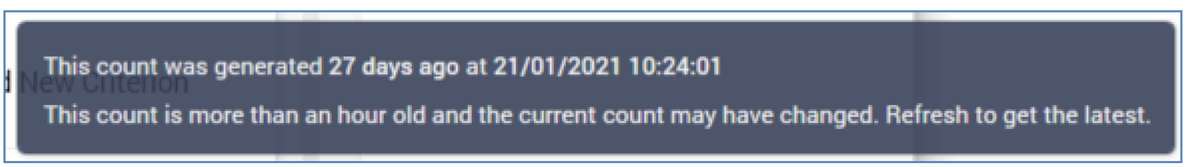
10.1.6 Count

A basic selection rule's count describes the number of records that matched the rule's criteria at the point in time when the count was last refreshed.



The date and time at which the count was generated is display immediately below the count itself.

When you open a selection rule, if a count had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. If the count is more than an hour old, an information icon is shown. A tooltip is shown on hovering over the same:



10.1.7 Refresh Count

You can refresh a basic selection rule's count by clicking the button shown to the right of its count.

A Refreshing count… indicator is displayed while the system determines the number of records that match the rule's criteria.

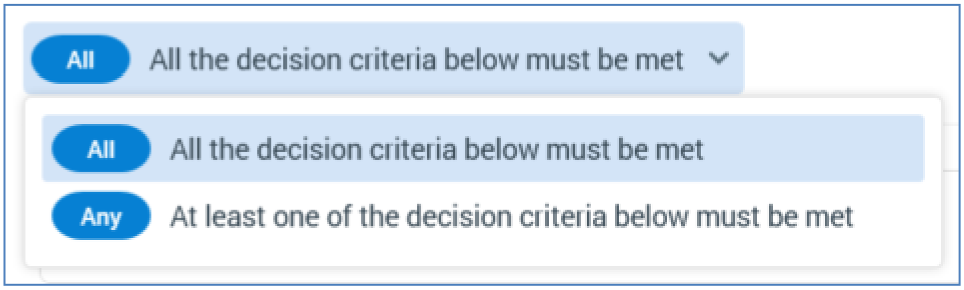
The act of getting a basic selection rule count creates a Count job. The My Jobs Dialog is not shown automatically at such a job's creation. You can view count jobs that match the current filter settings within the Dialog. Details of the job and Dialog are provided in the My Jobs documentation.

If an error occurs when refreshing a basic selection rule's count, exception details are written to the server and client logs.

When the current RPI installation is using a SQL Server data warehouse or auxiliary database, if the system is unable to connect when running a selection rule count (for example due to the database server not being found, the database login failing (due e.g. to the database being detached) or because of a deadlock), a series of attempts to reach the database are made (over a maximum of a 10-minute period). After this time the series of retries are abandoned. All retry details are logged to the server log.

10.1.8 All/Any

This dropdown property is displayed just below a basic selection rule's header.



It allows you to define how a basic selection rule's criteria are to be treated when a rule's count is generated. Two options are available – All (the default) and Any.

If All/Any is set to All, for a record to be targeted, all criteria in the rule must be satisfied. If set to Any, only one of the criteria need be met for the rule to be satisfied.

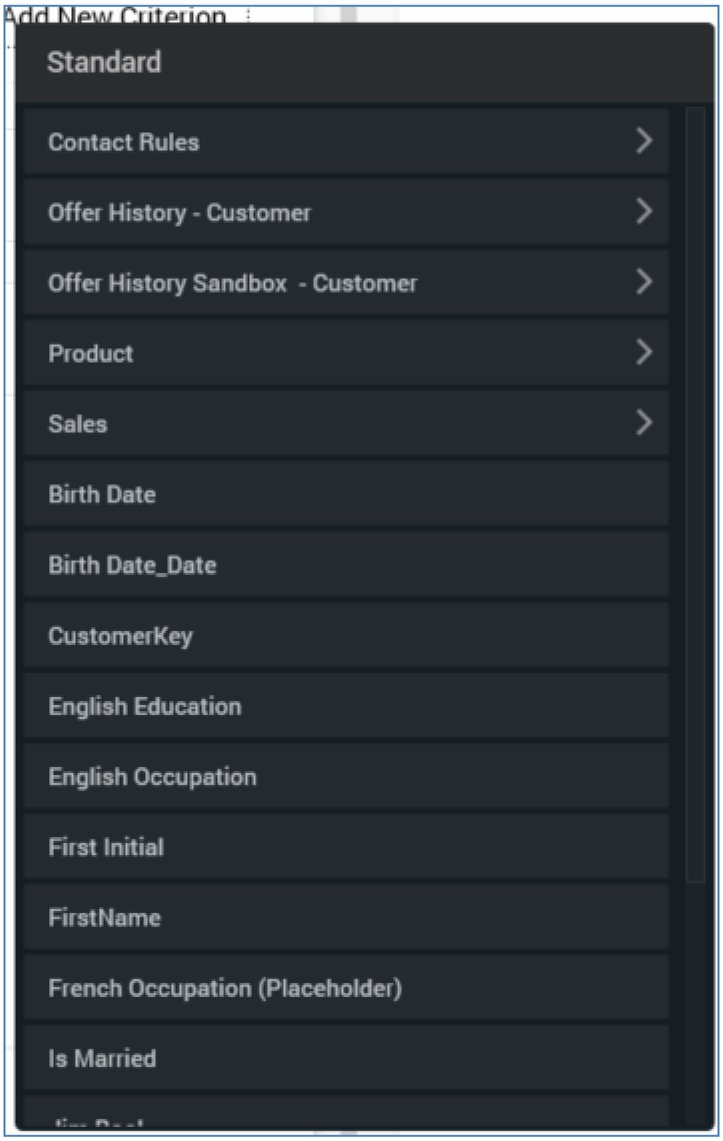
Note that All/Any is always displayed, even if a basic selection rule contains only a single criterion. In this case the property has no effect.

All/Any is also shown at a criteria list, to determine how the criteria listed therein are to be treated at the parent rule's execution.

10.1.9 Add New Criterion Button

This button allows you to add a criterion to a basic selection rule.

Clicking the button displays a slide-out panel.



The panel's header initially reflects the currently-selected context at the point of its being displayed. If the rule as a whole was selected, the panel's header is set to the currently-selected SQL database definition's name. If a criteria list/table is selected, its name is displayed instead. A '<' button is displayed to the left of the panel's header. You can click the header to return to the parent context.

All criteria applicable to the current context are listed in the panel.

Nested tables are displayed alongside criteria and are shown with a '>' button to the right. If clicked, the contents of the panel are replaced with the contents of the nested table, and the panel's title is updated to reflect the same. Note that nested tables can contain nested child tables, if thus specified at the selected SQL database definition.

Clicking a criterion within the panel adds a matching criterion to the basic selection rule.

If appropriate, a new criterion is created within criteria lists representing the attribute's position in the table hierarchy defined at the selected SQL database definition.

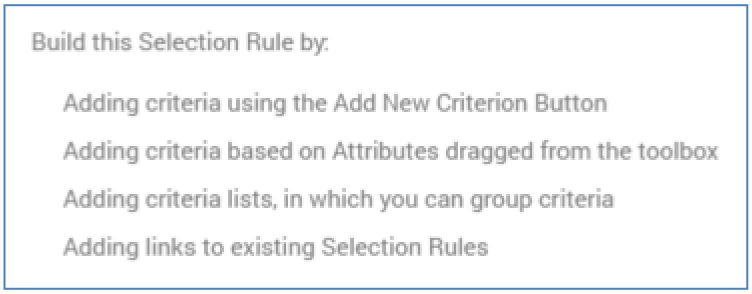
If a criteria list is selected when a criterion is added, if the selected criterion fits within the criteria list's hierarchy, it is added (along with any criteria lists necessary to represent the table structure). If the selected criterion does not fit within the hierarchy, a warning is thrown.

A newly-added criterion is presented in Edit mode by default. If you were editing an existing criterion when Add New was clicked, Edit mode is exited in the former context, and the new criterion is shown in Edit mode.

If the currently-selected SQL database definition's Enable contact rules property is checked, three additional nested sets of criteria (Contact Rules, Offer History - [Audience Definition] and Offer History Sandbox - [Audience Definition] are available when adding a new criterion. These are documented separately.

10.1.10 Canvas

A basic selection rule's canvas initially displays a message:



Criteria, criteria lists and linked selection rules are described elsewhere in this documentation.

The following options are available when you right click a basic selection rule's canvas:

- Add New Criteria List: adds a new, empty criteria list to the basic selection rule.
- Paste: only available if the clipboard contains something that may legitimately be pasted into the rule (e.g. a criterion or criteria list).

10.1.11 Add New Criteria List

This button is displayed below the basic selection rule's canvas.

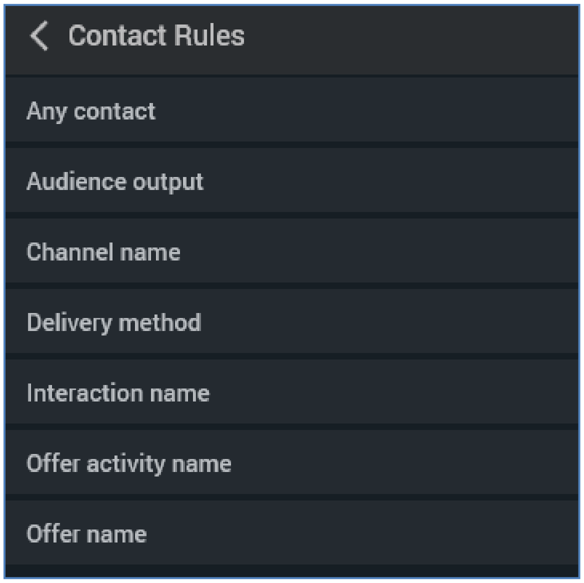
Clicking it adds a new, unconfigured criteria list to the basic selection rule. The criteria list is added to the root level of the currently-selected rule, after all existing criteria, criteria lists and linked selection rules.

Details on criteria lists are provided elsewhere in the basic selection rule documentation.

10.1.12 Contact Rules

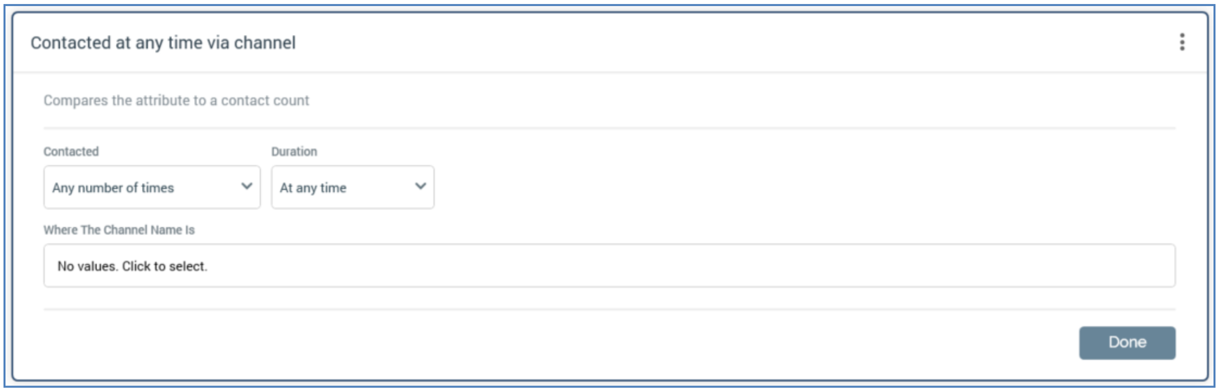
If the currently-selected SQL database definition's Enable contact rules property is checked, three additional sets of contact rule criteria are made available when adding a criterion:

- Contact Rules: these criteria facilitate the selection of records that have previously been contacted via RPI. The following types of contact rules are supported:



You can choose a criterion type that satisfies your requirements – for example, choose 'Any contact' to target any records previously contacted via RPI, or choose 'Offer name' to target only those records that were in receipt of a specific RPI offer.

When presented in edit mode, a contact rule criterion has the following properties:



- Textual description
- ‘Compares the attribute to a contact count’
- Contacted: allows you to specify the number of times a record has been contacted. The following dropdown values are available:
  - Any number of times (the default)
  - Not contacted
  - Exactly - Has been contacted on a specific number of times
  - More than - Has been contacted more than a specific number of times
  - Less than - Has been contacted less than a specific number of times
- time(s): this integer property accompanies [Dropdown 1] and is shown when that field's value is set to one of 'More than' or 'Less than'. It defaults to 1 and accepts a minimum value of 0 and a maximum value of 9,999.
- Duration: allows you to specify the timeframe in which a contact needs to have taken place for the criterion to be satisfied. The following dropdown values are available:
  - At any time (the default)
  - In the last
- day(s): this integer property accompanies [Dropdown 2] and is shown when that field's value is set to 'In the last'. It defaults to 7 and accepts a minimum value of 1 and a maximum value of 9,999.
- Where the [Criterion Type] name is: this property is displayed for all contact rule criterion types other than 'Any contact', and allows you to specify the name of the context in which records were targeted (for example, in an Interaction name contact rule, this field would be used to specify the names of the interaction(s) in which records were contacted. Provision of a value at the field is mandatory when it is shown. You can select from a list of predefined values (if available) using the Choose Values dialog.

When presented in read-only mode, a contact rule criterion appears as per the following example:

- Offer History - [Audience Definition]: these criteria allow you to target records on the presence of matching records in the selected SQL database definition's Audience definition's Offer History tables. The following criterion types are supported:
    - Activity name
    - Address key
    - Audience ID
    - Audience output ID
    - Audience output name
    - Channel execution ID
    - Channel name: predefined values available
    - Delivery method: predefined values available
    - First execution date
    - Interaction name
    - Is selected
    - Last execution date
    - Offer channel name
    - Offer name
    - RP contact ID
    - Seed count
    - State
    - State detail
    - State timestamp
    - Target count
    - Timestamp

    - Workflow ID
    - Offer History Attributes: as defined at the audience definition.
- Offer History Sandbox - [Audience Definition]: the same set of criteria are also available to assist in the targeting of records previously contacted in Test mode, and for which offer history sandbox table entries exist.

10.1.13 Criteria

Criteria define the records to be targeted by a basic selection rule. By adding criteria to a basic selection rule you limit the records to be counted when the rule is run. For example, adding a ‘Gender is female’ criterion causes only female records to be counted.

A dark border is displayed at a criterion when it is when selected.

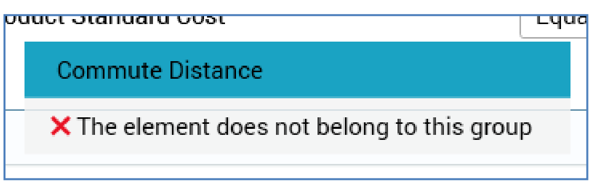
Provision of criteria is optional. If you get a basic selection rule's count with no criteria specified, a count of all records at the SQL database definition’s resolution is returned.

You can add a criterion to a basic selection rule by clicking the Add New Criterion button (documented separately). You can also do so by dragging an attribute that is present in the rule’s SQL database definition from the toolbox and dropping it onto the rule.

When adding a criterion from a child table within the SQL database definition, if adding the criterion at the level of the basic selection rule itself, a parent criteria list is created automatically, and the new criteria created within. If a criteria list matching the level of the nested criterion is selected at its creation, the new criterion is added within the criteria list. If a criteria list with a level other than the new criterion's level is selected at the criterion's creation, a warning is thrown.

A validation error is raised if the attribute on which the criterion is based cannot be located in the currently-selected definition (this may occur if, for example, you change the definition after a criterion has been added).

You can re-order read-only criteria within a basic selection rule using drag and drop. If you attempt to drag a criterion into an incompatible parent criteria list, a message is displayed to advise that you are unable to do so.



You can also drag and drop criteria between basic selection rules. Drag and drop is not supported at criteria when in edit mode.

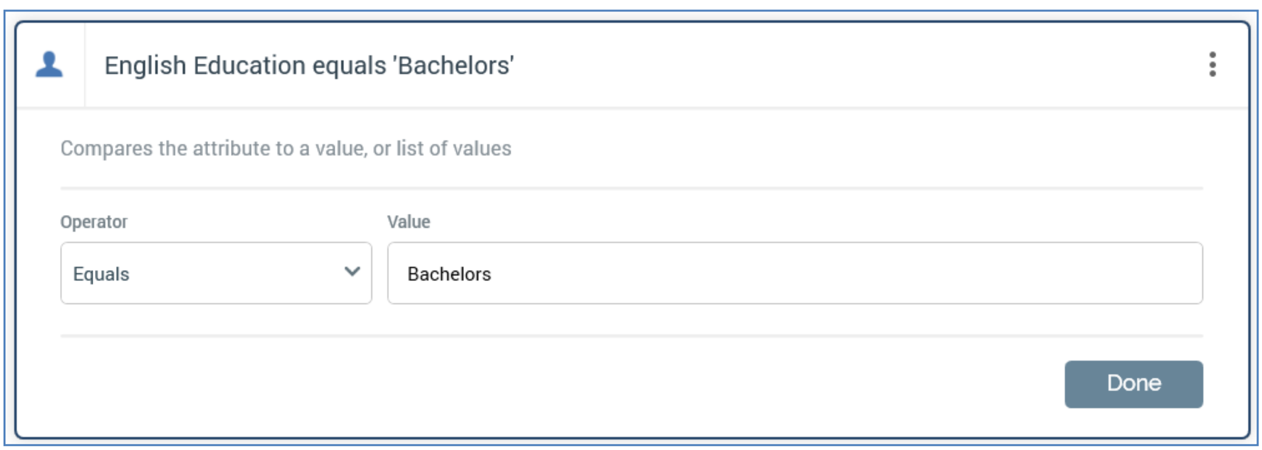
Criteria can be presented in either read-only or edit mode. Only a single criterion can be displayed in edit mode at a time.

When in read-only mode, the following are shown at a criterion:

- Resolution level icon
- Plain text interpretation of settings: consisting of the criterion name, operator and any specified values, e.g.:
- Configure: clicking this button puts the criterion into edit mode.
- Actions: clicking this button displays a context menu, which exposes the following:
    - Cut
    - Copy
    - Remove: removes the criterion without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a criterion.

When in edit mode, the following are shown:



- Textual criterion description.
- Operator: a dropdown field, the values exposed by which are data type-appropriate.
- Value(s): the values supported at a criterion are appropriate for its data type. If a criterion supports the provision of values, the following is initially displayed at its value:

- If a string criterion type, if predefined values exist for the decision criterion type, clicking the value field displays the Choose Values dialog, in which you can select the values you require. More information on the Choose Values dialog can be found in the RPI Framework documentation.

  If predefined values are not supported, values are supplied using the Specify Values dialog. More information on the Specify Values dialog can also be found in the RPI Framework documentation.

- If a numeric criterion type, a masked field restricts data entry to a numeric value. If one of the ‘Is in list’ or ‘Is not in list’ operators is selected, multiple values can be supplied using the Specify values dialog (see above for details).

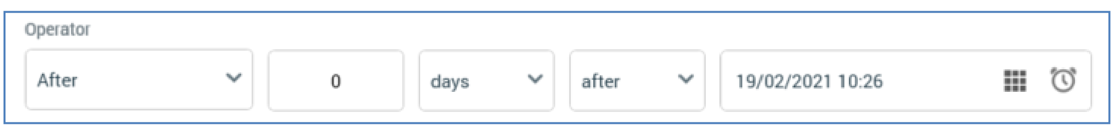
- If a date criterion type, display depends on the selected operator.

  - If ‘Equals’ or ‘Does not equal’, the following are shown:

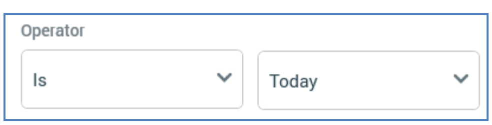
    

    A date or datetime picker, defaulting to today/now, is shown. Selecting the button to its right sets the value to the Current date/time.

  - If ‘After’, ‘Before’ or ‘Within’, the following are shown:

  - If ‘Is’, the following are shown:

    Note that if set, values are calculated using the time zone specified in system configuration setting RuleTimezoneOverride. If blank, the server time zone is used.

- If a Boolean decision criterion type, the following values are available:

  - Is True

  - Is False (the default)

Note that if an Exists or Does not exist operator has been selected, Value is not shown.

- Done: clicking this button returns the criterion to read-only mode.

The following keyboard shortcuts are supported at read-only criteria:

  - Ctrl-C: copy
  - Ctrl-X: cut
  - Delete: remove

Please note the following:

- You can get a basic selection rule's count when one or more criteria are in edit mode.
- You can put a read-only criterion into edit mode by double-clicking it.

10.1.14 Criteria List

A criteria list allows you to group related criteria, in order treat such criteria as independent blocks that must be entirely satisfied or not satisfied (using All/Any as required).

The following are displayed at a criteria list:

- Include/Exclude: defines whether the criteria within the group must be satisfied or not satisfied for the criteria list itself to be satisfied.
- All/Any: defines how the criteria within the criteria list are to be treated. If set to All, all criteria within the criteria list must be satisfied for the group as a whole to be satisfied. When set to Any, any of the criteria must be satisfied for the group to be satisfied.
- List Definition: this can be set in accordance with the rule's currently-selected Definition, or, if its criteria exist within a child table within the SQL database definition, to a value matching that table's name.
- Criteria List Description: this optional property can be a maximum of 1000 characters in length.
- Actions: clicking this button displays a context menu, which exposes the following:
  - Cut
  - Copy
  - Remove: removes the criteria list without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a criteria list.

You can re-order criteria lists within their peer criteria and criteria lists using drag and drop. You can also re-order criteria within a criteria list. You cannot drag a criterion out of its parent criteria list.

Nested criteria lists are supported; the maximum number of nested criteria lists that can be added is limited to 5.

The following keyboard shortcuts are supported at criteria lists:

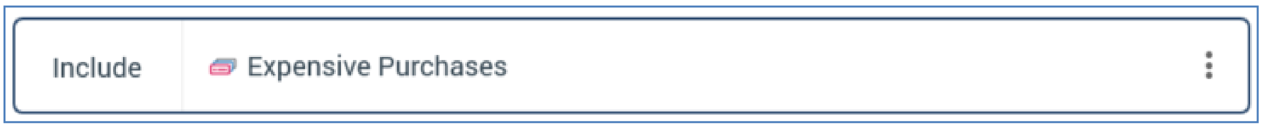
- Ctrl-C: copy
- Ctrl-X: cut

- Ctrl-V: paste
- Delete: remove

10.1.15 Linked Basic Selection Rule

You can create a link to a basic selection rule within an outer basic selection rule by dragging a basic selection rule file from the toolbox and dropping it into the outer rule. You cannot create a link to a standard or NoSQL selection rule within a basic selection rule.

When a link is created to a basic selection rule within a basic selection rule, it is shown like this:



The following are shown:

- Include/Exclude: this setting allows you to specify that the linked basic selection rule's criteria should be met or not met for its usage in this context to be satisfied.
- Basic selection rule name
- Open latest version: clicking this button opens the linked basic selection rule in the current Rule Designer tab.
- Pop out: displays the linked rule in an independent, modeless Window. For more information, please see the Rule Designer documentation.
- View Insights: clicking this button displays insights pertaining to the linked basic selection rule in the Insights Window. For more information, please see the Rule Designer documentation.
- Actions: clicking this button displays a context menu, which exposes the following:
  - Cut
  - Copy
  - Remove: removes the linked selection rule without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a linked selection rule.

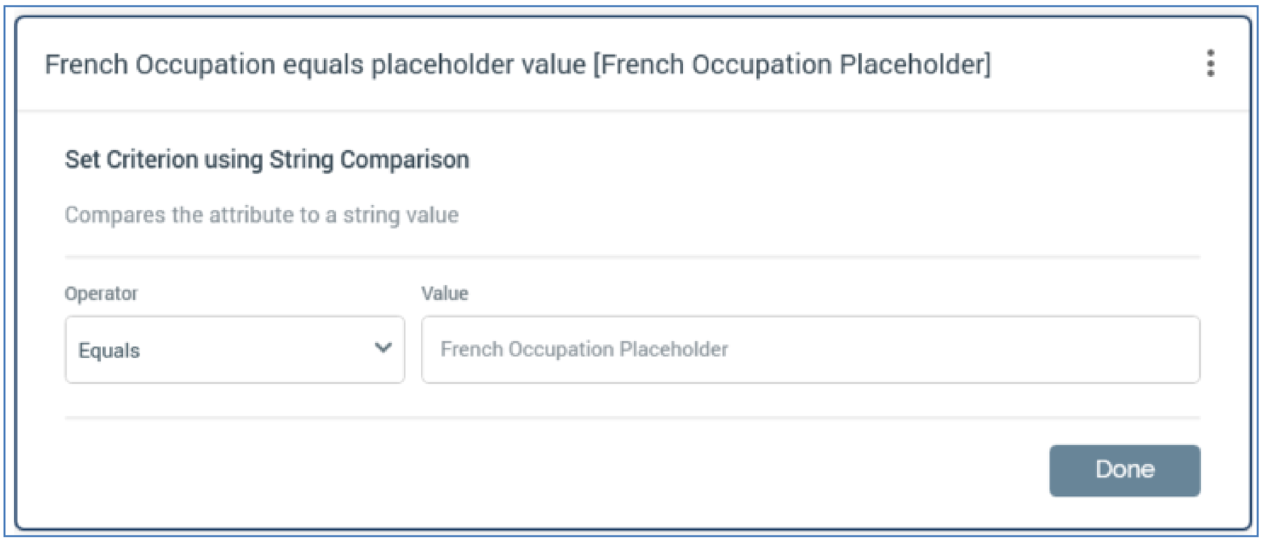
The following keyboard shortcuts are supported at linked rules:

- Ctrl-C: copy
- Ctrl-X: cut
- Delete: remove

10.1.16 Placeholder Criterion

If a basic selection rule's SQL database definition is configured with one or more Placeholder attributes, they can be used as criteria within the same. A basic selection rule placeholder criterion is presented in read-only mode as per the following example:

In edit mode, the following are shown at a placeholder attribute:

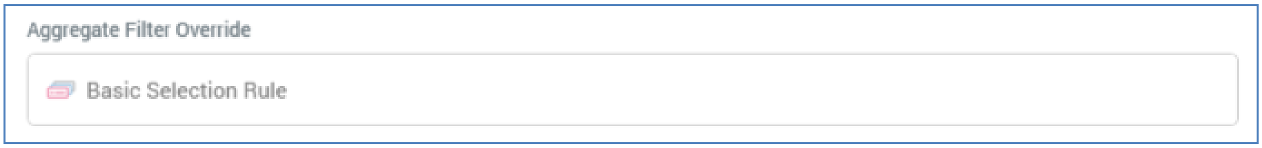


- Operator
- Value: set to the name of the placeholder criterion.

You can manage basic selection rule placeholders at the Test Attribute Placeholders dialog, which is shown on invocation of Manage Test Placeholders at the toolbox's Tools tab. For more information on using placeholders in selection rules, please see the Rule Designer documentation.

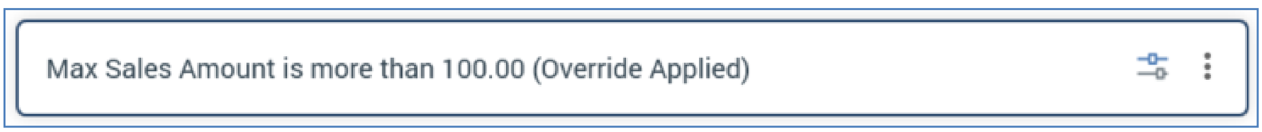
10.1.17 Aggregate Filter Overrides

Having added a criterion based on an aggregation attribute to a basic selection rule, an additional property is available. When in Edit mode, the following is shown:



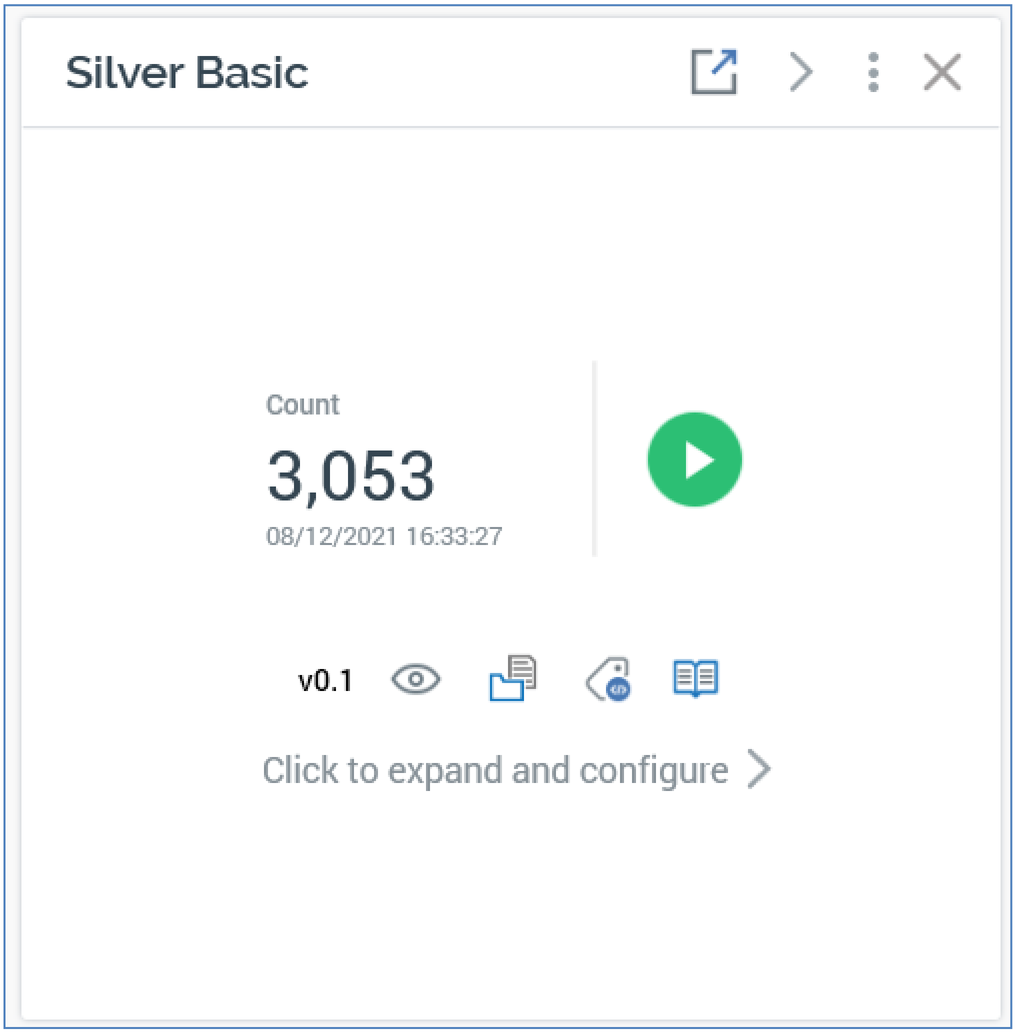
- Aggregate filter override: you can optionally select another basic selection rule to apply a filter to the aggregate, such that when the rule's count is calculated, only records targeted by the filter rule are included in aggregate calculations. You can populate the property by browsing for a basic selection rule, or by using drag and drop. You can also initiate the creation of a new basic selection rule. Once populated, Open Latest Version, View Insights and Clear inline buttons are available. Context menu options are also available. Note that the selected rule must resolve to same table as the aggregation attribute's Aggregation table.

When viewed in read-only mode, a criterion at which an aggregate filter override has been applied appears as follows:



10.2 Collapsed Mode

The following is shown at a basic selection rule when in collapsed mode:



- Count
- Date/time of count generation
- Refresh
- File options
- Click to expand and configure: clicking this button displays the rule in expanded mode

11 NoSQL Selection Rules

The primary role of a NoSQL selection rule is to execute queries against a NoSQL database. As such, it serves as the analog of a standard or basic selection rule in a SQL environment. You can configure criteria within a NoSQL selection rule, and then get a count of the records that match the criteria. You can use NoSQL selection rules to configure blocks within an audience, and execute them when running interaction workflows, in order to retrieve records in respect of which to take action.

NoSQL selection rules are made available in the Rule Designer toolbox when running RPI against a NoSQL data warehouse, or where the current RPI client has been configured with one or more NoSQL auxiliary databases.

You can generally use a NoSQL selection rule in a NoSQL environment in other contexts where you would use a standard or basic selection rule for SQL. For example, you would set a channel Filter using a selection rule at a SQL client, but you would do the same using a NoSQL selection rule at a NoSQL client.

NoSQL selection rules can also be used to make content applicability decisions at a rule smart asset.

Further information on using NoSQL selection rules can be found across the RPI documentation.

Access to NoSQL selection rule functionality is controlled by the following functional permissions:

- Selection Rule – NoSQL – Count
- Selection Rule – NoSQL – Data Viewer
- Selection Rule – NoSQL – Design
- Selection Rule – NoSQL – Export

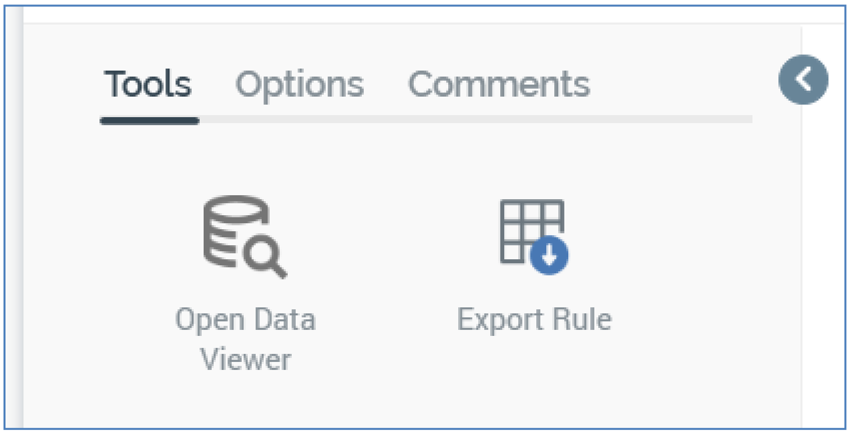
This document details features of NoSQL selection rules that are specific to the file type. Details of features shared between NoSQL selection rules and other files supported in the Rule Designer can be found in that interface's documentation.

11.1 Expanded Mode

The following features are available at a NoSQL selection rule when it is displayed in expanded mode.

11.1.1 Toolbox

The NoSQL selection rule's toolbox is shown to the left.

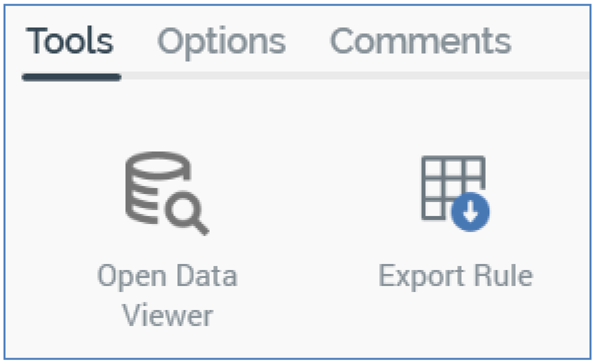


Its display is controlled using the Show/Hide Toolbox button. The toolbox is shown by default.

The toolbox contains three tabs – Tools, Options and Comments. Each is documented separately.

11.1.2 Toolbox – Tools Tab

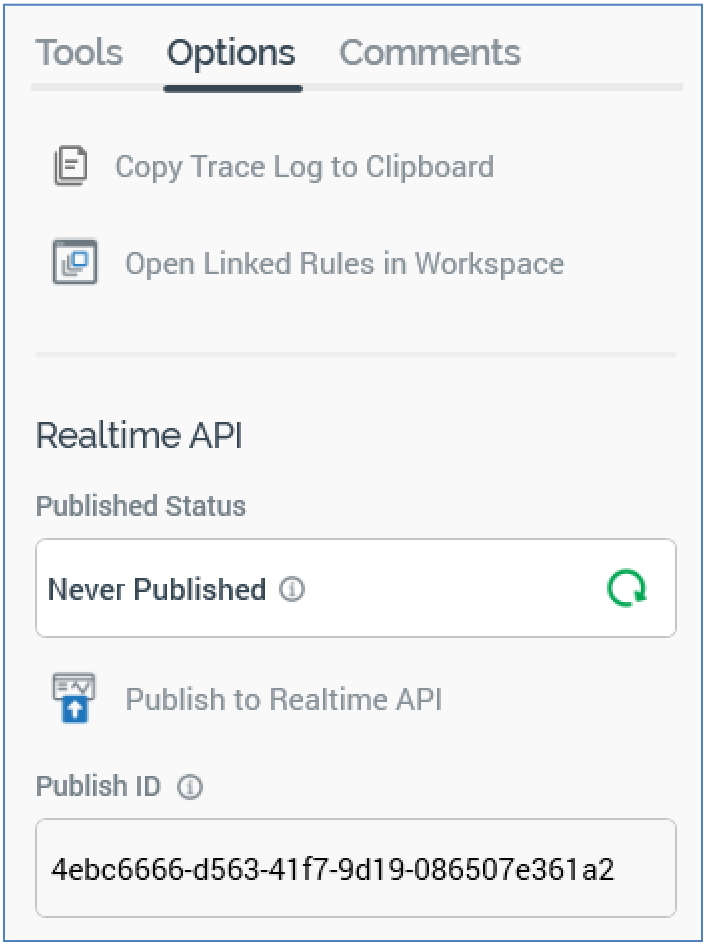
The toolbox's Tools tab exposes the following:



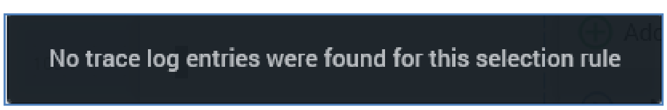
- Open Data Viewer: clicking this button displays the Data Viewer Window. The Data Viewer allows you to view a sample of the records targeted by the current NoSQL selection rule. For more information, please see the Rule Designer documentation.
- Export this Rule: allows you to export the records that match the NoSQL selection rule's criteria to a file. For more information, please see the Rule Designer documentation.

11.1.3 Toolbox – Options Tab

The toolbox's Options tab exposes the following:



- Copy Trace log to Clipboard: this option is always available, irrespective of as to whether the NoSQL selection rule has been saved or contains outstanding changes. If the rule has not been run before, an informational message advises that:

  If the rule has been run, a message advises that the SQL trace log has been copied to the clipboard. The content contains the trace logs associated with the NoSQL selection rule's count execution. A maximum of 100 log entries are copied to the clipboard.

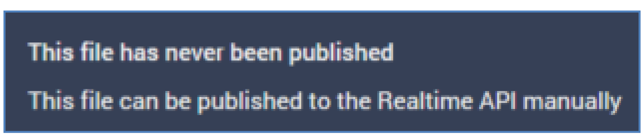
  The following are captured for each log entry:

  - Execution type
  - Context

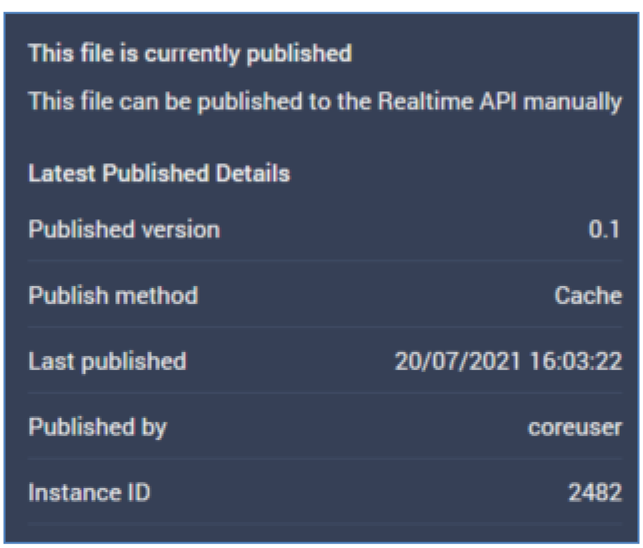
- Query status
- Query result
- Started
- Ended
- Duration
- File
- Query string
- Error Message (if applicable)

- Open Linked Rules in Workspace: upon invocation, all selection rules linked to the current rule are opened in the same Rule Designer instance. Linked rules are opened in collapsed mode. Any rules that are already open in the workspace are ignored. A message is displayed to advise of any rules that are already open in other Rule Designer instances. A message is also shown if no rules are found to open.

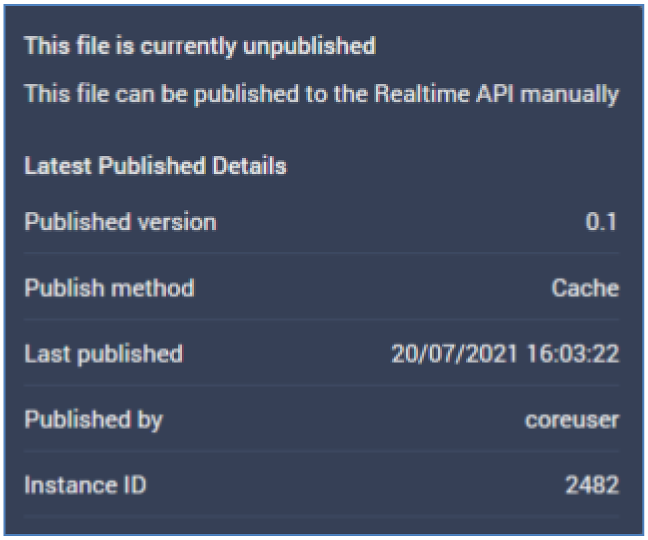
- Realtime API section: containing the following:
  - Published Status: read-only, and one of:
    - Never Published: the following information tooltip is provided:



    - Published: the following information tooltip is provided:



- Unpublished: the following information tooltip is provided:

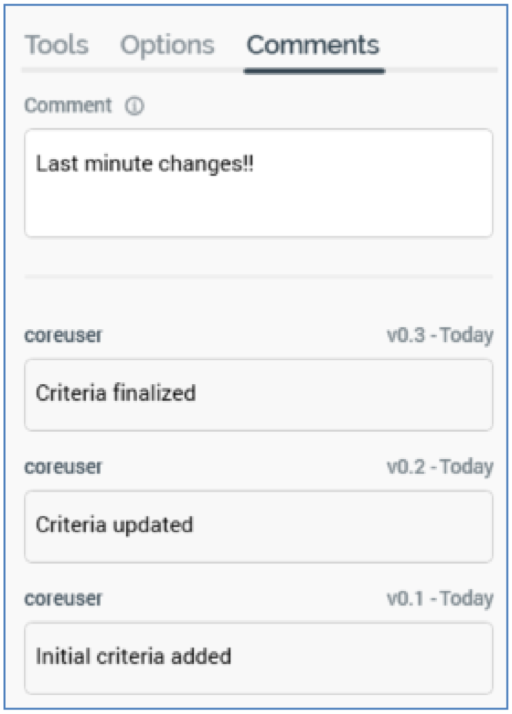


- Refresh: you must click this button to manually refresh the file's latest Published Status (published status changes are not displayed automatically).
- Publish to Realtime API: clicking this button allows you to publish the file for use with the RPI Realtime API. It is enabled when the file is valid, and contains no unsaved changes. Invocation creates a Publish job and displays it in the My Jobs dialog. Following a successful publish, the file's Published Status is set to Published, and the Unpublish from the Realtime API button is displayed.
- Unpublish from Realtime API: this button is displayed and enabled when a file is Published. Clicking it unpublishes the file, meaning it can no longer be used by the RPI Realtime API, and is protected by an 'Are You Sure?' dialog. Upon invocation, an Unpublish job is created and displayed in the My Jobs dialog. Following a successful unpublish, the file's Published Status is set to Unpublished, and the Unpublish from the Realtime API button is hidden.
- Publish ID: this read-only GUID is used to uniquely identify the rule during evaluation by the Realtime API. You can select it to copy it to the clipboard.

When a rule is evaluated using the Realtime API, if its criteria are satisfied, the returned ResultContent is true. If not satisfied, the returned ResultContent is false.

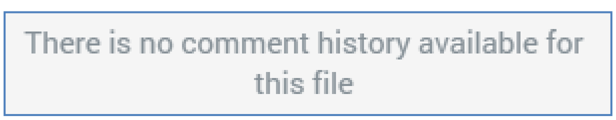
11.1.4 Toolbox – Comments Tab

The toolbox's Comments tab exposes the following:



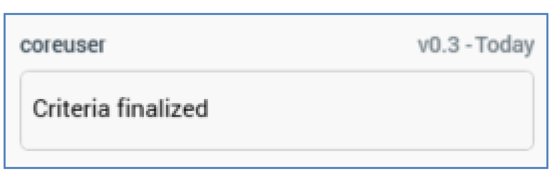
- Comment: you can add optionally add comments to the rule, which will be persisted with the new version of the file created when it is next saved. Comments are added using a multi-line text field, and can be a maximum of 1000 characters in length.

- Comment history: if no comments have been saved with the rule, a message is displayed:



  If comments have been saved, they are displayed in reverse chronological order.

  The following read-only information is displayed for each comment in the comment history:



  - Username
  - File version

- Date/time added
- Comment

11.1.5 Definition

This dropdown allows you to select a NoSQL database collection or offer history definition, which will be interrogated when the NoSQL selection rule is run.

Selection of a definition is mandatory, as the selected definition provides the basis for the criteria with which the rule can be configured. The Add New Criterion and Add Criteria list buttons are disabled when no definition has been selected.

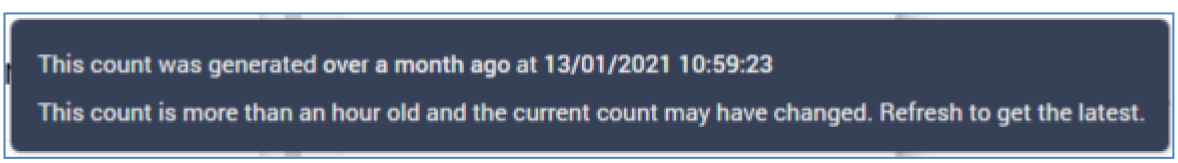
If you change a rule's definition having added one or more criteria, any existing criteria are cleared without display of an 'Are You Sure?' dialog.

11.1.6 Count

A NoSQL selection rule's count describes the number of records that matched the rule's criteria at the point in time when the count was last refreshed.

The date and time at which the count was generated is display immediately below the count itself.

When you open a selection rule, if a count had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. If the count is more than an hour old, an information icon is shown. A tooltip is shown on hovering over the same:



11.1.7 Refresh Count

You can refresh a NoSQL selection rule's count by clicking the button shown to the right of its count.

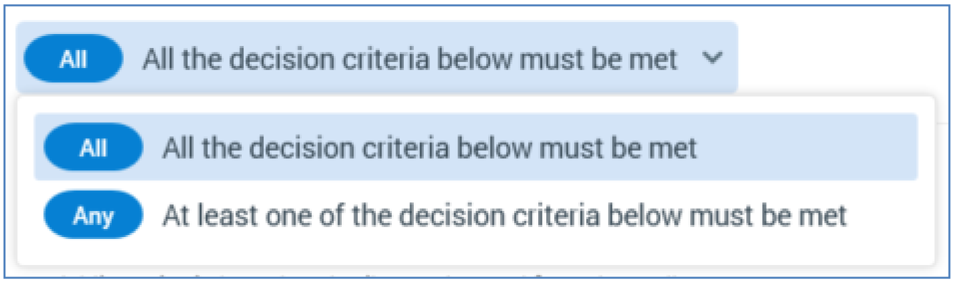
A Refreshing count… indicator is displayed while the system determines the number of records that match the rule's criteria.

The act of getting a NoSQL selection rule's count creates a Count job. The My Jobs Dialog is not shown automatically at such a job's creation. You can view count jobs that match the current filter settings within the Dialog. Details of the job and Dialog are provided in the My Jobs documentation.

If an error occurs when refreshing a NoSQL selection rule's count, exception details are written to the server and client logs.

11.1.8 All/Any

This dropdown property is displayed just below a NoSQL selection rule's header.



It allows you to define how a NoSQL selection rule's criteria are to be treated when a rule's count is generated. Two options are available – All (the default) and Any.

If All/Any is set to All, for a record to be targeted, all criteria in the rule must be satisfied. If set to Any, any one of the criteria needs to be met for the rule to be satisfied.

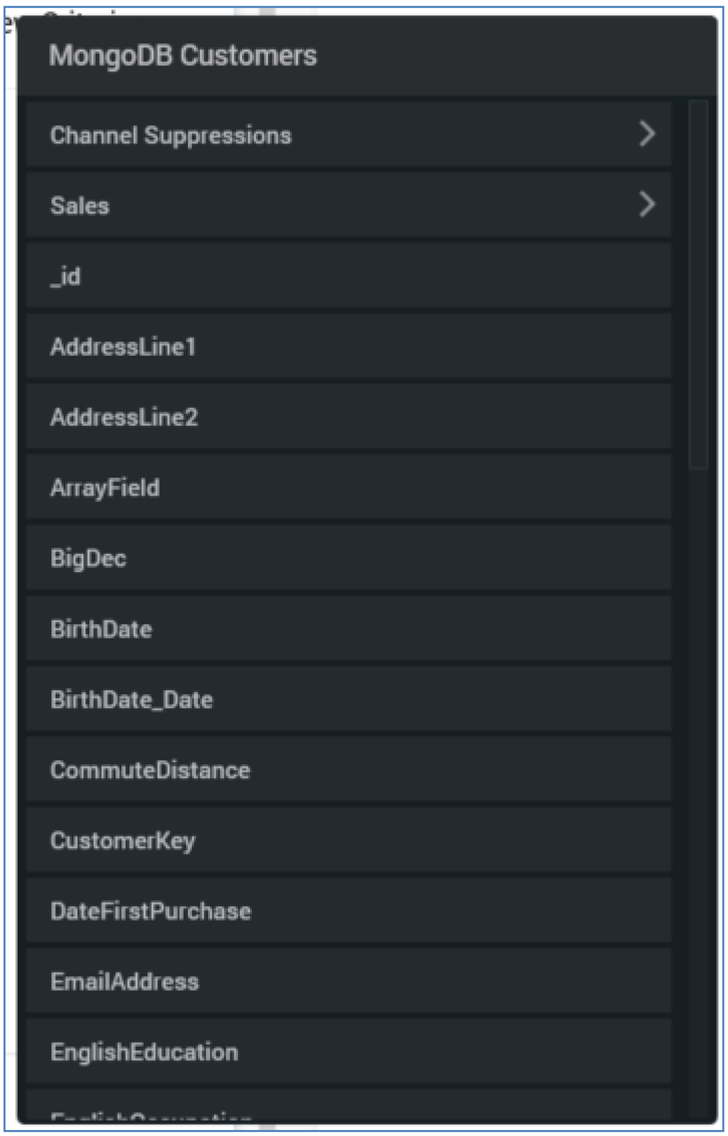
Note that All/Any is always displayed, even if a NoSQL selection rule contains only a single criterion. In this case it has no effect.

All/Any is also shown at a criteria list, to determine how the criteria listed therein are to be treated at the parent rule's execution.

11.1.9 Add New Criterion Button

This button allows you to add a criterion to a NoSQL selection rule.

It is disabled when a definition has not been selected. Clicking the button displays a slide-out panel.



The panel's header initially reflects the currently-selected context at the point of its being displayed. If the rule as a whole was selected, the panel's header is set to the currently-selected definition's name. If a criteria list selected, its name is displayed instead. A '<' button is displayed to the left of the panel's header. You can click the header to return to the parent context.

All criteria applicable to the current context are listed in the panel. If a DisplayName was provided for a criterion, it is shown instead of its Name.

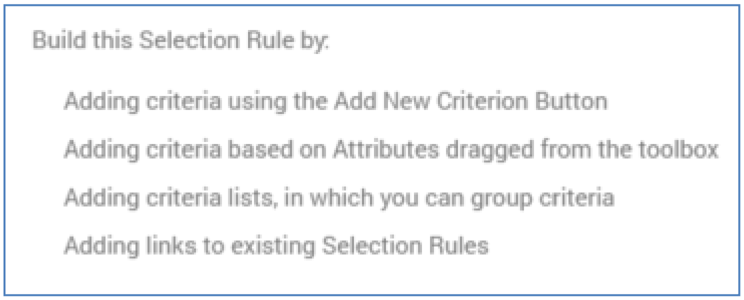
Nested collections are displayed alongside criteria and are shown with a '>' button to the right. If clicked, the contents of the panel are replaced with the contents of the nested collection, and the panel's title is updated to reflect the same.

Clicking a criterion within the panel adds a matching criterion to the NoSQL selection rule. The newly-added criterion is presented in Edit mode by default. If you were editing an existing criterion when Add New was clicked, Edit mode is exited in the former context, and the new criterion is shown in Edit mode.

Note that, as well as adding a criterion using the Add New Criterion button, you can also drag a parameter attribute from the toolbox and drop it at an appropriate position within a NoSQL selection rule to create a criterion. A tooltip describes where the attribute will be dropped relative to the current position.

11.1.10 Canvas

A NoSQL selection rule's canvas initially displays a message:



Criteria, criteria lists and linked selection rules are described elsewhere in this documentation.

The following options are available when you right click a NoSQL selection rule's canvas:

- Add New Criteria List: adds a new, empty criteria list to the NoSQL selection rule.
- Paste: only available if the clipboard contains something that may legitimately be pasted into the rule (e.g. a criterion or criteria list).

11.1.11 Add New Criteria List

This button is displayed below the NoSQL selection rule's canvas.

Clicking it adds a new, unconfigured criteria list to the NoSQL selection rule. The criteria list is added to the root level of the currently-selected rule, after all existing criteria, criteria lists and linked selection rules.

Details on criteria lists are provided elsewhere in the NoSQL selection rule documentation.

11.1.12 Criteria

Criteria define the records to be targeted by a NoSQL selection rule. By adding criteria to a NoSQL selection rule you limit the records to be counted when the rule is run. For example, adding a 'Gender is female' criterion causes only female records to be counted.

A dark border is displayed at a criterion when it is when selected.

Provision of criteria is optional If you get a NoSQL selection rule's count with no criteria specified, a count of all records in the selected collection is returned.

You can add a criterion to a NoSQL selection rule by clicking the Add New Criterion button (documented separately). You can also do so by dragging a parameter attribute that is present in the rule's definition from the toolbox and dropping it onto the rule.

When adding a criterion from a collection other than the top level within a NoSQL selection rule, if adding the criterion at the level of the NoSQL selection rule itself, a parent criteria list is created automatically, and the new criteria created within. If a criteria list matching the level of the nested criterion is selected at its creation, the new criterion is added within the criteria list. If a criteria list with a level other than the new criterion's level is selected at the criterion's creation, a warning is thrown.

A validation error is raised if the element on which the criterion is based cannot be located in the currently-selected definition (this may occur if, for example, you change the definition after a criterion has been added).

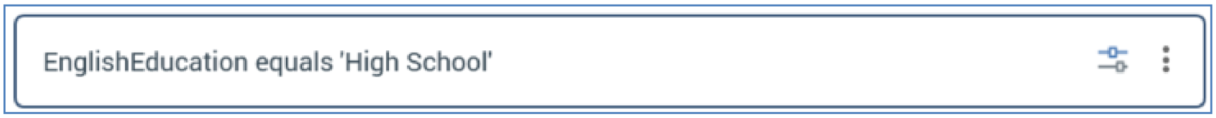
You can re-order criteria within a NoSQL selection rule using drag and drop. If you attempt to drag a criterion into an incompatible parent criteria list, a message is displayed to advise that you are unable to do so.

You can also drag and drop criteria between NoSQL selection rules. Drag and drop is not supported at criteria when in edit mode.

Criteria can be presented in either read-only or edit mode.

When in read-only mode, the following are shown:

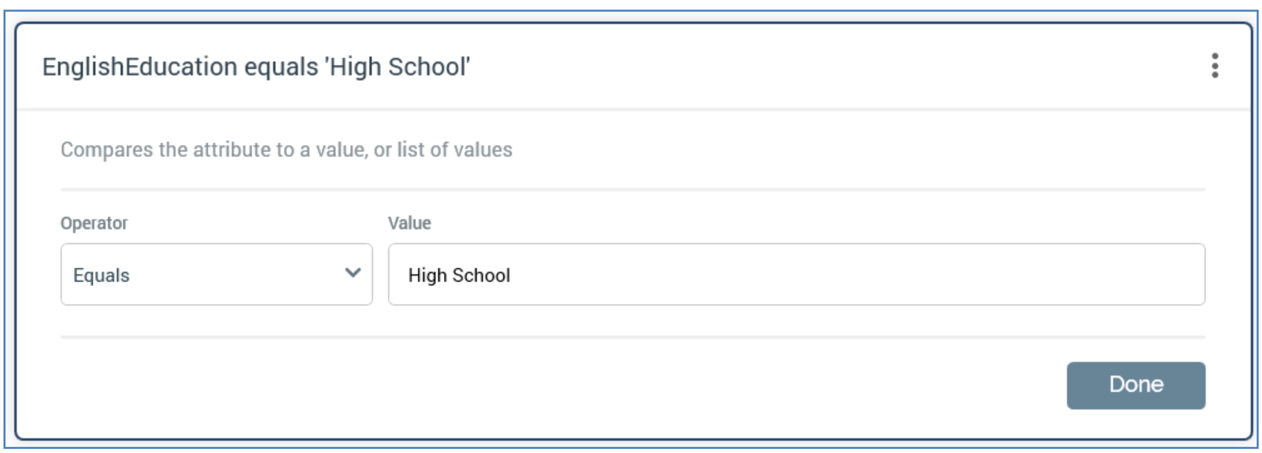
- Plain text interpretation of settings: consisting of the criterion name, operator and any specified values; e.g.:



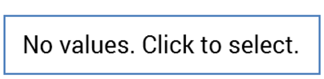
- Configure: clicking this button puts the criterion into edit mode.
- Actions: clicking this button displays a context menu, which exposes the following:
  - Cut
  - Copy
  - Remove: removes the criterion without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a criterion.

When in edit mode, the following are shown:



- Textual criterion description.
- Operator: a dropdown field, the values exposed by which are data type-appropriate.
- Value(s): the values supported at a criterion are appropriate for its data type. If a criterion supports the provision of values, the following is initially displayed at its value:



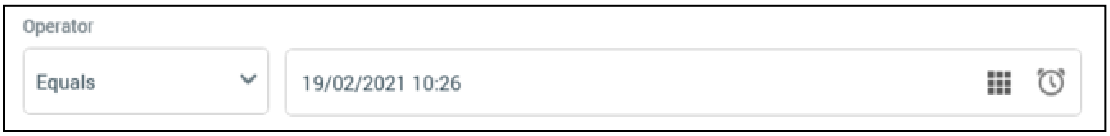
  - If a string criterion type, if predefined values exist for the decision criterion type, clicking the value field displays the Choose Values dialog, in which you can select the values you require. More information on the Choose Values dialog can be found in the RPI Framework documentation.

If predefined values are not supported, values are supplied using the Specify Values dialog. More information on the Specify Values dialog can also be found in the RPI Framework documentation.

- If a numeric criterion type, a masked field restricts data entry to a numeric value. If one of the 'Is in list' or 'Is not in list' operators is selected, multiple values can be supplied using the Specify values dialog (see above for details).

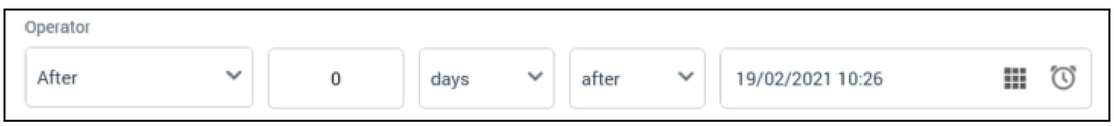
- If a date criterion type, display depends on the selected operator.

  - If 'Equals' or 'Does not equal', the following are shown:

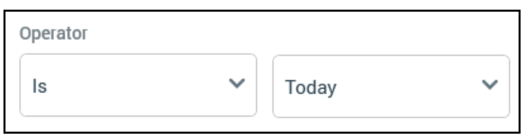


A date or datetime picker, defaulting to today/now, is shown. Selecting the button to its right sets the value to the Current date/time.

  - If 'After', 'Before' or 'Within', the following are shown:



  - If 'Is', the following are shown:



Note that if set, values are calculated using the time zone specified in system configuration setting RuleTimezoneOverride. If blank, the server time zone is used.

- If a Boolean decision criterion type, the following values are available:

  - Is True

  - Is False (the default)

Note that if an Exists or Does not exist operator has been selected, Value is not shown.

- Done: clicking this button returns the criterion to read-only mode.

The following keyboard shortcuts are supported at read-only criteria:

- Ctrl-C: copy
- Ctrl-X: cut
- Delete: remove

Please note the following:

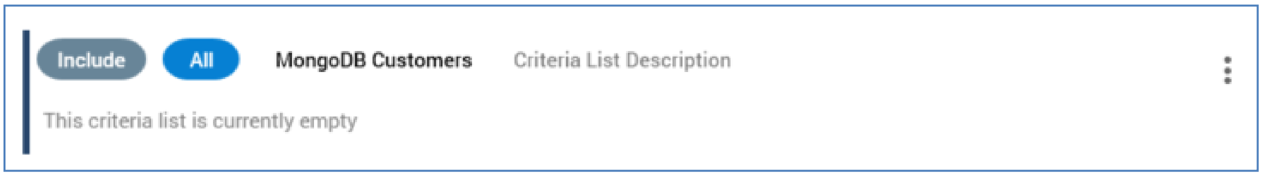
- You can get a NoSQL selection rule's count when one or more criteria are in edit mode.

You can put a read-only criterion into edit mode by double-clicking it.

11.1.13 Criteria List

A criteria list allows you to group related criteria, in order treat such criteria as independent blocks that must be entirely satisfied or not satisfied (using All/Any as required).

The following are displayed at a criteria list:



- Include/Exclude: defines whether the criteria within the group must be satisfied or not satisfied for the criteria lists to be satisfied.
- All/Any: defines how the criteria within the criteria list are to be treated. If set to All, all criteria within the criteria list must be satisfied for the group as a whole to be satisfied. When set to Any, one or more criteria must be satisfied for the group to be satisfied.
- List Definition: this can be set in accordance with the rule's currently-selected Definition, or, if its criteria exist within a child collection within the SQL database definition, to a value matching that collection's name.
- Criteria List Description: this optional property can be a maximum of 1000 characters in length.
- Actions: clicking this button displays a context menu, which exposes the following:
    - Cut
    - Copy
    - Remove: removes the criteria list without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a criteria list.

You can re-order criteria lists within their peer criteria and criteria lists using drag and drop. You can also re-order criteria within a criteria list. You cannot drag a criterion out of its parent criteria list.

Nested criteria lists are supported; the maximum number of nested criteria lists that can be added is limited to 5.

The following keyboard shortcuts are supported at criteria lists:

- Ctrl-C: copy
- Ctrl-X: cut

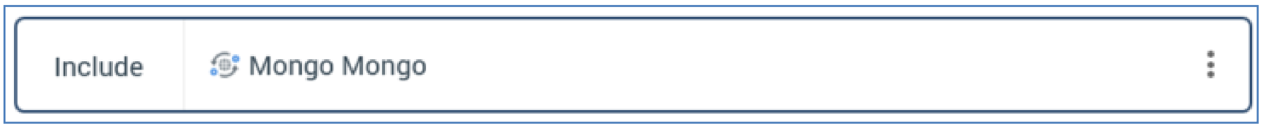
- Ctrl-V: paste
- Delete: remove

When adding a criterion from a collection other than the top level within a NoSQL selection rule, if adding the criterion at the level of the NoSQL selection rule itself, a parent criteria list is created automatically, and the new criteria created within. If a criteria list matching the level of the nested criterion is selected at its creation, the new criterion is added within the criteria list. If a criteria list with a level other than the new criterion's level is selected at the criterion's creation, a warning is thrown.

11.1.14 Linked NoSQL Selection Rule

You can create a link to a NoSQL selection rule within an outer NoSQL selection rule by dragging a NoSQL selection rule file from the toolbox and dropping it into the outer rule. You cannot create a link to a standard or basic selection rule within a NoSQL selection rule.

When a link is created to a NoSQL selection rule within a NoSQL selection rule, it is shown like this:



The following are shown:

- Include/Exclude: this setting allows you to specify that the linked NoSQL selection rule's criteria should be met or not met for its usage in this context to be satisfied.
- NoSQL selection rule name
- Open latest version: clicking this button opens the linked NoSQL selection rule in the current Rule Designer tab.
- Pop out: displays the linked rule in an independent, modeless Window. For more information, please see the Rule Designer documentation.
- Actions: clicking this button displays a context menu, which exposes the following:
    - Cut
    - Copy
    - Remove: removes the linked selection rule without displaying an 'Are You Sure?' dialog.

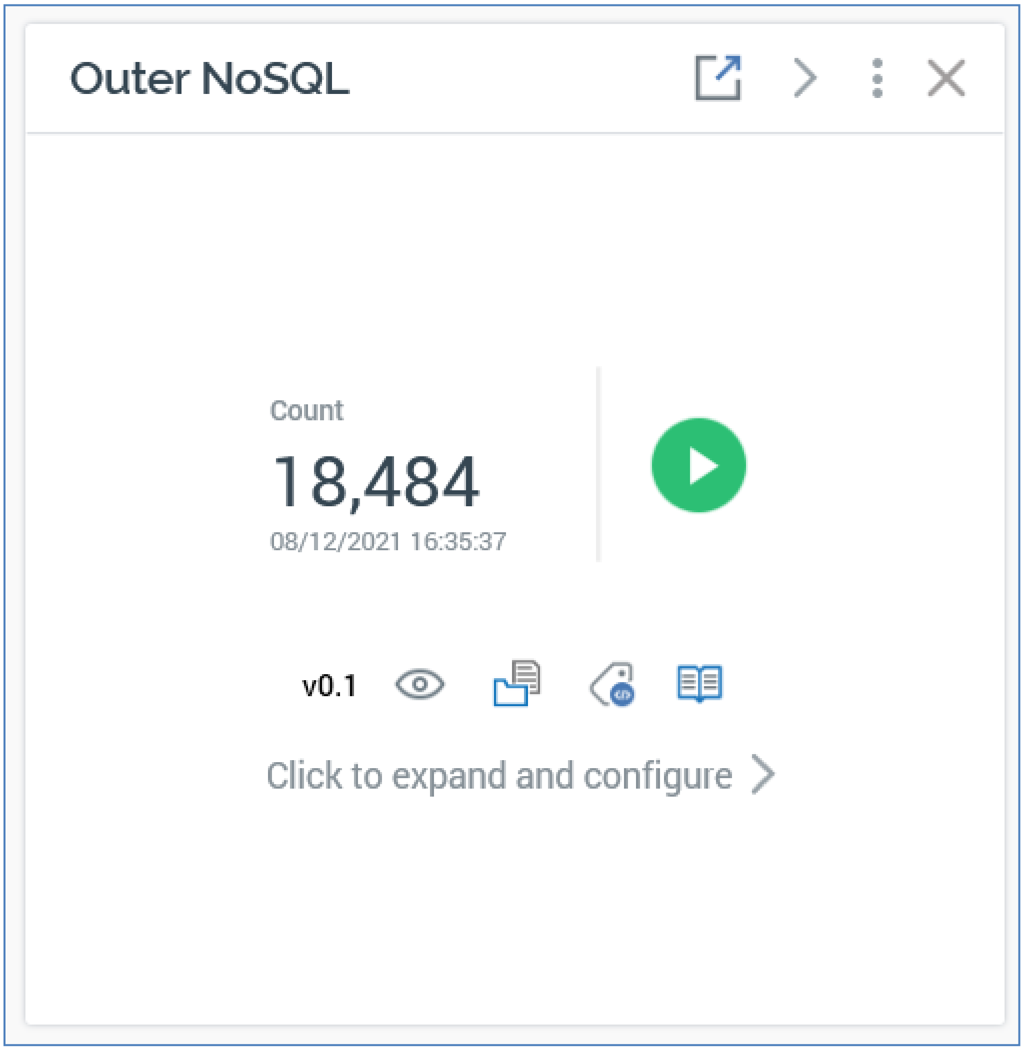
  Note that the same context menu is shown when right-clicking a linked selection rule.

The following keyboard shortcuts are supported at linked rules:

- Ctrl-C: copy
- Ctrl-X: cut
- Delete: remove

11.2 Collapsed Mode

The following is shown at a NoSQL selection rule when in collapsed mode:



- Count
- Date/time of count generation
- Refresh
- File options
- Click to expand and configure: clicking this button displays the rule in expanded mode

11.3 Restrictions When Using Google Datastore

When using NoSQL selection rules at a Google Datastore NoSQL database, the following restrictions apply:

- Use of OR is not supported.
- Use of the ≠, Exists and Does not exist operators is not supported.
- If more than one column is referenced in a rule's criteria, a Datastore composite index covering the columns in question must be configured prior to rule execution.

If any of the above are not observed, rule execution will fail.

12 Analysis Panels

Analysis panels are created and edited in the Rule Designer. Ultimately, the purpose of an analysis panel is to facilitate the analysis of data elements, primarily with a view to creating selection rules based on the insights thus gleaned. As such, they offer an alternative to the creation of selection rules through the manual definition of their criteria.

Note that the Word Cloud panel represents an exception to this approach, as it is not possible to create a selection rule from its results.

RPI supports the following types of analysis panel:

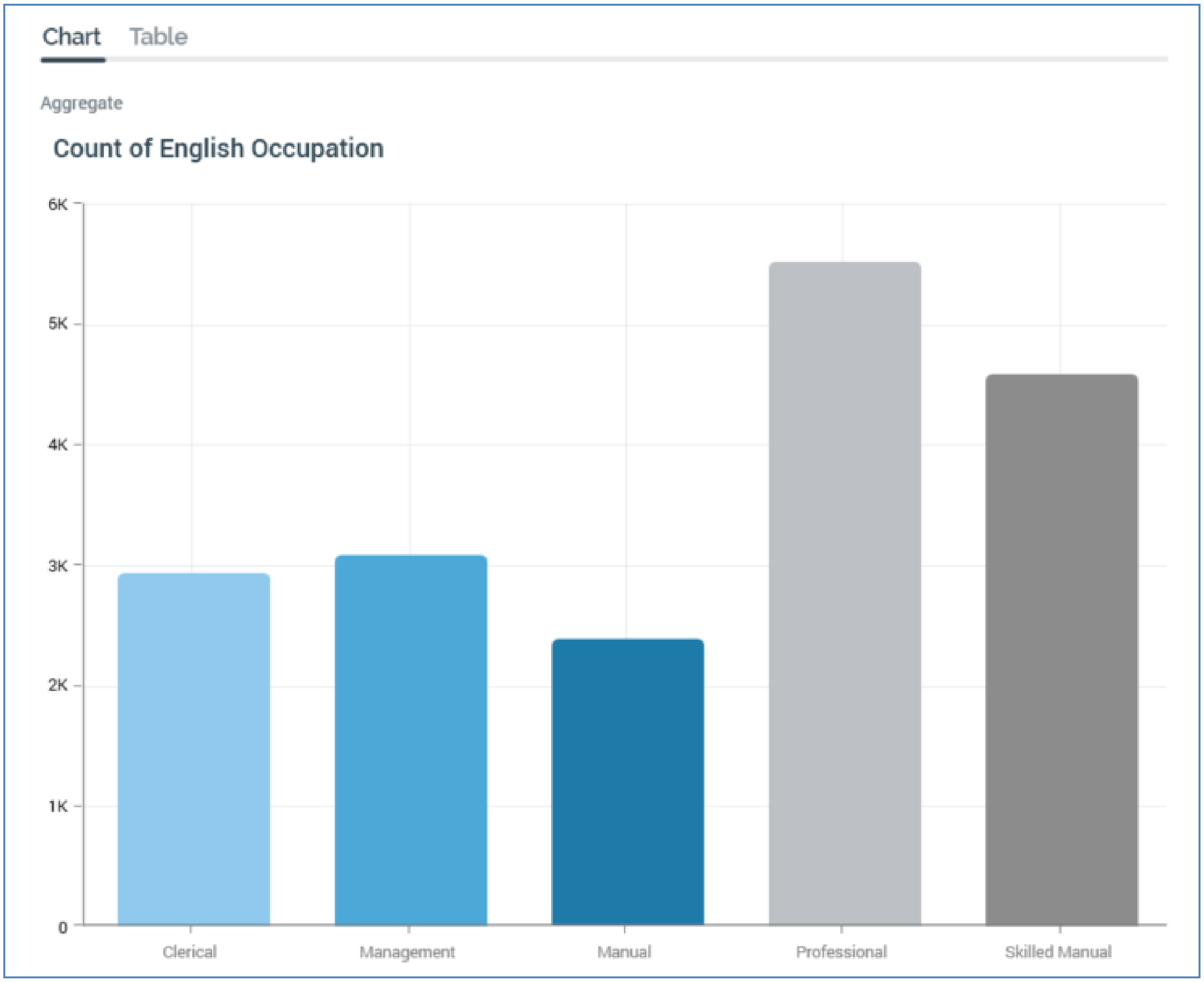
- Chart
- Crosstab
- Pivot Table
- Venn Diagram
- Word Cloud

Each of these is discussed separately below.

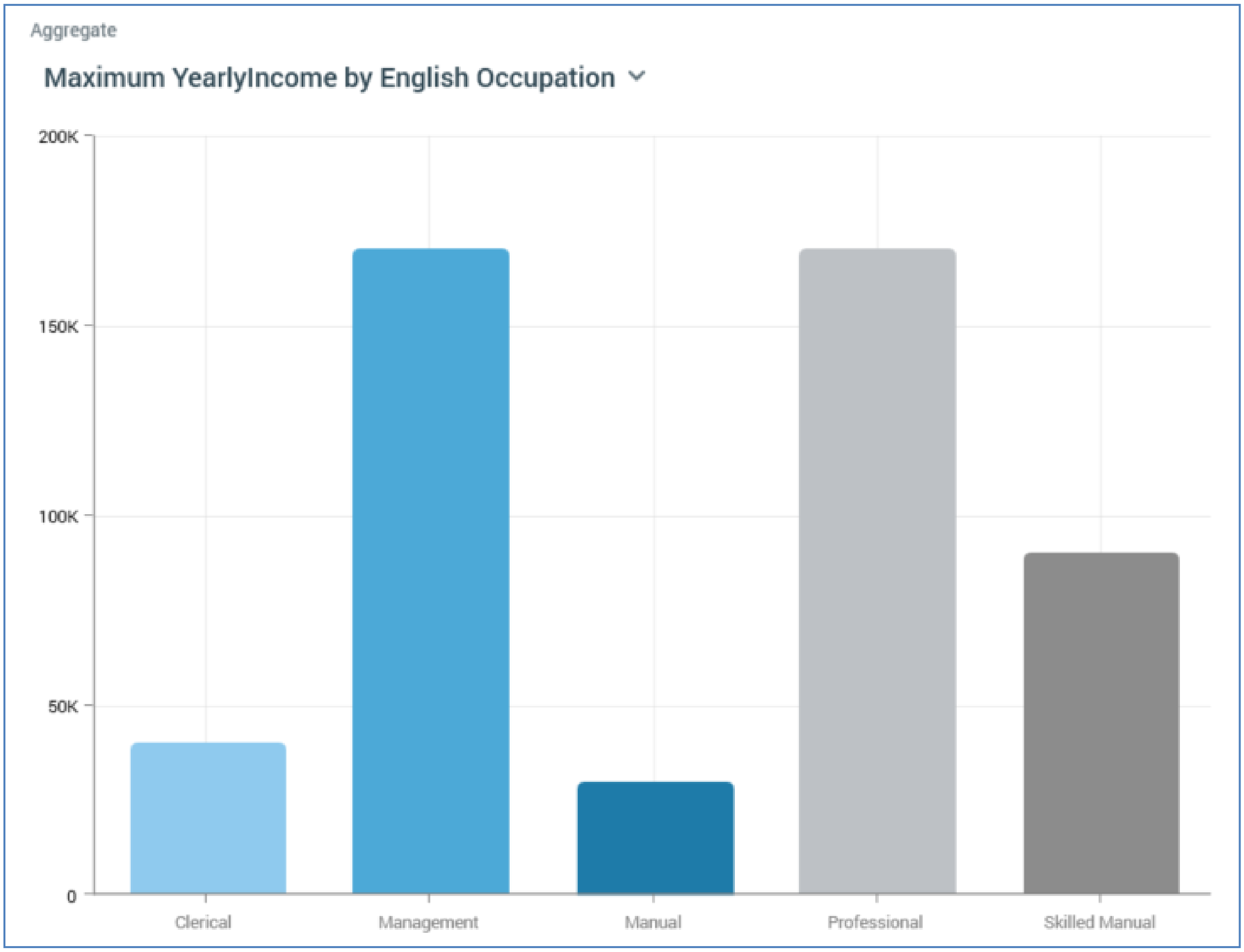
12.1 Chart

An RPI chart panel can be used to visually display data in two primary ways.

By configuring a chart with a single Attribute, you can refresh it to view a graphical representation of that attribute's data:



You can also configure a chart with a Function attribute. You can then select from a series of available aggregates. On refreshing the chart, you can analyze how the Function attribute is aggregated against each displayed Attribute value:



A chart consists of the following elements, each of which is documented separately:

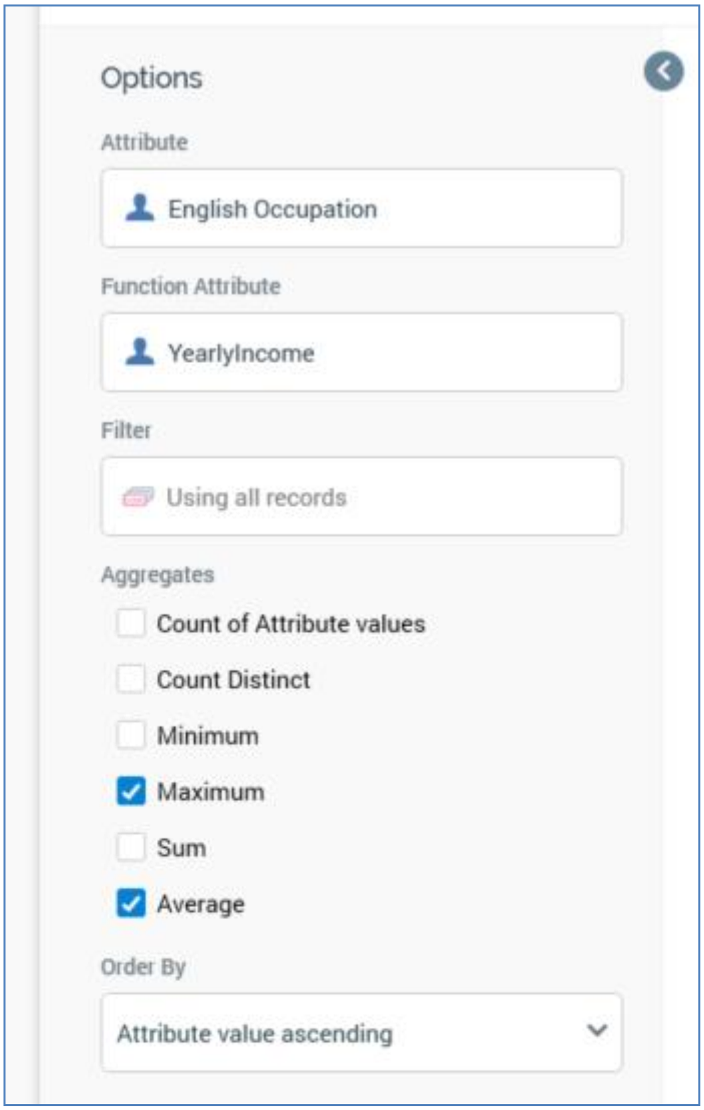
- Resolution/Definition
- Toolbox
- Chart Tab
- Table Tab
- Actions Menu

12.1.1 Resolution/Definition

A chart can be based on attributes sourced from a SQL or NoSQL database, depending on whether a resolution level or NoSQL database collection definition is selected at this property. Note that any attributes used to configure the panel must be compatible with the value selected here.

12.1.2 Toolbox

A chart's toolbox is shown to the left.



Its display is controlled by the Show/hide Toolbox button. It is shown automatically when a chart is created or opened.

It exposes a number of Options:

- Attribute: this property allows you to specify the base attribute to be shown in the chart. You can browse for an attribute using the recent items chooser or File System Dialog, or you can provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. An attribute must be provided prior to refreshing the chart. The property cannot be same as the Function attribute, cannot be a parameter, model project or exists in table attribute, and cannot be a function attribute configured with a constant value. The attribute selected must be sourced from the same database as the panel's resolution level.

- Function attribute: this optional property allows you to specify a second attribute, which can be analyzed in the context of the first Attribute, with the results being displayed in the chart. You can browse for an attribute using the recent items chooser or File System Dialog, or you can provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. The property cannot be same as the Attribute property, cannot be a parameter, model project or exists in table attribute, and cannot be a function attribute configured with a constant value. The attribute selected must be sourced from the same database as the panel's resolution level.

- Filter: this optional property allows you to provide a selection rule that will be executed at the point of the chart's being refreshed, thereby limiting the data displayed therein to include just records that match the selected filter's criteria. A Filter is initially not provided, with a message ('Using all records') being shown instead. You can browse for a selection rule with which to configure the property, or you can provide one using drag and drop. You can also initiate the creation of a new selection rule to serve as the chart's Filter. Once a Filter has been provided, you can open its latest version in the Rule Designer or clear it if required. Note that the resolution level of the chosen selection rule must be from the same database as the panel's resolution level.

  When a Filter has been applied, it is displayed within the panel:

- Aggregates: this property allows you to control the type of values displayed within the chart. A list of available aggregates is displayed when an Attribute or Function attribute are provided. Each is accompanied by a checkbox.

  If an Attribute is provided, only a single Count aggregate is available, and is checked by default. In the absence of a Function attribute, a chart can only display a simple count of Attribute values.

  If an Attribute and a Function attribute are provided:

  - If an integer, decimal or bigint Function attribute is provided, the following Aggregates are available:

        - Count of Attribute values: the Function attribute is ignored, and a simple count Attribute values is provided per cell.
        - Count Distinct (the number of distinct instances of the Function attribute value for each Attribute value displayed in the chart)
        - Minimum (the minimum Function attribute value for each Attribute value displayed in the chart)
        - Maximum (the maximum Function attribute value for each Attribute value displayed in the chart)
        - Sum (the sum of all Function attributes for each Attribute value displayed in the chart)
        - Average (the average of all Function attribute values for each Attribute value displayed in the chart)
    - If a non-numeric Function attribute of a data type other than Boolean is provided, the following Aggregates are available:
        - Count of Attribute values
        - Count Distinct
    - If a Boolean Function attribute is provided, only the Count aggregate is available (and is checked by default).

    At least one aggregate must be checked prior to invocation of Refresh.

- Order by: this dropdown property allows you to control the way in which data is ordered in the chart. The following values are available:
    - Attribute value ascending (the default)
    - Attribute value descending
    - Aggregate value ascending
    - Aggregate value descending
- Using: this property is only displayed if Order by is set to one of Aggregate value ascending or descending. A dropdown field, it lists all checked aggregates, and allows you to choose a set of data by which the grid is to be ordered.

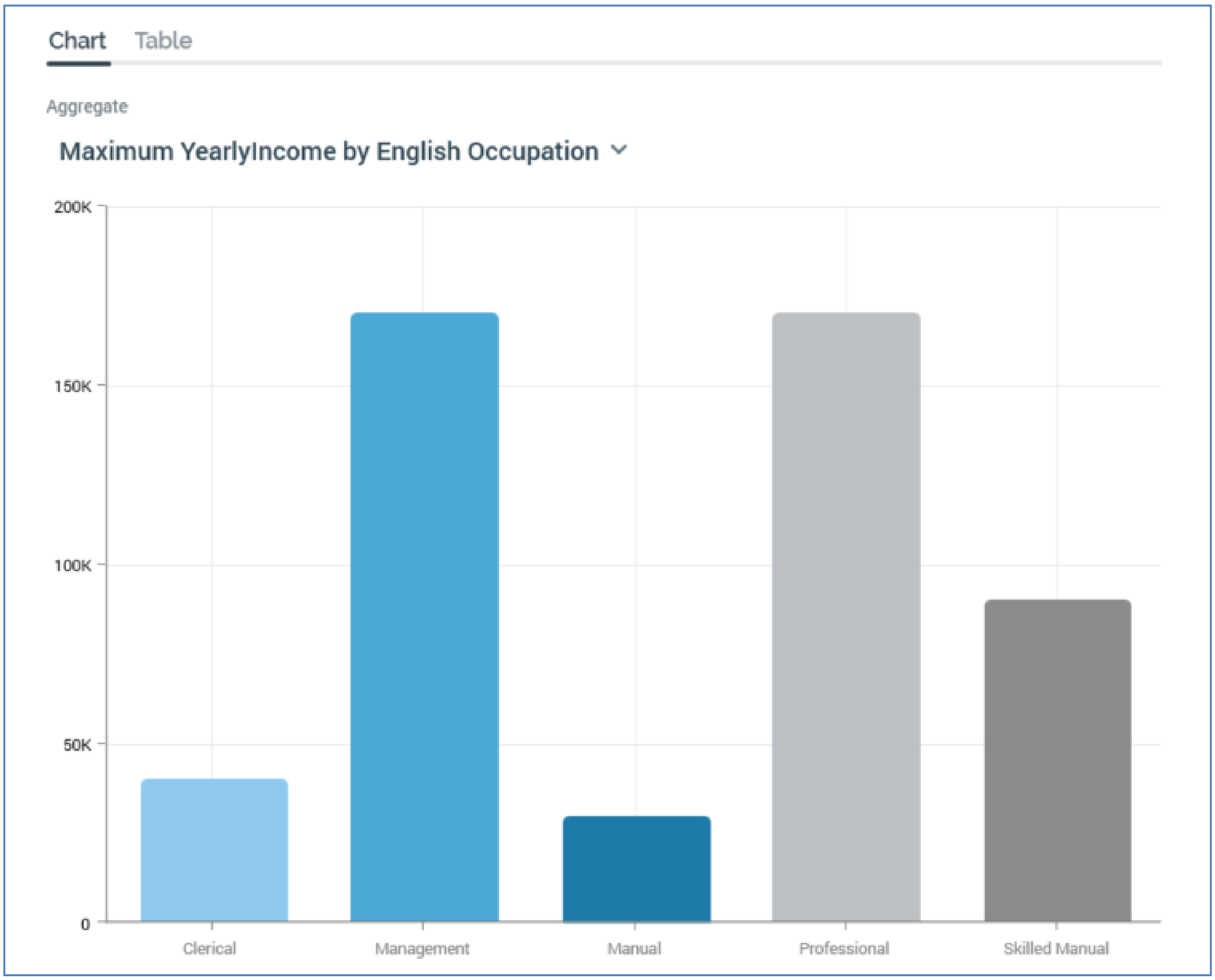
Note that the configuration panel is read-only when a chart panel is refreshing.

12.1.3 Chart Tab

When initially displayed, following creation or being opened, the Chart tab is blank, save for a message:

Please configure this panel and refresh to view results

When a chart has been refreshed, and its results displayed, the following are shown:

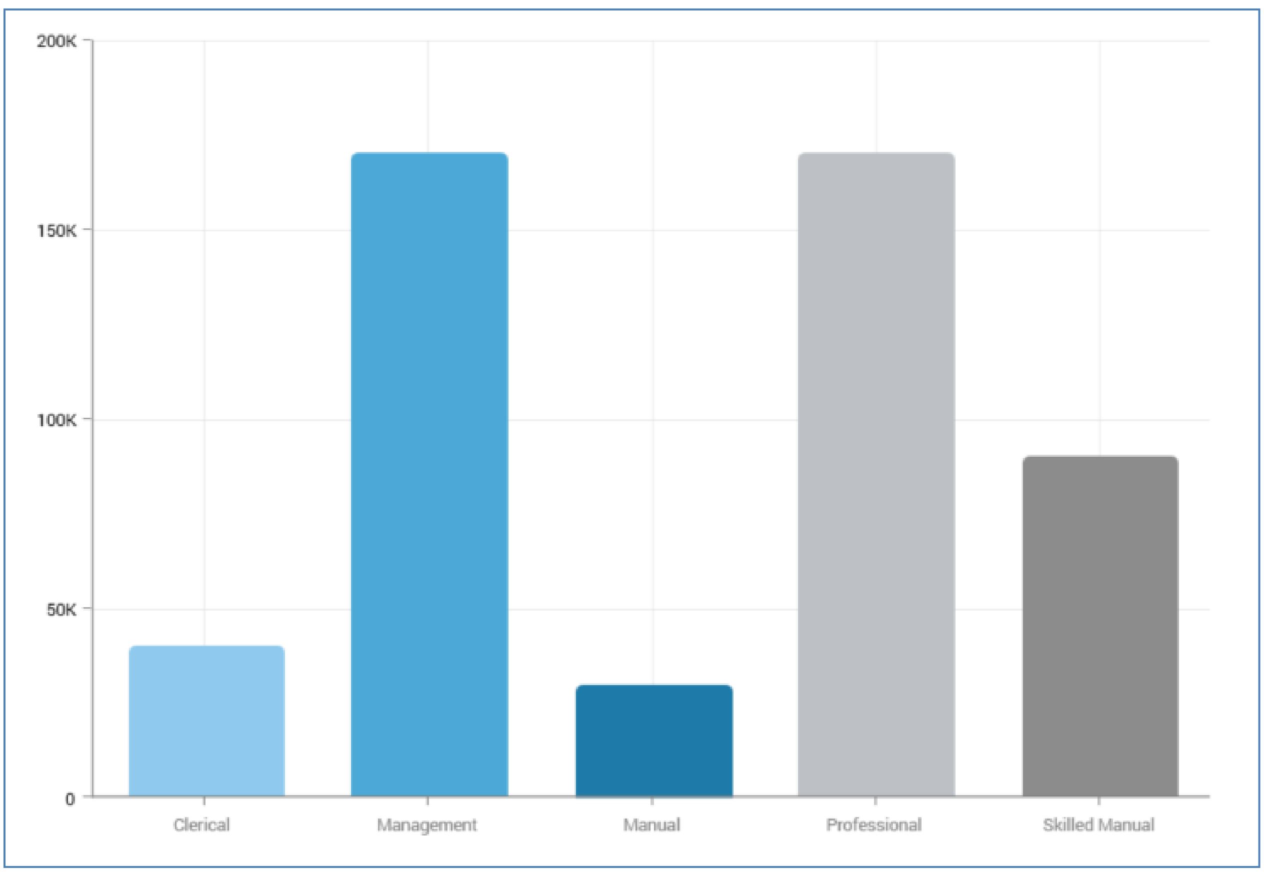


- Aggregate: if no Function attribute has been selected, or if only a single aggregate was checked, this is displayed as per the following example:

If more than one Aggregate is checked, a dropdown allows you to select the aggregate you wish to view in the chart:

When you change the displayed aggregate, the chart is refreshed accordingly

- Chart: results are displayed as a bar chart:

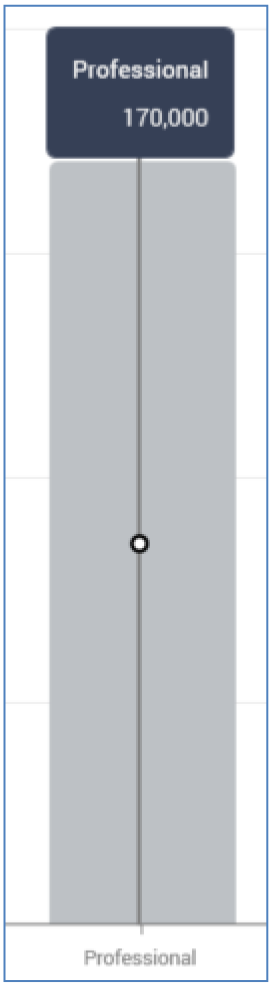


If no Function attribute was provided, or a Function attribute was provided and aggregate Count of Attribute Values was selected, the chart displays a simple count of Attribute values at the selected resolution level.

If a Function attribute was provided, and an aggregate other than Count of Attribute Values selected, the chart displays aggregated Function attribute values for each distinct Attribute value (also at the selected resolution level).

If translations have been provided for attribute values, they are rendered within a chart.

When you hover over a bar chart bar or pie chart segment, a tooltip describes that which the current context represents



When you open a chart, if results had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. If the results are more than an hour old, an information icon is shown. A tooltip is shown on hovering over the same.

12.1.4 Table Tab

Chart results can also be displayed in tabular form. For a simple count, the Attribute's value and number of matching records are shown:

English Occupation	Count
Clerical	2,928
Management	3,075
Manual	2,384
Professional	5,520
Skilled Manual	4,577

When one or more aggregates are selected, aggregated Function attribute counts in the context of the current Attribute value are displayed:

English Occupation	YearlyIncome (Maximum)	YearlyIncome (Average)
Clerical	40,000	30,710
Management	170,000	92,325
Manual	30,000	16,451
Professional	170,000	74,178
Skilled Manual	90,000	51,715

12.1.5 Actions Menu

A chart's Actions menu is displayed at its header. An additional option is available at a chart:

- Copy Data to Clipboard: this option allows you to copy a chart's tabular data to the clipboard, for later pasting into e.g. Excel.

12.2 Crosstab

An RPI crosstab allows you to cross-tabulate two attributes against one another and view the resultant counts at attribute value intersections as cells within a grid:

Aggregate

Count of Attribute Values

	Bachelors	Graduate De...	High School	Partial College	Partial High...
Clerical	668	456	82	1,255	467
Management	1,601	1,057	307	91	19
Manual	83	61	893	748	599
Professional	1,888	860	976	1,660	136
Skilled Manual	1,116	755	1,036	1,310	360

A crosstab also allows you to glean insights in respect of a third, 'Function', attribute, which can be aggregated in the context of each cell to produce a count value:

Aggregate

Maximum YearlyIncome

	Bachelors	Graduate De...	High School	Partial College	Partial High...
Clerical	£40,000.00	£40,000.00	£30,000.00	£40,000.00	£40,000.00
Management	£170,000.00	£170,000.00	£170,000.00	£170,000.00	£160,000.00
Manual	£20,000.00	£20,000.00	£30,000.00	£30,000.00	£20,000.00
Professional	£150,000.00	£130,000.00	£170,000.00	£170,000.00	£170,000.00
Skilled Manual	£80,000.00	£80,000.00	£80,000.00	£90,000.00	£90,000.00

A crosstab consists of the following elements, each of which is documented separately:

- Resolution/Definition

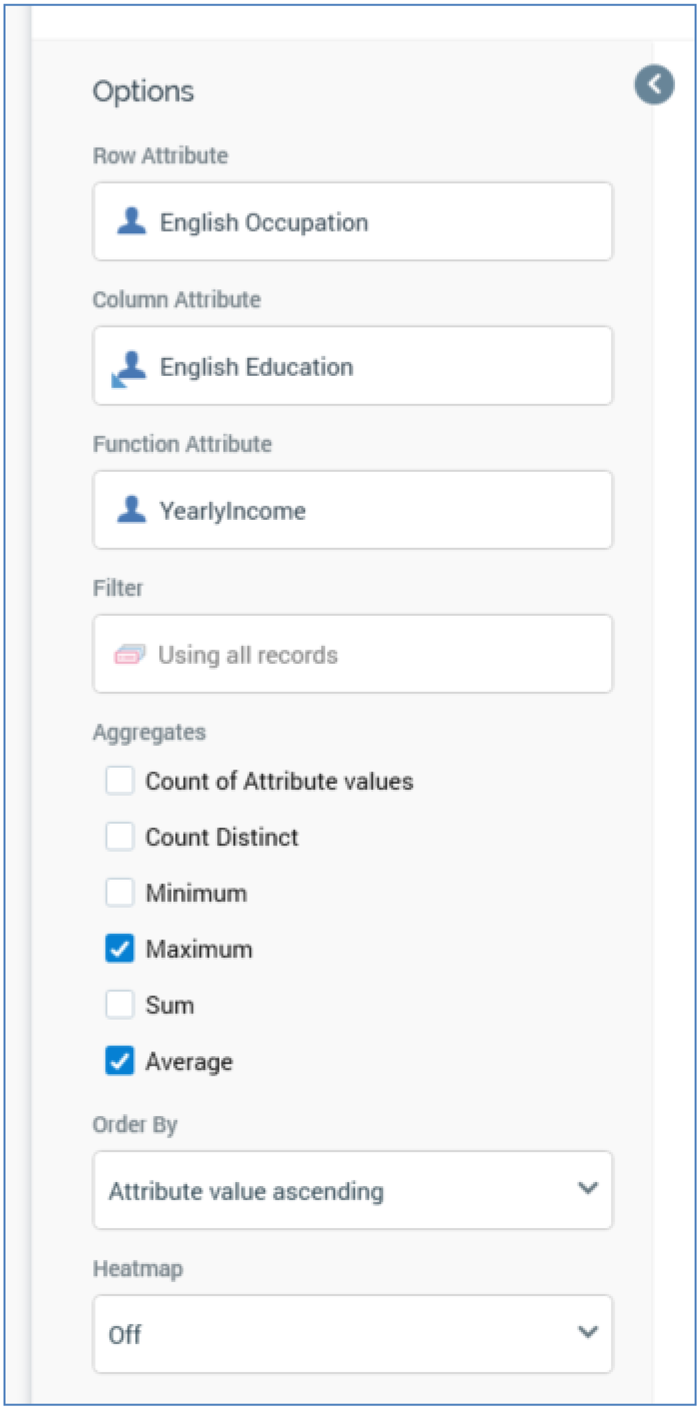
- Toolbox
- Chart Tab
- Table Tab
- Actions Menu

12.2.1 Resolution/Definition

A crosstab can be based on attributes sourced from a SQL or NoSQL database, depending on whether a resolution level or NoSQL database collection definition is selected at this property. Note that any attributes used to configure the panel must be compatible with the value selected here.

12.2.2 Toolbox

A crosstab's toolbox is shown to the left.



Its display is controlled by the Show/hide Toolbox button. It is shown automatically when a chart is created or opened.

It exposes a number of Options:

- Row attribute: this property defines the crosstab's row attribute, values for which are displayed, one per row, to the left of the crosstab grid. You can browse for an attribute using the recent items chooser or File System Dialog, or you can provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. A Row attribute must be provided prior to refreshing the crosstab. The property cannot be same as the Column or Function attributes, cannot be a model project, exists in table or parameter attribute, and cannot be a function attribute configured with a constant value. The attribute selected must be sourced from the same database as the panel's resolution level.

- Column attribute: this property defines the crosstab's column attribute, values for which are displayed, one per column, across the top of the crosstab grid. You can browse for an attribute using the recent items chooser or File System Dialog, or you can provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. A Column attribute must be provided prior to refreshing the crosstab. The property cannot be same as the Row or Function attributes, cannot be a model project, exists in table or parameter attribute, and cannot be a function attribute configured with a constant value. The attribute selected must be sourced from the same database as the panel's resolution level.

- Function attribute: this optional property defines an attribute that can be aggregated and analyzed in the context of cells within the crosstab results grid. You can browse for an attribute using the recent items chooser or File System Dialog, or you can provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. The property cannot be same as the Row or Column attributes, cannot be a model project, exists in table or parameter attribute, and cannot be a function attribute configured with a constant value. The attribute selected must be sourced from the same database as the panel's resolution level.

- Filter: this optional property allows you to provide a selection rule that will be executed at the point of the crosstab results grid's being refreshed, thereby limiting the cell counts therein to include just records that match the selected filter's criteria. A Filter is initially not provided, with a message ('Using all records') being shown instead. You can browse for a selection rule with which to configure the property, or you can provide one using drag and drop. You can also initiate the creation of a new selection rule to serve as the crosstab's Filter. Once a Filter has been provided, you can open its latest version in the Rule Designer or clear it if required. Note that the resolution level of the chosen selection rule must be from the same database as the panel's resolution level.

When a Filter has been applied, it is displayed within the panel:

- Aggregates: this property allows you to control the type of count values displayed at cells within the crosstab grid. A list of available aggregates is displayed when a Row attribute or Row attribute and Function attribute are provided. Each is accompanied by a checkbox.

  If a Row attribute is provided, only a single Count aggregate is available, and is checked by default. In the absence of a Function attribute, a crosstab can only display a simple count of the intersects between Row and Column attribute values.

  If a Row attribute and a Function attribute are provided:

  - If an integer, decimal or bigint Function attribute is provided, the following Aggregates are available:
    - Count of Attribute values: the Function attribute is ignored, and a simple count of the intersection of attribute values is provided per cell.
    - Count Distinct (the number of distinct instances of the Function attribute value in the records that qualify in a given cell)
    - Minimum (the minimum Function attribute value per cell)
    - Maximum (the maximum Function attribute value per cell)
    - Sum (the sum of all Function attribute values per cell)
    - Average (the average of all Function attribute values per cell)
  - If a non-numeric Function attribute of a data type other than Boolean is provided, the following Aggregates are available:
    - Count of Attribute values
    - Count Distinct
  - If a Boolean Function attribute is provided, only the Count aggregate is available (and is checked by default).

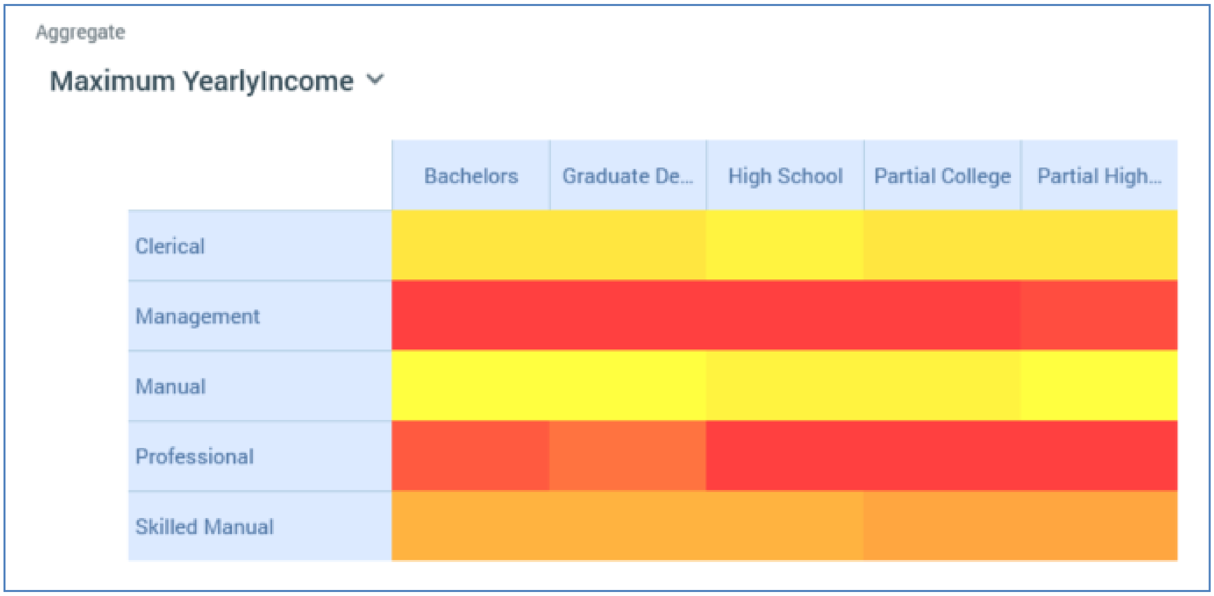
  At least one aggregate must be checked prior to invocation of Refresh.

- Order by: this dropdown property allows you to control the way in which data is ordered in the crosstab grid. The following values are available:
  - Attribute value ascending (the default)
  - Attribute value descending

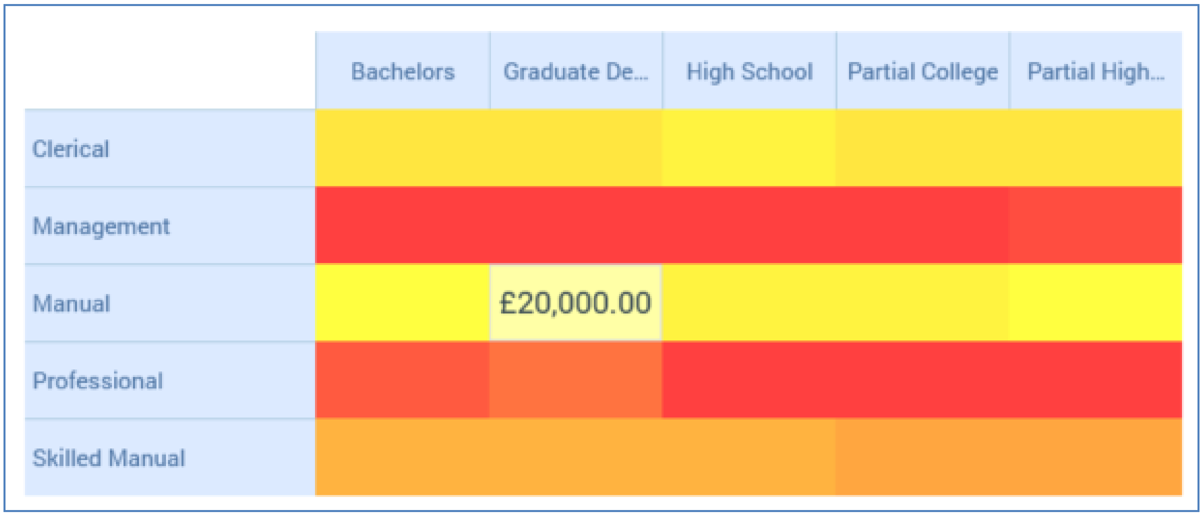
- Aggregate value ascending
- Aggregate value descending

- Using: this property is only displayed if Order by is set to one of Aggregate value ascending or descending. A dropdown field, it lists all checked aggregates, and allows you to choose a set of data by which the grid is to be ordered.
- Heatmap: you can apply a colored heatmap to crosstab results using the Heatmap property. By default, a new crosstab's Heatmap is set to Off. You can click the property to display available heatmap options using the dropdown:

Upon selecting a heatmap color range, the selected color gradient is applied at crosstab results:


Aggregate
Maximum YearlyIncome
Bachelors
Graduate De...
High School
Partial College
Partial High...
Clerical
Management
Manual
Professional
Skilled Manual

Count values are not shown when a heatmap applied, unless a cell is hovered over.



The selected Heatmap setting is persisted along with the analysis panel and applied each time results are refreshed. The lowest value takes the leftmost gradient color, and the highest value takes the rightmost gradient color. Any change to the heatmap setting is applied immediately to displayed crosstab results. Coloration is removed if the Heatmap setting is set to Off. Cells with no data are displayed in white.

Note that the configuration panel is read-only when a crosstab panel is refreshing.

12.2.3 Crosstab

When initially displayed, following creation or being opened, a crosstab's workspace is blank, save for a message:

Please configure this panel and refresh to view results

When a crosstab has been refreshed, and its results displayed, the following are shown:

Aggregate

Count of Attribute Values

	Bachelors	Graduate De...	High School	Partial College	Partial High...
Clerical	668	456	82	1,255	467
Management	1,601	1,057	307	91	19
Manual	83	61	893	748	599
Professional	1,888	860	976	1,660	136
Skilled Manual	1,116	755	1,036	1,310	360

- Aggregate: set to the current Aggregate's name. If more than one aggregate was checked, you can select which to view using the dropdown provided:

  Aggregate

  Maximum YearlyIncome

- Grid: Column attribute values are listed as headers across the top of the grid, and Row attribute values are listed to the left of the grid. Count or aggregate values are displayed at cells within grid.

  If no Function attribute was provided, or a Function attribute was provided and aggregate Count of Attribute Values was selected, a cell's count represents the number of records at the selected resolution level with matching Row and Column attribute values.

If a Function attribute was provided, and an aggregate other than Count of Attribute Values selected, a cell's count represents the value of the selected aggregate for the Function attribute, in respect of records at the selected resolution within the cell in question.

A cell is selected when you hover over it. On right clicking a cell, a Create New Selection Rule from Cell option is displayed at a context menu. Invocation creates a new standard selection rule, pre-configured with criteria accordant with the cell's Row and Column Attribute values, and displays it in the Rule Designer, after all currently-displayed rules and panels. The new rule is named 'New Crosstab Rule'. The option is not available when the panel is popped out.

If more than 60 Row or Column Attribute values are returned, a message is displayed: 'Results returned exceed the amount of rows and/or columns that can be shown'. Note that the non-displayed data are accessible by copying the grid's contents to the clipboard.

When you open a crosstab, if results had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. For more information

12.2.4 Actions Menu

A crosstab's Action menu is displayed at its header. An additional option is available at a crosstab:

- Copy Data to Clipboard: this option allows you to copy a crosstab's tabular data to the clipboard, for later pasting into e.g. Excel.

12.3 Pivot Table

An RPI pivot table expands upon the capabilities of the crosstab panel, facilitating the cross-tabulation of up to eight attributes.

Aggregate

Count of Attribute Values

		Clerical		Management		Manual		Professional		Skille
		0	1	0	1	0	1	0	1	0
Bachelors	0-1 Miles	150	401	167	183	13	70	356	180	153
	1-2 Miles	25	39	123	191			13	71	
	2-5 Miles	4	49	95	215			113	315	1
	10+ Miles			17	380			206	321	6
	5-10 Miles			22	208			117	196	5
Graduate Degree	0-1 Miles	66	389	113	230	13	48	172	247	136
	2-5 Miles		1	21	55			17	396	
	10+ Miles			2	141			4	24	
	1-2 Miles			127	128					22
	5-10 Miles			6	234					
	0-1 Miles	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Like the crosstab, a pivot table also supports provision of a Function attribute, which can be aggregated in the context of each cell to produce a count value.

A pivot table consists of the following elements, each of which is documented separately:

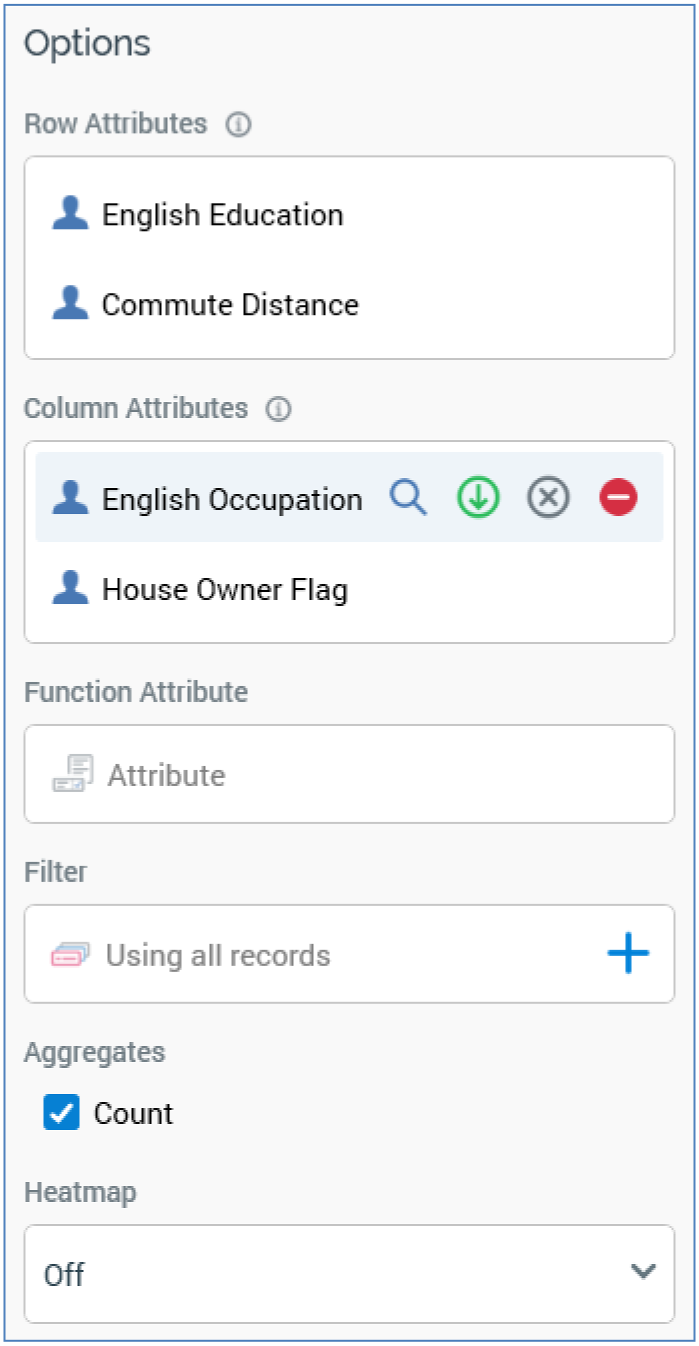
- Toolbox
- Resolution/Definition
- Chart Tab
- Table Tab
- Actions Menu

12.3.1 Resolution/Definition

A pivot table can be based on attributes sourced from a SQL or NoSQL database, depending on whether a resolution level or NoSQL database collection definition is selected at this property. Note that any attributes used to configure the panel must be compatible with the value selected here.

12.3.2 Toolbox

A pivot table's toolbox is shown to the left.



Its display is controlled by the Show/hide Toolbox button. It is shown automatically when a chart is created or opened.

It exposes a number of Options:

- Row Attributes: you must specify at least one Row attribute to display a pivot table. You can add row attributes by dragging one or more attributes from the toolbox and dropping them onto the property. You cannot add a parameter, model project or exists in table attribute. A maximum of four row attributes can be added to the pivot table. If the total maximum number of attributes – eight – have already been added across the pivot table's three lists, an informational message is displayed and any excess attributes are not added.

  Having added an attribute to the Rows or Columns list, a series of buttons are displayed on hover:

  - View file information...: clicking this button displays details of the attribute in the File Information Dialog.
  - Move attribute up: this button is only available if the attribute is not the first in the list. Clicking it moves the attribute up one position within the list.
  - Move attribute down: this button is only available if the attribute is not the last in the list. Clicking it moves the attribute down one position within the list.
  - Remove attribute: removes the attribute from the pivot table without displaying an 'Are You Sure?' dialog.

- Column Attributes: you must specify at least one Column attribute to display a pivot table. For more information on Column attributes, please see the Row Attributes documentation.

- Function attribute: this optional property defines an attribute that can be aggregated and analyzed in the context of cells within the pivot table's results grid. You can browse for an attribute using the recent items chooser or File System Dialog, or you can provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. The attribute selected must be numeric, cannot be same as one of the Row or Column attributes, cannot be a model project, exists in table or parameter attribute, and cannot be a function attribute configured with a constant value. The attribute selected must be sourced from the same database as the panel's resolution level.

- Filter: this optional property allows you to provide a selection rule that will be executed at the point of the pivot table's being refreshed, thereby limiting the cell counts therein to include just records that match the selected filter's criteria. A Filter is initially not provided, with a message ('Using all records') being shown instead. You can browse for a selection rule with which to configure the property, or you can provide one using drag and drop. You can also initiate the creation of a new selection rule to serve as the pivot table's Filter. Once a Filter has been provided, you can open its latest version in the Rule Designer or clear it if required. Note that the resolution level of the chosen selection rule must be from the same database as the panel's resolution level.

  When a Filter has been applied, it is displayed within the panel:

- Aggregates: this property allows you to control the type of count values displayed at cells within the pivot table results. A list of available aggregates is displayed when a Row attribute or Column attribute are provided. Each is accompanied by a checkbox.

  If a Function attribute is not provided, only a single Count aggregate is available, and is checked by default. In the absence of a Function attribute, a pivot table can only display simple counts of the intersects between Row and Column attribute values.

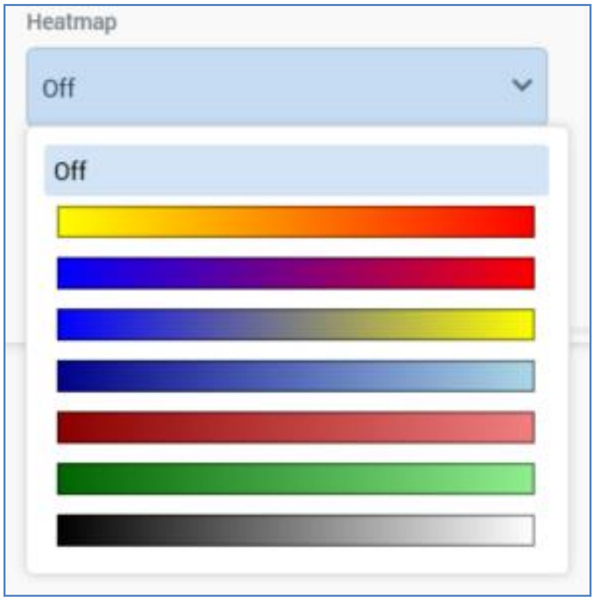
  If a Function attribute is provided, the following Aggregates are available:

  - Count: the Function attribute is ignored, and a simple count of the intersection of attribute values is provided per cell.
  - Minimum (the minimum Function attribute value per cell)
  - Maximum (the maximum Function attribute value per cell)
  - Sum (the sum of all Function attribute values per cell); always available
  - Average (the average of all Function attribute values per cell)

  At least one aggregate must be checked prior to invocation of Refresh.

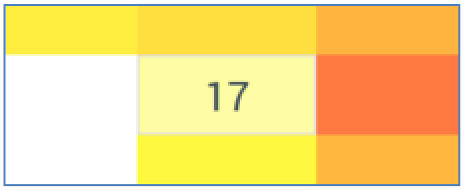
  Note that, if only the Average aggregate is selected, on refreshing the pivot table, the Sum aggregate will also be available (due to sums being calculated as part of average calculation during pivot table refresh).

- Heatmap: you can apply a colored heatmap to pivot table results . By default, a new pivot table's Heatmap is set to Off. You can click the property to display available heatmap options using the dropdown:



Upon selecting a heatmap color range, the selected color gradient is applied at pivot table results:

Count values are not shown when a heatmap applied, unless a cell is hovered over.

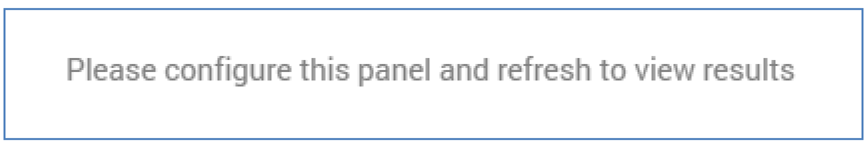


The selected Heatmap setting is persisted along with the analysis panel and applied each time results are refreshed. The lowest value takes the leftmost gradient color, and the highest value takes the rightmost gradient color. Any change to the heatmap setting is applied immediately to displayed pivot table results. Coloration is removed if the Heatmap setting is set to Off. Cells with no data are displayed in white.

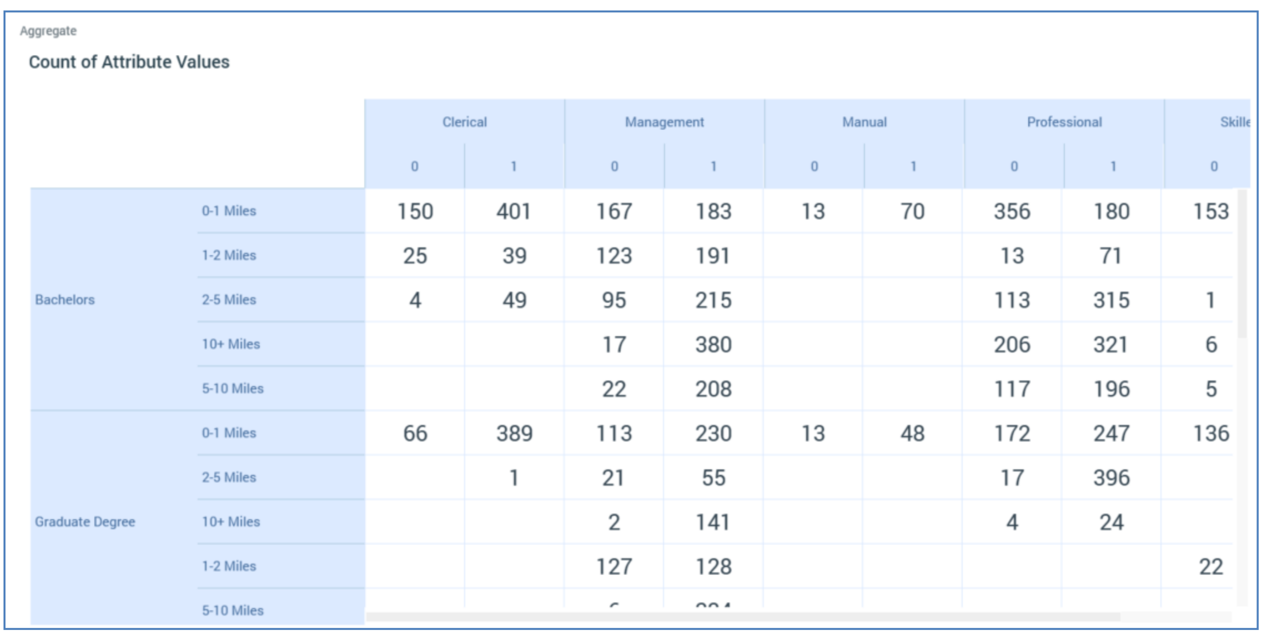
Note that the configuration panel is read-only when a pivot table panel is refreshing.

12.3.3 Pivot Table

When initially displayed, the following message is shown at a pivot table:



When a pivot table has been refreshed, and its results displayed, the following are shown:



Aggregate

Count of Attribute Values

		Clerical		Management		Manual		Professional		Skille
		0	1	0	1	0	1	0	1	0
Bachelors	0-1 Miles	150	401	167	183	13	70	356	180	153
	1-2 Miles	25	39	123	191			13	71	
	2-5 Miles	4	49	95	215			113	315	1
	10+ Miles			17	380			206	321	6
	5-10 Miles			22	208			117	196	5
Graduate Degree	0-1 Miles	66	389	113	230	13	48	172	247	136
	2-5 Miles		1	21	55			17	396	
	10+ Miles			2	141			4	24	
	1-2 Miles			127	128					22
	5-10 Miles			[illegible]	[illegible]					

- Aggregate: set to the current Aggregate's name. If more than one aggregate was checked, you can select which to view by clicking the title and selecting from a dialog:

- Column headers: one column is displayed per attribute in the Columns attributes list. The position of an attribute within the Columns list determines its position within the results. The first attribute's values are displayed once. If supplied the second attribute's values are displayed for each of the first attribute's values. The same pattern applies at the third and fourth attributes. If a column contains no results, it is not shown.

  On hovering over a column header value, a tooltip displays:

  - Attribute name
  - Attribute value (raw database)

- Row headers: as Column headers, other than the top attribute is displayed to the left.

- Table data: a value is displayed at each cell that represents a combination of row and column values. If no data are present within a cell, it is shown as empty.

  Table cell counts represent the following:

  - If a Function attribute was not supplied, the cell contains the count of records at the selected resolution level that match the cell's column and row attribute values.
  - If a Function attribute was supplied:
    - If the Count aggregate is displayed, a cell shows the same value as if a Function attribute were not provided: the count of records at the selected resolution level that match the cell's column and row attribute values.
    - If an aggregate other than Count is displayed, a cell shows the aggregated value of the Function attribute in the context of the cell's row and column values. For example, if Function attribute Yearly income and aggregate Average are selected, a cell will display the average yearly income for its unique combination of row and column values.

  A cell is selected when you hover over it. On right clicking a cell, a Create New Selection Rule from Cell option is displayed at a context menu. Invocation creates a new standard selection rule, pre-configured with criteria accordant with the cell's Row and Column Attribute values, and displays it in the Rule Designer, after all currently-displayed rules and panels. The new rule is named 'New Pivot Table Rule'. The option is not available when the panel is popped out.

A maximum number of 100,000 records in total, or 100 distinct values per column or row, can be retrieved when you refresh a pivot table. If a larger number than this are returned, a message is displayed at the bottom of the pivot table workspace.

When you open a pivot table, if results had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. For more information on previously-generated results, please see the Chart Workspace documentation.

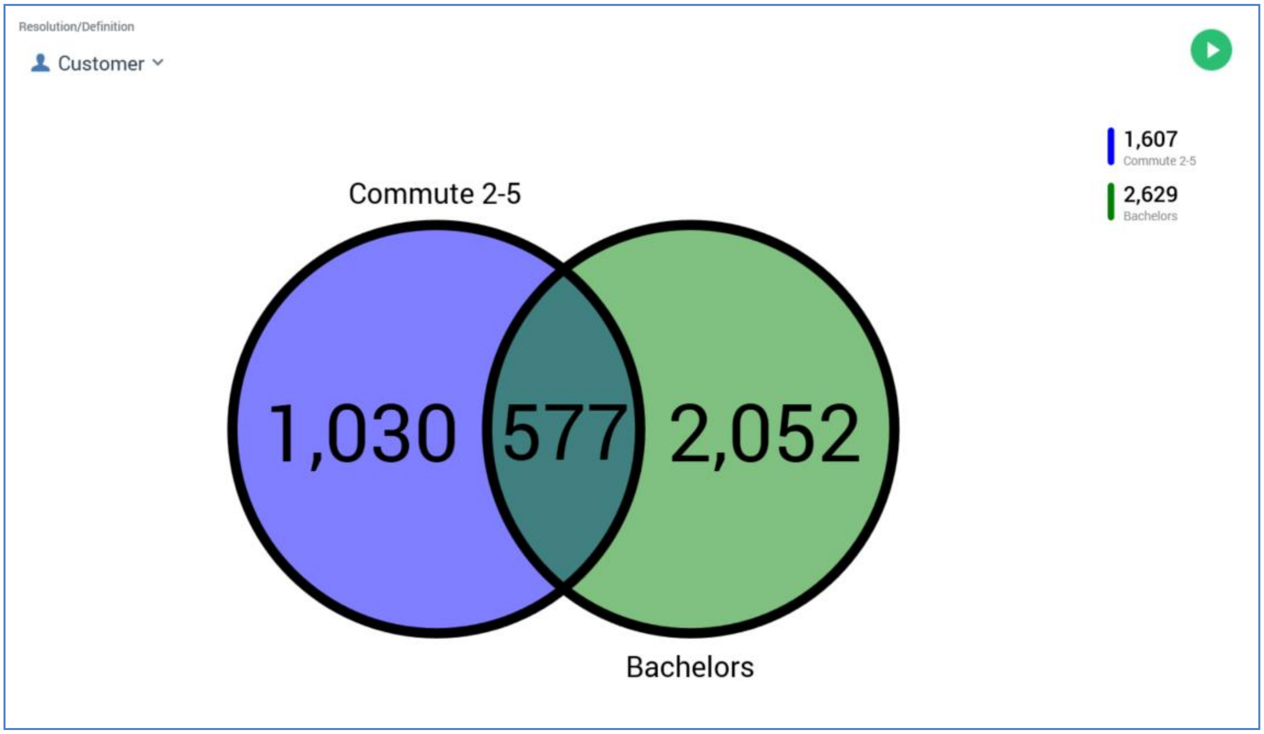
12.3.4 Actions Menu

A pivot table's Action menu is displayed at its header. An additional option is available at a pivot table:

- Copy Data to Clipboard: this option allows you to copy a pivot table's tabular data to the clipboard, for later pasting into e.g. Excel.

12.4 Venn Diagram

An RPI Venn diagram allows a number of Venn sets, each defined using a selection rule, to be configured against the background of an optional universe filter.



Having prepared the Venn diagram, you can refresh the counts of the Venn sets and the intersects between them. You can then choose to create new selection rules by dragging segments of interest and dropping them onto the Rule Designer workspace.

A Venn diagram consists of the following elements, each of which is documented separately:

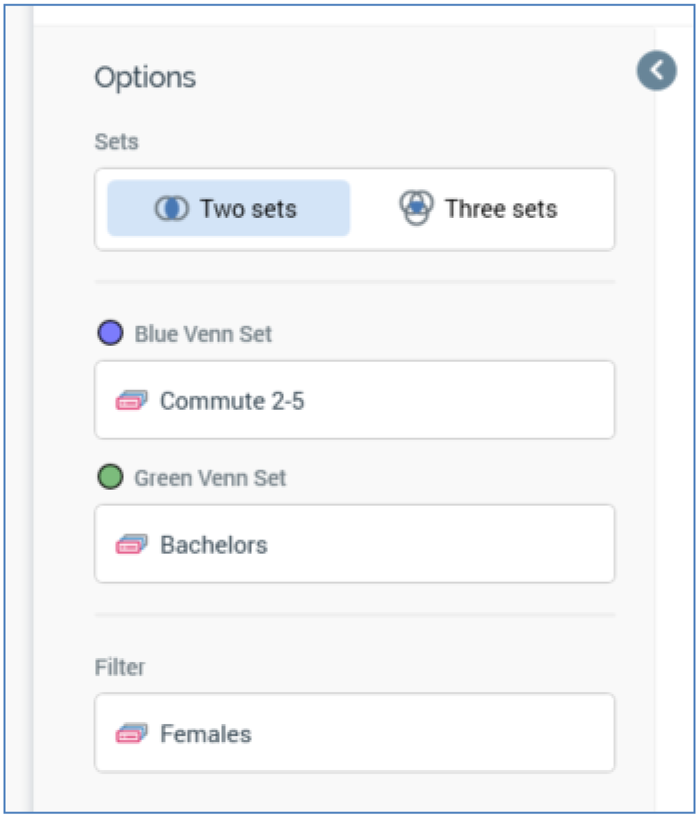
- Resolution/Definition
- Toolbox
- Venn Diagram
- Legend
- Actions Menu

12.4.1 Resolution/Definition

A Venn Diagram can be based on attributes sourced from a SQL or NoSQL database, depending on whether a resolution level or NoSQL database collection definition is selected at this property.

12.4.2 Toolbox

A Venn Diagram's toolbox is shown to the left.



Its display is controlled by the Show/hide Toolbox button. It is shown automatically when a Venn Diagram is created or opened.

It exposes a number of Options:

- Sets: you can use this property to choose whether to display two or three Venn sets. By default, a new Venn diagram is configured with two sets. If you change a three-set diagram to a two-set diagram, having configured all of the former's Venn sets, the top two Venn sets are retained in the latter context; on reverting back to a three-set diagram, the original third Venn set's selection rule configuration is lost.

- Blue/Green/Red Venn Set: you must associate each displayed Venn set with a selection rule (standard, basic or NoSQL). You can specify a selection rule using browse or drag and drop. The resolution level or definition of a Venn set selection rule must be from the same database as the panel's resolution level/definition. Having populated a Venn set's selection rule, you can open its latest version in the Rule Designer. You can also clear the selection rule.

  You can also populate a Venn set by dragging a selection rule from the toolbox and dropping it directly onto a set displayed within the Venn diagram.

In addition, you can populate a Venn set by dragging an attribute from the toolbox and dropping it directly onto a set displayed within the Venn diagram itself. When you do so, the Criterion Builder is displayed to allow creation of a criterion within a new standard selection rule, which is displayed in the Rule Designer and named '[Attribute Name] Selection Rule'. The matching Venn set' property is also set to the new rule, with the fact that the new rule has yet to be saved indicated via using italic font (this is removed when the rule is saved). The new Venn set selection rule setting is retained even if you cancel creation of the criterion.

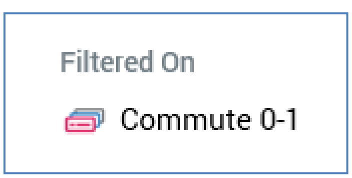
If you wish, you can save a Venn diagram containing a link to an unsaved selection rule. If you do so, you can open the unsaved selection rule from the Venn diagram using an Open this version button.

- Filter: you can provide an optional filter to define the universe of records against which the Venn diagram will be run. You can click the property to browse for an existing selection rule from the RPI file system, or you can populate the filter by dragging a selection rule from the toolbox and dropping it onto the property. Once set, you can open the filter's latest version in the Rule Designer. You can also clear the filter. Note that the resolution level of the chosen selection rule must be from the same database as the panel's resolution level.

  You can populate also a Venn diagram's filter by dragging an attribute from the toolbox and dropping it directly onto the Venn diagram canvas(avoiding its Venn sets when doing so). The attribute used must be sourced from the same database as the panel's resolution level. Note that you cannot drop an attribute onto the Filter property itself. Parameter attributes are not supported in this context.

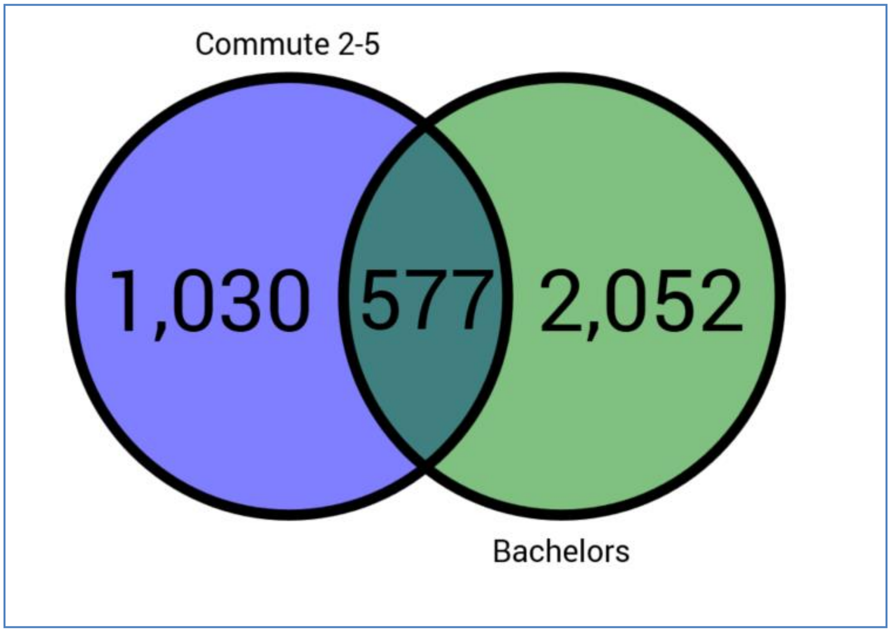
  When you do so, a new selection rule is created and the Criterion Builder displayed, as per configuring a Venn Set using an attribute. Please see the preceding section for further information.

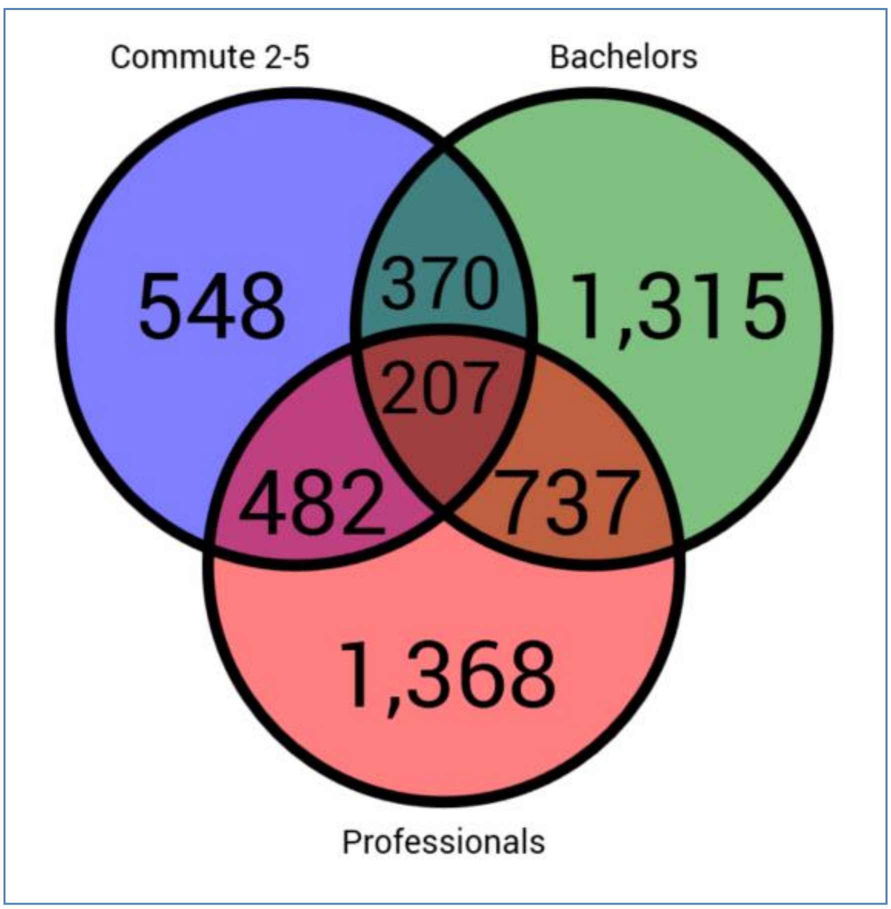
  When a Filter has been applied, it is displayed within the panel:



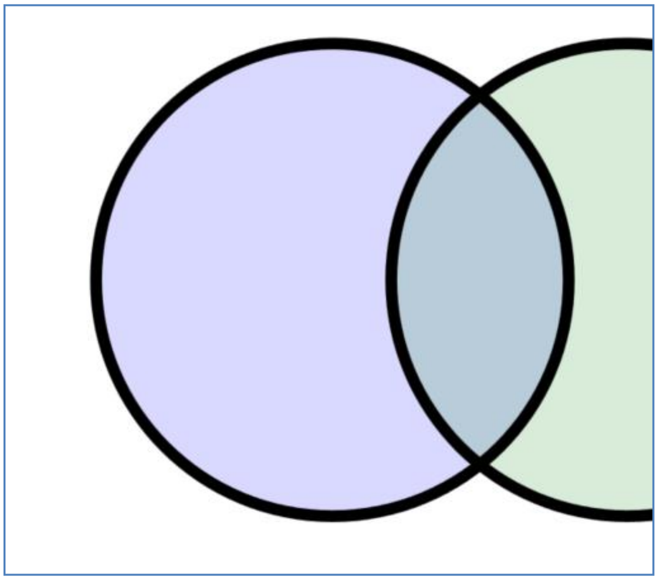
12.4.3 Venn Diagram

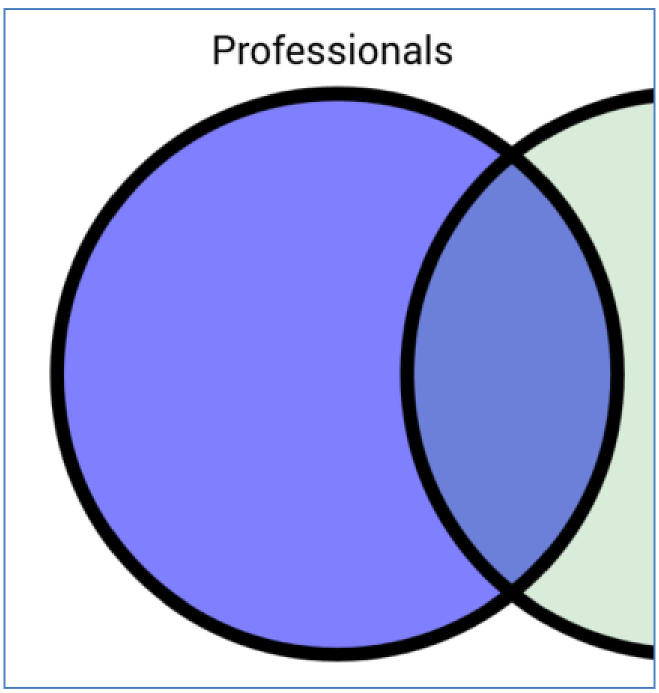
A two-or-three set Venn diagram is displayed to the right of the toolbox:





A colored circle is displayed for each Venn set. The circle's color is intensified when it is configured with a selection rule:





Once a Venn diagram's counts have been displayed, hovering over a Venn set (or an intersect within the diagram) displays the hovered context in the lighter color.

When you hover over a Venn set with a dragged selection rule, the Venn set is temporarily blanked:

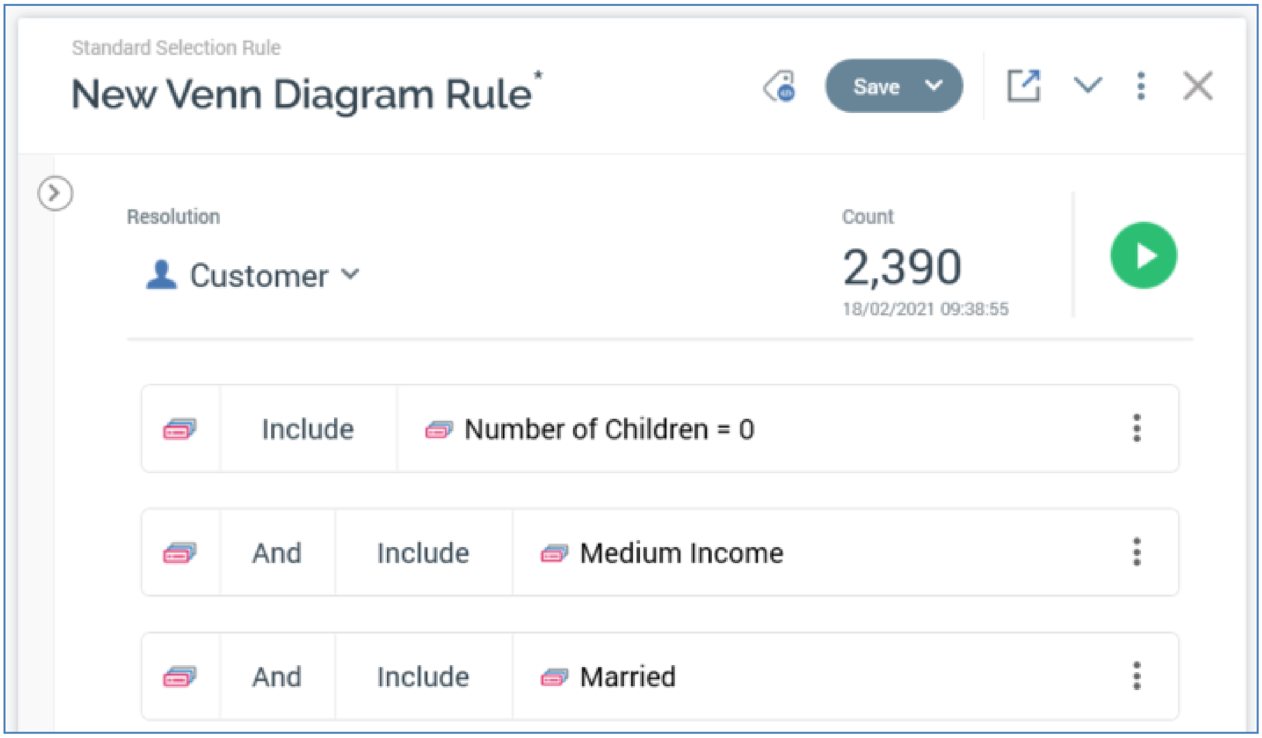
Dropping at this point configures with Venn set in question with the selection rule.

When you open a Venn diagram, if results had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. For more information on previously-generated results, please see the Chart Workspace documentation.

A Venn diagram's principal function is to provide an alternative method to building standard selection rules, other than through manual configuration.

Once you have populated Venn sets with selection rules, you can right click a segment and choose the Create new Selection Rule from Segment context menu option thus displayed.

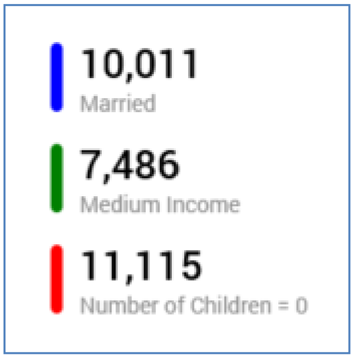
A new standard selection rule is created and displayed in the Rule Designer. It named 'New Venn Diagram Rule' (an incrementing integer can be appended to the name to ensure uniqueness). The rule contains linked selection rules in accordance with the Venn set and filter selection rules that define the segment on which the selection rule is based.



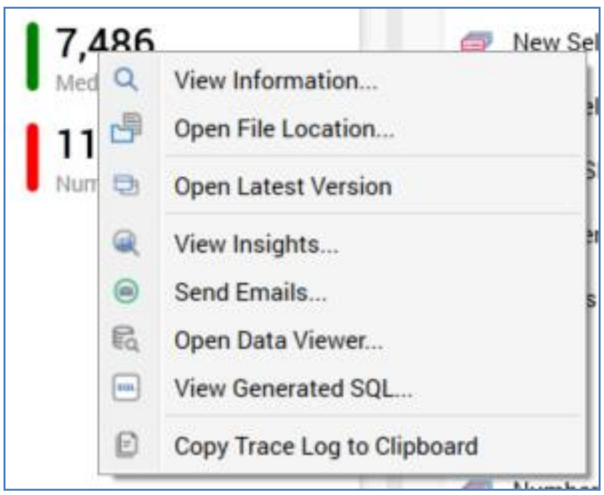
In addition, the new selection rule's resolution level is set to the same value as the Venn diagram from which it was created (with any cross-resolution linked rules contained within criteria lists with appropriate resolution levels).

12.4.4 Legend

A legend, displayed to the right of a Venn diagram, provides a color-coded guide to the selection rules with which each Venn set is configured, along with the count of records at each.

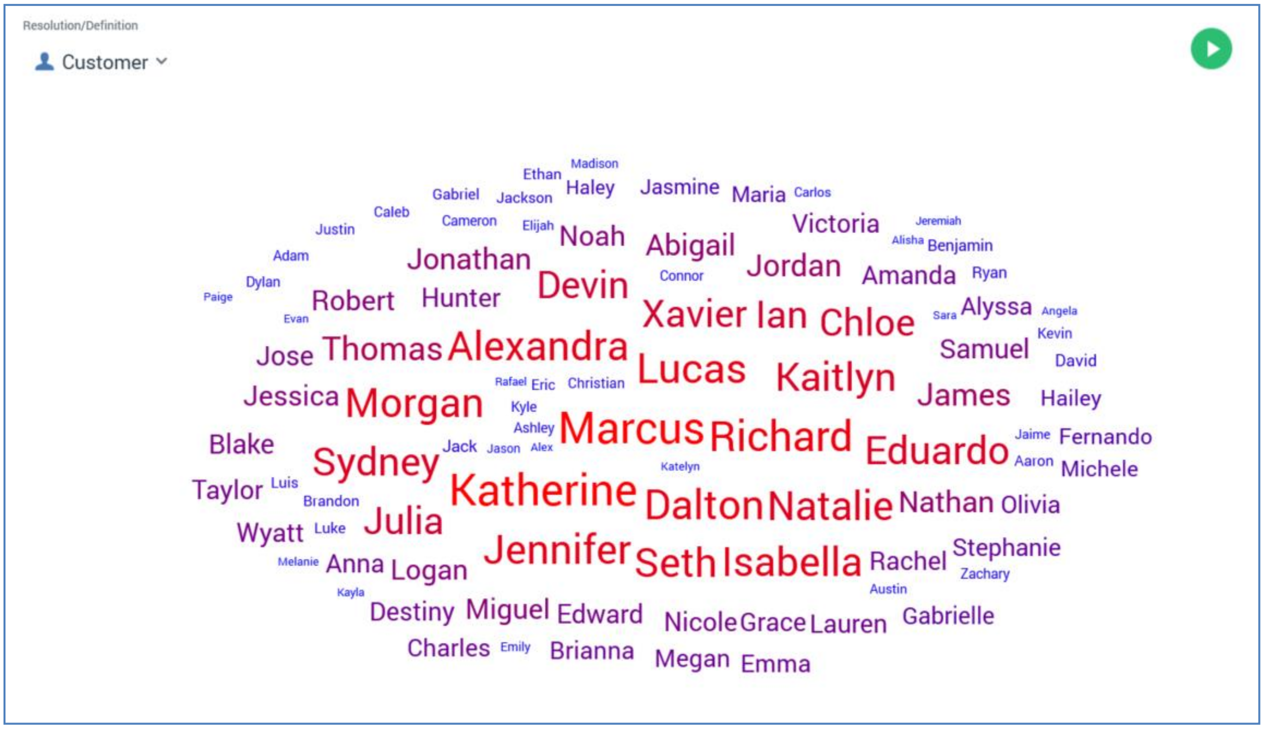


You can access functionality relating to each selection rule displayed at the legend by right-clicking the same to view a context menu:



12.5 Word Cloud

The Word Cloud analysis panel allows you to visualize the frequency at which words appear with a text attribute's values.



Words that appear within a text attribute's set of values are ranked in terms of frequency, with the most common words being shown in the largest font. A color range is also applied to increase the word cloud's visual impact.

Note that a word cloud facilitates visual discovery of data insights only. It is not possible to create a selection rule from word cloud results. However, you can copy details of the words displayed therein, along with a count of each, to the clipboard.

Note that word clouds are only currently supported at SQL Server and Hive databases.

A word cloud consists of the following elements, each of which is documented separately:

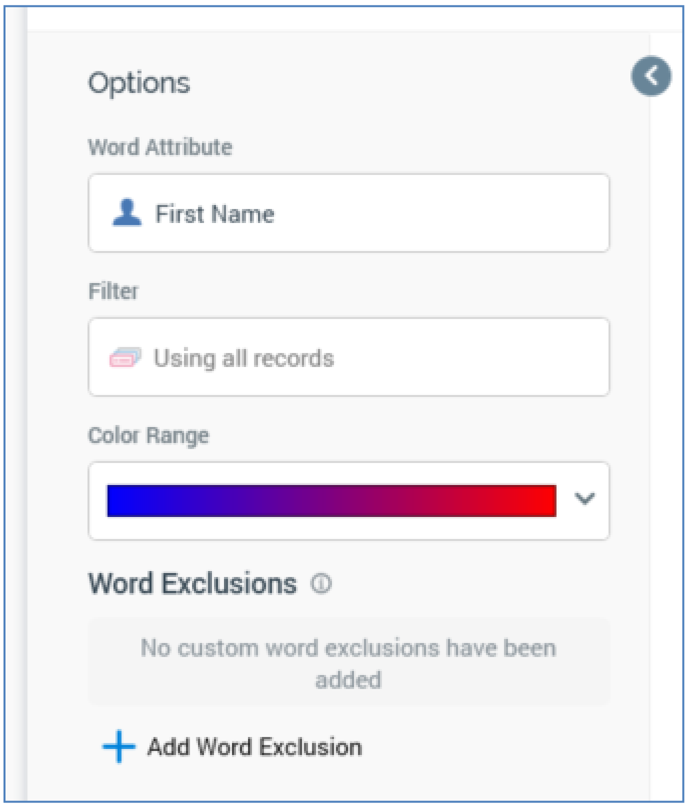
- Resolution/Definition
- Toolbox
- Word Cloud
- Actions Menu

12.5.1 Resolution/Definition

A word cloud can be based on an attribute sourced from a SQL or NoSQL database, depending on whether a resolution level or NoSQL database collection definition is selected at this property. Note that any attributes used to configure the panel must be compatible with the value selected here.

12.5.2 Toolbox

A word cloud's toolbox is shown to the left.



Its display is controlled by the Show/hide Toolbox button. It is shown automatically when a chart is created or opened.

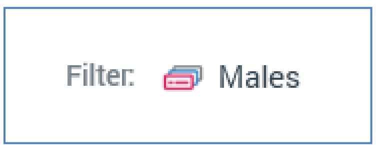
It exposes a number of Options:

- Word attribute: this property defines the attribute in respect of which the word cloud will be constructed. You can choose a recently-used attribute, browse for one using the File System Dialog, or provide one using drag and drop. Once provided, you can clear the selected attribute, or invoke View Information... to view its details in the File Information dialog. A Word attribute must be provided prior to refreshing the word cloud. The attribute selected must be a string database column or SQL expression attribute. Other attribute types are not supported. The attribute selected must be sourced from the same database as the panel's resolution level.

- Filter: this optional property allows you to provide a selection rule that will be executed at the point of the word cloud results being refreshed, thereby limiting the data displayed therein to words sourced from those attribute values present at records that match the selected filter's criteria.

  A Filter is initially not provided, with a message ('Using all records') being shown instead. You can choose a recently-used selection rule, browse for one using the File System Dialog, or provide one using drag and drop. You can also initiate the creation of a new selection rule to serve as the word cloud's Filter. Once a Filter has been provided, you can open its latest version in the Rule Designer or clear it if required. Note that the resolution level of the chosen selection rule must be from the same database as the panel's resolution level.

  When a Filter has been applied, it is displayed within the panel:

- Color range: this property allows you to specify the range of colors to be used when displaying the word cloud. The most frequently-appearing word(s) assume a color at one end of the scale, the least-frequently at the other.

  You can choose a color range using a dropdown:

  The property defaults to the blue – red scale value.

- Word exclusions: this optional property allows you to specify a list of words that will be excluded from the work cloud's results. Note that any custom word exclusions provided complement the system-wide set of default word exclusions defined by system configuration setting WordCloudExclusions.

The property consists of a toolbar and words list.

- Toolbar: the Word exclusions toolbar exposes the following:
  - Add new Word Exclusion: invocation of this option adds a new word exclusion to the bottom of the list. By default, its text is set to the value ‘word’. If a second ‘word’ is added to the list, it is displayed as ‘word 2’ (the integer can be incremented as required).
  - Remove selected Word Exclusion: invocation of this option removes the work exclusion from the words list. An ‘Are You Sure?’ dialog is not displayed.
  - Information button: an explanatory tooltip is displayed when you hover over the information button:

- Words list: when shown initially, the words list displays a message:

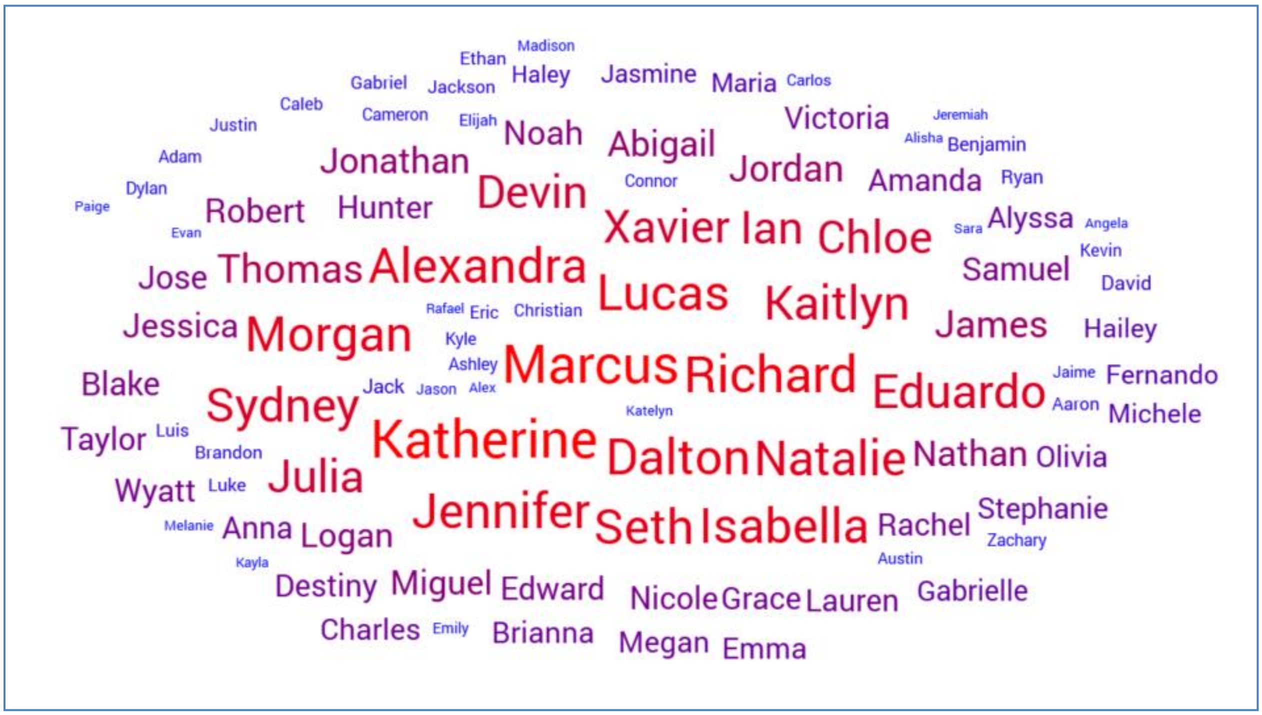
Each word added to the list must be unique. Each list entry must be configured with a word. Words are not case sensitive.

Note that the configuration panel is read-only when a word cloud panel is refreshing.

12.5.3 Word Cloud

When initially displayed, following creation or being opened, a word cloud's workspace is blank, save for a message:

When a word cloud has been refreshed, its results are displayed:



Words with the highest numbers of occurrences are displayed with the largest text. Words are also displayed in a color accordant with their position within the selected Color range. Raw database values, not translations, are shown. Any word exclusions (custom and system-wide) are removed from the results. If supplied, the Filter limits the records in respect of which the word cloud is generated. If no results are found, a message is displayed.

When you open a Word Cloud, if results had been generated previously, the most recently-generated version thereof is displayed automatically at the panel. For more information on previously-generated results, please see the Chart Workspace documentation.

12.5.4 Actions Menu

A word cloud's Action menu is displayed at its header. An additional option is available at a word cloud:

- Copy Data to Clipboard: this option allows you to copy a word cloud’s tabular data to the clipboard, for later pasting into e.g. Excel.

12.6 Analysis Panel NoSQL Restrictions

The following restrictions apply when running analysis panels against a NoSQL database:

- MongoDB: Count Distinct aggregate is not supported.
- CosmosDB: Count Distinct aggregate is not supported.
- Amazon Document DB: Count Distinct aggregate is not supported.
- Google Datastore: Venn Diagram not supported.

13 Realtime Decisions

Realtime decisions can be used to make decisions on the type of content to be displayed in a smart asset. They can be used to determine applicability in content elements in a smart asset; when the criteria within a content element's realtime decision are met, the visitor is served the associated content.

Realtime decisions use a memory cache that allows for the persistence of a visitor profile for each known and unknown website visitor. The data stored in the cache can be a combination of properties determined from the visitor's browser session, including goals achieved at landing pages, information advised by Facebook, knowledge gleaned through traversing a customized link in an RPI outbound offer and attribute values retrieved from the data warehouse or an auxiliary database upon the user choosing to identify him- or herself (e.g. by submission of an email address in a web form).

In addition, custom visitor profile values can be added to the realtime cache through the addition of RPI JavaScript functions to web pages. Please see the RPI Realtime documentation for further information.

Once a visitor profile has been established in the cache, on the caching service's being restarted, all salient decision logic is reloaded into the cache. Note that visitor profiles themselves are not reloaded in this context and must be re-established.

Realtime decisions are managed, alongside decision scorecards, selection rules and analysis panels, in the Rule Designer. Realtime decisions and decision scorecards are covered in this documentation. Selection rules and analysis panels are documented separately. The Rule Designer is also documented independently.

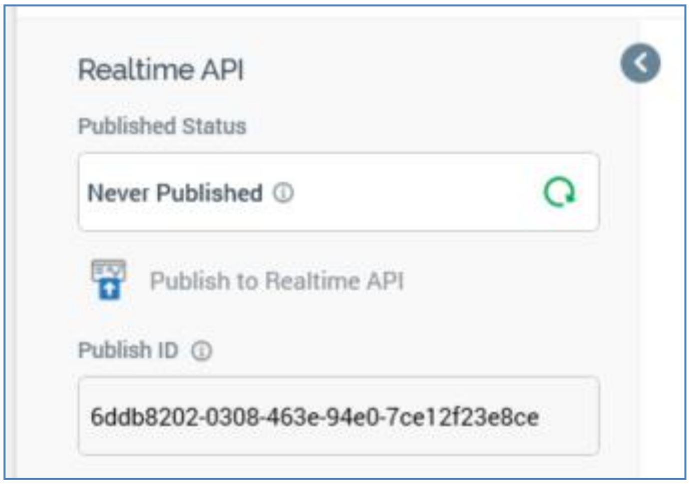
Access to realtime decision functionality is controlled by the Realtime Decision - Design functional permission.

13.1 Expanded Mode

The following features are available at all realtime decisions when displayed in expanded mode.

13.1.1 Toolbox

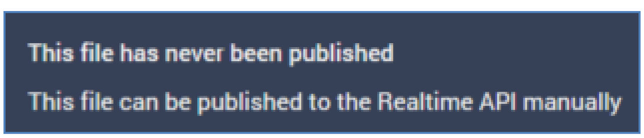
The realtime decision's toolbox is shown to the left.



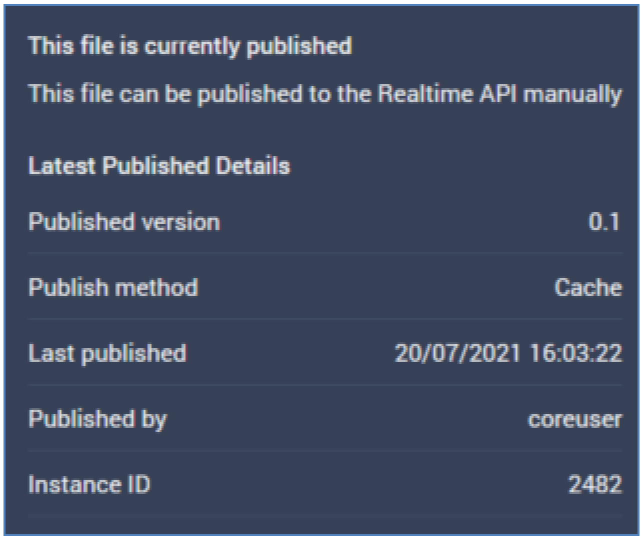
Its display is controlled using the Show/Hide Toolbox button. The toolbox is shown by default.

It contains a single Realtime API section, which, in turn, contains the following:

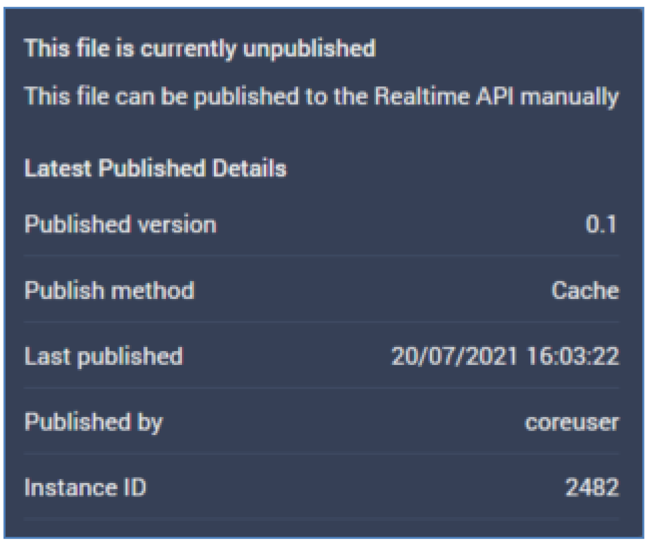
- Published Status: read-only, and one of:
  - Never Published: the following information tooltip is provided:



  - Published: the following information tooltip is provided:



- Unpublished: the following information tooltip is provided:



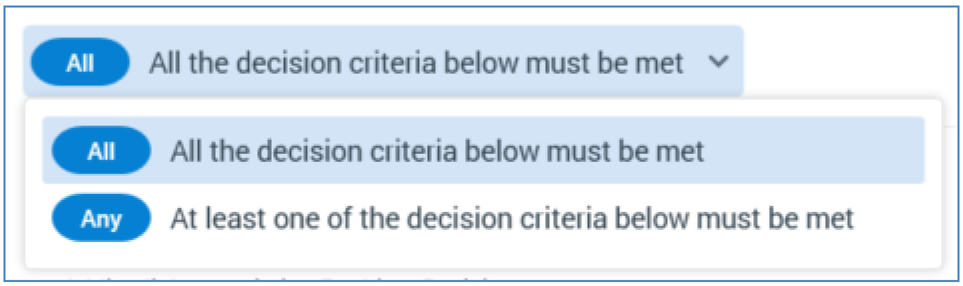
- Refresh: you must click this button to manually refresh the file's latest Published Status (published status changes are not displayed automatically).
- Publish to Realtime API: clicking this button allows you to publish the file for use with the RPI Realtime API. It is enabled when the file is valid, and contains no unsaved changes. Invocation creates a Publish job and displays it in the My Jobs dialog. Following a successful publish, the file's Published Status is set to Published, and the Unpublish from the Realtime API button is displayed.
- Unpublish from Realtime API: this button is displayed and enabled when a file is Published. Clicking it unpublishes the file, meaning it can no longer be used by the RPI Realtime API, and is protected by an 'Are You Sure?' dialog. Upon invocation, an Unpublish job is created and displayed in the My Jobs dialog. Following a successful unpublish, the file's Published Status is set to Unpublished, and the Unpublish from the Realtime API button is hidden.

- Publish ID: this read-only GUID is used to uniquely identify the realtime decision during evaluation by the Realtime API. You can select it to copy it to the clipboard.

When a realtime decision is evaluated directly using the Realtime API, if its decision criteria are satisfied, the returned ResultContent is true. If not satisfied, the returned ResultContent is false.

13.1.2 All/Any

This property allows you to define how a realtime decision's criteria are to be treated when determining whether a website visitor satisfies them or not.

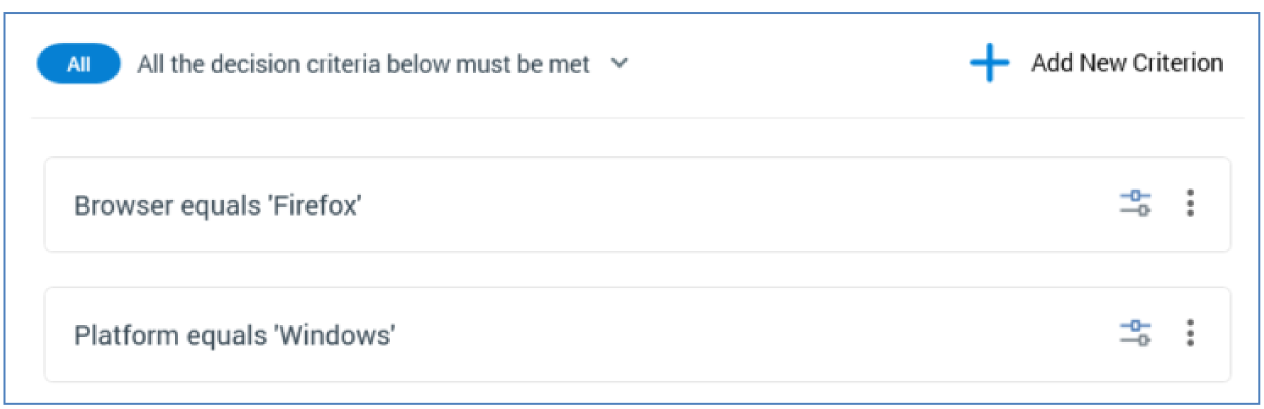


Two options are available – All (the default) and Any. You can change the property's value using the dropdown field provided.

To give a simple illustration of how the property can be used to determine whether to display content, consider an RPI landing page that contains a smart asset. The asset determines whether to display a piece of content depending on whether a visitor satisfies the criteria defined within a web tracking realtime decision.

(For more information on using realtime decisions to determine smart asset applicability, please see the Smart Asset Designer documentation).

Let us assume that the criteria within the realtime decision look like this:



If All/Any is set to All, for the criteria within the decision to be satisfied, the visitor must be using Firefox to browse to the landing page and must be running on a Windows operating system.

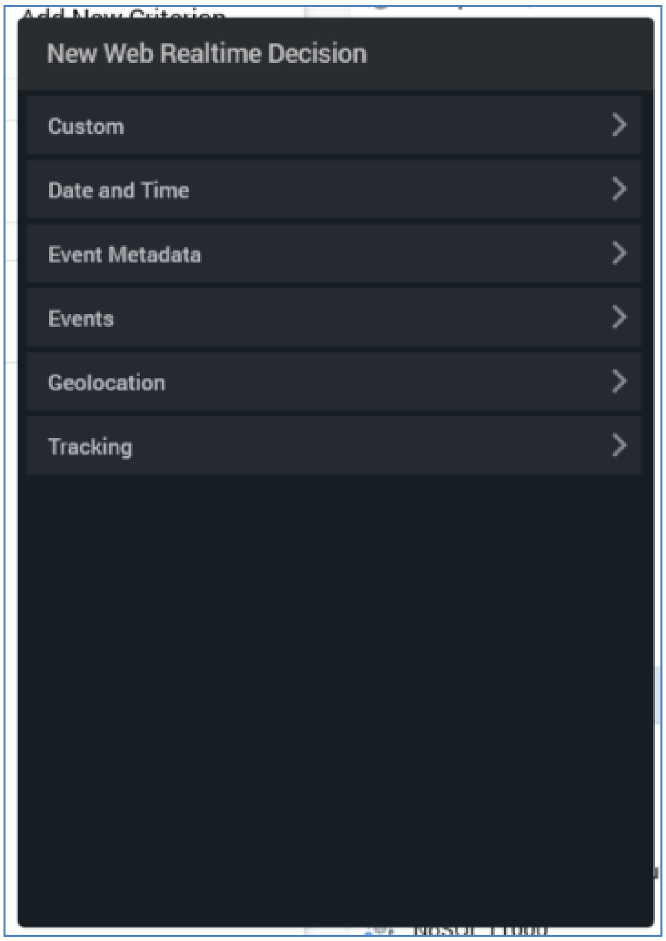
If set to Any, only one of the criteria need be met for the realtime decision to be satisfied.

Note that All/Any is always displayed, even if a decision contains only a single decision criterion. In this case it has no effect.

13.1.3 Add New Criterion Button

This button is used to add a decision criterion to a realtime decision.

It is displayed to the right of All/Any. Clicking it displays the Decision Criteria panel to the right of the realtime decision:



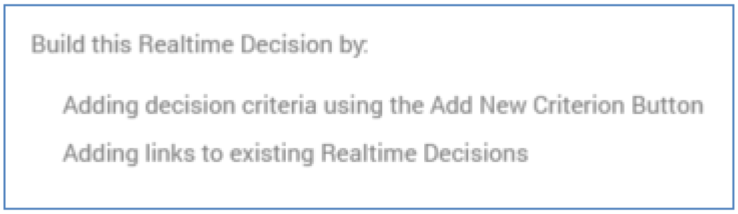
The panel allows you to select the type of decision criterion to add to the realtime decision. The list of available criteria types differs by realtime decision type; each is documented separately.

You can click a criterion type to add it to the realtime decision. When you do so, a new criterion of the appropriate type is added to the end of the current decision's criteria list. The new decision criterion is presented in edit mode.

Clicking off the panel causes it to be removed from display.

13.1.4 Canvas

A realtime decision's canvas initially displays a message:



Criteria and linked realtime decisions are described elsewhere in this documentation.

The following options are available when you right click a realtime decision's canvas:

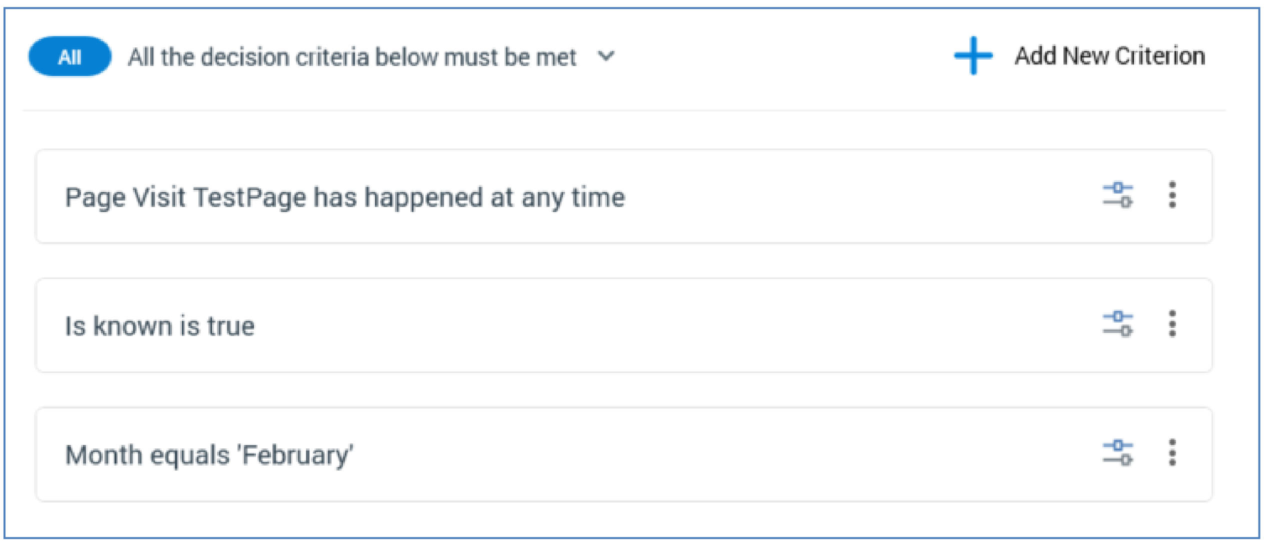
- Add New Criteria List: adds a new, empty criteria list to the realtime decision.
- Paste: only available if the clipboard contains something that may legitimately be pasted into the rule (e.g. a criterion or criteria list).

13.1.5 Decision Criteria

A realtime decision's criteria allow you to define the elements of the decision that collectively determine the audience to which the decision applies. For example, you might have content within a smart asset that is tailored to those users from a particular geographical location, or who have previously received a specific Redpoint offer; realtime decision criteria are the medium through which the decision as to whether to display certain content at a website visit can be made.

The types of decision criterion available at a given realtime decision are determined by the decision's type (offer or web tracking). The criteria types available at each are described elsewhere. This section documents the features generic to all realtime decision criteria.

A realtime decision's criteria are displayed in a list, shown below the All/Any property and above the Add New Criteria List button:



You can add a new decision criterion to a realtime decision by clicking the aforementioned button (this is documented elsewhere).

A realtime decision can contain a combination of:

- Decision criteria
- Criteria lists
- Linked realtime decisions
- Linked basic selection rules
- Linked NoSQL selection rules
- Scorecards

The above are all discussed separately.

A realtime decision's criteria list must contain at least one decision criterion or linked realtime decision.

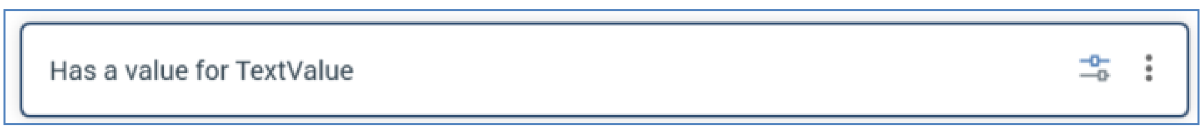
You can order decision criteria within a criteria list using drag and drop. An indicator is displayed to show you where the dragged criterion will be dropped on releasing the mouse button.

Decision criteria can be presented in read-only or edit mode. Only a single criterion can be in edit mode at any one time.

When shown in read-only mode, the following are displayed at a decision criterion:

- Plain text summary of the decision criterion's settings, consisting of:
  - Decision criterion type name
  - Operator
  - Value(s)

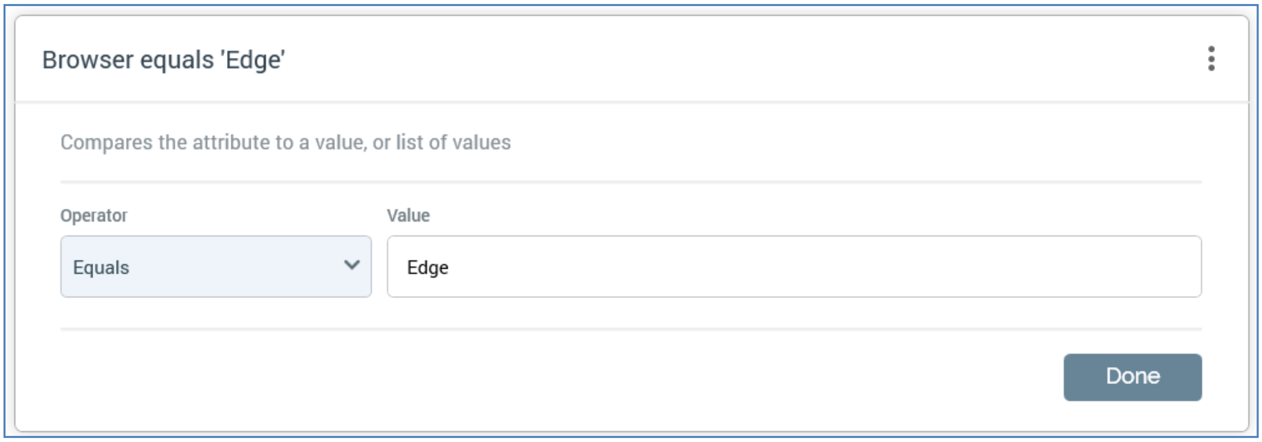
  The following is shown in the case of an Exists/Does not exist operator having been selected:

- Configure: clicking this button places the criterion into edit mode.
- Actions: clicking this button displays a context menu, which exposes the following:
  - Cut
  - Copy
  - Remove: removes the criterion without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a criterion.

When in edit mode, the following are shown:



- Textual criterion description.
- Operator: a dropdown field, the values exposed by which are data type-appropriate.
- Value(s): the values supported at a criterion are appropriate for its data type. If a criterion supports the provision of values, the following is initially displayed at its value:

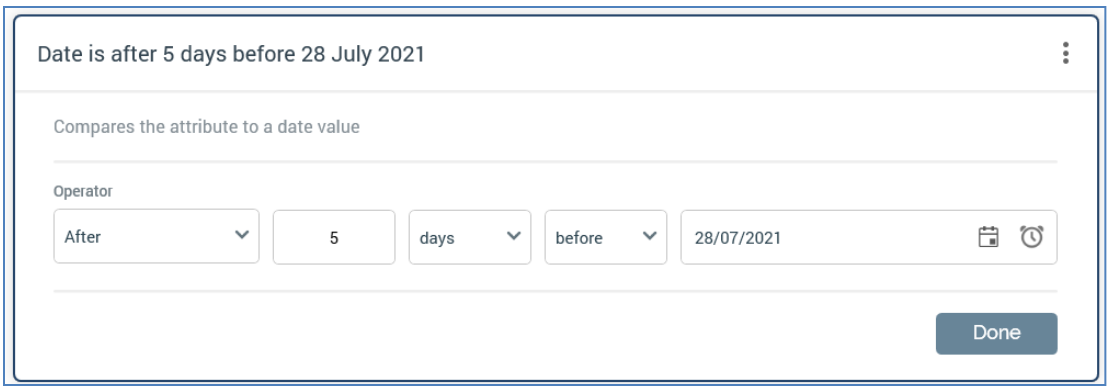
  - If a string criterion type, if predefined values exist for the decision criterion type, clicking the value field displays the Choose Values dialog, in which you can select the values you require. More information on the Choose Values dialog can be found in the RPI Framework documentation.

    If predefined values are not supported, values are supplied using the Specify Values dialog. More information on the Specify Values dialog can also be found in the RPI Framework documentation.

  - If a numeric criterion type, a masked field restricts data entry to a numeric value. If one of the 'Is in list' or 'Is not in list' operators is selected, multiple values can be supplied using the Specify values dialog (see above for details).
  - If a date criterion type, display depends on the selected operator.
    - If 'Equals' or 'Does not equal', the following are shown:

A date or datetime picker, defaulting to today/now, is shown. Selecting the button to its right sets the value to the Current date/time

- If After, Before or Within, the following are shown:

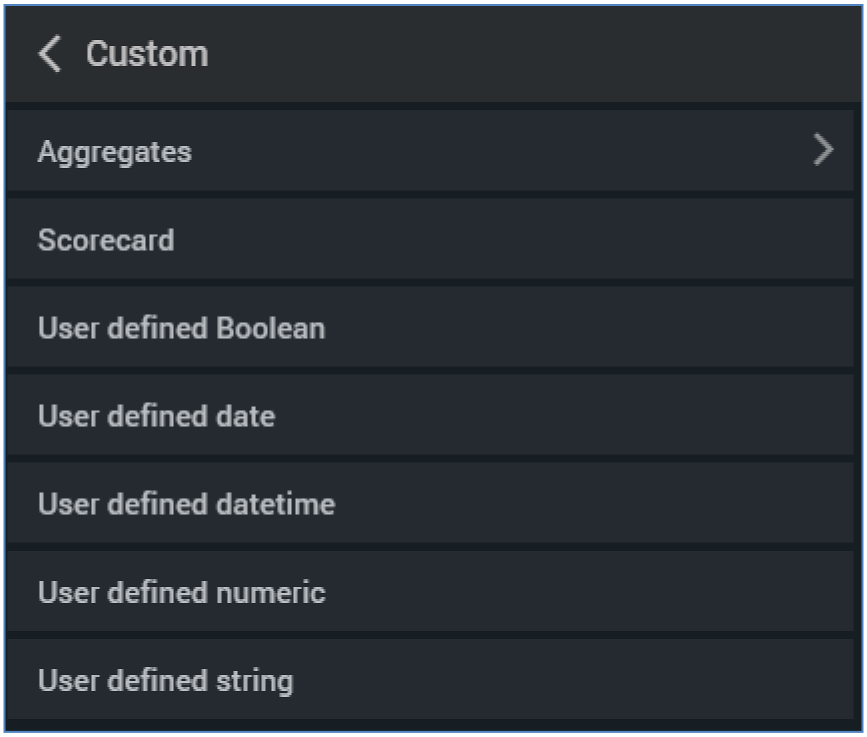


- If a Boolean decision criterion type, the following values are available:
  - Is True
  - Is False (the default)

Note that if an Exists or Does not exist operator has been selected, Value is not shown.

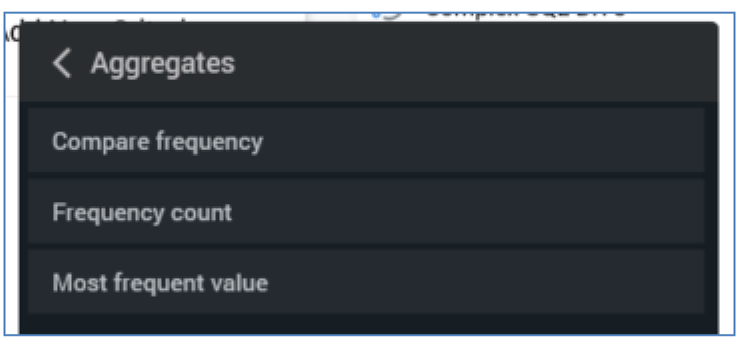
13.1.6 Custom Criteria

When adding a decision criterion to a realtime decision, a Custom option gives access to the following:



When you add one of the 'User defined' criteria to a realtime decision, its name is editable. This provides extensibility at decision criteria; if a given criterion type is not supported, a user-defined criterion can be used to fulfill a specific requirement.

The Aggregates group gives access to the following decision criteria:



These allow you to calculate aggregates in respect of collection values stored within a visitor parameter.

- Compare frequency: this criterion type allows you to specify whether value 'A' is more frequent than 'B' in a collection.

- Frequency count: this criterion type allows you to specify the count of any value, or 'A', or 'A' and 'B' in a collection.
- Most frequent value: this criterion type allows you to specify the most frequent value in a collection.

The Custom aggregate menu also provides the ability to add a linked decision scorecard to a realtime decision, using the Scorecard option. This feature is discussed in the Linked Decision Scorecard section elsewhere in this documentation.

13.1.7 Linked Realtime Decisions and Selection Rules

You can add a link to another realtime decision within a realtime decision. You can do this by dragging a realtime decision file from the toolbox, and dropping it onto the outer realtime decision's canvas. You can also copy a linked realtime decision and paste it into the outer realtime decision.

A linked realtime decision appears as follows:

The following are shown:

- Include/Exclude: this setting allows you to specify that the linked realtime decision's criteria should be met or not met for its usage in this context to be satisfied.
- Realtime decision name
- Open latest version: clicking this button opens the linked realtime decision in the current Rule Designer tab.
- Pop out: displays the linked decision in an independent, modeless Window. For more information, please see the Rule Designer documentation.
- Actions: clicking this button displays a context menu, which exposes the following:
    - Cut
    - Copy
    - Remove: removes the linked realtime decision without displaying an 'Are You Sure?' dialog.

  Note that the same context menu is shown when right-clicking a linked realtime decision.

The following keyboard shortcuts are supported at linked rules:

- Ctrl-C: copy
- Ctrl-X: cut
- Delete: remove

You can also include links to basic and NoSQL selection rules within a realtime decision.

13.1.8 Linked Realtime Decisions and Selection Rules

You can create a create a link to a decision scorecard file within a realtime decision. When you do so, you are specifying that the scorecard be treated as a decision criterion; an operator and value are assigned to the linked scorecard, and are used to determine whether the 'criterion' is satisfied or otherwise.

Decision Scorecards are documented separately elsewhere in the Realtime Decisions documentation.

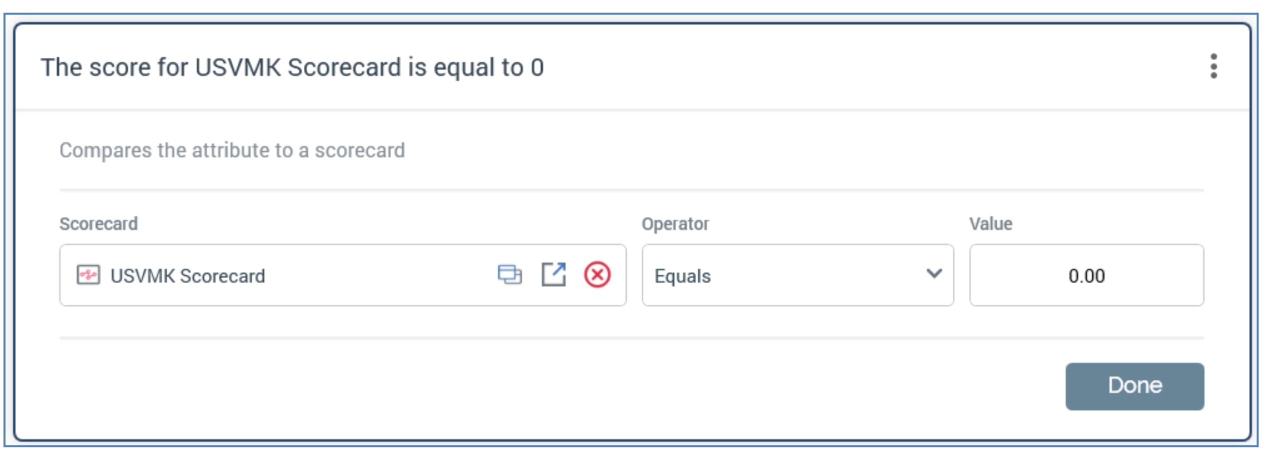
- Dragging a decision scorecard file from the Rule Designer toolbox and dropping it onto a realtime decision's canvas. When you do so, the linked scorecard is presented in read-only mode.
- Selecting the Scorecard option from the Custom section within the menu displayed at invocation of Add New Criterion. When you do so, the linked scorecard is presented in edit mode.
- Pasting in a copied linked scorecard.

When in read-only mode, a decision scorecard appears as follows:

The following are shown:

- Plain text summary of the linked scorecard's settings.
- Configure: clicking this button places the linked scorecard into edit mode.
- Actions: as shown at a read-only decision criterion.

When in edit mode, the following are displayed:



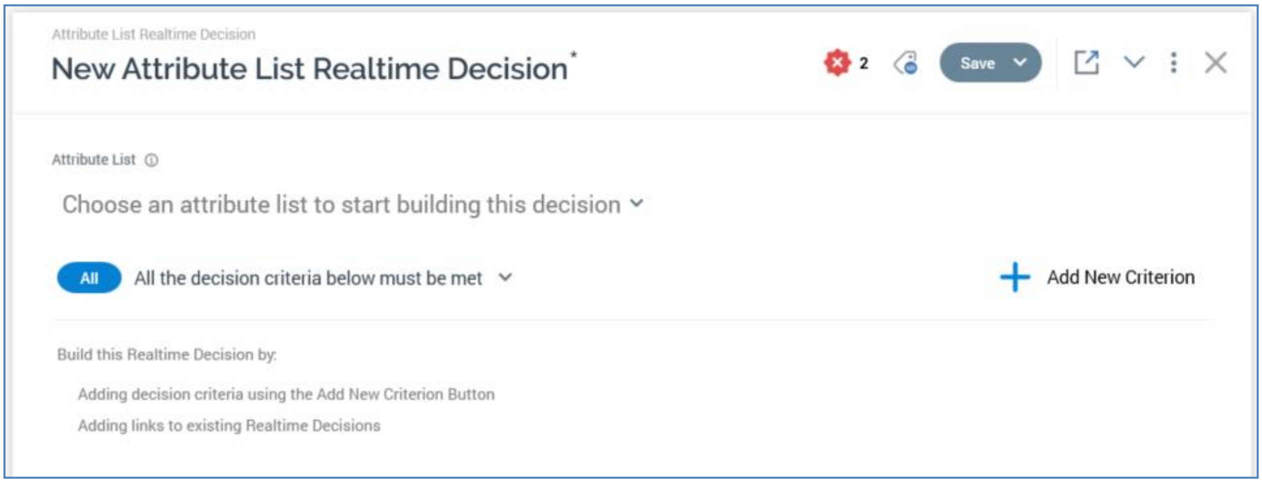
- Textual criterion description.
- ‘Set Criterion using…’
- Scorecard: provision of a decision scorecard file is mandatory in this context.
    - Open Latest Version
    - Pop out
    - Clear
- Operator
- Value: numeric
- Done: returns the linked decision scorecard to read-only mode.

13.2 Realtime Decision Types

RPI supports a number of types of realtime decision, which fulfill specific functions. Each is documented separately.

13.2.1 Attribute List Realtime Decision

An attribute list realtime decision allows you to make decisions based on data values available in a visitor's profile, represented through use of an attribute list.

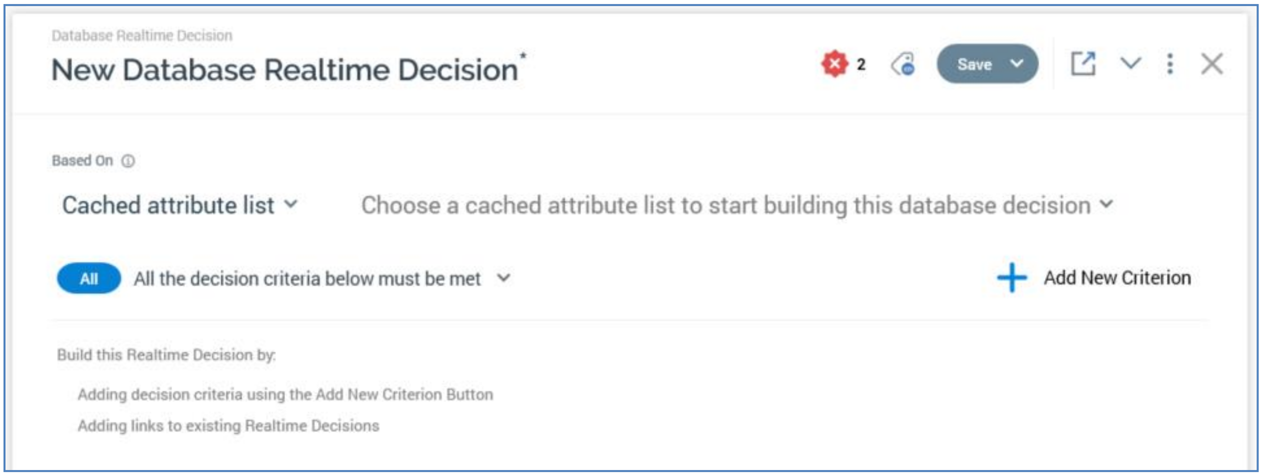


The realtime decision exposes a single bespoke property:

- Attribute list: you must select an attribute list from a dropdown, which exposes all non-placeholder attribute lists configured at the current client. Having done so, you can create and configure decision criteria based on the attributes within the selected list.

13.2.2 Database Realtime Decision

A database realtime decision allows you to personalize web content based on a known website visitor's attribute values, as retrieved from the data warehouse or an auxiliary database.



To use a database decision, RPI must be provided with a lookup key value, which can be used to uniquely identify the visitor. This can happen when e.g.:

- The visitor submits a web form containing e.g. an email address, and the field within which the value is provided is mapped to a cached attribute list. The submitted value can then be used as a lookup to the list of attributes, values for which can be retrieved and persisted in the realtime cache. Note that, when a web form is used to determine a lookup key, an entry in the site's web.config's ParameterToDataMappings setting is not required.

- The visitor logs into a Facebook app using an RPI Facebook Login button, and the site's web.config includes a ParameterToDataMappings setting that maps the name of piece of data provided by Facebook at successful login to a cached attribute list. Attribute values can then be retrieved and persisted in the realtime cache.

- The same mechanism can be used to map a URL parameter, present in the query string used to navigate to a web page, to a cached attribute list lookup key.

ParameterToDataMappings are defined in the RPI Realtime website's appsettings.json file, as per the following example:

```
"ParameterToDataMappings": [
    {"ParameterName": "Email", "CALName": "CAL01"},
    {"ParameterName": "Employee", "CALName": "CachedTable01"},
    {"ParameterName": "CustomerKey", "CALName": "Cassandra"},
    {"ParameterName": "Cassandra2", "CALName": "Cassandra2"}]
```

Full details of cached attribute lists can be found in the Configuration Workbench documentation.

Note that RPI looks for changes to cached attributes every 10 minutes and updates the realtime cache if any attribute values are found to have changed in the intervening period.

A database decision exposes additional properties when compared to other realtime decision types:

- [Using]: this dropdown property allows you to specify the basis upon which decision criteria will be added to the realtime decision. It exposes the following values:
  - Cached attribute list: the default value. Selection of this value displays the cached attributes list property below the dropdown.
  - Realtime cache offer: selecting this value displays the Offer property below the dropdown.
- Cached attributes list: if displayed, you can select a cached attributes list that will be used when adding decision criteria to the database decision using a dropdown, in which all cached attributes lists are listed alphabetically. You can choose an attribute- or NoSQL definition-based cached attribute list.
- Offer: this property is mandatory when displayed. It allows you to select a realtime cache offer, and then use the attributes from that offer when building the realtime decision's decision criteria.

  You can populate the property by browsing for a realtime cache offer, or by using drag and drop. The offer selected must support the realtime cache delivery method. Having selected an offer, you can open its latest version in the Offer Designer. You can also clear the property.

Note that selection of a cached attribute list or realtime cache offer is simply a mechanism to be used when adding decision criteria to a database decision – both are, after all, just vehicles for the population of data within the realtime cache. If required, you can include decision criteria based on cached attribute list and realtime cache offers in the same database decision.

If a database decision is currently configured to use a cached attribute list when adding decision criteria, the decision criteria types available are contingent on the selected cached attribute list.

If a NoSQL cached attribute list is selected, if a DisplayName was provided for a criterion, it is shown instead of its Name. The criterion editor utilized is the same as the criterion editor used at the JSON realtime decision.

If the decision is configured to use a realtime cache offer, you can choose an attribute from the same when adding a new decision criterion.

Having established a visitor's identity, you can use a database decision to vary smart asset content in accordance with attribute values.

If more than one record with a different attribute value exists for the same lookup key, more than one value is persisted in the realtime cache.

If a given visitor qualifies to be served more than one piece of content, the content element order within the smart asset determines which content will be displayed.

After a number of days defined by a cached attribute's Lifetime value, on a visitor's re-visiting the site and presenting a lookup key, the attribute value is refreshed from the data warehouse or auxiliary database.

When using a cached attribute list that has been created as a table in the cache in the context of a database realtime decision, lookups are performed against a visitor's profile entry with a name matching that of the cached attribute list's Lookup key attribute. You can use cached attributes from such a list as the basis for decision criteria. If data is not present in the cache when the lookup is performed, it is retrieved from the database. If the cached attribute with the lowest Lifetime (Days) value has expired at the point of a lookup being made, a full refresh of the cached attribute list virtual table is performed. If data is not present in the virtual table (due to the MaxRowsPerCachedTable setting having been reached), the decision criterion using the same will not be satisfied. Similarly, if the Lookup key is not present in the visitor profile, decision criteria based on cached attributes from the virtual table will not be able to be satisfied. Note that if RPI is unable to locate a cached attribute in a virtual table, the visitor profile will be checked for its presence; if located in this way, the value thus retrieved will be used.

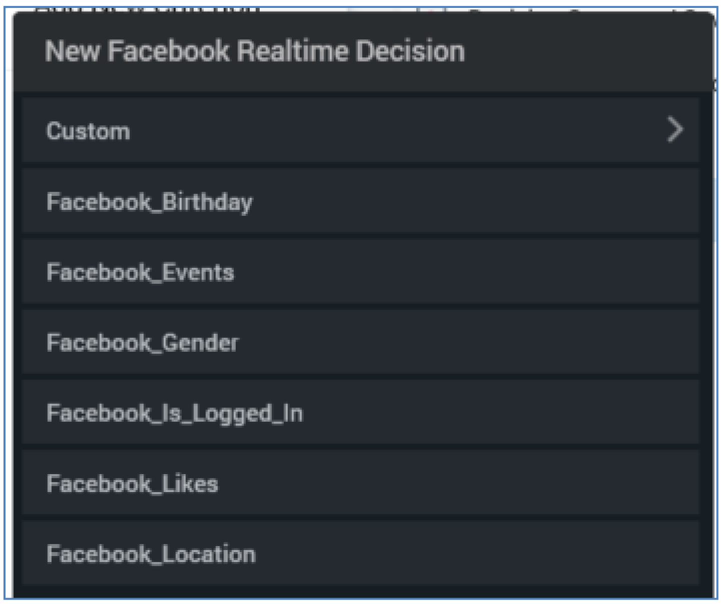
When using a database decision criterion based on a database column attribute with a List or Map data type, the comparison of the value supplied at the decision criterion is performed against all individual values contained within the attribute's value.

13.2.3 Facebook Realtime Decision

A Facebook realtime decision allows you to personalize web content in accordance with a series of data about a website visitor provided by Facebook. These data are stored in the realtime cache when a user logs into a Facebook app using an RPI Facebook login button. A default set of data are always provided by Facebook, and the set can be augmented through the specification of extended login permissions when configuring the Facebook login button.

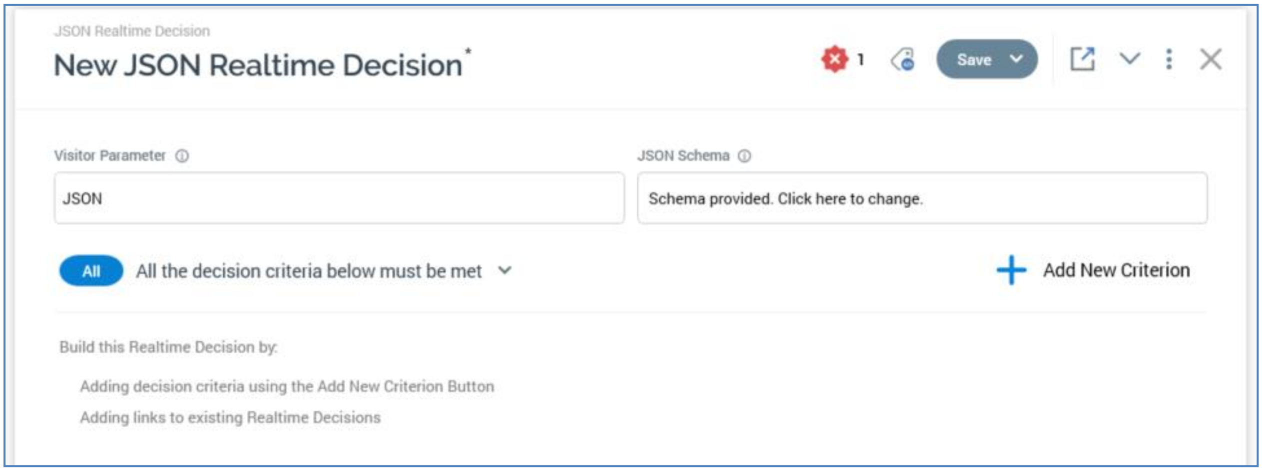
For further details about the Facebook Login button, please see the Landing Page Designer documentation.

The following decision criteria types are available at a Facebook decision:



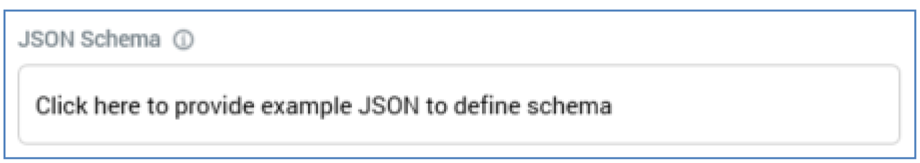
13.2.4 JSON Realtime Decision

A JSON realtime decision allows you to make realtime decisions based on pieces of JSON data persisted in a parameter within a visitor's profile.



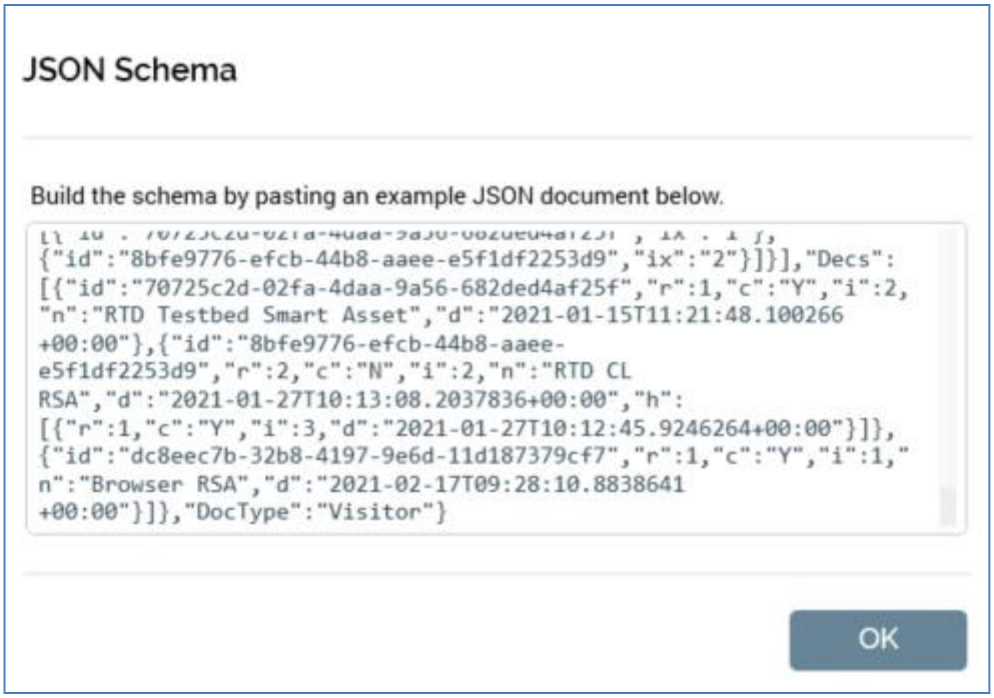
A JSON realtime decision contains the following:

- Visitor Parameter: this mandatory property represents the visitor profile parameter within which JSON to be used by the realtime decision will be stored.
- JSON Schema: allows you to provide a piece of JSON, which will be used as the basis for determining the types of decision criteria available at the realtime decision. At its initial display, the following text is shown:

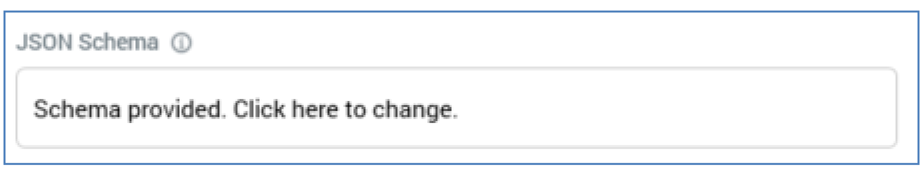


You must supply a JSON schema; a validation error is raised prior its provision.

On clicking the button, the JSON Schema dialog is displayed. It contains the following:



- Valid JSON document: you can paste or enter a JSON document in this multi-line field. The example provided will be used as a schema to establish the list of decision criteria types available to the realtime decision. Clicking the OK button removes the dialog from display. If you provided a JSON example the property's text is changed as follows:

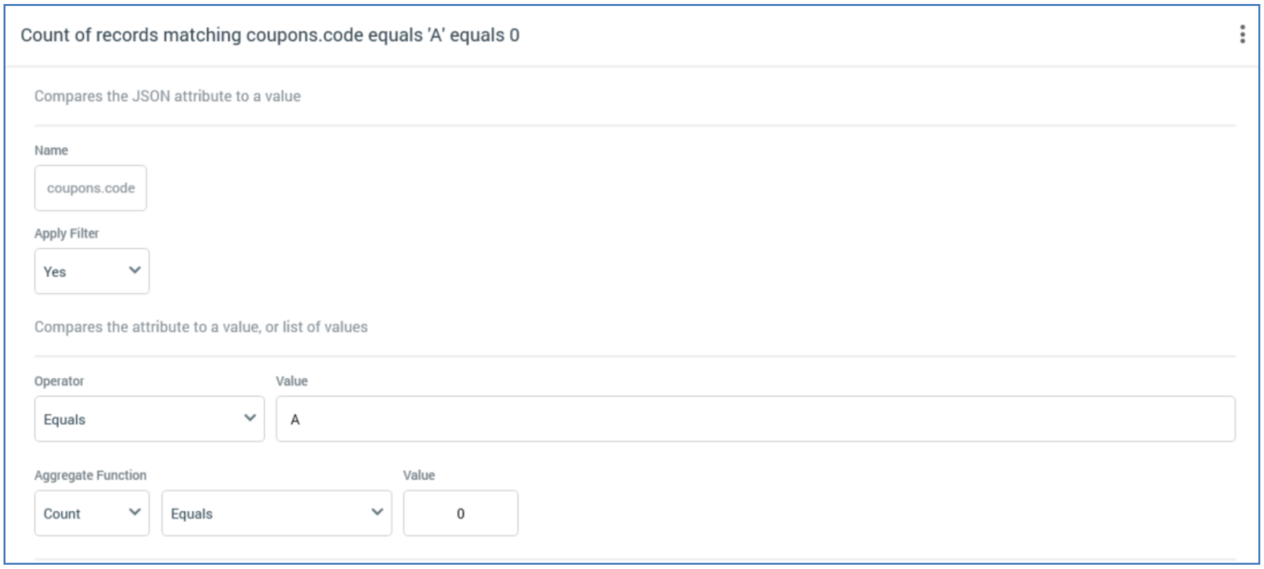


On invocation of Add new Decision Criterion, if an invalid JSON schema supplied, a warning is raised.

If a valid JSON schema was supplied, available JSON elements (objects, arrays and attributes) are listed in the Add New Decision Criterion dialog. In addition, standard Custom and Custom JSON decision criteria are available. The latter are covered separately.

You can select an element to use as the basis for creating a new decision criterion. On selection of the same, the new decision criterion is displayed in the realtime decision and is selected automatically.

When displayed in edit mode, a JSON decision criterion appears as follows:



- Name: of the JSON parameter.
- Apply Filter: this Yes/No dropdown defaults to 'No'. When set to 'Yes', the Operator and Value fields allows you to specify a filter to limit the decision's targets.
- Operator: a dropdown. The values available are type-specific; if the JSON element is numeric, Operator defaults to '=', and if string, to 'contains'.
- Value: provision of a filter value is mandatory. Data entry is constrained in accordance with the JSON element's data type:
  - Decimal: defaults to '0.0000'; the maximum supported value is '9999999999.9999'
  - Integer: defaults to '0'; the maximum supported value is '9999999999'
  - String: a button is shown. Its label is set initially to 'No values. Click to select'. Clicking the button displays the Specify Values dialog, in which you can specify one or more filter values.

    Note that a validation error is raised in the event of adding the same value more than once. Having specified values, you can click the OK button or click off the dialog to close it. The values are displayed as a comma-separated list at the Additional Details panel and are also shown in a tooltip on hover.
- Aggregate function: a dropdown field, in which available values are presented alphabetically. The following values are always available:
  - Any (the default)
  - Not any

  The following additional value is available if the selected JSON element is an array or an attribute of an object in an array:

- Count

The following additional values are only available at numeric JSON attributes:

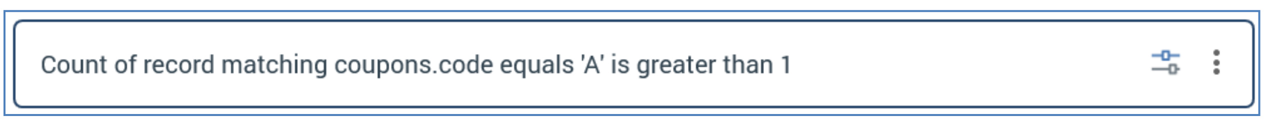
- Sum
- Minimum
- Maximum
- Average

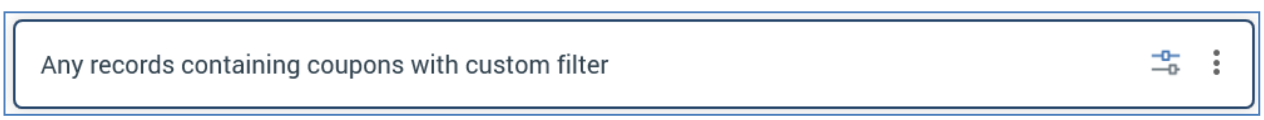
If a value other than Any or Not Any is selected, the following additional fields are displayed:

- [Operator]: set using a dropdown; defaults to '='.
- [Value]: if the selected Aggregate function is Count, an integer field is supplied, otherwise a decimal field is used to specify the value. The property defaults to '0'.

The following are shown when the decision criterion is based on a JSON array:

A read-only JSON criterion appears as per the following examples:





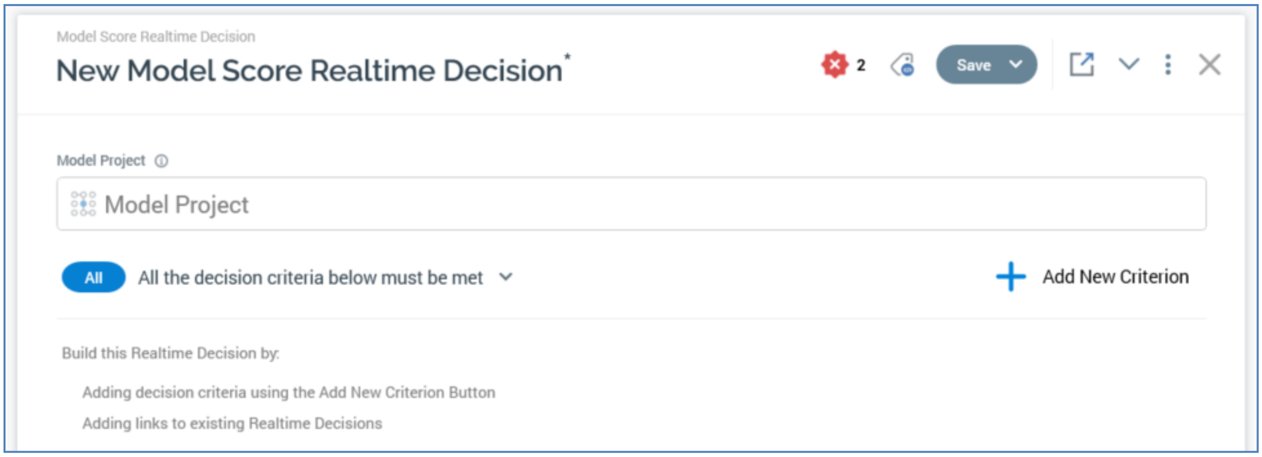
13.2.5 Custom JSON Decision Criteria

Two decision criteria are available within the Custom JSON option, displayed when adding a decision criterion to a JSON realtime decision.

- User defined JSON numeric: this decision criterion represents a user-defined JSON parameter that queries a numeric property value within a piece of JSON.
- User defined JSON string: this decision criterion represents a user-defined JSON parameter that queries a string property value within a piece of JSON.

13.2.6 Model Score Realtime Decision

A model score realtime decision allows you to make content applicability decisions based on a visitor's model score, as sourced from Redpoint Automated Machine Learning (AML).



The realtime decision exposes a single bespoke property:

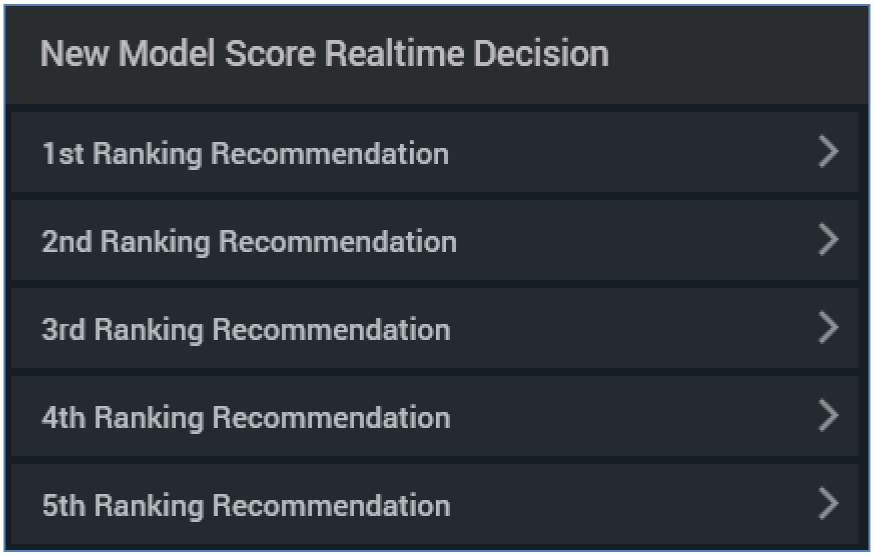
- Model Project: you must select a model project file with which to configure the realtime decision. You can browse for a model project, or populate the property using drag and drop. you can also initiate the creation of a new model project. Having populated the property, you open the latest version of the model project in the Model Project Designer. You can also clear your selection.

When adding criteria within a model score realtime decision, the following types of decision criteria are available:

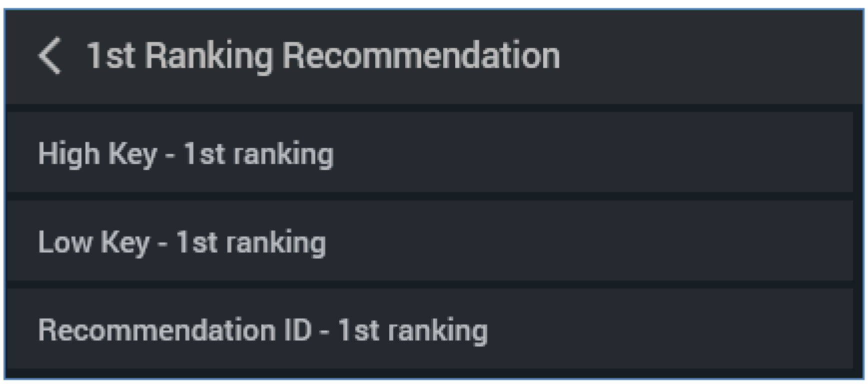
- Model Score: allows you to specify a specific decimal model score value. Can be used with all model projects, including those that have not been configured with bands.
- Bands: each band exposed by the model project is available for selection as a decision criterion. When editing a criterion based on the same, a dropdown allows you specify that the criterion be satisfied if a visitor is (the default) or is not in the band.

When a smart asset containing a model score realtime decision is evaluated, a call is made to the AML service to determine the visitor's model score. The returned model score is compared against the model score All/Any band decision criteria to determine whether they are satisfied. If the model project is configured with a parameter attribute generated from a cached attribute list, and the list's lookup key is present in the visitor's profile, or passed in the request, the visitor profile's database values are populated with data sourced from the data warehouse.

When a Recommender model project is selected at a model score realtime decision, the following is shown when adding a decision criterion:



In this example, the model returns 5 recommendations. On selecting one of the above, the following criteria are available:



Again, in this example, 'High Key' and 'Low Key' are bands returned by the model.

Note that, to use a model score realtime decision, the RedPointMLServiceAddress setting must be configured in the RPI Realtime appSettings file.

13.2.7 Orchestration Realtime Decision

Three sets of decision criteria are always available at a Web realtime decision (in addition to the standard Custom decision criteria:

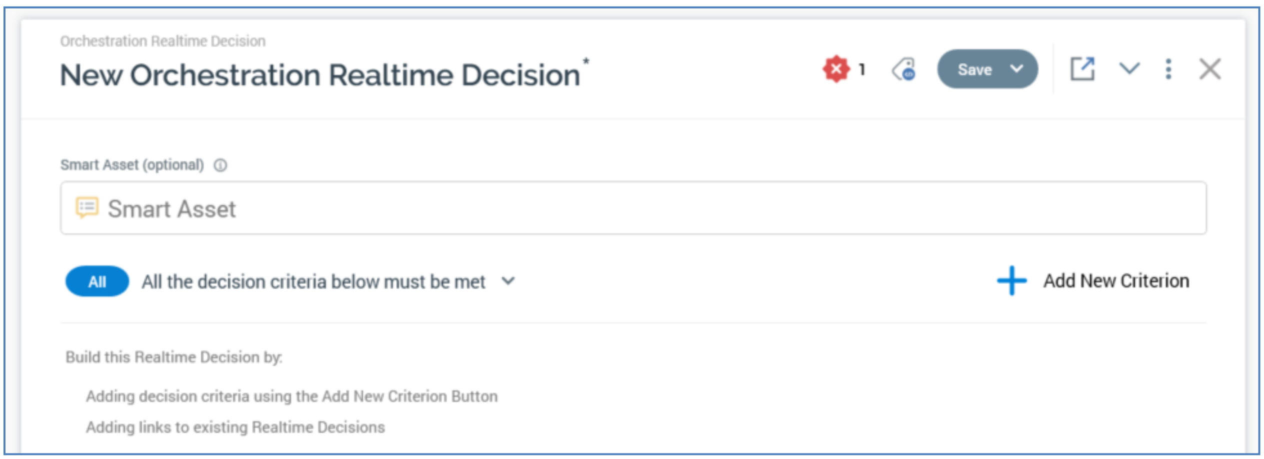
- Offer
- Selection Rule
- Smart Asset Result

An additional set of criteria is available when an advanced smart asset is selected at the decision's Smart Asset property (see below):

- Message History

Each is discussed separately.

An orchestration decision exposes an additional property when compared to other realtime decision types:



- Smart Asset: you can optionally select a smart asset, used when adding Smart Asset Result criteria to the decision. You can populate by browsing for a file, or by using drag and drop. Attribute and audience segment smart assets are not supported. Having populated the property, you can open the file's latest version in the Smart Asset Designer. You can also clear your selection.

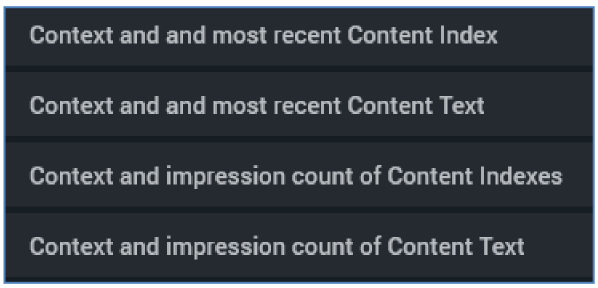
13.2.8 Smart Asset Result Decision Criteria

Smart Asset Result decision criteria allow you, to personalize content on the basis of a visitor having previously viewed (or not viewed) a piece of content, delivered by a smart asset.

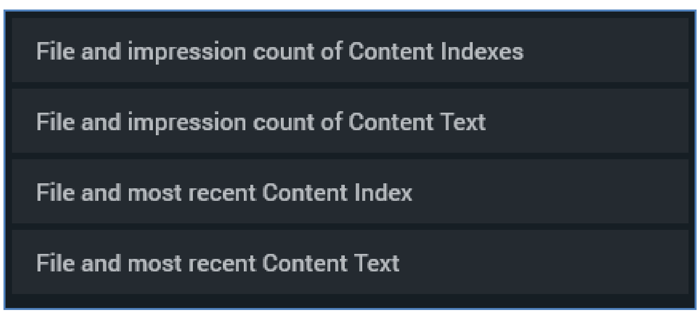
Smart asset result decision criteria make use of an Orchestration decision's Smart Asset property. For more information, please see the Orchestration realtime decision documentation.

The types of Smart asset result decision criteria available at the decision are contingent on its configuration:

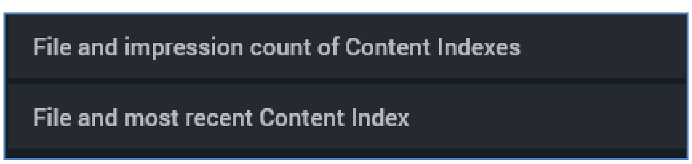
- If no file is selected, the following decision criteria types are available:



- If a file, which was published to the cache with at least one content element containing text content, is selected, the following decision criteria types are available:



- Otherwise, if a file is selected, the following are available:



Note that an asset's containing text content is defined as its containing a content element configured with the following:

- Text asset
- Inline text/HTML

- A nested smart asset containing at least one of the above as content.

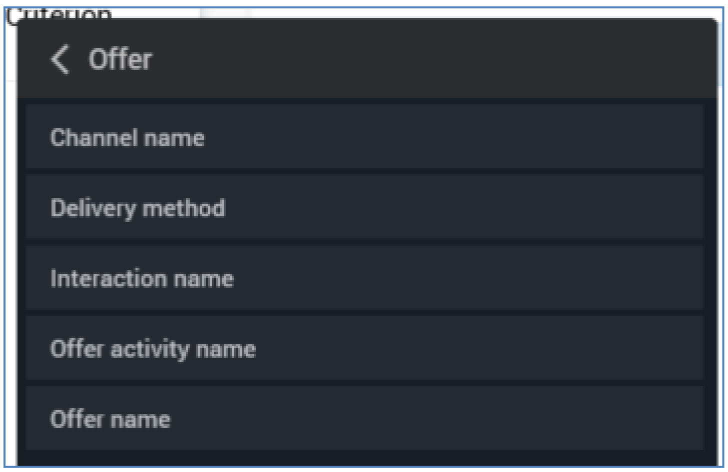
13.2.9 Offer Decision Criteria

An Orchestration realtime decision's Offer decision criteria allow you, through their use within a smart asset, to present content accordant with a site visitor's previous receipt of RPI offers.

When a recipient clicks through a link in a communication – typically an email – received via RPI, the URL followed is personalized, including parameters exid (ChannelExecutionID) and rpcid (RPContactID).

These can then be used by RPI, when determining whether a visitor satisfies offer decision criteria, to identify the RPI offers he or she has received previously.

The following offer decision criteria types are available:

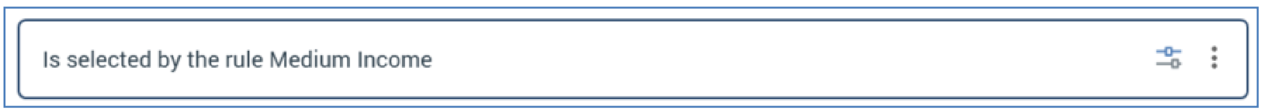


13.2.10 Selection Rule Decision Criteria

An Orchestration realtime decision's Selection Rule decision criteria allow you, through their use within a smart asset, to present content on the basis of selection rule resolution key values being persisted in a visitor's realtime profile.

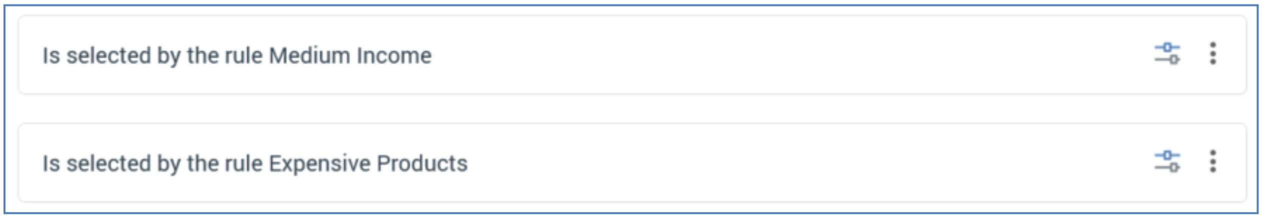
Each selection rule decision criterion is associated with a selection rule. When a selection rule decision criterion is resolved, its selection rules are executed (see note below re. caching of selection rule results). If a visitor's profile contains parameters with names matching the selection rules' resolution keys, the criteria can be assessed to determine whether they are met. If such parameters are not present, the rule is not satisfied.

For example, consider this orchestration realtime decision:



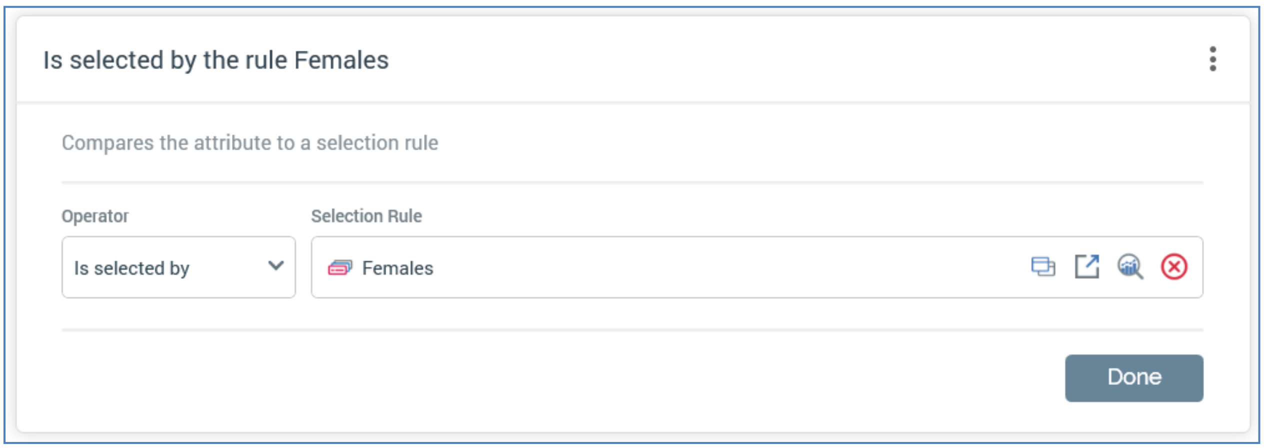
The realtime decision above contains a single selection rule decision criterion, which is configured with the 'Medium Income' selection rule. This selection rule has a 'Customer' resolution level, which in turn is associated with the 'CustomerKey' database key. When the realtime decision is resolved, the selection rule is executed. If a visitor's profile contains a 'CustomerKey' parameter, the value of which matches a CustomerKey targeted by the selection rule, the realtime decision will have been satisfied.

Note that a selection rule decision criterion's selection rules' resolution levels do not need to be the same. In the following example:



…a visitor's profile must contain (e.g.) CustomerKey and ProductKey values targeted by the respective selection rules for the realtime decision to be satisfied.

When in edit mode, a Selection rule decision criterion appears as follows:



It exposes the following properties:

- Operator: this dropdown property allows you to specify as to whether the criterion will be satisfied when the records targeted by the selection rule either match, or do not match, a value stored in the visitor's profile.

- Selection rule: this mandatory property is blank by default. You can choose a selection rule using browse or drag and drop; you can also create a new selection rule. Once populated, you can clear the chosen selection rule, or view its details in the Rule Designer. You can also add a selection rule decision criterion by dragging a selection rule from the toolbox and dropping it directly in the realtime decision.

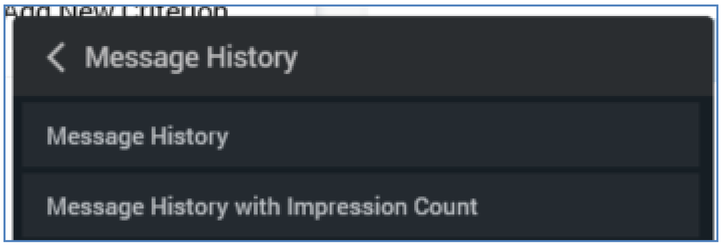
Note that two RPI Realtime settings have a bearing on selection rule realtime decision behavior:

- In the RPI Realtime website's appSettings.json file, the NoMinsCacheSelectionResults setting represents the time period (in minutes) for which selection rule results will be cached. If a decision is requested within this period, the selection rule is not run, with cached results being used instead.

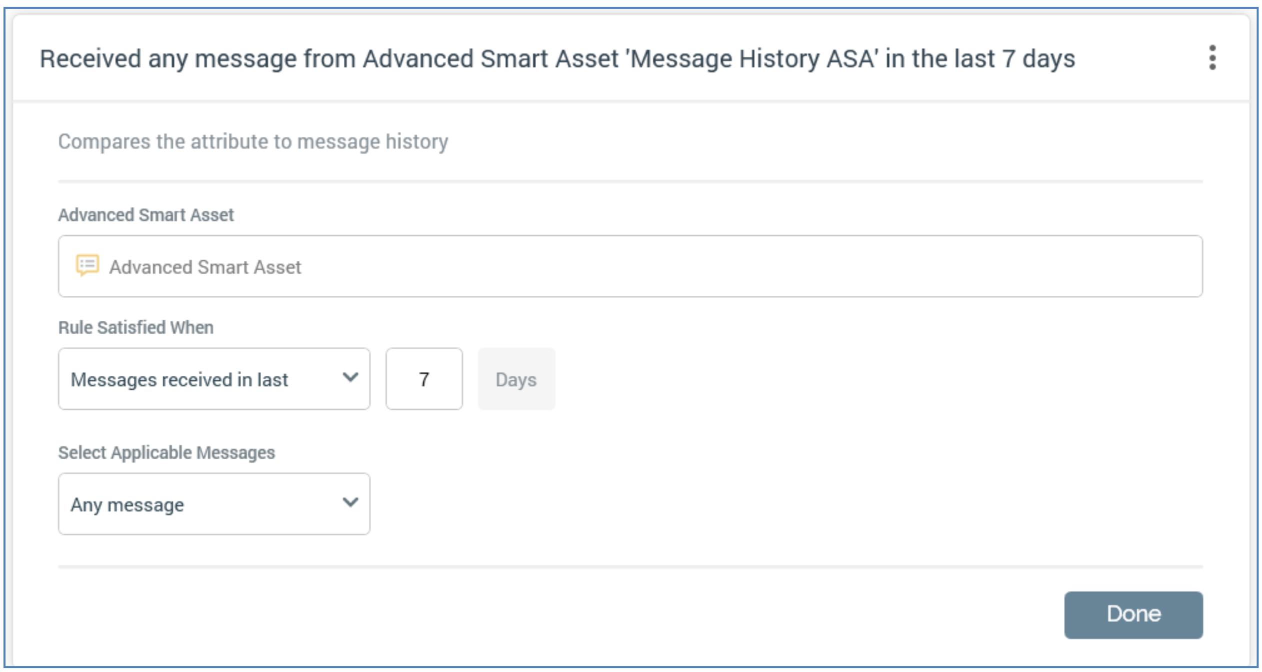
- In the Realtime Agent's web.config file, the CachedSelectionRuleExpiry setting represents the time period (in minutes) after which a selection rule file will be reloaded from the RPI file system.

13.2.11 Message History Decision Criteria

Message History decision criteria allow you to make realtime decisions on the basis of a visitor's having been served messages by a Smart Asset. Two Message History criteria are available when an Orchestration realtime decision's Smart Asset property has been populated with an Advanced Smart Asset:

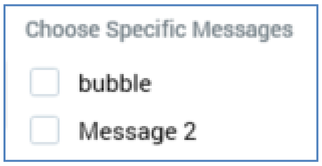


When in edit mode, a Message History criterion has the following properties:



- Advanced Smart Asset
- Rule satisfied when: a dropdown property, exposing values 'Messages received' (the default) and 'Messages not received'.
- In last [n] day(s): a mandatory integer property, which defaults to 7, and accepts a range of values from 1 to 999.
- Select Applicable Messages: a dropdown, exposing the following:
    - Any message: selected by default. When selected, no additional properties are shown.

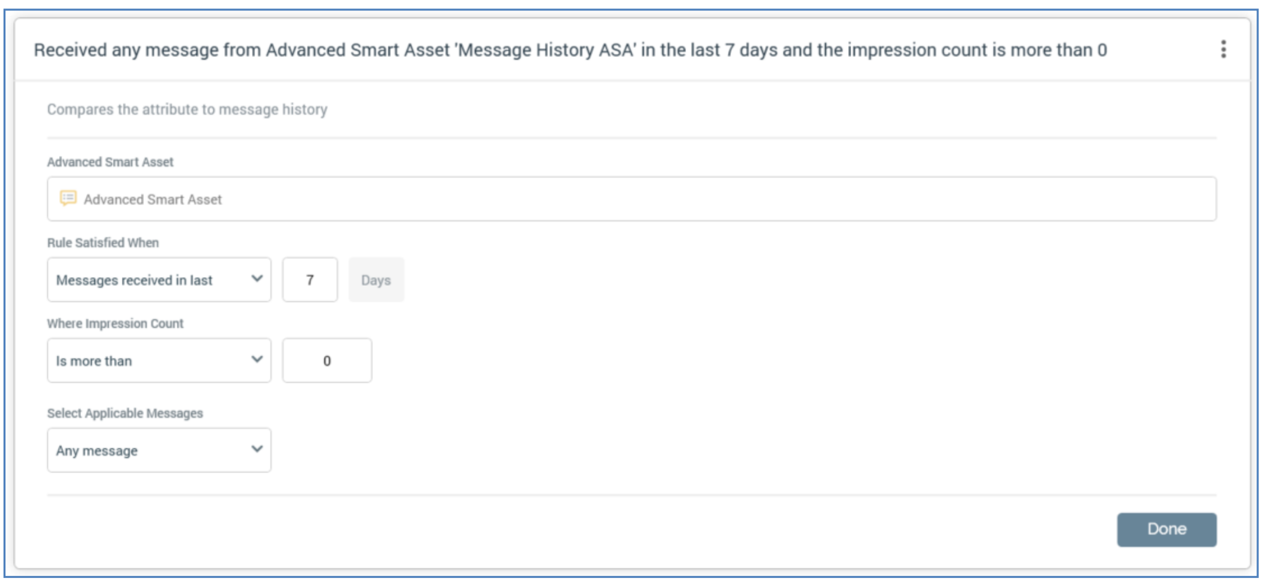
- Specific messages: when selected, all messages from the selected advanced smart asset are listed. Each is accompanied by a checkbox.



It is mandatory to select at least one message.

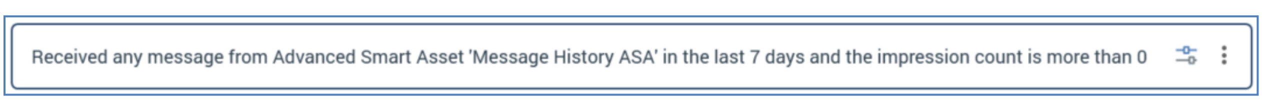
When in read-only mode, a message history criterion is displayed as per the following example:

When in edit mode, a Message History with Impression Count criterion displays the same set of properties as a Message History criterion, with an additional property also being displayed:



- Where Impression Count: two additional properties are shown:
  - [Operator]: this dropdown field defaults to 'Is more than'.
  - [Value]: this integer property defaults to 0, and accepts a range between 9 and 999,999.

When in read-only mode, a message history with impression count criterion is displayed as per the following example:



13.2.12 Web Realtime Decision

The following sets of decision criteria are available at a Web realtime decision (in addition to the standard Custom decision criteria:

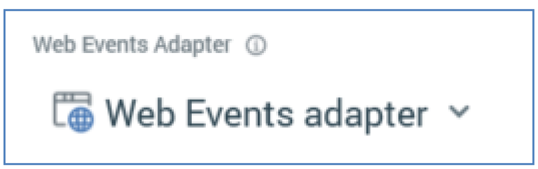
- Date and time
- Events
- Geolocation
- Tracking

Each is discussed separately.

A web decision exposes an additional property when compared to other realtime decision types:

- Web events adapter: if you intend to use custom Events decision criteria when building a web events decision's decision criteria, you must first select a web events adapter. The property is set automatically to the default web tracker adapter.

  You can select an alternative web events adapter using a dropdown. On choosing an adapter, it is displayed at the property:

  If you do not intend to use custom events when building decision criteria, you do not need to select a web events adapter.

13.2.13 Date and Time Decision Criteria

A Web realtime decision's Date and time decision criteria allow you, through their use within a smart asset, to present content accordant with a series of date or time-based decision criteria.

The following Date & time decision criteria are supported:

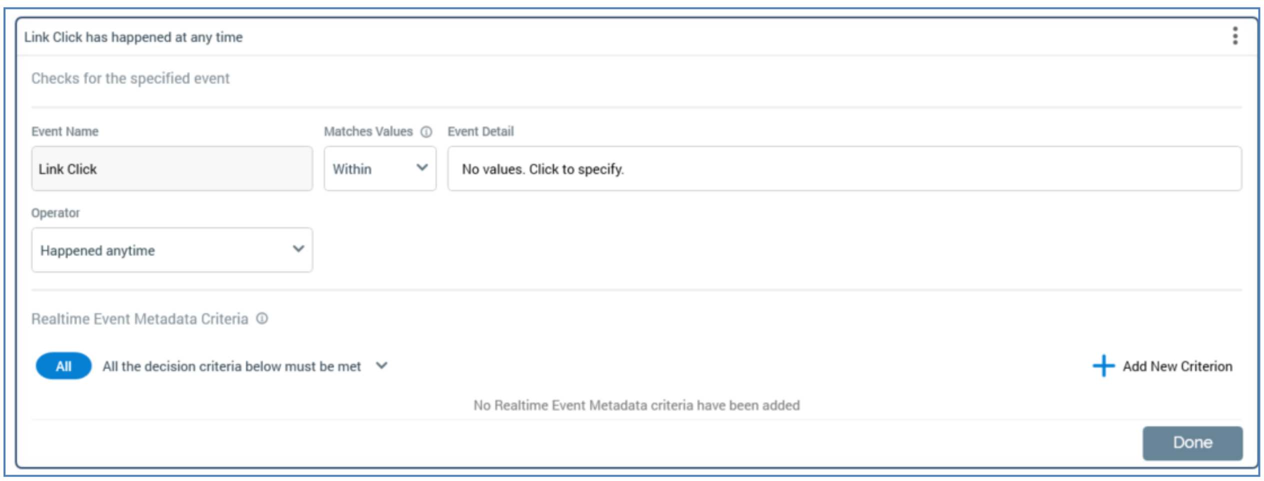
13.2.14 Event Decision Criteria

A Web realtime decision's Event decision criteria allow you, through their use within a smart asset, to present web page content accordant with RPI's knowledge of the web events with which a visitor is associated. Such web events include standard events, such as page visits, form submissions and link clicks, and custom states and metrics, captured following execution of scripts at (typically) an RPI landing page.

Custom web events are defined using web events adapters, which are managed at the Web Adapters configuration interface, and which can be associated with landing pages (for more information, please see the Configuration and Landing Page Designer documentation). To use custom web events in a web decision, you need to select a Web events adapter. For more information, please see the Web realtime decision documentation.

The Form Submission, Link Click and Page Visit standard web event types are available irrespective as to whether a web events adapter has been selected at the realtime decision. If a web events adapter has been selected, any metrics All/Any states that it contains are also listed. in addition, the standard scorecard and User defined decision criteria types are also available.

The following properties are displayed at event decision criteria in edit mode:



- Event Name: read-only
- Matches Values: this property allows you to specify whether values provided are to be matched exactly, or if are to be contained anywhere within the supplied Event Detail. A dropdown, it exposes values 'Within' (the default) and 'Exactly'.
- Event Detail: clicking the property displays the Specify Values dialog, in which you can provide one or more values with which to configure the criterion.
- Operator: this property allows you to specify when the form submission happened (or didn't happen). A dropdown provides access to the following values:
    - Happened anytime (the default)

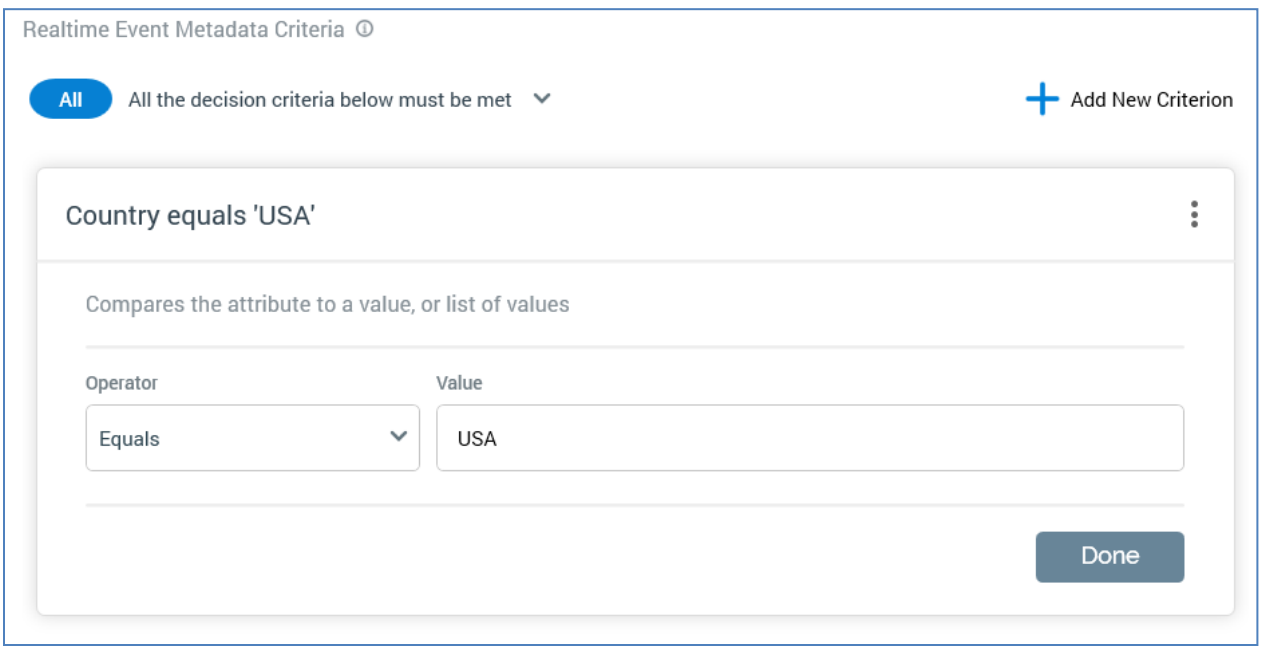
- Has never happened
- Happened in the last
- Didn't happen in the last

  If one of the latter two values is selected, the Time Frame property is shown.

- Time Frame hour(s): this property is shown if Operator is set to one of 'Happened in the last' or 'Didn't happen in the last'. A mandatory decimal field, the value provided must be more than 0, and less than 999,999.99.

Note that the RPI Realtime API web.config setting NoDaysPersistWebEvents controls the time period for which web event data is stored in the realtime cache.

You can refine an event criterion by adding event metadata criteria. These allow you to respond to very specific occurrences – for example, the addition of a specific type of product to a shopping cart.



A Realtime Event Metadata Criteria section is shown at bottom of the event criterion editor. It allows you to specify additional criteria to further refine the event criterion. It contains the following:

- All/Any
- Add New Criterion: you can add event metadata criteria based on an event metadata-enabled attribute list specified at the selected web events adapter. Custom event metadata criteria are also supported.
- Event metadata criteria

Note that RPI Realtime appsettings setting MaxNoEventMetadataInstances controls the maximum amount of event metadata that can be stored per event.

When in read-only mode, an event decision criterion appears as per the following example:

Link Click has happened in the last 2 hours

If refined with additional event metadata criteria, the criterion is shown like this:

Link Click has happened in the last 2 hours and satisfies the metadata criteria provided

13.2.15 Geolocation Decision Criteria

A Web realtime decision's Geolocation decision criteria allow you, through their use within a smart asset, to present content accordant with a visitor's current geographical location.

The following decision criteria types are available at a geolocation decision:

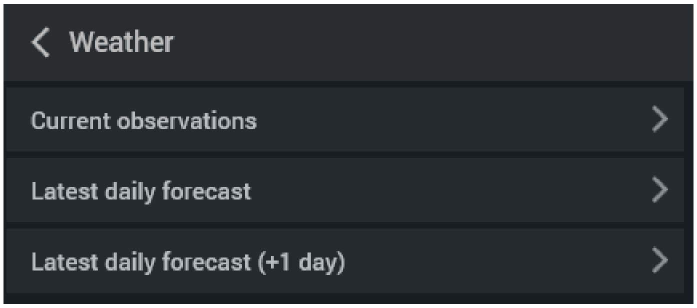
Note that geolocation decision criteria make use of either a Bing Maps, Azure or Google Maps Services API , all calls to which are recorded in the RPI Realtime logs (any provider-specific exceptions are provided at specific criteria's documentation). Note that the provider is responsible for determining a visitor's location, in accordance with their own criteria.

The appsettings setting GeoCoordsCacheTimespanMinutes is used to control the length of time for which geolocation coordinates will be cached before another call to the API is made.

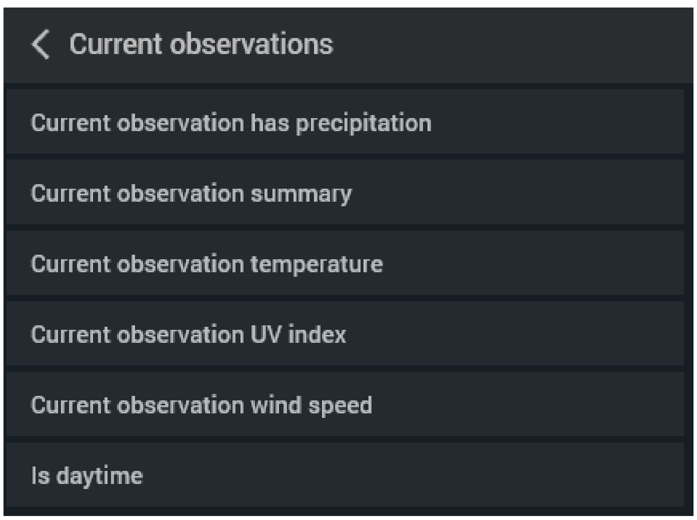
Several of the above are documented separately in more detail.

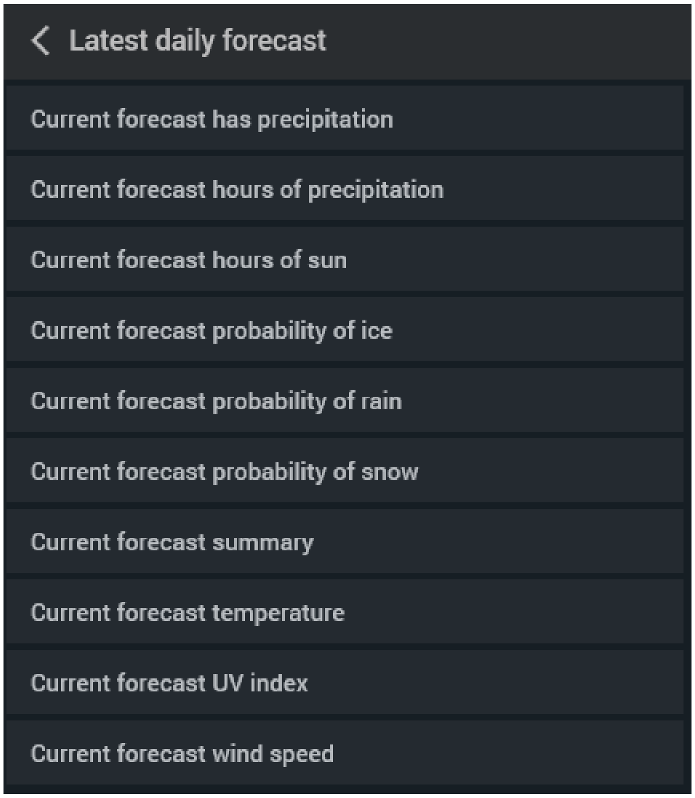
13.2.16 Geolocation Decision Criteria – Weather

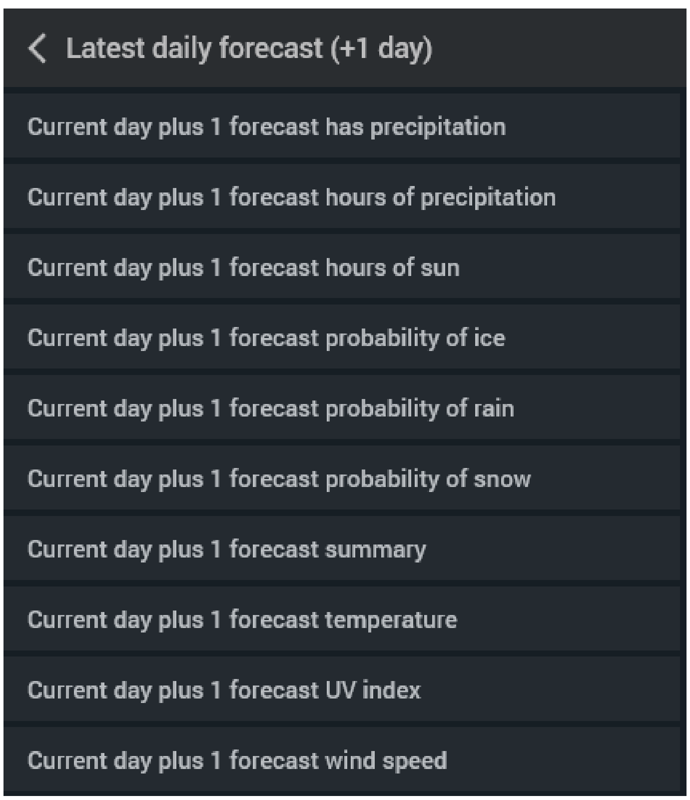
The following Weather Geolocation criteria groups are available:



These, in turn, expose the following decision criteria:





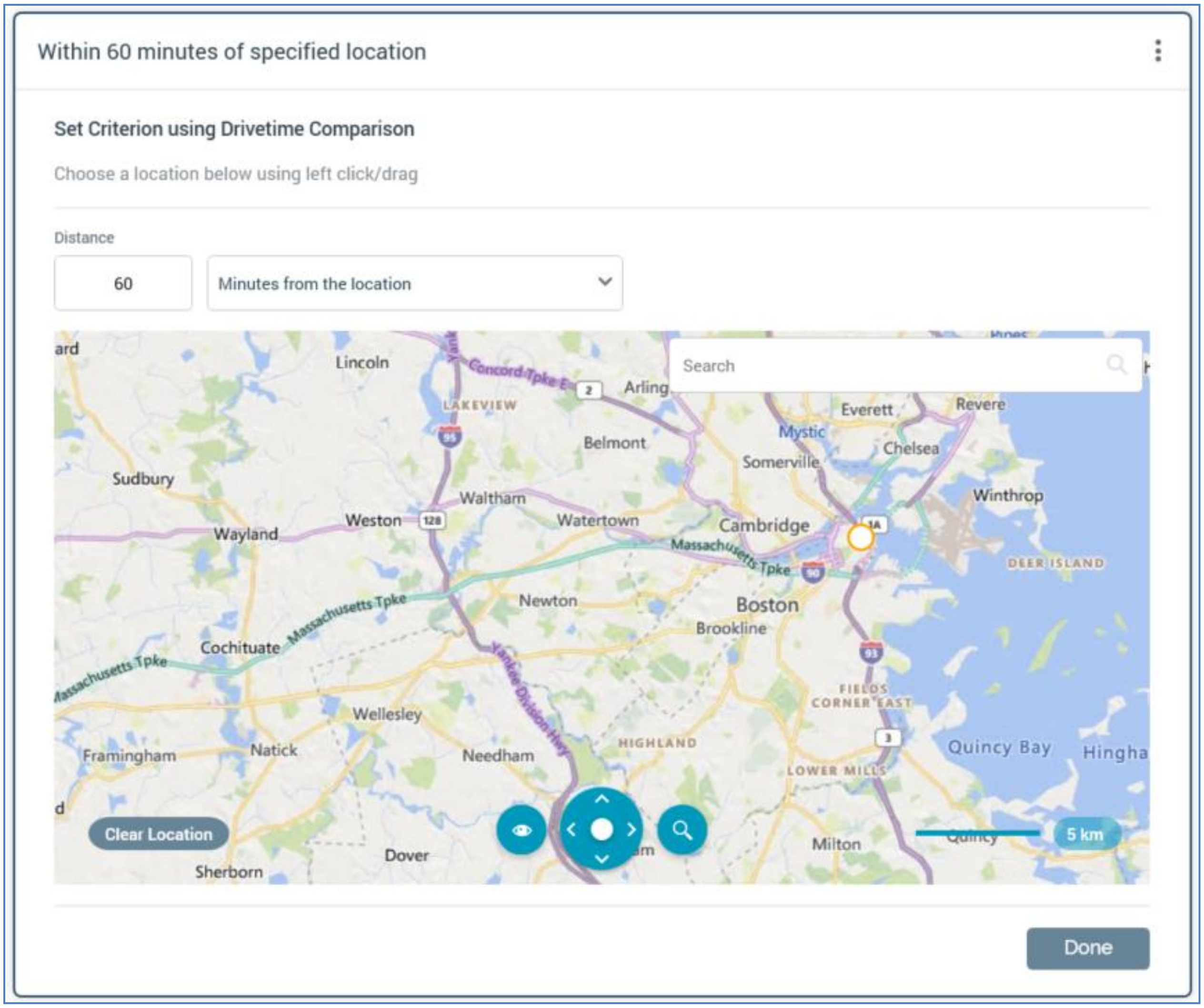


Note that Weather Geolocation criteria are only available when using the Azure geolocation provider.

13.2.17 Geolocation Decision Criteria – Drivetime

The Drivetime Geolocation allows you to make realtime decisions on the basis of a visitor's proximity (in distance or time) from a given geographical location. The criterion editor uses a map. The default location displayed in the criterion editor's map is controlled by user preference Realtime Decision Default Map Location.

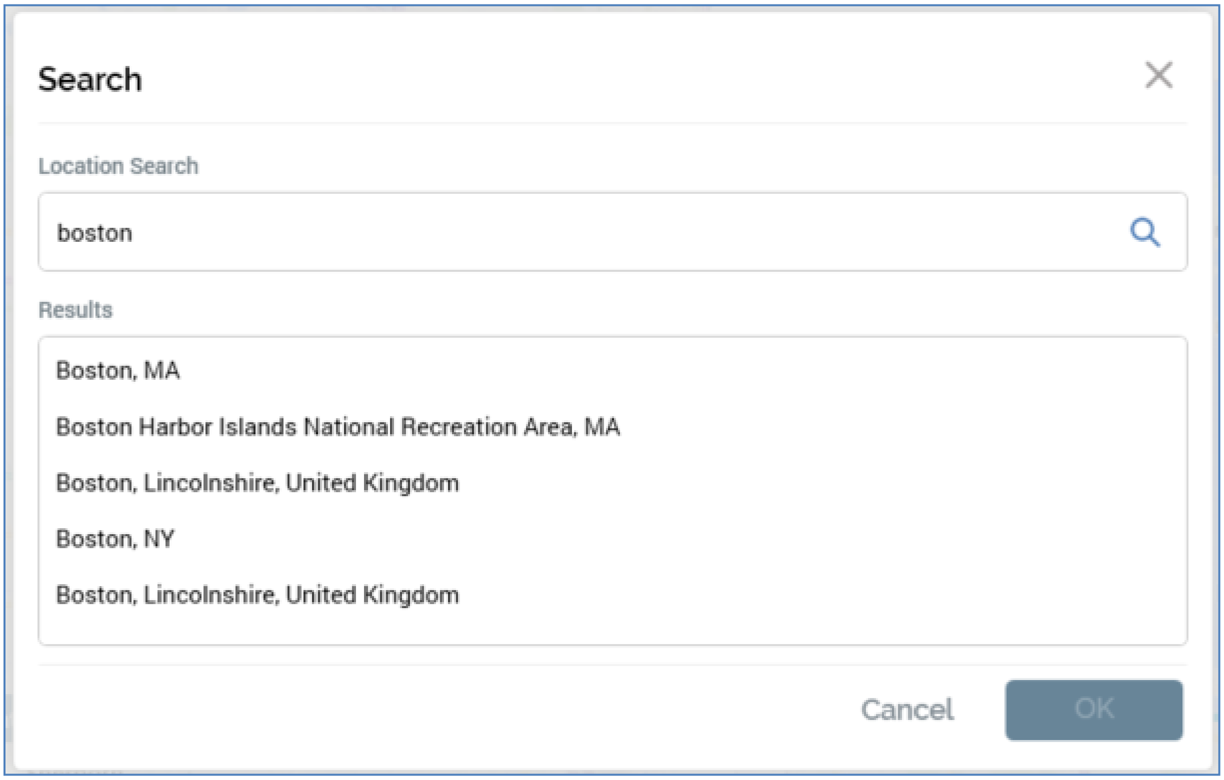
When in edit mode, the following is presented at a Drivetime criterion:



- Distance: this mandatory integer property accepts a value between 0 and 999,999
- [Dropdown]: the accompanying dropdown allows you to specify the type of proximity to be used, by selecting one of the following values:
    - Miles from the location
    - Kilometers from the location

- Minutes from the location (the default)

- Search: you can search the map for a location. Having entered a search string and clicked the button, search results are shown when multiple exist:



You can select a location to proceed, or click Close or Cancel to remove the search results from display.

- Clear Location: this button is enabled when a location has been added to the map. Clicking it removes the specified location.

- Map: a world map allows you to choose the location upon which the criterion is to be based. The following are shown at the bottom of the map:

  - View: allows you to display the map in Road (the default) or Aerial View.
  - Show Labels: this toggle button is enabled when Aerial View is selected. It is selected by default when enabled.
  - Map Navigator: facilitates scrolling around the map.
  - Zoom: you can zoom the map using a slider control, or by selecting one of the options to the right (Neighborhood, City, Region, State or World).
  - Scale: read-only.

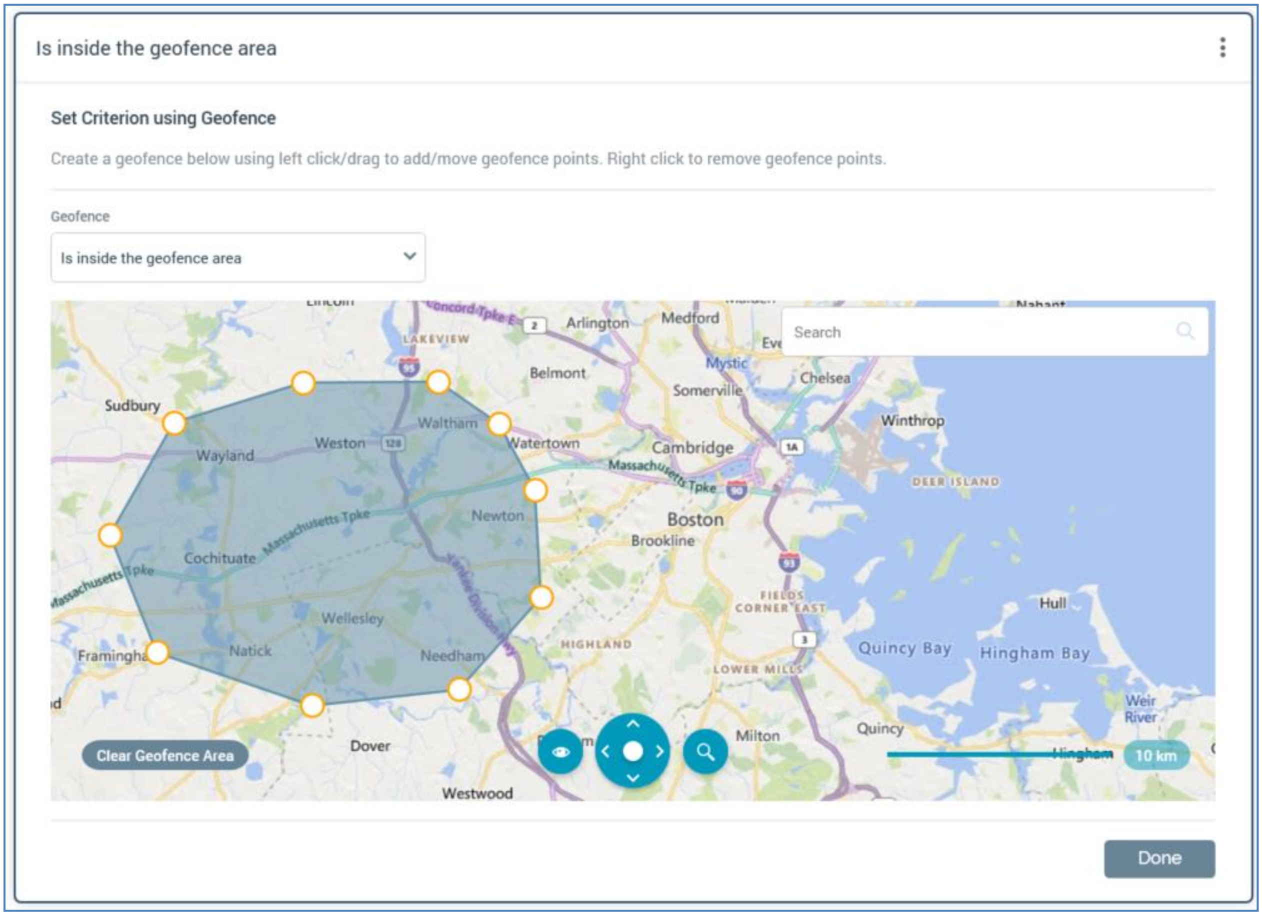
You can click the map to add a location. Having done so, you can click the Clear Location button to remove your selection, or drag the location to move it. Note that it is mandatory to specify a location.

When in read-only mode, a drivetime location is shown as e.g.:

13.2.18 Geolocation Decision Criteria – Geofence

The Geofence Geolocation allows you to make realtime decisions on the basis of a visitor's relationship to a Geofence area. The default location displayed in the criterion editor's map is controlled by user preference Realtime Decision Default Map Location.

When in edit mode, the following is presented at a Geofence criterion:



- Geofence: allows you to specify the nature of a visitor's relationship to the geofence. The following values are supported:
  - Is inside the geofence area (the default)
  - Is outside the geofence area and within
  - Is inside the geofence area, or outside and within
  - Is outside the geofence area
- [n]: this mandatory integer property is shown if [Dropdown] is set to one of 'Is outside the geofence area, within' or 'Is inside the geofence area, or within'. It defaults to 50, and accepts a minimum value of 1 and a maximum value of 500.

- [units]: this dropdown property is displayed if [Dropdown] is set to one of 'Is outside the geofence area and within' or 'Is inside the geofence area, or outside and within'. It exposes the values meters of boundary (the default) and yards of boundary.

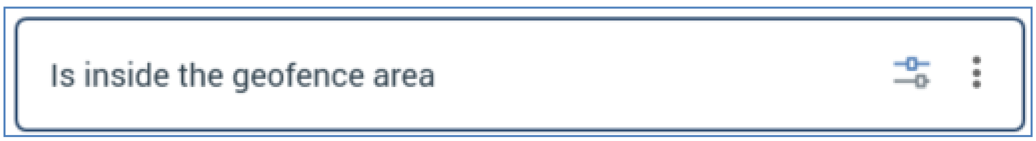
- Search: see the Drivetime criterion for details.

- Clear Geofence Area: this button is enabled when a geofence has been added to the map. Clicking it removes the geofence.

- Map: you can create a geofence polygon by clicking positions on the map. Each click adds a geofence point. A geofence is created when at least three points have been added. You can drag a geofence point to move it, or right click it to remove it. It is mandatory to add a geofence.

Further information on using the map control can be found in the Drivetime Geolocation decision criterion documentation.

When in read-only mode, a geofence criterion is displayed as per the following examples:

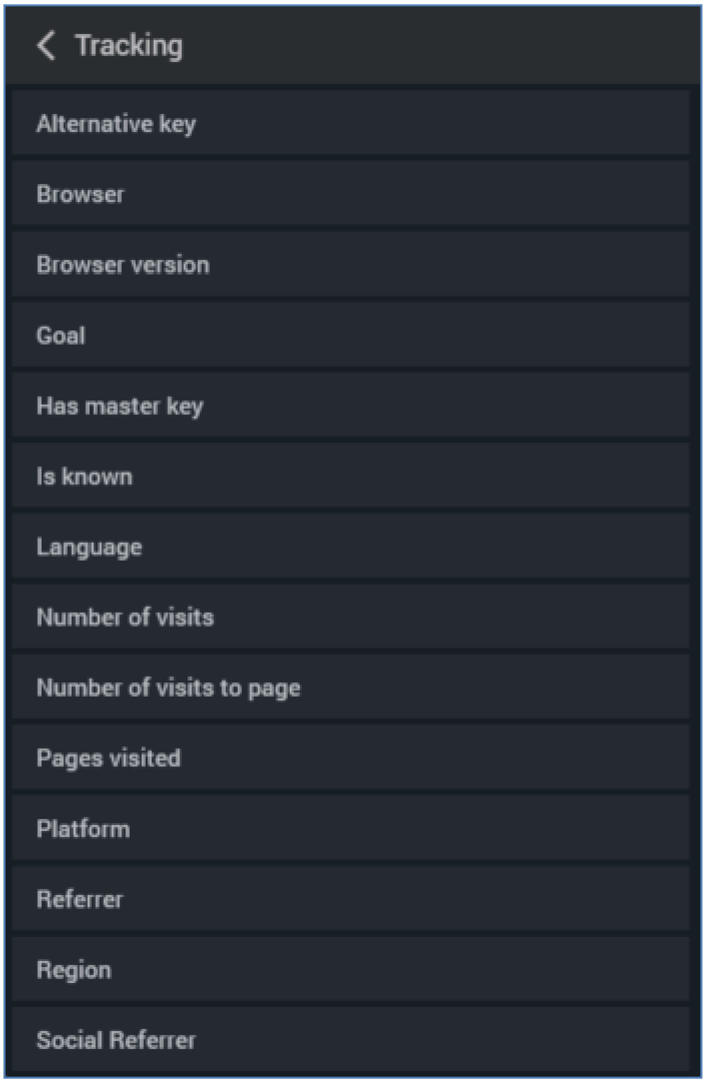


Note that the geofence criterion is only supported when using the Azure geolocation provider.

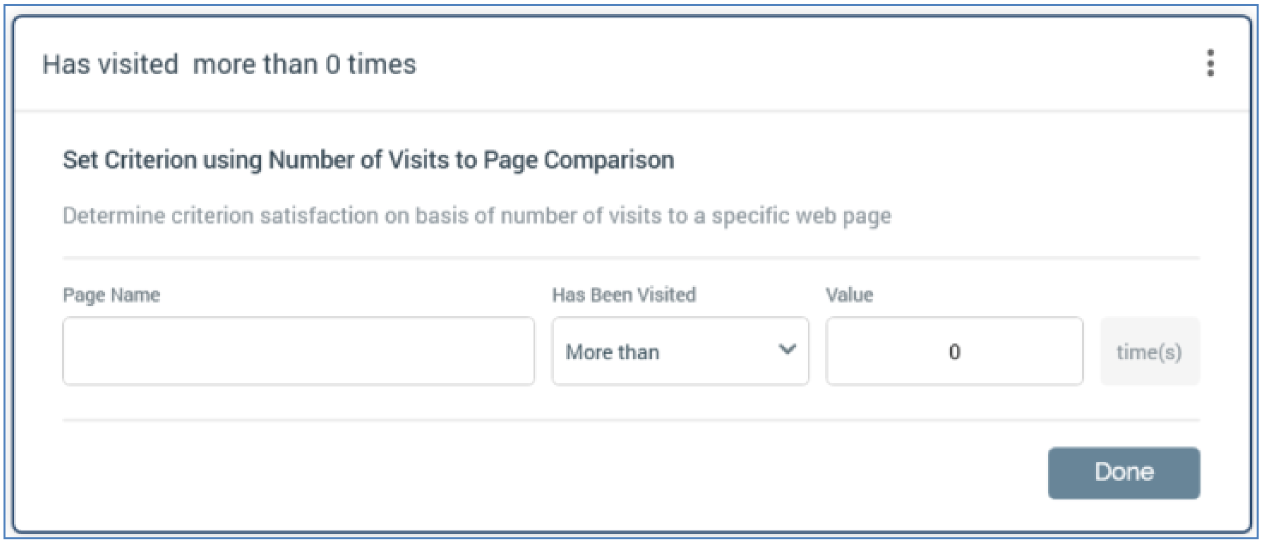
13.2.19 Tracking Decision Criteria

A Web realtime decision's Tracking decision criteria allow you, through their use within a smart asset, to present content accordant with a site visitor's web behaviors and browser characteristics.

The following decision criteria types are available at a web tracking decision:



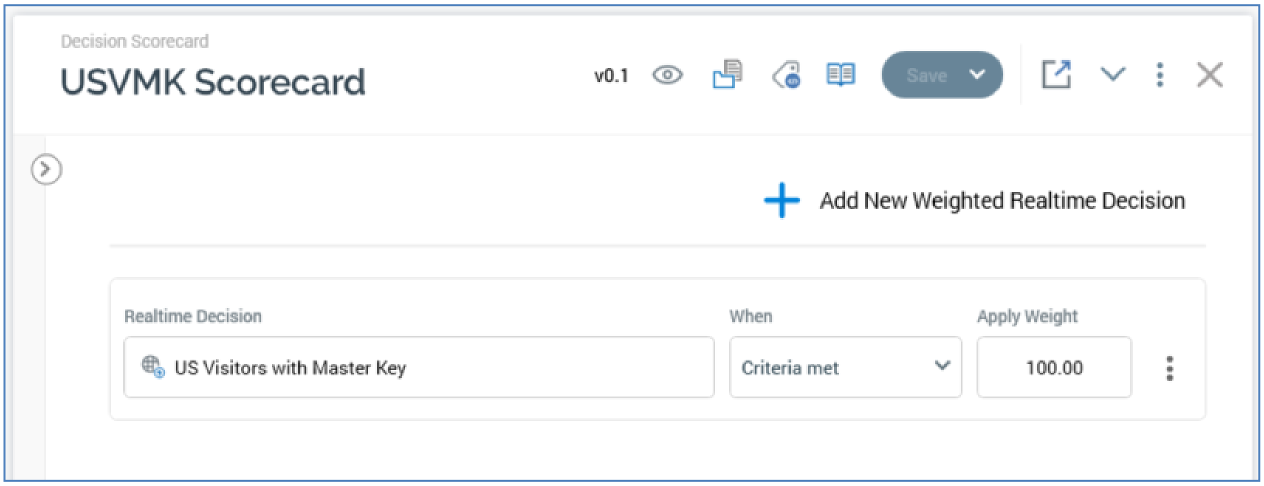
The Number of visits to page decision criterion type is specialized. On creation of such a decision criterion, it is displayed thus:



You must specify the name of an RPI landing page. You can then define the number of times the page must have been visited for the criterion to be satisfied using the operator and integer value field supplied. The Website web.config setting ThresholdBetweenPageVisitsMinutes determines the interval in minutes that must pass for another discrete visit by the same visitor to be registered.

13.3 Decision Scorecard

The decision scorecard is a specialized file type that is managed in the Rule Designer.



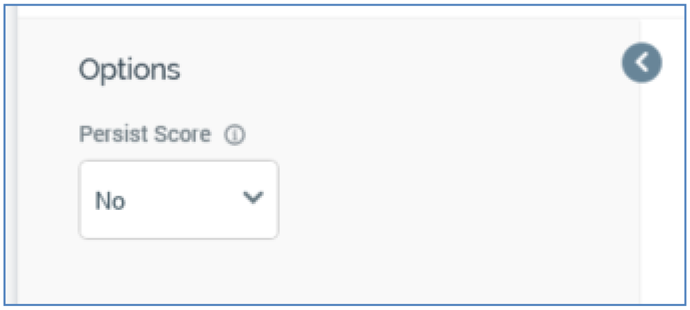
Decision scorecards allow you to gather together a number of realtime decisions, and assign to each a numerical score value, creating a series of 'weighted decisions'. If a website visitor fulfills a weighted decision's criteria, its score is applied to the visitor.

A decision scorecard can then be leveraged in the context of another realtime decision, where a decision criterion can be met based on a visitor's applied score.

Decision scorecards share a number of the features of a realtime decision. The differences between a scorecard and a realtime decision are outlined below.

13.3.1 Toolbox

A decision scorecard's toolbox is displayed to the left:



It is shown or hidden using the button provided.

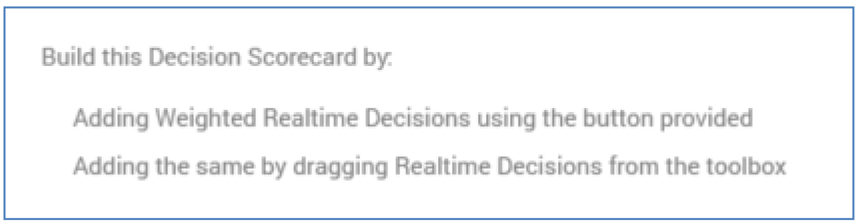
It exposes the following options:

- Persist score: this dropdown field exposes values 'No' (the default) and 'Yes'. When set to 'Yes', an accompanying Identifier field is displayed. If Persist score is set to 'Yes', on a scorecard being used to determine content to be shown to a landing page visitor, data is written back to the data warehouse table RPI_WebVisitorsScores, using the Web cache data importer system task. One record is persisted per visitor per scorecard Identifier. If a value in visitor/scorecard identifier context changes, the record in question is updated.
- Identifier: this field is shown if Save score is checked. It is mandatory if displayed, and its maximum length is 100 characters. It is used, as described in the Persist score property, to identify records in the RPI_WebVisitorsScores data warehouse table.

13.3.2 Canvas

Unlike a realtime decision, within which the workspace is used to list decision criteria, a decision scorecard's canvas is used to list weighted realtime decisions.

When displayed initially, a scorecard's canvas displays a message:



You can use the Add New Weighted Realtime Decision button to add the same to a decision scorecard's canvas. You can also add a weighted realtime decision by dragging a realtime decision from the toolbox and dropping it onto the canvas.

A weighted realtime decision has the following properties:

- Realtime Decision: provision of a realtime decision is mandatory. You can populate the property using drag and drop, or by browsing. When a realtime decision has been selected, you can open its latest version in the Rule Designer. You can also Clear the selected realtime decision. A realtime decision must have been saved to the RPI file system to be used in a scorecard.
- When: this dropdown field exposes values 'Criteria met' (the default) and 'Criteria not met'. It specifies whether to assign a score should the selected realtime decision's criteria be met or not met, as required.
- Apply Weight: a mandatory decimal value.
- Actions: this menu gives access to a single Remove option, invocation of which removes the weighted realtime decision without display of an 'Are You Sure?' dialog.

A validation error is raised when a weighted realtime decision is configured with a realtime decision that uses the current scorecard (thereby creating a circular reference), or when the same realtime decision is included more than once in a weighted realtime decision list.

Note that it is mandatory for a scorecard to contain at least one weighted realtime decision.

14 Model Project Designer

The Model Project Designer is used to create and modify model projects.

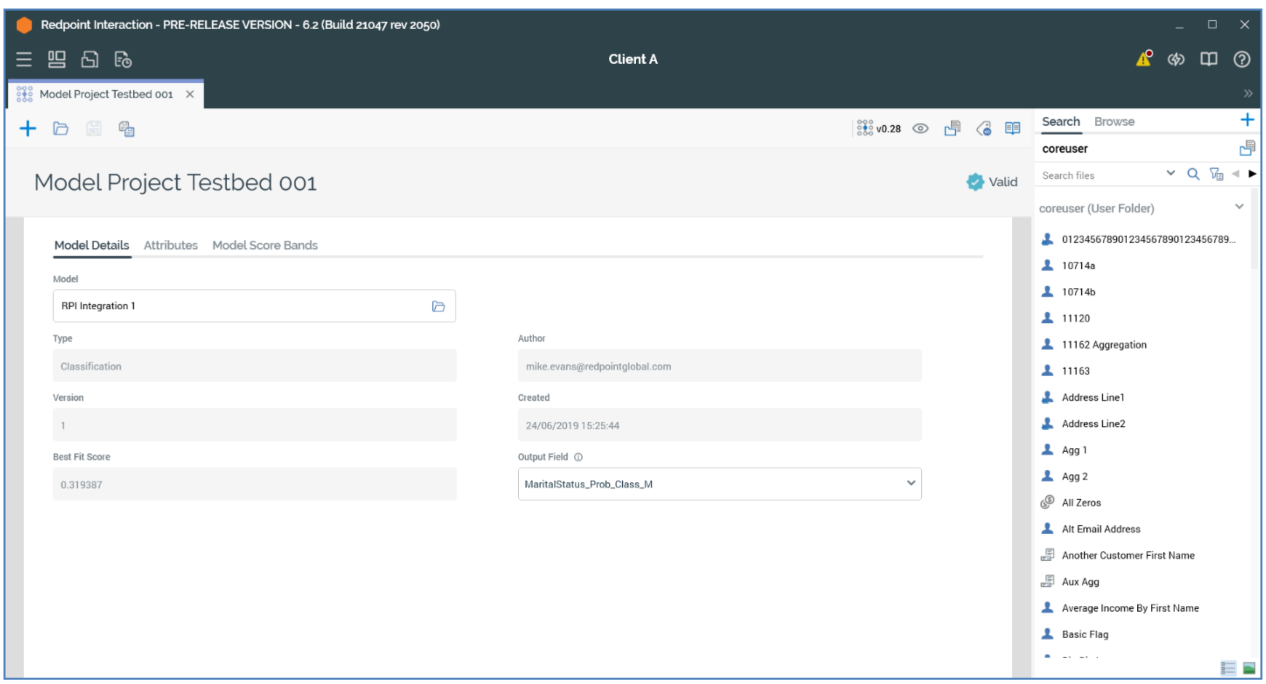
A model project allows you to create a representation of a RedPoint Automated Machine Learning (AML) model in RPI, which can then be used at audience execution or smart asset evaluation to make a call to AML to determine target or visitor model scores.

Model projects are saved as ‘Model Project’ files in the RPI file system. All model project files currently have a sub-type of ‘Automated Machine Learning’.

In order to use model projects in RPI, values must be provided for the following system configuration settings:

- AutomatedMLAPIAddress
- AutomatedMLCredentials

The Model Project Designer is displayed in its own tab in the RPI framework.



The Model Project Designer contains the following elements:

- Toolbar
- Toolbox
- Properties
- Tabset, consisting of the following tabs:
  - Model Details
  - Attributes
  - Model Score Bands

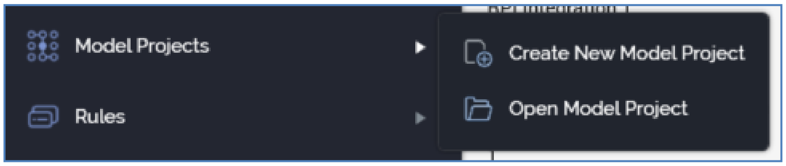
Each of the above is documented separately.

Note that model projects are supported in both SQL and NoSQL environments.

14.1 Invoking the Model Project Designer

You can invoke the Model Project Designer in the following ways:

- From the quick access menu's Model Projects menu. The menu exposes the following options:



- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.

By double-clicking a model project file in the File System Dialog, or by highlighting a model project and clicking OK in the same context.

- By viewing the latest version of the model project contextually – for example, from a model project block in the Audience Designer.

Note that access to the Model Project Designer is controlled via the Model Project – Design functional permission. If none of the user groups of which you are a member are associated with this permission, you will not be able to able to access the Model Project Designer.

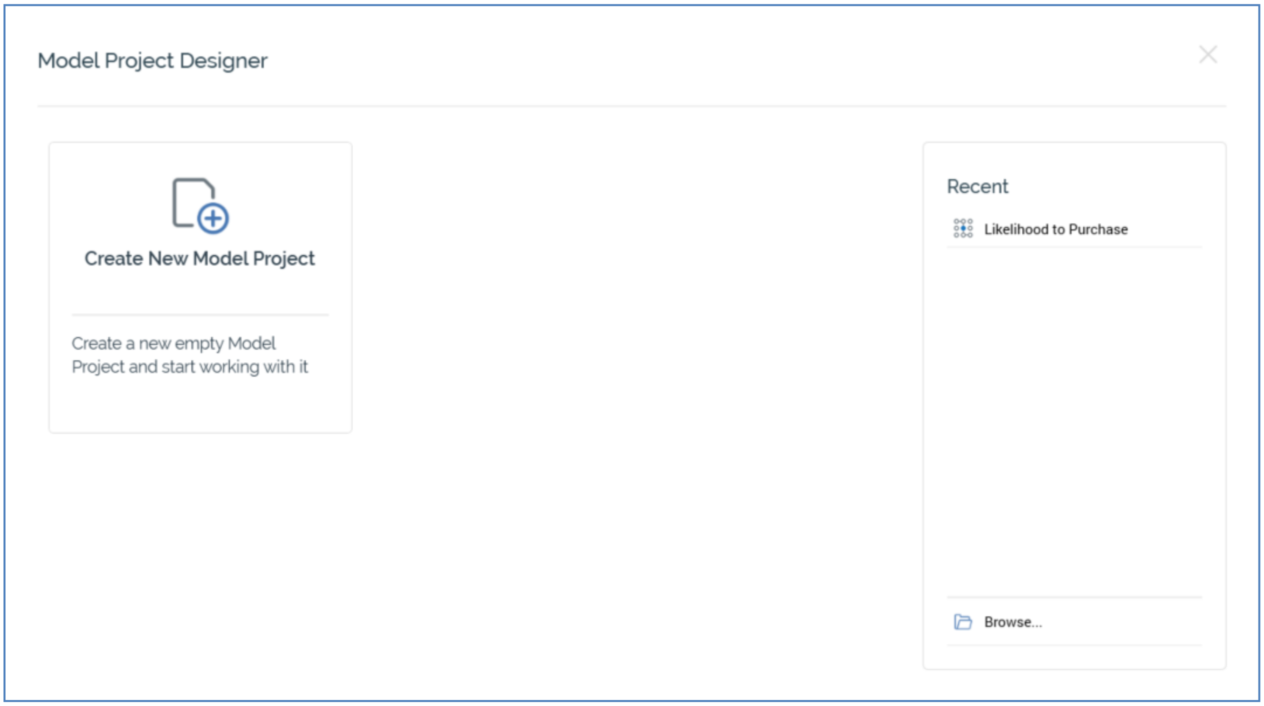
14.2 Closing the Model Project Designer

You can close the Model Project Designer by closing the tab within which it is displayed, or by shutting down RPI itself. If you do so when the Designer contains a model project with unsaved changes, a dialog is shown, within which you can choose to do the following:

- Save the changes and proceed with closing the Model Project Designer
- Abandon the changes and proceed with closing the Model Project Designer
- Cancel closing the Model Project Designer or RPI.

14.3 Start Page

The Model Project Designer Start Page is shown upon invocation of Model Projects at the quick access menu, and also on clicking Create new Model Project at the Model Project Designer toolbar. It contains the following:



- Create New Model Project button. Clicking the button displays a new, unconfigured model project in the Model Project Designer.
- Recent: lists recently-accessed model projects, facilitating the opening of the same.
- Browse: displays the Open Model Project File System Dialog, allowing you to select a model project to open.

A Cancel button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and redisplays the Model Project Designer. The Cancel button is only shown on invocation of the Start Page by clicking Create new Model Project at the Model Project Designer toolbar.

14.4 Configuring a Model Project's Name

A model project's name is configured in the large property shown at the top of the Model Project Designer, below the toolbar:

Provision of a name is mandatory, and the value provided may be a maximum of 100 characters. The model project's name is the same as the filename under which it is saved within the RPI file system. As such, it must be unique amongst the model projects in the folder within which saved.

You can edit a model project's name by clicking the property. Complete the edit by clicking off the property, or by hitting return.

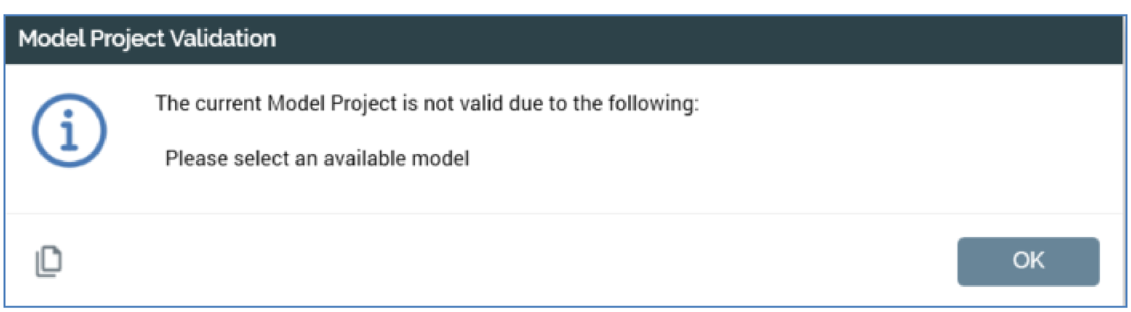
14.5 Model Project Validation

Before a model project can be used, it must be valid.

A validation status indicator is displayed to the right of the model project's name. When the model project is valid and contains no validation errors, the validation status indicator is shown as follows:

Specific validation errors are outlined in the model project documentation. When one or more validation errors is present, a validation error indicator is shown:

Clicking the indicator lists the validation errors in a dialog:



You can use the button at the bottom left of the dialog to copy the validation error details to the clipboard. You can close the dialog using the OK button.

14.6 Toolbar

The Model Project Designer toolbar exposes the following options:

- Create new Model Project: clicking this button displays the Model Project Designer Start Page. A close button is shown to its top right; clicking it removes the overlay from display. If a model project containing unsaved changes is displayed at invocation of Create New, an 'Are You Sure?' dialog is shown, from which you can:
  - Save the changes
  - Abandon the changes
  - Abandon creation of the new model project
- Open an existing Model Project: invocation of this option displays the Open Model Project File System Dialog. You can navigate accessible folders in the RPI file system to locate the model project that you wish to open. Only model project files are shown. Having located a model project, you can click OK or double click it to display it in the Model Project Designer. You can also click Cancel to close the File System Dialog without opening a model project.

  If a model project containing unsaved changes is displayed, you can:
  - Save the changes
  - Abandon the changes
  - Abandon opening the model project
- Save the current Model Project: this option is disabled when no outstanding changes are present within the model project. If the model project has not been saved, Save behaves like Save As.... If the model project has previously been saved, invocation of this option saves any model project changes to the existing model project file.
- Save the current Model Project as...: invocation of this option displays the Save Model Project As… File System Dialog, allowing stipulation of the filename to which to save the new model project file.
- Version number
- Follow/Unfollow File: please see the RPI Framework documentation.
- File options: please see the RPI Framework documentation.
- File Metadata: please see the RPI Framework documentation.
- Linked Page options: please see the RPI Framework documentation.

14.7 Toolbox

The Model Project Designer toolbox exposes the standard RPI Folder Search component, which is constrained to display attribute, audience and selection rule files only. Please see the RPI Framework documentation for more information.

14.8 Tabset

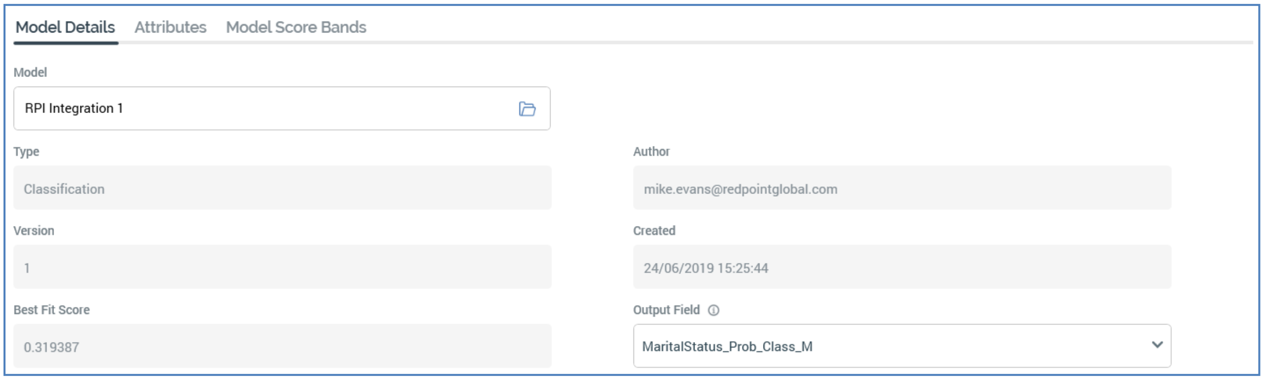
The Model Project Designer's tabset exposes up to four tabs:

- Model Details
- Attributes
- Model Score Bands
- Decision Tree

Each tab is documented separately.

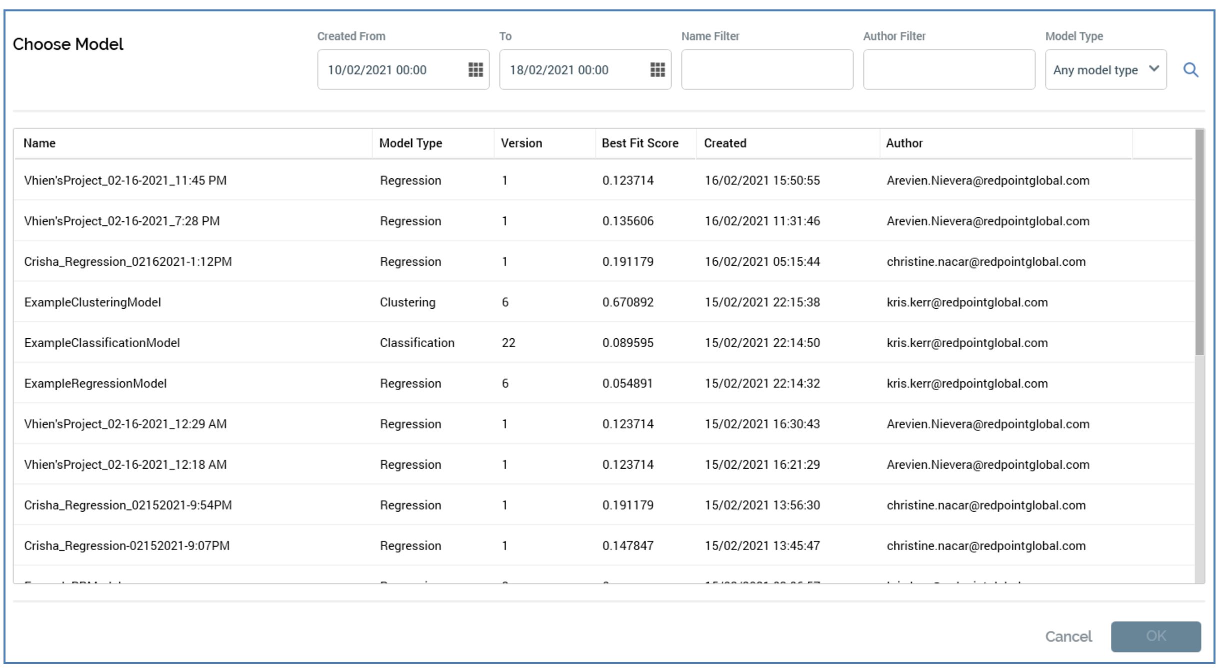
14.9 Model Details Tab

The Model Details tab is used to record details of the AML model to which the model project will connect. It contains the following:



- Model: you must choose a model with which to configure the model project. Clicking the empty property displays the Choose Model overlay, which you can use to select an AML model. When you have selected a model, the Type, Author, Version, Created, Best fit score and Output field properties are populated.

  The Choose Model overlay facilitates selection of an AML model. It contains a toolbar, list and OK and Cancel buttons.



  - Toolbar: allows the list of models to be filtered. It exposes the following filters:
    - Created from/to: these date/time fields default to today - 7 days, 00:00:00 and tomorrow, 00:00:00 respectively.

        - Name Filter
        - Author Filter
        - Model Type: a dropdown, exposing the following values:
            - Any model type (the default value)
            - Classification
            - Clustering
            - Regression
            - Recommender
        - Search: clicking the accompanying button refreshes the list of models.
    - List: the list is populated with models matching the currently-applied search criteria. The following read-only columns are shown:
        - Name
        - Model Type
        - Version
        - Best Fit Score
        - Created
        - Author

      You can choose a model and click OK to select it; double-clicking a model within the list has the same effect.

    - OK: this button is enabled when a model is selected. Clicking it selects the model in question.
    - Cancel: clicking this button removes the Choose Model overlay from display. Note that clicking off the overlay has the same effect.
- Type: this read-only property is displayed once a model has been selected. It is set to one of the following values:
    - Classification
    - Clustering
    - Regression
    - Recommender

- Author: this read-only property is shown once a model has been selected. It displays the email address of the AML user who created the selected model.

- Version: this read-only property is shown once a model has been selected. It displays the version number of the selected AML model.

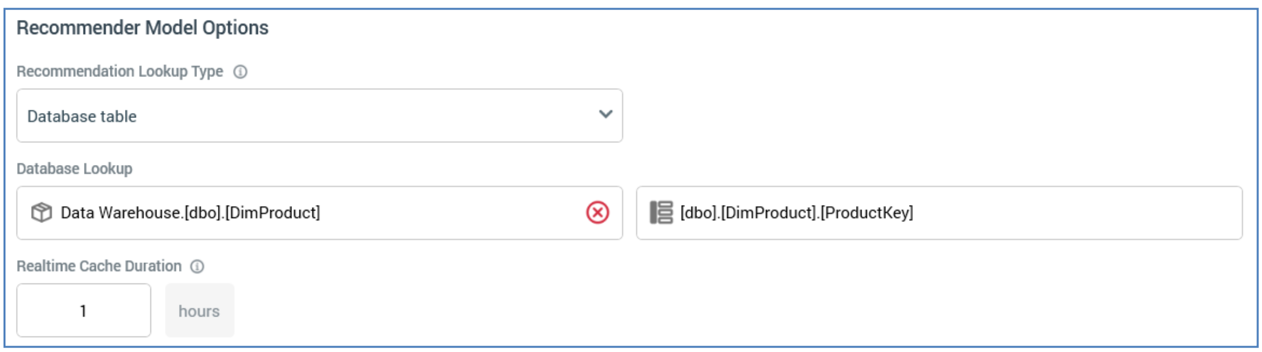
- Created: this read-only property is shown once a model has been selected. It displays date and time of the AML model's creation.

- Best fit score: this read-only property is shown once a model has been selected. It displays the AML model's best fit score, which provides an indication of the selected model’s predictive efficacy.

- Output field: this property is shown once a model has been selected. It allows you to select the score field to be used as the model's output (if more than one is available).

  A dropdown is used to the facilitate selection of an output field. The dropdown is populated with the output fields exposed by the AML model.

If an AML Recommender model is selected, an additional Recommender Model Options section is also displayed:



It contains the following:

- Recommendation Lookup Type: this dropdown property allows you to define the type of lookup to be performed when using the model. It exposes the following values:
  - No lookup required (the default)
  - Value list
  - Database table

- Value List Lookup: this dropdown property is displayed when Recommendation Lookup Type is set to 'Value list'. It defaults to 'No value list chosen'. The property lists all currently configured value lists. Selection of a value list is mandatory when the property is displayed.

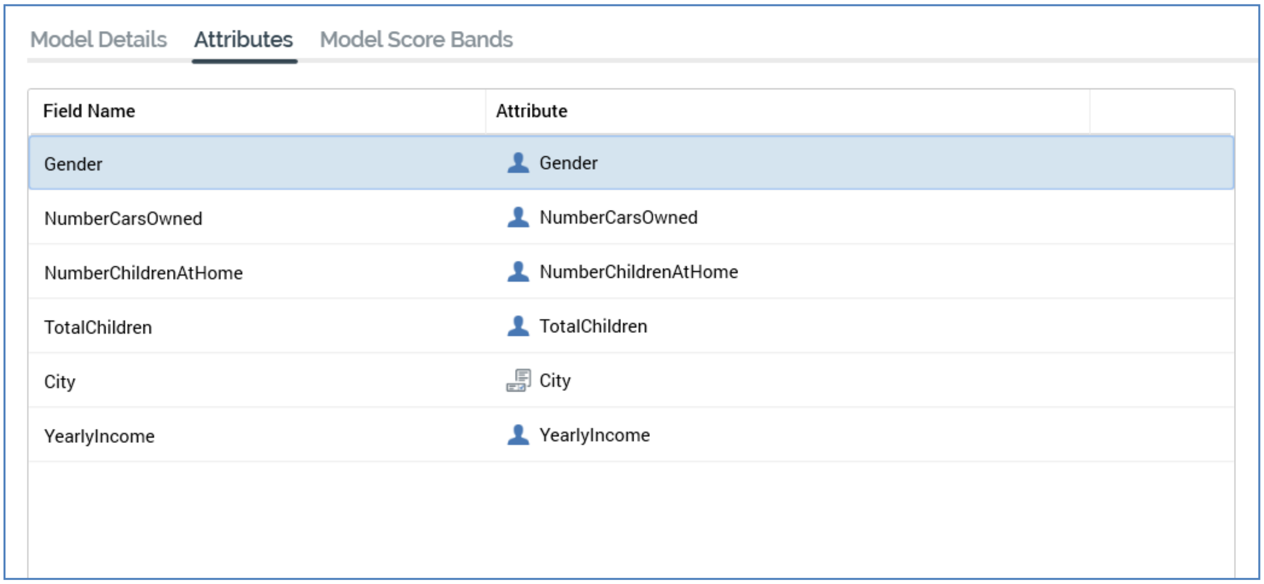
- Database Lookup: these properties are displayed when Recommendation Lookup Type is set to 'Database table'. Table and Column choosers are provided and are not set by default.

Selection of a table and column is mandatory when the properties are displayed. Note that, when using this option, entire records are retrieved from the selected table using the key provided, giving the model project access to all the fields contained therein.

- Realtime Cache Duration: this mandatory integer property allows you to specify the number of hours for which data from the selected table will be stored in the RPI Realtime cache. If set to 0, nothing will be cached. It is displayed when Recommendation Lookup Type is set to 'Database table' or 'Value list. The property defaults to 24 and accepts a range of values from 0 to 99,999.

14.10 Attributes Tab

The Attributes tab allows you to specify the mapping of RPI attributes to expected model inputs.



The list of attributes shown therein is populated on selection of a model in the Model Details tab. Prior to selection, the following message is displayed:

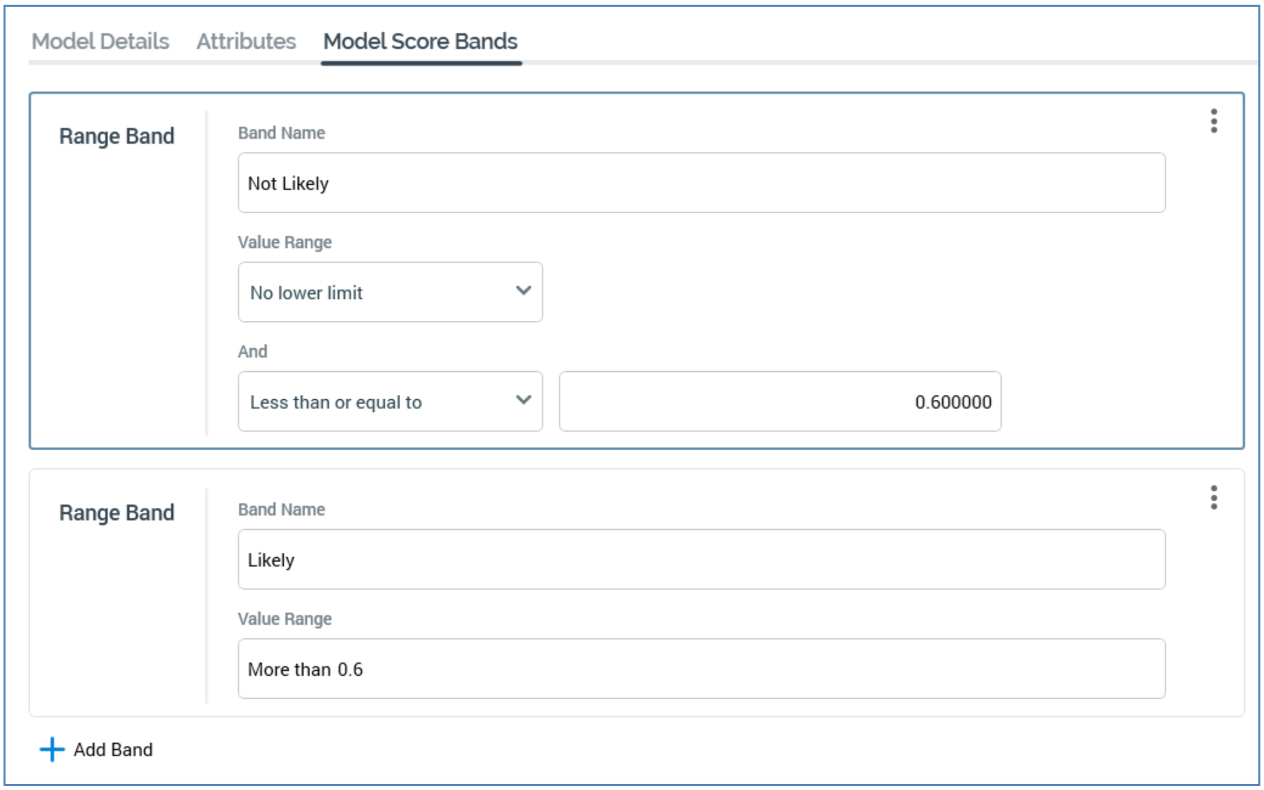
The following columns are shown in the attributes list:

- Field Name: a read-only field, which displays the name of the model input name defined at AML.
- Attribute: this field must be populated with an RPI attribute file. Note that Model Project and Exists in Table attributes are not supported in this context. Parameter attributes are supported; if populated with a parameter attribute created from a cached attribute list, RPI Realtime can retrieve data to populate realtime cache databasevalues during smart asset evaluation. You can populate the field using browse or drag and drop. Having done so, you can view information relating to the selected attribute in the File Information Dialog. You can also clear your selection.

14.11 Model Score Bands Tab

The Model Score Bands tab allows you to provide bands in order to categorize records in terms of their model scores. Provision of bands in a model project is optional - a model project without bands can be used to configure a Model Score realtime decision. For more information, please see the Realtime Decisions documentation.

The tab contains a list of model score bands.



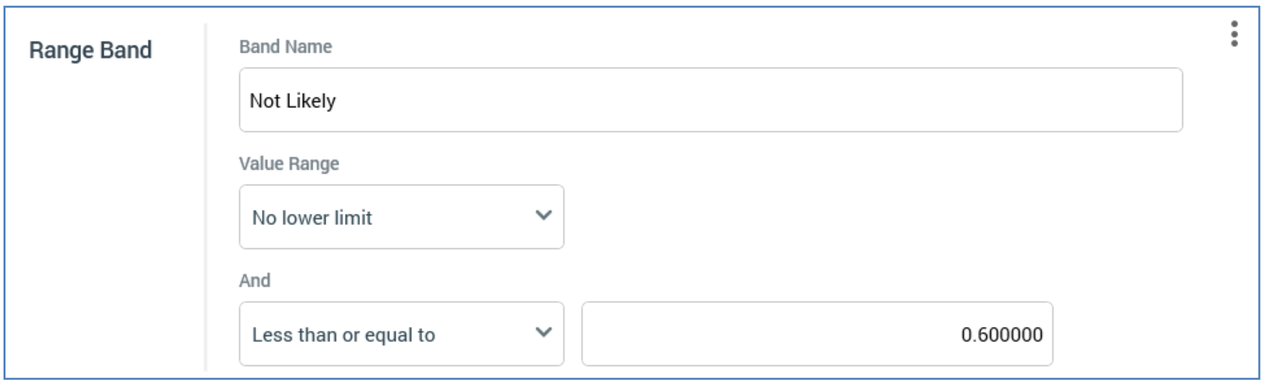
An Add Band button is displayed at the bottom of the list. Clicking it displays a sub-menu, which exposes the following:

- Add Discrete Band: clicking this button adds a new discrete band to the list. A discrete band allows for the specification of specific values to define band membership.
- Add Value Range Band: clicking this button adds a new discrete band to the list. A value range band allows you to specify a range of values to be used to determine band membership.

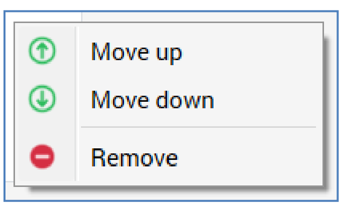
The list of bands is empty by default, and a message is displayed therein:

The list is used to display the bands associated with the model project. Discrete bands are shown as follows:

...and value range bands as follows:



An Options menu is displayed to the right of a band, exposing the following:



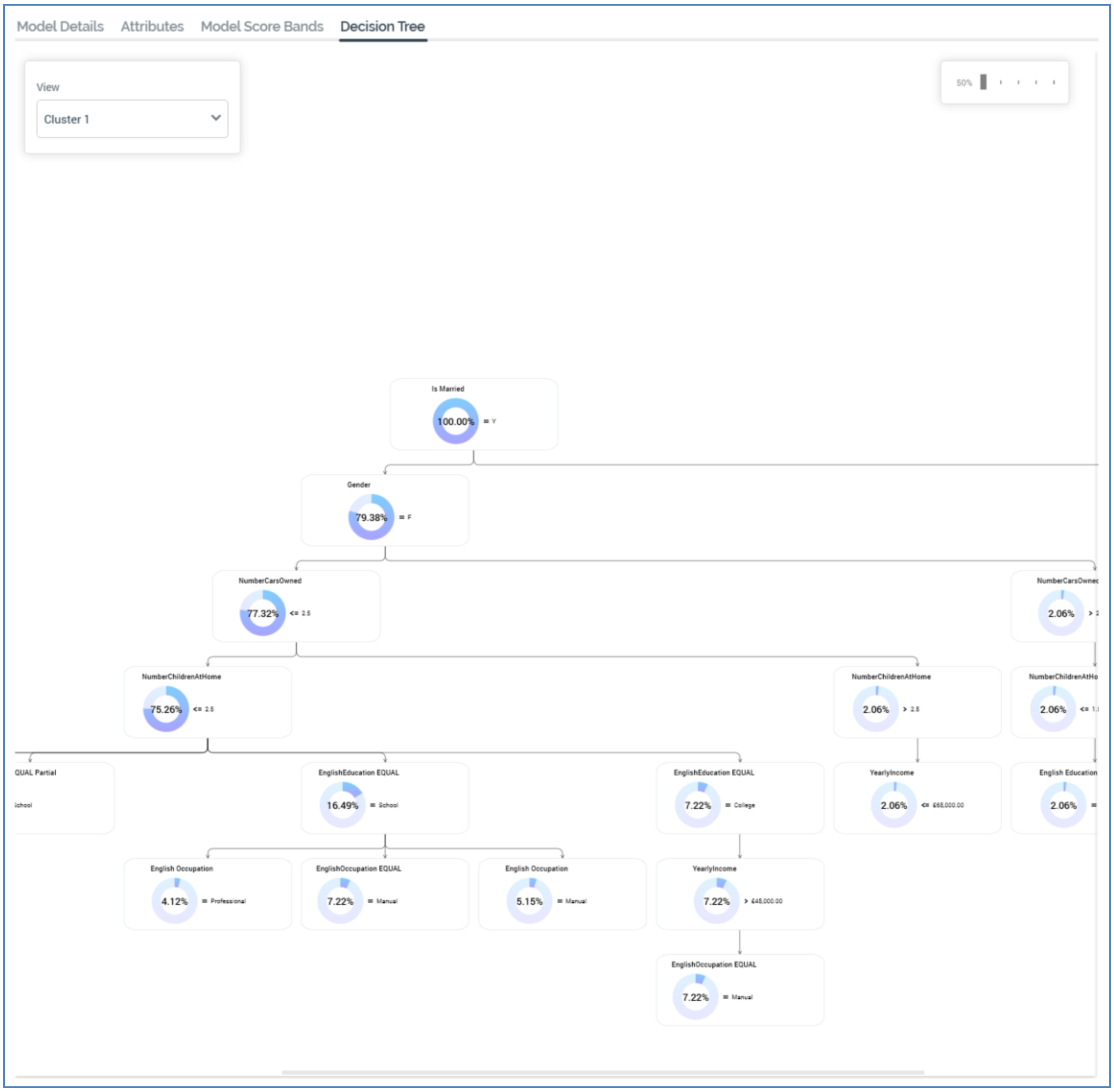
Validation is employed to ensure that bands are configured with mandatory values and make logical sense.

On selection of a Cluster model, one model score band is added automatically per cluster generated by the same. Bands are named 'Cluster n' (where n is an incrementing integer). Each band is mapped to single discrete value exposed by the model.

14.12 Decision Tree Tab

The tab is only available at model projects created during the generation of clustered audiences. For more details on this feature, please see the Standard Selection Rules documentation.

The tab allows you to view details of the how clusters exposed by the model are defined, in terms of the proportion of records therein that exhibit certain attribute values.

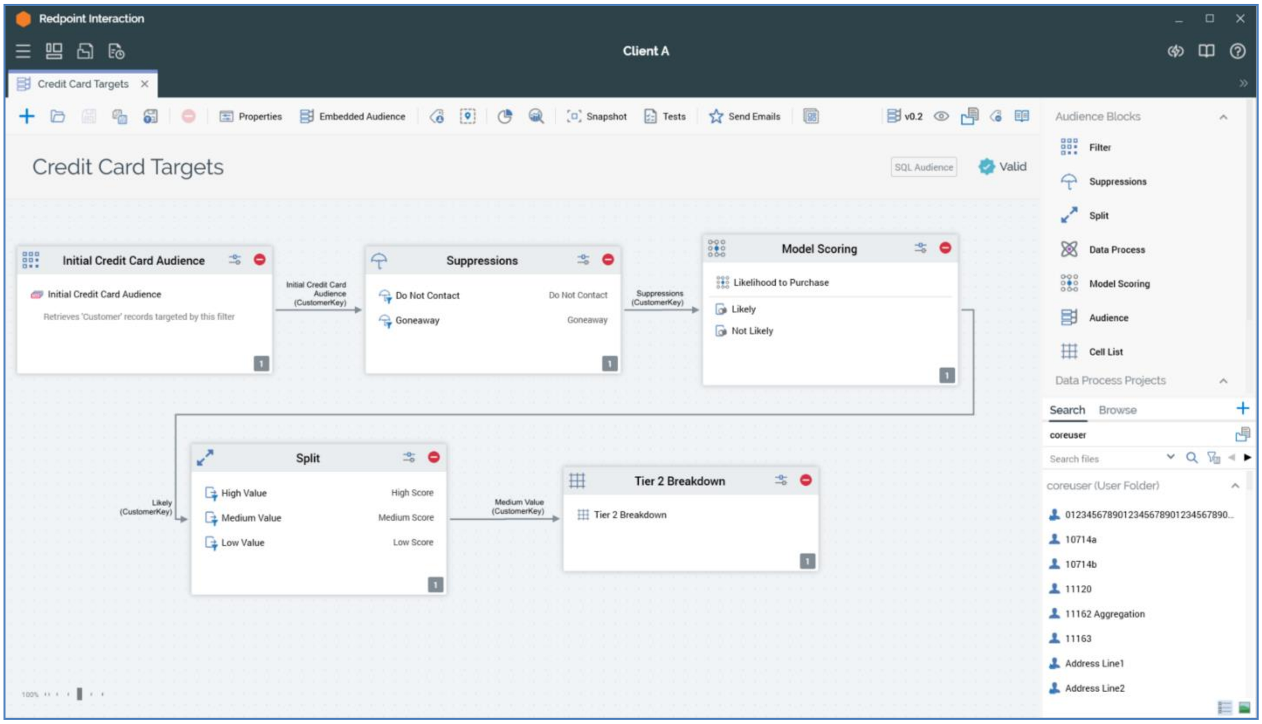


A View dropdown, displayed at the top left of the decision tree, allows you to choose the cluster you want to view.

A zoom control is provided to the top right.

15 Audience Designer

The RPI Audience Designer allows you to create and maintain audiences.

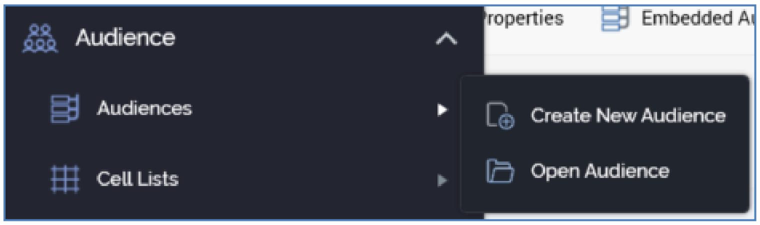


Audiences wrap up the logic involved in determining to whom messages are to be delivered when executing your interactions. An audience is composed of a series of segments.

15.1 Invoking the Audience Designer

You can invoke the Audience Designer in the following ways:

- From the quick access menu's Audiences menu. The menu exposes the following options:



- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.

- By double-clicking an Audience file in the File System Dialog, or by highlighting an Audience and clicking OK in the same context.

- By viewing the latest version of an Audience contextually – for example, from the Audience property within the Audience Snapshot configuration interface.

Note that access to the Audience Designer is controlled via the Audience – Design functional permission. If none of the user groups of which you are a member are associated with this permission, you will not be able to access the Audience Designer.

15.2 Audience Designer Basics

Displayed within a separate tab, the Audience Designer consists of a toolbar, properties panel, toolbox and workspace.

The name of the currently-displayed audience is shown in the tab header.

15.3 Toolbar

The following options are available within the Audience Designer toolbar:

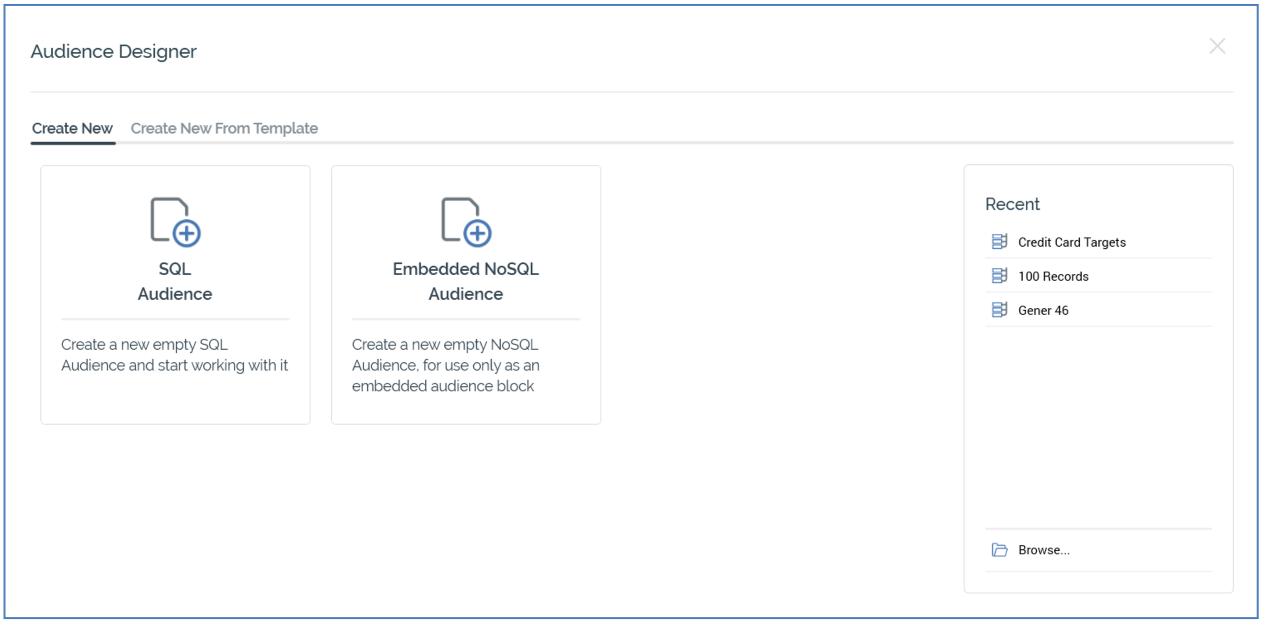
- New: creates a new, empty audience within the workspace.
- Open an existing Audience: allows you to retrieve an existing audience from storage within the RPI file system and display it for viewing or editing within the workspace.
- Save the current Audience: saves changes made to an audience that has been saved previously.
- Save the current Audience as...: allows you to navigate to an RPI file system folder and save an audience.
- Save the current Audience as a Template: clicking this button, which is only shown when a non-template audience is shown, allows you to save the current audience as a template. For more information on audience templates, please see Audience Templates.
- Remove selected blocks and/or connections: removes the currently-selected blocks and/or connections from the workspace.
- Properties: allows you to toggle the display of the audience properties panel on and off.
- Embedded Audience: this toggle button allows you to define that the audience can only be used when embedded in another audience as an audience block. Please see Embedded-only Audiences for further information.
- Show Audience-level Metadata: displays a summary of metadata values assigned at the audience level in a dialog. Please see Configuring Audience Metadata for further information.
- Show Audience Placeholders: clicking this button displays the [Audience Name] - Attribute Placeholders dialog. Full details of the Attribute Placeholders dialog can be found in the Framework documentation.

  You can use the dialog to provide values for any placeholder attributes used in standard or basic selection rules at the audience's filters, suppressions, split and cell list blocks. Note that any test placeholder values provided in the Rule Designer at standard selection rules are ignored and are not presented as default values.

- Show the Segment Summary for this Audience: displays a dialog, allowing you to view the metadata assigned to the audience's segments. Please see Segment Summary for further information.
- View Insights for this Audience: displays the Insights Window, allowing you to view results pertaining to any audience instances, as well as insights gleaned from viewing a configurable dashboard. For more information, please see the Insights Window section elsewhere in this documentation.
- Snapshot: allows you to create an audience snapshot based on the audience. Please see Creating an Audience Snapshot for further information.
- Tests: facilitates the creation of an audience instance to allow you to test the execution of your audience. Also provides access to previously-executed test instances. Please see Testing an Audience for further information.
- Send Emails: this button is displayed if training aids are configured to be shown within the RPI client. If clicked when the current Audience Designer contains unsaved changes, or when the audience therein is invalid, a warning message is displayed. Clicking the button at a valid, saved audience displays the Send Emails training aid. Full details of the Send Emails training aid can be found in the Training Aids documentation.
- Copy image to Clipboard: This option is available when at least one block is present in the workspace. Clicking it copies the contents of the workspace to the clipboard (even if its full contents are not currently visible).
- Version number
- Follow/Unfollow File: please see the RPI Framework documentation.
- File options: please see the RPI Framework documentation.
- File Metadata: please see the RPI Framework documentation.
- Linked Page options: please see the RPI Framework documentation.

15.4 Start Page

The Audience Designer Start Page is shown upon invocation of Audiences at the quick access menu, and also on clicking Create new Audience at the Audience Designer toolbar.



It contains a tabset, which exposes Create New and Create New From Template tabs.

The Create New tab exposes the following:

- Buttons facilitating creation of the following Audience types (if available).
    - SQL Audience
    - NoSQL Audience
    - Embedded NoSQL Audience

The Create New From Template tab lists any audience templates configured at the current RPI client. More information on audience templates is provided elsewhere in this documentation. You can search for a template using the field and button provided. If multiple search results are displayed, they can be accessed using the Previous and Next buttons.

In addition, the Start Page also exposes the following:

- Recent: lists recently-accessed audiences, facilitating the opening of the same.
- Browse: displays the Open Audience File System Dialog, allowing you to select an audience to open.

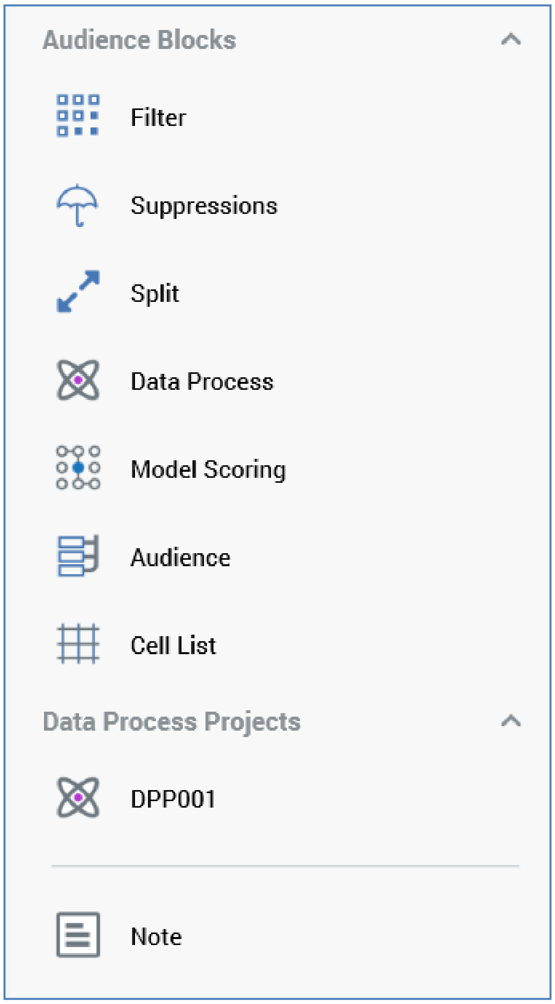
A Cancel button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and redisplays the Audience Designer. The Cancel button is only shown on invocation of the Start Page by clicking Create new Audience at the Audience Designer toolbar.

15.5 Toolbox

The Audience Designer toolbox contains the following:

15.5.1 Audience Blocks

The section at the top of the Audience Designer toolbox exposes the following:



- Audience Blocks: exposing the following:
  - Filter
  - Suppressions
  - Split
  - Data Process
  - Model Scoring

- Audience
- Cell List

You can drag each block type from the toolbox in order drop it onto the workspace.

- Data Process Projects: any data process Projects configured at the current RPI client that have their Show in toolbox properties set are listed. You can drag a data process project from the toolbox and drop it onto the Audience Designer workspace, creating a data process block with a pre-configured Data process project property.

- Note

When you drag a block from the toolbox, a label is displayed against the cursor ('Insert new [block type]').

If you cannot drop the block (for example, due to its being positioned above the toolbox), the label is accompanied by a 'no drop' icon:

At the point of dropping the block onto the workspace, a new block of the appropriate type is displayed at the cursor's current position.

15.5.2 Folder Search

The lower section of the Audience Designer toolbox contains a Folder Search component. For more information, please see the Framework documentation.

The Folder Search is your source for the attributes, selection rules, audiences, model projects and cell lists you will need when building an audience. Having located a file of the required type, you can drag it from the toolbox.

Immediately upon dragging the file onto the workspace, its type's name is displayed against the cursor. Dropping the following existing files onto the workspace has the following effects:

- Dropping a selection rule creates a new filter
- Dropping an audience creates a new audience block
- Dropping a cell list creates a cell list block

You cannot drop an attribute directly onto the workspace.

You can also drop a selection rule:

- Onto an existing filter, thereby specifying the records to be targeted by it.
- Onto a split output, to create a new output within the split.
- Onto a suppressions block, to create a new suppression within the suppressions block.

In addition, you can drop an audience onto an existing audience block, or a cell list onto an existing cell list block.

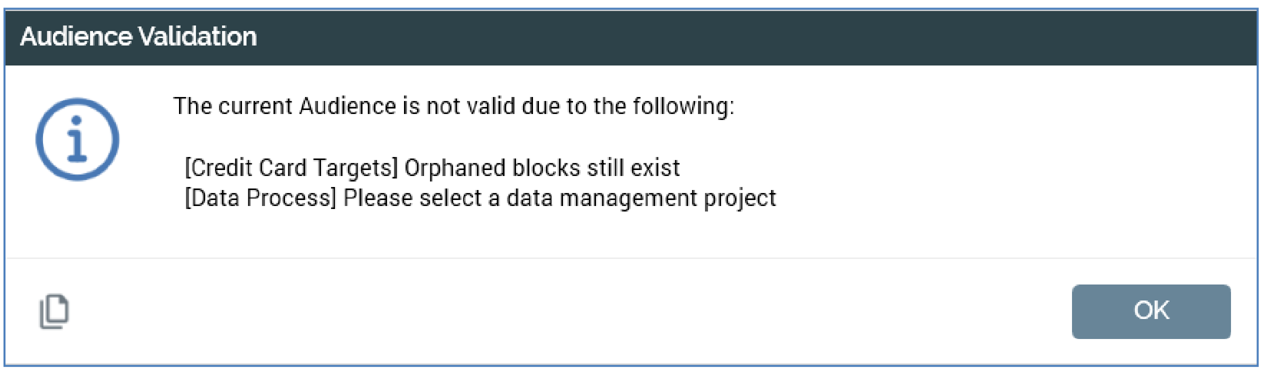
15.6 Audience Validation

Before an audience can be used, it must be valid.

A validation status indicator is displayed to the top right of the Audience Designer, above the workspace. When the audience is valid and contains no validation errors, the validation status indicator is shown as follows:

Specific validation errors are outlined in the Audience documentation. When one or more validation errors is present, a validation error indicator is shown:

Clicking the indicator lists the validation errors in a dialog:

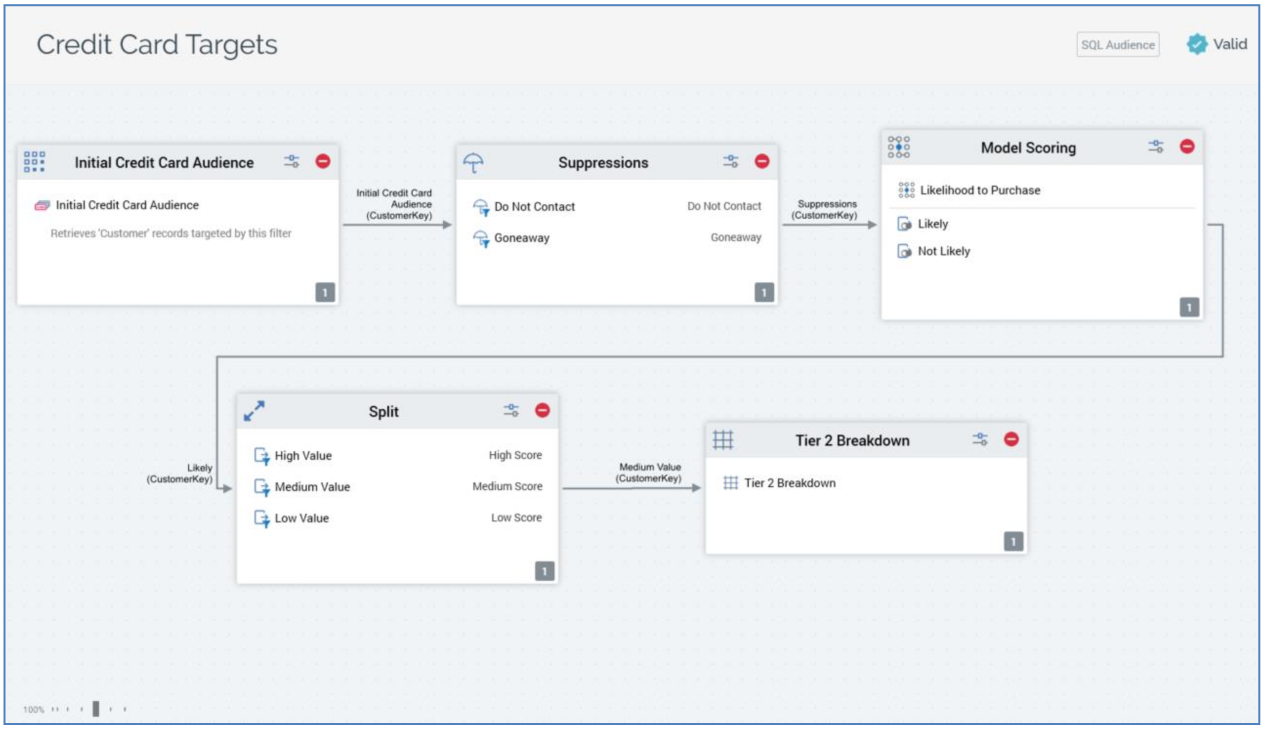


You can use the button at the bottom left of the dialog to copy the validation error details to the clipboard. You can close the dialog using the OK button.

If the determination of an audience's validation status takes longer than three seconds, dynamic validation is switched off automatically. A button is displayed, and advises of this fact. Clicking the button re-enables dynamic validation.

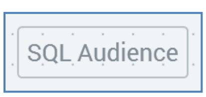
15.7 Workspace

The Audience Designer workspace is the canvas upon which you can design your audiences.



The Audience Designer can only ever display a single audience.

The type of audience (SQL vs. NoSQL) is shown to the top right of the workspace:

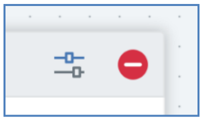


The workspace is used to display the rules that make up an audience. These rules are represented within the workspace as blocks and connections between blocks. When blocks are moved or resized within the workspace their positions and sizes are snapped to an invisible grid.

A block can be added to the workspace by dragging from the Audience Blocks section in the toolbox.

Blocks are used to restrict records retrieved when an audience instance runs. By default, all records within the table defined by an audience's resolution level (itself defined by the audience's audience definition) will be retrieved when an audience instance is executed. Adding blocks to an audience , and connecting those blocks, refines the set of data from the resolution table that will ultimately be retrieved when an instance based upon the audience runs.

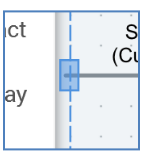
All blocks display the following buttons:



- Configure: clicking this button allows you to configure the block in the Audience Block Builder.
- Remove: clicking this button removes the block from the audience, without display of an 'Are You Sure?' message.

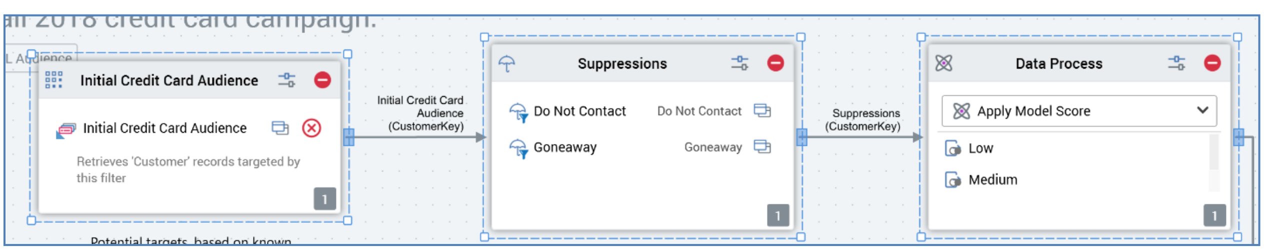
You can select a block in the workspace by clicking upon it. When you highlight a block, it is surrounded by a dashed highlight indicator.

A connection point is shown to the right-hand side of the block as a blue rectangle.

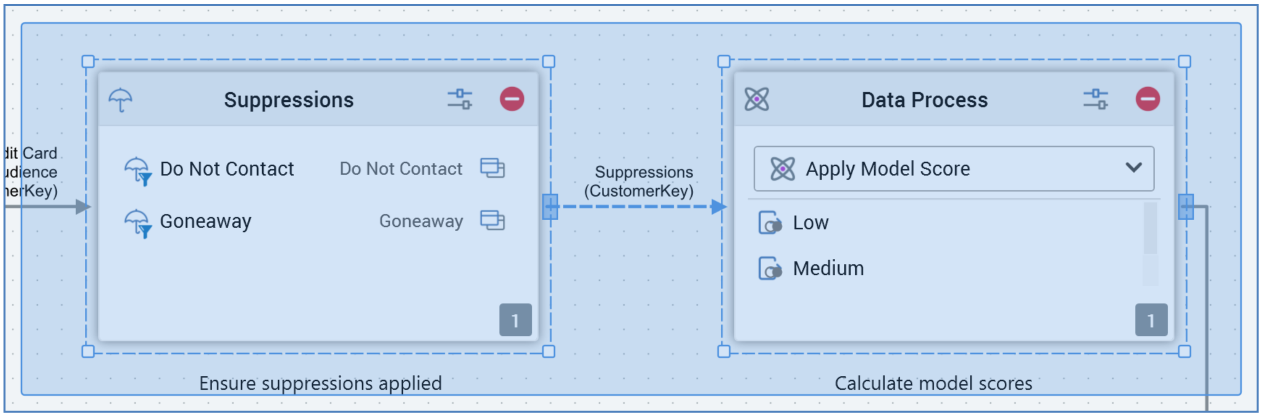


Four resize points are displayed.

You can select more than one block concurrently by holding down the Ctrl key and clicking several blocks in turn.



You can also select multiple blocks by clicking and dragging a 'rubberband'.



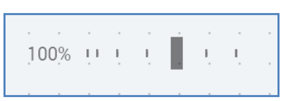
A block must be completely included within the rubberband to be selected.

If a block is not selected, neither the selected indicator nor the connection point are displayed.

Blocks can be dragged around the workspace. Any connections from or to a block that is moved are also moved appropriately. If multiple blocks are selected, they all move simultaneously.

You can resize a block in the workspace. Note that a block is constrained to a minimum and a maximum size. If multiple blocks are selected, all are resized simultaneously.

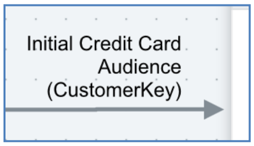
You can zoom the workspace using the slider control displayed to the bottom left.



The workspace can be zoomed from 25% to 150% of its standard display size. Note that you can also use Ctrl-mouse wheel to zoom the designer workspace.

By default, a maximum number of 30 blocks are displayable in workspace concurrently (note that this value may be configured via system configuration setting MaxBlocksDisplayedPerWorkspace). If, by adding a block to the workspace, the maximum number of blocks is exceeded, a warning message is displayed and you are unable to add the block.

The name of the output from the preceding block that is serving as the current block's input is displayed above its incoming connector.



In addition, the preceding block's deduplication level is shown in parentheses below the name of the output.

When you highlight one or more blocks, you can copy them by right-clicking to display a context menu, then selecting Copy. When you do so, an advisory message ('Selected block(s) copied to clipboard') is shown.

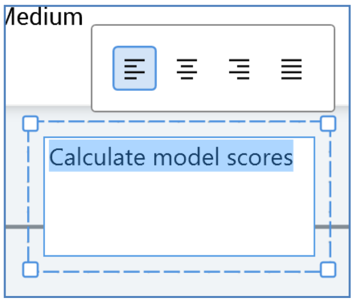
Once blocks have been copied to the clipboard, you can Paste them in the current audience's workspace, also by using a context menu option. The newly-pasted blocks' names are the same as the blocks from which they were copied, with an integer appended to ensure uniqueness. Any connections between blocks are also pasted (even if not copied explicitly).

You can also paste copied blocks into another Audience Designer instance.

15.8 Note

You can annotate an audience within the Audience Designer by adding a note to the workspace. Simply drag a Note from the Components.Miscellaneous section of the toolbox and drop it where required. The new note is presented in edit mode. You can also add a note by selecting Insert Note – displayed at the context menu shown when right-clicking the workspace.

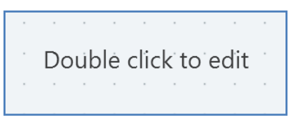
You can edit an existing note by double-clicking it:



No practicable length limit applies. If the note contains more characters than may currently be displayed, a vertical scrollbar will be shown.

A toolbar shown above the note allows you to control the alignment of the text therein.

A note in display mode is shown without a border (unless selected, when the standard blue dashed border is displayed). If no text has been added, the default text is shown:



If a note contains more characters than may be displayed within its current size, an ellipsis is appended to the final visible character.

A note is presented in the Foreground (accent) color defined at the Preferences interface.

A context menu is displayed when right-clicking a note. The following options are available:

- Edit Note
- Copy
- Remove

15.9 Creating a New Audience

You can initiate the creation of a new audience in a number of ways:

- By clicking the Create New toolbar button at any time when the Audience Designer is displayed. Clicking this button displays the Audience Designer Start Page. A Close button is shown to its top right; clicking it removes the Start Page from display. If an audience containing unsaved changes is displayed at invocation of Create New, an 'Are You Sure?' dialog is shown, from which you can:
  - Save the changes
  - Abandon the changes
  - Abandon creation of the new audience
- By clicking Create new Audience in a widget or the quick access menu, or by clicking Create New Item in a batch audience’s or interactive activity’s configuration panel in the Interaction Designer. This displays a new audience in the Audience Properties overlay (covered separately in this documentation).

A new audience’s name is ‘New Audience’. Its other properties are set to their default values.

15.10 Opening an Audience

You can open an existing audience in the following ways:

- By clicking the Open audience toolbar button at any time when the Audience Designer is displayed.
- By clicking Open Audience in a widget or the quick access menu.
- By double-clicking an audience in the recent items component.
- By double-clicking or clicking Open having selected an audience when browsing the RPI file system.
- By clicking Open latest version in a batch audience's or interactive activity's configuration panel in the Interaction Designer.

Invoking Open causes the File System Dialog to be displayed. You can navigate the folders within the RPI file system to locate the audience you require and, having found it, you can open it. Doing so displays the audience within the Audience Designer. You can also abandon opening the audience, which removes the File System Dialog from display.

When opened, the audience is zoomed to the level displayed at the time of its last having been saved.

If you attempt to open an audience in the Audience Designer when an audience to which changes have been made is already displayed, the system displays a dialog. You may:

- Save changes to the displayed audience and proceed with opening the audience.
- Lose changes made to the displayed audience and proceed with opening the audience.
- Cancel opening the audience.

15.11 Saving an Audience- Save

You can save an audience that has been saved already to the file system using Save. The audience is saved using its existing filename. No opportunity is given to specify a new filename or destination folder for the audience . If the audience's name has changed since the last time it was saved, its filename is updated to match its new name. In this case, the file with the original name is not retained. Note that an audience instance's validity does not affect its ability to be saved.

Following a successful save an advisory message is displayed. The asterisk is removed from the audience name in the current tab, indicating that unsaved changes no longer exist.

15.12 Saving an Audience - Save As...

You can save any audience, regardless of whether it has been saved before, at any time using Save As....When you do so, the File System Dialog is displayed.

The audience's filename defaults to the value provided. You can navigate accessible folders within the RPI file system to locate a folder in which to save the audience. Having done so, you can click OK, which saves the audience's details; the File System Dialog is then removed from display.

You can also cancel saving the audience.

If you updated the audience's filename when saving it, upon returning to the audience, its name is updated to match the new filename. Note that an audience instance's validity does not affect its ability to be saved.

Following a successful save an advisory message is displayed. The asterisk is removed from the audience name in the current tab, indicating that unsaved changes no longer exist.

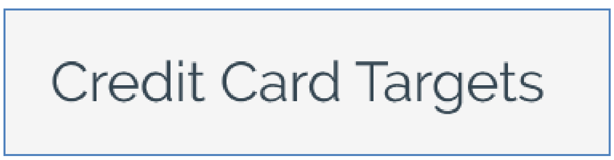
15.13 Saving an Audience as a Template

You can save a non-template audience as a template using the Save the current Audience as a Template toolbar button, which is only shown when a non-template audience is displayed in the Audience Designer. Clicking it displays the Save Audience as Template File System Dialog. You can specify name for the new template file and click Save. When you do so, the file is saved with a modified icon that indicates that it is a template.

For more information on audience templates, please see Audience Templates.

15.14 Configuring an Audience's Name

An audience's name is configured in the large property shown at the top of the Audience Designer, below the toolbar:

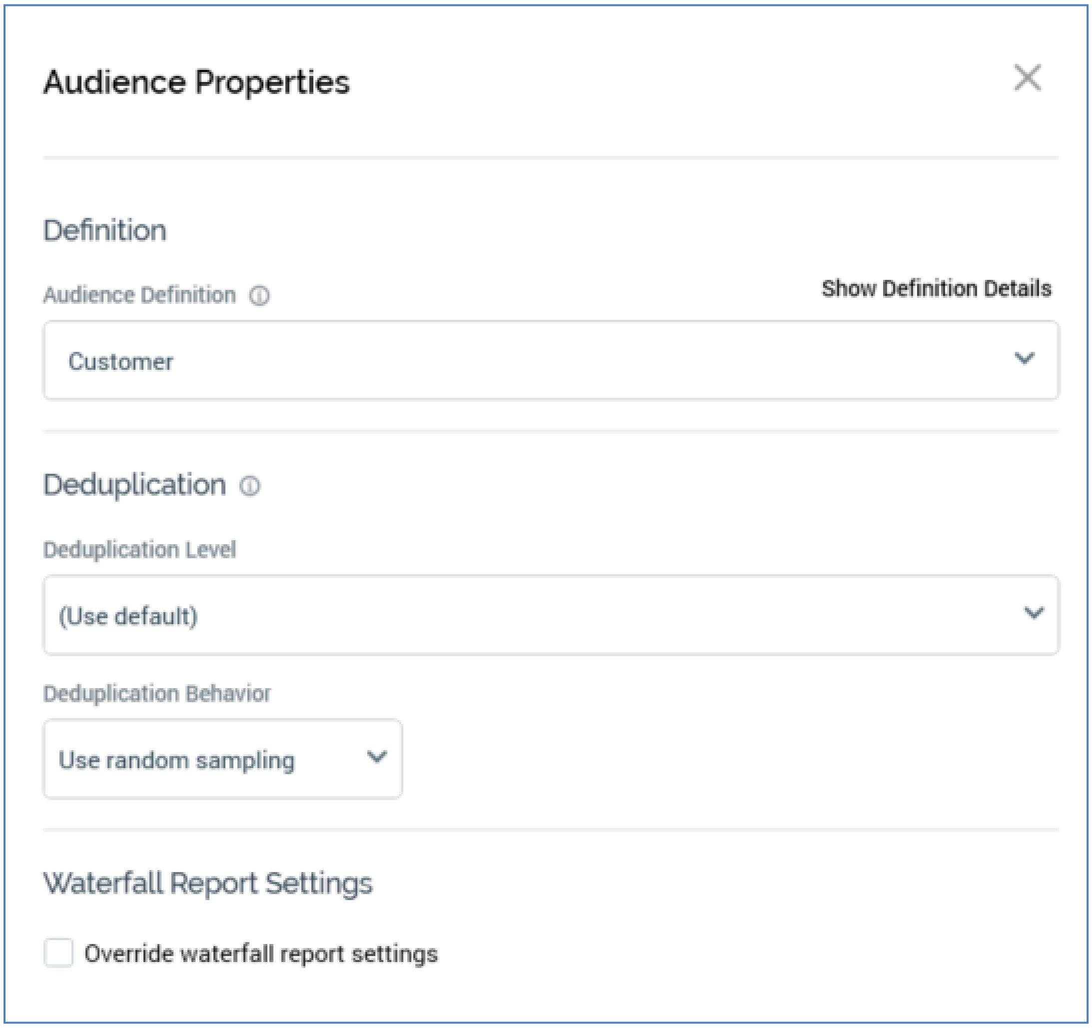


Provision of a name is mandatory, and the value provided may be a maximum of 100 characters. The audience's name is the same as the filename under which it is saved within the RPI file system. As such, it must be unique amongst the audiences in the folder within which saved.

You can edit an audience's name by clicking the property. Complete the edit by clicking off the property, or by hitting return.

15.15 Configuring Audience Properties

An audience's properties are configured in the Audience Properties overlay:



The overlay is shown at the point of a new audience being displayed in the Audience Designer, or on clicking the Properties toolbar button. It exposes the following audience properties:

- Definition section:
    - Audience Definition: all audiences must be configured with an audience definition. You can select an audience definition using a dropdown. An audience's audience definition defines:
        - Its resolution level, which in turn defines the table from which data will be retrieved when an instance of the audience is run. The resolution level associated with the selected audience definition is displayed as a tooltip when hovering over the audience definition.

- Its available metadata attributes and their default values. These values can then be overridden at the audience itself or at its blocks.
- The fields that will be stored in the offer history and offer history meta tables when a workflow instance executes.
- The list of deduplication levels available to the audience - only database keys that are compatible with its resolution level are listed.

If system configuration setting EnableOrgNodeConfigUserControl is set to true, and there exist any audience definitions to which you do not have access, a View restricted items button is shown at the bottom of the dropdown.

Note that restricting access to specific audience definitions is carried out in the Audience Definitions configuration interface, in which you can link an audience definition to one or more organization nodes.

If your user account is linked to an organization node user group that matches an audience definition's linked organization node, you will have access to that audience definition. If an audience definition is associated with more than one organization node, a user need be associated with only one of the nodes to access the audience definition. If an audience definition is associated with a descendent node from an organization hierarchy, a user associated with an ancestor node may access the audience definition.

For more information, please see the Configuration Workbench documentation.

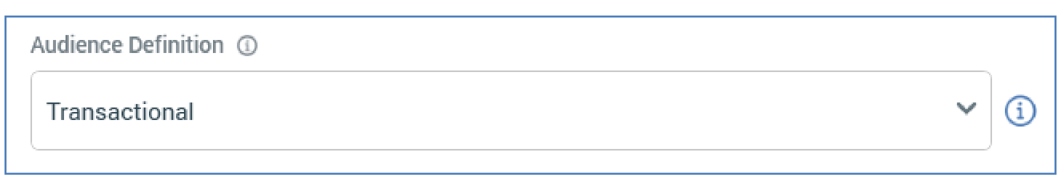
When you click the button, it is selected, and its text set to Hide restricted items. A list of audience definition levels is displayed at the bottom of the chooser.

You can select a restricted audience definition; however, on its display at the audience, it is accompanied by a warning indicator. A tooltip is shown when you hover over the warning icon.

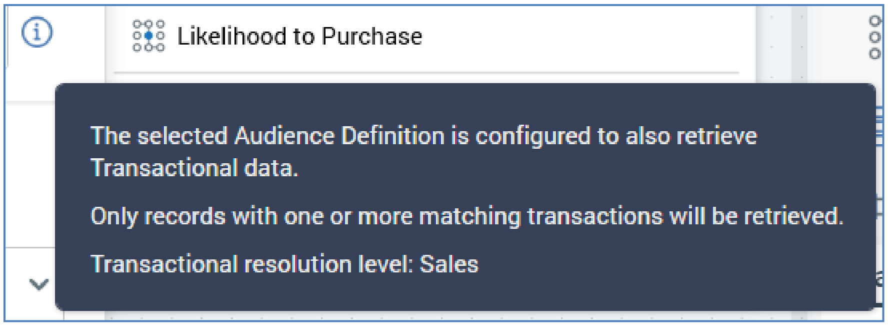
Restricted Items are hidden again on redisplay of the chooser. If no restricted audience definitions exist, the Restricted Items button is not shown.

If system configuration setting EnableOrgNodeConfigUserControl is set to false, Restricted Items are not shown, and access to all audience definitions is freely available, irrespective of any linked organization nodes.

An information icon is displayed to the right of the Audience definition field if the selected definition is transactional.



Hovering over the icon displays a tooltip.



For full details on transactional audience definitions please see the Configuration Workbench documentation.

- Show Definition Details: this toggle button is not selected by default. When selected, the Audience Definition Details section is shown, displaying read-only properties of the currently-selected audience definition:

Audience Definition Details

Resolution level	Customer
Audit audience target IDs	No
Ensure all blocks execute separately	No
Run fulfillment queries in test mode	No
Enabled for queue listeners	No
Offer history table	OfferHistory
Offer history meta table	OfferHistoryMeta
Offer history attributes	CustomerKey First Name Subscriber Key State Province Name
Produce validation files	No
Generate waterfall report (test)	No
Generate waterfall report (production)	No
Transactional	No
Generate audit files	Never
Backfill files	No

- Deduplication section:

  - Deduplication Level: this value is selected from a drop-down list. Deduplication level represents the level at which, by default, the audience will be deduplicated - for example, select one record per individual, or one record per household. The list of available deduplication levels is restricted by the audience definition chosen for the audience. A list of database keys is filtered to include only those compatible with the selected audience definition's resolution level.

    Deduplication level defaults to the value '[Use default]'. If this value is not amended, by default, an audience based upon the audience will be deduplicated at the default deduplication level defined by its resolution level.

    A validation error is raised if the selected Deduplication level is not compatible with the template's Audience definition.

  - Deduplication Behavior: specified by selecting a value from a drop-down list; deduplication behavior specifies the default manner in which deduplication will be performed when an audience instance based upon the template is run. For example, consider an audience that resolves to a Household level - one contact is to be made per household. Should more than one person within a household satisfy the audience's rules, the system needs to understand the basis by which to choose a single individual from the household. The available values are:

    - Use random sampling

    - Sample ascending using

    - Sample descending using

    If Use random sampling is selected, the person is chosen at random. If one of the other options is chosen, the decision is made on the basis of that person's value for a specified attribute (defined by the Order attribute property) - for example, if Deduplication behavior is set to Sample ascending using and Order attribute to Date of birth, the oldest person in the household will be selected for inclusion by the audience. Note that a validation error will be raised if an exists in table or parameter attribute is selected in this context.

    Note that, having selected an Order attribute, you can view its details in the File Information Dialog.

    The default value for Deduplication behavior is Use random sampling. Note that this property can be overridden within the blocks contained within an audience.

  - Order Attribute: not relevant if Use random sampling Deduplication behavior selected, otherwise mandatory. Order attribute is populated using the recent items chooser or File System Dialog. A validation error is raised if you choose a parameter, model project, exists in table or Boolean attribute.

- Waterfall Report Settings section:
    - Override Waterfall Report Settings: this checkbox is unchecked by default. Checking it displays the Create in Test and Production mode checkboxes, both of which are unchecked by default.

      When Override waterfall report settings is unchecked, audience waterfall reports are generated in accordance with the audience's audience definition settings.

      When Override... is checked, audience waterfall reports are generated in accordance with the audience's Create... checkbox settings.

15.16 Embedded-Only Audiences

The Embedded Audience toolbar toggle button allows you to specify that an audience should only be able to be executed when it is embedded in another audience as an audience block. The button is not selected by default. When selected, the following audience properties are hidden:

- Audience definition
- Deduplication level
- Deduplication behavior
- Override waterfall report settings

The following property is shown:

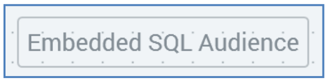
- Resolution level: this dropdown field is mandatory when displayed. No value is selected by default. You cannot use an anonymous auxiliary database resolution level at an embedded SQL audience's Resolution level property.

When an audience is defined as an Embedded Audience, it can only be used as an embedded audience block in another audience. It cannot be used directly in a batch audience or interactive activity within an interaction workflow. However, it can still be used in the following contexts:

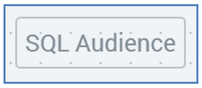
- Audience snapshot
- Audience waterfall report
- Cell list.Input audience
- Audience segment smart asset
- Workflow waterfall report

A label, shown at the Audience Designer workspace, reflects the toggle button's state:

- If selected:



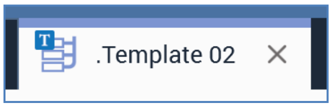
- If not selected:



15.17 Audience Templates

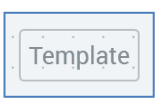
An audience template is a special type of audience file that cannot be executed in a production interaction (however, it can be tested from the Audience Designer). Audience templates allow you to create a base audience, save it as a template file, and then create audiences based on the template.

When an audience template file is shown in the Audience Designer, the icon shown at the tab identifies it as a template.



The following differences are manifest at an audience template when it is displayed in the Audience Designer:

- The Save Audience button is replaced by a Save Audience Template button, allowing you to save any changes you make to the current audience template file.
- The Save Audience As button is replaced by a Save Audience Template As button, allowing you to save the audience template to a different filename.
- The Save Audience as Template button is not shown.
- The Snapshot button is not shown.
- The Tests button is shown (execution of tests at an audience template is supported).
- A 'Template' watermark is shown at the workspace.



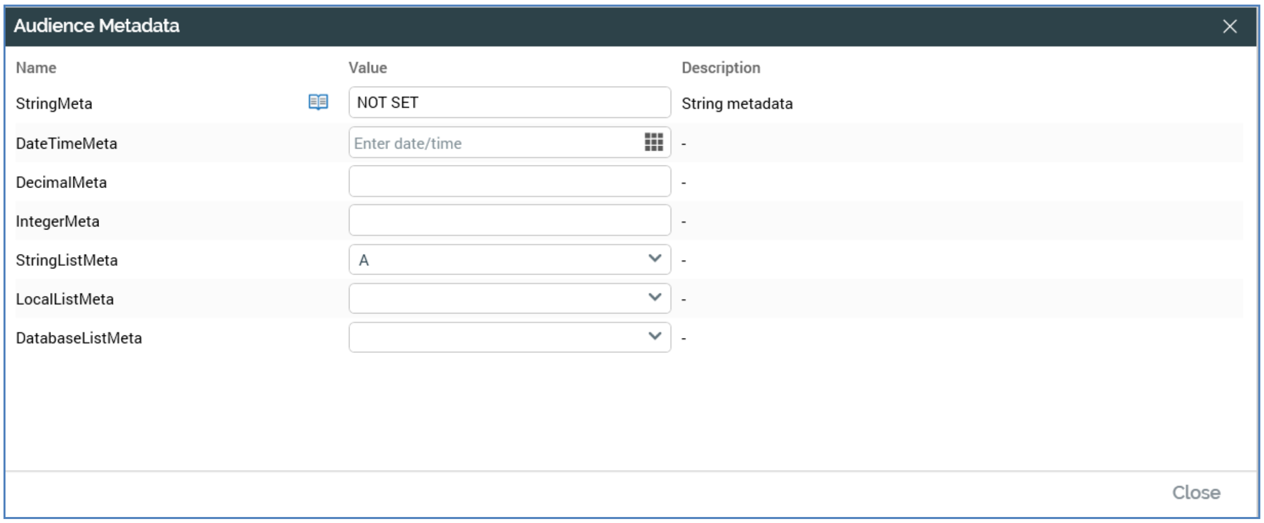
The following limitations are applied in respect of audience templates:

- Audience template files are not shown at designer toolboxes.
- You cannot configure an audience snapshot with an audience template.
- You cannot configure an embedded audience block with an audience template.
- You cannot configure a cell list's Input audience using an audience template.
- You cannot configure an interaction's batch audience or interactive activity with an audience template.
- Use of audience templates is not supported at the Workflow Builder's Choose your Audience interface.

- Use of audience templates is not supported at the Send Emails Training Aid's Choose an existing Audience interface.

15.18 Configuring Audience Metadata

You can view and configure an audience’s metadata using the Audience Metadata dialog, which you can access from the toolbar.



The metadata attributes listed in the Audience Metadata dialog, both standard and managed list-based, are defined by the audience’s audience definition.

For each available metadata attribute, the following properties are displayed:

- Name: read-only. The metadata attribute’s name, as defined within the audience definition.
- Open linked Page. This inline button is only shown if the metadata attribute was associated with a Wiki or external web page when defined in the audience definition. Clicking it displays the page in question in the Linked Page Browser.
- Value: updateable. When updating a metadata attribute's value, an appropriate control is provided in accordance with the value's data type. If the attribute is a string or numeric, you may update its value using a text box (string length restrictions must be observed). If a date, a calendar control is provided.

  If Use List is checked, or the attribute is based on a managed list, a dropdown control is shown. If based on a database managed list, the maximum number of values shown in the list is controlled by system configuration setting MaxValuesDatabaseManagedList.

  When you enter a value, the system ensures that the value you supplied is compatible with the attribute's data type. Having updated a metadata attribute's value, you can, if you wish, revert to its default value (if one exists).

You can use metadata parameters when specifying a string metadata attribute's value. If the metadata attribute's data type is DateTime, its value must be on or after 1 January 1800.

- Description: read-only. The metadata attribute's description, as defined within the audience definition.

Metadata values can be refined at the level of each audience block's outputs. You can override the metadata values set at the audience. You can also override any values set in an ancestor block. If you choose to revert the metadata attribute's value, it is reset to the next value set within the audience block hierarchy.

If the selected metadata attribute was associated with a Wiki page in the Audience Definition configuration interface, you can invoke Open linked Page to display the related page in the Linked Page Browser. If no linked page exists the button is not shown.

You can close the Audience Metadata dialog using the OK button displayed to its bottom right-hand corner. Any updates you have made are only saved when you save the audience as a whole.

Following an update of audience metadata, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.18.1 Metadata Parameters

You can use parameters when configuring metadata attribute values at both the audience and block levels. Metadata parameters allow you to specify that all or part of a string metadata attribute's value will vary when assigned during audience execution.

The following metadata parameters are supported:

- Day
- DayOfWeek
- DayOfYear
- DayName
- Month
- MonthName
- Year2
- Year4
- Hour Minute

As an example, suppose you specified a metadata value as 'This audience ran on {Day}'. At audience execution, this might be expressed as 'This audience ran on Tuesday'.

15.19 Audience Blocks

Audiences define the list of contacts to whom your communications are to be addressed. The rules executed to identify these contacts are represented as audience blocks.

RPI supports the following audience blocks:

- Filter
- Suppressions
- Split
- Data Process
- Model Scoring
- Audience
- Cell List

At least one block must be present in the audience, and orphaned blocks that are not connected to other blocks are not permitted. All of the blocks within an audience must be provided with a name, which must be unique within the audience .

15.19.1 Configuring Common Audience Block Properties in the Workspace

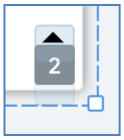
You can configure certain properties that are shared by all block types directly within their visual representations in the workspace. Note that, immediately upon making a change to a block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

- Name: you can edit a block's name directly in the workspace by double-clicking it.

  The block's name becomes editable. A block's name is mandatory and can be a maximum of 100 characters. The block must be named uniquely within its audience (note that this validation check is only performed if orphaned blocks do not exist within the template). You can finish editing the name by pressing Return, or by clicking elsewhere in the workspace.

- Execution Order: you can define the order in which a block's child blocks will be executed. The order in which a block will be executed when compared to its siblings is shown in the circle to its bottom right-hand corner.



You can alter a block's execution order using the up and down arrows shown when you hover over the circle. The arrows allow you to promote or demote a block's execution order.

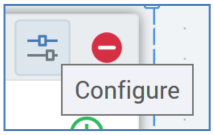
Promoting a block's execution order removes 1 from its value. Its order number is swapped with its immediately-preceding block - for example, if you promote a block with execution order 2, its order is set to 1. The order of the block set previously to 1 is set to 2. If a block's execution order is set to 1, you may not promote it.

Demoting a block's execution order adds 1 to its value. Its order number is swapped with its immediately-following block - for example, if you promote a block with execution order 1, its order is set to 2. The order of the block set previously to 2 is set to 1. If a block's execution order is the highest value amongst its siblings, you may not demote it.

15.19.2 Configuring Common Block Properties in the Audience Block Builder

You can configure properties shared by all block types in the Audience Block Builder.

This dialog can be displayed using the Configure button, displayed to the top right of a block.

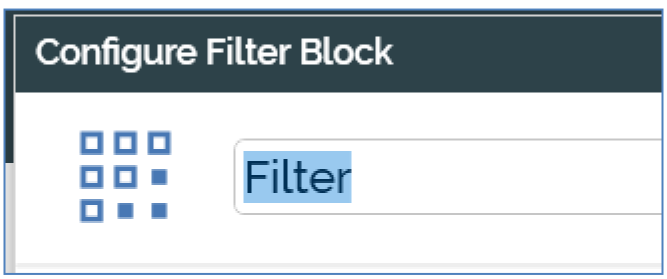


Updates made within the Audience Block Builder are reflected dynamically within the block in the workspace (if relevant): e.g. if you update a block's name in the Audience Block Builder, the name change is visible straight away in the block. Note that, immediately upon making a change to a block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

Having opened the Audience Block Builder to configure a block, if you then change focus of the block selected currently in the workspace, the block details shown in the Audience Block Builder are not affected. However, if you invoke Configure in respect of another block, the Audience Block Builder is refreshed to display the new block's details.

The size of the Audience Block Builder Window is maintained on a per user, per client basis, so that it is always shown as per its most recent invocation in a given context.

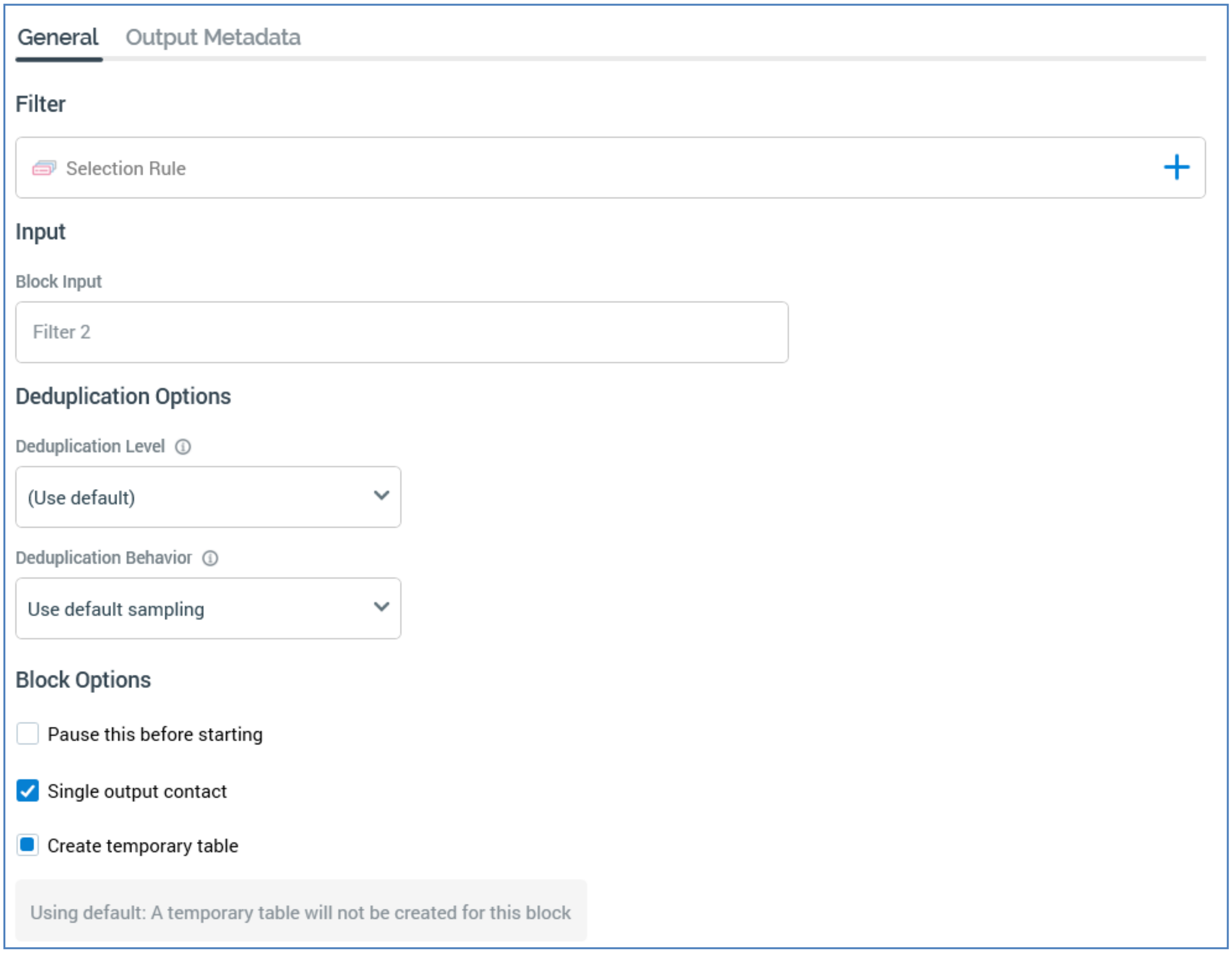
A block's name is set using the property at the top of the Builder:



A block's name is mandatory and can be a maximum of 100 characters. The block must be named uniquely within its audience (note that this validation check is only performed if orphaned blocks do not exist within the template).

Depending on the type of block being configured, the dialog contains a number of tabs, each of which is discussed separately.

15.19.3 General Tab



Any block-specific properties are displayed at the top of the tab – for example, the Filter block above has a Filter selection rule property.

An Input section is shown if the block is not the first within the audience. It exposes a single property:

- Block input: if the block's preceding block exposes a single output, a read-only representation of its name is displayed. If multiple outputs are available, you can select the input using a dropdown list.

The following properties are available in the Deduplication Options section:

- Deduplication level: this property provides the ability to override the audience's deduplication level within a specific block and any of its descendants. The selected deduplication level must be compatible with the audience's audience definition.

- Deduplication behavior: this dropdown exposes the following values:

- Use default sampling (the default)
- Use random sampling
- Sample ascending using
- Sample descending using

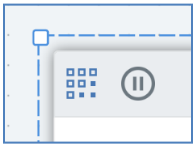
If either of the latter two are selected you must specify an attribute by which to deduplicate. You cannot select a model project, exists in table, Boolean or parameter attribute. Having selected an attribute, you can view its details in the File Information dialog or clear it.

Full details on Deduplication are provided elsewhere in the documentation.

A message displayed at the bottom of the tab at all blocks other than the Filter block confirms that a temporary table will be created during its execution:

The following properties are available in the Block Options section:

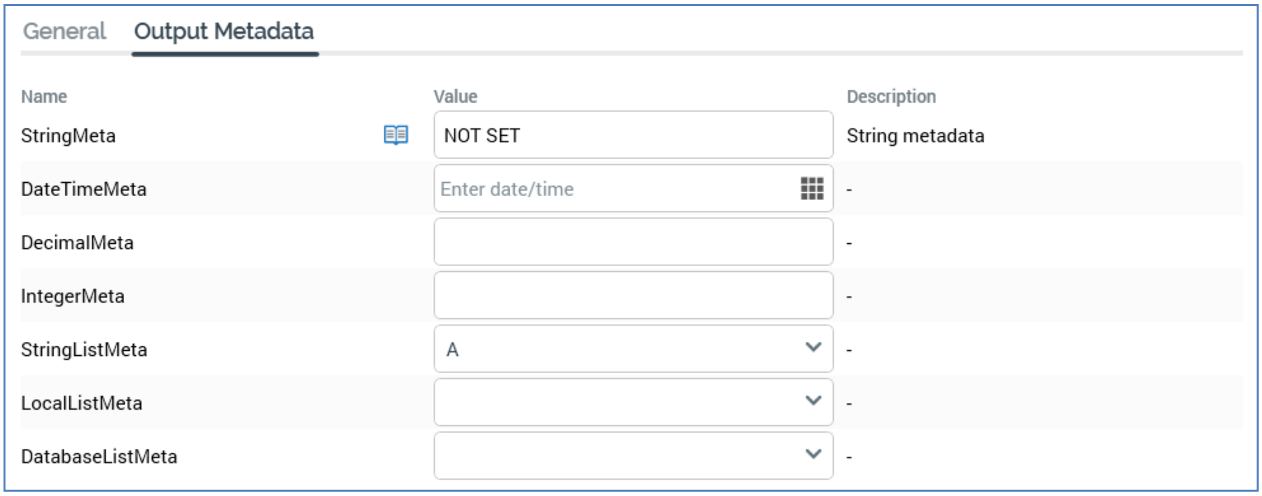
- Pause this before starting: a checkbox, with the default value being unchecked. Pause... is accompanied by legend that reads 'Note that audience instances based on this template will pause and will need to be restarted manually'. If the checkbox is checked, the icon displayed within the block in the workspace is accompanied by a smaller pause icon.

- Single output contact: this checkbox is checked by default. At a block's execution, if its execution order is greater than 1:
  - If the property is checked, any contacts made via preceding blocks at the same level within the audience are not targeted by the block.
  - If the property is unchecked, contacts made via preceding blocks at the same level within the audience are targeted by the block.

15.19.4 Output Metadata Tab

Block types other than splits, cell lists and audience blocks have a single output only. For these block types, the Output Metadata tab is used to configure a block's metadata overrides.



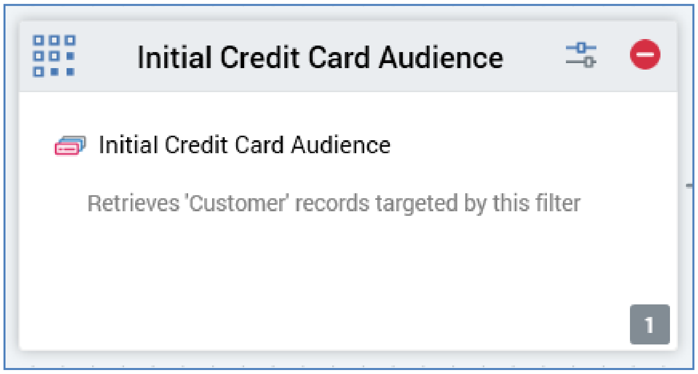
You can override metadata values, set within an ancestor block or within the audience, at the level of a block's output(s). If the block is the starting block, metadata values default to those of the audience; if not the starting block, metadata values default to those of the parent block. If a metadata value is set explicitly for a block's output, if that value is set subsequently within an ancestor block or the audience, the explicitly-set value is not overridden. You can revert an overridden metadata value to its inherited value.

You can use metadata parameters when specifying a string metadata attribute's value.

Note that all outputs within an audience must be named uniquely. Appending one or more spaces to an output's name does not remove this constraint.

15.20 Filter

Filters are used to narrow down the set of records to be retrieved when an audience instance is run.



A filter must always be associated with a single selection rule. The selection rule is applied to the output, or one of the outputs, of the block that precedes the filter (if one exists) in order to further refine the data set.

For example, consider an audience that contains a filter, to which a selection rule that selects only females is attached. Another filter is added, and a connection created from the original to the new filter. A selection rule that selects only married people is added to the second filter. The second filter is applied to the output of the first, so that only married females are selected.

15.20.1 Adding a Filter to an Audience

You can add a new filter block to an audience by dragging a filter block from the Audience Blocks section within the toolbox. Doing so creates a new, unconfigured filter block within the workspace.

The new filter is selected automatically and, by default, is named ‘Filter’. If a filter named ‘Filter’ already exists within the current audience, the newly-created filter is named ‘Filter 2’ (note that, if required, the numerical value can be incremented accordingly).

Following the addition of a filter block, an asterisk is appended to the audience’s name displayed within the current tab, indicating that unsaved changes now exist.

15.20.2 Adding a Filter by Dropping a Selection Rule

You can create a filter by dragging a selection rule from the toolbox and dropping it directly onto the Audience Designer workspace.

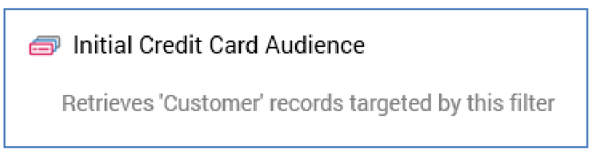
The new filter is named by default in accordance with the name of the selection rule. If a filter of that name already exists within the current audience, the newly-created filter is named '[Filter Name] 2' (note that, if required, the numerical value can be incremented accordingly).

The new filter's Selection rule property is set to the rule that was dropped onto the workspace. The link between the block and selection rule is dynamic – that is, the block is always linked to the most up-to-date version of the selection rule. The selection rule's name is shown in the filter, which is selected automatically.

Following the addition of a filter block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.20.3 Configuring a Filter in the Workspace

A filter has only a single unique property that may be configured directly within the workspace:



- Selection Rule: a filter must be associated with a single selection rule. You can browse for a filter's selection rule by clicking the button displayed when you hover over the Selection rule property. Doing so displays the File System Dialog, within which you may navigate the RPI file system to locate a selection rule for the filter (only selection rule files are shown).

  You can also drag a selection rule from the toolbox and drop it onto the filter block.

  The link between the block and selection rule is dynamic – that is, the block is always linked to the most up-to-date version of the selection rule. Having added a selection rule to a filter, the rule's name is displayed within the filter block. If you add an incorrect selection rule to a filter, you can replace it by either browsing or dragging and dropping.

  Having configured a filter with a selection rule, a message is displayed at the block. The message shown depends on whether the audience's audience definition is transactional, and whether the selection rule with which the filter is configured shares the definition's transactional resolution level (for more details on transactional audience definitions please see the Configuration Workbench documentation).

  If the audience definition is transactional and the filter's selection rule shares the transactional resolution level, the following message is displayed:

'Retrieves 'Customer' records along with a matching 'Sales' record for each, as targeted by this filter

In this example, the audience definition's resolution level is 'Customer' and transactional resolution 'Sale'.

In all other circumstances a message like the following is displayed:

Retrieves 'Customer' records targeted by this filter

In this example, the audience definition's resolution level is 'Customer'.

Having configured a filter with a selection rule, you can click Open Latest version to display the rule in question in the Rule Designer. If the Designer is already open, the rule is displayed there. If the Designer is not open, the rule is displayed in a new Designer instance.

Note that you may, if desired, remove a selection rule from a filter using the Clear button within the filter block.

Note that you cannot use an anonymous auxiliary database-resolving selection rule in a Filter block.

15.20.4 Configuring a Filter using the Audience Block Builder

The following properties can be managed for filter blocks in the General tab of the Audience Block Builder:

- Filter: you must configure the block with a selection rule. Details on doing so can be found in the Configuring a Filter in the Workspace section.
- Create temporary table: a tri-state checkbox.

Create temporary table

If unchecked, a temporary table is not created for the block during audience execution. If checked, a temporary table is created for the block.

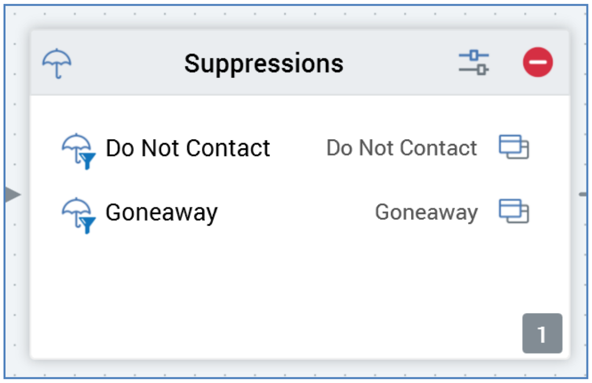
If in an indeterminate state (as pictured), the block adopts the default position adopted by the audience definition upon which the template is based. If the definition's Ensure all blocks execute separately property is unchecked, a temporary table is not created for the block at audience execution. If the property is checked, a temporary table is created.

A read-only description of the ramification of the current state of the checkbox is displayed at the bottom of the tab:

Note that the property is only enabled if the filter is followed by another filter. A temporary table is always created for the last filter in a chain thereof (in such a case, if all blocks' Create temporary table checkboxes are unchecked, all filters' SQL is concatenated and executed in a single statement).

15.21 Suppressions Block

Suppressions blocks are similar in nature to filters; however, they differ in two fundamental respects.



Firstly, a suppressions block is not used to target records - rather, it defines the records to which messages should definitely not be sent. These may include records of the deceased, and those who have explicitly requested not to receive communications.

Secondly, a suppressions block may contain more than one selection rule, in contrast to a filter's single rule. A suppressions block ensures that all records identified by its selection rules will not be targeted when an audience instance based upon its parent template is run.

Note that a suppressions block must contain at least one suppression.

15.21.1 Adding a Suppressions Block to an Audience

You can add a new suppressions block to an audience by dragging a suppressions block from the Audience Blocks section within the toolbox and dropping it onto the workspace. Doing so creates a new, blank suppressions block within the workspace.

By default, the new suppressions block is named 'Suppressions'. If a suppressions block named 'Suppressions' already exists within the current audience, the newly-created suppressions block is named 'Suppressions 2' (note that, if required, the numerical value can be incremented accordingly).

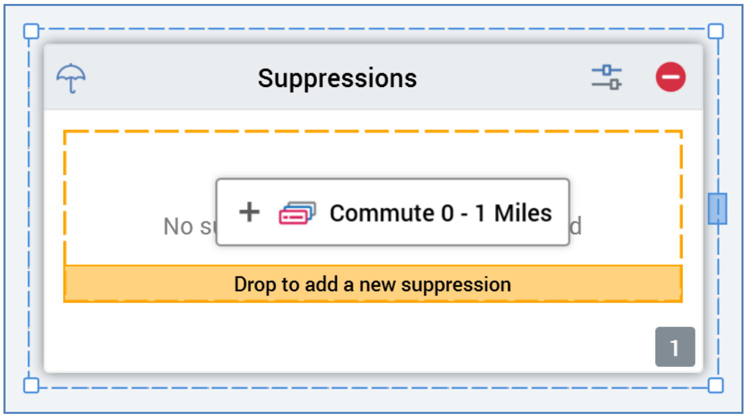
The new suppressions block is selected automatically.

Following the addition of a suppressions block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.21.2 Configuring a Suppressions Block in the Workspace

It is possible to configure a suppression block's suppressions directly the workspace.

A list of the suppressions block's suppressions is displayed within the block. You may drag one or more selection rules from the toolbox and drop them directly onto the suppressions block to add suppressions. When you do so, an orange indicator is displayed:



By default, the name of a suppression is the name of the selection rule. Each suppression added in this way is listed within the suppressions block. Selection rule names are also shown in the suppressions block.

The link between the suppressions block and a selection rule is dynamic – that is, the block is always linked to the most up-to-date version of the selection rule.

Each suppression listed at a suppressions block is accompanied by an inline Open Latest Version button. Clicking the button opens the rule in the Rule Designer.

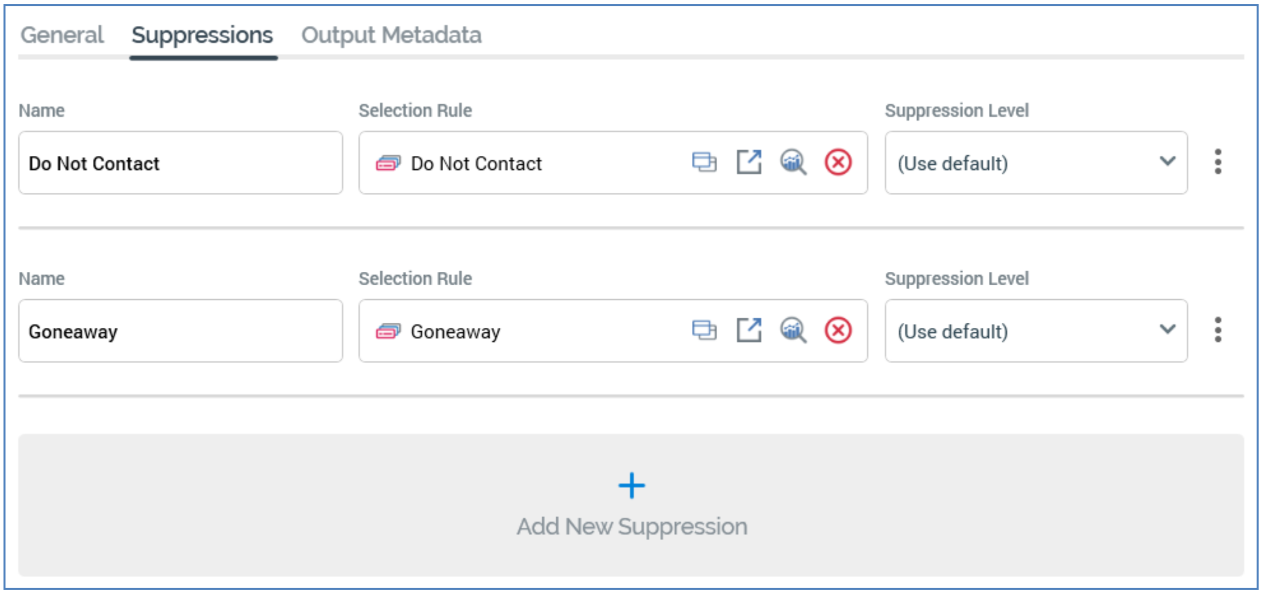
15.21.3 Configuring a Suppressions Block using the Audience Block Builder – General Tab

An additional property is displayed within the suppression block Audience Block Builder's General tab:

- Provide drop-off counts: this checkbox is checked by default. On execution of an audience, on invocation of View Results and Log at the suppressions block within the Audience Instance Viewer, if the setting was checked, the Show Suppression Results toggle button is available. If the setting was unchecked, the button is not displayed.

15.21.4 Configuring a Suppressions Block using the Audience Block Builder – Suppressions Tab

A suppressions block's list of suppressions is managed within its Audience Block Builder's Suppressions tab.



A suppressions block must contain at least one suppression.

The following are exposed at each suppression in the list:

- Name: mandatory, and a maximum 100 of characters; a suppression's name must be unique within the suppressions block. By default, a new suppression added within the Suppressions tab is named 'New suppression'. If you add another, it is called 'New suppression 2' (this number can be incremented as required).

- Selection Rule: you must associate a suppression with a selection rule. You can browse the RPI file system to locate a rule or drag a rule onto the suppression from the toolbox. The link between the suppressions block and rule is dynamic – that is, the block is always linked to the most up-to-date version of the rule. Having configured the rule, you can invoke Open Latest version to display the rule in question in the Rule Designer. If the Designer is already open, the rule is displayed there. If the Designer is not open, the rule is displayed in a new instance of the Designer. You can also clear the property.

  Note that an anonymous auxiliary database-resolving selection rule can be used at an Audience's Suppressions block.

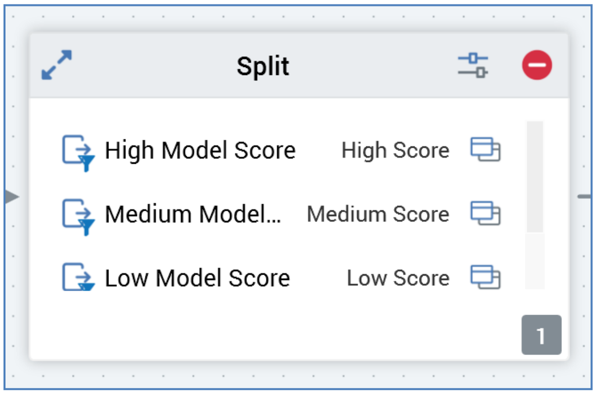
- Suppression Level: for each suppression, you can define the suppression level - the level at which to join the audience's resolution level to the suppression's selection rule. Suppression level is only enabled when a selection rule has been associated with the suppression. The suppression level drop-down is populated with a list of existing database keys. Suppression level defaults to '[Use default]'.

- Actions menu: exposing the following:
  - Move up
  - Move down
  - Remove: not protected by 'Are You Sure?'

An Add New Suppression button is provided at the bottom of the suppressions list.

15.22 Split

A split is used to split an audience into a series of outputs.



Specific metadata values may then be applied to each output. A given split output may also serve as an input to a subsequent child block.

Split outputs can be filtered by association with a selection rule and can be capped at a specific percentage or volume.

When displayed in the workspace, a split displays a list of its outputs, along with the configured selection rule and capping value for each (if assigned).

15.22.1 Adding a Split to an Audience

You can add a new split to an audience by dragging a split from the Audience Blocks section within the toolbox. Doing so creates a new, blank split within the workspace.

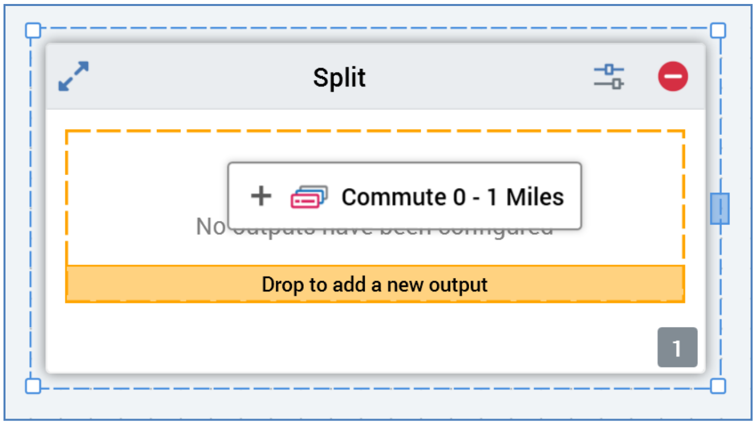
By default, the new split is named 'Split'. If a split named 'Split' already exists within the current audience, the newly-created split is named 'Split 2' (note that, if required, the numerical value can be incremented accordingly).

The new split is selected automatically.

Following the addition of a split block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.22.2 Configuring a Split in the Workspace

A split's outputs are listed within its visual representation within the workspace, and you can add outputs by dropping selection rules directly onto the split's outputs list. When you drag one or more selection rules from the toolbox and hover over a split's output list a dashed highlight is shown.



When you drop the selection rule(s), new outputs are created. The default names of the outputs correspond to the names of the dropped selection rules.

The link between the split and selection rule is dynamic – that is, the block is always linked to the most up-to-date version of the selection rule.

Any splits that are configured with selection rules are identifiable by the presence of a rule icon at each split displayed within the block.

Each split configured with a rule listed at a split block is accompanied by an inline Open Latest Version button. Clicking the button opens the rule in the Rule Designer.

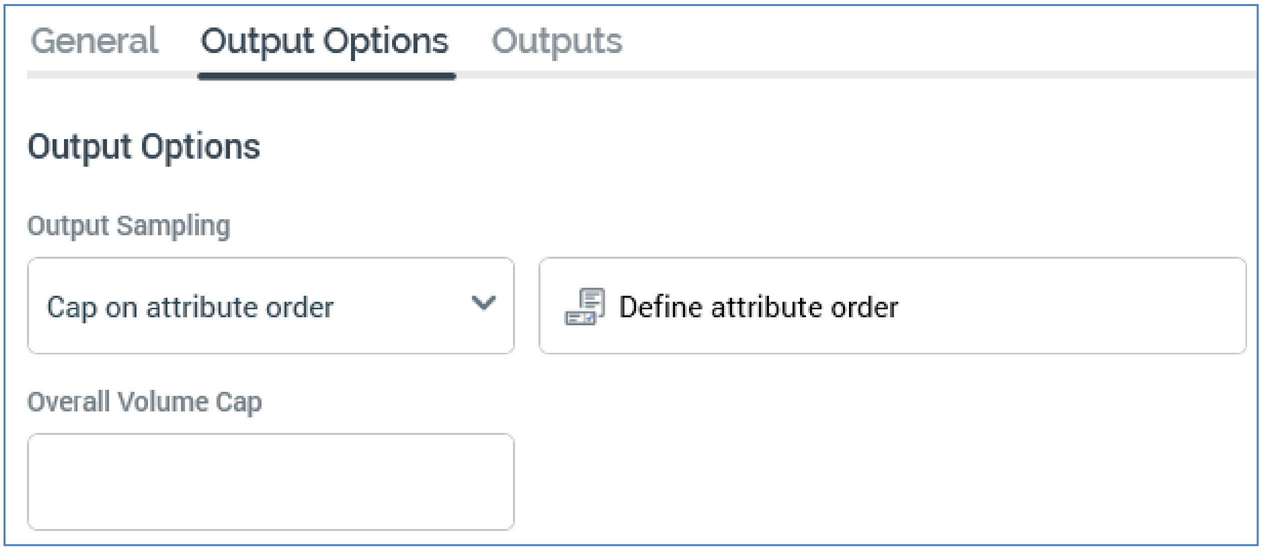
15.22.3 Configuring a Split using the Audience Block Builder – General Tab

An additional property is displayed within the split block Audience Block Builder's General tab:

- Deduplicate after filtering: this checkbox is unchecked by default. At split block execution, if the property is unchecked, deduplication is performed at the block prior to application of its output filters. If checked, deduplication is performed afterwards.

15.22.4 Configuring a Split using the Audience Block Builder – Output Options Tab

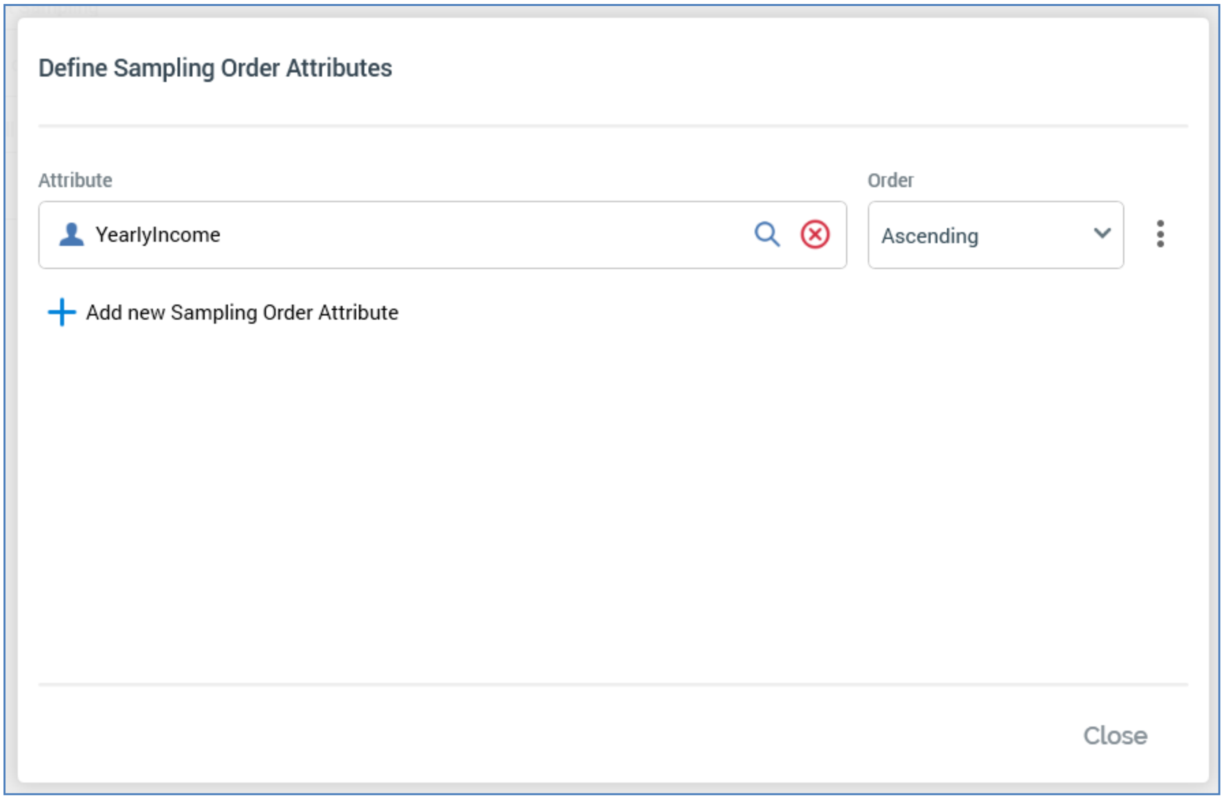
The following split block properties are managed in the Audience Block Builder's Output Options tab:



- Output sampling: allows you to define how capping will be applied across the split's outputs. Output sampling is selected from a drop-down list, values for which are:
  - Use random capping: the default value. Records are capped randomly – as an example, say Output sampling is set to Use random capping, and an output is defined as being capped at 40,000 records. The 40,000 records will be selected randomly when an audience instance is run in an interaction.
  - Cap on attribute order: if this value is selected, the Define attribute order button is displayed to the right of this property. Records are chosen on the basis of their values for the attributes defined in the Define Sampling Order Attributes dialog (see Define attribute order, below, for more details).
  - Nthing on attribute order: if this value is selected, the Define attribute order button is displayed to the right of this property. 1 in every *n* of the records available to the split is selected per output, based on the order defined in the Define Sampling Order Attributes dialog.

    If the exact number of records cannot be selected, the cycle is repeated until the requisite number of records have been included within the output. Note that the application of a filter at an output can have an adverse effect on the ability to meet the number of required records quorum, meaning that additional pass(es) through data may be required.

- Define attribute order: this button is enabled when Output sampling is set to one of Cap on attribute order or Nthing on attribute order. It allows you to define the order by which records will be selected when capping is applied across all of a split's outputs. Clicking the button displays the Define Sampling Order Attributes dialog.



The dialog contains the following:

- Attributes list: the attributes used to determine the basis by which records will be chosen when capping is applied across the split's outputs are listed herein. At least one attribute must be provided for the audience to be valid.

  You can add an entry to the list by dragging an attribute from the toolbox onto the list, or by clicking the Add new Sampling Order Attribute button.

  For each list entry, the following are shown:

  - Attribute: provision of an attribute is mandatory. You can browse for an attribute, or you can configure the property using drag and drop. You cannot select an exists in table or parameter attribute. Once an attribute has been provided, you can view its details in the File Information Dialog. You can also clear the selected attribute.
  - Order]: this dropdown allows you to define the basis upon which records with values for the attribute are to be selected for capping. Two values are provided for the property: Ascending (the default) and Descending.
  - Actions meu: exposing the following options:
    - Move Up
    - Move Down

        - Remove: not protected by 'Are You Sure?'

    - Add new Sampling Order Attribute: this button adds a new, unconfigured row to the bottom of the list.

    - Close: clicking this button confirms your changes and removes the dialog from display.

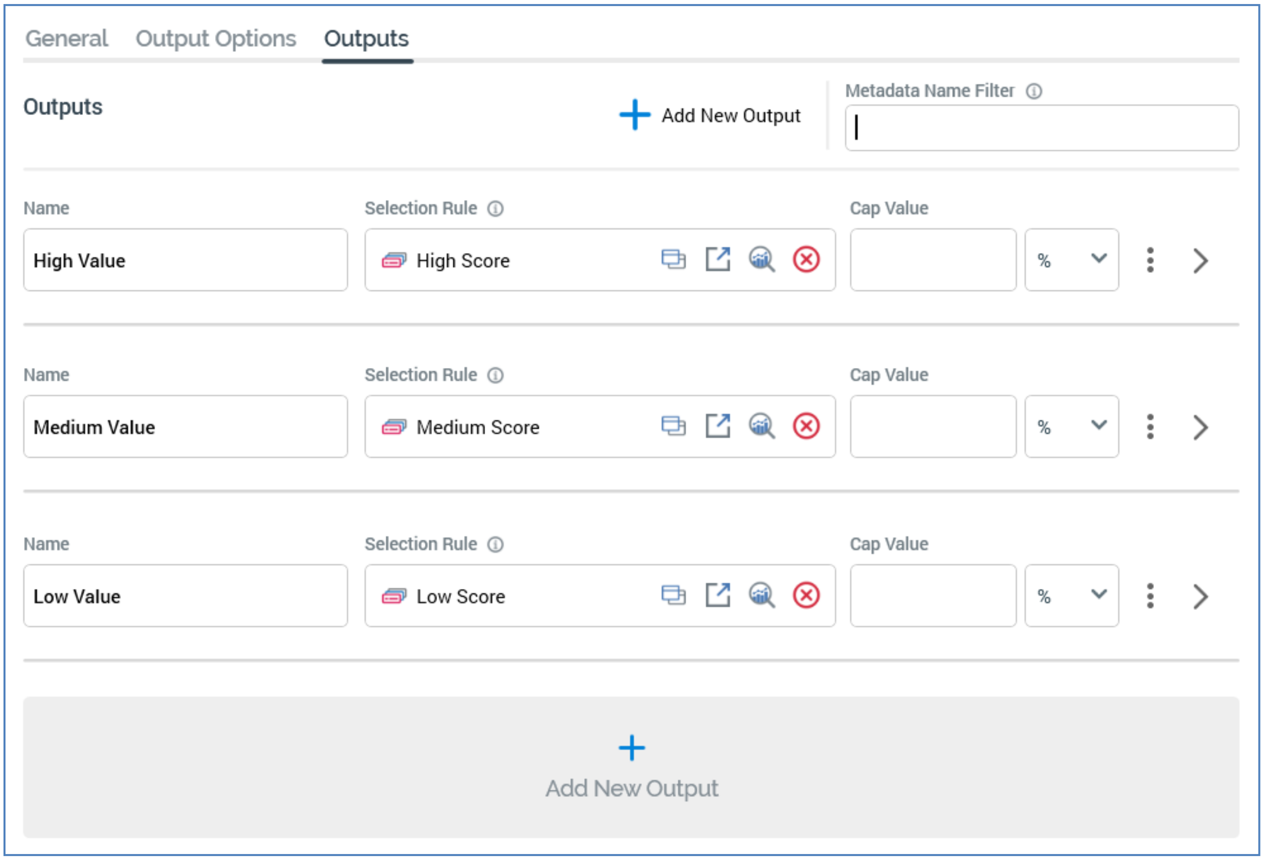
    On audience execution, split capping is applied to records in accordance with the stipulations made at the dialog.

    For example, if an output is capped at 10%, Output sampling is set to Cap on attribute order, and Sampling order attributes are defined as Yearly Income (descending), followed by Commute Distance (descending), records with the highest income values will be selected first. Within that set, records with the lowest commute distance will be selected for inclusion within the capped cell.

- Overall volume cap: an optional integer field that allows you to define an overall maximum number of records that can be output by the split block. For example, if you have a split block that produces three equal outputs capped at 10,000 records each, and you define an Overall volume cap of 15,000 records, the first output will contain 10,000 records, the second 5,000 records and the final output will be empty (but will still be created).

15.22.5 Configuring a Split using the Audience Block Builder – Outputs Tab

A split's outputs define how its input data is to be segmented when it is run. Outputs listed in the Outputs tab:

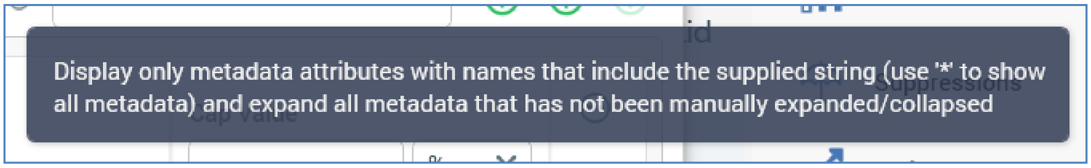


The list is initially empty, and a message is displayed:

You can add a new output using the button shown at the bottom of the list.

If a record qualifies for inclusion in more than one output, it will appear in the output that appears first in the split. A split must contain at least one output.

You can filter the list of metadata attributes displayed at outputs using the Metadata name filter field, at which the following information tooltip is shown:



You can configure the following split output properties:

- Name: an output's name may be a maximum of 100 characters and is mandatory. The name must be unique within the audience. By default, a new output is named 'New Output'. If an output with this name already exists, the new output is called 'New Output 2' (note that this numerical value can be incremented if required).

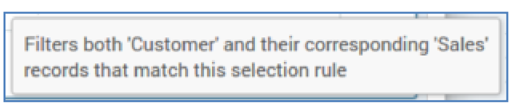
- Selection Rule: this optional property allows you to associate a split output with a selection rule. The rule is run when the split is executed. Only records that are targeted by the rule are included in the output.

  You can associate a rule with an output by browsing the RPI file system, or by dragging a rule from the toolbox and dropping it onto the output. The link between the split and selection rule is dynamic – that is, the block is always linked to the most up-to-date version of the selection rule.

  Having configured a split with a selection rule, an information icon is displayed to the right of the rule's name.

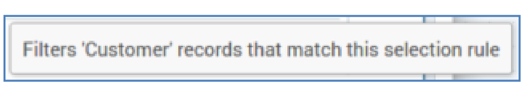
  

  Hovering over the icon displays an informational tooltip. If the audience is configured with a transactional audience definition, and the resolution of the selection rule is the same as the definition's transactional resolution level, the following message is shown:

  In this example, the audience definition's resolution level is 'Customer' and transactional resolution 'Sales'.

  In all other cases this message is displayed:

  In this example, the audience definition's resolution level is 'Customer'.

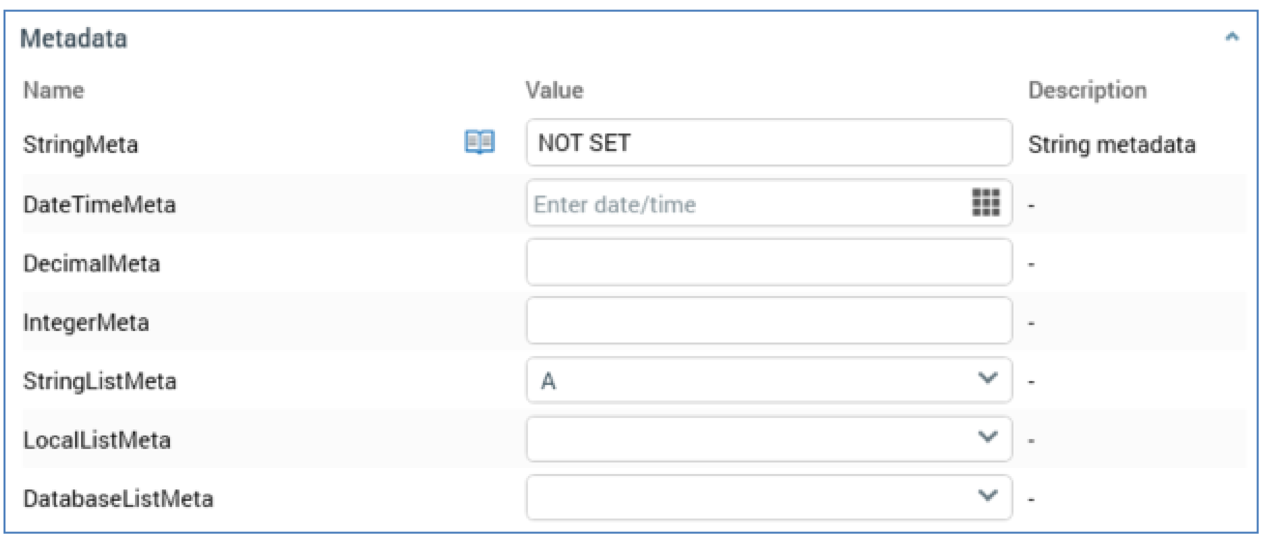
  Also having configured a split with a rule, you can invoke Open Latest version to display the rule in question in the Rule Designer. If the Designer is already open, the rule is displayed there. If the Designer is not open, the rule is displayed in a new instance of the Designer. You can also clear the property.

Note that you cannot use an anonymous auxiliary database-resolving selection rule in a Split block.

- Cap Value: defines the value at which the output will be capped. For example, if Cap by volume or percentage is set to Volume, and Capping value to 10,000, a maximum of 10,000 records will be included in the output generated when the split is run. If Cap by... is set to Percentage and Capping value to 10, a maximum of 10% of the block's total input records will be included in the output. If Cap by... is set to Volume, Capping value must be a positive integer. If set to Percentage, it must be a numerical value greater than 0 and less than or equal to 100. The maximum total percentage value across all split outputs must not exceed 100%. Similarly, if percentage caps totaling 100% exist within the split, and you add an additional value cap, the audience becomes invalid. Where the final output in a split exists without an explicit cap value, the output generated from the output will contain the remainder of records not picked up by preceding outputs.

- Percentage/Volume: this field determines whether the output's cap - the maximum number of records to be included within the output - is defined as an explicit numerical volume value or as a percentage of the total of number of records output by the split. You can toggle the setting, which defaults to Percentage.

- Metadata: you can override previously-assigned metadata attribute values at the split output level. A Metadata section appears at the bottom of an output and can be expanded or hidden as required.



You can also revert a value to that which was assigned previously. You can use metadata parameters when specifying a string metadata attribute's value.

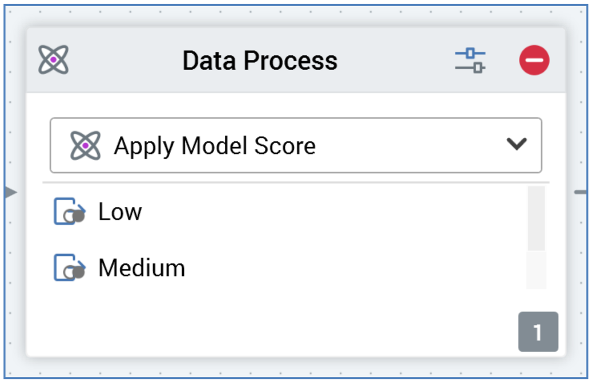
An inline menu button is also displayed at a split:

- Actions: exposing the following options:

- Move up
- Move down
- Remove: not protected by ‘Are You Sure?’

15.23 Data Process Block

A data process block allows you to invoke the execution of a RedPoint Data Management (RPDM) project from within an audience.



A data process block is configured with a data process project. Data process projects are managed within their own dedicated configuration interface. Each data process project contains a reference to an RPDM project.

A data process project can (but does not have to) execute its RPDM project against the dataset provided as the block's input. Optionally, it can write the results of project execution to a data warehouse table. For example, a series of customer records supplied as the input to a data process block can be passed to its RPDM project, and a score generated for each record therein. A series of bands can be defined at the data process project, which leverage the execution results – for example, creating High, Medium and Low score bands.

For more information on data process projects, please see the Configuration Workbench documentation.

15.23.1 Adding a Data Process Block to an Audience

You can add a new data process block to an audience by dragging a data process block from the Audience Blocks section within the toolbox. Doing so creates a new, unconfigured data process block within the workspace.

The new data process block is selected automatically and, by default, is named 'Data Process'. If a data process block with this name already exists within the current audience, the newly-created data process block is named 'Data Process 2' (note that, if required, the numerical value can be incremented to ensure uniqueness).

Following the addition of a data process block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.23.2 Adding a Data Process Block by Dropping a Data Process Project

You can create a data process block by dragging a data process project from the toolbox and dropping it directly onto the Audience Designer workspace. A data process project is shown in the Audience Designer toolbox if its Show in toolbox property is checked in the Data Process Projects configuration interface.

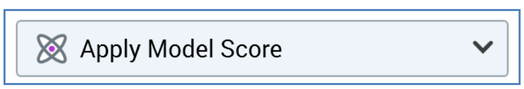
The new data process block is named by default in accordance with the name of the data process project. If a data process block of that name already exists within the current audience, the newly-created data process block is named '[Data Process Project] 2' (note that, if required, the numerical value can be incremented to ensure uniqueness).

The new data process block's Data process project property is set to the project that was dropped onto the workspace.

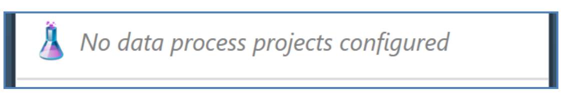
Following the addition of a data process block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.23.3 Configuring a Data Process Block in the Workspace

A data process block has a single unique property that may be configured directly within the workspace:

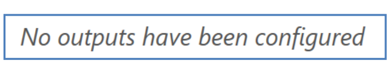


- Data process project: the property is set using a dropdown. Provision of a Data process project for the data process block is mandatory. If no data process projects have been configured, a message is displayed at the data process block:

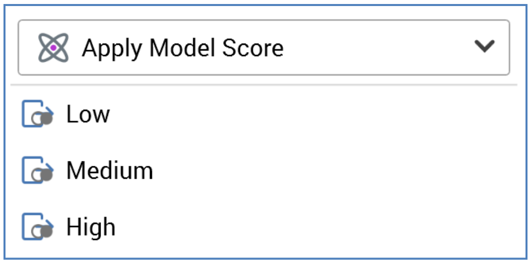
  

  On selecting a data process project, if its Icon property is set, the custom icon is displayed (both at the dropdown and data process block, once selected).

  If the selected data process project's Use result in audience property is checked, if no outputs are configured at the data process block, a message is displayed:

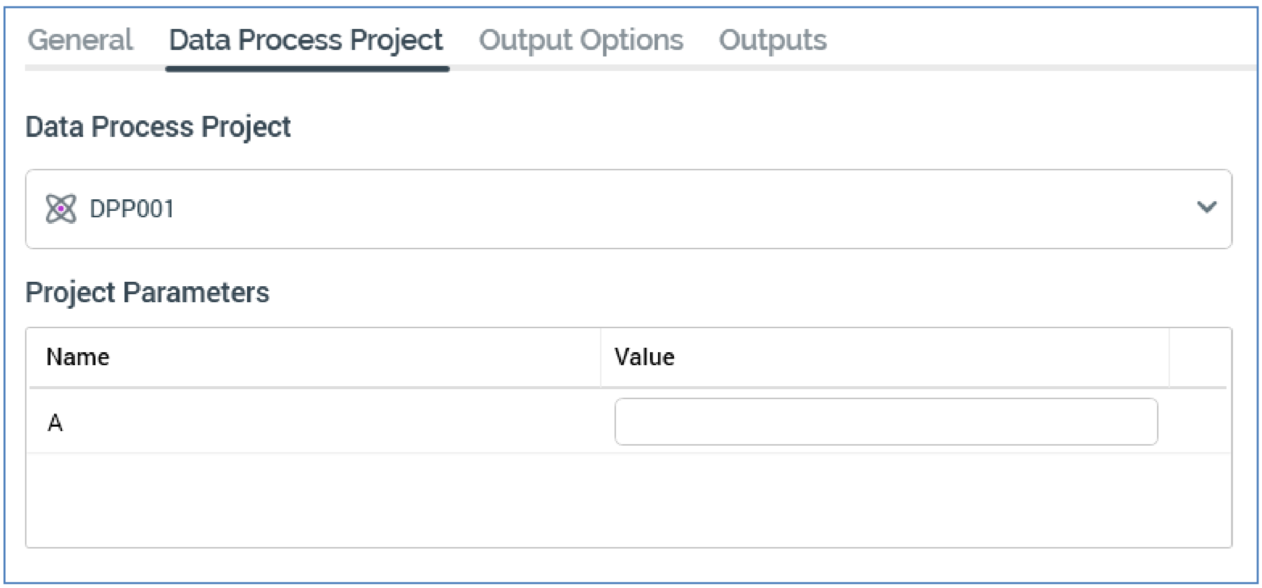
  

  Otherwise the data process block's outputs are listed:



15.23.4 Configuring a Data Process Block using the Audience Block Builder – Data Process Project Tab

When configuring a data process block, the Audience Block Builder's Project tab contains Data Process Project and Parameters sections.



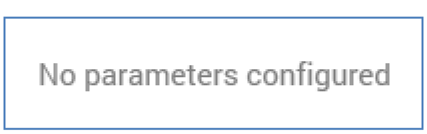
The Data Process Project section exposes a single property:

- Data process project: this property is set as per the equivalent property shown at a data process block.

The Project Parameters also exposes a single property:

- Project Parameters: a grid listing all of the selected data process project's project parameters is displayed.

  A message is displayed when a Data process project is yet to be selected, or when the selected data process project has no configured project parameters:



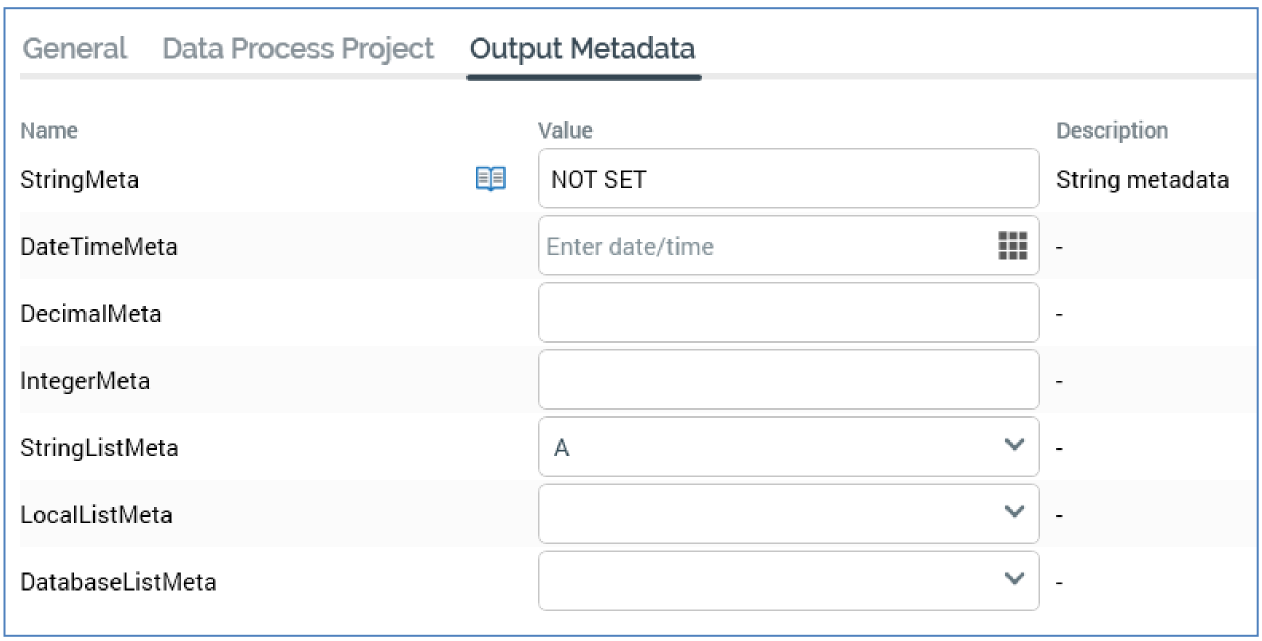
For each project parameter, the following are displayed:

- Name: read-only
- Value: the parameter's default value is shown (if appropriate). You can update the parameter's value using a data type-appropriate control. If a string parameter that supports a list of values, you can select a value using a dropdown.

15.23.5 Configuring a Data Process Block using the Audience Block Builder – Other Tabs

When configuring a data process block, the other tabs shown within the Audience Block Builder's depend on whether the selected data process project's Use results in audience property is checked or unchecked.

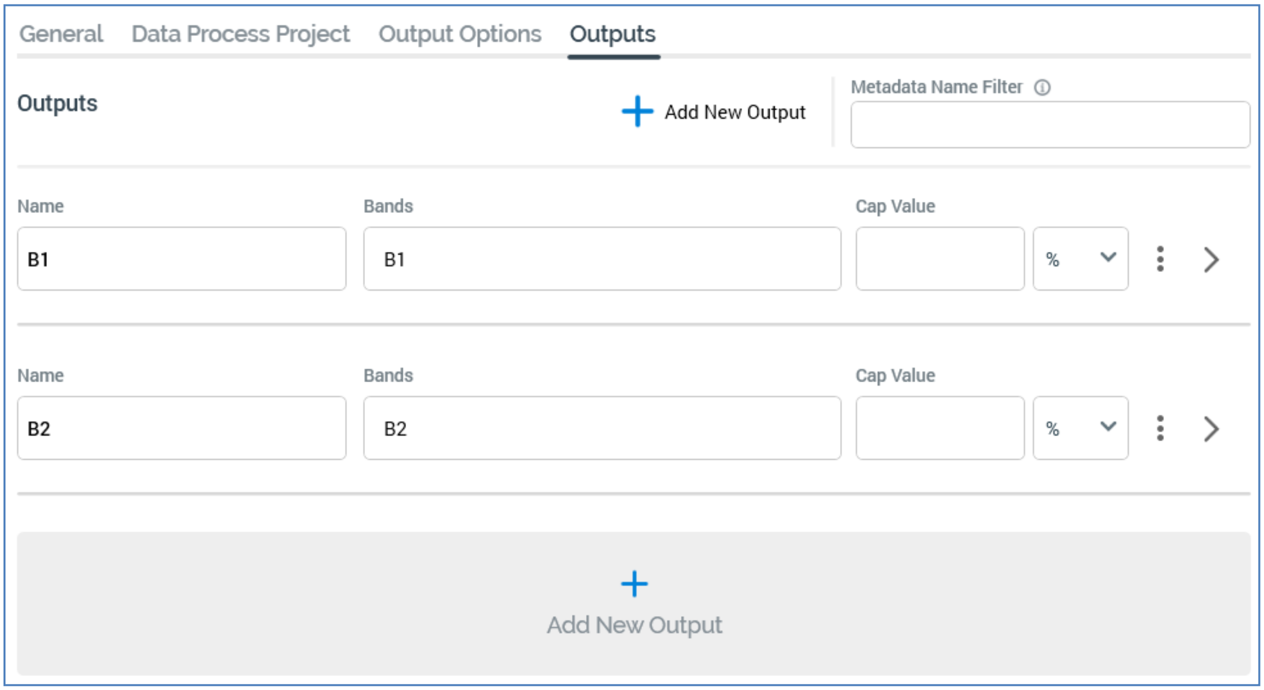
If the property is unchecked, or if a data process project has yet to be selected, the tab is named Output Metadata, and can be used to manage the block's metadata:



If the data process project's Use results in audience property is checked, Output Options and Outputs tabs are displayed.

The Output Options tab is documented in the Configuring a Split using the Audience Block Builder – Output Options Tab section.

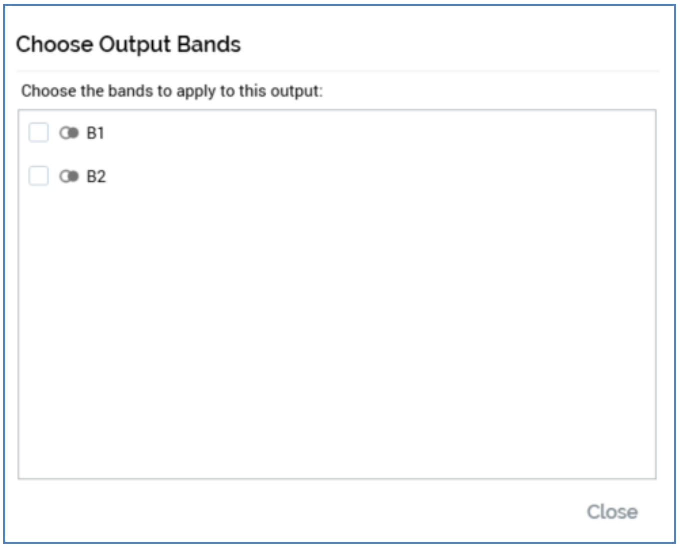
The Outputs tab is similar to the Split block equivalence, as documented in the Configuring a Split using the Audience Block Builder – Outputs Tab section.



Its functionally mirrors its Split block peer, with the latter's Selection Rule property being replaced by the following:

- Bands: this property allows you to define that records that fall within the selected data process project bands are to be included in the output.

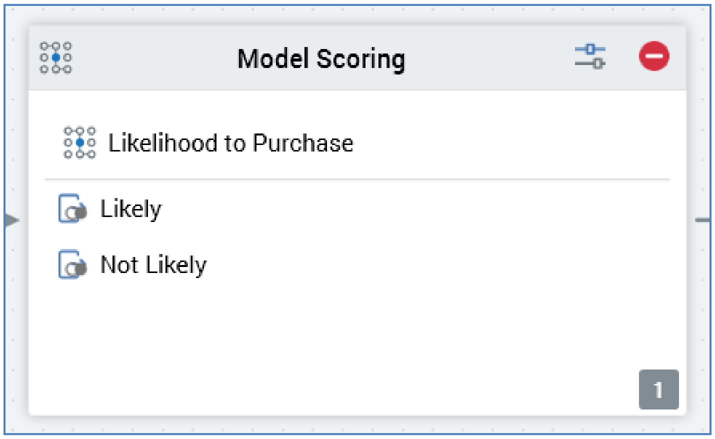
  If the selected data process project contains no bands, the text 'N/A' is shown. Otherwise, '[n] band(s)' is displayed (where [n] is number of bands selected for the output. You can click the same to select bands to assign to the output using the Choose Output Bands dialog.



Note that provision of outputs at a data process block is optional.

15.24 Model Scoring Block

A model scoring block allows you to leverage the results of execution of a Redpoint Automated Machine Learning (AML) model in an audience.



A model scoring block is configured with a model project. Model projects are managed within their own dedicated designer. Each model project contains a reference to an AML model.

For more information on model projects, please see the Model Project Designer documentation.

15.24.1 Adding a Model Scoring Block to an Audience

You can add a new model scoring block to an audience by dragging a model scoring block from the Audience Blocks section within the toolbox and dropping it onto the Audience Designer workspace. Doing so creates a new, unconfigured model scoring block within the workspace.

The new model scoring block is selected automatically and, by default, is named 'Model Scoring'. If a model scoring block with this name already exists within the current audience, the newly-created model scoring block is named 'Model Scoring 2' (note that, if required, the numerical value can be incremented to ensure uniqueness).

Following the addition of a model scoring block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.24.2 Adding a Model Scoring Block by Dropping a Model Project

You can create a model scoring block by dragging a model project file from the toolbox and dropping it directly onto the Audience Designer workspace.

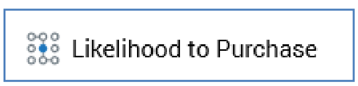
The new model scoring block is named by default in accordance with the name of the model project. If a model scoring block of that name already exists within the current audience, the newly-created model scoring block is named '[Model Project] 2' (note that, if required, the numerical value can be incremented to ensure uniqueness).

The new model scoring block's Model project property is set to the project that was dropped onto the workspace.

Following the addition of a model scoring block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.24.3 Configuring a Model Scoring Block in the Workspace

A model scoring block has a single unique property that can be configured directly within the workspace:



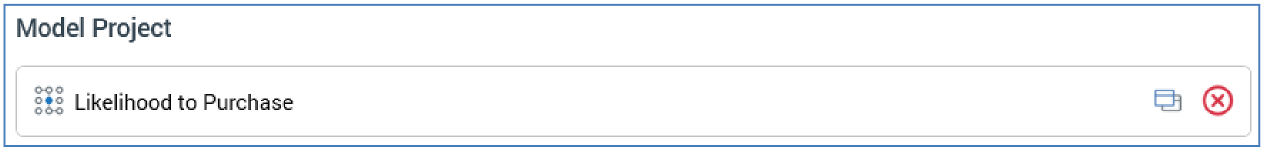
- Model project: you must configure the block with a model project file. You can browse for a model project, or populate the property using drag and drop. You can also initiate the creation of a new model project file.

The model scoring block's outputs are also listed at the block, but are set in the Audience Block Builder's Outputs tab.

15.24.4 Configuring a Model Scoring Block using the Audience Block Builder

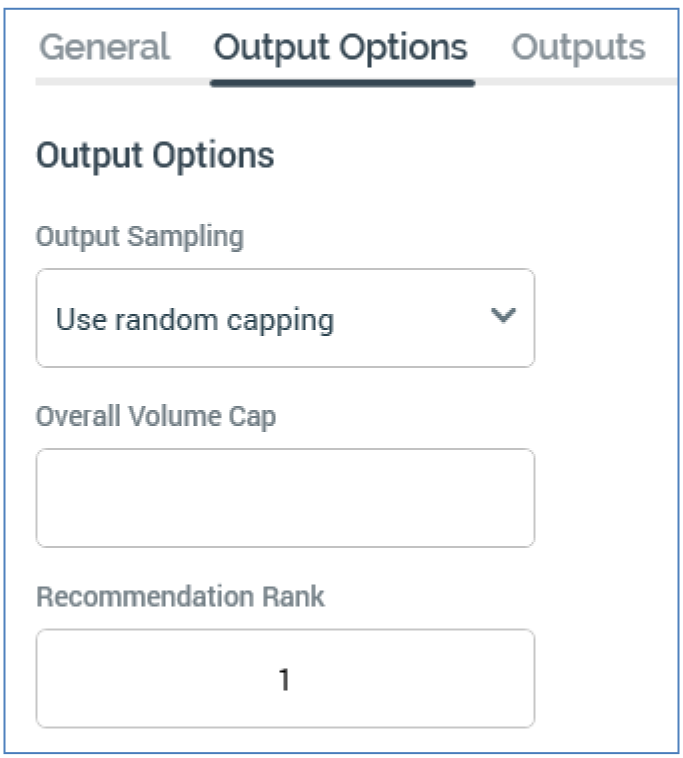
When configuring a model scoring block, the Audience Block Builder contains General, Output Options and Outputs tabs.

The General tab is documented elsewhere in the Audience Designer documentation. An additional property is exposed:



- Model Project: you must configure the block with a model project file. You can browse for a model project, or populate the property using drag and drop. You can also initiate the creation of a new model project file.

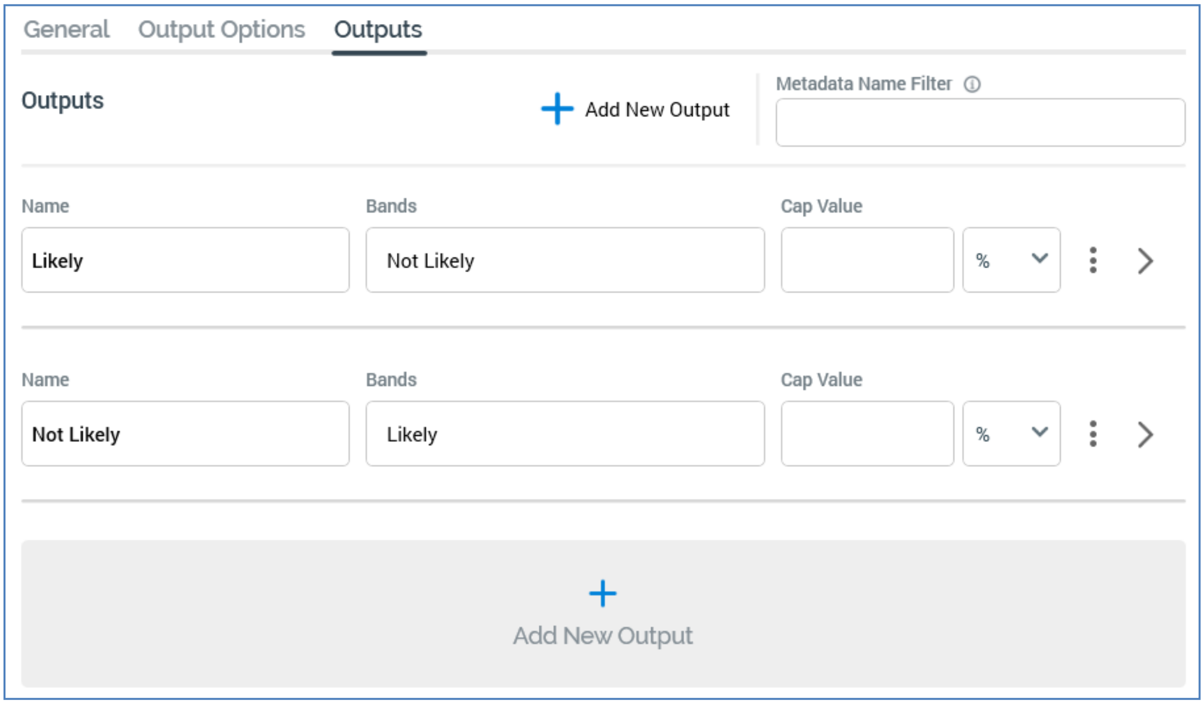
The contents of the Output Options tab are as follows:



Details of the Output Sampling and Overall Volume Cap properties can be found in the Split block documentation. One additional property is shown:

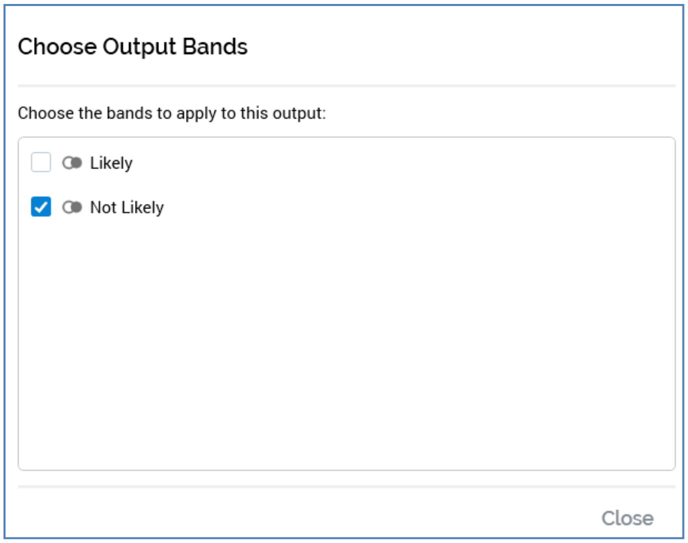
- Recommendation Rank: this property is only shown when the model project with which the block is configured is based on an AML Recommender model. It allows you to specify which of the ranked recommendation results returned by the model should be used by the block. An integer property, it defaults to the value 1, and accepts a range of values from 1 to 99. At execution, targeted records' model band membership is determined using recommendation accordant with the Recommendation Rank specified.

The Outputs tab allows you define how the block's data will be segmented. It is similar to the Split block equivalence, as documented in the Configuring a Split using the Audience Block Builder – Outputs Tab section.



Its functionally mirrors its Split block peer, with the latter's Selection Rule property being replaced by the following:

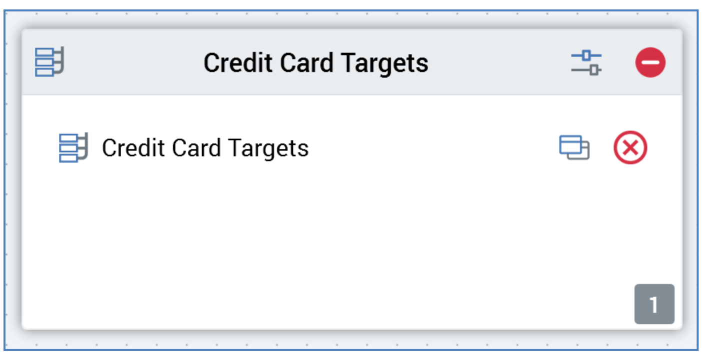
- Bands: this property allows you to define that records that fall within the selected model project bands are to be included in the output. If the selected model project contains no bands, the text 'N/A' is shown. Otherwise, '[n] band(s)' is displayed (where [n] is number of bands selected for the output). You can click the same to select bands to assign to the output using the Choose Output Bands dialog.



Note that provision of outputs at a model scoring block is mandatory.

15.25 Audience Block

Audience blocks allow you to nest audiences within one another.



In this way, you can minimize your audiences' complexity and re-use common patterns of logic.

Note that, if creating an audience at an auxiliary database that does not support embedded audience execution, a validation error is raised in the audience in which an embedded audience is sited.

Note also that, if an audience block's configured audience contains one or more selection rules using placeholder attributes, the placeholder values applied at the embedded audience are used at outer audience execution.

15.25.1 Adding an Audience Block to an Audience

You can nest an existing audience within an audience by dragging an audience block from the Audience Blocks section within the toolbox.

Doing so creates a new, unconfigured audience block within the workspace.

By default, the new audience block is named 'Audience'. If an audience block with that name already exists within the current audience, the newly-created audience block is named 'Audience 2' (note that, if required, the numerical value can be incremented accordingly).

The new audience block is selected automatically.

No restrictions are placed upon the inclusion of an audience block anywhere within an audience. It may be preceded and/or followed by other blocks.

Following the addition of an audience block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.25.2 Configuring an Audience Block in the Workspace

You can select an audience with which to configure the audience block directly in the workspace by:

- Dragging and dropping an audience from the toolbox onto an existing audience block in the workspace.
- Browsing for an existing audience by invoking the File System Dialog directly from an audience block in the workspace. from the toolbox onto the empty workspace to create a new audience block.

Provision of a valid audience is mandatory; in addition, the selected audience's audience definition must match the current audience definition.

Having configured an audience block with an audience, you can clear the audience using the button provided. You can also open the latest version of the audience, in another Audience Designer instance, using the Open Latest Version button.

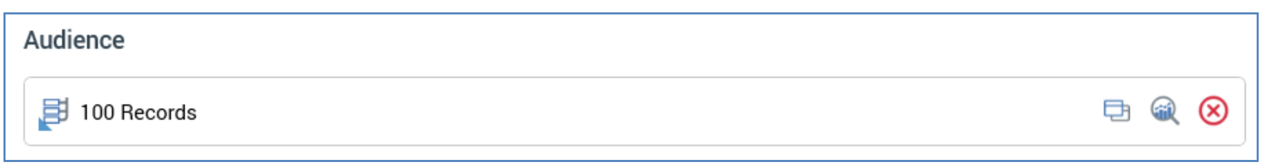
Note that you cannot configure an audience block with the current audience. Similarly, if the current audience is included elsewhere in a hierarchy of nested audiences, a validation error is raised.

The current audience becomes invalid if it contains an audience block configured with an audience based upon a different audience definition.

15.25.3 Configuring an Audience Block using the Audience Block Builder

When invoked to configure an audience block, the Audience Block Builder contains General and Outputs tabs.

The General tab is documented elsewhere in the Audience Designer documentation. An additional property is exposed:

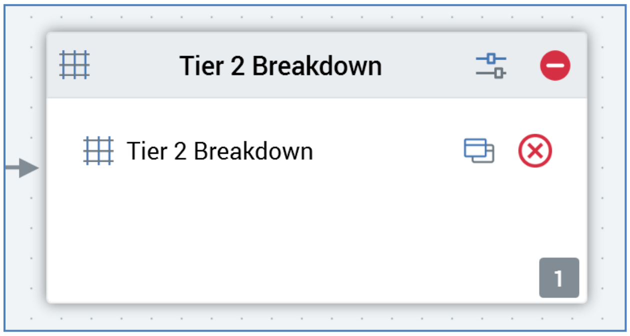


- Audience: you must configure the block with an audience file. You can browse for an audience, or populate the property using drag and drop. You can also initiate the creation of a new audience. Having selected an audience, inline Open Latest Version, View Insights and Clear buttons are displayed.

The Outputs tab displays a read-only list of the nested audience's outputs. You cannot add, delete, re-order or apply filters to the outputs. However, you can configure metadata in respect of each output.

15.26 Cell List Block

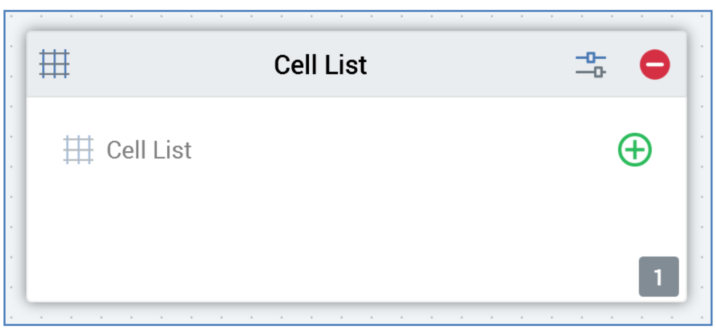
A cell list block allows you leverage a pre-existing cell list file in an audience. A cell list allows you to divide a series of input records into discrete cells, based on a number of supplied dimensions. For more information, please see the Cell List Designer documentation.



Like a split, a cell list block is also used to split an audience into a series of discrete outputs. The rules that define how the split is to be effected are contained in a cell list. A cell list block is configured with a cell list, allowing the rules defined therein to be applied in the context of an audience. If required, a cell list can be used to configure multiple cell list blocks across several audiences.

15.26.1 Adding a Cell List Block to an Audience

You can add a new cell list block to an audience by dragging a Cell list from the Audience Blocks section within the toolbox. Doing so creates a new, blank cell list block in the Audience Designer workspace.



By default, the new cell list block is named Cell list. If a cell list block named Cell list already exists within the current audience, the newly-created cell list block is named Cell list 2 (note that, if required, the numerical value can be incremented accordingly). The new cell list is selected automatically.

You can also drag an existing cell list from the toolbox and drop it onto the workspace to create a cell list block. Doing so pre-configures the cell list block with the cell list in question. The new cell list block is given the same name as the cell list upon which it is based. If a block with this name already exists, an integer (which can be incremented) is appended to the new block's name to ensure its uniqueness.

Following the addition of a cell list block, an asterisk is appended to the audience's name displayed within the current tab, indicating that unsaved changes now exist.

15.26.2 Configuring a Cell List Block in the Workspace

A single cell list block property, Cell list, can be managed directly in the workspace.

Clicking the Cell list property displays the Choose Cell List File System Dialog, which is limited to display cell lists only. You can choose a cell list from an accessible folder in the RPI file system, and then click OK or double-click the file to select it. Doing so populates the block's Cell list property. You can also cancel the File System Dialog.

You may also populate the Cell list property by dragging an existing cell list from the toolbox and dropping it directly onto the field.

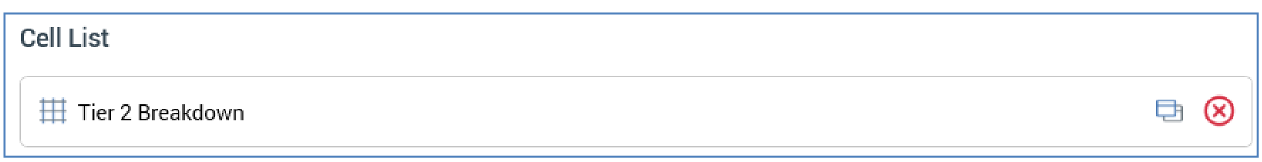
The selected cell list must not be configured with the current audience, and its audience definition must be compatible with the current audience's audience definition.

Having specified a cell list, you can clear it. You can click Open latest version to view the template in the Cell List Designer.

15.26.3 Configuring a Cell List Block using the Audience Block Builder

When invoked to configure A cell list block, the Audience Block Builder contains General and Outputs tabs.

The General tab is documented elsewhere in the Audience Designer documentation. An additional property is exposed:

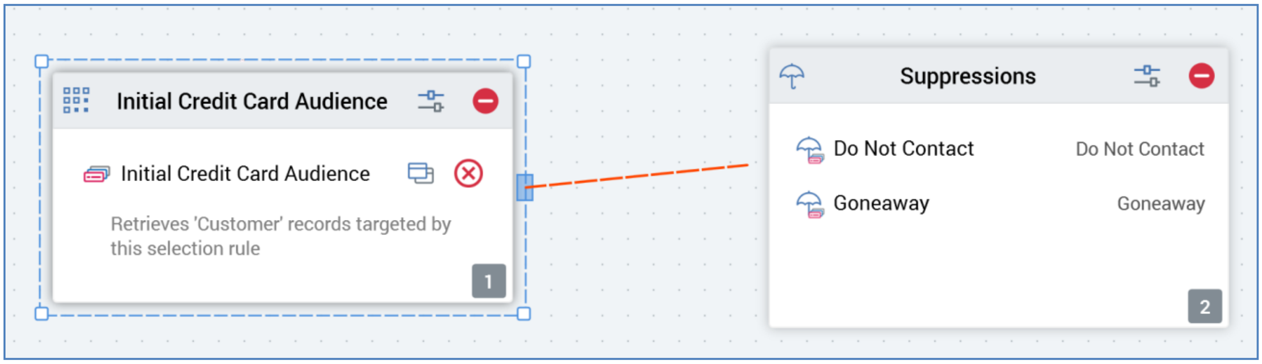


- Cell list: you must configure the block with a cell list file. You can browse for a cell list, or populate the property using drag and drop. You can also initiate the creation of a new cell list. Having selected an audience, inline Open Latest Version and Clear buttons are displayed.

The Outputs tab displays a read-only list of the cell list's outputs. You can configure metadata in respect of each output.

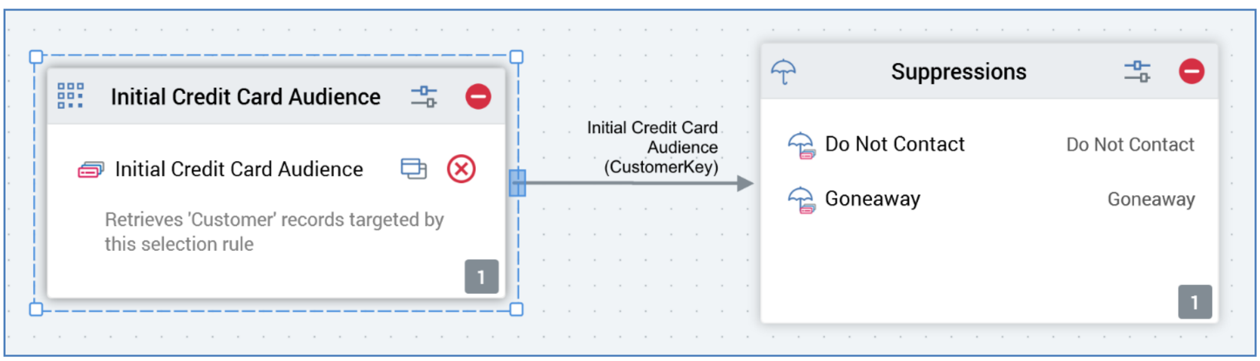
15.27 Connecting Blocks

You can connect two independent blocks within the workplace. When you hover over a block's connection point, the cursor becomes a crosshair.



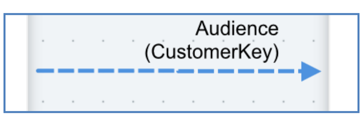
You can drag the crosshair outwards from the block; when you do so, a dashed red line indicates the availability of a candidate connection.

You can drop the crosshair over the second block to create a connection. The connection's direction is indicated by an arrow.



Dropping the crosshair onto the workspace other than upon another block causes the new candidate connection to disappear.

All block connections are displayed using straight lines and right angles. A selected connection is displayed as a dashed line.



The following attempts to create a connection between blocks are not allowed and result in the display of a warning message:

- Trying to create a cyclical connection (one that links a block back to one of its ancestor blocks).

- Trying to create a connection that results in a block with more than one parent.
- Trying to connect the same two blocks twice.

Otherwise, there exists no limitation as to the type of blocks that may be connected in the Audience Designer workspace.

15.28 Removing a Block

You may highlight a block in the Audience Designer workspace and invoke its removal. This can be done using the button on the block itself, or via the toolbar. You can remove several blocks concurrently by highlighting them and using the toolbar button.

Note that no ‘Are you sure?’ dialog is displayed when you elect to remove one or more blocks.

Following the removal of one or more blocks, an asterisk is appended to the audience’s name displayed within the current tab, indicating that unsaved changes now exist.

15.29 Removing a Connection

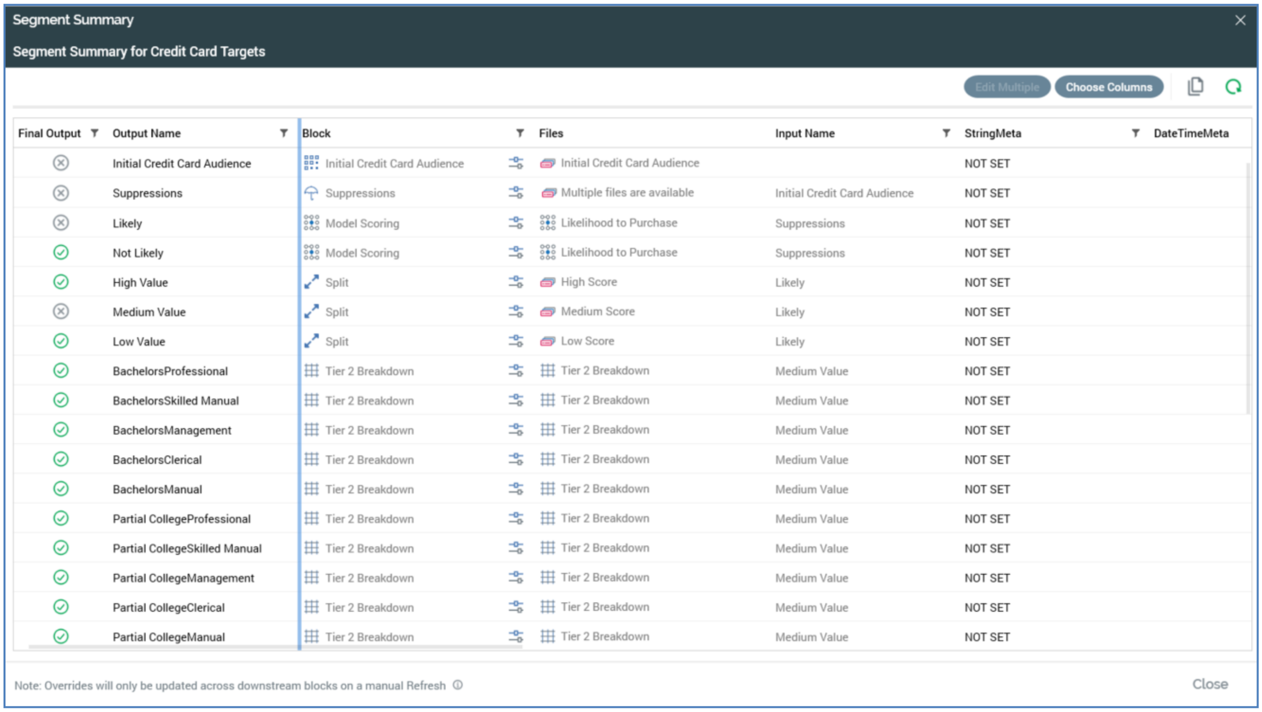
You can remove one or more connections between two blocks within the Audience Designer workspace by highlighting them and invoking Remove from the toolbar. When you do so, the connections are removed from display. The previously-connected blocks remain displayed.

Note that no ‘Are you sure?’ dialog is displayed when you elect to remove one or more connections.

Following the removal of one or more connections, an asterisk is appended to the audience’s name displayed within the current tab, indicating that unsaved changes now exist.

15.30 Segment Summary

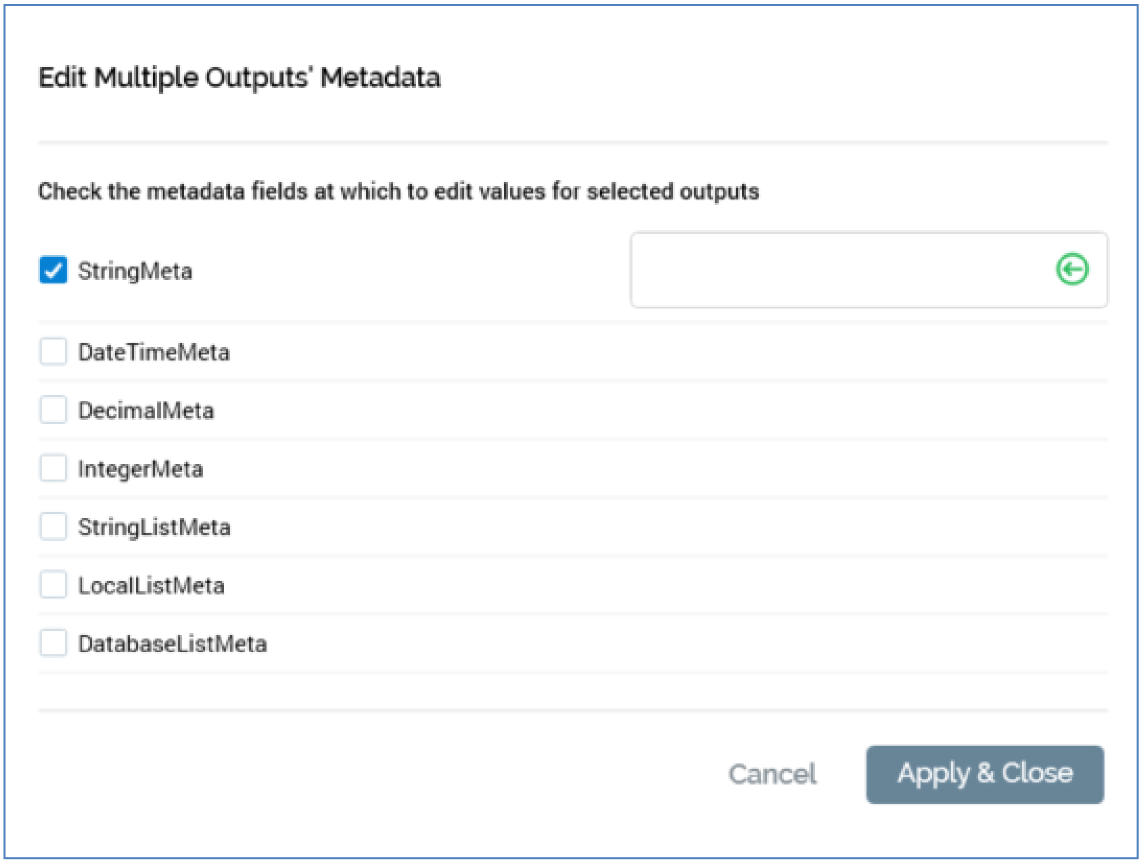
An audience outputs a number of segments, which represent its final outputs, once processing of all of its blocks has completed. Invocation of Segment Summary from the Audience Designer toolbar displays the Segment Summary Window, which provides visibility of the audience's segments.



Final Output	Output Name	Block	Files	Input Name	StringMeta	DateTimeMeta
	Initial Credit Card Audience	Initial Credit Card Audience	Initial Credit Card Audience		NOT SET	
	Suppressions	Suppressions	Multiple files are available	Initial Credit Card Audience	NOT SET	
	Likely	Model Scoring	Likelihood to Purchase	Suppressions	NOT SET	
	Not Likely	Model Scoring	Likelihood to Purchase	Suppressions	NOT SET	
	High Value	Split	High Score	Likely	NOT SET	
	Medium Value	Split	Medium Score	Likely	NOT SET	
	Low Value	Split	Low Score	Likely	NOT SET	
	BachelorsProfessional	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	BachelorsSkilled Manual	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	BachelorsManagement	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	BachelorsClerical	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	BachelorsManual	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	Partial CollegeProfessional	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	Partial CollegeSkilled Manual	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	Partial CollegeManagement	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	Partial CollegeClerical	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	
	Partial CollegeManual	Tier 2 Breakdown	Tier 2 Breakdown	Medium Value	NOT SET	

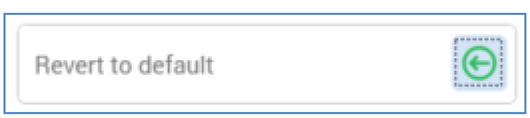
The Segment Summary contains a toolbar and a grid.

- Toolbar: exposing the following options:
  - Edit Multiple: this button allows you to edit multiple outputs' metadata values simultaneously. It is enabled when at least one output has been selected. Invocation displays the Edit Multiple Outputs' Metadata overlay.



All metadata attributes within the audience's definition are listed. Each is accompanied by checkbox, with all unchecked by default. When checked, an editable field is displayed, accordant with the attribute's data type. You can use the same to change metadata attribute values as required.

A revert button, displayed within each editable field, allows you to revert a metadata attribute to its default value. Invocation displays a read-only 'Revert to default' at the previously-editable field:

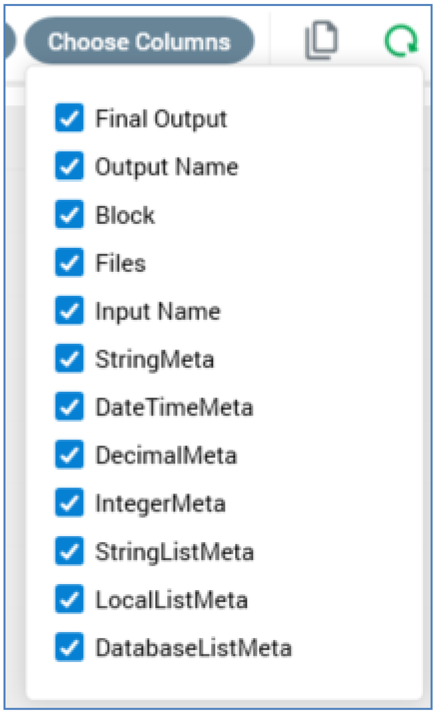


Two buttons are shown at the bottom of the overlay:

- Cancel: clicking this button abandons any metadata edits and removes the overlay from display.

- Apply & Close: clicking this button applies any changes made within the overlay to the selected outputs' metadata attribute values.

- Choose Columns: this button allows you to show or hide, and order, the columns displayed in the grid. Clicking it displays a dialog, which facilitates display of the following columns:

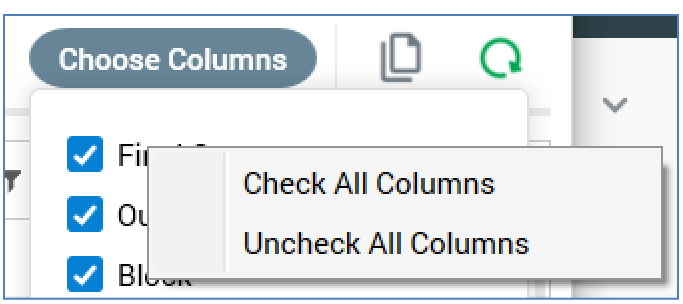


- Final Output
- Output Name
- Block
- Files
- Input Name
- Metadata attributes provided by the audience definition

Details of each of the above are provided in the grid documentation.

All columns are displayed by default. For each column shown in the dialog, a checkbox is displayed. The column is shown if checked, and not shown if unchecked. Column display settings are persisted on a per-client basis.

The following context menu options are available when right-clicking the list of columns:

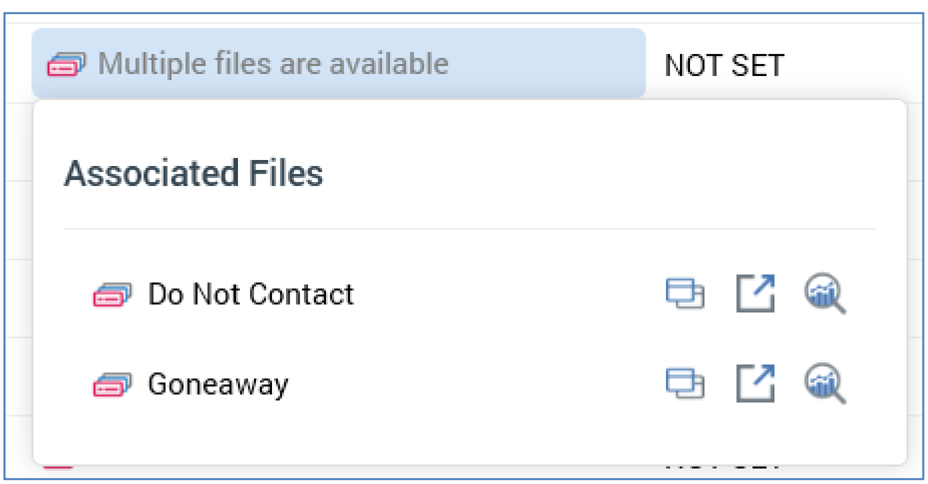


- Copy these details to the clipboard: invocation of this option copies the displayed columns to the clipboard.
- Refresh: loads the latest state of the audience into the Segment Summary. Note that if changes are made to the audience when the Segment Summary is displayed, Refresh must be clicked to reflect the changes therein.

- Grid: the grid lists block outputs, which are presented in execution order within the audience. Orphaned blocks are not listed, and unconfigured cell list and audience blocks are not displayed. The following read-only columns can be displayed (in accordance with the current Choose Columns settings):
  - Final Output: a tick or cross indicates whether the current output is or is not one of the audience's final outputs.
  - Output Name: this column is updatable. Provision of an Output Name is mandatory, the value provided must be unique within the list and can be a maximum of 100 characters.
  - Block: an icon indicates the output's parent block type. A button – View/configure this Block – is displayed to the right of Block Name. Clicking it displays the block's details in the Audience Block Builder. If the Builder is already open, it is refreshed with the selected block's details.
  - Files: if the output is not associated with any files (e.g. a split output without a selection rule), a 'No associated files' message is shown. If associated with one or more files, an icon indicates the file type. Filter, audience and cell list outputs are all associated with a single file. Hovering over such an output's Files property shows the file's details in an informational tooltip and displays Open Latest Version and View Insights buttons.

    If the output of a suppressions block:

    - If configured with a single suppression, the suppression's selection rule is shown.
    - If configured with multiple suppressions, the text 'Multiple files are available' is shown on a button. Clicking it displays the Associated Files dialog.



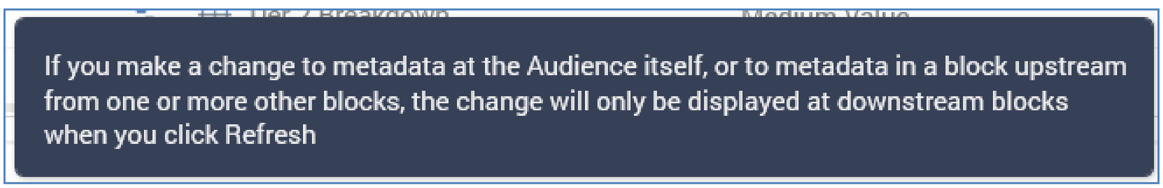
An informational tooltip is shown when hovering over each such file, and inline Open Latest Version, Pop Out and View Insights buttons are available.

If a split output:

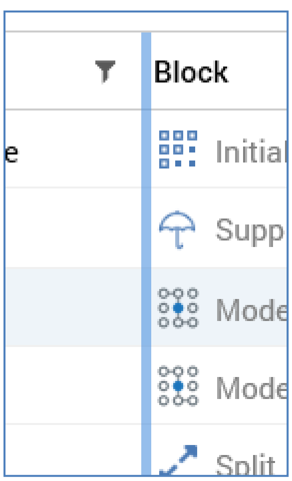
- If configured with a selection rule, the file in question is shown.
- If not configured with a selection rule, a No associated files message is displayed.

- Input Name: shown as [Input Block Name].[Input Name]. Blank at the audience's initial block.
- Metadata attributes: each output's metadata attribute values are shown for each such attribute configured at the audience's definition. Metadata values are updateable; however, please note the information message displayed at the bottom of the Window:

Hovering over the information icon displays this tooltip:

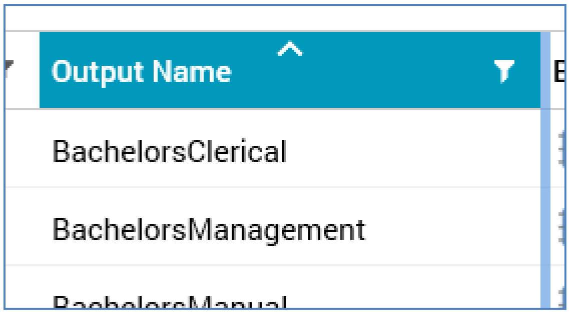


A splitter allows for the display of static columns to the left when scrolling the Segment Summary horizontally.



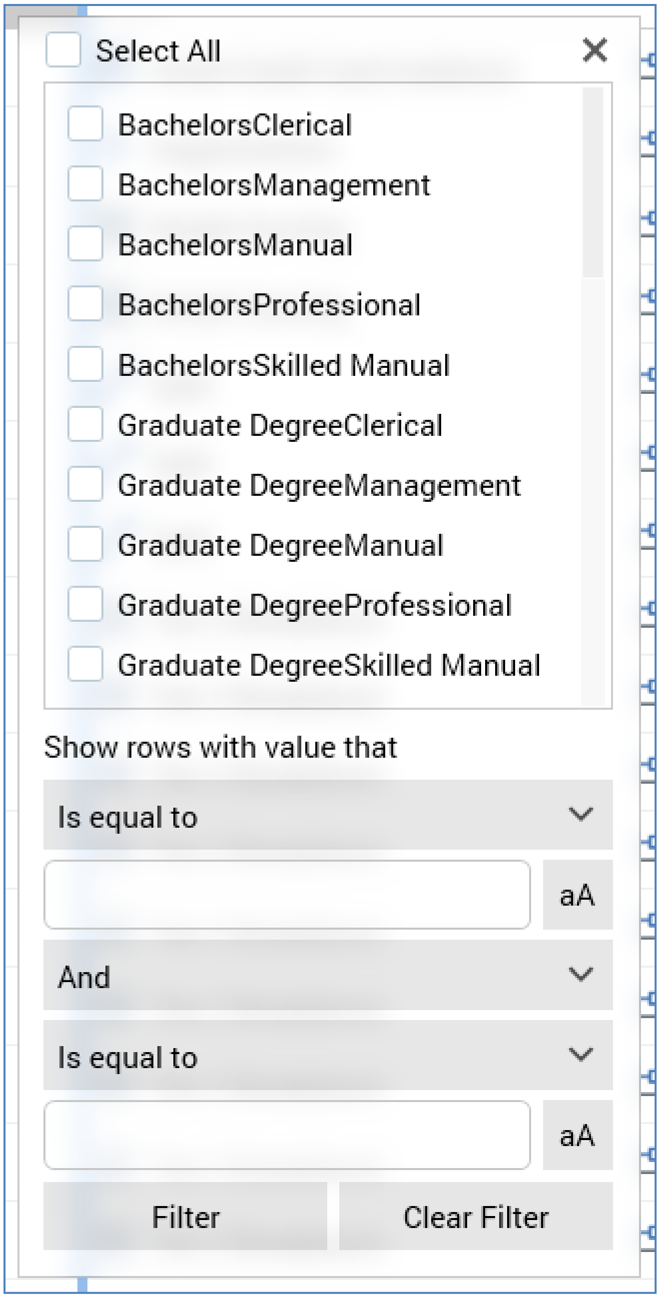
It is displayed to the right of the Output Name column by default, but you can re-position it as required.

You can sort the grid by any column therein by clicking on the column header:



Clicking a column header once sorts in an ascending direction, twice sorts in a descending direction and clicking for a third time removes the sort. You can also sort by multiple columns.

You can also filter the contents of the grid by clicking on the filter icon to the right of the header:

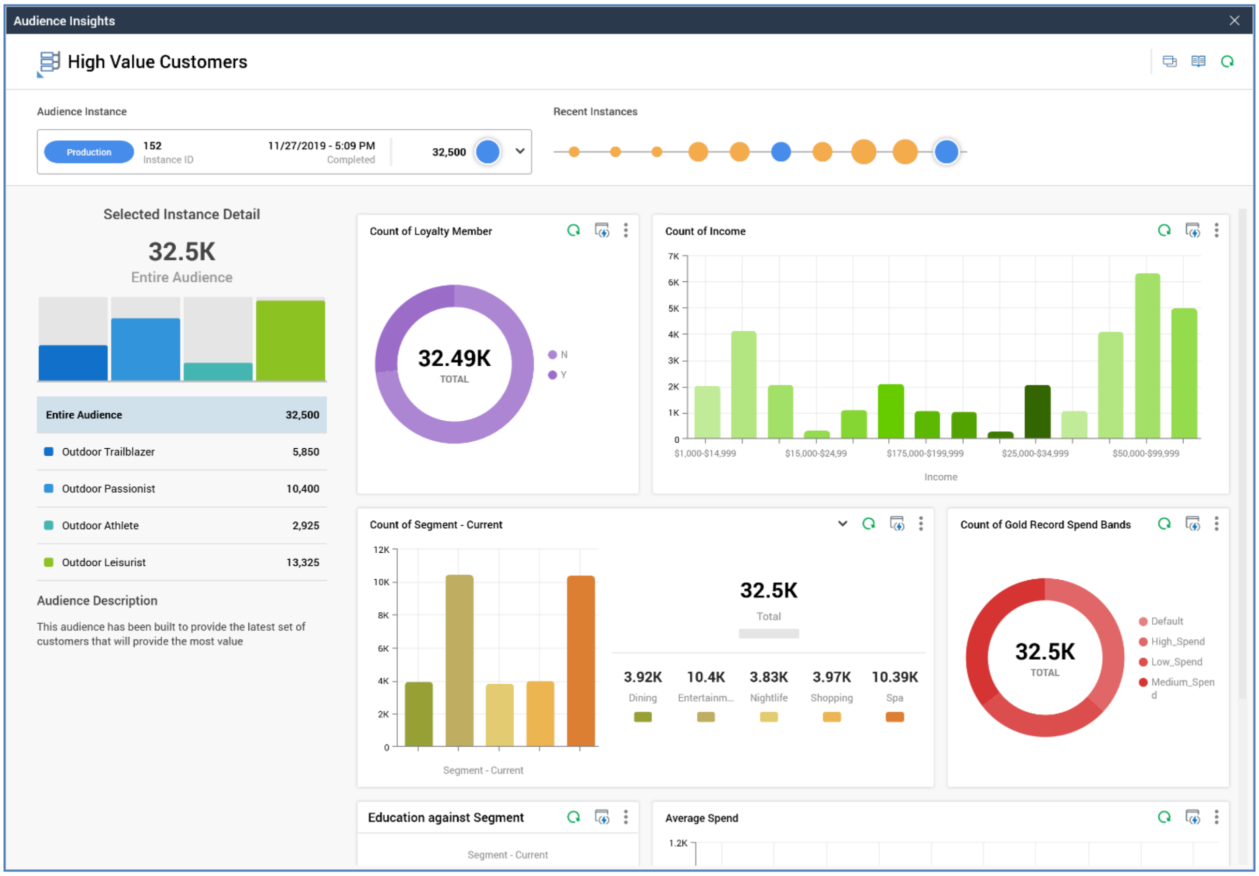


Multiple columns can be filtered simultaneously. Filtering is performed upon database values, not translations.

If the Segment Summary is already open on being invoked at another audience, the current Window is refreshed with data from the context of invocation.

15.31 Audience Insights

The Insights Window is used to view insights related to an audience.



It displays results associated with any existing audience instances, as well as a configurable dashboard containing chart and/or count results widgets, against which audience instance results are applied as a filter. The Insights Window is shown at invocation of View Insights (in the contexts listed below). View Insights is only available at audiences at which at least one audience instance exists.

The Insights Window can be invoked from the following contexts:

- Audience Designer toolbar
- Audience Instance Viewer toolbar. If you invoke the Insights Window from an audience instance other than one of the most ten instances, the Window is displayed with the ten most recent instances therein, and an advisory message is shown.
- Results Window toolbar (when audience results displayed)
- Audience property
- Audience context menu at File System Dialog

- Audience displayed in File Information Dialog
- Audience at File Type Widget
- Audience within Send Emails Training Aid

The Insights Window is a non-modal Window, which contains the following:

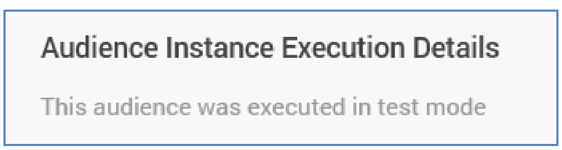
- File icon
- File name
- Toolbar, exposing:
  - Open Latest Version
  - Open linked Page: displayed if a Wiki or external web page has been linked to the file.
  - Choose Another File to View Insights: clicking this button displays the Choose Audience File System Dialog, facilitating the selection of another file in respect of which to view insights.
  - Copy Results to Clipboard as Image: clicking this button copies an image of the current state of the Insights Window to the clipboard and displays an advisory message to this effect. Everything displayed in the Window, other than the toolbar, is copied.
  - Refresh
- Audience Instance: this dropdown property allows you to select an audience instance to visualize. Up to 10 instances can be displayed, in Audience ID descending order. The following is displayed at each entry in the dropdown list:
  - Mode: one of Test, Production or Audience Test
  - Instance ID
  - Completed: date/time
  - Audience count
  - Circle: representing the audience instance's relative size when compared to any others.
- Recent Instances: this graphic displays up to 10 of the most recent audience instances on a timeline. Each instance is represented by a circle, and its mode of execution is represented by the circle's color. The relative size of each circle indicates the number of targets per instance. The currently-selected instance is represented by a halo around the circle. You can change the currently-displayed instance by clicking a circle on the timeline.

  A tooltip is shown on hovering over timeline instance, containing the following:

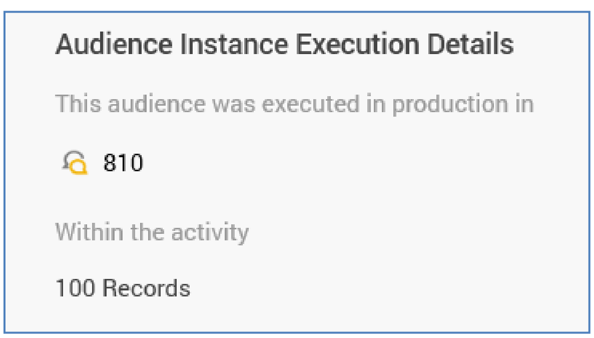
  - [Audience Instance] - [Mode]

- Count
- Date
- Time

- Selected Instance Detail: this section contains the following:
  - Overall instance count, accompanied by the text 'Entire Audience'.
  - Bar chart: one bar is shown per audience segment. A legend is shown below the chart, which displays the count for the Entire Audience, as well as each segment therein. You can click a bar within the chart, or an entry in the legend, to apply your selection to the data displayed within the accompanying dashboard's widgets.
  - Audience Description
  - Audience: contents depend on whether the audience instance was created when testing the audience from the Audience Designer, or in during audience execution in an interaction.
    - If executed as an audience test, the following is shown:



    - If executed in an interaction, the following is shown:



- Dashboard: widgets configured at the Insights dashboard are displayed in accordance with their individual configuration. The current audience instance or segment count is applied as a filter to the results displayed in any Chart widgets, and also to the counts of rules displayed within any Count Results widgets.

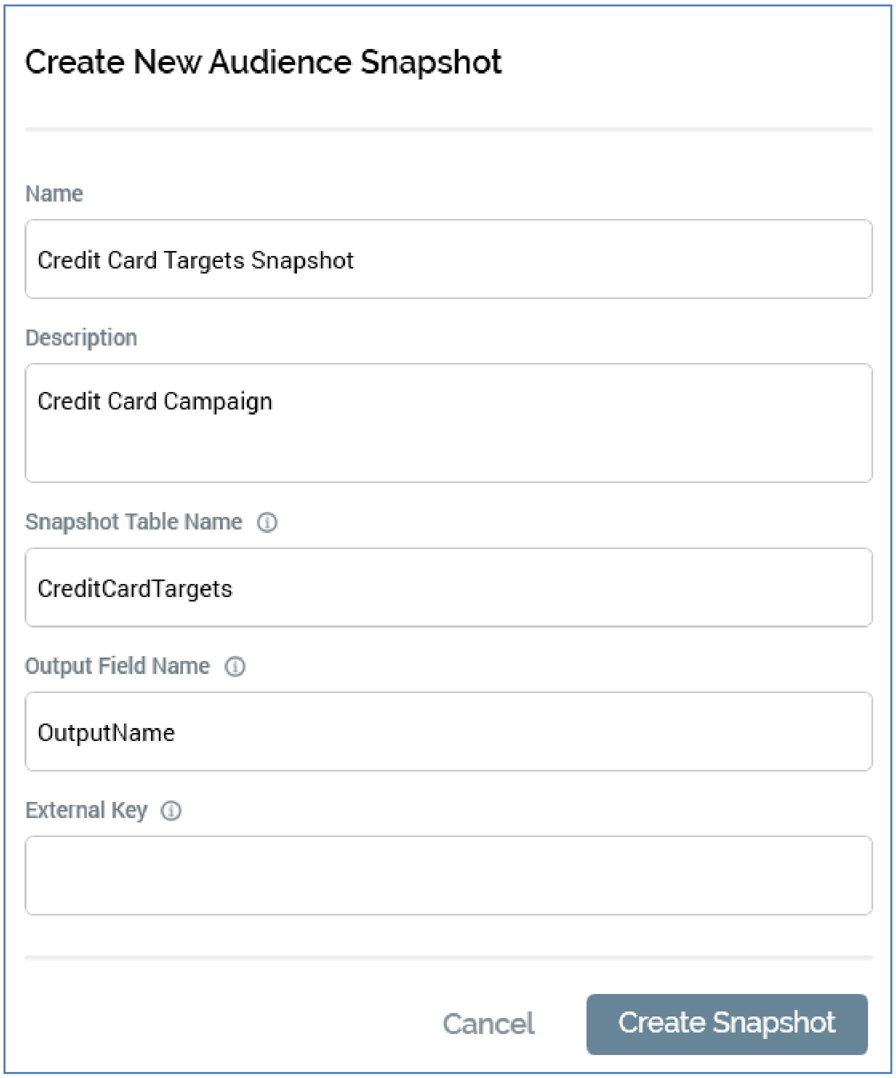
Note that the maximum number of Insights Windows that can be displayed concurrently is five. Note also that any changes to an Insights dashboard saved when the Insights Window is open and displaying the same is not reflected at the Window until it is re-opened.

15.32 Creating an Audience Snapshot

You can initiate the creation of an audience snapshot based on the current audience by clicking the Snapshot button on the audience toolbar. Please see the Configuration Workbench and Operations documentation for full details on audience snapshots.

The button is disabled when unsaved changes exist within the audience, or when the audience is not valid.

Clicking the button displays the Create New Audience Snapshot dialog.



The dialog contains the following:

- Name: the audience snapshot's name defaults to '[audience name] Snapshot'. Its provision is mandatory, and it can be a maximum length of 100 characters.

- Description: defaults to the audience's description (if provided). Description is optional and can be a maximum length of 1000 characters.

- Snapshot table name: this field defaults to the name of the audience, with any spaces removed. It is mandatory, can be a maximum length of 50 characters and must be database-valid. A description of the property is shown in a tooltip when hovering over the accompanying information icon.

- Output field name: represents the name of the column in the snapshot table that will contain the name of the audience segment. A description of the property is shown in a tooltip when hovering over the accompanying information icon.

- External key: this property is blank by default. Its provision is optional, and it can be a maximum of 100 characters in length. A description of the property is shown in a tooltip when hovering over the accompanying information icon.

- Create Snapshot: on clicking the button, if the new audience snapshot's Name or Snapshot table name is already in use, an 'Are You Sure?' dialog is displayed. If not, or if you elect to proceed in the event of a conflict, a new audience snapshot is created, and is accessible at the Configuration Workbench and Operations interface. An information message advises of successful creation of the snapshot.

- Cancel: clicking this button removes the dialog from display (clicking off the dialog has the same effect).

- Informational message: this is displayed at the bottom of the dialog if the audience is already referenced by an existing audience snapshot:

  This Audience is already being used by another Snapshot

If you attempt to create a snapshot when a restricted audience definition has been selected, a Permission Denied dialog is displayed, and an error is thrown.

The same restriction also applies when the audience contains a:

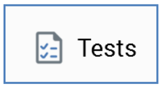
- Filter, suppressions or split block configured with a selection rule using a restricted resolution level.

- Cell list block configured with a cell list using a restricted audience definition or configured with an audience using a restricted audience definition or configured with a block as above.

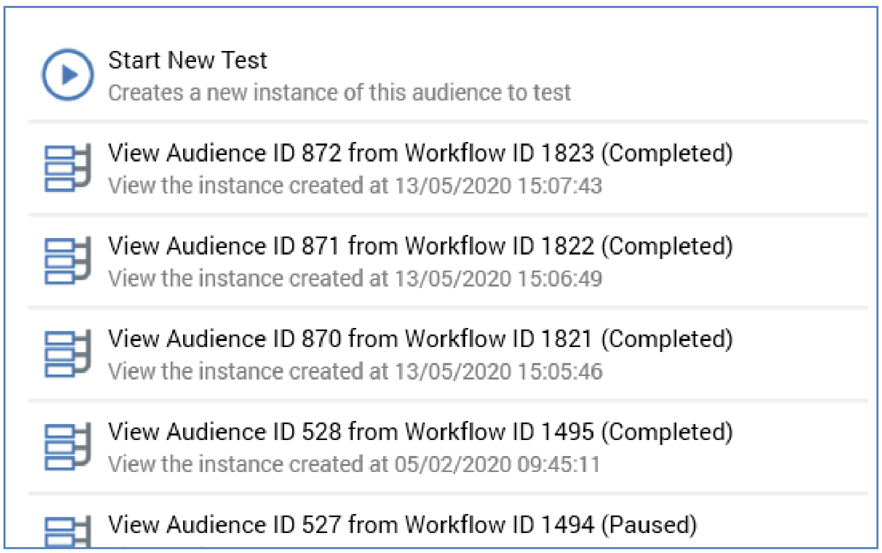
- Audience block configured with an audience using a restricted audience definition or configured with a block as above.

15.33 Testing an Audience

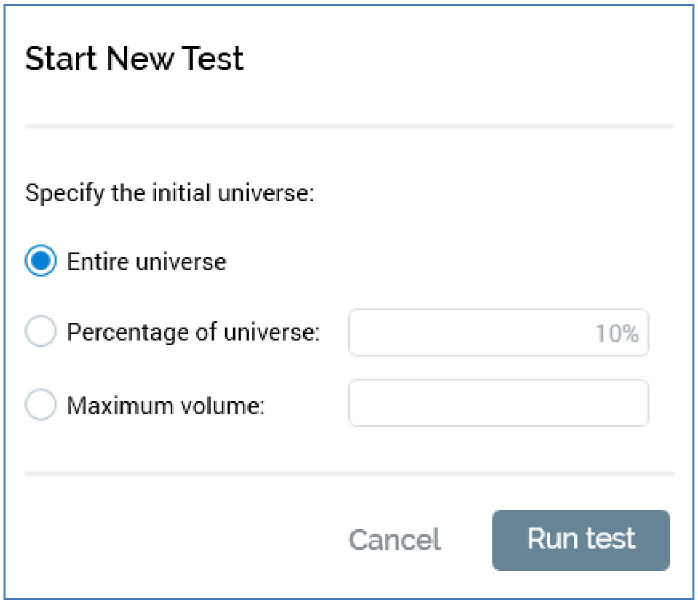
You can initiate the testing of the current audience using the Tests toolbar button.



This button is only available when no outstanding changes exist within the audience, and when it is valid. On clicking the button, a menu is displayed. If the audience has been tested previously, up to the 100 most recent test instances are listed (with the most recent instance displayed first). Note that each test instance has its own separate Audience (instance) ID and temporary Workflow (instance) ID. The option to start a new test is always provided.



Selecting Start new test displays the Start new test dialog:



Three radio buttons allow you to specify the size of the initial data set against which the rules articulated in the audience will be run:

- Entire universe: this option is selected by default. If chosen, all records available in the current audience definition's universe will serve as the input to the audience.
- Percentage of universe: if this option is selected, a specified, random percentage of the total available universe will be selected, and the rules in the audience executed against it. Percentage… defaults to 10, and a value must be provided if the radio button is selected (up to a maximum of 100%).
- Maximum volume: if this option is selected, up to the specified maximum volume of records will serve as the test data set (if the specified value is greater than the size of the universe, the whole universe will be used). If the radio button is selected, a value between 1 and 9,999,999 must be supplied.

Selecting a previous test instance displays the existing instance in the Audience Instance Viewer. If executing a new test, you can watch as the audience's rules are executed. In both cases, you can view the results of the audience's test execution in the Results Window.

If the test was executed against a percentage of the universe or a maximum volume of records, the watermark shown at the Audience Instance Viewer, which displays the name of the audience being tested, is augmented with the percentage or actual number of records that served as the test's input data set.

If the audience contains an auxiliary selection rule, it is executed to determine a list of keys that match the rule's criteria, which is written to a temporary table. This table can then be used to join to data warehouse tables to identify matching data warehouse records which will serve as the audience's output(s).

If you run a test at an audience that contains an auxiliary selection rule, and sufficient joins do not exist to link the resolution levels of the auxiliary rule and the audience's definition, an error occurs.

If you attempt to run an audience test when a restricted audience definition has been selected, a Permission Denied dialog is displayed, and an error is thrown. The same restriction also applies when the audience contains a:

- Filter, suppressions or split block configured with a selection rule using a restricted resolution level.
- Cell list block configured with a cell list using a restricted audience definition or configured with an audience using a restricted audience definition or configured with a block as above.
- Audience block configured with an audience using a restricted audience definition or configured with a block as above.

If the audience's audience definition is defined as producing validation files, these can also be accessed at the Results Window, providing you with an accurate impression of the audience's segments during interaction execution.

If the audience definition is defined as producing an audience waterfall report in Test mode, the report is available at the Results Window's Files tab.

For further details please see the Audience Instance Viewer and Results Window documentation.

When the current RPI installation is using a SQL Server data warehouse or auxiliary database, if the system is unable to connect when running an audience test (for example due to the database server not being found, the database login failing (due e.g. to the database being detached) or because of a deadlock), a series of attempts to reach the database are made (over a maximum of a 10-minute period). After this time, the series of retries are abandoned. All retry details are logged to the server log.

If the audience contains a data process block, if its Data process project's Use results in audience property is unchecked, the RPDM project that it represents is executed independently of the continued execution of other blocks within the audience.

If Use results in audience is checked, you can leverage the data process project's Output table result field values in the following contexts:

- Output sampling (Cap on result field order, Nthing on result field order)
- Output bands (Discrete, Value range, Relative date)

If no output(s) have been configured at the data process block, a single output, named in accordance with the block's name, is created.

The passing of project parameters to the RPDM project is supported (values can be specified in the block's Project tab). The passing of additional, unnecessary, parameters does not cause a failure to occur.

Note that the following data process project properties must match those at the RPDM project, or the audience will fail:

- Repository path
- Output table key field name
- Output table result field name

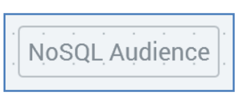
When a model scoring block executes in an audience. RPI calls the AML service to execute the model with which the block’s model project is configured. This returns a model score for each targeted record. Records can then be classified by band.

15.34 The Audience Designer and NoSQL Databases

When using the Audience designer in a NoSQL data warehouse environment (database mode NoSQL databases only or NoSQL data warehouse with SQL auxiliary databases), the following considerations apply:

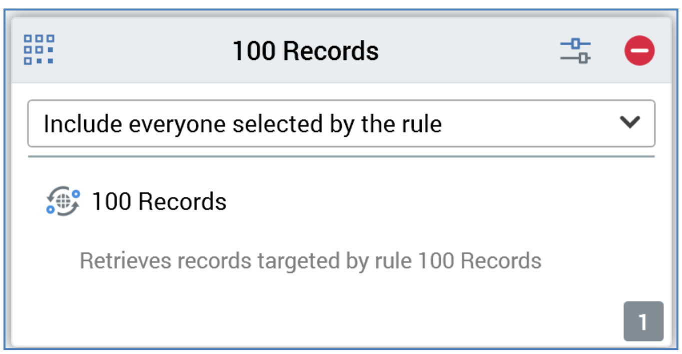
- Toolbar:
  - Metadata: metadata attributes at the audience are presented in accordance with their configuration at the selected Offer history definition (see below).
  - Snapshot: the Snapshot button is not shown when in NoSQL mode, as audience snapshots are not supported in this context.
- Properties:
  - Offer history definition: you must select an existing NoSQL database offer history definition, which defines the collection in which offer history data will be persisted at audience execution, as well as the pool of metadata attributes available to the audience.

    In addition, the selected Offer history definition's NoSQL DB collection definition determines the NoSQL database collection that will be interrogated when the audience is executed.
  - The following properties are not shown:
    - Audience definition
    - Deduplication level
    - Deduplication behavior
    - Override waterfall report settings
- Workspace: a 'NoSQL Audience' label is displayed to the top left:



- Toolbox:
  - Audience Blocks: only the following audience blocks are supported when running in NoSQL mode:
    - Filter
    - Suppressions
    - Split
    - Model Scoring

- Folder Search: only the following file types are supported when running in NoSQL mode:
  - Attribute
  - Model Project
  - Selection Rule
- Workspace
  - You can drag in a decision to create a filter block.
  - Resolution levels are not shown at connector arrows.
  - The Send Emails button is not supported.
- Audience blocks:
  - Filter:
    - Block:



- Include/Exclude everyone selected by the rule: this fixed-dialog style chooser allows you to define whether all records selected by the filter are to be included in, or excluded from, the audience's output.
- Selection rule: you must populate the filter with a NoSQL selection rule. You can populate it using drag and drop or browse. Having populated the property, you can open its latest version in the Rule Designer. You can also clear your selection. Having chosen a NoSQL selection rule, the verbiage 'Retrieves/Excludes records targeted by rule [rule name]' is shown below it.

  The inclusion of NoSQL selection rules that target the current NoSQL offer history collection is supported (handling use cases where previous targeting is a factor in audience determination). If a filter is configured with an offer history NoSQL selection rule, the verbiage 'Joins to collection [collection name] and retrieves/excludes records targeted by rule [rule name]' is shown below the property.

  - Suppressions

        - Block:
            - Suppressions: you can drag a NoSQL selection rule file into the block to add it as a suppression.
        - Configuration panel:
            - Suppressions tab:
                - Suppressions: each suppression must be configured with a NoSQL selection rule.
    - Split
        - Block:
            - Outputs: you can drag a NoSQL selection rule file into the block to add it as an output.
        - Configuration panel:
            - Outputs tab:
                - Output sampling: only values Use random sampling and Cap on attribute order are supported.
                - Define attribute order: if Cap on attribute order is used, any Sampling order attributes must be from the NoSQL database collection definition associated with the audience's Offer history definition.
    - All configuration panels:
        - General tab: only the following properties are shown:
            - Name
            - Pause before start
            - Single output contact

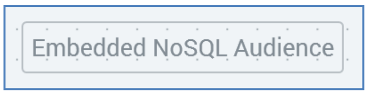
Note that use of auxiliary NoSQL selection rules is supported in the following contexts:

- Filter
- Suppressions
- Split

Note also that you cannot create a NoSQL audience unless at least one NoSQL offer history definition has been configured.

15.35 Embedded NoSQL Audiences

Embedded NoSQL audiences can be used at an RPI SQL client at which one or more NoSQL auxiliary databases has been configured. The key feature of an embedded NoSQL audience is that it cannot be executed independently in an interaction batch audience or interactive activity. It can only be used in an embedded audience block. To differentiate an embedded NoSQL audience, a label is shown in the Audience Designer workspace:



An embedded NoSQL audience has a single property:

- NoSQL database definition

The following also apply at an embedded NoSQL audience:

- The Metadata toolbar button is displayed.
- Initiation of Test execution from the Audience Designer is supported.
- You cannot covert an embedded NoSQL audience to a standard (SQL) audience.

16 Cell List Designer

The RPI Cell List Designer is used to create and modify cell lists.

A cell list defines a series of cells and is used to configure a cell list block in an audience.

The Cell List Designer is not available when working in a NoSQL environment.

16.1 Cell List

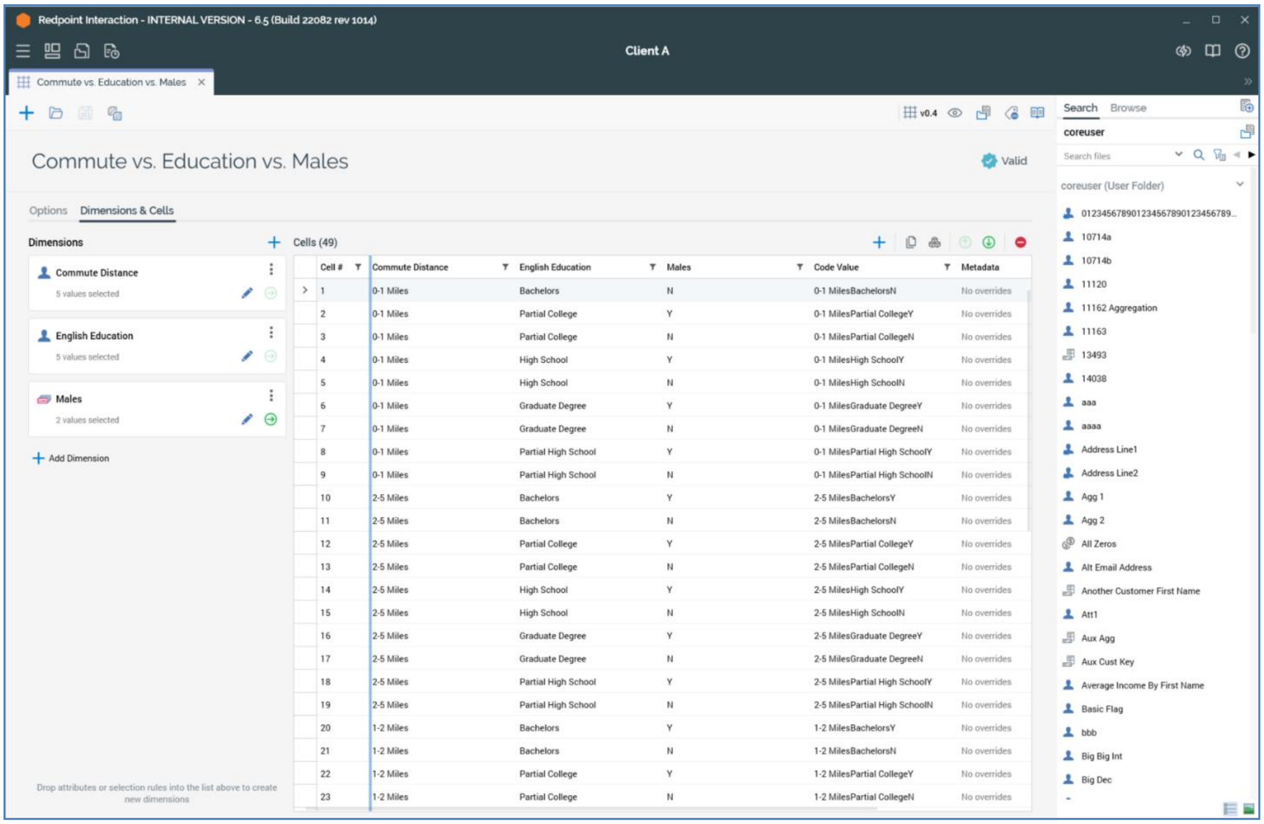
Cell lists are stored as files in the RPI file system, the same way as any other file type. They are used to configure cell list blocks in the Audience Designer. A cell list block can be used to split an audience's output into a series of discrete cells, each of which may then be handled separately in an interaction workflow. Each cell list block is based on the cell structure defined by its cell list. In this way, the same cell list can be used to configure many audiences.

Cells within a cell list are based on dimensions, which in turn can be based on attributes, selection rule qualification, metadata values assigned in an input audience or output membership, also determined by an input audience.

Having added dimensions to a cell list, you can then automatically generate cells based on unique combinations of dimensions' values. You can also manage cells manually.

16.2 Cell List Designer

The Cell List Designer is displayed in its own tab in the RPI framework.



It is used to create and manage cell lists.

The Cell List Designer contains the following elements:

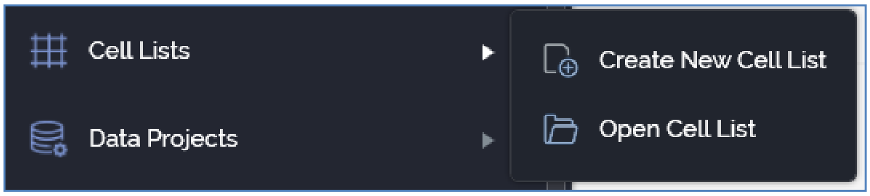
- Toolbar
- Toolbox
- Options tab
- Dimensions & Cells tab

Each of the above is documented separately.

16.3 Invoking the Cell List Designer

You can invoke the Cell List Designer in the following ways:

- From the quick access menu's Cell Lists menu. The menu exposes the following options:



- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.

- By double-clicking a cell List file in the File System Dialog, or by highlighting a cell list and clicking OK in the same context.

- By viewing the latest version of the cell list contextually – for example, from a cell list block in the Audience Designer.

Note that access to the Cell List Designer is controlled via the Cell List – Design functional permission. If none of the user groups of which you are a member are associated with this permission, you will not be able to able to access the Cell List Designer.

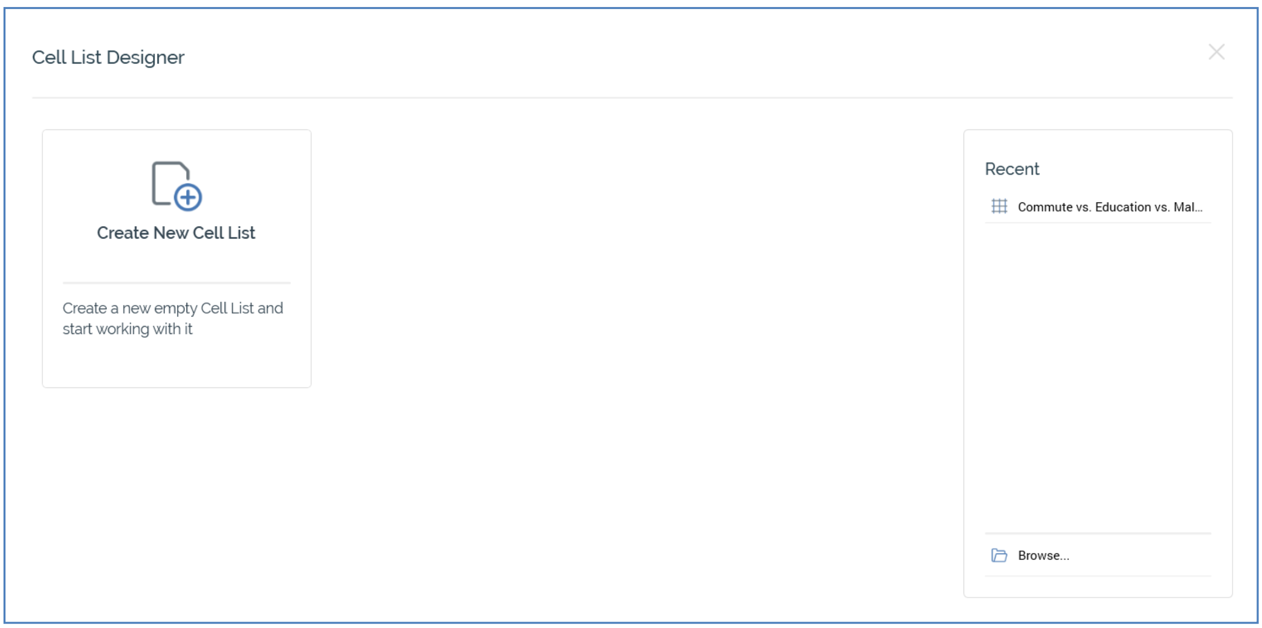
16.4 Closing the Cell List Designer

You can close the Cell List Designer by closing the tab within which it is displayed, or by shutting down RPI itself. If you do so when the Designer contains a cell list with unsaved changes, a dialog is shown, within which you can choose to do the following:

- Save the changes and proceed with closing the Cell List Designer
- Abandon the changes and proceed with closing the Cell List Designer
- Cancel closing the Cell List Designer or RPI.

16.5 Start Page

The Cell List Designer Start Page is shown upon invocation of Cell Lists at the quick access menu, and also on clicking Create new Cell List at the Cell List Designer toolbar. It contains the following:



- Create New Cell List button. Clicking the button displays a new, unconfigured cell list in the Cell List Designer.
- Recent: lists recently-accessed cell lists, facilitating the opening of the same.
- Browse: displays the Open Cell List File System Dialog, allowing you to select a Cell List to open.

A Cancel button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and redisplays the Cell List Designer. The Cancel button is only shown on invocation of the Start Page by clicking Create new Cell List at the Cell List Designer toolbar.

16.6 Configuring a Cell List's Name

An audience's name is configured in the large property shown at the top of the Cell List Designer, below the toolbar:

Provision of a name is mandatory, and the value provided may be a maximum of 100 characters. The cell list's name is the same as the filename under which it is saved within the RPI file system. As such, it must be unique amongst the cell lists in the folder within which saved.

You can edit a cell list's name by clicking the property. Complete the edit by clicking off the property, or by hitting return.

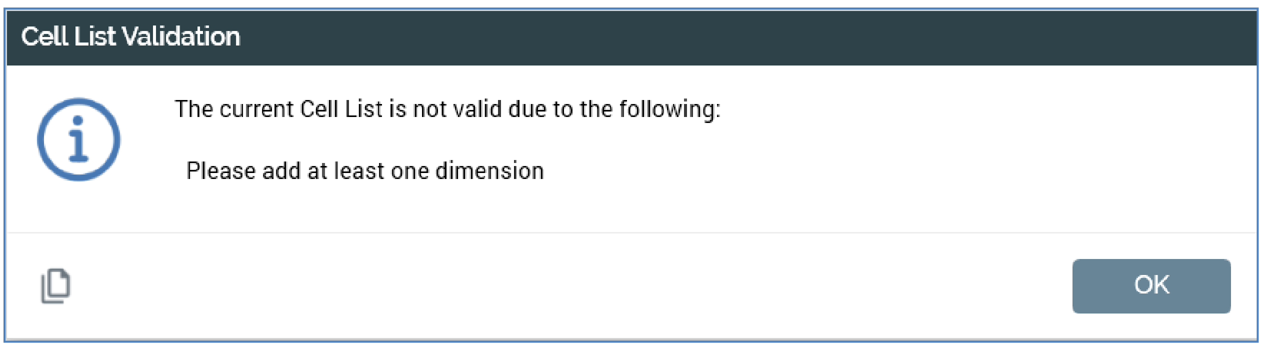
16.7 Cell List Validation

Before a cell list can be used, it must be valid.

A validation status indicator is displayed to the right of the cell list's name. When the cell list is valid and contains no validation errors, the validation status indicator is shown as follows:

Specific validation errors are outlined in the cell list documentation. When one or more validation errors is present, a validation error indicator is shown:

Clicking the indicator lists the validation errors in a dialog:



You can use the button at the bottom left of the dialog to copy the validation error details to the clipboard. You can close the dialog using the OK button.

If the determination of a cell list's validation status takes longer than three seconds, dynamic validation is switched off automatically. A button is displayed, and advises of this fact. Clicking the button re-enables dynamic validation.

Note that validation is only performed in respect of the first 100 cells within a cell list.

16.8 Toolbar

The Cell List Designer toolbar exposes the following options:

- Create new Cell List: clicking this button displays the Cell List Designer Start Page. A close button is shown to its top right; clicking it removes the overlay from display. If a cell list containing unsaved changes is displayed at invocation of Create New, an 'Are You Sure?' dialog is shown, from which you can:
  - Save the changes
  - Abandon the changes
  - Abandon creation of the new cell list
- Open an existing Cell List: invocation of this option displays the Open Cell List File System Dialog. You can navigate accessible folders in the RPI file system to locate the cell list that you wish to open. Only cell list files are shown. Having located a cell list, you can click OK or double click it to display it in the Cell List Designer. You can also click Cancel to close the File System Dialog without opening a cell list.

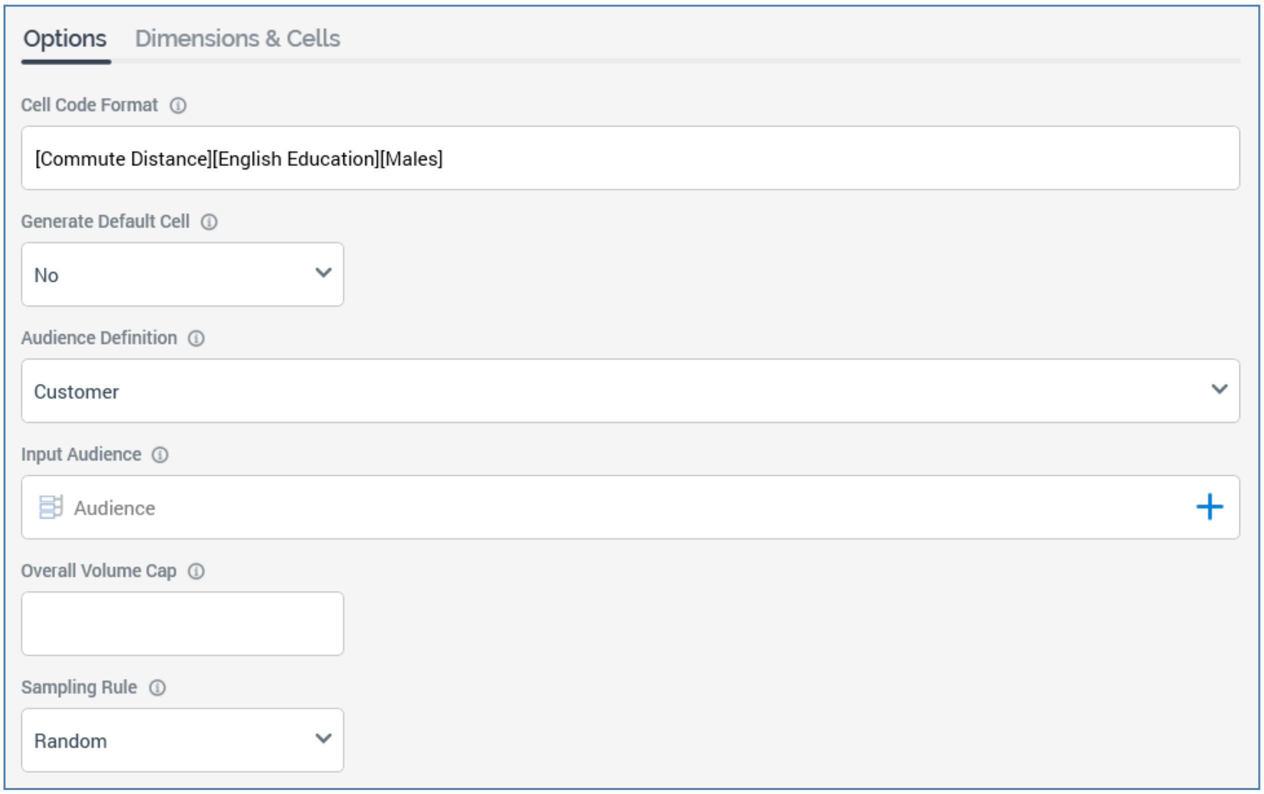
  If a cell list containing unsaved changes is displayed, you can:
  - Save the changes
  - Abandon the changes
  - Abandon opening the cell list
- Save the current Cell List: this option is disabled when no outstanding changes are present within the cell list. If the cell list has not been saved, Save behaves like Save As.... If the cell list has previously been saved, invocation of this option saves any cell list changes to the existing cell list file.
- Save the current Cell List as...: invocation of this option displays the Save Cell List As... File System Dialog, allowing stipulation of the filename to which to save the new cell list file.
- Version number
- Follow/Unfollow File: please see the RPI Framework documentation.
- File Options: please see the RPI Framework documentation.
- File Metadata: please see the RPI Framework documentation.
- Linked Page Options: please see the RPI Framework documentation.

16.9 Toolbox

The Cell List Designer toolbox exposes the standard RPI Folder Search component, which is constrained to display attribute, audience and selection rule files only. Please see the RPI Framework documentation for more information.

16.10 Options Tab

The Options exposes the following properties.

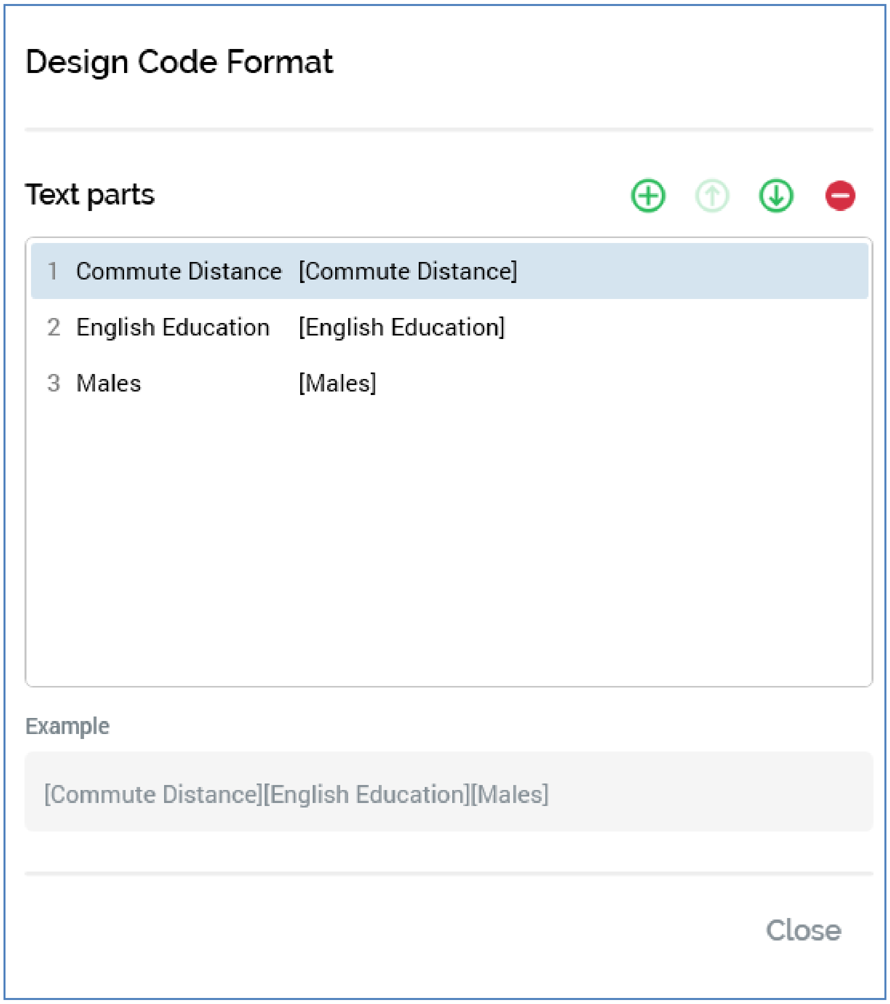


The following cell list options can be set:

- Cell Code Format: this button allows you define the format of automatically-generated cell codes.

  When a cell code format has not been set, the button's text reads 'Click here to design the format'. When it has been set, an example cell code format is shown on the button itself.

  Clicking the button displays the Design Code Format dialog.



The Design Code Format dialog allows you to build up a format for cell codes that are generated automatically. A format consists of text parts. Several types of text part are available for inclusion in a cell code format, and each is discussed below.

The Design Code Format dialog contains the following:

- Text parts toolbar: the toolbar exposes the following options:
  - Add a new Text Part: invocation of this option displays a submenu that in turn exposes the following options:
    - Add String
    - Add Date part
    - Add Cell number
    - Add Audience instance id
    - [For each dimension in Dimensions list,] Add [Dimension Name]

Selection of a text part adds it to the Text parts list and updates the example cell code format shown at the bottom of the dialog immediately. The example shown at the Cell code format button is updated at the same time.

  - Move the selected Text Part up: this button is enabled when a text part other than the first in the list is selected. Invocation moves the text part up one position in the list. Example cell code formats are updated immediately.
  - Move the selected Text Part down: this button is enabled when a text part other than the last in the list is selected. Invocation moves the text part down one position in the list. Example cell code formats are updated immediately.
  - Remove the selected Text Part: this button is enabled when a text part is selected in the list. Invocation removes the selected text part without display of an 'Are You Sure?' dialog.

- Text parts list: the Text part list displays any text parts included within the current cell list's cell code format. For each, the following are displayed:
  - [Ordinal position indicator]: a read-only, system-supplied integer.
  - [Text part type]: read-only. One of: String, Date part, Cell number, Audience instance id, or [Dimension Name].
  - [Value]: this is set in accordance with the text part's type:
    - String: a text field is displayed, blank by default, within which you can specify a value for the text part. Provision of a value is optional. The specified value is shown 'as is' both in the cell code format examples, and also in any automatically-generated cell codes.
    - Date part: a dropdown field is shown, exposing the following values: DayOfTheMonth (the default), DayNameShort, DayNameFull, Month, MonthNameShort, MonthNameFull, Year2Digits, Year4Digits, Hour, Minutes, Seconds and Milliseconds. Having selected a value, the cell code format example, and any generated cell codes, default to the current date and time. The actual cell codes applied to any cells generated during audience execution will include date parts set in accordance with the date and time of execution.
    - Cell number: shown as a read-only '[CellNo]' in the Text parts list and example cell code formats. When included as part of a cell's cell code, a cell number text part is set to an integer representing the cell's ordinal position in the Cells list.
    - Audience instance id: shown as a read-only '[AudienceID]' in the Text parts list, example cell code formats and within auto-generated cell codes in the Cells list. When included as part of a cell's cell code, at audience execution, an Audience ID text part is set to the audience's unique integer ID value.
    - Dimension: shown as a read-only '[Dimension Name]' in the Text parts list and example cell code formats (e.g. '[Financial Group]'). Within auto-generated cell

codes in the Cells list, a dimension text part is set to the dimension value for the current cell (e.g. 'High Flyers').

- Example: a read-only example of the cell code format is shown at the bottom of the Design Code Format dialog. It displays an example cell code in accordance with the rules outlined above:

  - String text part values are displayed as entered
  - Date text part values are displayed in accordance with the part's dropdown setting
  - Cell number text parts are displayed as '[CellNo]'
  - Audience instance ID text parts are displayed as '[AudienceId]'
  - Dimension text parts are displayed as '[Dimension Name]'

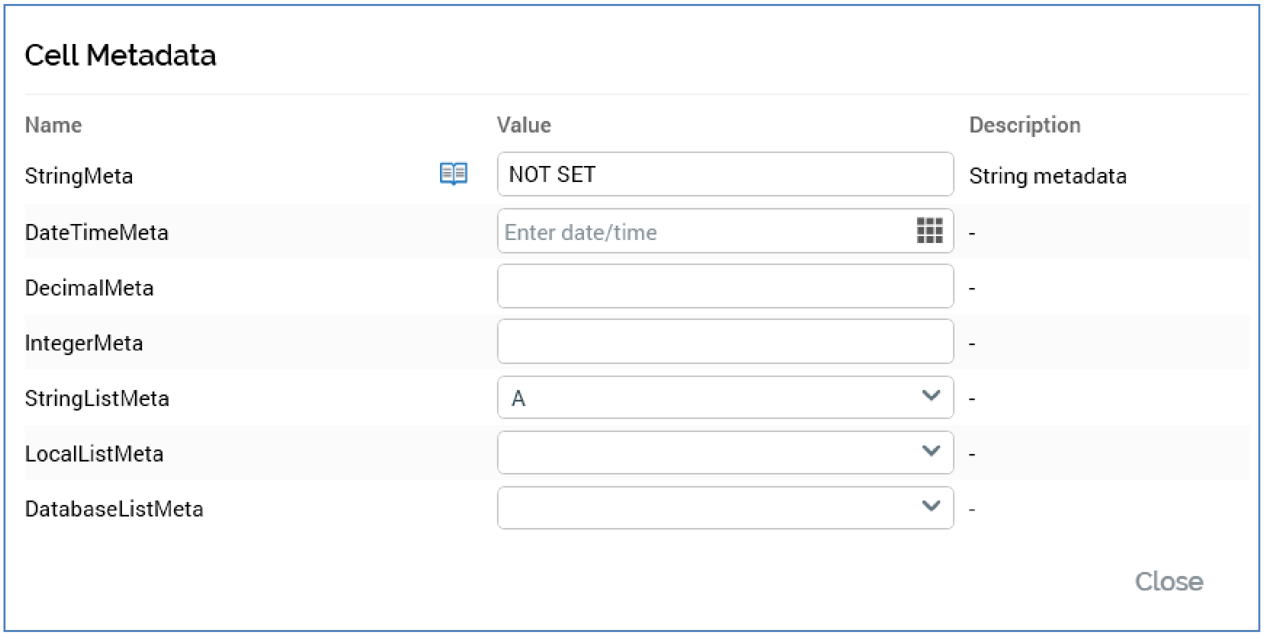
  Note that the maximum length for a cell code format is 100 characters – above this length, a validation error is raised.

Clicking Close removes the Design Code Format dialog from display and applies the cell code format to any cells displayed in the Cells list that do not have manually-overridden cell codes. Clicking off the dialog has the same effect.

- Generate Default cell: this dropdown, exposing 'Yes' and 'No' (the default) values, allows you to define whether the cell list will support the creation of a default cell, into which will fall all records not targeted explicitly by a cell in the Cells list. Setting the property to 'Yes' enables the Default cell code and Default cell metadata fields.

- Default Cell Code: and is enabled when Generate Default Cell is set to 'Yes' (in which case provision of a Default Cell Code is mandatory). The code can be a maximum length of 100 characters. The Default cell code is assigned to all records that are not targeted explicitly by a defined cell, and so end up in a 'remainder' cell.

- Default Cell Metadata: allows you to assign metadata attribute values to the default cell. Default Cell Metadata is only enabled when Generate default cell is set to 'Yes'. By default, 'No overrides' is displayed as the text on a button which, when clicked, displays the Cell Metadata dialog, in which you can record metadata attribute values for the default cell.



Upon overriding the default cell's metadata, the button text is updated to '[n] override[s]' (where n is the number of metadata attribute values overridden at the default cell).

Audience Definition: this field defines the output tables where cells will be created and metadata values persisted). Audience Definition is set using a dropdown that lists all audience definitions configured within the current RPI client. Provision of an Audience Definition is mandatory, and the field defaults to the first audience definition alphabetically.

If system configuration setting EnableOrgNodeConfigUserControl is set to true, and there exist any audience definitions to which you do not have access, a View restricted items button is shown at the bottom of the dropdown.

Note that restricting access to specific audience definitions is carried out in the Audience Definitions configuration interface, in which you can link an audience definition to one or more organization nodes.

If your user account is linked to an organization node user group that matches an audience definition's linked organization node, you will have access to that audience definition. If an audience definition is associated with more than one organization node, a user need be associated with only one of the nodes to access the audience definition. If an audience definition is associated with a descendent node from an organization hierarchy, a user associated with an ancestor node may access the audience definition.

For more information, please see the Configuration Workbench documentation.

When you click the button, it is selected, and its text set to Hide restricted items. A list of audience definition levels is displayed at the bottom of the chooser.

You can select a restricted audience definition; however, on its display at the cell list, it is accompanied by a warning indicator. A tooltip is shown when you hover over the warning icon.

Restricted Items are hidden again on redisplay of the chooser. If no restricted audience definitions exist, the Restricted Items button is not shown.

If system configuration setting EnableOrgNodeConfigUserControl is set to false, Restricted Items are not shown, and access to all audience definitions is freely available, irrespective of any linked organization nodes.

- Input Audience: this field is allows you to select an optional input audience to allow code generation based on metadata values or audience segments.

  You can, optionally, select an audience to serve as the cell list's Input Audience. When a cell list block configured with the cell list is executed in an audience, the rules defined within the Input Audience are executed, output cells are generated and metadata values are applied to them. These cells then serve as the input to the cell list block and allow two additional types of dimension to be added to the current cell list.

  Metadata-based dimensions allow you to determine cell membership within the current cell list based on metadata values assigned during Input Audience execution.

  Output-based dimensions allow you to determine cell membership within the current cell list based on the output cell from the Input Audience to which records belong.

  You can browse for an Input Audience using the File System Dialog or populate the field by dragging and dropping an audience sourced from the toolbox. Selecting an Input Audience enables the Use segments as dimension checkbox. Having selected an audience, you can open its latest version in the Audience Designer.

  Once set, you can also clear the Input Audience; clearing the property removes any associated metadata attribute and output dimensions and any cells that depend on dimensions of either type and unchecks the Use segments as dimension checkbox.

  A validation error is raised if the selected Input Audience contains a cell list block configured with the current cell list. A runtime validation error is raised if the Input Audience's audience definition is incompatible with the current cell list's audience definition.

- Use input audience segments as dimension: this checkbox allows you to specify whether the segments of the Input Audience will be used as a dimension. It is unchecked by default. Checking adds an 'Audience Segment' dimension to the Dimensions list. One dimension value is available per Input audience segment.

  Note that, if the input audience's segment structure changes, such changes are not reflected at any cells generated using the same. Any changes will need to be reflected by manually re-generating cells.

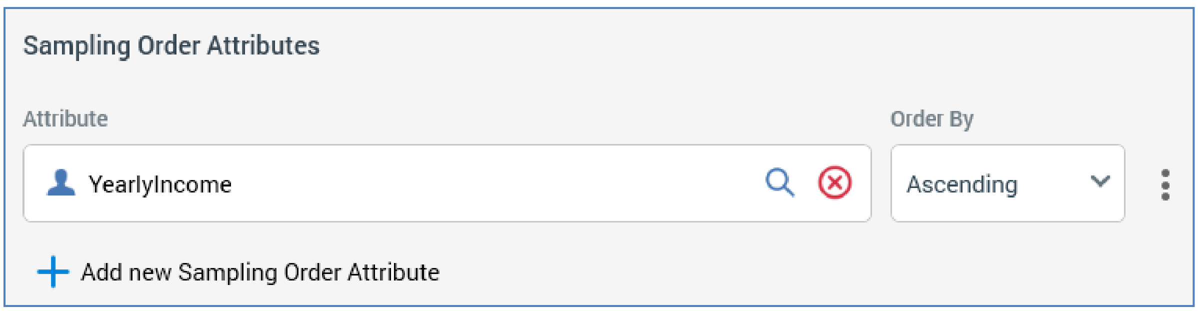
- Overall Volume Cap: an optional integer field that allows you to define a maximum number of records that can be output by the cell list. For example, if you have a cell list that produces three equal cells capped at 10,000 records each, and you define an Overall volume cap of 15,000 records, the first cell will contain 10,000 records, the second 5,000 records and the final cell will be empty (but will still be created).

- Sampling Rule: this property allows you to define whether, if cell capping is to be applied, records will be selected randomly or in accordance with a specified priority order. A dropdown, the property exposes the following values:

  - Random: selected by default.

  - Cap on attribute order: when this option is selected, the Sampling Order Attributes property is displayed.

- Sampling Order Attributes: this property is displayed when Sampling Rule is set to 'Cap on Attribute Order'.



The list displays the cell list's sampling order attributes, which define the order in which records will be selected when capping is applied. Each entry in the list exposes the following:

  - Attribute: provision of an attribute file is mandatory. You can browse for an attribute, or you can provide one using drag and drop. Having populated the property, you can View Information relating to the attribute in the File Information Dialog. You can also clear your selection. Exists in table and parameter attributes are not supported in this context.

  - Order By: this dropdown field allows you to specify the attribute value sort order (Ascending/Descending) when capping is applied. By default, the property is set to 'Ascending'.

  - Actions: exposing the following options:

    - Move up

    - Move down

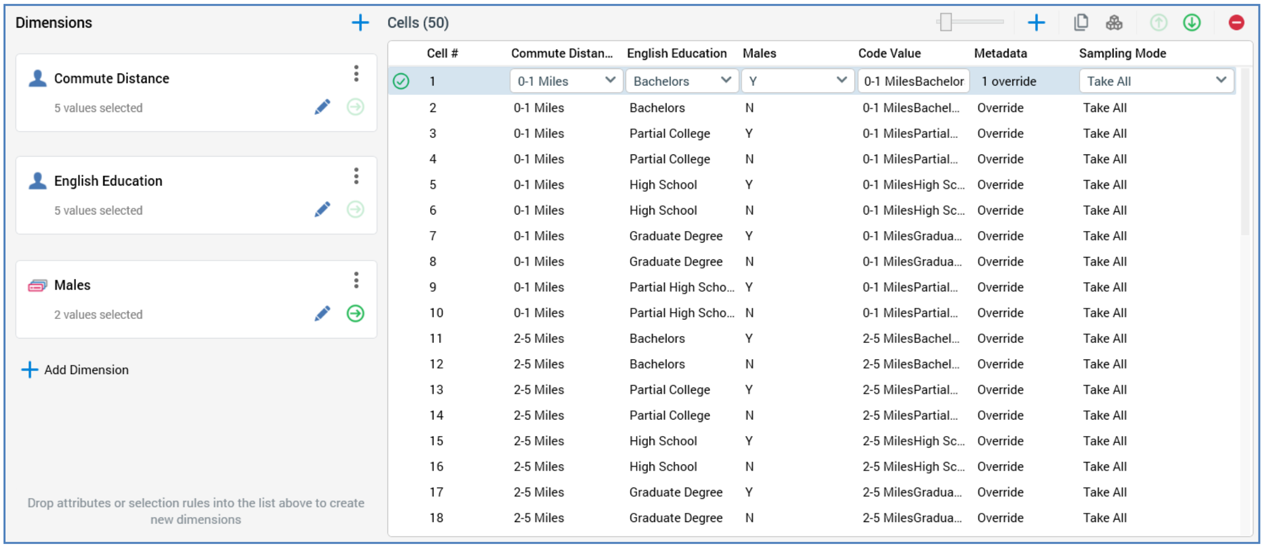
    - Remove: not protected by 'Are You Sure?'

An Add new Sampling Order attribute button is displayed at the bottom of the list. You can also add a sampling order attribute by dragging an attribute from the toolbox and dropping it onto the list.

Sampling Order Attributes are applied when cells are generated, and when one or more cells' capping values have been specified (Sampling Mode being set to one of Volume or Percent).

16.11 Dimensions & Cells Tab

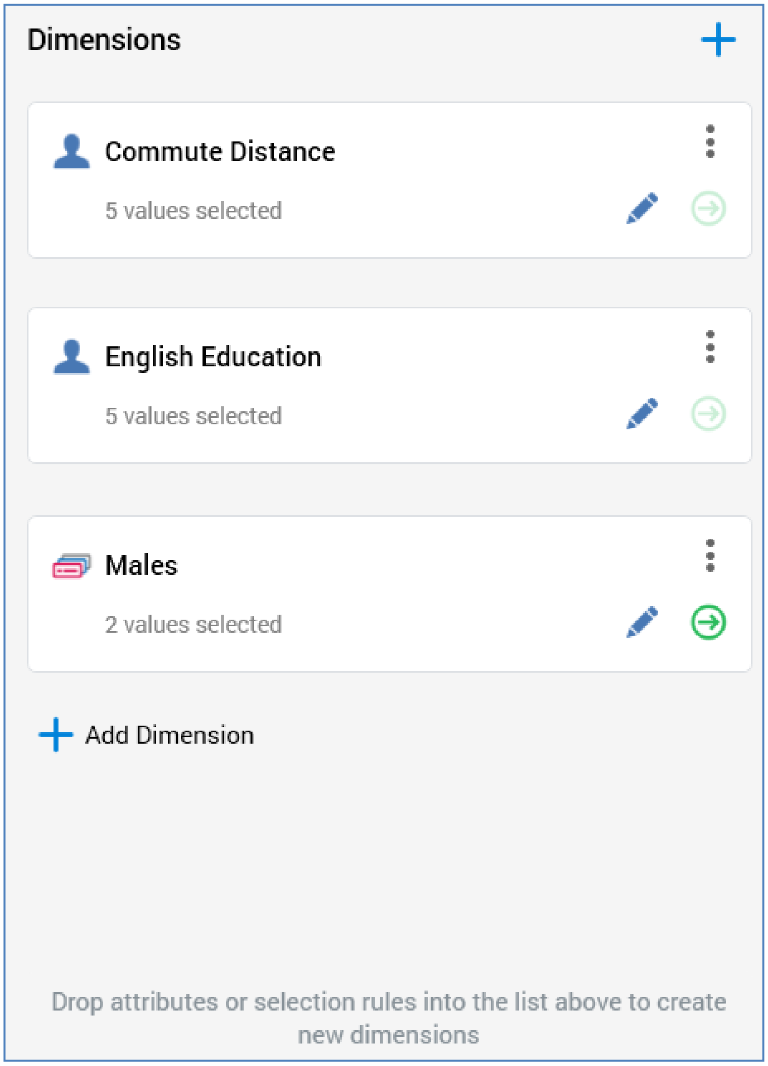
The Cell List Designer's Dimensions & Cells tab lists the Dimensions used by the cell list, and the Cells generated by selecting values at the same.



Dimensions and Cells are documented separately.

16.11.1 Dimensions List

The Dimensions list is shown to the left of the Dimensions & Cells tab.



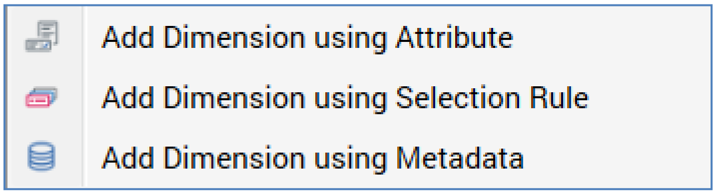
It lists the dimensions selected for the current cell list. Dimensions may be based on:

- Attribute values
- Selection rule targeting
- Input audience metadata attribute values
- Input audience segment membership

Each of these is discussed further below.

The Dimensions list contains the following:

- Toolbar, exposing the following options:
    - Add a new Dimension: clicking this button displays a submenu, which exposes the following:



        - Add Dimension using Attribute: selecting this menu option displays the File System Dialog. You can select the attribute you require and invoke Choose the selected attribute to confirm your choice. You cannot choose an exists in table or parameter attribute. Having made your selection, a new, attribute-based dimension is added to the bottom of the Dimensions list.

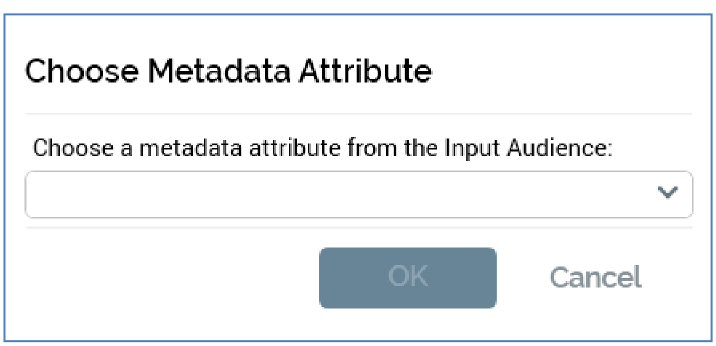
          Note that a warning message is displayed when the attribute's type is Exists in table; you cannot create a dimension based on attributes of this type.

          In addition, attributes with names matching certain reserved words (e.g. ‘OutputName’) cannot be used as dimensions.

        - Add Dimension using Selection Rule: selecting this menu option displays the Choose Selection Rule File System Dialog. The dialog displays selection rule files only. You can choose a standard or basic selection rule from an accessible folder in the RPI file system and double-click or click OK to select it. NoSQL selection rules are not supported. The new, selection rule-based dimension is added to the bottom of the Dimensions list.

          You can also cancel the File System Dialog, which closes it without creating a dimension.

        - Add Dimension using Metadata: if you select this menu option and an Input audience has not been selected, a message is displayed ('Please assign an Input audience to add metadata dimensions'). If an Input audience has been selected, the Choose Metadata Attribute dialog is shown.



    A dropdown lists all metadata attributes defined by the Input audience's audience definition. Selecting a metadata attribute displays the OK button, and invocation of OK creates a new dimension using the metadata attribute. The new, metadata-attribute based dimension is added to the bottom of the Dimensions list.

    You can click Cancel to close the Choose Metadata Attribute dialog. Clicking off the dialog has the same effect.

  A validation error is raised if you add the same dimension to the cell list more than once.

  Note that you can also add dimensions by dragging one or more attributes or selection rules from the toolbox and dropping them directly onto the Dimensions list.

  - Move the selected Dimension up: this button is only enabled when a dimension other than the first in the list is selected. Invocation moves the dimension up one position in the list.

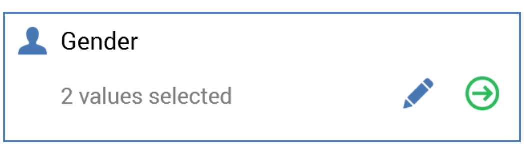
  - Move the selected Dimension down: this button is only enabled when a dimension other than the last in the list is selected. Invocation moves the dimension down one position in the list.

  - Remove the selected Dimension: invocation of this option removes the selected dimension from the Dimensions list and is protected by an 'Are You Sure?' dialog.

- List: initial display of a cell list's Dimensions list shows the message 'No dimensions have been added'. Once one or more dimensions have been added to the cell list, they are displayed in the Dimensions list.

  Dimensions are list in the order in which they were added to the cell list (unless moved up or down manually thereafter).

  For each dimension, the following are displayed:



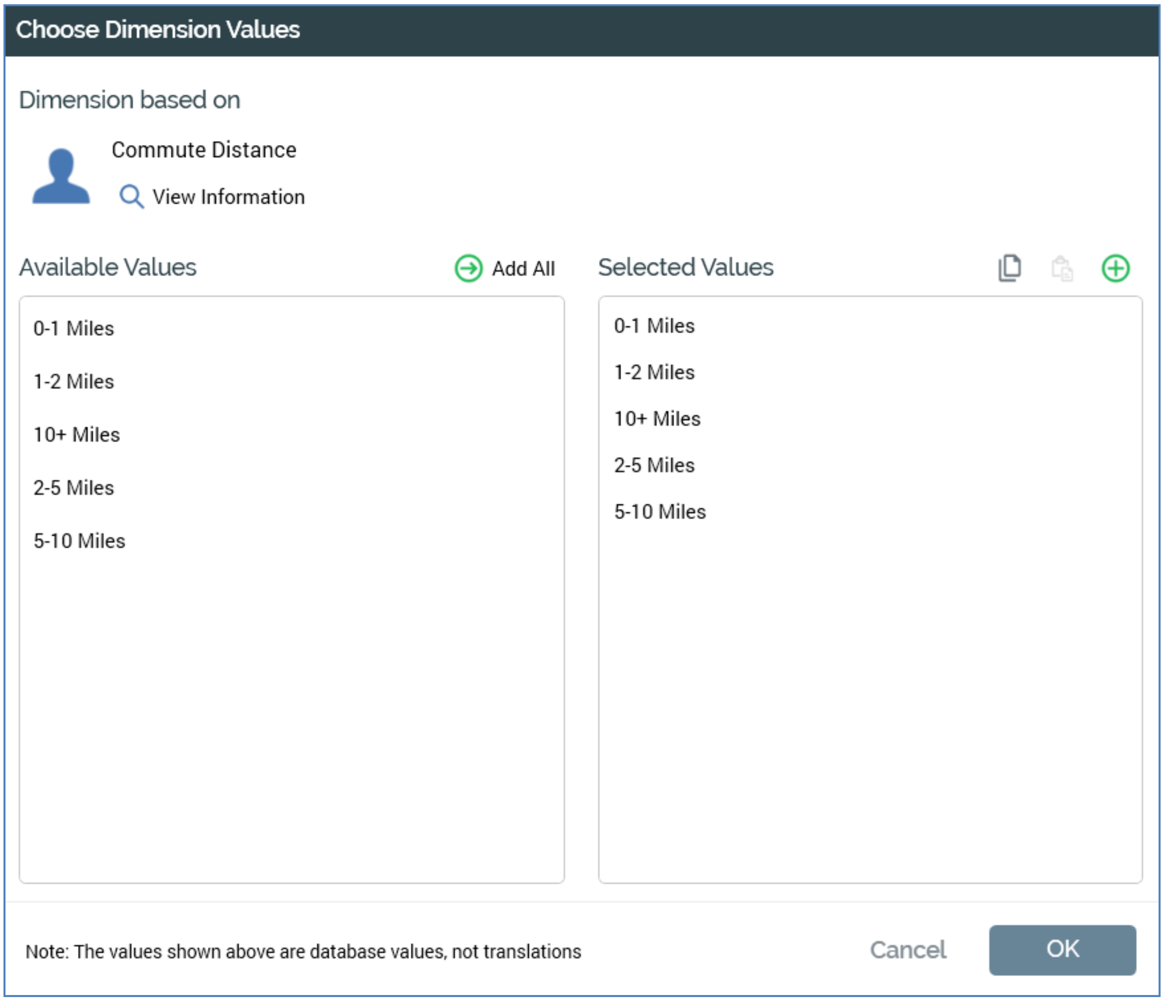
  - [Icon]: specific to the dimension type.

  - [Name]: of the attribute, selection rule or metadata attribute; if the dimension is based on Input audience segments, its name is 'Audience Segment'. A dimension's name is read-only.

  - 'No | [n] values selected': this text reflects the number of values currently selected for the dimension.

  - Choose Dimension Values: invocation of this button displays the Choose [Dimension Name] Dimension Values dialog, which allows you select values from a dimension that are of relevance to the current cell list.

Note that you cannot use an anonymous auxiliary database-resolving selection rule or an anonymous auxiliary database attribute as a cell list dimension.



Note that all values displayed in the Choose Dimension Values dialog are database, not translation, values. A message shown at the bottom of the grid confirms this fact.

The dialog contains the following:

- Dimension Based On: the section at the top of the dialog provides a summary of the item upon which the dimension is based.

  The information shown depends on the type of item the dimension is based on:

  - Attribute: an icon accordant with the attribute's target table is displayed along with its name. A View Information button gives access to the File Information dialog, in which the attribute's details are displayed.

- Selection rule: the selection rule icon is displayed along with its name. A View Information button gives access to the File Information dialog, in which the selection rule's details are displayed

- Metadata attribute: a generic icon is shown alongside the metadata attribute's name.

- Audience segment: the audience icon is displayed along with the Input audience's name.

▪ Available values list: this section lists the dimension's values. An Add All button is displayed at the top of the list. Invocation adds all values not currently in the Selected values list to that list. Values in the Available values list are ordered alphanumerically.

  If a dimension is based on an attribute, the number of distinct attribute values listed is accordant with config setting AttributeValueListSize. Where a greater number of distinct values than the configured limit exists, an advisory message is displayed. When attribute values have not cached, a message ('Values have not been loaded for this dimension') and button ('Start loading values') are shown. Clicking the button starts the loading of attribute values (note that attribute values are loaded in the background irrespective of whether the button is clicked).

  If a dimension is based on a selection rule, the values 'Y' and 'N' are listed – the former representing those records that are targeted by the selection rule, the latter those that are not.

  If a dimension is based on a metadata attribute, all distinct metadata attribute values as defined in Input audience are listed.

  An 'Add this value to the list of selected values' button is displayed when you hover over an available value. Clicking the button adds the value to the Selected values list. Double-clicking the value has the same effect.

  A warning message is shown when you attempt to add the same value to the Selected values list more than once.

▪ Selected values list: this section lists all values selected for the current dimension. It consists of a toolbar and a list.

  - Toolbar: exposing the following options:

    - Add a custom value to the list of selected values: this button is displayed at the top of the Selected values list for attribute-based dimensions only. Invocation adds a new value to the bottom of the Selected values list. If a string attribute, the new value's default value is 'New value'. If 'New value' already exists, the new value is 'New value 2' (this value can be incremented). If an integer or decimal attribute, the new value's default value is '0'. If '0' already exists, the new value is '1' (this value can be incremented if required). If a date attribute, the default value is set to Now.

        - Copy values to clipboard: this button is available when one or more selected values are present in the Selected Values list. Clicking it copies the values in question to the clipboard. Null values are not copied.

        - Paste values from clipboard: invocation of this option displays a submenu:

            - Replace existing Values: selecting this option removes the existing Selected Values and replaces them with values pasted from the clipboard.

            - Add to existing Values: selecting this option appends the contents of the clipboard to the Selected Values list. Values are pasted in appropriate alphabetical positions. Any existing or duplicate values are not added (a warning message is displayed in this case).

              Note that data pasted must be compatible with the criterion's attribute's data type. Values pasted must be database values, not translations.

    - List: this section displays the selected dimension values. Values are ordered alphanumerically.

      If the dimension is based on an attribute, the currently-selected value is writeable; if you desire, you can overwrite the value sourced from the database.

      Note that a validation error is raised if more than one identical selected value is listed.

      A ‘Remove this value from the list of selected values’ button is displayed when you hover over a selected dimension value. Clicking the button removes the value from the list. An ‘Are You Sure?’ dialog is not shown.

      Note that removing a dimension value sets the value of any cells to which that value is assigned to ‘Any’.

  - OK: invocation of this option removes the dialog from display and applies any changes made. The dimension as shown in the Dimensions list is updated to show the current number of selected values.

  - Cancel: invocation of this option removes dialog from display without applying any changes made.

- Generate Cells for this Dimension: invocation of this option adds at least one cell per selected dimension value to the Cells list.

  If the grid already contains cells generated from another dimension’s values, one cell per unique dimension value combination is created.

  If another dimension has been selected, but no cells generated based on its values, 'Any' is displayed in the dimension column in the grid.

If one or more cells have been deleted from the Cells list, on invocation of Generate…, any 'gaps' (based on unique dimension value combinations) are 'filled in' by the creation of new cells. Any relevant 'Any' settings are replaced by explicit values.

Newly-generated cells' Code Values are provided if a Cell code format has been defined.

The maximum number of cells that can be added to a cell list is defined by system configuration setting MaxCellListTemplateCells. Note that if this setting's value is decreased such that it is lower than the number of cells within an existing cell list, the existing template is not affected.

If the maximum number of cells is reached during cell generation a message is displayed:

'The maximum amount of allowed cells was reached. [n] cell(s) were added'

A confirmatory message is displayed post-cell generation.

A context menu, containing a single option (Open Latest Version) is available when you right-click a selection rule dimension only (the option is not available for attribute, metadata and audience segment-based dimensions). Invocation opens the selection rule in question in the Rule Designer. If the rule is already open, it receives the focus.

A validation error is displayed when a cell list contains no dimensions. A validation error is also raised when a dimension based on the same source item is present in the Dimensions list.

Another Add Dimension button is displayed below all configured dimensions.

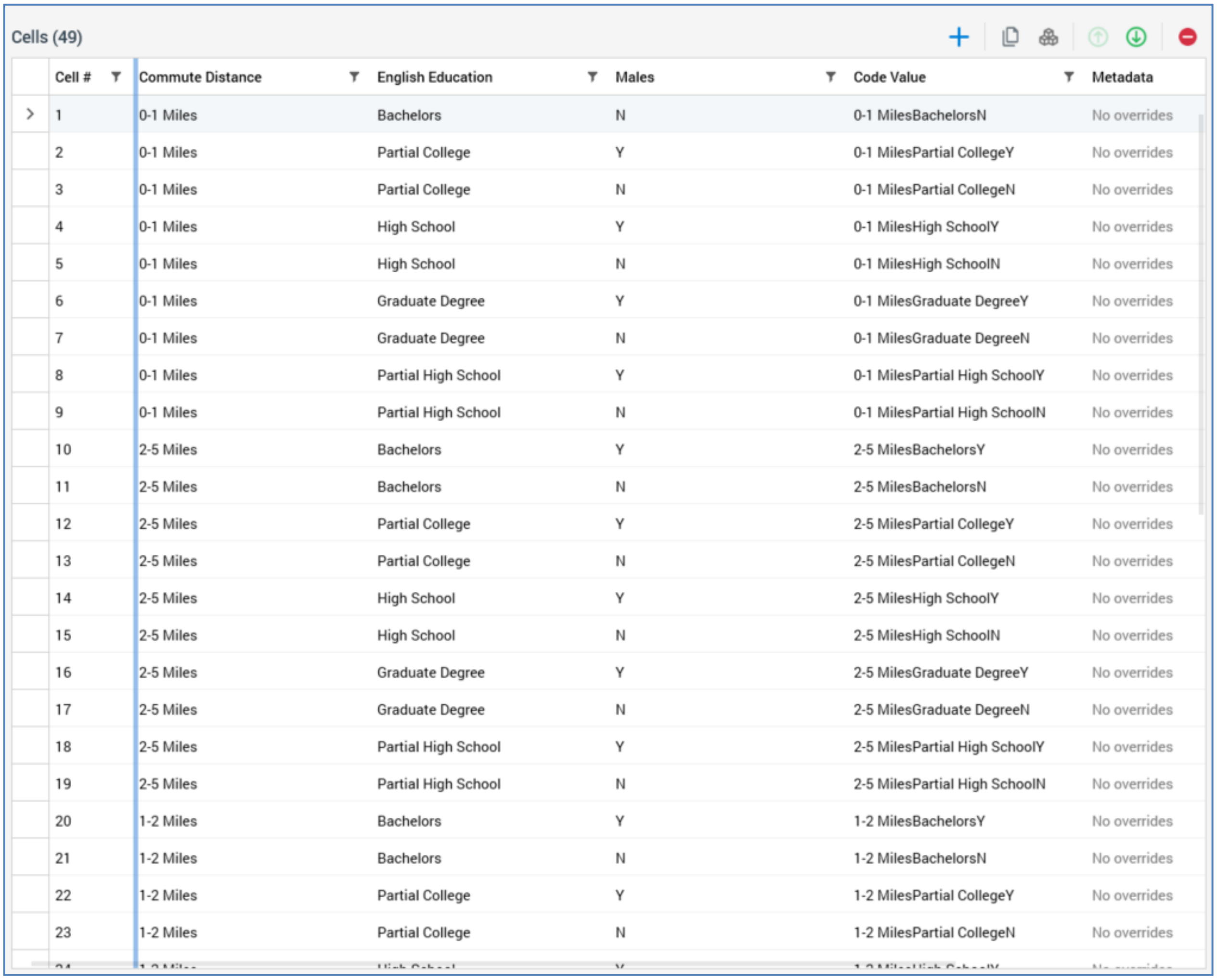
An instructional message appears at the bottom of the Dimensions list:

The contents of the Dimensions list are synchronized with the Cells list - one column per listed dimension is shown in the Cells list.

Columns are ordered from left to right as per the top to bottom order in the Cells list. Removing a dimension removes the related column in the Cells list.

16.11.2 Cells List

The cell list's cells are listed in the Cells list.


Cells (49)

Cell #	Commute Distance	English Education	Males	Code Value	Metadata
1	0-1 Miles	Bachelors	N	0-1 MilesBachelorsN	No overrides
2	0-1 Miles	Partial College	Y	0-1 MilesPartial CollegeY	No overrides
3	0-1 Miles	Partial College	N	0-1 MilesPartial CollegeN	No overrides
4	0-1 Miles	High School	Y	0-1 MilesHigh SchoolY	No overrides
5	0-1 Miles	High School	N	0-1 MilesHigh SchoolN	No overrides
6	0-1 Miles	Graduate Degree	Y	0-1 MilesGraduate DegreeY	No overrides
7	0-1 Miles	Graduate Degree	N	0-1 MilesGraduate DegreeN	No overrides
8	0-1 Miles	Partial High School	Y	0-1 MilesPartial High SchoolY	No overrides
9	0-1 Miles	Partial High School	N	0-1 MilesPartial High SchoolN	No overrides
10	2-5 Miles	Bachelors	Y	2-5 MilesBachelorsY	No overrides
11	2-5 Miles	Bachelors	N	2-5 MilesBachelorsN	No overrides
12	2-5 Miles	Partial College	Y	2-5 MilesPartial CollegeY	No overrides
13	2-5 Miles	Partial College	N	2-5 MilesPartial CollegeN	No overrides
14	2-5 Miles	High School	Y	2-5 MilesHigh SchoolY	No overrides
15	2-5 Miles	High School	N	2-5 MilesHigh SchoolN	No overrides
16	2-5 Miles	Graduate Degree	Y	2-5 MilesGraduate DegreeY	No overrides
17	2-5 Miles	Graduate Degree	N	2-5 MilesGraduate DegreeN	No overrides
18	2-5 Miles	Partial High School	Y	2-5 MilesPartial High SchoolY	No overrides
19	2-5 Miles	Partial High School	N	2-5 MilesPartial High SchoolN	No overrides
20	1-2 Miles	Bachelors	Y	1-2 MilesBachelorsY	No overrides
21	1-2 Miles	Bachelors	N	1-2 MilesBachelorsN	No overrides
22	1-2 Miles	Partial College	Y	1-2 MilesPartial CollegeY	No overrides
23	1-2 Miles	Partial College	N	1-2 MilesPartial CollegeN	No overrides

Cells are created when an audience containing a cell list block configured with a cell list is executed, either as a test within the Audience Designer, or in an interaction workflow.

A record's inclusion in a given cell is determined by:

- Its values of the attributes utilized as dimensions in the cell list
- Whether it is targeted by any selection rules utilized as dimensions
- Its values of any metadata attributes utilized as dimensions (as determined by the cell list's Input audience)
- Its being included in the cell list's Input audience's segments, if utilized as dimensions

The Cells list contains the following:

- Title: ‘Cells (*n*)’ (where *n* is the number of cells displayed in the grid).
- Toolbar:
  - Add a new Cell: this option is available when one or more dimensions are listed in the Dimensions list. Invocation adds a new cell to the bottom of the grid. The cell's dimension values are set as follows:

    If values are not selected for a given dimension, the cell’s value for that dimension is set to a read-only 'Any'.

    If values have been selected for a given dimension, the cell’s value for that dimension is set to the first available value that will ensure a unique dimension value combination. Dimension values cycled through from the right, e.g.: ‘AAA’, ‘AAB’, ‘AAC’, ‘ABA’, ‘ABB’, ‘ABC’, ‘BAA’, ‘BAB’, etc.

    If a unique dimension value combination is not possible, a duplicate will be created.

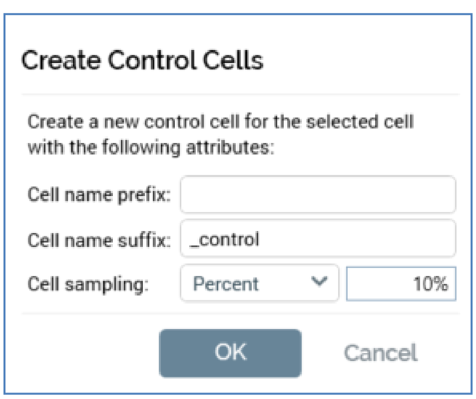
    The cell's Code Value is set in accordance with the cell list’s defined Cell code format. If not set, Code Value is blank (and a validation error is raised).

    The maximum number of cells that can be added to a cell list is defined by system configuration setting MaxCellListTemplateCells.

  - Clone the selected Cell: this option is only available when a single cell is selected in the grid. Invocation creates an exact copy of the cell, which is displayed immediately below the original.

    A warning triangle is displayed if the original cell's Sampling Mode is Take All. A tooltip shown on hovering over the warning indicator states 'This cell is a duplicate of another cell'. The warning triangle is removed when the no is longer a duplicate: i.e. the duplicate or original cell's dimension values are set to a unique combination, or the initial cell's Sampling Mode is set to a value other than Take All (note that when an initial cell takes all records, no records are left for subsequent duplicates – hence the warning).

  - Create Control Cells from selected Cells: this option is only available when one or more cells are selected in the Cells list. Invocation displays the Create Control Cells dialog.



The dialog contains the following:

- Cell name prefix: an optional text field that can be a maximum of 100 characters in length. Cell prefix is added before the code value of a cell to be cloned when a new clone cell is created.
- Cell name suffix: an optional text field that can be a maximum of 100 characters in length, and which defaults to the value '_control'. Cell prefix is appended to the code value of a cell to be cloned when a new clone cell is created.
- Cell sampling: two fields are used to define the records that will be targeted by a new clone cell.
  - [Type]: a dropdown field that exposes values Take All, Volume and Percent (the default value).
  - [Value]: this field is only available when [Type] is set to Volume or Percent. Data entry constrained to integer or decimal values as appropriate. By default, the field is set to 10% if sampling by Percent, or 1,000 if sampling by Volume.
- OK: clicking this button creates clone(s) of the selected cell(s). An original cell's properties are overridden in a clone cell in accordance with the specified parameters: the new cell's Code Value includes the Cell name prefix and/or suffix, and its Sampling Mode is also set appropriately. Each control cell appears immediately before the cell upon which it is based.
- Cancel: clicking this button removes the dialog from display without creating control cells.

Note that, if you create control cells and then change the Cell code format, the amended format is not applied to the control cells.

- Move the selected Cells up: this option is enabled when a single cell other than the first in the grid, or a contiguous group of cells that does not contain the first in the grid, is selected. Invocation moves the selected cell(s) up one position in the grid. If cells' Code Values include a cell number, they are adjusted to reflect the cells' current ordinal positions.
- Move the selected Cells down: this option is enabled when a single cell other than the last in the grid, or a contiguous group of cells that does not contain the last in the grid, is selected. Invocation moves the selected cell(s) down one position in the grid. If cells' Code Values include a cell number, they are adjusted to reflect the cells' current ordinal positions.
- Remove the selected Cells: this option is available when one or more cells are selected in the grid. Invocation removes the selected cells and is protected by an 'Are You Sure?' dialog.

- Cells list: when displayed initially, the grid contains the following columns:
  - Cell #

- Code Value
- Metadata
- Sampling Mode

The grid initially displays the message 'No cells have been added'.

One column is added to the grid per dimension present in the Dimensions list.

The following columns are shown in the Cells list:

- [Selected indicator]: a tick is shown when a row is selected.
- [Warning indicator]: sharing the same column as the Selected indicator, the warning indicator is accompanied by a tooltip ('This cell is a duplicate of another cell'). The warning indicator is displayed against all cells that are duplicates of preceding cells within the list. The indicator is removed when the cell is no longer a duplicate (i.e. the duplicate or initial cell's dimension values are set to a unique combination, or the initial cell's Sampling Mode is set to a value other than Take All – note that when the initial cell takes all records, none are left for subsequent duplicates).
- Cell #: the cell's number when compared to its peers is displayed as a read-only integer. Note that if you move a cell up or down its cell number changes to reflect its current ordinal position.
- [Dimension]: one column is shown per dimension in the Dimensions list. Columns are ordered as per dimensions in the Dimensions list; the leftmost column is the first in the Dimensions list. Removal of a dimension from the Dimensions list removes the associated column from the grid.

  When no values are selected for a dimension, all cells' values for that dimension are set to 'Any'.

  When a cell is selected, a dropdown field is displayed. If dimension values are selected, the dropdown exposes values:

  - 'Any'
  - All selected dimension values

  If no dimension values are selected, only value 'Any' is available.

  If a cell's dimension value is set such that a non-unique dimension value combination exists, a warning triangle displayed is against the first duplicate cell.

- Code Value: a cell's code value is used to provide a unique reference that can be used to identify the cell. Provision of a cell code is mandatory, and its maximum length is 100 characters.

When cells are generated from a dimension’s values, their Code Values are set in accordance with the cell list’s Cell code format. If a Cell code format has not been provided, new cells’ Code Values are blank.

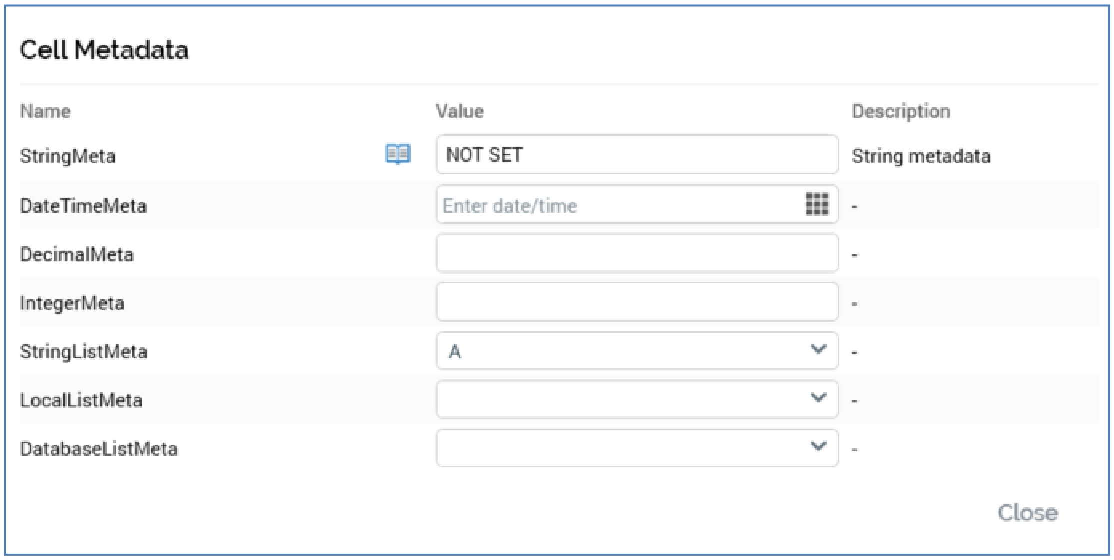
Code Value may be overridden manually. When overridden, a Clear the overridden value button is displayed to the right. If you delete a cell’s Code Value, it reverts to the originally-supplied value.

Text parts within a cell’s Code Value are rendered as follows:

- String: as per the Cell code format
- Date part: as per Cell code format for current date/time
- Cell number: as per ordinal position in the Cells list
- Audience instance id: '[AudienceID]' (note that an audience ID is not generated until audience execution)
- Dimension: the dimension value. If set to 'Any', the Code Value displays the same literal value.

Each cell's Code Value must be unique. If this is not the case, a validation error is raised.

- Metadata: the button displayed at hovering over this column initially displays the text 'Override'. Invocation displays the Cell Metadata dialog.



The dialog's grid lists all metadata attributes defined by the cell list's audience definition. For each, the following are shown:

  - Name: read-only
  - Value: set initially to the default value inherited from the audience definition. You can override the default value. Once the value has been overridden, you can revert it to its default. Datatype-specific validation is enforced.
  - Open Linked Page: this button is only displayed if a linked Wiki or external web page exists. Invocation displays the page in question in the Linked Page Browser.

  After overriding metadata attribute values, the button displays the text '[n] overrides' (where [n] is the number of overridden metadata attributes).

- Sampling Mode: a dropdown, exposing values:

  - Take All (default)
  - Volume
  - Percent

  Sampling Mode defines whether the cell will include all records that match its selected dimension values, or whether it should limit the number of records therein in accordance with a defined volume or percentage cap.

  Changing Sampling Mode to one of Volume or Percent displays the [Sampling Value] column.

- [Sampling Value]: this column is displayed when Sampling Mode is set to one of Volume or Percent. [Sampling Value] must be greater than 0. If Sampling Mode is set to Volume, the value must be a positive integer. If Sampling Mode is set to Percent, the value must be a positive decimal that is less than or equal to 100. If any duplicate cells exist and more than one utilize the Percent Sampling Mode, the percentage total across duplicate cells must be less than or equal to 100.

A validation error is raised when a cell list contains at least one dimension and no cells. A validation error is also raised when more than one cell shares the same cell code.

17 Content Editor

The RPI content editor is used to create and edit RPI content.

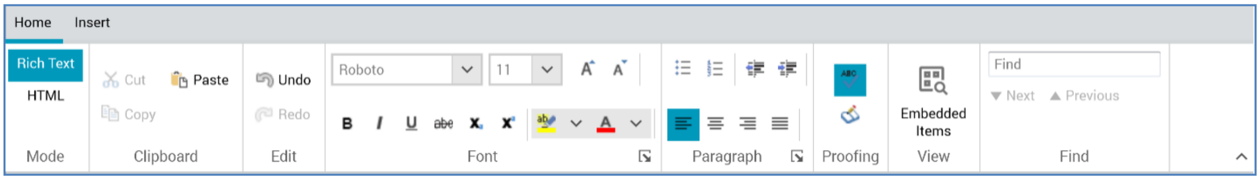
The following RPI designers make use of the content editor:

- Asset Designer
  - Text asset
  - HTML asset
- Offer Designer
  - Email offer
  - SMS offer
- Landing Page Designer
- Wiki Page Designer

This section documents the features of the content editor, including any specific to the contexts listed above.

17.1 Toolbar

A toolbar is shown at the top of the content text editor.

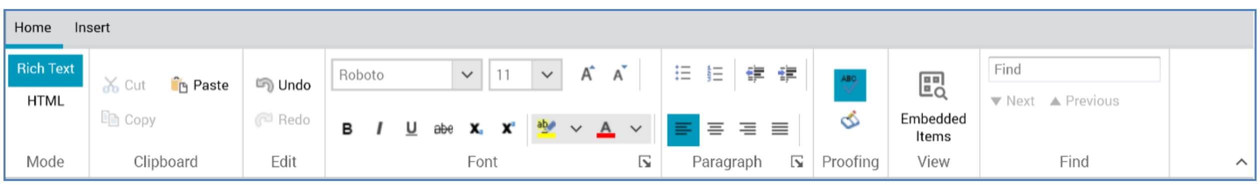


It contains a number of tabs, not all of which are always displayed. Each is documented separately below.

Note that double clicking a tab control hides the toolbar, and clicking it again shows it once more.

17.1.1 Home Tab

The Home tab is always displayed.



It can contain the following sections:

- Mode
- Clipboard
- Edit
- Font
- Paragraph
- Proofing
- View
- Find
- HTML Template
- Text
- Misc

Each is documented separately.

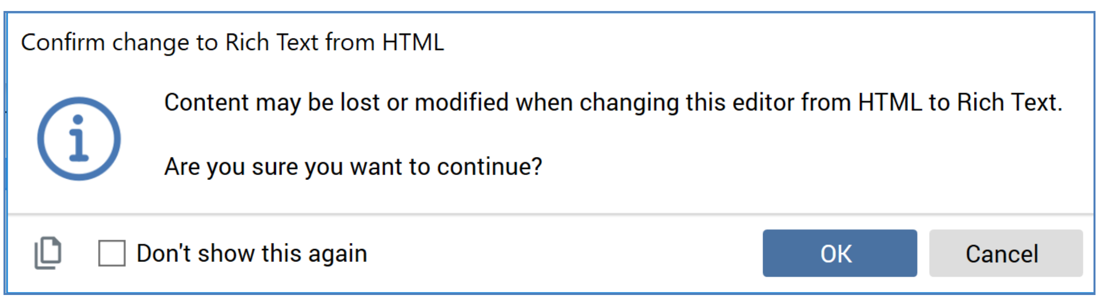
17.1.2 Home Tab – Mode Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode
- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode

The Home tab's Mode section exposes the following:

- Rich Text: clicking this button switches the current content editor into rich text mode. Upon invocation, a dialog is displayed:

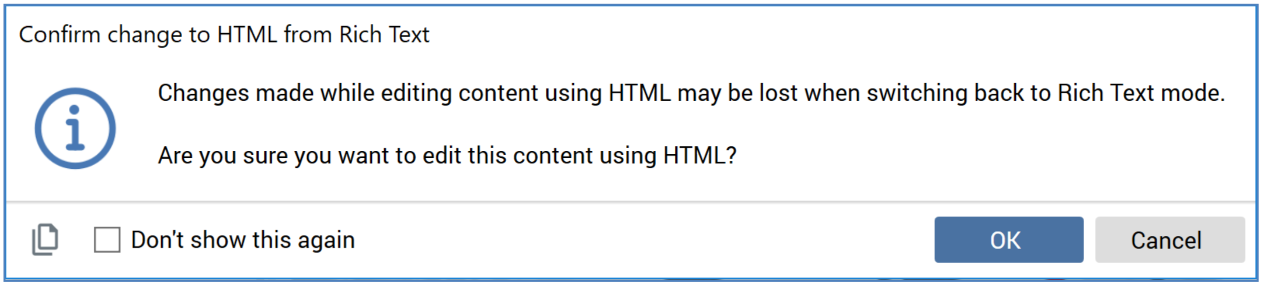


You can click OK to proceed with changing the edit mode or Cancel to remove the dialog from display without changing mode.

If you check the checkbox at the dialog's footer, the dialog will not be shown again when changing content editor mode.

Note that, if you wish to maintain precise control over the HTML that is ultimately rendered (e.g. in an email offer or HTML asset), it is recommended to use HTML, rather than rich text, mode.

- HTML: clicking this button switches the current content editor into HTML mode. Upon invocation, a dialog is displayed:



You can click OK to proceed with changing the edit mode or Cancel to remove the dialog from display without changing mode.

If you check the checkbox at the dialog's footer, the dialog will not be shown again when changing content editor mode.

Any unsupported HTML tags that you previously entered in HTML view are removed when you change display from rich text to HTML and are replaced with <SPAN> tag pairs.

Note that your most recent selection within the current designer is applied at its subsequent invocation.

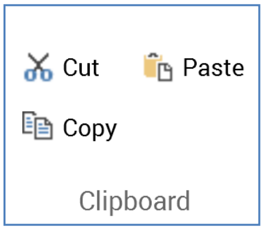
17.1.3 Home Tab – Clipboard Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Email Offer Designer – Text Email Content
- SMS Offer Designer
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode
- Asset Designer - Text Asset

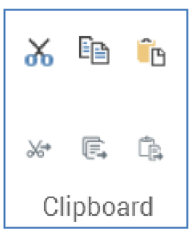
- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode

The Home tab’s Clipboard section exposes the following commands:



- Cut
- Copy: note that the copying of table content is not supported.
- Paste

The following additional commands are shown when editing Rich text:



- Cut special: displayed only when editing rich text content, this button allows you to copy the selection and put it on the clipboard, converting any embedded objects into tags that can be pasted back into content without losing their reference.
- Copy Special: as per Cut special, but copies, rather than cuts, text.
- Paste Special: displayed only when editing rich text content, this button allows you to paste the contents of the clipboard, converting any embedded object tags back into standard RPI tags and adding any references to embedded objects.

17.1.4 Home Tab – Edit Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Email Offer Designer – Text Email Content
- SMS Offer Designer
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode
- Asset Designer - Text Asset
- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode

The Home Tab's Edit section exposes the following commands:

- Undo
- Redo

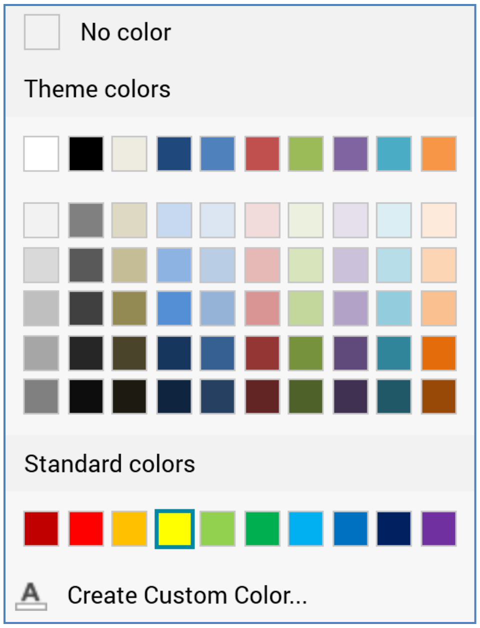
17.1.5 Home Tab – Font Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Landing Page Designer - Rich Text mode
- Asset Designer - HTML Asset - Rich Text mode
- Wiki Page Designer - Rich Text mode

The Home tab's Font section exposes the following commands:

- Font: note that not all available fonts are supported in the Preview's embedded browser control. Where a specific font is not supported, a 'best fit' equivalent is applied at Preview. Note that this may also extend to the rendering of content authored in the rich text editor in an email offer recipient's inbox.
- Font Size
- Grow Font
- Shrink Font
- Bold
- Italic
- Underline
- Strikethrough
- Subscript
- Superscript
- Text Highlight Color: this field facilitates direct application of the most-recently selected color. Clicking the accompanying dropdown displays a dialog:



The dialog gives access to the following types of color:

- No color
- Theme colors
- Standard colors
- Recent colors
- Create Custom Color...: invocation of this option displays the Create Custom Color dialog, which is documented separately.

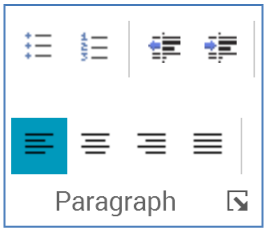
- Font Color: as per Text Highlight Color, above. Note that Automatic replaces No Color in the dialog.
- Show the font dialog box: this button, displayed in the bottom right-hand corner of the Font section, allows you to display the Font dialog box, which is documented separately.

17.1.6 Home Tab – Paragraph Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Landing Page Designer - Rich Text mode
- Asset Designer - HTML Asset - Rich Text mode
- Wiki Page Designer - Rich Text mode

The Home tab's Paragraph section exposes the following commands:



- Bullets
- Numbering
- Decrease Indent
- Increase Indent
- Align Text Left: selected by default.
- Center
- Align Text Right
- Justify
- Show the Paragraph dialog box: clicking this button, which is shown at the bottom right of the Paragraph section, displays the Paragraph Properties dialog box, which is documented separately.

17.1.7 Home Tab – Proofing Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Landing Page Designer - Rich Text mode
- Asset Designer - HTML Asset - Rich Text mode
- Wiki Page Designer – Rich Text mode

The Home tab's Proofing section exposes the following options:

- Enable Spell Check: this toggle button allows you to enable or disable spell checking within the current content editor. The enabled/disabled setting is persisted across all designer types.
- Find Next Error: this button is enabled when spell check is enabled. Clicking the button selects the next spelling error in the current content. An informational message is shown when no further spelling errors are present.

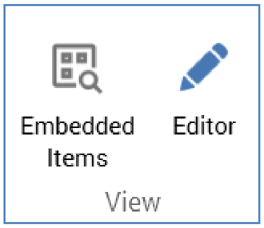
For more information on the handling of spelling errors when spell check is enabled, please see the separate Spell Check section.

17.1.8 Home Tab – View Section

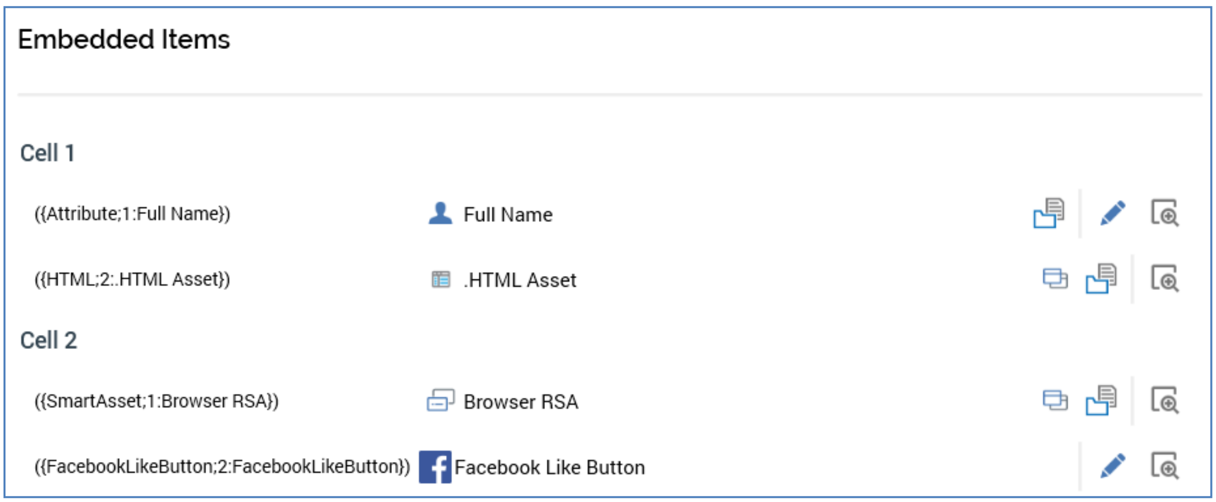
This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Email Offer Designer – Text Email Content
- Email Offer Designer - Asset Assigned to cell
- SMS Offer Designer
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Landing Page Designer - Asset Assigned to cell
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode
- Asset Designer - Text Asset
- Wiki Page Designer – HTML mode
- Wiki Page Designer – Text mode

The Home tab's View section exposes the following options:



- Embedded Items: this button is available at all of the contexts listed above. It allows you to view a list of the items (files, links, buttons and advanced smart asset variants) embedded in the current content (or, if an email offer, used in the email's Subject property). Items are listed in the Embedded Items dialog.



If no items are embedded in the content, the dialog is not shown and an informational message is displayed.

If shown for HTML email offer or landing page content, embedded items are grouped by cell. If a cell is shared, its share name is displayed; if not, its ordinal cell number is shown. Cells are ordered as per their appearance within the Page Layout section. Any items included in a cell more than once are displayed once only in that cell.

When shown in other contexts, embedded items are not grouped. Any items included in content more than once are displayed once only.

For each embedded item, the following are shown:

- Tag
- Icon
- Name: the verbiage displayed is dependent on the embedded item's type:

        - If a file, the filename is shown.
        - If a button, the name of the button type is shown.
        - If a link:
            - If linking to an address, the link address is shown
            - If linking to a landing page, the landing page name is shown.
        - If a web form element, '[web form name] ([element name])' is shown.

- Open latest version: this button is only shown for assets, advanced smart asset variants and web form elements. Invocation in respect of an asset displays the latest version of the file in the Asset Designer. If the asset is already open, it receives the focus. Invocation at an advanced smart asset variant displays the smart asset in the Smart Asset Designer. Clicking Open latest version at a web form element displays the element's parent web form in the Asset Designer.
- Open file location: this button is only shown for non-external files. When clicked, the file's folder is displayed in the File System Dialog, and the file itself is selected.
- Select in content: clicking this button highlights the first instance of the embedded item in the current context. If invoked in respect of a file that is embedded more than once in a given context, it is only selected once therein.
- Edit: this button is available at links, buttons, web form elements and advanced smart asset variants displayed within the Embedded Item dialog. Clicking it shows the item's settings in an appropriate dialog, allowing them to be edited as required. In the case of an advanced smart asset variant, the Edit Advanced Smart Asset Variant dialog allows for another variant from the same smart asset to be selected.

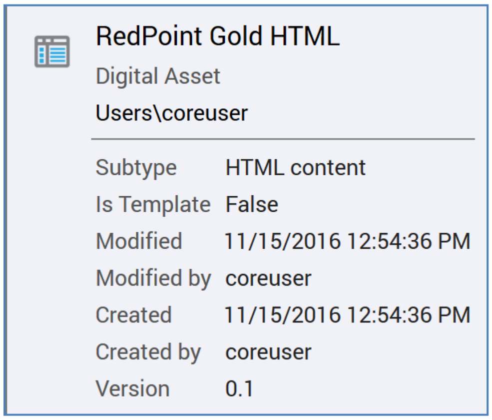
The following context menu items area available when right-clicking a local file in the Embedded Items dialog:

- View File Information...: displays the file's details in the File Information Dialog.
- Open Latest Version: only available at an asset or smart asset variant. Clicking it displays the latest version of the file in the Asset Designer. If the asset is already open, it receives the focus.
- Open This Version: only available at an asset or smart asset variant. If the current context contains a previous version of another asset, invocation of this options displays that version in another instance of the Asset Designer.
- Open File Location: displays the File System Dialog, with the file in question selected therein.

The following option is available when right-clicking an external file in the Embedded Items dialog:

- View File Information…

An informational tooltip is displayed on hovering over a file in the Embedded Items dialog, containing:



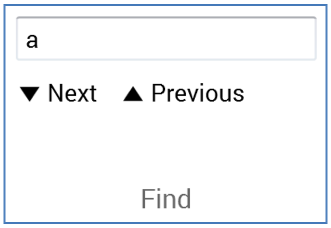
- Editor: this button allows you to show or hide the editor used to edit cells or raw HTML. It is available in the email Offer Designer (when editing HTML at a cell, or raw HTML content), and also in the Landing Page Designer. When selected, the Cell/Raw HTML Editor is displayed. When not selected, only the Preview is shown.

17.1.9 Home Tab – Find Section

This section is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Email Offer Designer - Text Email Content
- SMS Offer Designer
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode
- Asset Designer - Text Asset
- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode

The Home tab's Find section exposes the following options:



- Find: this field and its accompanying buttons allow you to search the current content editor for occurrences of a supplied text string. The Find field allows you to enter the string for which you wish to search. Entering text enables the Find next and Find previous buttons, and removing the text disables the same.
- Find next: this button is enabled when a string is present in the Find field. Invocation finds the next instance of the specified string. If an occurrence of the string is located in the content, it is selected.

  If the cursor is within the text when the button is pressed, the string must be to the right of and below the cursor to be found. If no matching instances are located, the existing cursor position and highlighting are maintained.

  If the cursor is not within the text, the string to be found may be anywhere within the content editor.

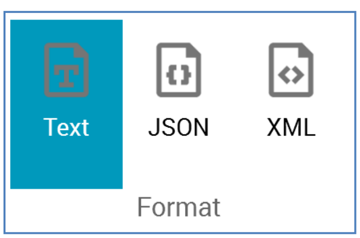
  If no matching instances are located, an advisory message is displayed.
- Find previous: invocation of this option behaves as Find next, except that text is searched in the opposite direction.

17.1.10 Home Tab – Format Section

This section is displayed in the following context:

- Asset Designer - Text Asset

It exposes the following options:



Three toggle buttons allow you to choose the type of text to be entered in the editor. You can choose from Text (the default)…

```
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Cras ac felis non lorem tincidunt rutrum eget ac mauris.
Aenean odio ligula, tristique nec quam ut, sollicitudin pretium nibh. Maecenas finibus odio at ante vehicula tristique.
Nam sit amet turpis quis augue placerat pulvinar nec nec mauris. Phasellus a commodo risus.
Aliquam a nisl ac metus euismod condimentum vitae et velit.
Praesent porttitor sollicitudin dui eget ultricies. Praesent tincidunt, dolor ac scelerisque sollicitudin,
justo dui lobortis purus, in mollis tortor nibh non risus. Donec sed nibh ut nisl porta aliquet.
Vivamus sapien eros, tempus quis ullamcorper vel, bibendum sit amet justo.
Quisque volutpat maximus nisl, et posuere quam imperdiet ac. Donec ornare augue sit amet rutrum hendrerit.
```

…JSON…

```
{
  "ContentID": "af32ba8e-58aa-4cd2-86a8-c57367458d8a",
  "Result": "1",
  "ResultContent": {
    "Stores": [
      "Lambton Quay",
      "Willis Street",
      {
        "xxx": "yyy"
      }
    ],Q
    "Address": {
      "Address1": "1 ABC",
      "ZIP": "ABCDE"
    },
    "Manufacturers": [
      {
        "Name": "Acme Co",
        "Products": [
          {
            "Name": "Anvil",
            "Price": 50
          }
        ],
        "IntTest": 2
      },
```

…or XML:

```
<?xml version="1.0"?>
<catalog>
   <book id="bk101">
      <author>Gambardella, Matthew</author>
      <title>XML Developer's Guide</title>
      <genre>Computer</genre>
      <price>44.95</price>
      <publish_date>2000-10-01</publish_date>
      <description>An in-depth look at creating applications with XML.</description>
   </book>
   <book id="bk102">
      <author>Ralls, Kim</author>
      <title>Midnight Rain</title>
      <genre>Fantasy</genre>
      <price>5.95</price>
      <publish_date>2000-12-16</publish_date>
      <description>A former architect battles corporate zombies, an evil sorceress, and her own childhood to become queen of the world.</description>
   </book>
   <book id="bk103">
      <author>Corets, Eva</author>
      <title>Maeve Ascendant</title>
      <genre>Fantasy</genre>
      <price>5.95</price>
      <publish_date>2000-11-17</publish_date>
      <description>After the collapse of a nanotechnology society in England, the young survivors lay the foundation for a new society.</description>
   </book>
```

The Format setting is used to correctly format the results returned from a call to the RPI Realtime Decisions API endpoint.

17.1.11 Home Tab – Wiki Links Section

This section is displayed in the following contexts:

- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode

It exposes the following options:

- Insert Wiki Page Link: available at the Wiki Page Designer only. Displays the File System Dialog, allow selection of a previously-saved Wiki page to which to create a link. Only Wiki page files are shown. The link is created at the point in the Wiki content where the cursor is currently placed. A link's syntax is accordant with the following example:

  ```
  <a href=‘‘RPI://Wikipage?id=3ca1a3c4-24c0-4967-a208-cb7e89faa948’’>Home</a>
  ```

  Note that you cannot traverse a link created in this way in the Wiki Page Designer.

- Create Page and Insert Link: available at the Wiki Page Designer only. Presents the File System Dialog, within which you may specify the filename and location of a new Wiki page. When you invoke OK, the new page is created and a link to it embedded within the current Wiki page at the current cursor position.

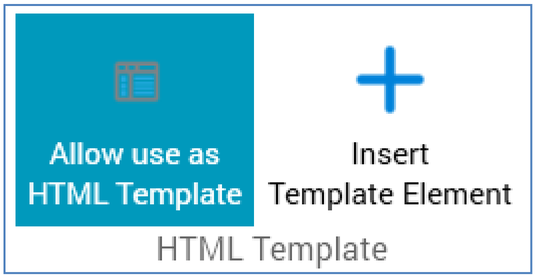
  Note that you cannot traverse a link created in this way in the Wiki Page Designer.

17.1.12 Home Tab – HTML Template Section

This section is displayed in the following contexts:

- Asset Designer - HTML Asset - HTML mode

It exposes the following options:

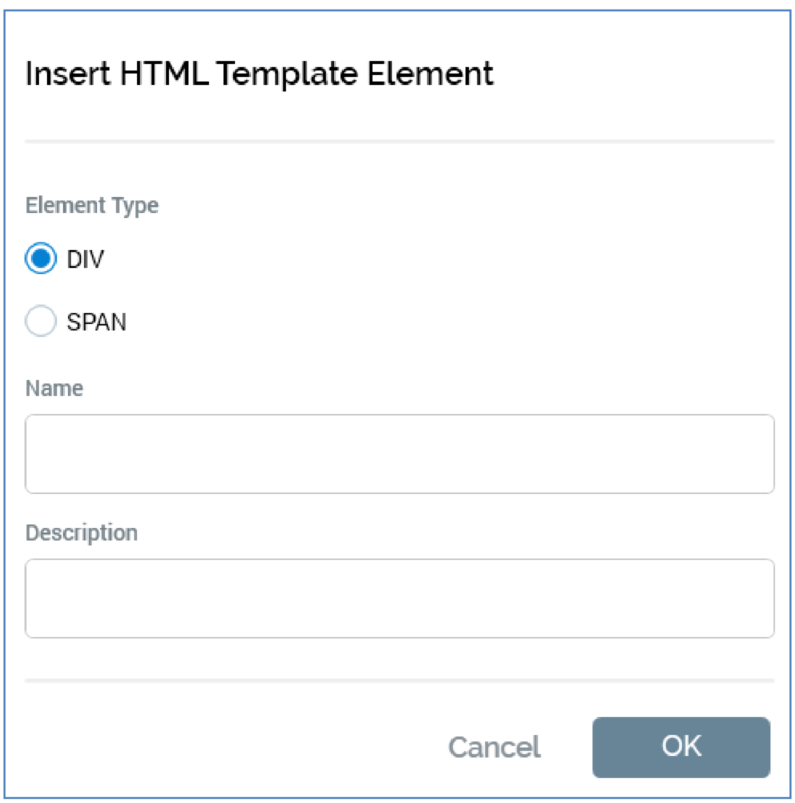


- Allow use as HTML Template: this toggle button controls whether the Insert Template Element button.

- Insert Template Element: this button is only displayed if Allow use as HTML Template is selected, and the cursor has been placed within the asset's content. It allows you to insert a special DIV or SPAN HTML element into your HTML content. When such an element is present, on selecting the template in the email Offer or Landing Page Designer, the element will be treated as a cell or content slot, to which appropriate collateral can be added.

  Note that the DIV or SPAN opening and closing tags must not be separated by a carriage return.

  Clicking the button displays the Insert HTML Template Element dialog.



The dialog contains the following:

- Radio buttons: two radio buttons allow you to define the type of element to be added:
  - DIV: selected by default
  - SPAN
- Name: provision of a name for the element is mandatory, and the value entered can be a maximum of 100 characters in length. The element's name must be unique within the current asset.
- Description: provision of a description is optional, and the value entered can be a maximum of 1000 characters in length
- OK: clicking OK adds an HTML element of the selected type at the current cursor position.

  If a DIV, the element is as per the following example:

  ‘<div id="rpicell_top"><!--description="Top div" --></div>’

  If a SPAN, as per this example:

  ‘<!--description="Middle span" -->’’

  Note that, in both cases, the element's name structure is as follows:

  ‘rpicell_[name, less spaces]’
- Cancel: clicking this button removes the dialog from display without adding an element. Clicking off the dialog has the same effect.

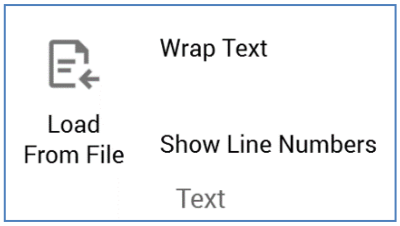
Note that you can also add cells to an HTML template manually. If you edit a cell’s name, any content in contexts where the template is used will be lost.

17.1.13 Home Tab – Text Section

This section is displayed in the following contexts:

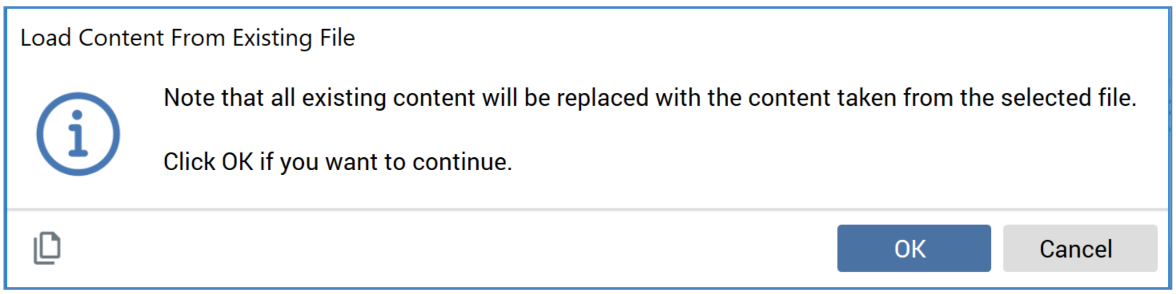
- Email Offer Designer - HTML Email Content - HTML mode
- Email Offer Designer – Text Email Content
- SMS Offer Designer
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - HTML mode
- Asset Designer - Text Asset
- Wiki Page Designer - HTML mode

The Home tab's Text section exposes the following options:



- Load From File: you can use this option to load content from an external file into the content editor.

  If content is already displayed, a dialog is shown:



  You can click OK to proceed with loading the new, or Cancel to retain the existing, content. Proceeding displays the Load Content Windows file system dialog.

  By default, the Windows file system dialog is filtered to display HTML and text files only; if you wish, you can choose to view All files instead. Having chosen a file, you can Open it. The contents of the file are displayed, replacing any previously-displayed content. An information message ('The contents of the chosen file have been loaded') is also displayed.

  You can also Cancel the Windows file system dialog, which retains any previously-displayed content.

- Wrap Text: this toggle button allows you to wrap the content displayed in the editor. The button's setting is persisted, so its most recently selected state is applied when you next open a content editor.

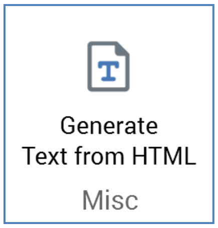
- Show Line Numbers: when this toggle button is selected, line numbers are shown at the content editor. The button's setting is persisted, so its most recently selected state is applied when you next open a content editor.

17.1.14 Home Tab – Misc Section

This section is displayed in the following contexts:

- Email Offer Designer –Text Email Content

Its exposes a single option:



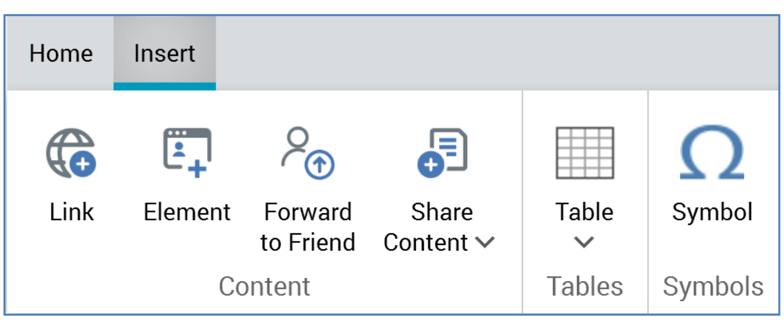
Invocation of this option takes all of an email offer’s current HTML email content, converts it to text and assigns the results to the offer’s text content, displaying the Text content tab when doing so.

If existing text content already exists, an ‘Are you Sure?’ dialog is displayed.

17.1.15 Insert Tab

The Insert tab is displayed in the following contexts:

- Email Offer Designer - Rich Text mode
- Email Offer Designer - HTML mode
- Email Offer Designer – text content
- SMS Offer Designer
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode
- Asset Designer - Text Asset
- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode



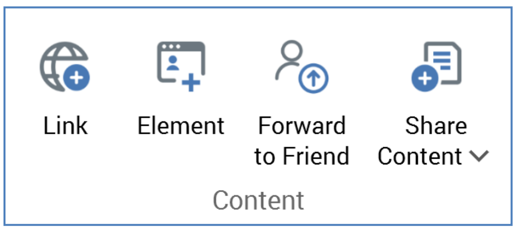
It can contain the following sections:

- Content
- Tables
- Symbols

Each is documented separately.

17.1.16 Insert Tab – Content Section

The Insert tab's Content section exposes the following sections:



- Link
- Element
- Forward to Friend
- Share Content

Each is documented separately.

17.1.17 Insert Tab – Content – Link

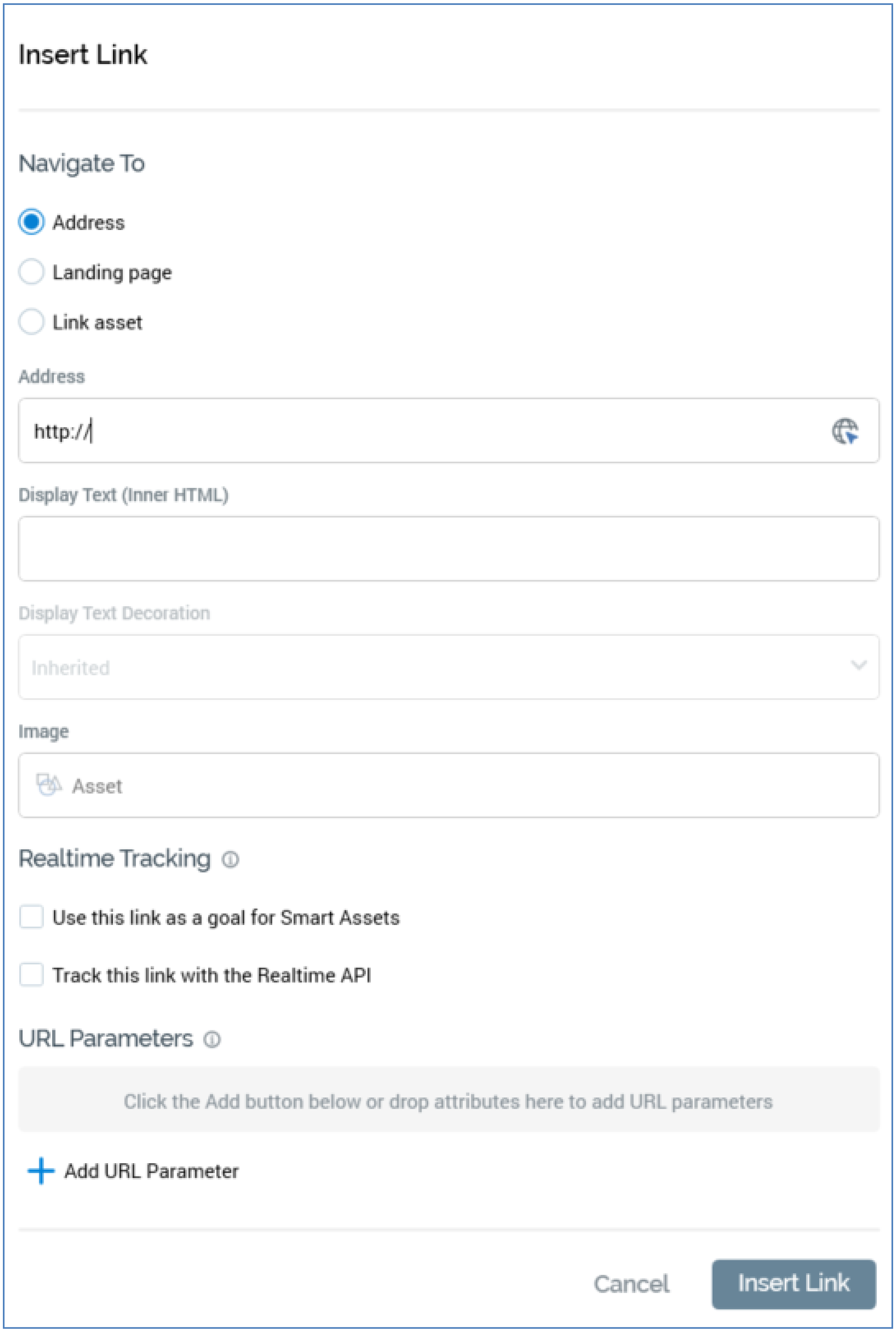
This button is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Email Offer Designer - Text Email Content
- SMS Offer Designer
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

- Asset Designer - Text Asset
- Wiki Page Designer - Rich Text mode
- Wiki Page Designer - HTML mode

This button allows you to include a hyperlink within the current content editor. Clicking it displays the Insert Link dialog.

When invoked at the email Offer and HTML Asset Designers, the dialog appears as follows:



The dialog contains the following:

- Navigate to: three radio buttons accompany properties, which allow you to define the type of link to be inserted
  - Address: selected by default. The property defaults to 'http://'. It is mandatory if the radio button is selected. An Encode the address query string button is shown to the right; clicking it encodes the URL query string, if one exists.
  - Landing page: if the radio button is selected, you must choose a landing page to which the link will navigate. You can browse for a landing page, or you can populate the property using drag and drop. Once a landing page has been chosen, you can invoke Open Latest Version to display its latest version in the Landing Page Designer. You can also Clear the selected landing page.
  - Link asset: when selected, the option facilitates the configuration of the link with a URL provided dynamically by a smart asset. You must select a valid smart asset, at which Realtime in Outbound is supported. Each of the asset's content elements must be configured with a valid absolute URL, which can be provided via inline text or a text asset (including a nested text asset). Note that the link's Display text property must be provided when Link asset is used.
- Display Text (Inner HTML): you can optionally provide Display text for the hyperlink. If you provide neither Display text nor an image, the link's Address is shown. If an Image and Display text are provided, the latter is used as the image's HTML Alt text.
- Text decoration: this dropdown field is enabled when Display text has been provided. It exposes the following values:
  - Inherited (the default)
  - No underline
  - Underline
- Image: you can optionally provide an Image for the hyperlink. If you provide neither Display text nor an image, the link's Address is shown. If Image is to be used,

  To configure the property, you must select a valid image asset or smart asset. If using a smart asset, all content elements at the same must be configured with image assets, or smart assets exposing nested images. In addition, Realtime in Outbound must be supported at the selected smart asset.

  When an image is rendered in a delivered email, clicking it will navigate to the address supplied. If an Image and Display text are provided, the latter is used as the image's HTML Alt text.
- Realtime Tracking section: the section header is accompanied by an information icon, hovering over which displays a tooltip:

The section contains the following properties:

- Use this link as a goal for Smart Assets: this checkbox is unchecked by default. When checked, clicks on the link can be used in goal smart asset assessment.
- Track this link with the Realtime API: this checkbox is unchecked by default. If a Link asset is specified, it is checked automatically. Otherwise, you can check the property manually to use the RPI Realtime API to track link clicks.

  Note that the Realtime Tracking section is not shown when inserting or editing a link in the Landing Page Designer.

- URL parameters: you can optionally customize the URL to which the hyperlink will navigate through the use of parameters. These appear as a query string at runtime.

  A toolbar above the URL parameters list exposes the following options:

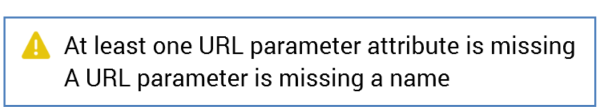
  - Add: invocation of this option adds a new URL parameter to the list. Its Attribute property is initially empty, and the parameter's name is set to NewParameter.
  - Remove: clicking this button removes the selected URL parameter without display of an 'Are You Sure?' dialog.

  The following properties are shown for each URL parameter:

  - Attribute: provision of an attribute is mandatory. You can choose an attribute by browsing the RPI file system, or you can provide one using drag and drop. Note that you cannot use exists in table or auxiliary database attributes in this context. Parameter attributes are supported. Once you have selected an attribute, you can view its details in the File Information Dialog. You can also Clear the attribute. Note that issues may occur if attempting to navigate to URLs containing date/time parameters.
  - Parameter name: it is also mandatory to provide a name for the URL parameter. The name provided must be unique within the link, can be a maximum of 100 characters in length and cannot contain the '?', '&' or space characters.

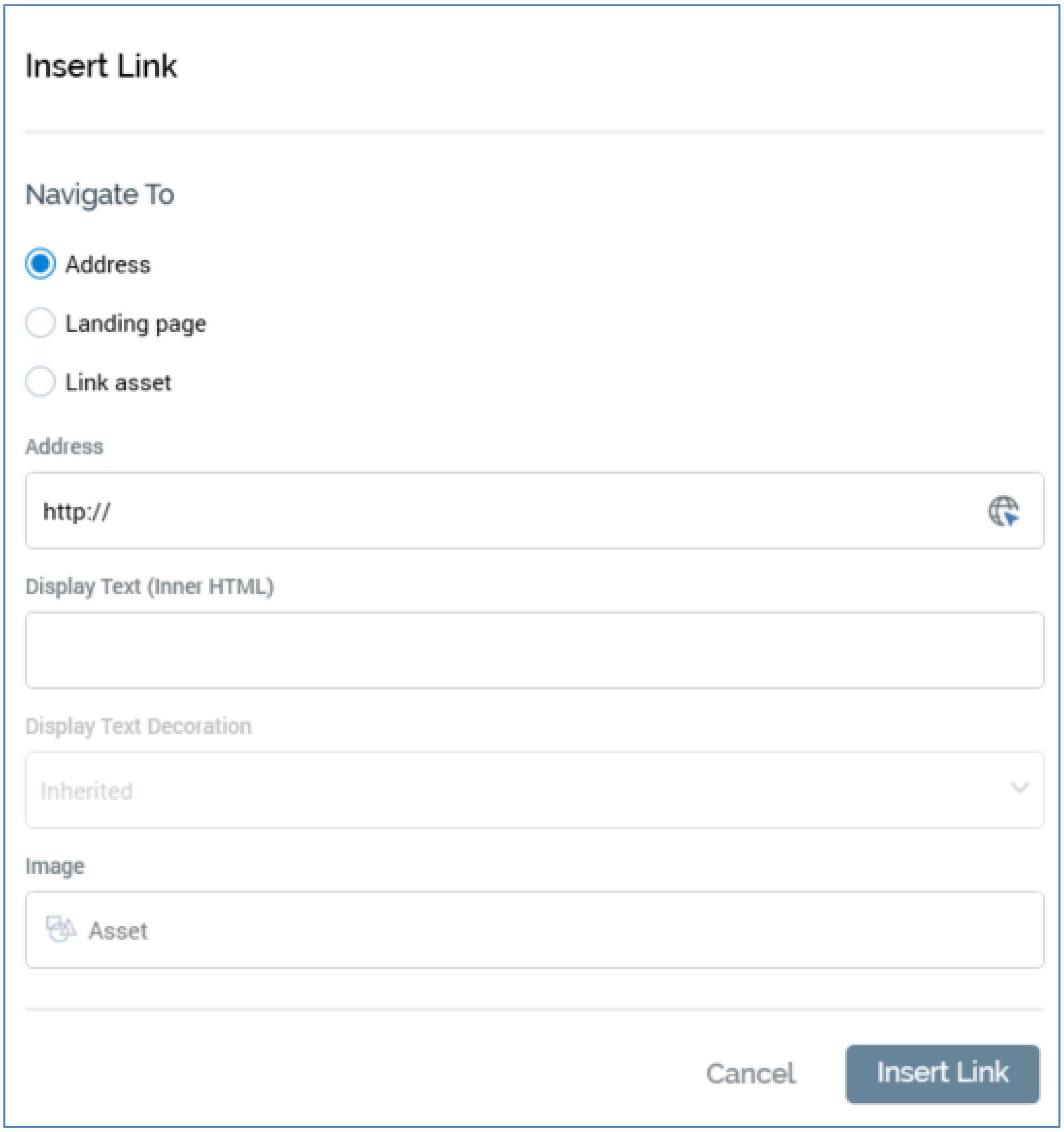
Two buttons are shown at the bottom of the dialog:

- Insert Link: clicking this button removes the dialog from display and adds a hyperlink to the content. If the link is configured incorrectly, any validation errors are displayed at the bottom:



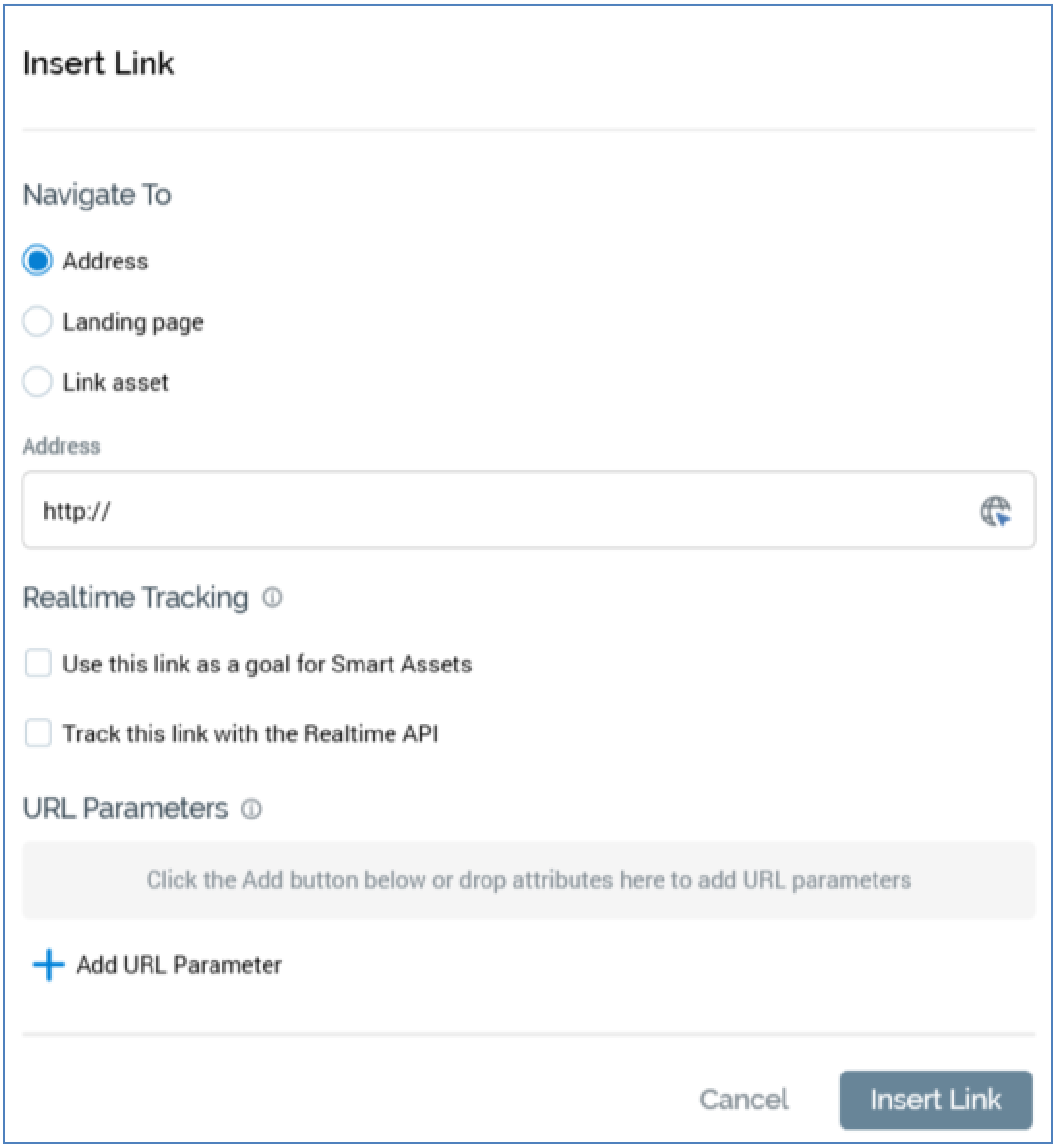
- Cancel: clicking this button removes the dialog from display without adding a hyperlink.

When invoked at the Landing Page Designer, the dialog appears as follows:

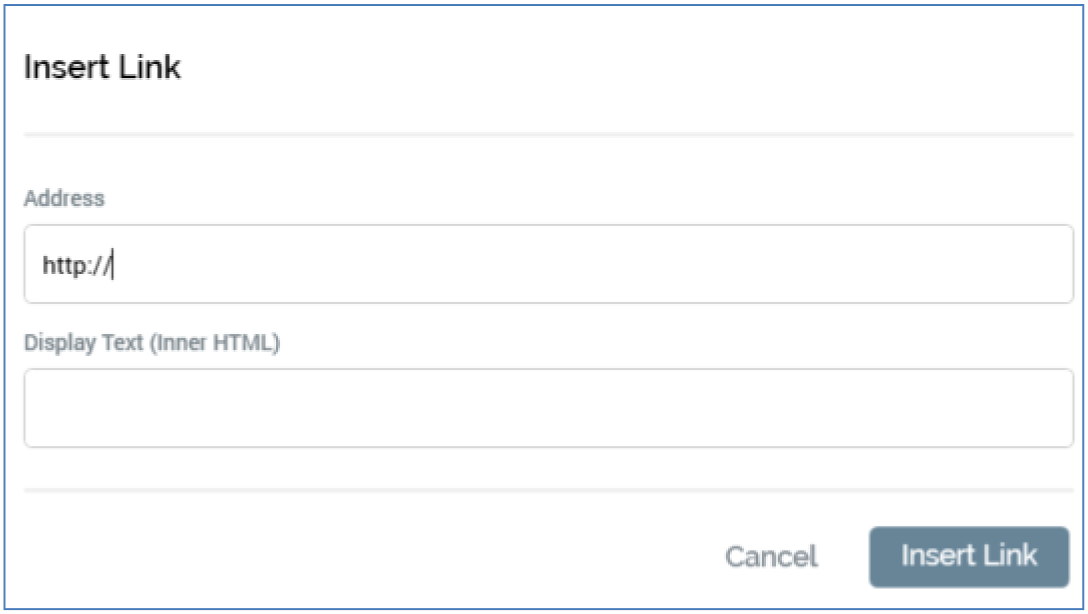


Note that the use of URL parameters is not supported in landing pages.

When invoked at the text Asset Designer, the dialog appears as follows:


Insert Link
Navigate To
Address
Landing page
Link asset
Address
http://
Realtime Tracking
Use this link as a goal for Smart Assets
Track this link with the Realtime API
URL Parameters
Click the Add button below or drop attributes here to add URL parameters
Add URL Parameter
Cancel
Insert Link

When invoked at the Wiki Page Designer, the dialog appears as follows:



It contains the following:

- Address: you must provide the Address to which the link will navigate when clicked.
- Display text: you must also provide the link's Display text.
- Insert Link: clicking this button adds the link to the Wiki page at the current cursor position.
- Cancel: clicking this button removes the Insert Link dialog from display.

The same dialog – with name changed to Edit Link – is used to edit existing links. Note that other toolbar buttons are disabled when the Insert/Edit Link dialog is shown. Note also that it is not currently possible to edit a link in the Wiki Page Designer.

17.1.18 Insert Tab – Content –Element

This button is displayed in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

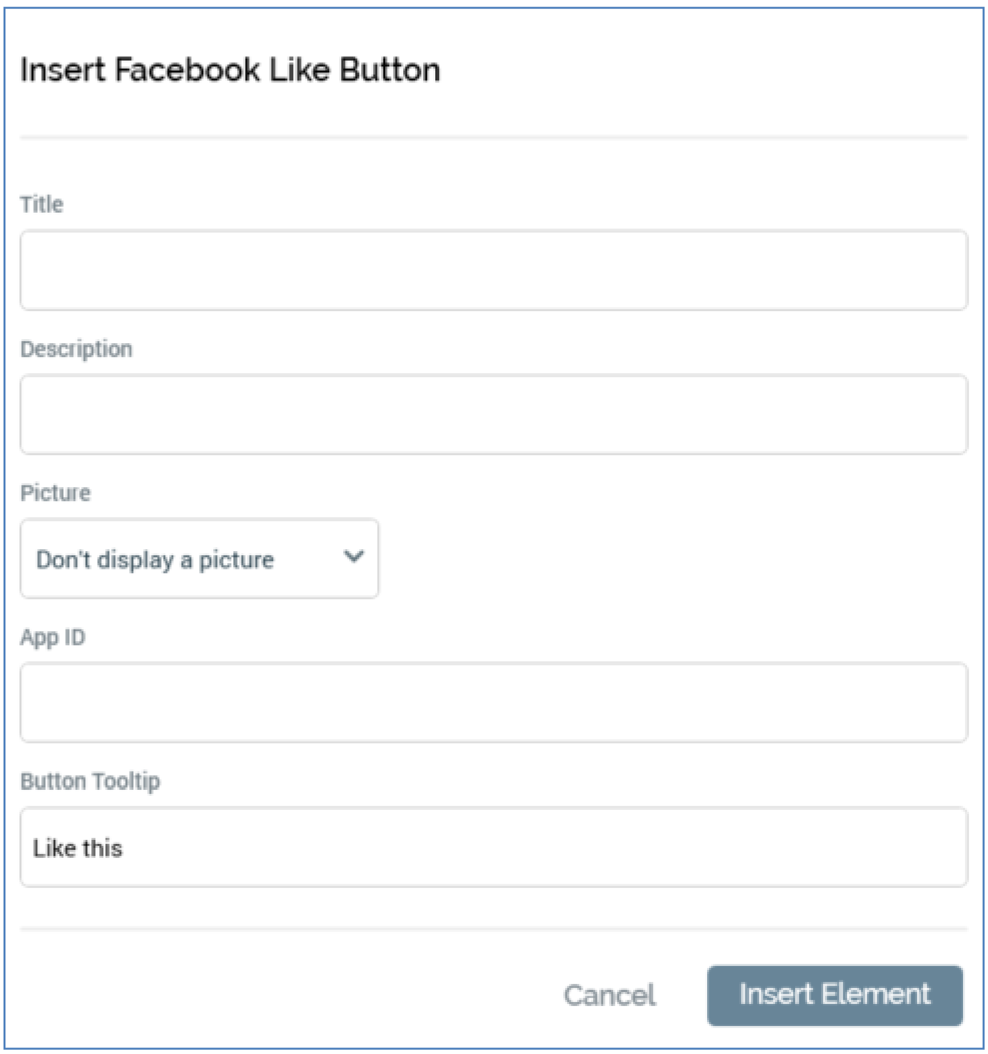
Clicking this button displays a submenu, the contents of which are dependent on the context of invocation. Each option available therein is documented within its own separate section.

17.1.19 Insert Tab – Content – Element – Facebook Like

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to include a Facebook Like button in email content. On clicking it, the Insert Facebook Like Button dialog is displayed.



The dialog exposes the following properties:

- Title: this value is displayed as the title and heading within the web page displayed when the Like button is clicked by a recipient. Its provision is mandatory. Its maximum length is 1000 characters.
- Description: an optional property, with a maximum length of 1000 characters. Description is shown above any shared content within the web page displayed when the Like button is clicked by a recipient.
- Picture: a dropdown field, with two values:
  - Don't display a picture (the default)
  - Display picture from URL. When selected, the Picture URL field is displayed.
  - Picture URL: this field is only displayed when Picture is set to Display picture from URL. It is mandatory when shown and can be a maximum length of 1000 characters. If set, the Picture is displayed at the 'liker's' timeline/news feed.
  - App ID: this value represents the unique ID of a Facebook app to be used to track the number of Likes. Its provision is optional, and its maximum length 100 characters.
- Button tooltip: an optional property that defaults to 'Like this'. Its maximum length is 1000 characters.
- Share: two radio buttons are displayed:
  - Entire content. This option is selected by default. When selected, if the recipient chooses to press the Like button, at the resultant preview page, all of the email's content is shown.
  - Content in cell. Selecting this option, which is not selected by default, allows the recipient to Like a specific shared cell within the email's content. It is accompanied by a [Shared cells] dropdown, which is enabled when this radio button is selected. The dropdown lists all shared cells alphabetically, with the first cell selected by default.
- Insert Element: clicking this button invocation adds a tag to the email content, e.g.:

  ```
  '({FacebookLikeButton;1:FacebookLikeButton})'
  ```

- Cancel: invocation removes the dialog from display.

17.1.20 Insert Tab – Content – Element – Facebook Page

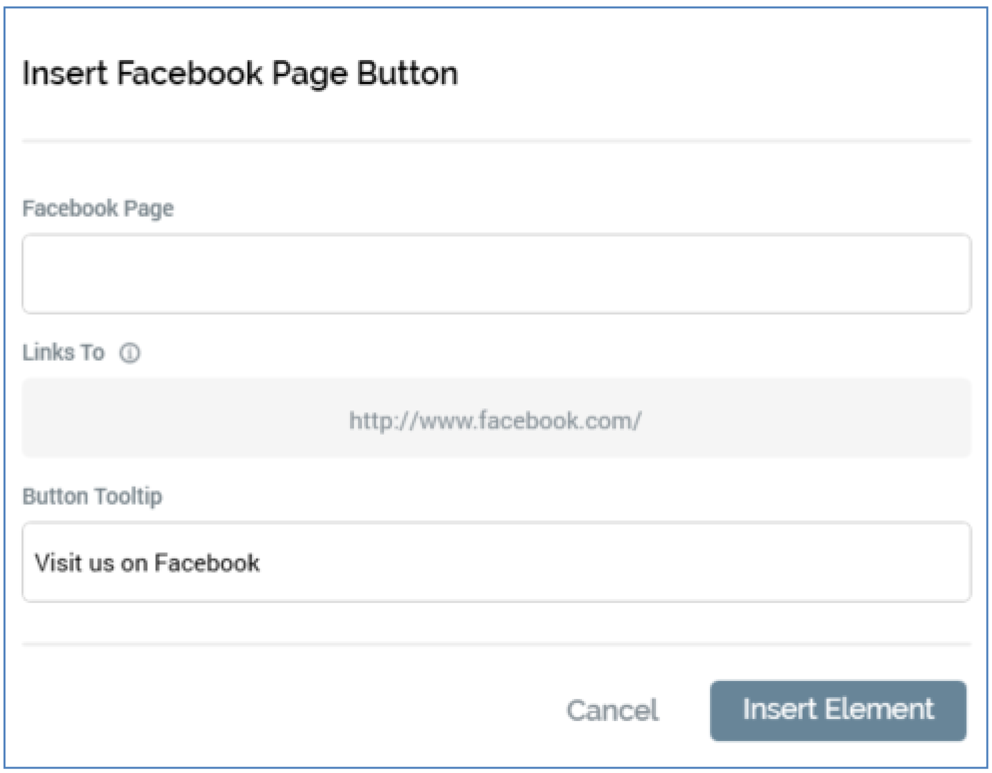
This option is available in the following contexts:

- Email Offer Designer - Rich Text mode
- Email Offer Designer - HTML mode

- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to include a button in content which, when clicked, opens the Facebook page with which it is configured in a browser.

On invocation, the Insert Facebook Page Button dialog is displayed:



It contains the following properties:

- Facebook page: provision of a Facebook page is mandatory (a warning icon is displayed at invocation of OK if not provided). The value can be a maximum length of 1000 characters, and is used at the button to link to a URL as per the following:

  ```
  'http://facebook.com/[Facebook page]'
  ```

- Button tooltip; by default, this value is set to 'Visit us on Facebook'. It is optional and can be a maximum length of 1000 characters.
- Insert Element: clicking OK adds a tag to the content, e.g.:

  ```
  '({FacebookPageButton;1:FacebookPageButton})'
  ```

- Cancel: clicking Cancel removes the dialog from display.

At Preview, or when displayed in a landing page or on receipt of an email containing a Facebook button, the image shown is accordant with system configuration setting ButtonImageFacebookVisit. If no button image has been defined, a default image is used.

Clicking the button in a landing page or delivered email opens the Facebook page in the visitor's or recipient's default browser.

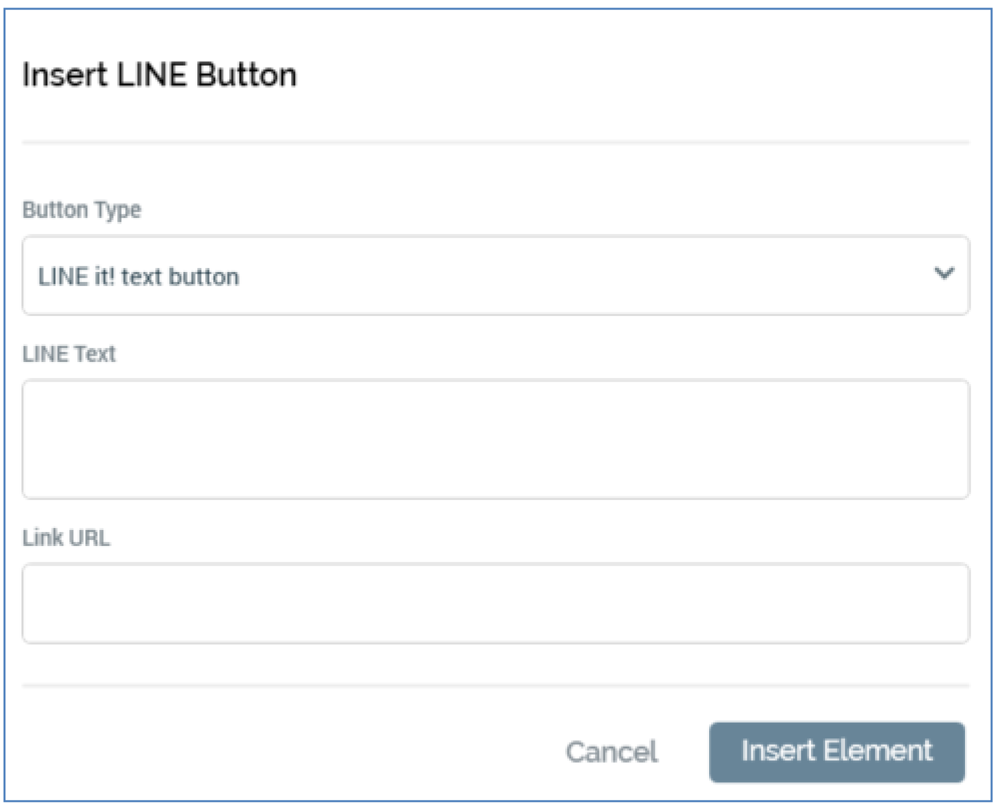
17.1.21 Insert Tab – Content – Element – LINE

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows the visitor or content recipient to publish content to the LINE social network.

On invocation, the Insert LINE button dialog is displayed:



It contains the following properties:

- Button type: this dropdown field exposes the following values:
  - LINE it! text button (default)

- LINE logo (20x20)
- LINE logo (30x30)
- LINE logo (40x40)
- LINE logo with Send text

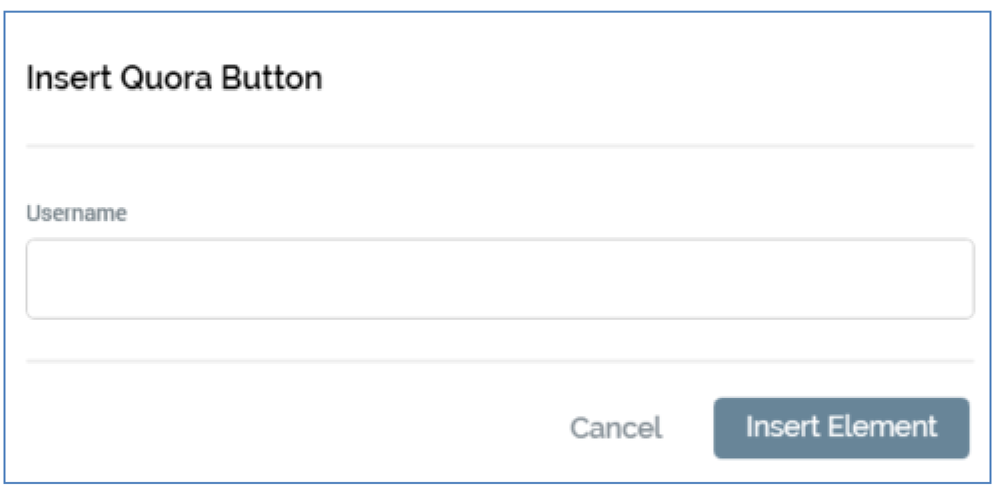
- LINE text: this property is optional if a value is provided for Link URL. It can be a maximum of 1000 characters in length. One of LINE text or Link URL must be provided.
- Link URL: this property is optional if a value is provided for LINE text. It can be a maximum of 1000 characters in length. One of LINE text or Link URL must be provided. The URL provided must be well formed.

17.1.22 Insert Tab – Content – Element – Quora

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to insert a button that will facilitate navigation to Quora. On invocation, the Insert Quora button dialog is displayed:



It contains the following:

- Username: a mandatory text field that can be a maximum of 500 characters in length. Username is case sensitive and is defined in Quora as First Name and Last Name, with the space replaced by a hyphen (e.g. 'Maria-Taylor').
- Insert Button: clicking this button adds a Quora button to the content. It is displayed thus at Preview:

- Cancel: clicking this button removes the dialog from display.

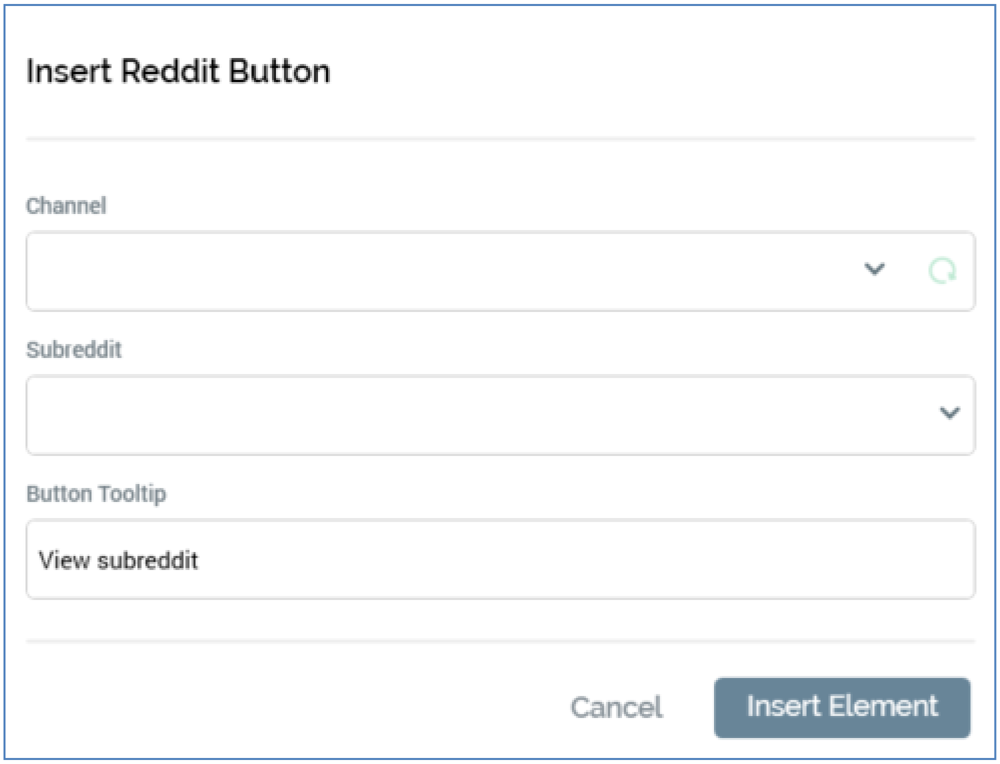
17.1.23 Insert Tab – Content – Element – Reddit

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to insert a button that will facilitate navigation to a given subreddit web page.

Clicking it displays the Insert Reddit Button dialog.



It contains the following:

- Channel: mandatory. A dropdown listing all currently-configured Reddit channels.
- Sync subreddits: this button is enabled when a Channel has been selected. Clicking it populates the Subreddit dropdown with details of all of the channel's associated subreddits.
- Subreddit: mandatory. A dropdown listing all Subreddits associated with the currently-selected channel. Populated by invocation of Sync subreddits.
- Button tooltip: an optional property that defaults to 'View subreddit', and which can be a maximum of 1000 characters in length.
- Insert Button: clicking this button adds a Reddit button to the current content.
- Cancel: clicking this button removes the dialog from display.

17.1.24 Insert Tab – Content – Element – SurveyMonkey Page

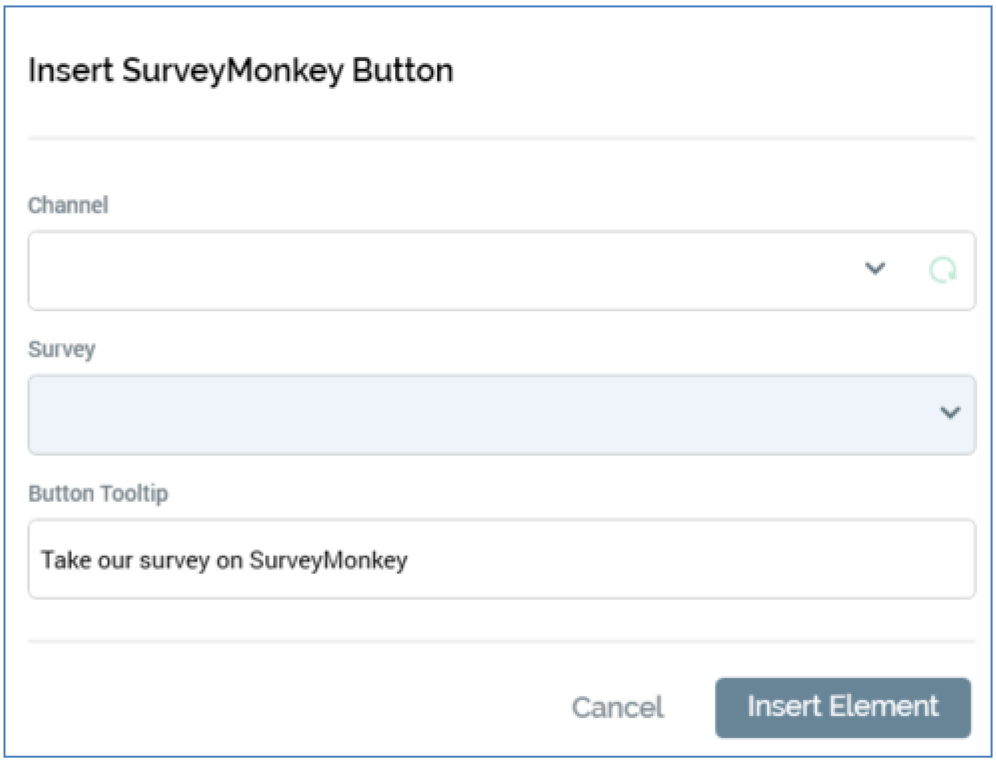
This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode

- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to insert a button that will facilitate navigation to a given SurveyMonkey survey.

Clicking it displays the Insert SurveyMonkey button dialog.



It contains the following:

- Channel: mandatory. A dropdown listing all currently-configured SurveyMonkey channels.
- Sync surveys: this button is enabled when a Channel has been selected. Clicking it populates the Survey dropdown with details of all of the channel's associated surveys.
- Survey: mandatory. A dropdown listing all surveys associated with the currently-selected channel. Populated by invocation of Sync surveys.
- Button tooltip: an optional property that defaults to 'Take our survey on SurveyMonkey', and which can be a maximum of 1000 characters in length.
- Insert Button: clicking this button adds a SurveyMonkey Page button to the current content.
- Cancel: clicking this button removes the dialog from display.

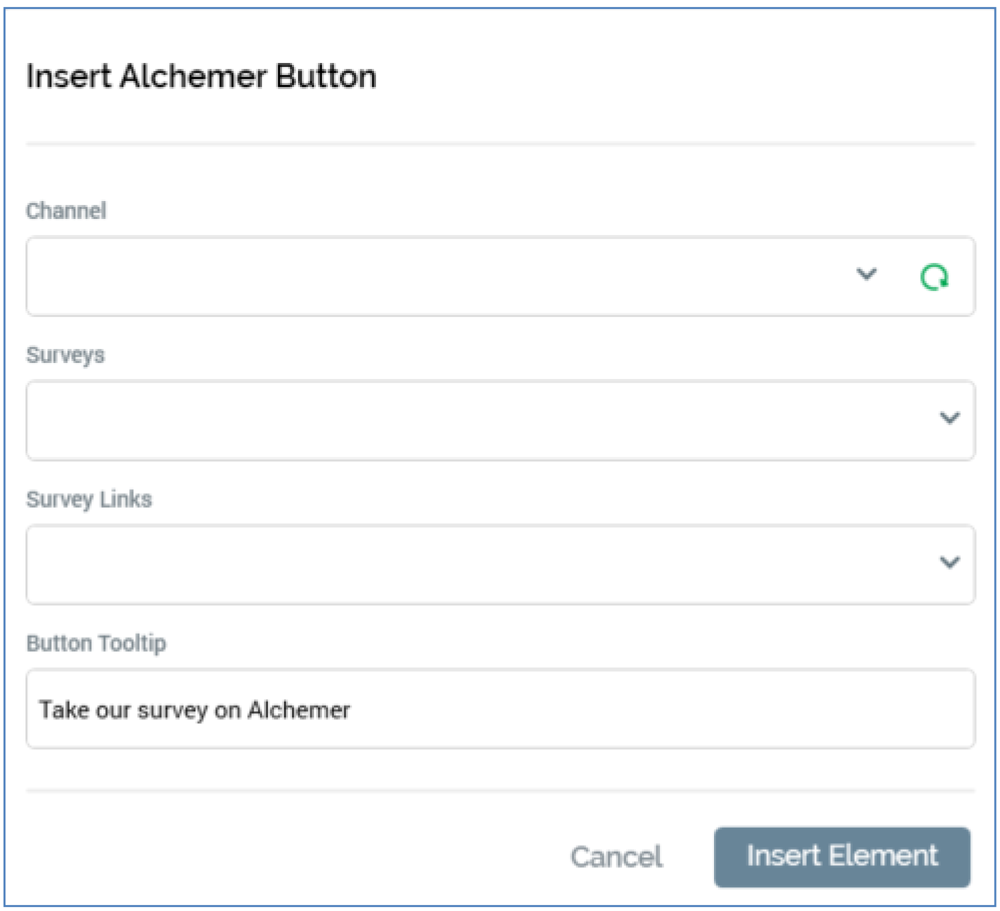
17.1.25 Insert Tab – Content – Element – Alchemer Page

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to insert a button that will facilitate navigation to a given Alchemer survey.

Clicking it displays the Insert Alchemer Button dialog.



It contains the following:

- Channel: mandatory. A dropdown listing all currently-configured Alchemer channels.
- Sync surveys: this button is enabled when a Channel has been selected. Clicking it populates the Survey dropdown with details of all of the channel's associated surveys.
- Survey: mandatory. A dropdown listing all surveys associated with the currently-selected channel. Populated by invocation of Sync surveys.
- Survey links: this dropdown allows you to select a survey link from the existing survey links configured at the selected survey.
- Button tooltip: an optional property that defaults to 'Take our survey on Alchemer', and which can be a maximum of 1000 characters in length.
- Insert Button: clicking this button adds an Alchemer Page button to the current content.
- Cancel: clicking this button removes the dialog from display.

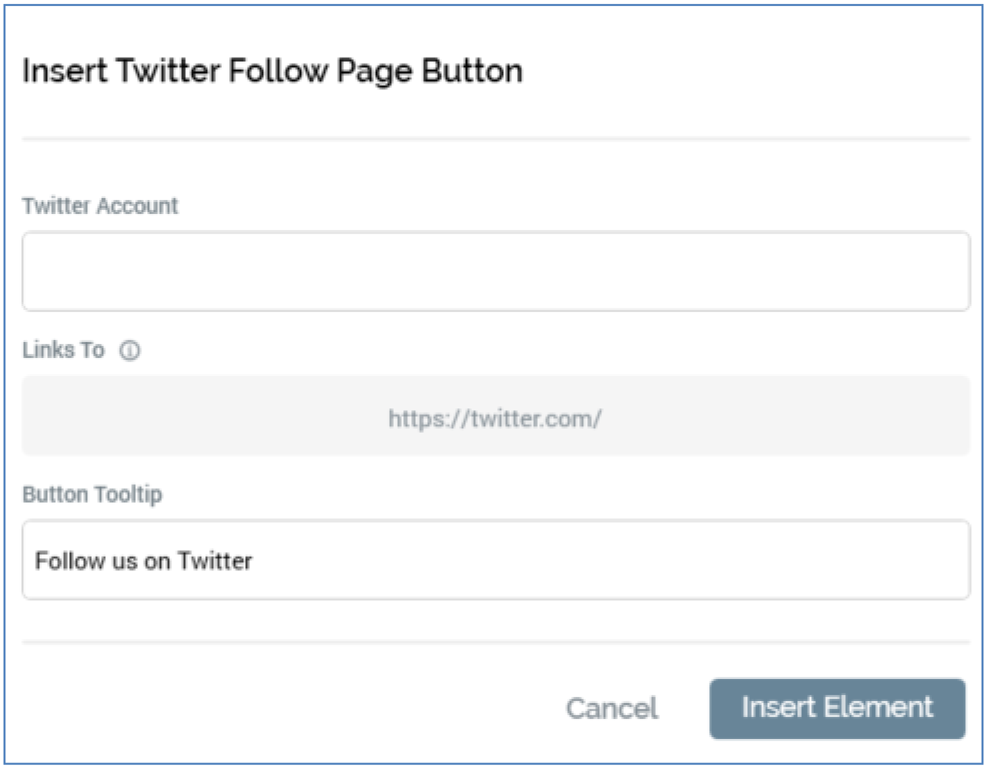
17.1.26 Insert Tab – Content – Element – Twitter Follow Page

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to include a button in content which, when clicked, opens the Twitter feed with which it is configured in a browser, allowing a visitor or recipient to become a follower.

On invocation, the Insert Twitter Follow Page Button dialog is displayed:



It contains the following properties:

- Twitter account: provision of a Twitter account is mandatory (a warning icon is displayed at invocation of OK if not provided). The value can be a maximum length of 100 characters, and is used at the button to link to a URL as per the following:

  'http://twitter.com/#[Twitter Page]'

- Button tooltip; by default, this value is set to 'Follow us on Twitter'. It is optional and can be a maximum length of 1000 characters.

- OK: clicking OK adds a tag to the current content, e.g.:

  `'({TwitterFollowPageButton;2:TwitterFollowPageButton})'`

- Cancel: clicking Cancel removes the dialog from display.

  At Preview, display in a landing page, or on receipt of an email containing a Twitter Follow Page button, the image shown is accordant with system configuration setting ButtonImageTwitterFollow. If no button image has been defined, a default image is used.

  Clicking the button opens the Twitter page in the recipient's default browser.

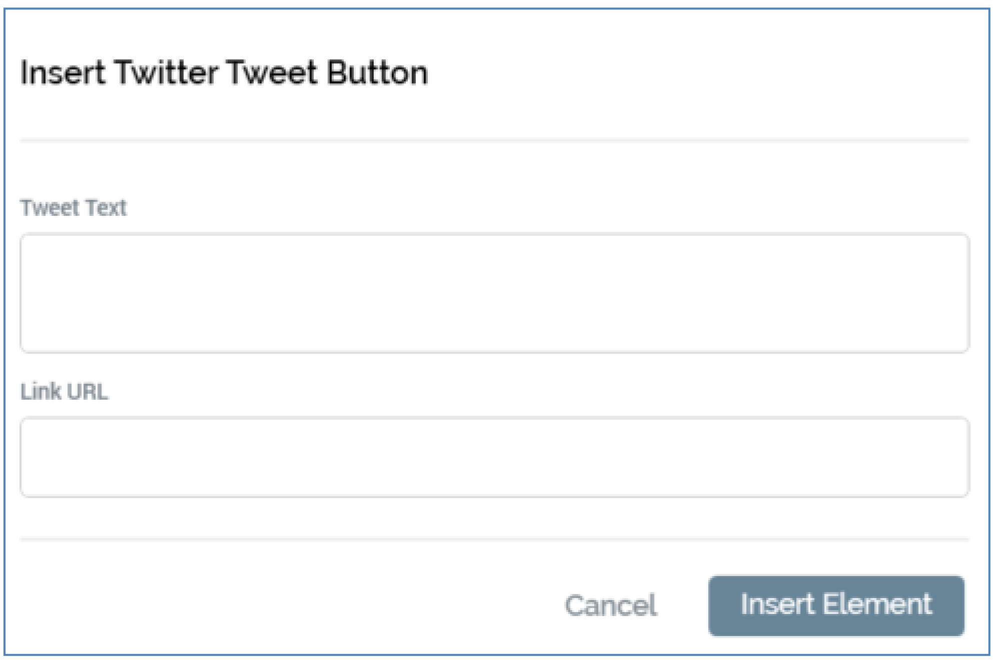
17.1.27 Insert Tab – Content – Element – Twitter Tweet

This option is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

The button allows you to embed a button in content which, when clicked, opens a Twitter page (following login, if required), in which a pre-configured tweet has been prepared for the recipient to share with his or her followers.

On invocation, the Insert Twitter Tweet Button dialog is displayed:



It contains the following properties:

- Tweet text: this field is mandatory if a Link URL is not provided. If the combined message and Link URL length exceeds 140 characters, a warning message is displayed.
- Link URL: this field is mandatory if a Twitter Tweet is not provided. The value entered must be a well-formed URL (a warning icon is displayed at invocation of OK if this is not the case). If the combined Tweet Text and Link URL exceeds 140 characters, a warning message is displayed.
- OK: a warning icon is displayed at invocation if neither Tweet text nor Link URL is provided. Clicking OK adds a tag to the current content, e.g.:

```
'({TwitterTweetButton;1:TwitterTweetButton})'
```

- Cancel: clicking Cancel removes the dialog from display.

At Preview, display in a landing page, or on receipt of an email containing a Twitter Tweet button, the image shown is accordant with system configuration setting ButtonImageTwitterTweet . If no button image has been defined, a default image is used.

Clicking the button opens Twitter in the recipient's default browser (if he or she is not logged in, a Sign in to Twitter page is displayed first). The Share a link on Twitter page is displayed and is pre-populated with the combined Twitter Tweet and Link URL (separated by a space character). The visitor or recipient is then able to tweet the predefined message to his or her followers.

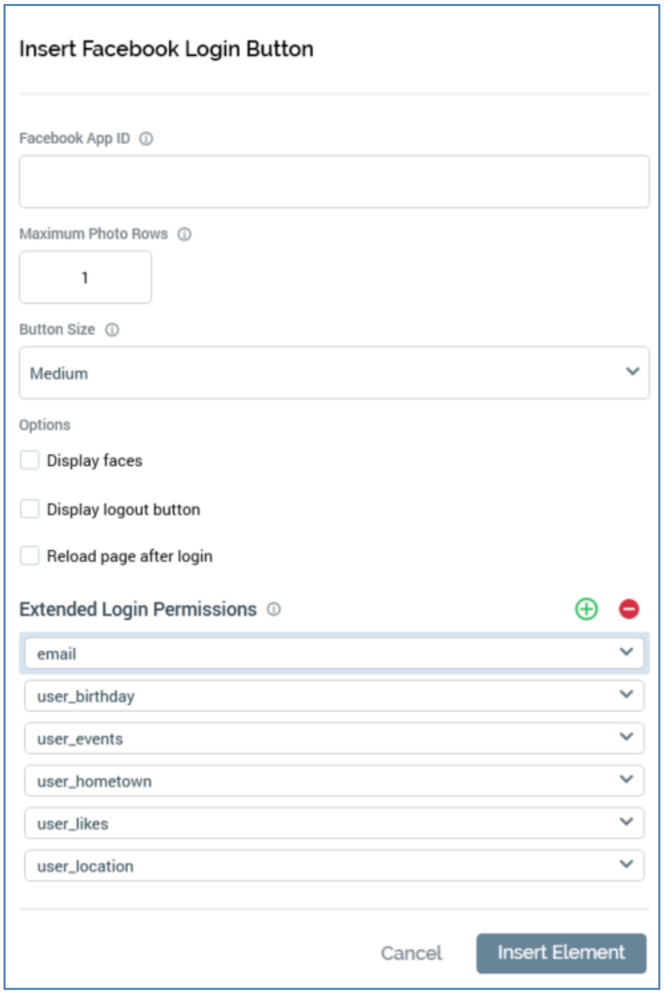
17.1.28 Insert Tab – Content – Element – Facebook Login

This option is available in the following contexts:

- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Landing Page Designer - Asset Assigned to cell
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

This social button allows you to insert a button into a landing page or asset, which a visitor can click in order to log into your Facebook app. During the login process, Facebook will confirm that the visitor is happy to divulge a range of data. After successful login, RPI can use this data in the context of Facebook realtime decisions to determine personalized content to be served via RPI smart assets. For more information, please see the Realtime Decision and Smart Asset Designers' documentation.

On invocation of the Facebook Login button, the Insert Facebook Login Button dialog is shown.



(The same dialog – entitled Edit Facebook Login Button – is used when editing a Facebook Login button.)

The dialog contains the following:

- Facebook App ID: this mandatory field can be a maximum length 100 characters. It must match the unique ID of the Facebook app to which the button facilitates login.
- Display faces: this checkbox is unchecked by default. It allows you to control whether profile photos replace the Login button when the user has logged in using the login button.
- Maximum photo rows: this integer property defaults to 1 and can be a maximum of 10. It allows you to control the number of profile photo rows displayed.
- Button size: this dropdown field allows you to specify the size of the Facebook login button as Small, Medium (the default), Large or Extra large.
- Display logout button: this checkbox, unchecked by default, allows you to control whether, following a successful login, the Login button is replaced by a Logout button.

- Reload page after login: this checkbox, unchecked by default, allows you to control whether the page should be reloaded automatically on logging into Facebook.
- Extended Login Permissions: this list allows you to specify a series of additional pieces of data, above a default set, to be provided by the user after confirmation during a successful login. A toolbar above the list exposes two options:
  - Add new Permission: clicking this button adds a new login permission to the bottom of list. Its default name blank.
  - Remove selected Permission: invocation of this option removes the currently-selected list entry without display of an 'Are You Sure?' dialog

  The following values are presented in the list by default. Each represents Facebook data to which RPI will be granted access on a user's successful login to a Facebook app using an RPI Facebook Login button.

  - email
  - user_birthday
  - user_events
  - user_hometown
  - user_likes
  - user_location

  For each list entry, a dropdown lists login permission values sourced from Facebook. Each value must be unique in the list, and specification of a value is mandatory.

  Note that provision of Extended Login Permissions is optional; if none are provided, RPI is furnished with default set of data from Facebook

Two buttons are shown at the bottom of the dialog:

- Insert Button: clicking this button adds a Facebook Login button to landing page content.
- Cancel: clicking Cancel removes the dialog from display without inserting a Facebook Login button

If editing a Facebook Login button, the Insert Button and Cancel buttons are replaced with a single OK button.

A Facebook Login button is represented in the Preview using a placeholder image, which does not reflect the selected button size.

You can only include a single Facebook Login button in a given landing page (a validation error is raised if more than one is present). This also applies if the button is hosted in an embedded HTML asset.

When an anonymous visitor navigates to a landing page containing Facebook login button and uses it to log in to a Facebook app, his or her Facebook data, as defined by the standard data supplied by Facebook and any extended login permissions, are written to the realtime cache. If the visitor already has a visitor profile, any changed Facebook data values are reflected in the cache.

Note that data is cached on domain basis, so the landing page in which the Facebook Login button is hosted and any landing pages utilizing Facebook decision-based smart assets must be hosted in the same context.

17.1.29 Insert Tab – Content – Element – Facebook Social Plugin

This option is available in the following contexts:

- Landing Page Designer - Rich Text mode
- Landing Page Designer - HTML mode
- Landing Page Designer - Asset Assigned to cell
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

Facebook social plugins are tools that can used in a landing page (or HTML asset in a landing page) to provide people with personalized social experiences. When you interact with social plugins, you share your experiences of Facebook with your friends and other Facebook users.

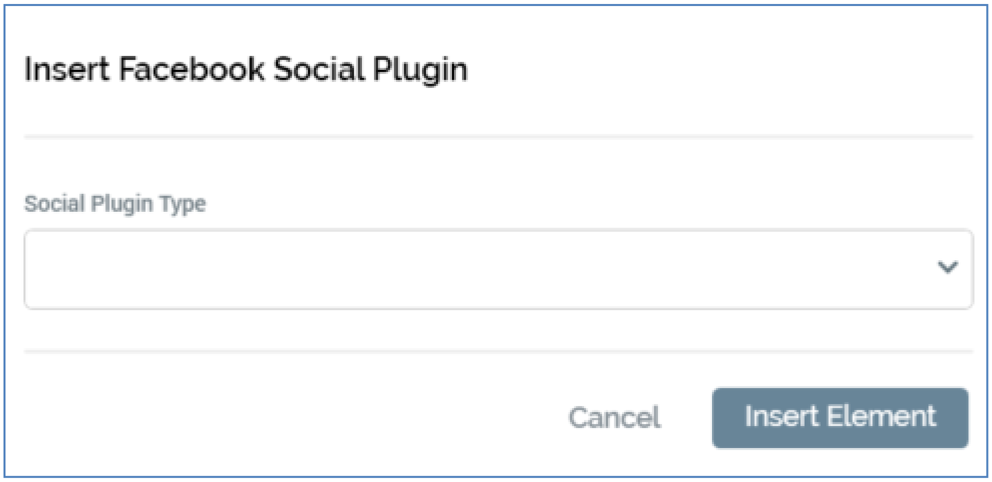
On invocation of the Facebook Social Plugin option, the Insert Facebook Social Plugin dialog is displayed. The dialog consists of a content section and a footer.

On addition of a Facebook plugin, a sample plugin layout is shown at preview.

When displayed to a visitor within a landing page, a Facebook plugin's behavior is determined by its type, and is documented separately.

17.1.30 Facebook Social Plugin – Content Section – Initial Display

When displayed initially, a single property is shown within the content section.



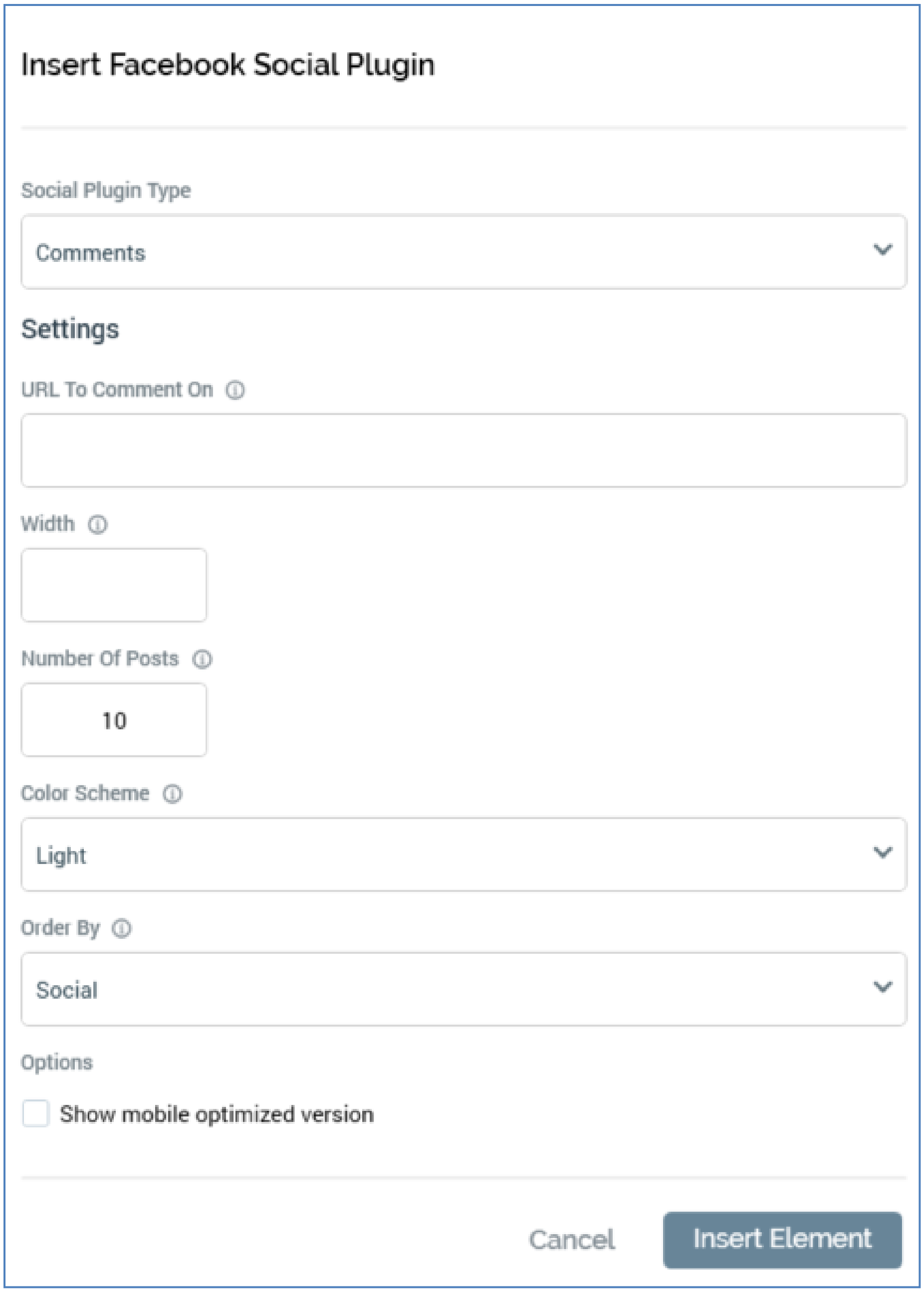
- Social plugin type: initially blank, you must select a social plugin type to add to the landing page content. The following types are available:
  - Comments
  - Embedded Posts
  - Follow Button
  - Like Button
  - Page Plugin
  - Send Button
  - Share Button

When you select a value from the list, settings relevant to your selection are displayed within the dialog.

17.1.31 Facebook Social Plugin – Content Section – Comments

The Comments plugin lets people comment on content on your site using their Facebook profile, and shows this activity to their friends in their news feeds. It also contains built-in moderation tools and special social relevance ranking.

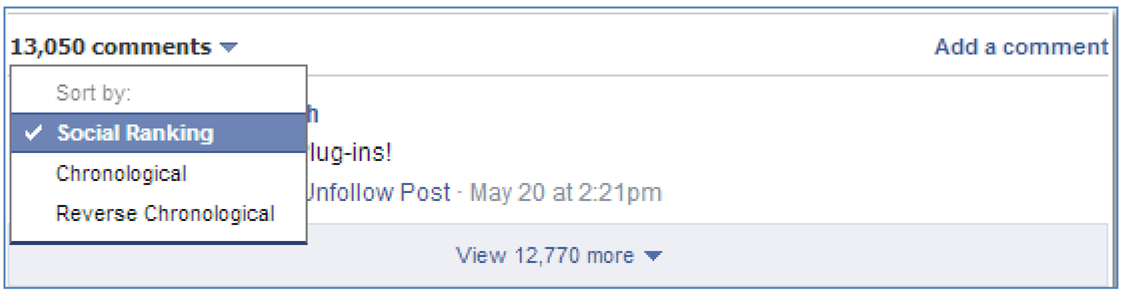
The following properties are displayed for a Comments Facebook plugin:



- URL to comment on: this mandatory textbox represents the absolute URL that comments posted in the plugin will be permanently associated with. It can be a maximum of 1000 characters in length and must be a valid URL.
- Width: provision of a width for the plugin, in pixels, is optional. The property can be a maximum value of 9,999.
- Number of posts: this mandatory property defaults to 10. It defines the number of comments to be shown by default.

- Color scheme: this dropdown allows you to define the color scheme to be used by the plugin as one of Light (the default value) or Dark.
- Order by: this dropdown allows you to specify the order in which comments will be presented. Available values are Social (the default), Reverse Time and Time.
- Show mobile: this checkbox is unchecked by default. It allows you to define whether to display the mobile-optimized version of the plugin.

When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

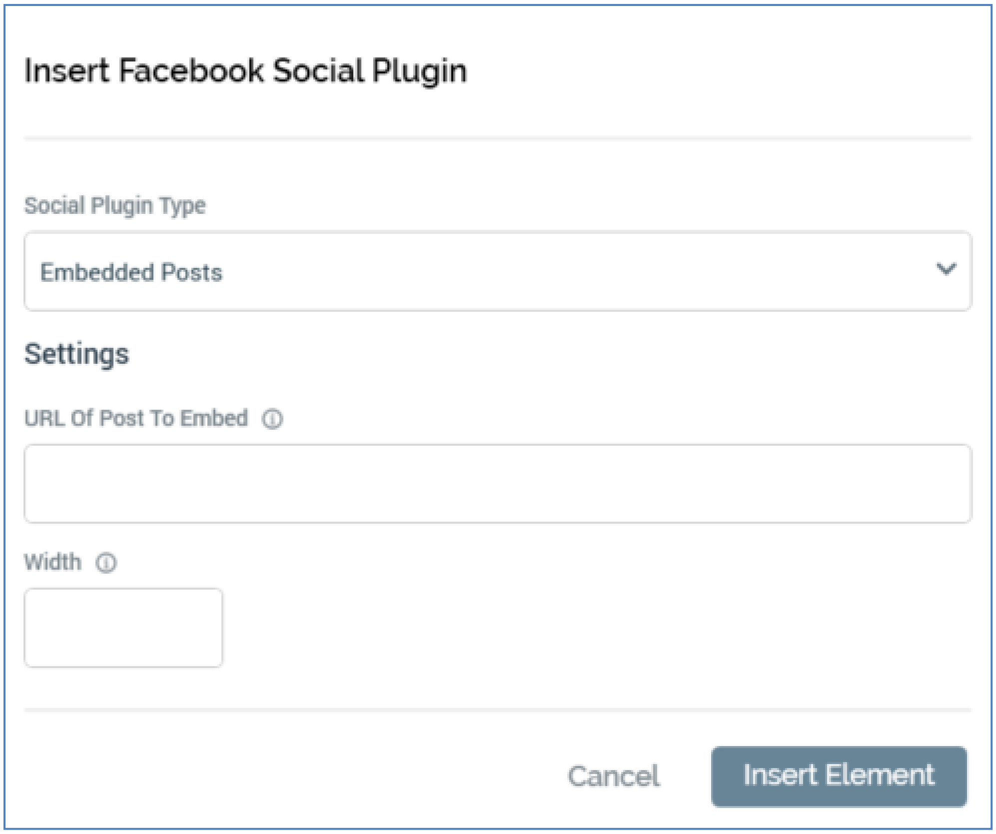


When viewed by a landing page visitor, the comments plugin will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin's settings.

17.1.32 Facebook Social Plugin – Content Section – Embedded Posts

Embedded Posts are a simple way to put public posts – by a page, or a person on Facebook – into web page content. Only public posts from Facebook pages and profiles can be embedded. The embedded post will show any media attached to it, as well as the number of likes, shares, and comments that the post has. Embedding posts will let people using your web site see the same information that is shown on Facebook.com, and they will enable people to follow or like content authors or pages directly from the embed.

The following properties are displayed for an Embedded Posts Facebook plugin:



- URL of post to embed: this mandatory textbox represents the Facebook URL of the post to embed. It can be a maximum of 1000 characters in length and must be a valid URL.
- Width: provision of a width for the plugin, in pixels, is optional. The property can accept values from 350 to 700.

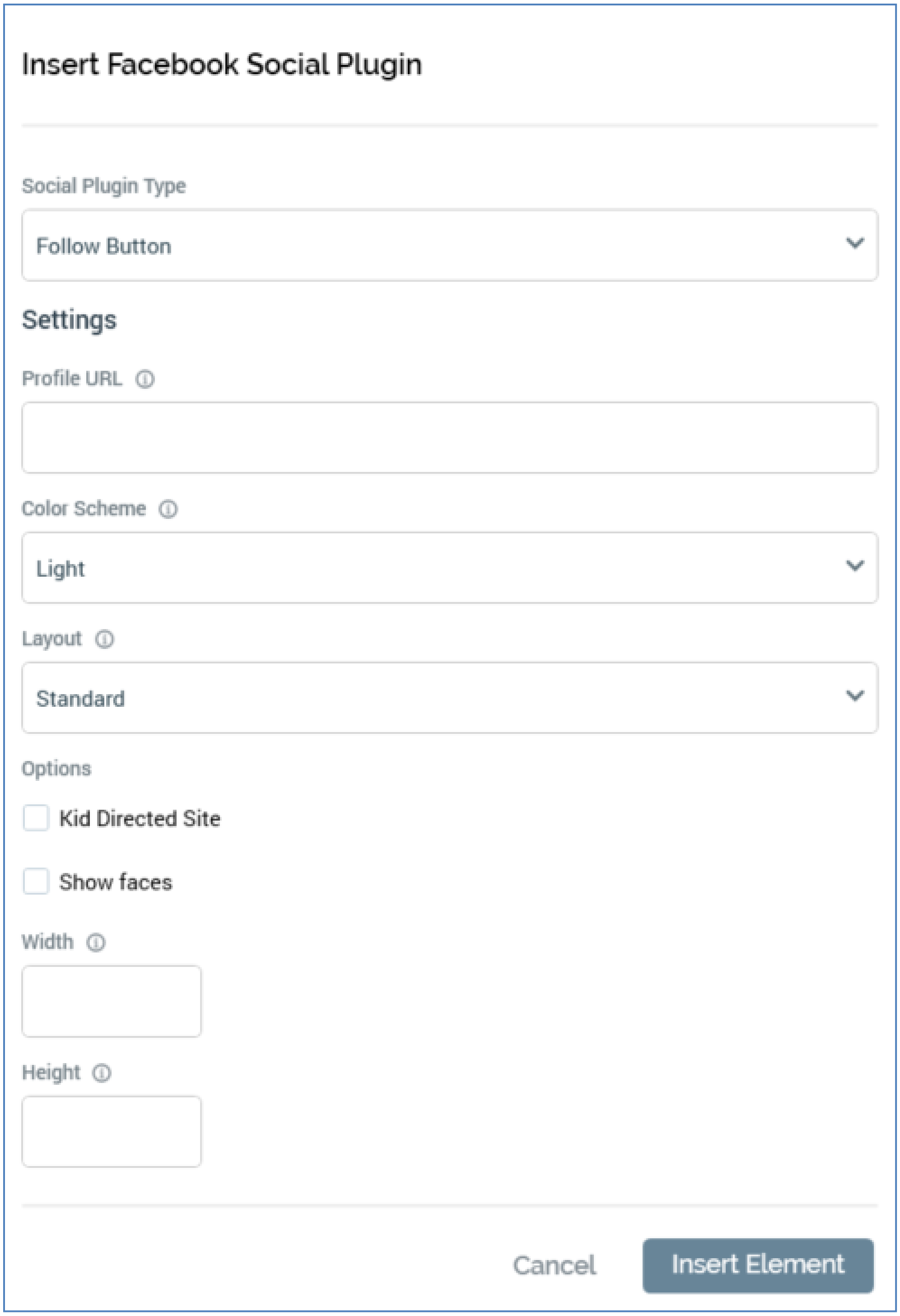
When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

When viewed by a landing page visitor, the embedded posts plugin will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin's settings.

17.1.33 Facebook Social Plugin – Content Section – Follow Button

The Follow button plugin lets people subscribe to the public updates of others on Facebook.

The following properties are displayed for a Follow Button Facebook plugin:



- Profile URL: this mandatory text field can be a maximum of 1000 characters in length. It represents the Facebook.com profile URL of the user to follow. The value provided must be a valid URL.

- Kid directed site: this checkbox, unchecked by default, identifies that the site to be followed is directed at children under the age of 13.

- Width: provision of a width for the plugin, in pixels, is mandatory. The property can be a maximum of value 9,999.
- Height: provision of a width for the plugin, in pixels, is mandatory. The property can be a maximum of value 9,999.
- Color scheme: this dropdown allows you to define the color scheme to be used by the plugin as one of Light (the default value) or Dark.
- Layout: this dropdown allows you to define the type of layout to be used by the plugin as one of Standard (the default value), Button, Button Count or Box Count.
- Show faces: this checkbox is unchecked by default. It allows you to define whether to display profile photos below the button (available for Standard layout only).

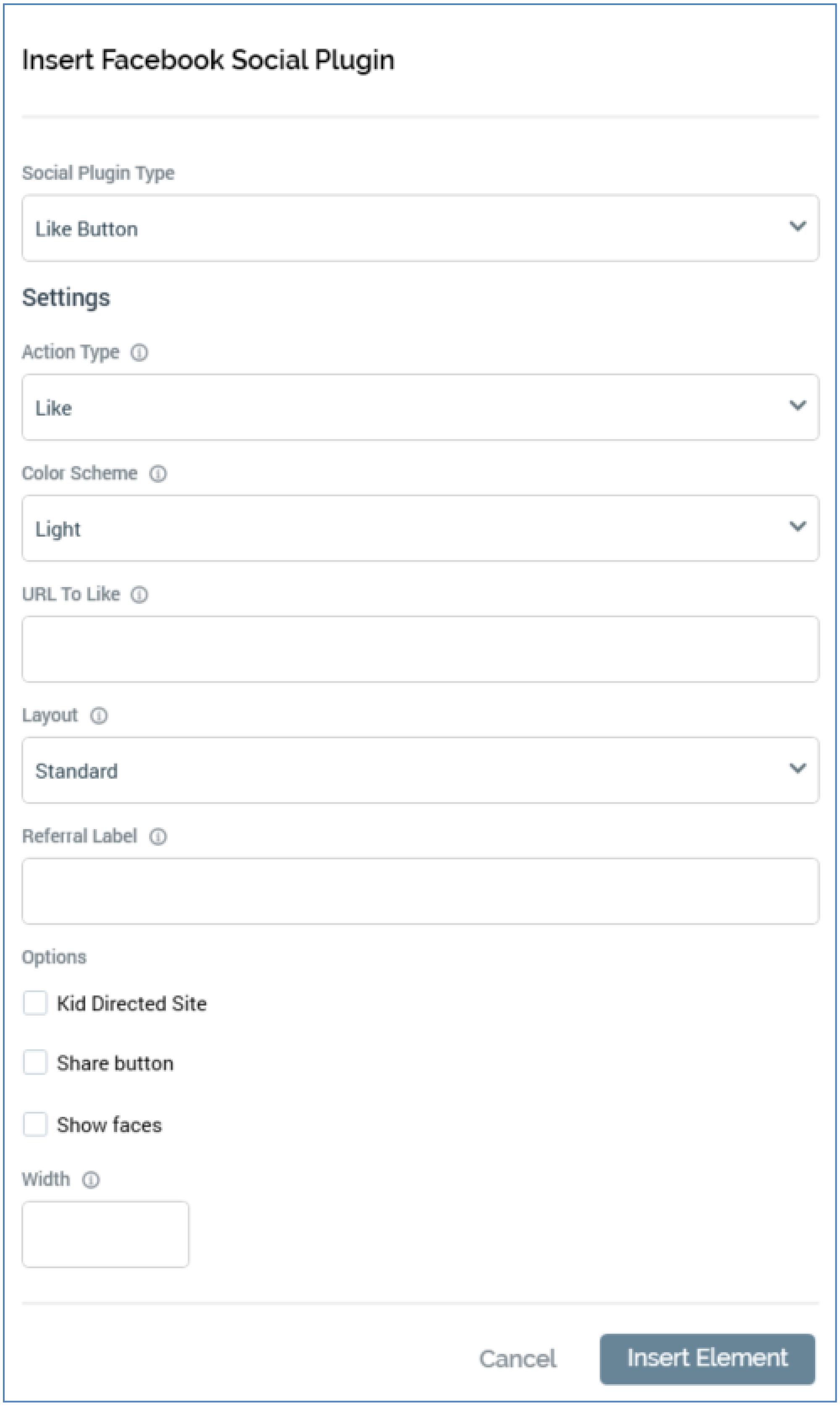
When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

When viewed by a landing page visitor, the follow button will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin's settings.

17.1.34 Facebook Social Plugin – Content Section – Like Button

The Like button is the quickest way for Facebook users to share content with their friends. A single click on a Like button will 'like' pieces of content on the web and share them on Facebook. You can also display a Share button next to the Like button to let people add a personal message and customize who they share the content with.

The following properties are displayed for a Like Button Facebook plugin:


Insert Facebook Social Plugin
Social Plugin Type
Like Button
Settings
Action Type
Like
Color Scheme
Light
URL To Like
Layout
Standard
Referral Label
Options
Kid Directed Site
Share button
Show faces
Width
Cancel
Insert Element

- Action Type: this dropdown allows you to specify the verb to be displayed at the button. It exposes values Like (the default value) and Recommend.
- Color scheme: this dropdown allows you to define the color scheme to be used by the plugin as one of Light (the default value) or Dark.
- URL to Like: this mandatory text field represents the absolute URL of the page to be liked. It can be a maximum length of 1000 characters and must be a valid URL.
- Kid directed site: this checkbox is unchecked by default. It allows you to specify that the site being liked is intended for children under 13.
- Layout: this dropdown allows you to specify the layout of the plugin. Available values are Standard (the default), Button Count, Button and Box Count.
- Referral label: this optional text field allows you to specify a label for tracking referrals. It can be a maximum of 50 characters in length.
- Share button: this checkbox is unchecked by default. When checked, a Share button is displayed alongside the Like button.
- Show faces: this checkbox is unchecked by default. When checked, profile photos are displayed below the button. Show faces is only applicable when Standard layout is selected.
- Width: provision of a width for the plugin, in pixels, is optional. The property can be a maximum value of 9,999.

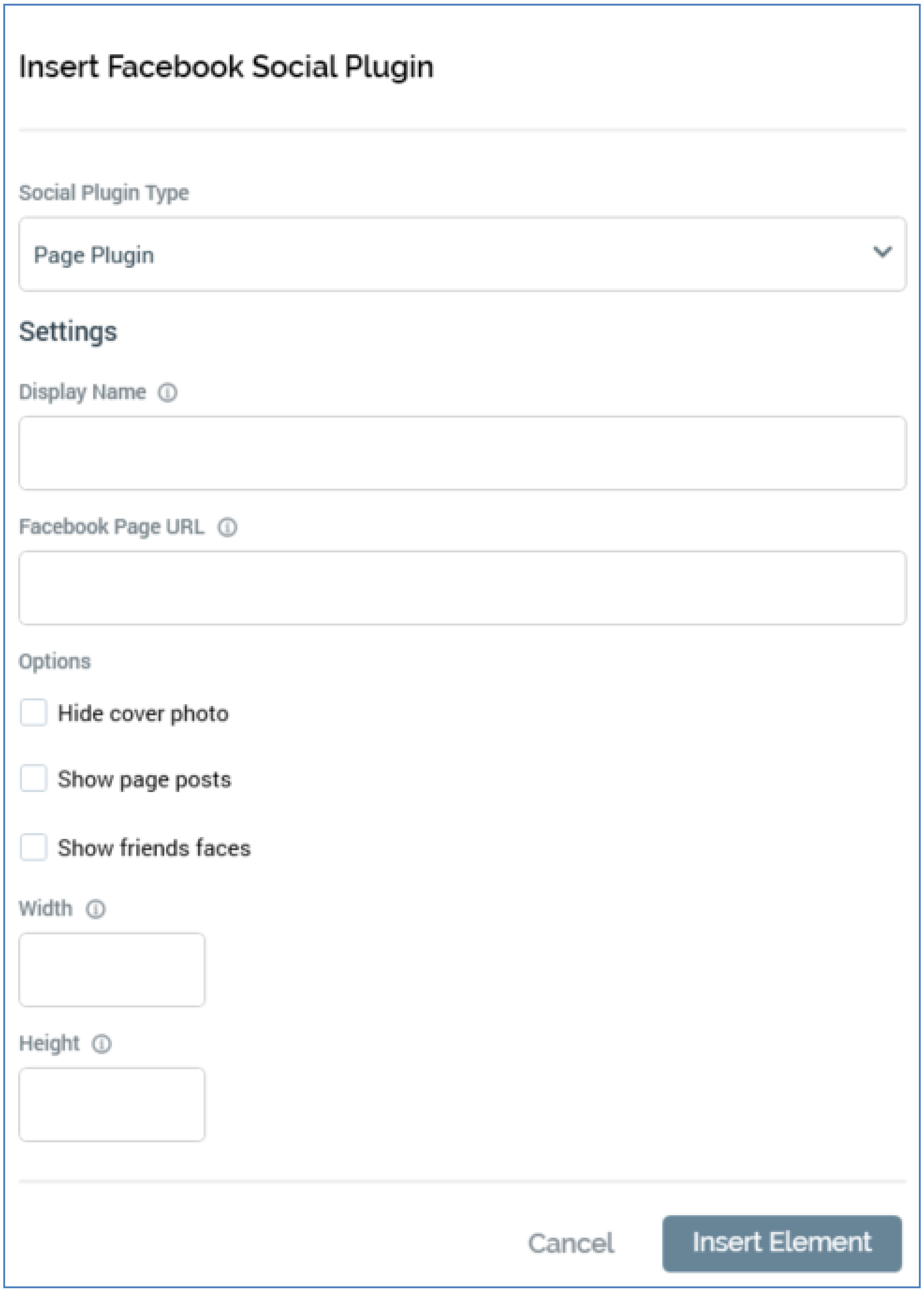
When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

When viewed by a landing page visitor, the like button will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin's settings.

17.1.35 Facebook Social Plugin – Content Section – Page Plugin

The page plugin allows you to include a summary of a Facebook page in landing page or HTML asset content.

The following properties are displayed for a Page Plugin Facebook plugin:



- Display name: the name to be displayed at the page plugin.
- Facebook page URL: the URL of the Facebook page to which the page plugin relates.
- Width: provision of a width for the plugin, in pixels, is mandatory. The property can be a minimum value of 280, and a maximum value of 500.
- Height: provision of a width for the plugin, in pixels, is mandatory. The property must be at least 130.

- Hide cover photo: this checkbox, unchecked by default, allows you to specify whether the Facebook page's cover photo is to be hidden.
- Show page posts: this checkbox, unchecked by default, allows you to define whether a feed of the page's posts is to be shown.
- Show friends' faces: this checkbox, unchecked by default, allows you to specify whether the faces of Facebook users who have already liked the page are to be shown.

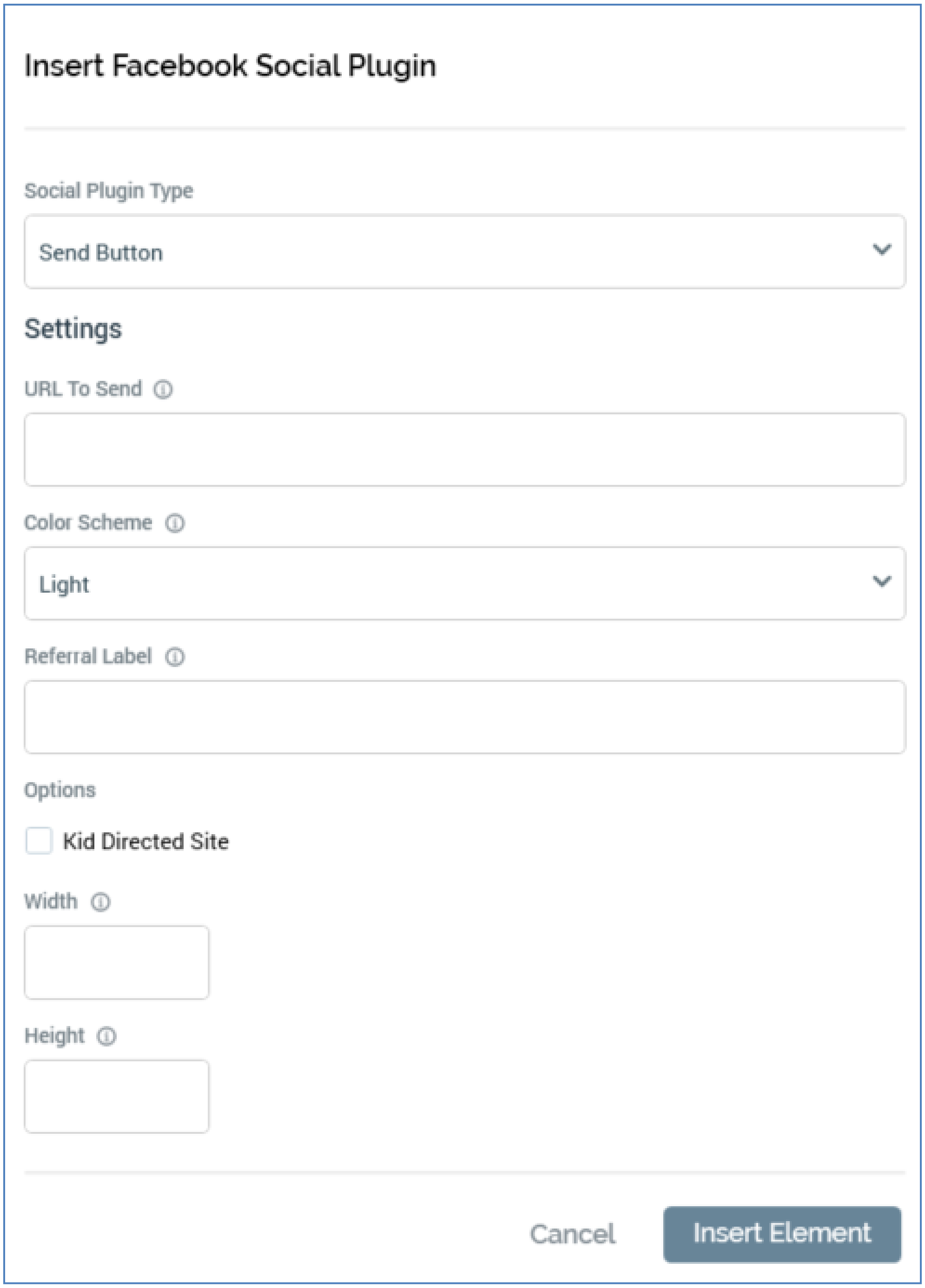
When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

When viewed by a landing page visitor, the page plugin will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin's settings.

17.1.36 Facebook Social Plugin – Content Section – Send Button

The Send button lets people privately send content on a site to one or more friends in a Facebook message, via an email address, or by sharing it with a Facebook group

The following properties are displayed for a Send Button Facebook plugin:



- URL to send: this mandatory text field defines the absolute URL of the page to be sent. It can be a maximum of 1000 characters in length and must be a valid URL.
- Kid directed site: this checkbox is unchecked by default. It defines that the page being sent is intended for children under 13
- Color scheme: this dropdown allows you to define the color scheme to be used by the plugin as one of Light (the default value) or Dark.

- Referral label: this optional property allows you to specify a label for tracking referrals. It can be a maximum of 50 characters in length.
- Width: provision of a width for the plugin, in pixels, is mandatory. The property can be a maximum value of 9,999.
- Height: provision of a width for the plugin, in pixels, is mandatory. The property can be a maximum value of 9,999.

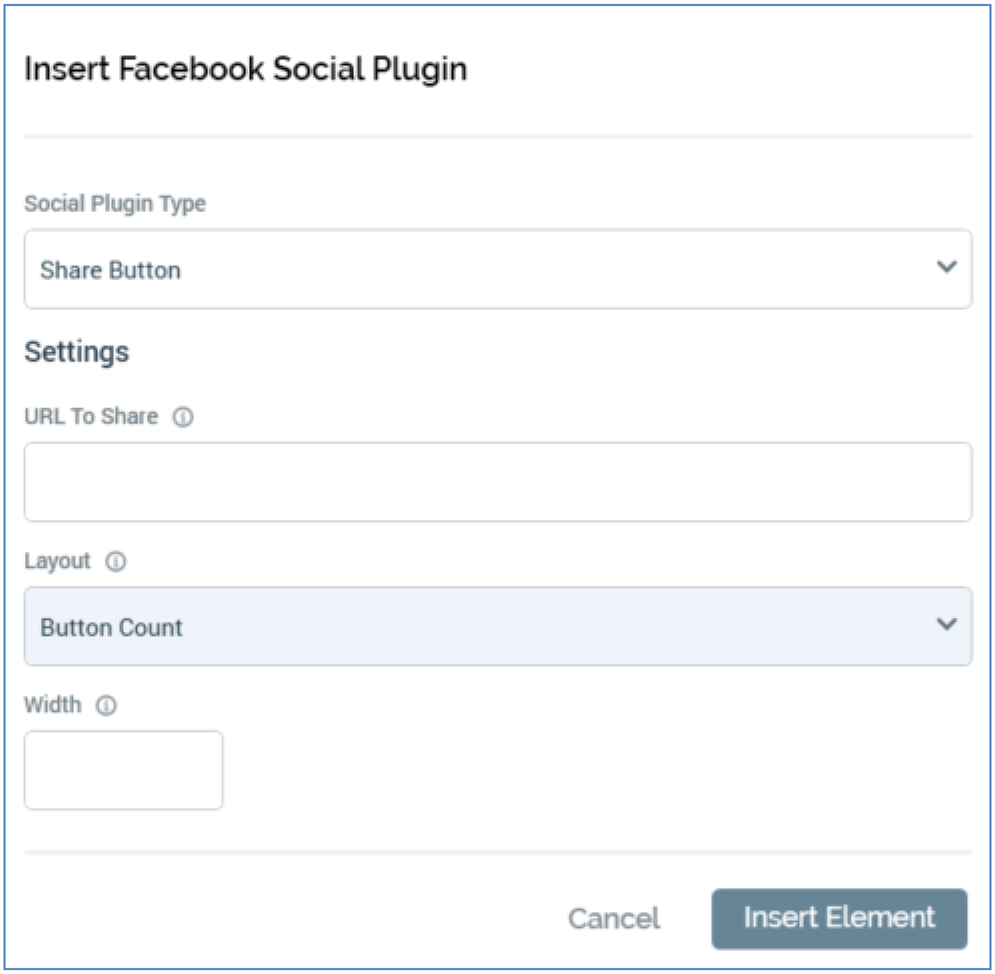
When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

When viewed by a landing page visitor, the send button will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin’s settings.

17.1.37 Facebook Social Plugin – Content Section – Share Button

The Share button lets Facebook users add a personalized message to links before sharing on their timeline, in groups, or to their friends via a Facebook Message.

The following properties are displayed for a Share Button Facebook plugin:



- URL to share: this mandatory text field defines the absolute URL of the page to be shared. It can be a maximum of 1000 characters in length and must be a valid URL.
- Layout: this dropdown allows you to specify the plugin's layout. Available values are Button Count (the default), Box Count, Button, Icon Link, Icon and Link.
- Width: provision of a width for the plugin, in pixels, is mandatory. The property can be a maximum value of 9,999.

When viewed at preview, a placeholder image similar to the final layout will be displayed. The placeholder images are fixed and cannot be configured.

When viewed by a landing page visitor, the share button will be displayed in accordance with the layout configured in RPI. The display may be different from the page preview, depending on the plugin's settings.

17.1.38 Facebook Social Plugin – Footer

Two buttons are shown in the Insert Facebook Social Plugin footer:

- Insert Social Plugin: this button is enabled when a Social plugin type has been selected. Invocation adds the plugin to landing page content. A plugin is represented by a tag, for example:

  ```
  ({FacebookSocialPlugin;1:FacebookSocialPlugin})
  ```

  If clicked when one or more validation issues are present, a warning, listing the issues, is displayed at the bottom of the content section.

- Cancel: clicking this button removes the dialog from display without adding a social plugin. An 'Are You Sure?' dialog is not displayed prior to closure

17.1.39 Insert Tab – Content – Forward to Friend

This button is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode
- Asset Designer - HTML Asset - Rich Text mode
- Asset Designer - HTML Asset - HTML mode

Clicking the button inserts a tag representing a 'Forward to a Friend' link at the current cursor position.

When viewed at Preview or in a delivered email, the button shown is accordant with system configuration setting ButtonImageForwardToFriend.

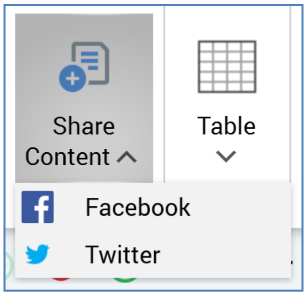
Clicking the button in a delivered mail facilitates the forwarding of the email in its entirety to one or more recipients of the sender's choosing.

17.1.40 Insert Tab – Content – Share Content

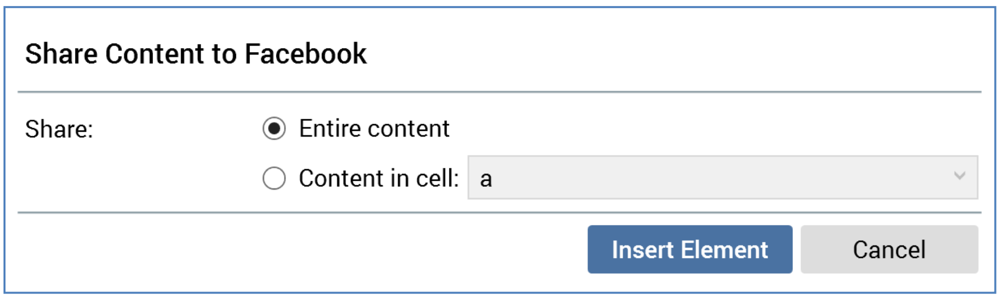
This button is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Email Offer Designer - HTML Email Content - HTML mode

This option allows you to embed a button in an email which, when clicked, facilitates the sharing of content via Facebook or Twitter. Invocation displays a submenu exposing the following options:



Selection of an option displays the Share Content to Facebook/Twitter dialog (the dialog is the same, other than the title, for both):



It contains the following:

- Share: two mutually-exclusive radio buttons are displayed:
  - Entire content: this radio button is selected by default. When configured with this option, the entire contents of the email will be shared.
  - Content in cell: this radio button is not selected by default. It is accompanied by a dropdown field that lists all cells within email content that have been defined as shareable. If no cells are enabled for sharing, the radio button and dropdown are disabled.

    When Content in cell is selected, only content within the selected cell will be shared.
- OK: invocation of this option adds a tag to email content, e.g.:

```
‘({ForwardToFacebook;1:ShareToSocial})’
```

- Cancel: invocation of this option removes the dialog without inserting a tag.

On receipt of an email containing a Share button, a button of the appropriate type is included in its content.

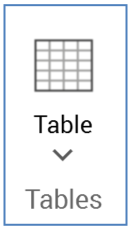
17.1.41 Insert Tab – Tables Section

This section is available in the following contexts:

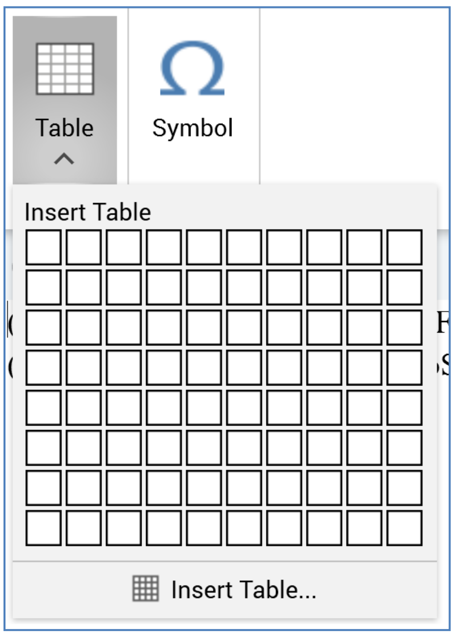
- Email Offer Designer - HTML Email Content - Rich Text mode

- Landing Page Designer - Rich Text mode
- Asset Designer - HTML Asset - Rich Text mode
- Wiki Page Designer - Rich Text mode

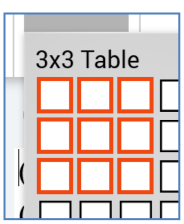
The Insert tab's Tables section exposes a single command:



- Table: invocation of this option displays the Insert Table grid:

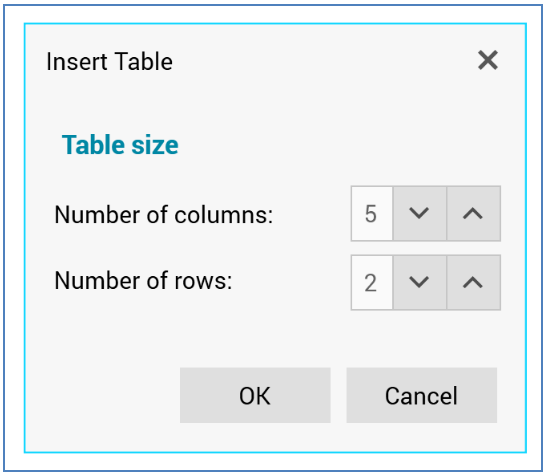


You can hover the mouse over the grid to select your required table size:



Clicking the bottom right cell within the grid inserts a table of the required size at the cursor position.

- Insert table button: invocation of this option displays the Insert Table dialog box:



The dialog allows you define the numbers of columns and rows in the table. Clicking OK adds the table to the rich text content and clicking Cancel removes the dialog box from display.

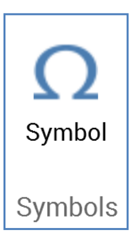
Inserting a table into rich text content displays the Layout tab.

17.1.42 Insert Tab – Symbols Section

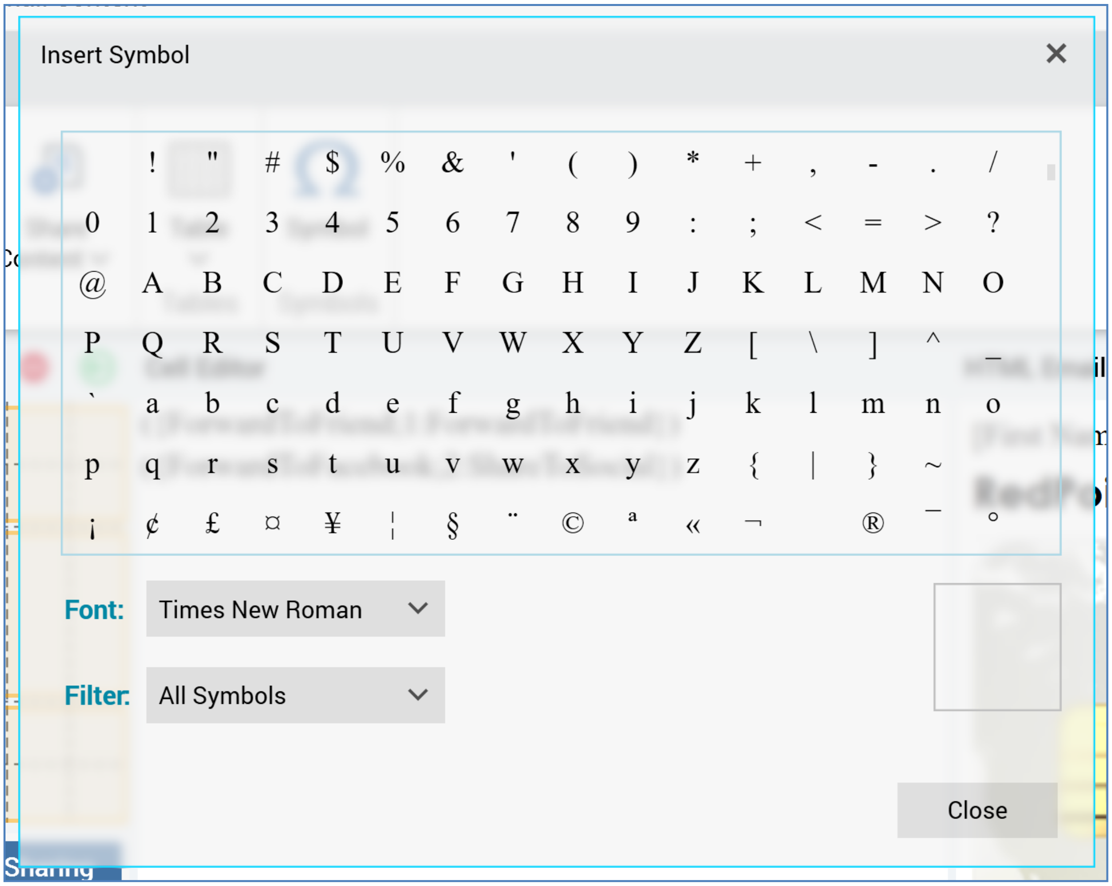
This section is available in the following contexts:

- Email Offer Designer - HTML Email Content - Rich Text mode
- Landing Page Designer - Rich Text mode
- Asset Designer - HTML Asset - Rich Text mode
- Wiki Page Designer - Rich Text mode

The Insert tab's Symbols section exposes a single command:



- Symbol: invocation of this option displays the Insert Symbol dialog box:

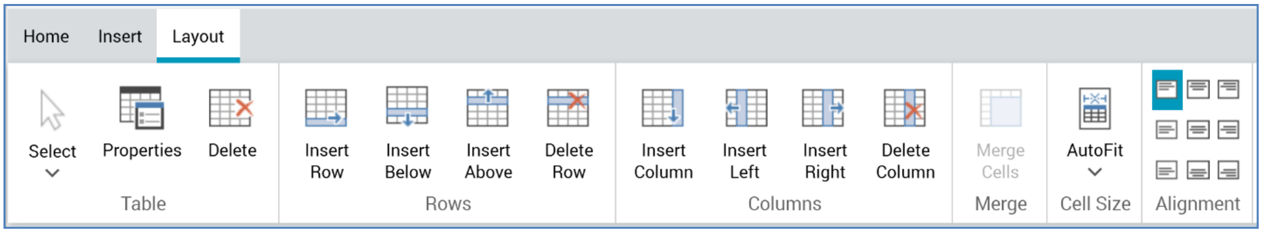


The dialog contains the following:

- Symbols list: you can click a symbol to insert it at the current cursor position.
- Font
- Filter: a dropdown field that allows the contents of the symbols list to be restricted to display e.g. currency symbols.
- Selected symbol
- Close: clicking this button removes the dialog from display.

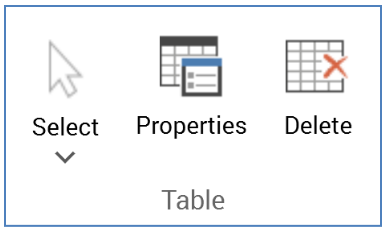
17.1.43 Layout Tab

This tab is only shown if the cursor placed within a rich text table, and consists of Table, Rows, Columns, Merge, Cell Size and Alignment sections.



17.1.44 Layout Tab – Table Section

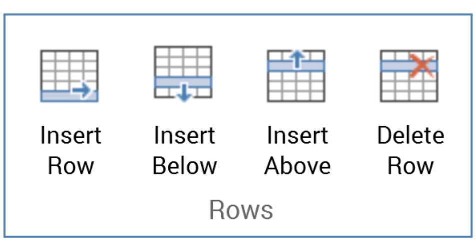
The Layout tab's Table section exposes the following commands:



- Select: invocation of this option displays a submenu that gives access to the following:
    - Select Cell
    - Select Column
    - Select Row
    - Select Table
- Properties: this button allows you to display the Table Properties dialog box, which is documented separately.
- Delete: invocation of this option removes the entire table without display of an 'Are You Sure?' dialog.

17.1.45 Layout Tab – Rows Section

The Layout tab's Rows section exposes the following commands:

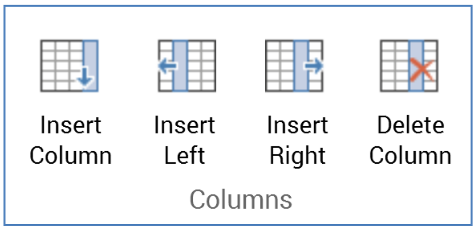


- Insert Row
- Insert Below

- Insert Above
- Delete Row

17.1.46 Layout Tab – Columns Section

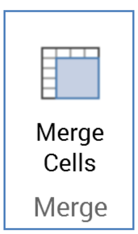
The Layout tab's Columns section exposes the following commands:



- Insert Column
- Insert Left
- Insert Right
- Delete Column

17.1.47 Layout Tab – Merge Section

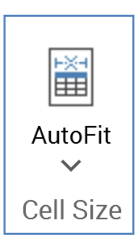
The Layout tab's Merge section exposes a single command:



- Merge Cells

17.1.48 Layout Tab – Cell Size Section

The Layout tab's Cell Size section exposes a single command:



- AutoFit:

- AutoFit to Window
- Fixed Column Width

17.1.49 Layout Tab – Alignment Section

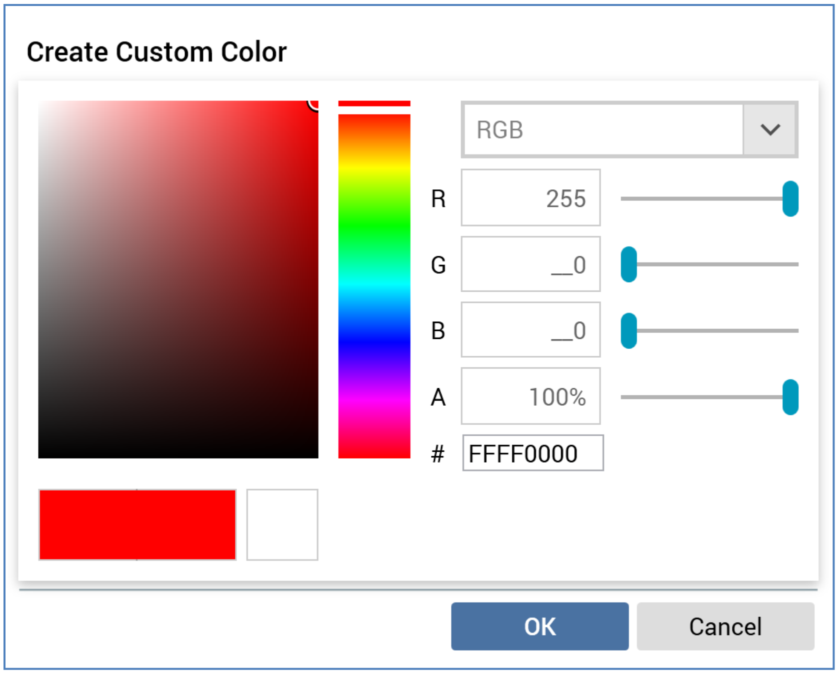
The Layout tab's Alignment section exposes the following settings, which facilitate alignment within a table:

Align Top Left: selected by default

- Align Top Center
- Align Top Right
- Align Center Left
- Align Center
- Align Center Right
- Align Bottom Left
- Align Bottom Center
- Align Bottom Right

17.1.50 Create Custom Color Dialog

This dialog, which can be invoked in a number of contexts, allows you to define a custom color for use in the rich text editor.



On the dialog's invocation, if the current context has a color applied, the controls within the dialog reflect the same.

The dialog contains the following:

- Color chart: the chart displays colors relevant to the hue selected at the right hand vertical slider and context of invocation. You can click on the chart to select the color value at the point in question.
- Vertical slider: the vertical slider, shown to the right of the color chart, facilitates selection of the range of colors to be displayed in the chart.

The following properties are shown below the color chart:

- Initial color
- Selected color
- Previous color

Note that you can select a color using these properties, by clicking one.

- Color model type: this dropdown exposes how colors are to be modeled in the dialog. The following values are available:
    - CMYK
    - HLS

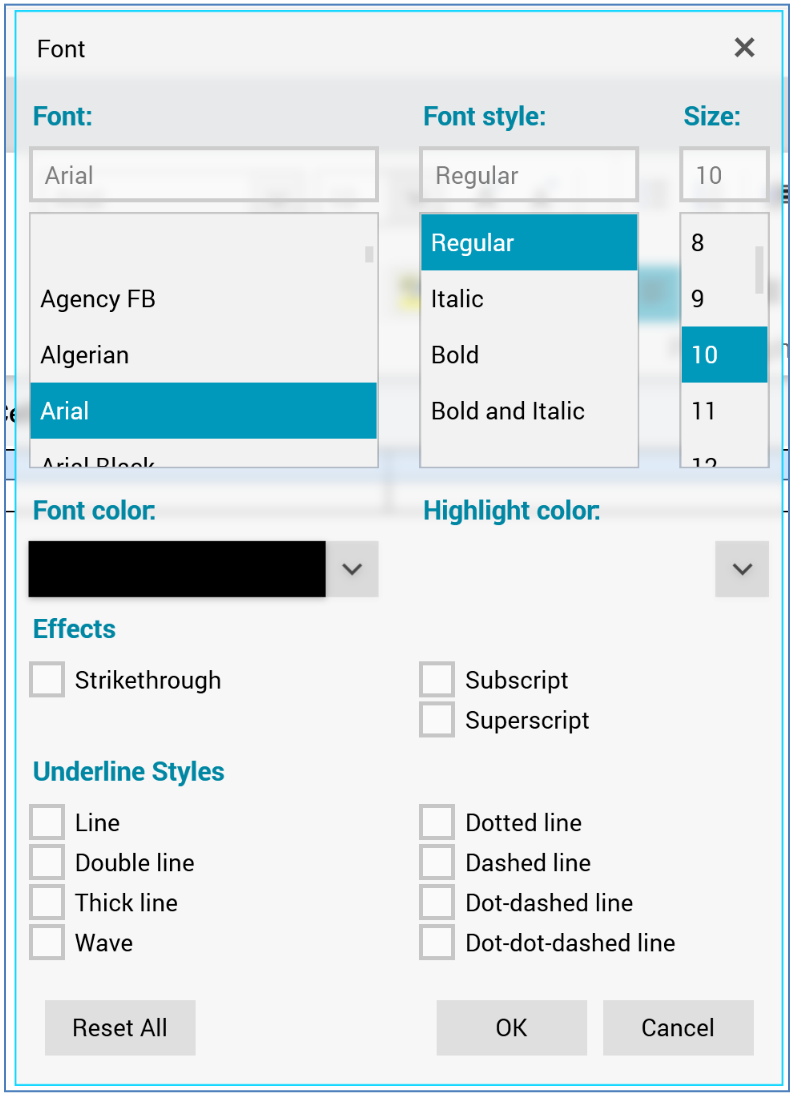
- HSV
- RGB (the default)

- Color model units: the properties shown below the dropdown are contingent upon the value selected therein. Each is accompanied by a horizontal slider that facilitates its setting (and adjusts properties elsewhere in the dialog accordingly - moving a slider results in corresponding movement at the vertical slider and change in # value.
- A: 'Alpha' – this property controls the selected color's opacity.
- #: this property allows you to specify a color hex value.

Two buttons are displayed at the bottom of the dialog:

- OK: clicking this button applies the selected color to the context of the dialog's invocation.
- Cancel: clicking this button closes the dialog without applying the selected color. Note that clicking off the dialog has the same effect.

17.1.51 Font Dialog Box



The Font dialog box provides control over the following font properties:

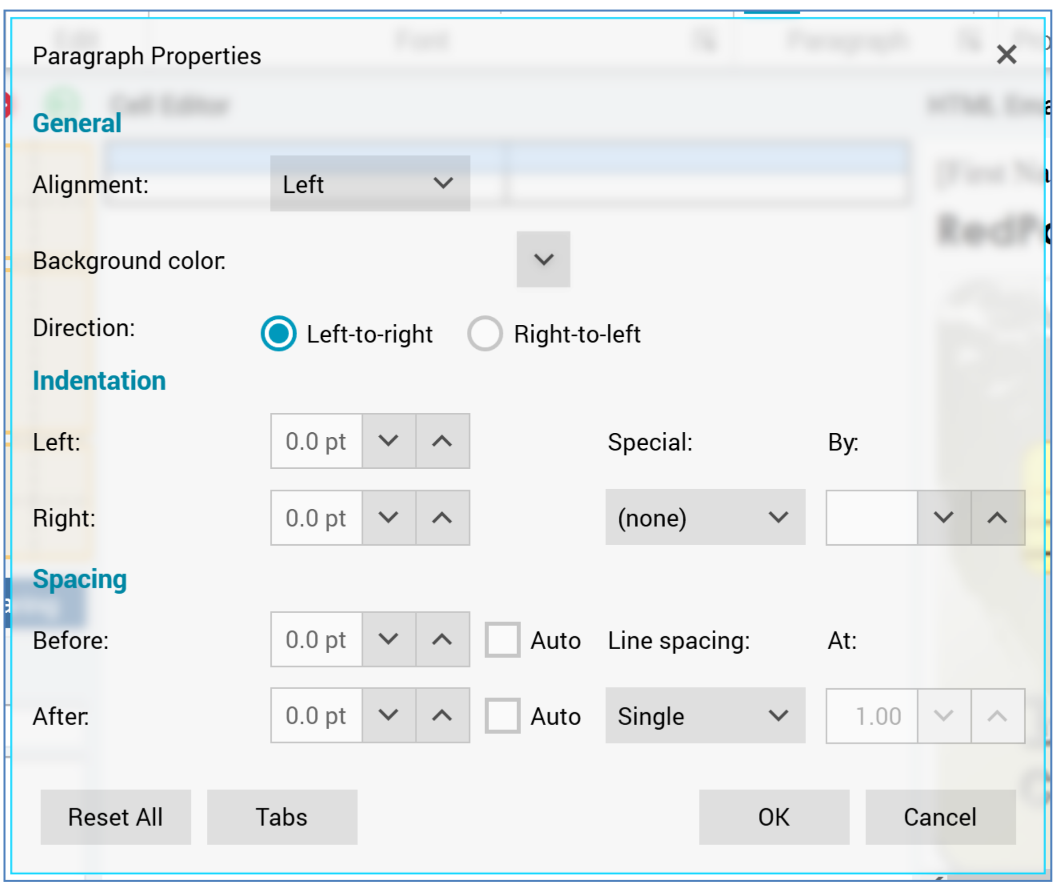
- Font
- Font style
- Regular
- Italic
- Bold
- Bold and Italic
- Size

- Font color
- Highlight color
- Effects
  - Strikethrough
  - Subscript
  - Superscript
- Underline styles

The following buttons appear at the bottom of the dialog:

- Reset
- OK
- Cancel

17.1.52 Paragraph Properties Dialog Box



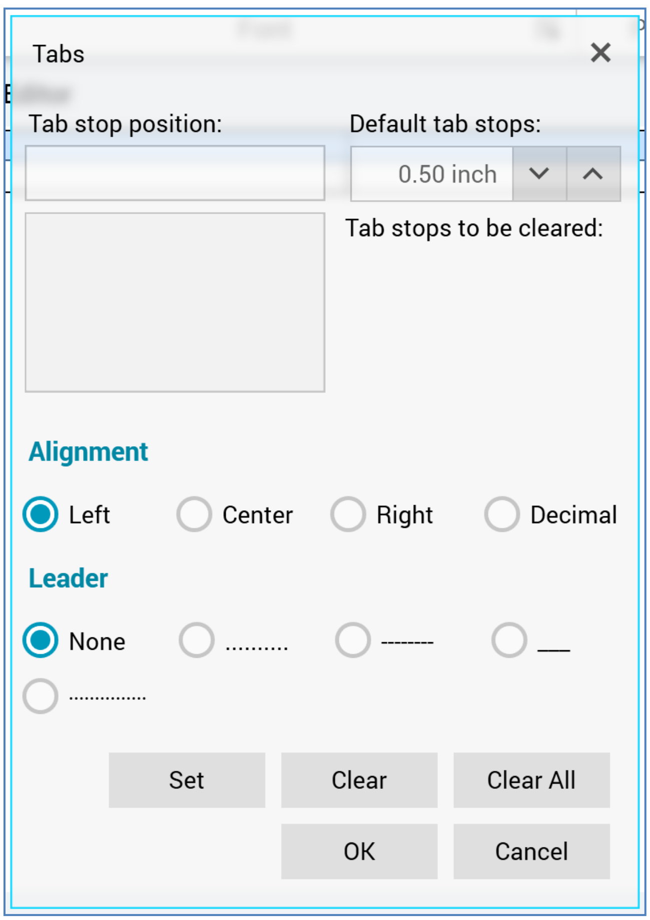
The Font dialog box provides control over the following paragraph properties:

- General section:
  - Alignment
    - Left (selected by default)
    - Center
    - Right
    - Justify
  - Background color
  - Direction
    - Left-to-right: selected by default.
    - Right-to-left
- Indentation section:
  - Left
  - Right
  - Special:
    - (none)
    - First Line
    - Hanging
  - By: this property is only relevant when Special is set to a value other than (none).
- Spacing section:
  - Before
    - Auto
  - After
    - Auto
  - Line spacing
    - Single
    - 1.5 lines
    - Double

        - At least
        - Exactly
        - Multiple (the default)
    - At: this property is only relevant when Line spacing is set to one of At least, Exactly or Multiple.

The following buttons appear at the bottom of the dialog:

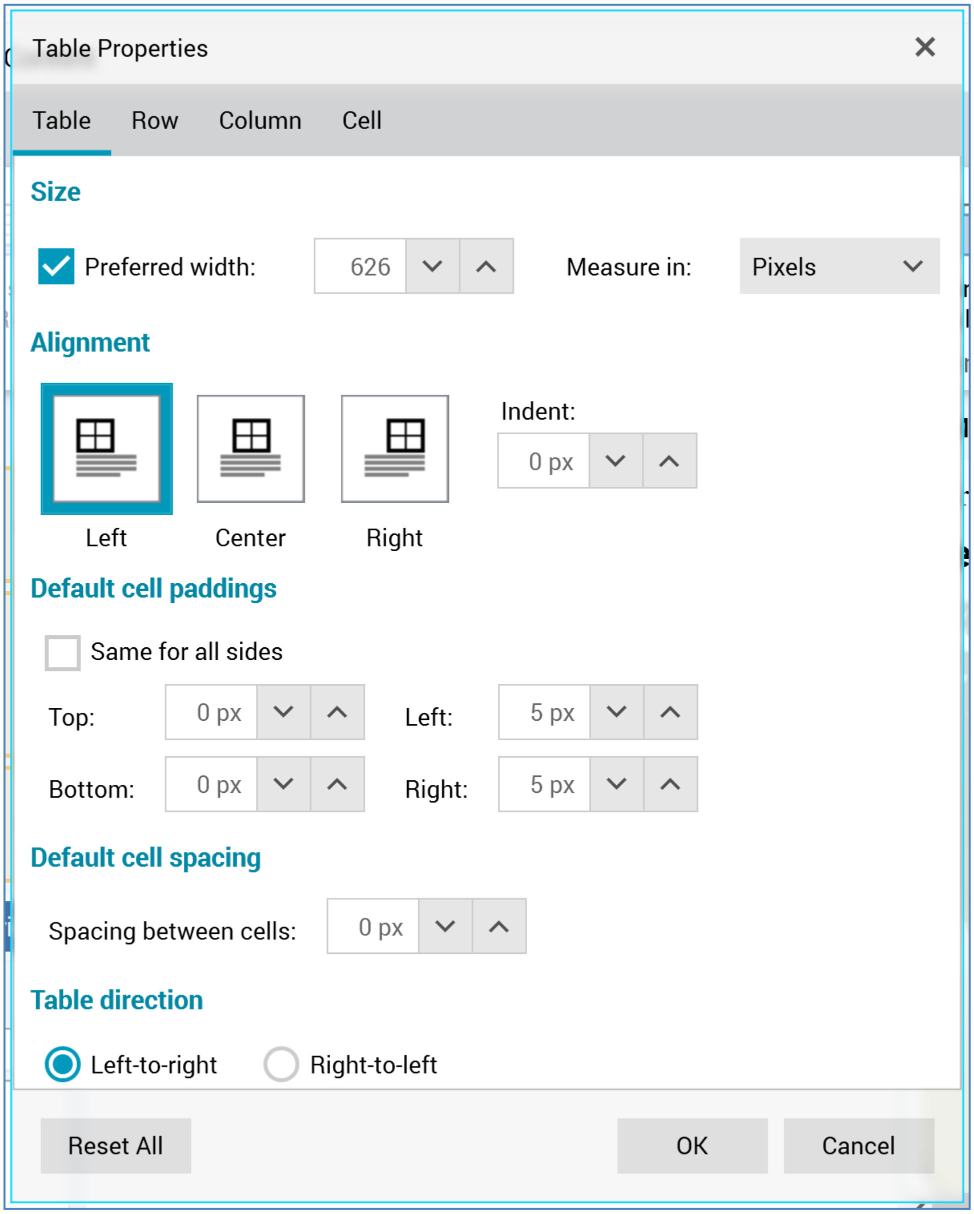
- Reset All
- Tabs: invocation of this option replaces Paragraph Properties with the Tabs dialog box:



  The dialog provides control over tab stop positions, alignment and leader formatting.

- OK
- Cancel

17.1.53 Table Properties Dialog Box



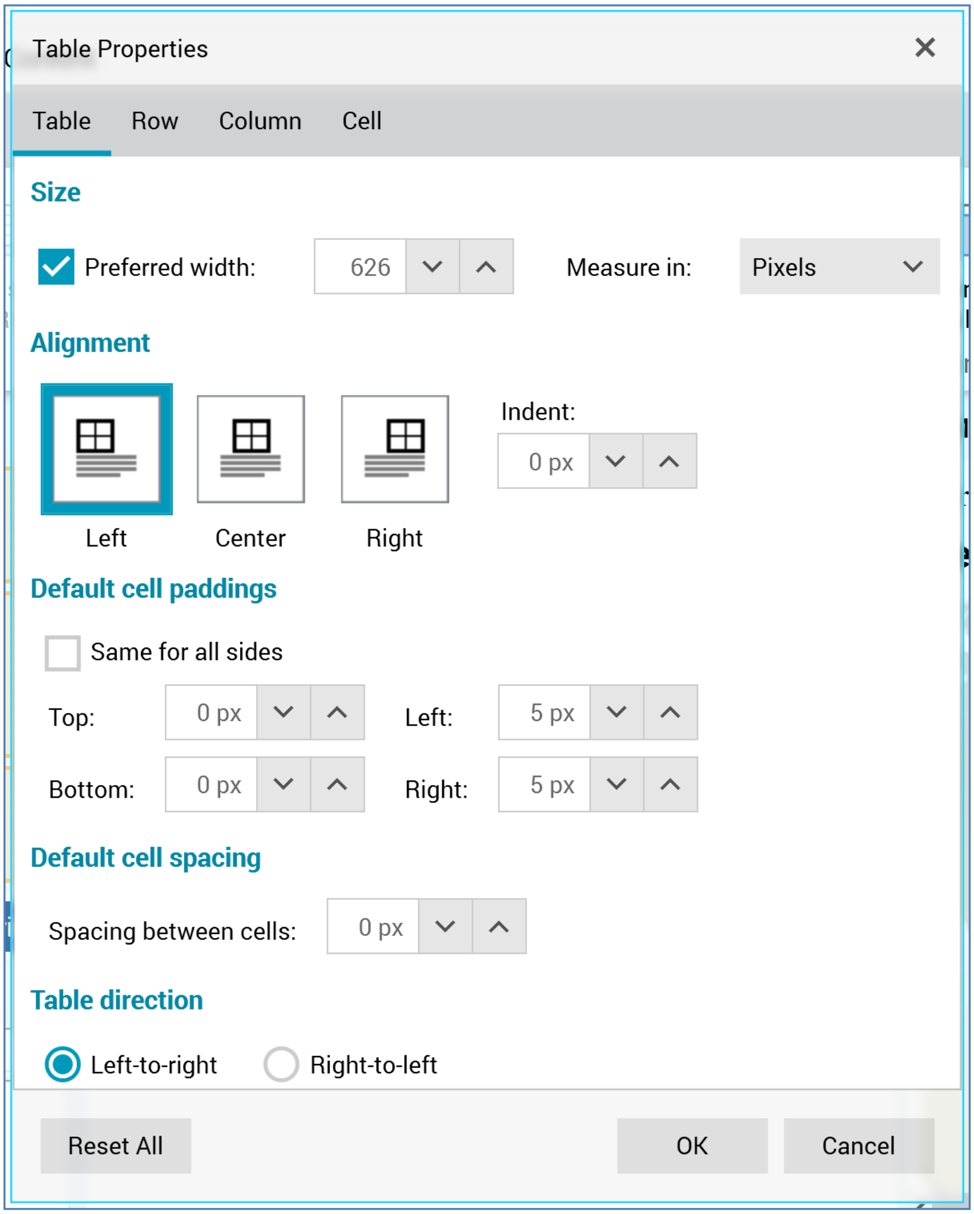
The Table Properties dialog box contains four tabs – Table, Row, Column and Cell – each of which is documented separately.

Three buttons are displayed at the bottom of the dialog box:

- Reset All
- OK
- Cancel

17.1.54 Table Properties Dialog Box – Table Tab

The Table Properties dialog box's Table tab exposes the following:



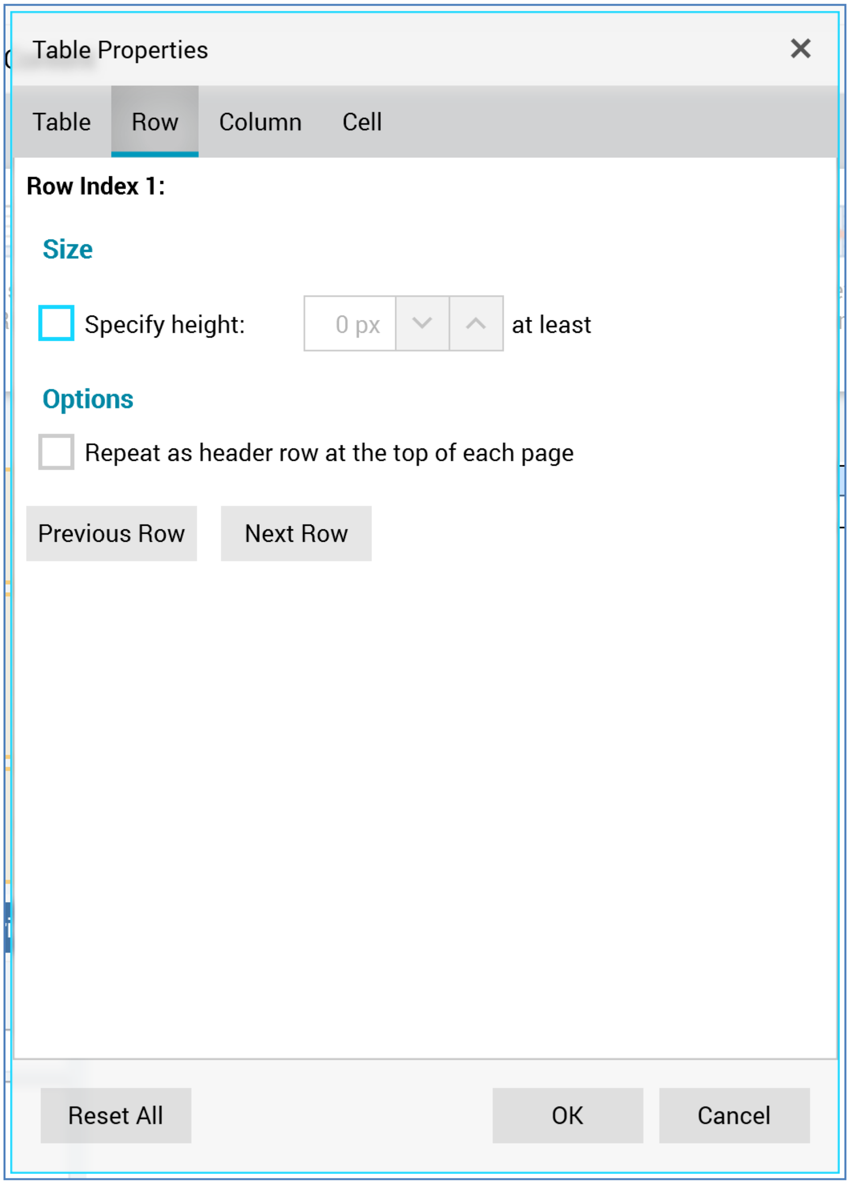
- Size section:
  - Preferred width
  - Measure in: Percent (the default) or Pixels
- Alignment section:
  - Left

- Center
- Right
- Indent

- Default cell paddings section:
  - Top
  - Left
  - Bottom
  - Right
  - Same for all sides: checkbox
- Default cell spacing section:
  - Spacing between cells
- Table direction section:
  - Left-to-right
  - Right-to-left

17.1.55 Table Properties Dialog Box – Row Tab

The Table Properties dialog box's Row tab exposes the following:



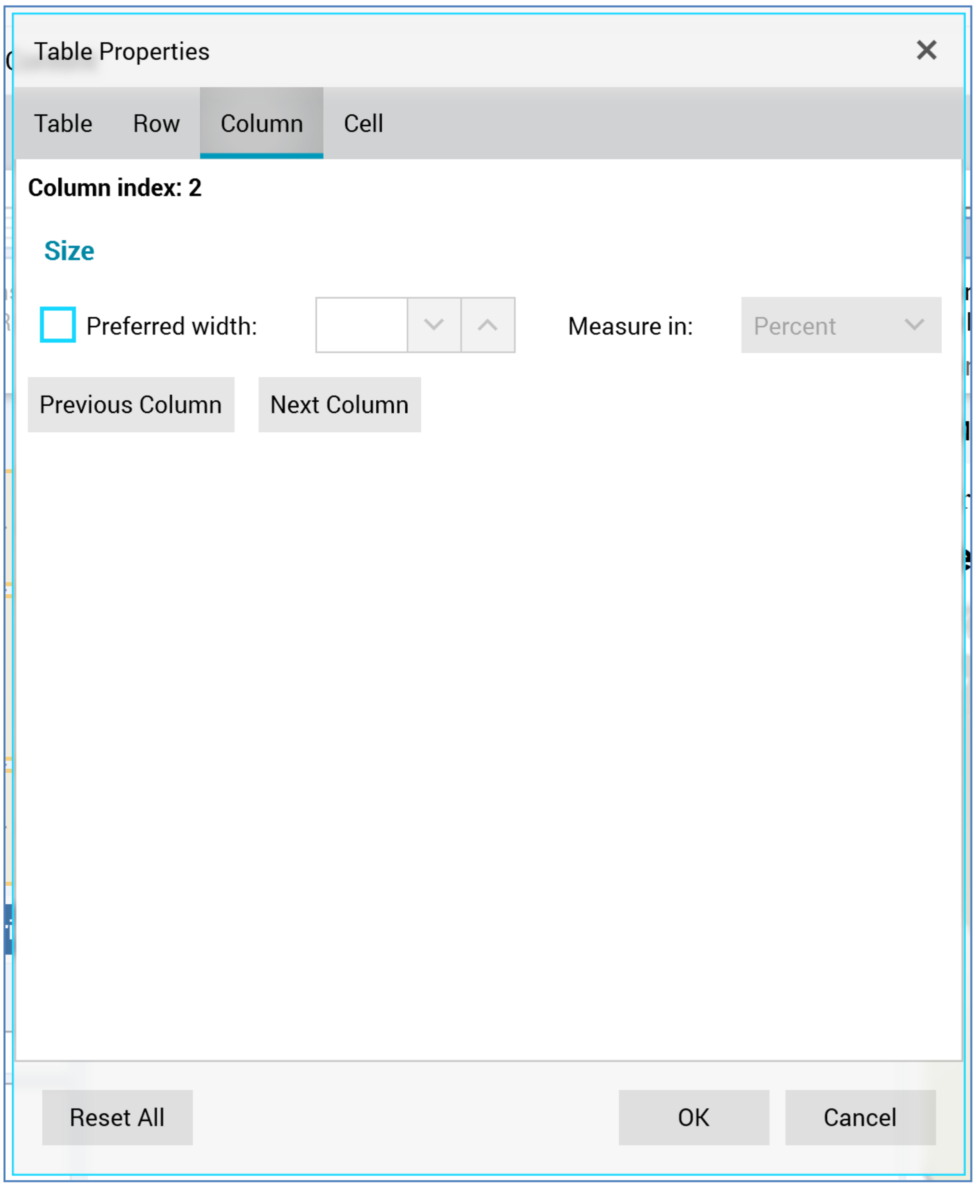
- Row index: a read-only representation of the row in respect of which properties are currently being managed.
- Size section:
  - Specify height: selecting this checkbox allows you to provide a specific minimum height for the row.
- Options section:
  - Repeat as header row at the top of each page: checkbox.

Two buttons below the tab's properties allow you to choose which row's properties to set:

- Previous Row
- Next Row

17.1.56 Table Properties Dialog Box – Column Tab

The Table Properties dialog box's Column tab exposes the following:



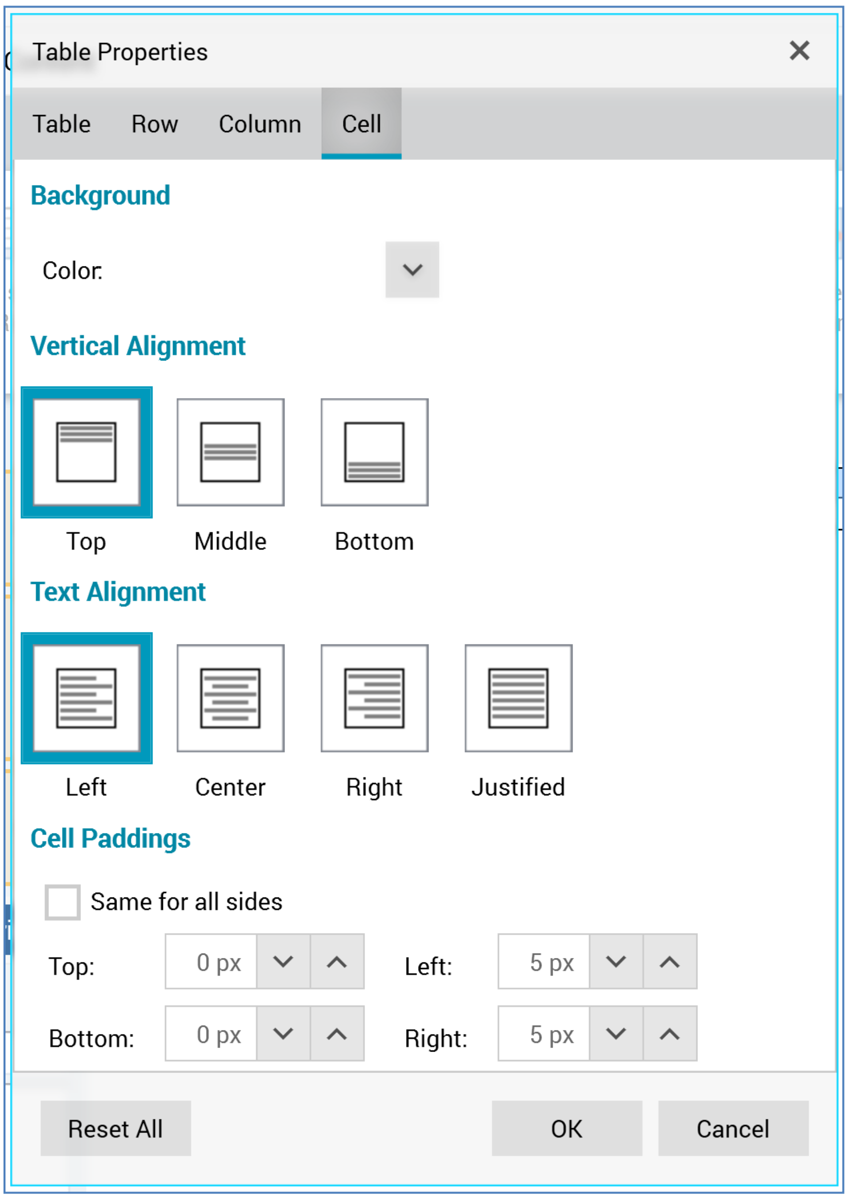
- Column index: a read-only representation of the column in respect of which properties are currently being managed.
- Size section:

- Preferred width
- Measure in

Two buttons below the tab's properties allow you to choose which column's properties to set:

- Previous Column
- Next Column

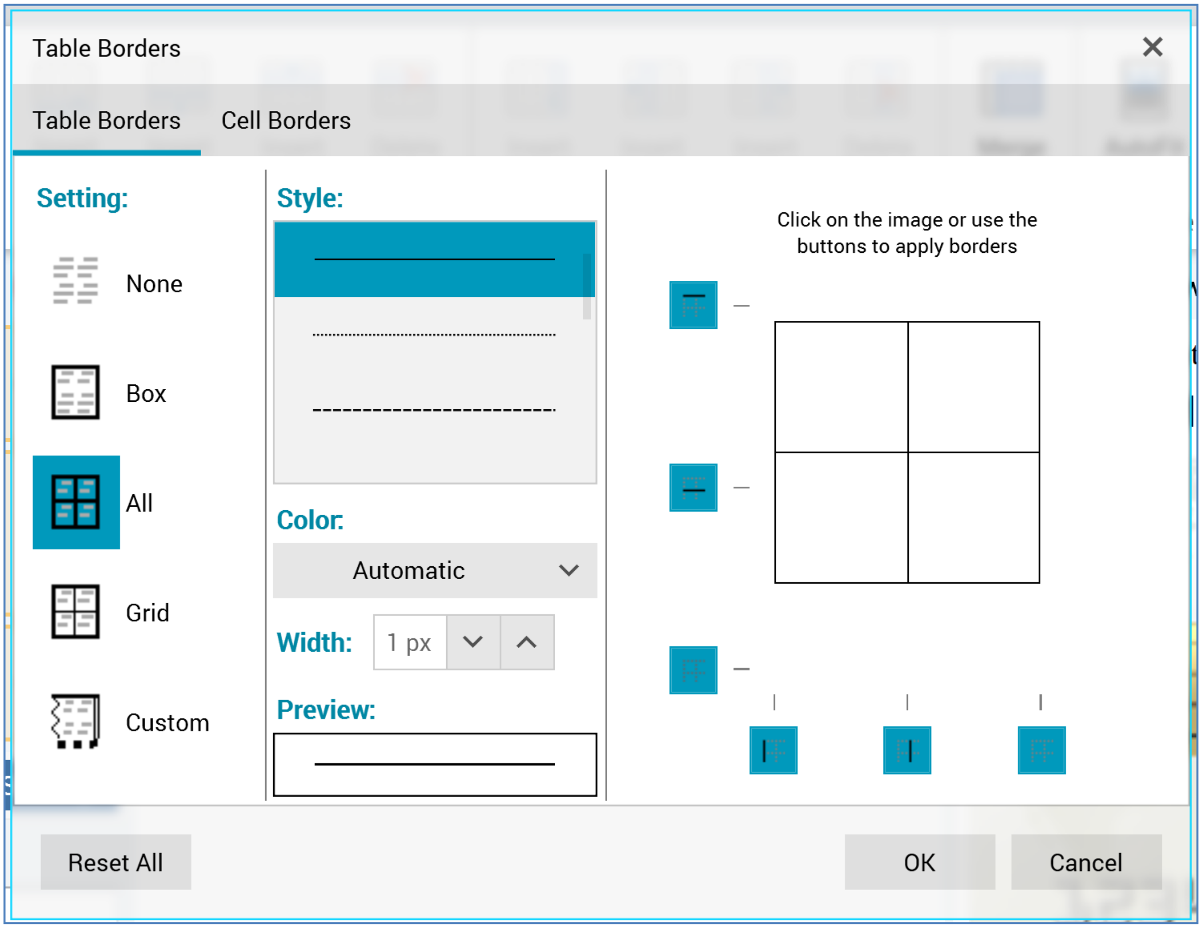
17.1.57 Table Properties Dialog Box – Cell Tab



The Table Properties dialog box's Cell tab exposes the following:

- Background section:
  - Color
- Vertical Alignment section:
  - Top
  - Middle
  - Bottom
- Text Alignment section:
  - Left
  - Center
  - Right
  - Justified
- Cell Paddings section:
  - Top
  - Left
  - Bottom
  - Right
  - Same for all sides: checkbox.

17.1.58 Table Borders Dialog Box



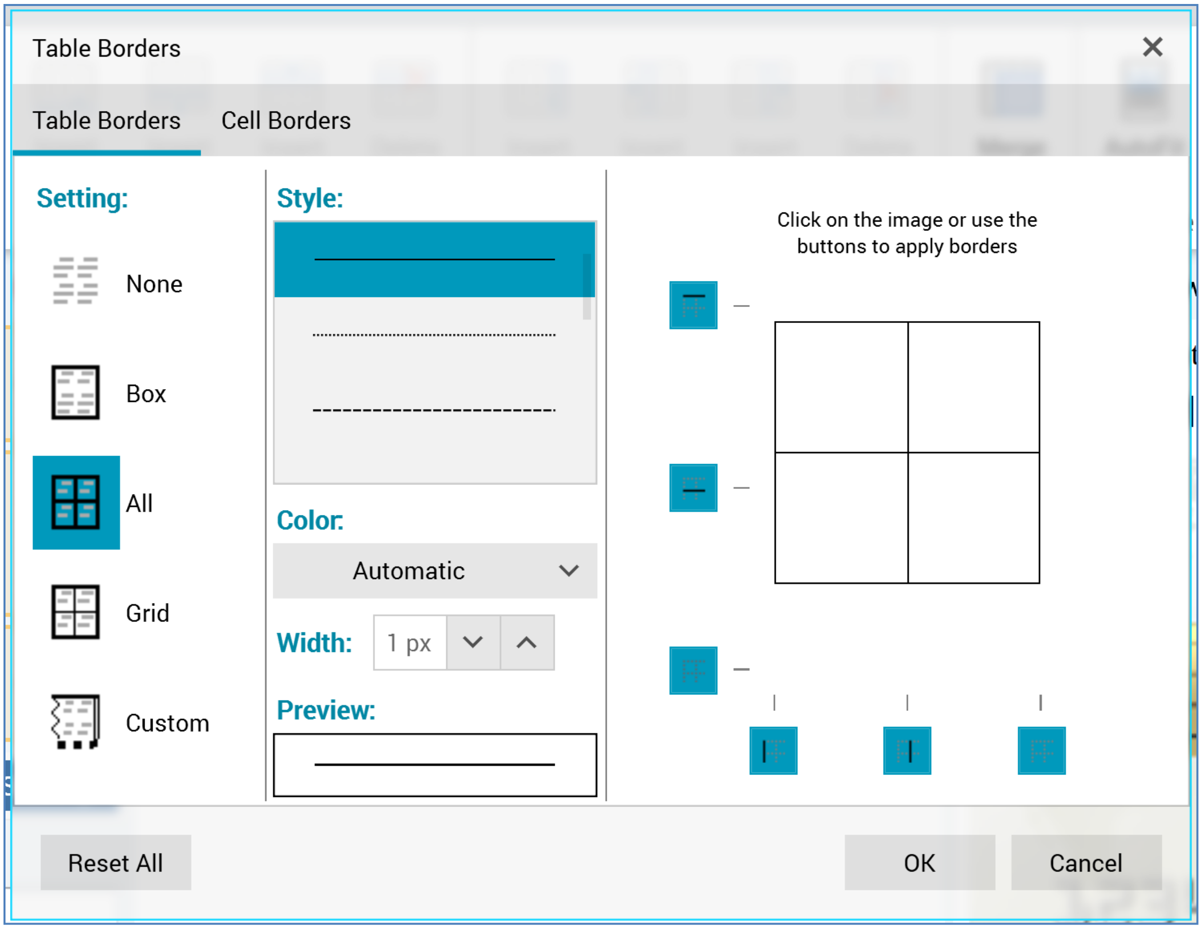
The Table Borders dialog box contains two tabs, Table Borders and Cell Borders, which are documented separately.

Three buttons are displayed at the bottom of the dialog box:

- Reset All
- OK
- Cancel

17.1.59 Table Borders Dialog Box – Table Borders Tab

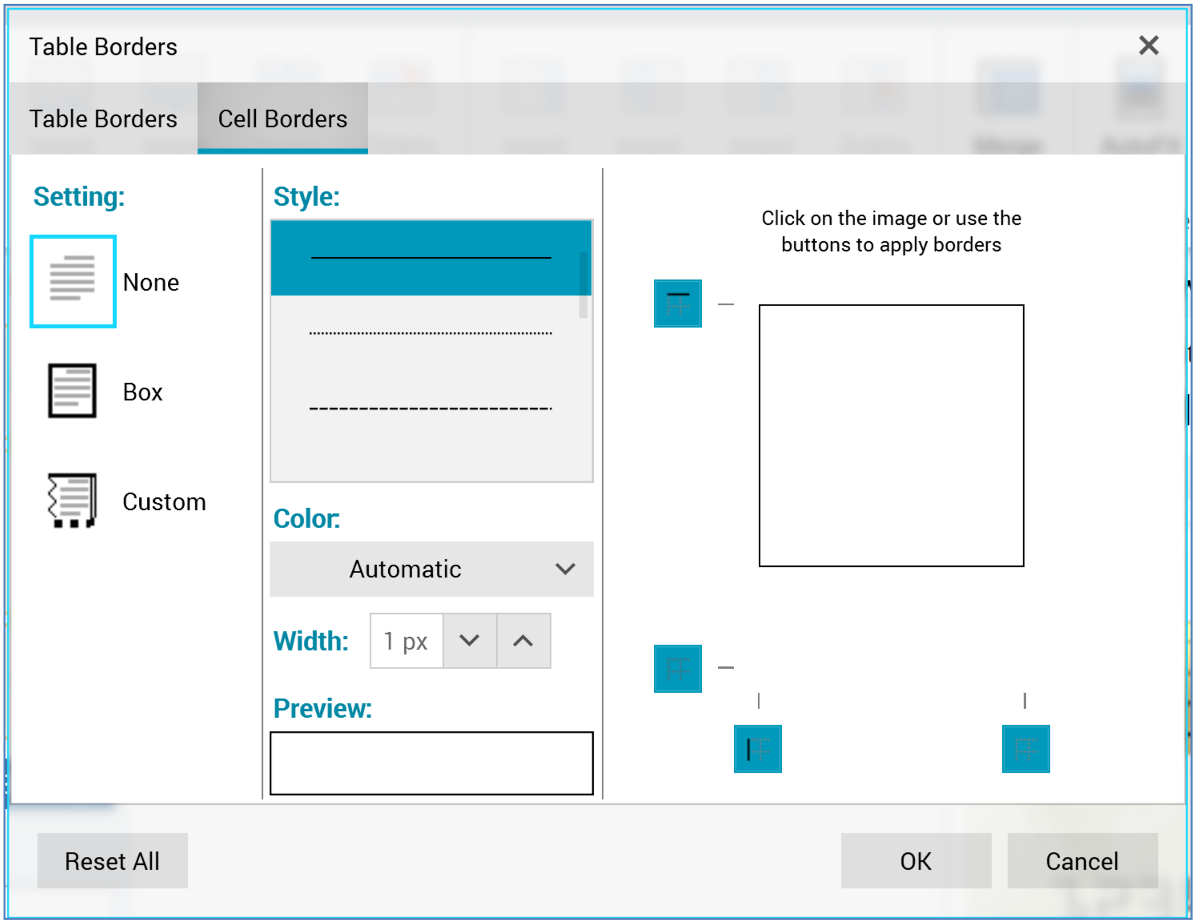
The Table Borders dialog box's Table Borders tab exposes the following:



- Setting section:
    - None
    - Box
    - All (the default)
    - Grid
    - Custom
- Style section:
    - Border style dropbox
    - Color
    - Width
    - Preview

The section to the right of the dialog box allows you to manually manipulate table borders.

17.1.60 Table Borders Dialog Box – Cell Borders Tab



The contents of the Table Borders dialog box's Cell Borders tab are the same as its Table Borders tab, other than the All and Grid options are missing at the Setting section.

17.2 Rich Text Content

Rich text content can be entered and manipulated in the rich text content section, and provision thereof is mandatory. No practicable content length limit exists for rich text content.

You can drag and drop attributes, assets and smart assets into rich text content. Certain restrictions apply:

- You cannot embed an exists in table attribute.
- Anonymous auxiliary database attributes are not supported.
- You cannot embed an asset within itself.
- Only text assets can be embedded in text content.

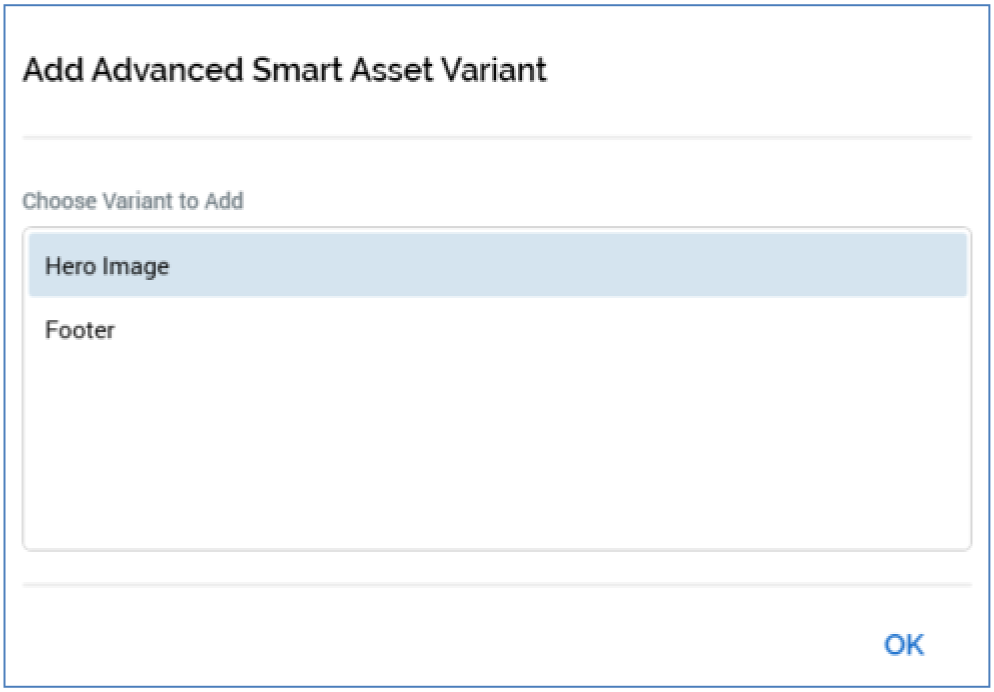
A tag is created when you embed an attribute or asset in this way, e.g.:

```
'({HTML1:My HTML Asset})'
```

```
'({Attribute;2:FirstName})'
```

You can create a link to a landing page by dragging a landing page from the toolbox and dropping it into the content editor. When you do so, the link's Display text property is set automatically to the name of the landing page.

You can add an advanced smart asset variant by dropping an advanced smart asset into the content. When you do so, the Add Advanced Smart Asset Variant dialog is displayed:



Click the variant you wish to add to the content.

You can also insert links and buttons using the toolbar buttons.

A series of context menu options are available when right-clicking rich text content:

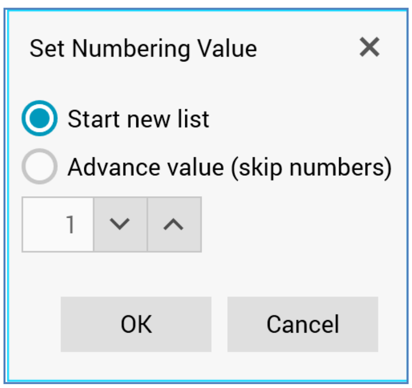
- Cut
- Copy: note that the copying of table content is not supported.
- Paste
- Font: selecting this option displays the Font dialog box.
- Paragraph: selecting this option displays the Paragraph dialog box.
- Edit: this option is available when right-clicking the following within rich text content:
    - Image asset: invocation of Edit in this context displays the Edit [Image] dialog, which is documented separately.
    - Link: facilitates editing of the link in the Edit Link dialog (as per the Insert Link dialog; documented separately).
    - Social button: facilitates editing of the button's settings in the Edit [Button Type] Button dialog (documented separately).

- Share button: facilitates editing of the button's settings (documented separately).
- Date or date/time attribute: facilitates editing of settings specific to attributes of these data types in the Edit Date/Time Attribute dialog (documented separately).
- Decimal attribute: facilitates editing of settings specific to attributes of this data type in the Edit Decimal Attribute dialog (documented separately).

- View File Information...: this option is available when a tag representing an embedded file (e.g. an attribute or image asset) is right-clicked in rich text content. Invocation displays the file's details in the File Information Dialog.

The following context menu options are available when right-clicking within a numbered list:

- Restart at 1: invocation of this option resets the list's initial number to 1.
- Continue Numbering: maintains the numbering sequence.
- Set Numbering Value...: clicking this option displays the Set Numbering Value dialog box:



The following context menu options are available when right-clicking within a table:

- Insert
    - Insert Column to the Left
    - Insert Column to the Right
    - Insert Row Above
    - Insert Row Below
- Delete
    - Delete Row
    - Delete Column
    - Delete Table

- Select
    - Select Cell
    - Select Column
    - Select Row
    - Select Table
- Merge Cells
- Table Borders...: clicking this option displays the Table Borders dialog box, which is documented separately.
- Cell Alignment
- AutoFit
- Table Properties: invocation of this option displays the Table Properties dialog box, which is documented separately.

The following keyboard commands are supported when editing rich text content:

- Select All
- Copy
- Cut
- Paste
- Undo
- Redo

17.3 HTML Content

When in HTML mode, you can enter raw HTML in the content editor. No default content is provided for HTML Email Content, which must be greater than one character in length.

You can drop attributes, assets and smart assets into HTML content. Files must be embedded by drag and drop, rather than by copying and pasting between tabs. An indication as to type of the file inserted is provided within the placeholder displayed, e.g.:

```
({HTML1:[AssetName]})
```

You can also add advanced smart asset variants to HTML content. For more information, please see the Rich Text Content documentation.

Note that you cannot include anonymous auxiliary database attributes in email offer content.

When including images within HTML email content, you have a choice in terms of the manner in which images embedded within email content are hosted. If you add images as image assets, RPI automatically copies the relevant images to the public web server folder defined by system configuration setting LiveImagesDirectoryExternalURL. Email recipients can then access the images contained in this folder when opening an email. Alternatively, you can include raw <IMG> tags pointing to externally-hosted images.

You can Copy or Cut content containing references to embedded items and paste into a third party application for editing purposes. When pasted, the number within the embedded file reference, e.g.:

({HTML;**2**:Personalised HTML Asset})

…is replaced by a GUID, e.g.:

({HTML;**8cfd12a4-0ad5-4ddb-b7b5-5ca1780d7ec5**:Personalised HTML Asset})

You can subsequently paste content edited in a third party application back into RPI (either into the file from which originally copied, or into a new file). When you do so, the original file references replace any pasted GUIDs.

You can copy a link from RPI HTML content to the clipboard. When you do so, it is converted into HTML. For example:

```
<a href="http://www.redpointglobal.com" data-rpi="link">www.redpointglobal.com</a>

<a href="http://www.redpointglobal.com" data-rpi="link">This is a link to Redpoint
Global</a>

<a href="http://www.redpointglobal.com" style="text-decoration: underline" data-
rpi="link">Underlined Link to Redpoint Global</a>
```

```
<a href="http://www.redpointglobal.com" style="text-decoration: none" data-
rpi="link">Redpoint</a>
```

```
<a href="http://www.redpointglobal.com" data-rpi="link">({Image;5bbeea5e-2d9f-474d-
b7e5-2cd9de76c0b4:Redpoint Global})</a>
```

```
<a href="http://www.redpointglobal.com?FirstName=({Attribute;8abf05ed-a3e4-4f64-b3a7-
994867667c41:FirstName})" data-rpi="link">Redpoint Global</a>
```

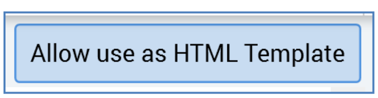
You can also paste HTML back into RPI HTML content, where it is converted into an embedded link. When you do so, the following properties are maintained:

- Link address
- Display text
- Display text decoration
- Image
- URL Parameters

The following properties are not maintained:

- Landing page
- Smart asset
- Realtime tracking properties

If editing an HTML asset in HTML mode, an extra button is displayed to the right of the HTML content header:



- Allow use as HTML Template: when this toggle button is selected, the current HTML asset can be used as an HTML template when building email offers and landing pages. The button is not selected by default.

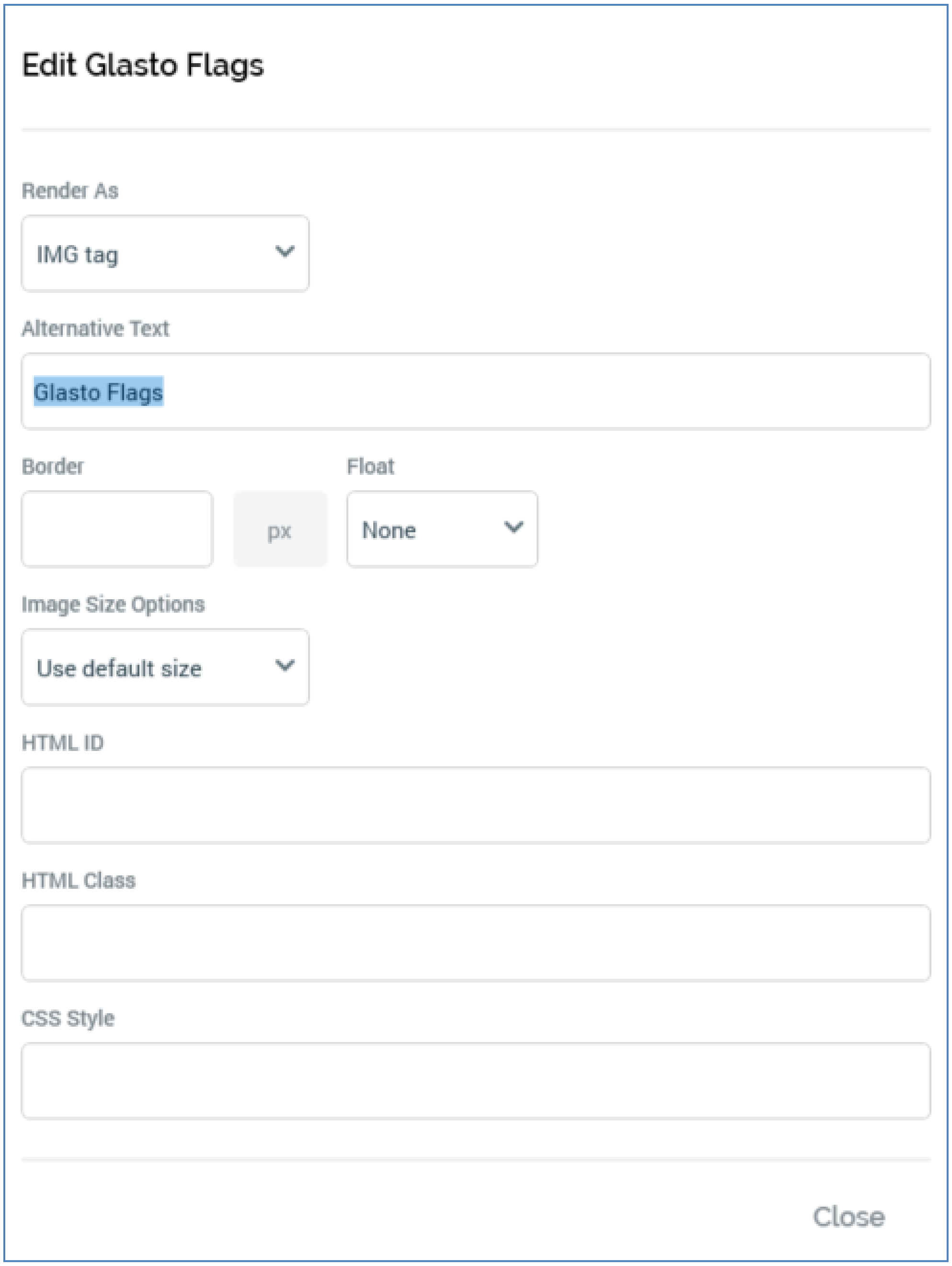
  When the button is selected, the HTML asset can be configured with template elements using the Insert Template Element button. Each such element, which must be uniquely named, serves as a cell or content slot when the HTML template is used in an email offer or landing page, to which required content can be added. An HTML template must contain at least one cell.

  When you save an HTML asset defined as usable as an HTML template, thumbnail representations of each of its cells are generated. These are then used to provide an illustration of the template's structure in the email Offer or Landing Page Designer. Save and Save As… are disabled during thumbnail generation.

Please see each designer's own documentation for information on using HTML templates.

17.4 Edit Image Dialog

This dialog is displayed on invocation of Edit (from the context menu, or the Embedded Items dialog) in the context of an image asset. Invocation displays the Invocation displays the Edit [Image Name] dialog.



The dialog contains the following:

- Render as: this dropdown property allows you to define how the image will be rendered within HTML content. It exposes the following values:
  - IMG tag: the default. When selected, the image is rendered within HTML content.
  - URL only: when this value is selected, all other properties within the dialog are hidden. When selected, a string representation of the image path is rendered within HTML content, and the image is not displayed. This value can be used when building custom HTML.
- Alternative text: this property defaults to the image asset's name. It is optional and can be a maximum of 100 characters. Note that the setting is ignored when content is fulfilled through the Salesforce Marketing Cloud email channel, unless applied to a public external image. Note also that alt text may not render correctly at certain email clients unless the image's height and width are specified explicitly.
- Border (px): an integer value, which defaults to blank. If provided, Border must be greater than or equal to 0. Note that the setting is ignored when content is fulfilled through the Salesforce Marketing Cloud email channel, unless applied to a public external image.
- Float: a dropdown field, exposing the following values:
  - None (default)
  - Left
  - Right
  - Inherit

  Note that the setting is ignored when content is fulfilled through the Salesforce Marketing Cloud email channel, unless applied to a public external image.
- Image size options: this dropdown field exposes the following values:
  - Use default size (the default). If this option is selected, the image's <img> tag contains its original width and height.
  - Set specific size. If this option is selected, the Width and Height properties are displayed. The image's <img> tag will contain its specified width and height.
  - Don't specify size. If this option is selected, no width and height settings are included at the image's <img> tag.

  Note that, if a given context (such as an email offer or HTML asset) contains more than one instance of the same image, it is not possible to set each instance's Image size options separately. Setting the property at one instance applies the same setting to all instances in the context.
- Width (px): an integer. This property is displayed when Image size options is set to Set specific size. It defaults to the image's current width and must be greater than or equal to 0.

- Height (px): an integer. This property is displayed when Image size options is set to Set specific size. It defaults to the image's current height and must be greater than or equal to 0.

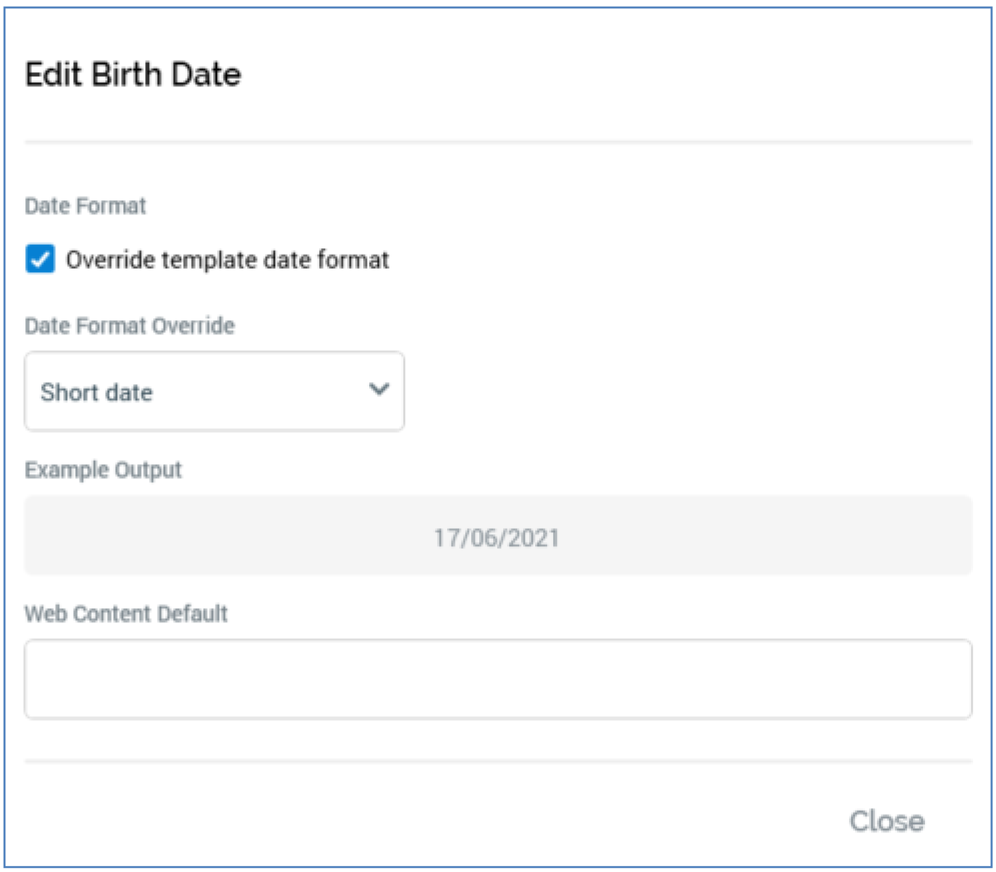
- HTML ID: allows you to define the image's HTML ID property.

- HTML class: allows you to define the image's HTML class property.

- CSS style: this optional property allows you to apply a CSS style to the image. If the style overrides any other explicitly-set properties, it takes precedence.

17.5 Edit Date/Time Attribute Dialog

This dialog is displayed on invocation of Edit (from the context menu, or the Embedded Items dialog) in the context of a date/time or date attribute. Invocation displays the Edit [Attribute Name] dialog.



The dialog contains the following:

- Override template date format: a checkbox, unchecked by default. Checking this property displays Date format and Example output.

- Date format: a dropdown field, exposing the following values:

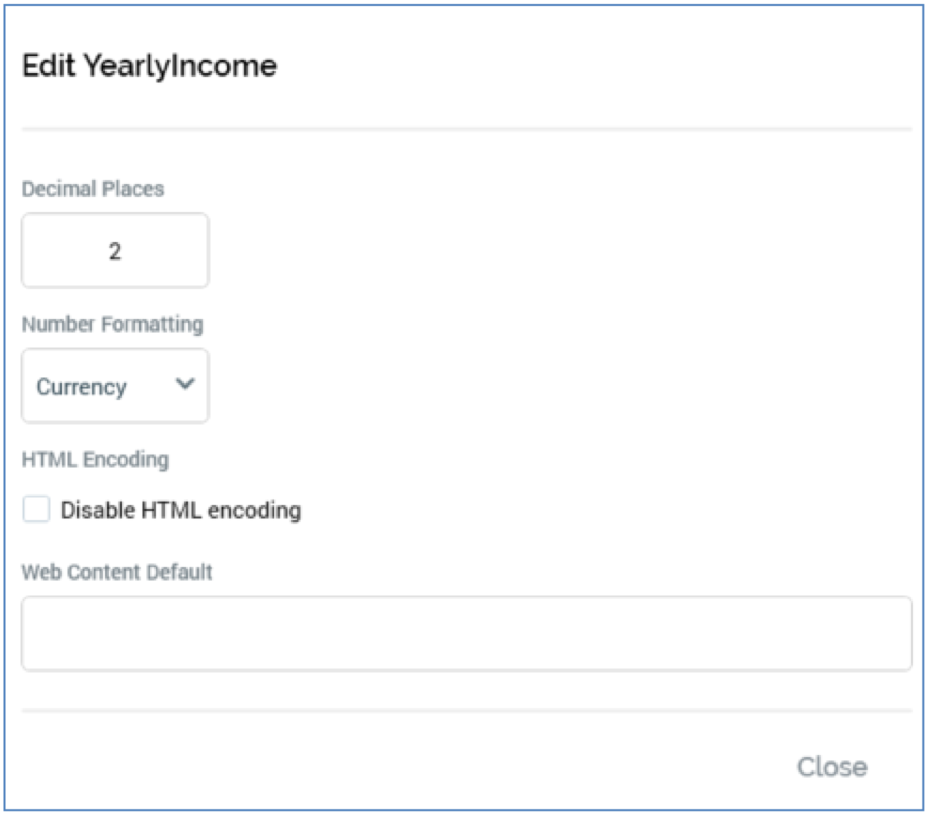
    - Use custom format

- Long date
  - Long date and long time
  - Long date and short time
  - Month day
  - Short date (default)
  - Short date and long time
  - Short date and short time
  - Short time
  - Long time
  - Sortable
  - Year month
- [Custom format]: this property allows you to manually specify a date format. It is only displayed if Use custom format is selected. It is mandatory if shown.
- Example output format: illustrates the selected date format using the current date and time.
- Web content default: used to provide an optional default value for the attribute. This is used when customizing landing page content through the inclusion of an attribute in landing page content; if a realtime cache value is available for the attribute, it is shown when the page is rendered. If a value is not available and a Web content default value has been provided, the default is displayed. If neither is available, no content is rendered.

Note that, when used in an email offer, application of a date format at an attribute overrides any overall date format applied at the offer itself.

17.6 Edit Decimal Attribute Dialog

This dialog is displayed on invocation of Edit (from the context menu, or the Embedded Items dialog) in the context of a decimal attribute. Invocation displays the Edit [Attribute Name] dialog.

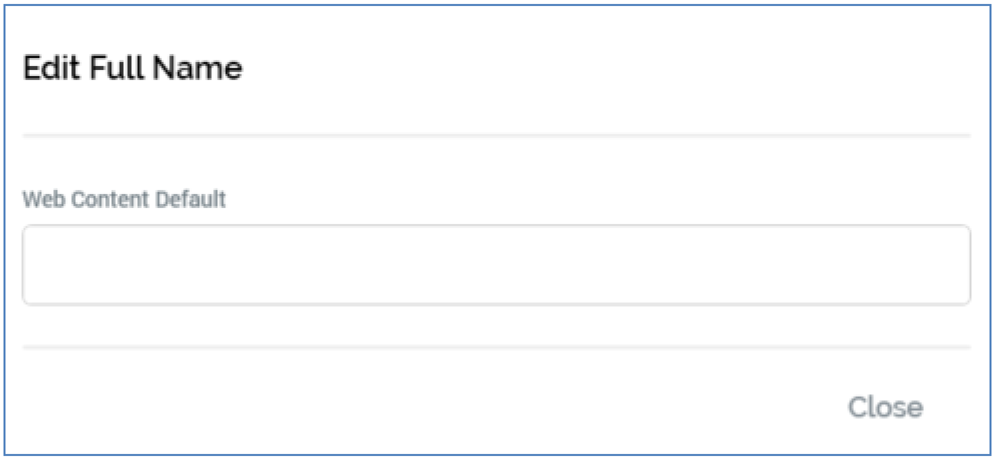


The dialog contains the following:

- Decimal places: an integer property that defaults to 2.
- Number formatting: a dropdown, exposing the following options:
  - None (the default)
  - Currency
  - Percentage
- Disable HTML encoding
- Web content default: used to provide an optional default value for the attribute. This is used when customizing landing page content through the inclusion of an attribute in landing page content; if a realtime cache value is available for the attribute, it is shown when the page is rendered. If a value is not available and a Web content default value has been provided, the default is displayed. If neither is available, no content is rendered.

17.7 Edit [Other] Attribute Dialog

This dialog is shown when editing an attribute other than a date/datetime or decimal attribute.



It exposes a single property:

- Web content default: used to provide an optional default value for the attribute. This is used when customizing landing page content through the inclusion of an attribute in landing page content; if a realtime cache value is available for the attribute, it is shown when the page is rendered. If a value is not available and a Web content default value has been provided, the default is displayed. If neither is available, no content is rendered.

17.8 Plain Text Content

You can enter plain text content in the text Asset Designer and email Offer Designer's Text Email Content tab. No default content is provided for plain text content, which must be greater than one character in length.

You can embed attributes in plain text email content. Attributes are sourced from the Offer Designer toolbox, and are displayed in accordance with the following example:

({Attribute;1:[AttributeName]})

An attribute must be embedded by drag and drop, rather than by copying and pasting between tabs.

Anonymous auxiliary database attributes are not supported in this context.

You can also drop text and text smart assets into plain text email content. You cannot include a HTML, image, or web form assets, or smart assets containing anything other than text content. You can add advanced smart asset variants, as long as text-based. For more information, please see the Rich Text Content section.

You can Copy or Cut content containing references to embedded items and paste into a third party application for editing purposes.

When pasted, the number within the embedded file reference, e.g.:

({HTML;**2**:Personalised HTML Asset})

…is replaced by a GUID, e.g.:

({HTML;**8cfd12a4-0ad5-4ddb-b7b5-5ca1780d7ec5**:Personalised HTML Asset})

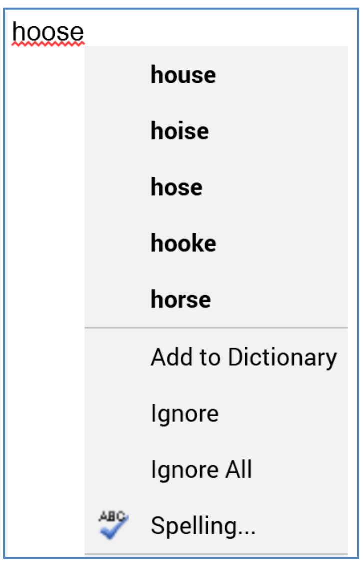
You can subsequently paste content edited in a third party application back into RPI (either into the file from which originally copied, or into a new file). When you do so, the original file references replace any pasted GUIDs.

17.9 Spell Check

Spell checking within content is enabled and disabled using the Spell Check button, which is located within the Home tab's Proofing section (for more information, please see the Proofing section's own documentation).

When Spell Check is enabled, spelling errors in content are identified using a red underline:

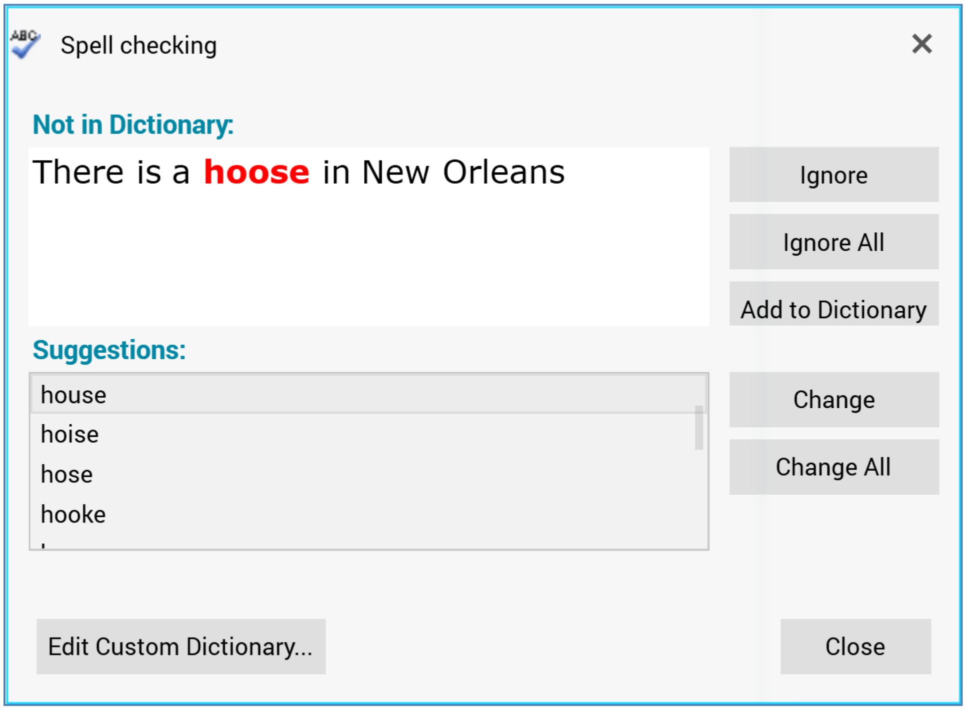
A context menu, displayed when right-clicking a spelling error, provides access to a number of Spell Check-related features:



- Spelling suggestions: a series of words that might represent a correct alternative to the current spelling error are listed. Selection of a word replaces the incorrectly spelled word with the selected value.
- Add to Dictionary: invocation of this option adds the ostensibly incorrectly spelled word to the current dictionary (note that dictionaries are maintained on a client machine basis. The word's red underlining is also removed.
- Ignore: invocation of this option removes the red underlining at the current instance of the spelling error but retains it at other instances. The word is not added to the current dictionary.
- Ignore All: invocation of this option removes the red underlining at all instances of the spelling error in the content editor. The word is not added to the current dictionary.
- Spelling: invocation of this option displays the Spell checking dialog (documented separately).

17.9.1 Spell Checking Dialog

The Spell Checking modal dialog allows you manage spell checking within the content editor.



It contains the following:

- Not in Dictionary: this section displays the incorrectly spelled word.
- Ignore: invocation of this option removes the red underlining at the current instance of the spelling error but retains it at other instances. The word is not added to the current dictionary.
- Ignore All: invocation of this option removes the red underlining at all instances of the spelling error in the content editor. The word is not added to the current dictionary.
- Add to Dictionary: invocation of this option adds the ostensibly incorrectly spelled word to the current dictionary (note that dictionaries are maintained on a client machine basis). The word's red underlining is also removed.
- Suggestions: this section lists a series of words that might represent a correct alternative to the current spelling error.
- Change: this button is enabled when a suggestion is selected. Clicking it changes the spelling error for the suggestion.
- Change All: this button is enabled when a suggestion is selected. Clicking it changes all instances of the spelling error for the suggestion.
- Edit Custom Dictionary: invocation of this option displays the Edit Custom Dictionary modal dialog.

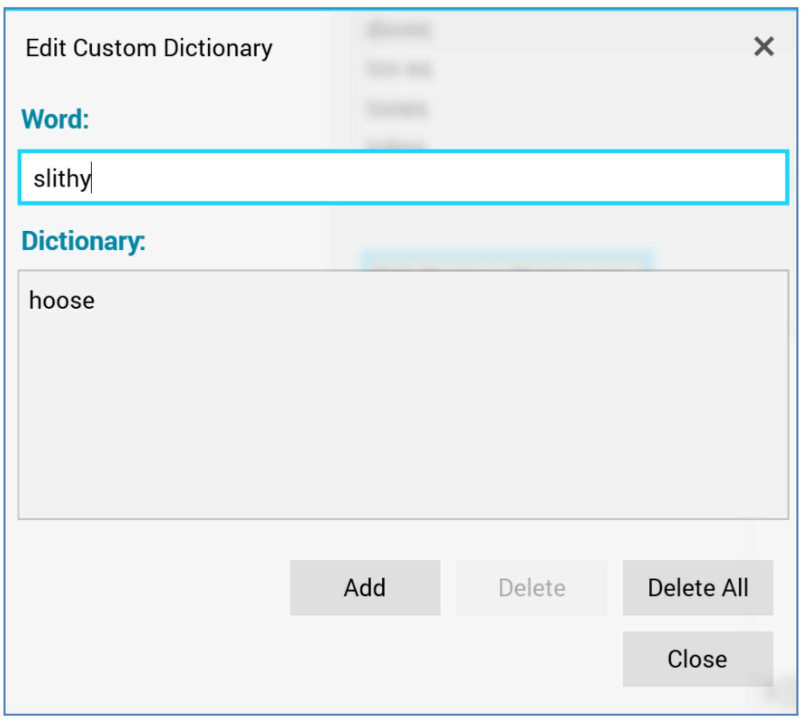
- Close: clicking this button removes the dialog from display.

The next spelling error is displayed (if one exists) post-invocation of the following:

- Ignore
- Ignore All
- Add to Dictionary
- Change
- Change All

17.9.2 Edit Custom Dictionary Dialog

This modal dialog enables you to manage the current custom dictionary used by the spell checker. Dictionaries are maintained on a client machine basis.



- Word: provision of a word enables the Add button.
- Dictionary: this section lists all of the words in the custom dictionary. The first word is selected automatically.
- Add: this button is enabled when a Word is provided. Clicking it adds the word to the dictionary. If the Word already exists, Add is disabled.
- Delete: this button is enabled when a word is selected in the Dictionary list. Invocation removes the word without display of an Are You Sure? dialog.

- Delete All: this button is enabled when at least one entry is present in the Dictionary list. It is protected by an Are You Sure? dialog. Proceeding clears the dictionary.
- Close: clicking this button removes the Edit Custom Dictionary dialog from display.

18 Asset Designer

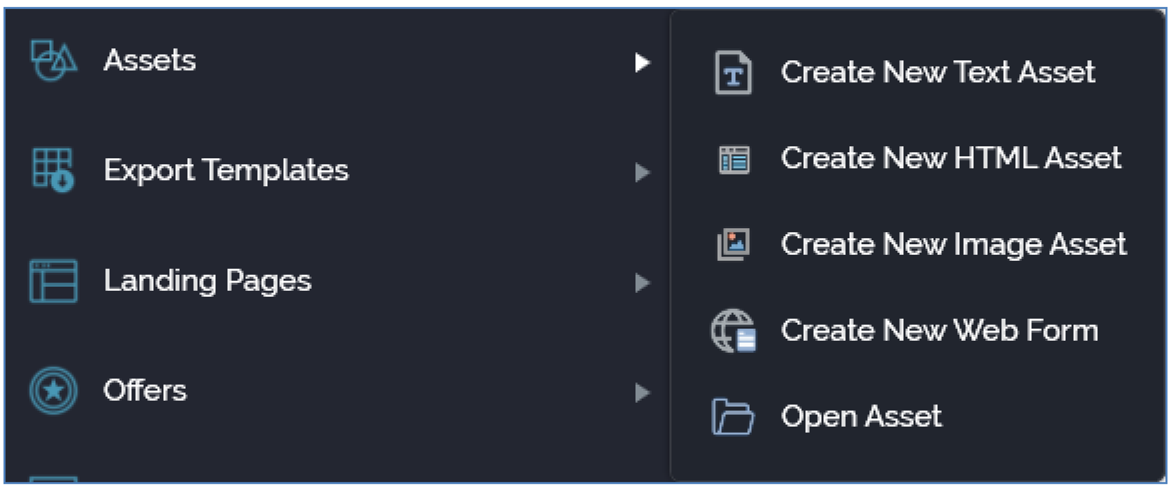
The RPI Asset Designer allows you to create and maintain text, HTML, image and web form assets. You can then use these assets when building offers, which in turn will deliver the content specified within the assets to your intended audience.

Note that the Smart Asset Designer is used to manage Smart Assets (a separate file type). Smart assets intrinsically facilitate dynamic content personalization, unlike Assets, in which content must be personalized by the inclusion of attributes or nested smart assets.

18.1 Invoking the Asset Designer

You can invoke the Asset Designer in the following ways:

- From the quick access menu's Assets menu. The menu exposes the following options:



- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.
- By double-clicking an asset file in the File System Dialog, or by highlighting an asset and clicking OK in the same context.
- By viewing the latest version of an asset contextually – for example, from the F2FButtonImage setting in the System Configuration interface.

Access to the Asset Designer is protected by a series of functional permissions:

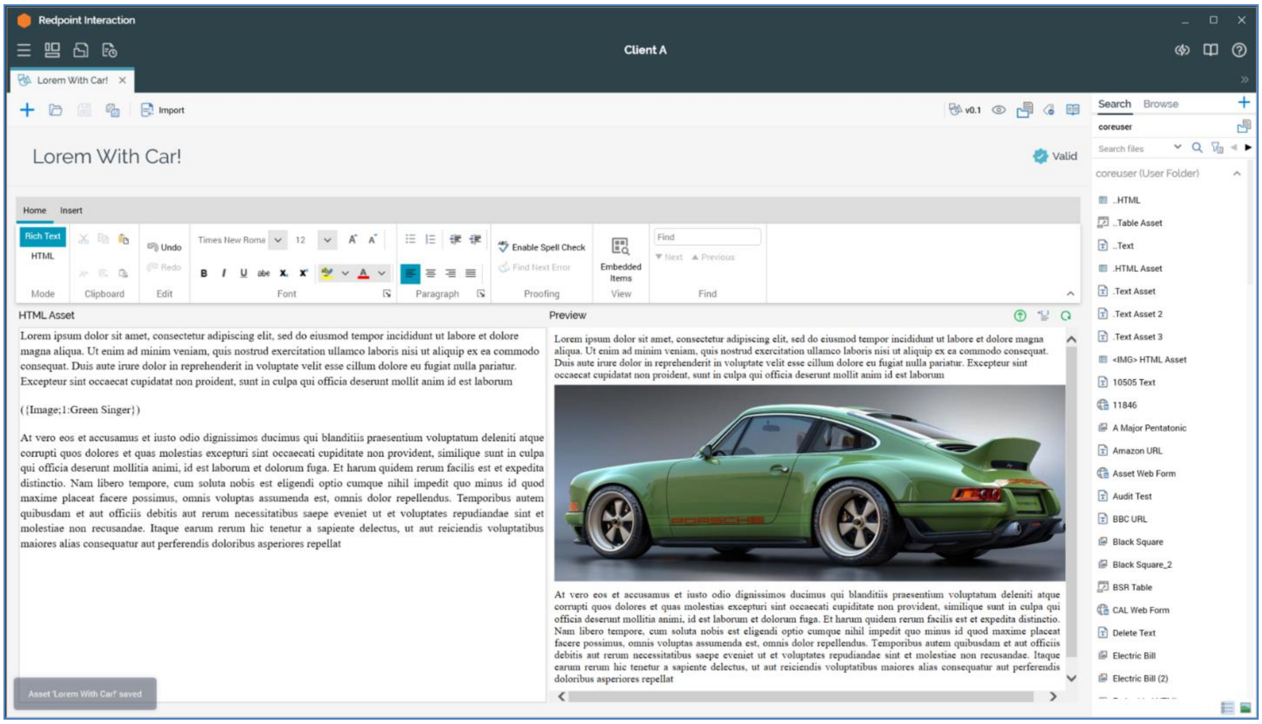
- The Asset - Design permission gives access to the Asset designer, but does not allow you to open, edit or create assets. You may import assets if required.
- To open, edit or create assets, you must be associated with an appropriate functional permission. For example, to work with HTML assets, you must be associated with the Asset

- HTML - Design functional permission. The following asset type-specific functional permissions are provided:

- Asset - HTML - Design
- Asset - Image - Design
- Asset - Text - Design
- Asset - Web Form - Design

18.2 Asset Designer Basics

The Asset Designer is displayed in a separate tab in the RPI framework.



It is composed of the following elements:

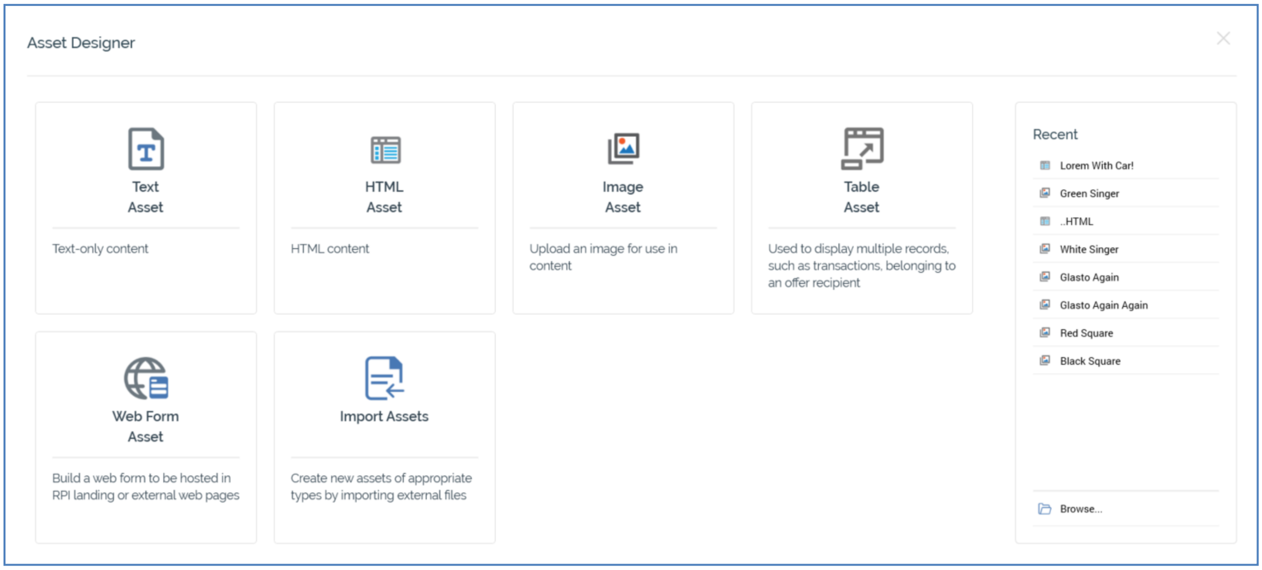
- Toolbar
- Name
- Validation status indicator
- Toolbox
- Content panel

If you close a tab containing the Asset Designer, within which an asset to which changes have been made is displayed, or you close RPI itself under the same circumstances, a dialog is displayed. You can:

- Save the changes and proceed with closing the tab or RPI.
- Abandon the changes and proceed with closing the tab or RPI.
- Cancel closing the tab or RPI.

18.3 Start Page

The Asset Designer Start Page is shown upon invocation of Assets at the quick access menu, and also on clicking Create new Asset at the Asset Designer toolbar. It contains the following:

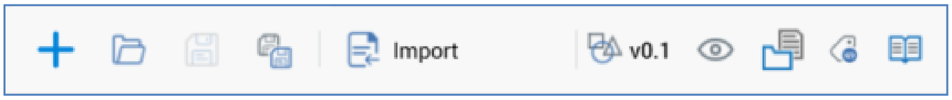


- Buttons facilitating creation of the following asset types:
  - Text Asset
  - HTML Asset
  - Image Asset
  - Web Form Asset
- Recent: lists recently-accessed assets, facilitating the opening of the same.
- Browse: displays the Open Asset File System Dialog, allowing you to select an asset to open.

A Cancel button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and redisplays the Asset Designer. The Cancel button is only shown on invocation of the Start Page by clicking Create new Asset at the Asset Designer toolbar.

18.4 Toolbar

The Asset Designer toolbar exposes the following options:



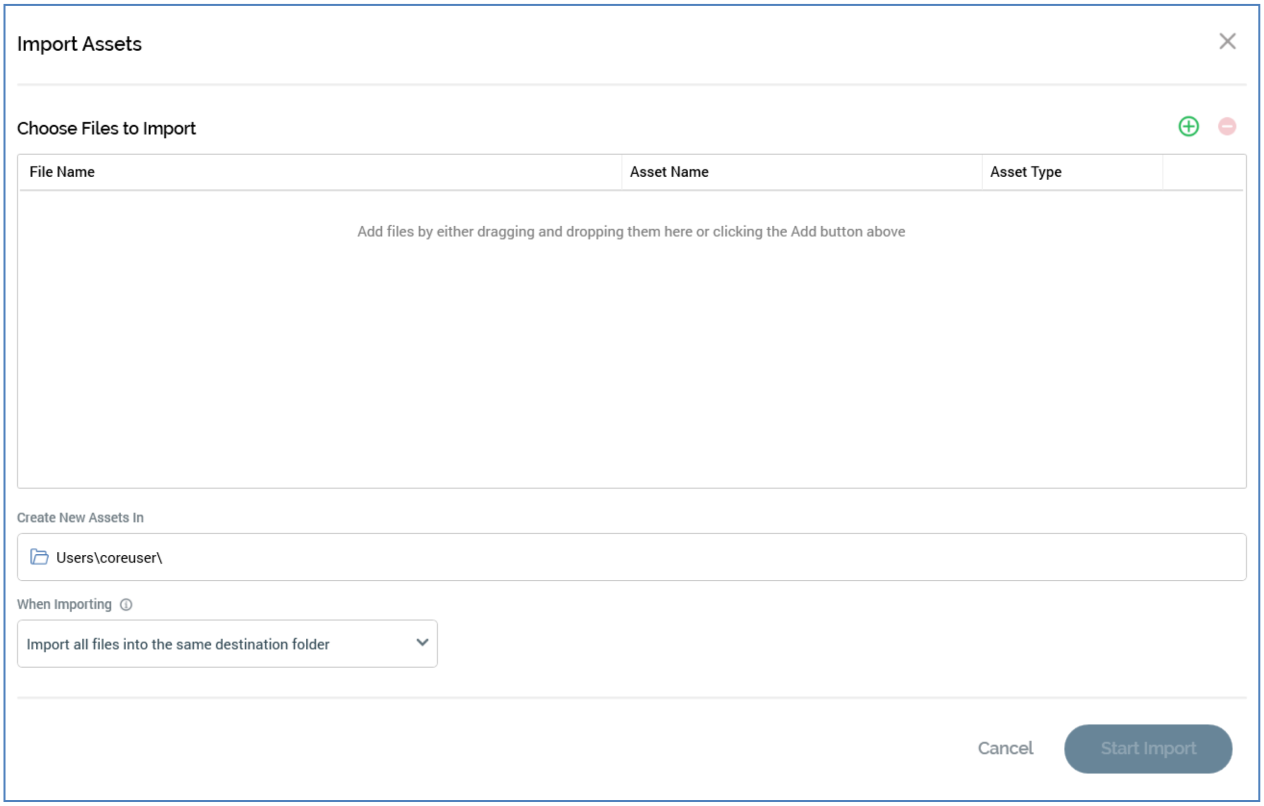
- Create new Asset: displays the Asset Designer Start Page (covered separately in this documentation). If an asset containing unsaved changes is displayed at invocation of Create New, an 'Are You Sure?' dialog is shown, from which you can::
    - Save the changes and create the new asset.
    - Abandon the changes and create the new asset.
    - Abandon creating the new asset.
- Open an existing Asset: displays the Open Asset File System Dialog, allowing you to navigate those folders within the RPI file system to which you have access in order to locate an asset to open. Only asset files are displayed in the File System Dialog.

  When you open an asset, if changes have been made to an asset displayed currently in the Asset Designer, a dialog is displayed. You can:
    - Save the changes and proceed with opening the asset.
    - Abandon the changes and proceed with opening the asset.
    - Abandon opening the asset.
- Save current Asset: saves the current asset to an existing filename; if the asset is yet to be saved, Save behaves like Save as.
- Save current Asset as...: allows you to specify the asset's filename and storage location within the RPI file system by displaying the File System Dialog. Save as creates a new, independent asset based on the original.
- Import: this button is always available, irrespective of whether an asset is current displayed in the Designer. Clicking it displays the Import Assets overlay, which is covered separately elsewhere in this documentation.
- File version
- Follow/Unfollow File: please see the RPI Framework documentation.
- File options: please see the RPI Framework documentation.
- File metadata: please see the RPI Framework documentation.

- Linked Page options: please see the RPI Framework documentation.

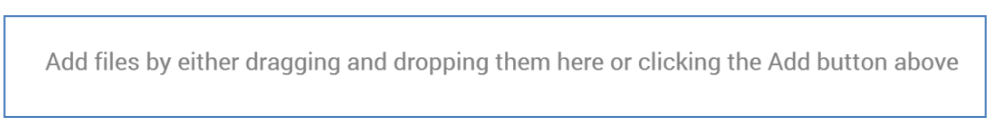
18.5 Import Assets

The Import Assets overlay is used to facilitate the simultaneous import of a number of files (e.g. images or HTML files) to create RPI assets based on the same.

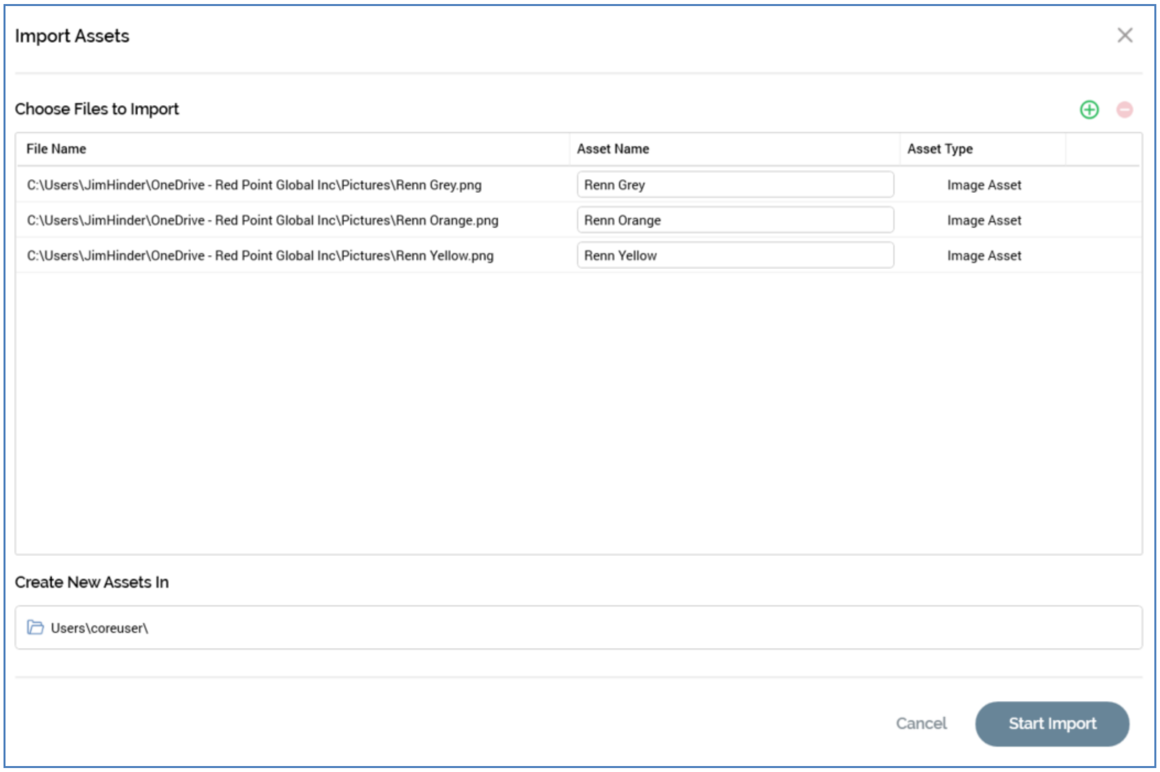


It contains the following:

- Choose files to Import section: this section contains the following:
  - Toolbar: the toolbar exposes the following functionality:
    - Add File: clicking this button displays the Import Asset Files... Windows file system dialog. You can select from the following File types: Image Files (the default), Text Files or HTML Files. Choosing a file adds a row to the dialog, with a name that defaults to the name of file in question, less its extension.
    - Remove File(s): this button is displayed when one or more files are selected in the Choose files... grid. Clicking it removes the selected files without displaying an 'Are You Sure?' dialog.
  - Grid: when empty, a message is shown:



The grid lists the files you have selected to import.



It contains the following columns:

- File Name: this read-only field displays the full path of the file.
- Asset Name: this field is writeable and can be a maximum of 100 characters. It is the name of the file to be created in the RPI file system. Note that you cannot start the import of files until all rows' Asset Names have been provided.
- Asset Type: this read-only field is populated automatically on the addition of a row to the grid. It can be set to one of Image Asset, Text Asset or HTML Asset.

If you wish, you can drag one or more files from an independent Windows Explorer Window and drop them directly into the grid. One row is created for each file dropped in this way. Note that the same file can only be present in the grid once.

You can also drag in one or more folders from Windows Explorer. When you do so, any files therein, or within nested subfolders, are added to the list. The dragging in of combinations of files and folders is similarly supported.

- Create new assets in: a folder, which defaults to your user folder. You cannot commence importing files until a folder has been provided. You cannot select an external folder.

- When Importing: this property allows you to specify where, when importing a file referencing other assets, the latter will be created in the RPI file system. A dropdown field, it exposes the following values

  - Import all files into the same destination folder: the default. When importing an HTML file referencing other assets imported at same time, all assets are created within the folder specified at the Create New Assets In property.

  - Import files and maintain the source folder structure: When importing an HTML file referencing other assets imported at same time, sub-folders mirroring the Windows file system are created in the RPI file system, and the referenced files are created therein.

- Cancel: clicking this button closes the overlay.

- Start Import: this button allows you to start the process of importing the specified files in order to create assets based on them.

  Note that a slight delay might occur prior to the button's being activated following the addition of one or more file(s) to the grid.

  Clicking the button displays a progress overlay. Clicking Cancel in this context results in the completion of the current upload; no further uploads are performed thereafter.

  Following a successful import, an information message advises that assets have been saved. In the event of issues having occurred during the import process (e.g. a file larger than the maximum permissible size (as defined by system configuration setting MaxFileAssetUploadSize) being uploaded), a dialog listing the errors is displayed.

When you import one or more HTML assets that contains link(s) to one or more images, a message is displayed post-successful import to advise that images referenced by the HTML asset were also created as image assets. Note that links within imported HTML assets must be relative.

Image assets are created for each <img> tag in an HTML asset and are saved in the same folder as the HTML asset. Assets are named as per images' filenames. Any RPI-supported image properties are set appropriately.

If an image asset with the same name already exists in the import folder, the image asset is not imported and a warning dialog is shown. If more than one imported HTML assets reference the same image, the image asset is only created once.

A History comment is added at each imported asset to indicate the method by which it was created.

18.6 Name

An asset's name is set using the property displayed at the top of the Asset Designer interface:

By default, an asset is named 'New [Asset Type] Asset'.

You can edit an asset's name by clicking the property. This make it editable. An asset's name can be a maximum of 100 characters in length. Provision of a name is mandatory.

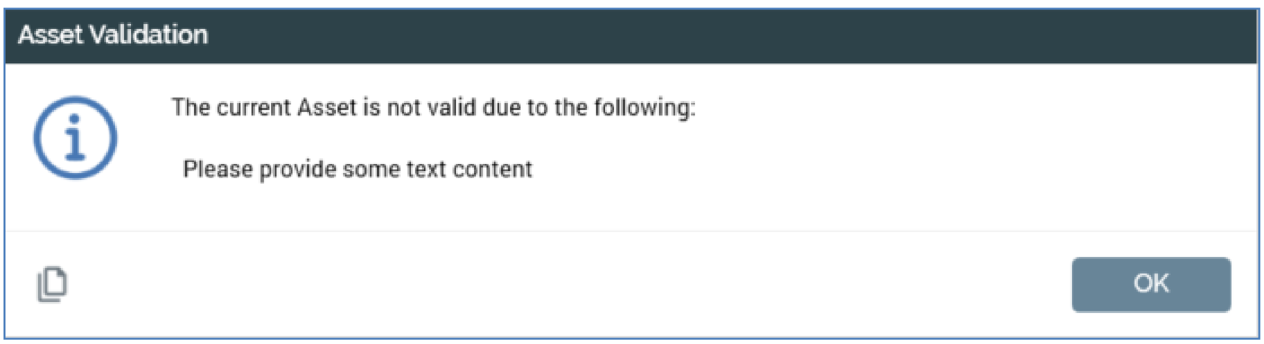
18.7 Validation Status Indicator

Before an asset can be used, it must be valid.

A validation status indicator is provided at the top right corner of the Asset Designer. When the asset is valid and contains no validation errors, the validation status indicator is shown like this:

Specific validation errors are outlined in the documentation provided for each specific asset type. When one or more validation errors is present, the validation status indicator is shown like this:

Clicking the indicator lists the validation errors in a dialog:



You can use the button at the bottom left of the dialog to copy the validation error details to the clipboard. You can close the dialog using the OK button

18.8 Toolbox

The Asset Designer toolbox exposes a Folder Search component. For more information, please see the Framework documentation.

The toolbox is your source of the other files you will need when building an asset.

If required, you can use external files, sourced through an external content provider, when building assets. This can be important when considering how to host images in e.g. email offers that use assets.

You can use external files of the following types in asset content:

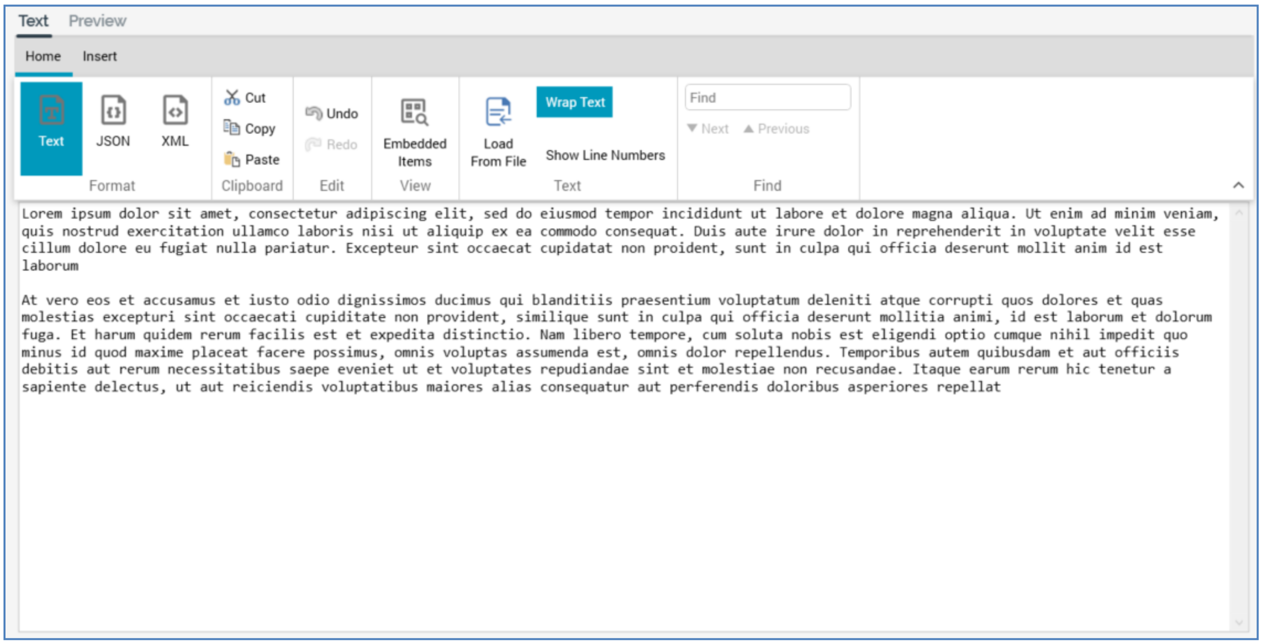
- Text: text external files only.
- HTML: text, HTML or image external files. You can also use audio and video external files when the HTML asset is to be used in a landing page.

18.9 Content Panel - Text Asset

If displaying a text asset, the content panel contains a tabset, exposing two tabs:

18.9.1 Text Tab

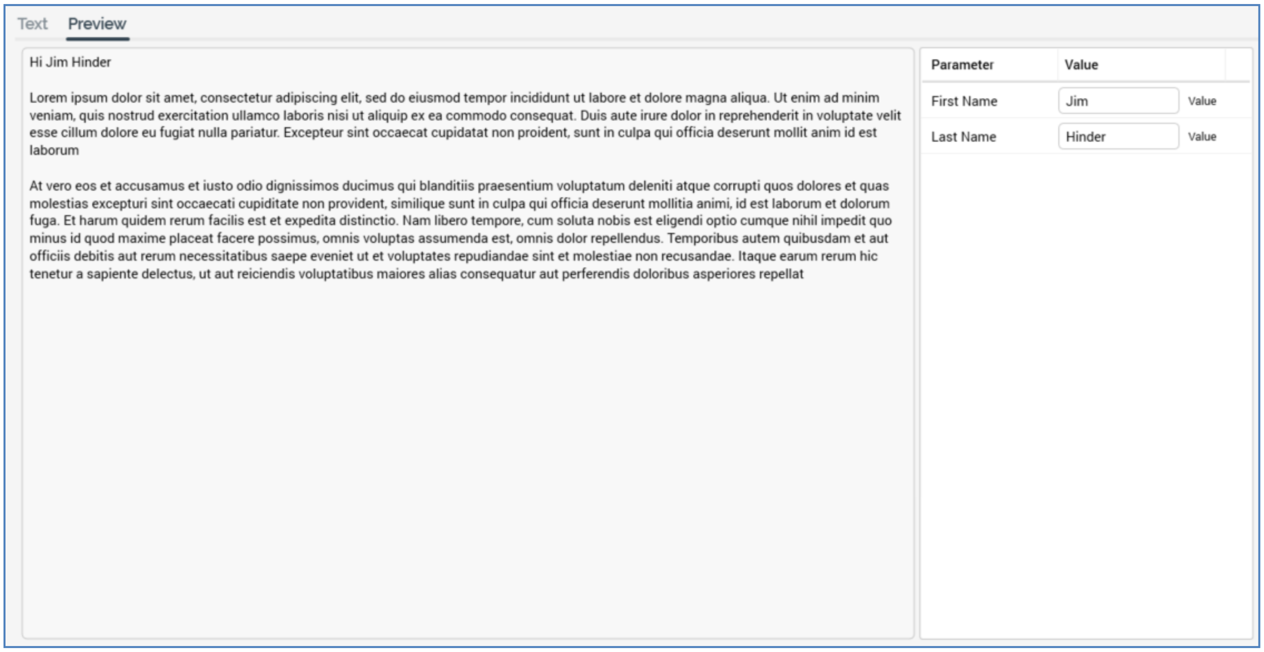
The Text tab contains a content editor, which is described within the RPI Content Editor documentation.



You can customize the content displayed within a text asset through the inclusion of attributes (including web form parameter attributes, if the asset is to be used e.g. in an email offer) and smart assets that contain text content.

18.9.2 Preview Tab

The Preview tab allows you to visualize how the text asset will be rendered. It consists of preview and parameters panels.



- Preview panel: the contents of the text tab are shown, with any parameter values supplied included therein.

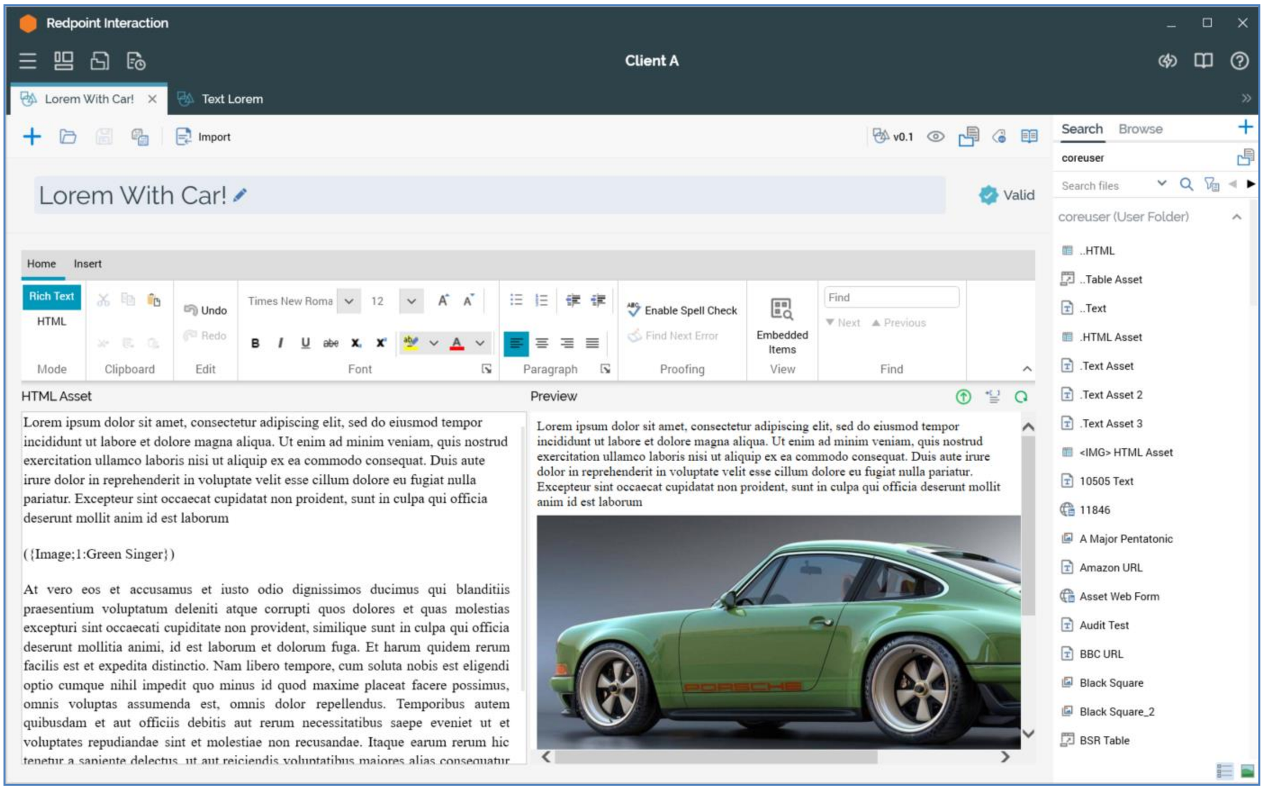
- Parameters panel: You can specify parameter values for the attributes you have included in order to give an illustration of the asset's final appearance. Provision of preview values is constrained by data type (string, integer, decimal or date/time).

  By default, an attribute's value is shown as [attribute name]. The preview is updated with a new parameter value immediately as you type.

  By default, parameter values are specified using raw database values, rather than translated values (where they exist). You can toggle between 'Value' and 'Trans' (translation) using the button shown to the right of the parameter. If you elect to specify the parameter's value using a translation, a dropdown, listing translated and raw values, is shown. Note, however, that when you choose a translated value, the raw value is shown in the preview; RPI only supports the output of raw database values, and not translated values.

18.10 Content Panel – HTML Asset

When an HTML asset is shown in the Asset Designer, the following are displayed:



18.10.1 Content Editor

The HTML asset content editor allows you to edit an HTML asset's contents. It is described in its own section within the RPI documentation.

Note that you can customize the content displayed within an HTML asset through the inclusion of attributes (including web form parameter attributes, if the asset is to be used e.g. in an email offer) and smart assets.

18.10.2 Preview Section

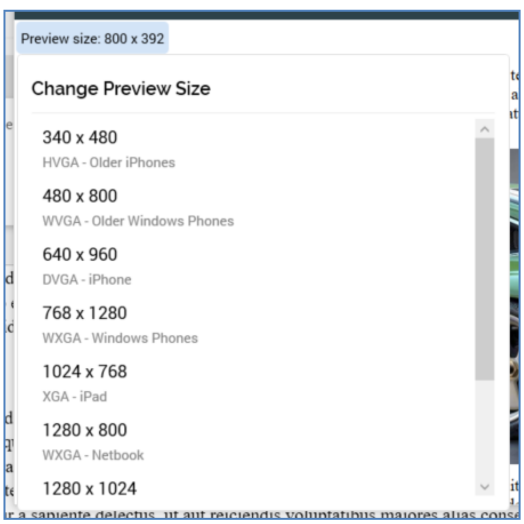
The preview section is displayed to the right of the content panel and provides a visual indication of the HTML asset's final appearance.

The following buttons are displayed at a toolbar:

- Show the Preview Window as a Popout: clicking this button removes the inline Preview from display, and displays it instead in a non-modal, floating Preview Window.

The floating Preview Window is displayed with a minimum width of 800px, and contains the following:

  - Preview size: the current size of the Preview Window is displayed. You can click it to change the size of the Preview Window. Doing so displays the Change Preview Size dialog.



  You can click a size to select it, whereupon it is applied at the Preview Window.

By default, the Preview Window is displayed with a width of 800px. On re-invocation of Change Size, if the size was selected manually, the Preview Window is sized in accordance with your most recently-used selection.

- Dock the Preview Window: clicking this button removes the floating Preview Window from display and redisplays the inline HTML Email Preview. Clicking the Window's Close button has the same effect.
- Show Preview Parameters: documented separately.
- Refresh

Content within the floating Preview Window is updated dynamically as it is changed within the Asset Designer. The Window is closed when the current RPI tab focus is changed.

- View Preview Parameters: invocation of this option displays the HTML Preview Parameters dialog:

You can specify parameter values for the attributes you have included in order to give an illustration of the asset's final appearance. Provision of preview values is constrained by data type (string, integer, decimal or date/time).

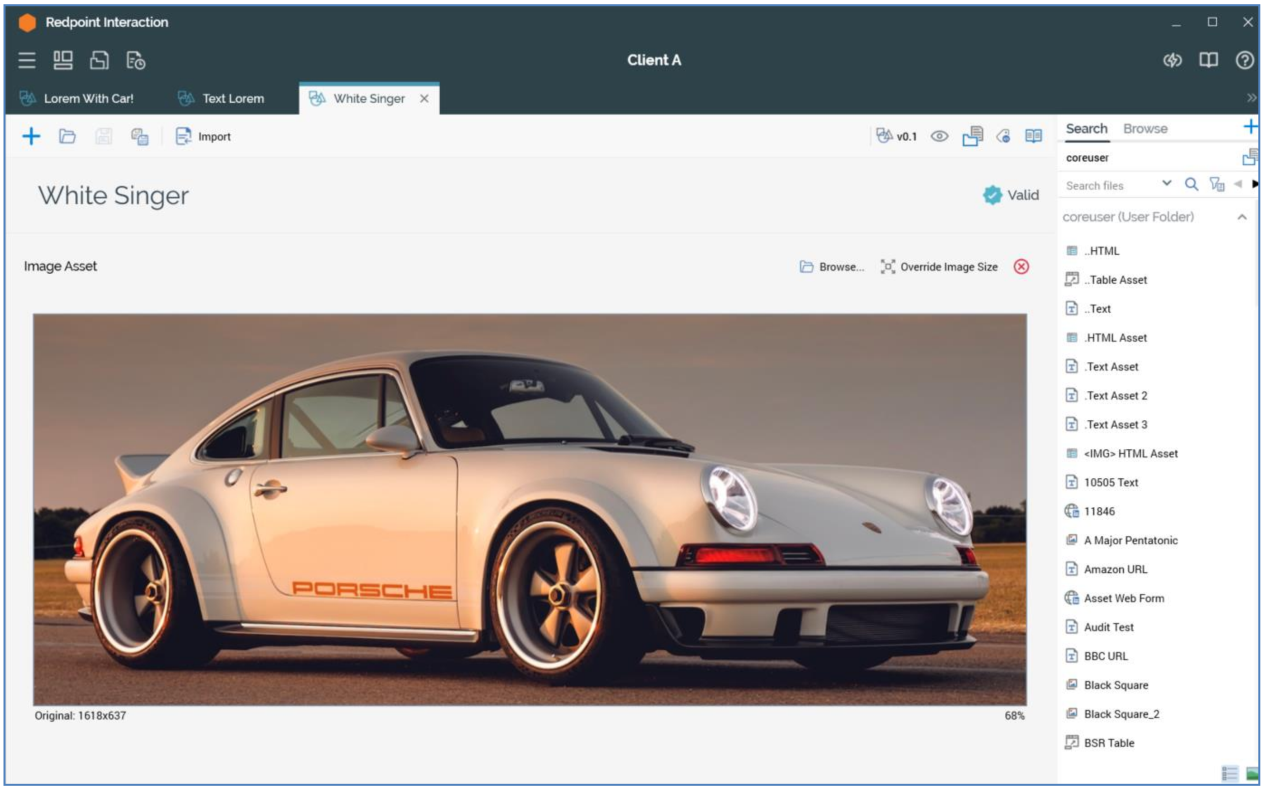
By default, an attribute's value is shown as [attribute name]. The preview is updated with a new parameter value immediately as you type.

By default, parameter values are specified using raw database values, rather than translated values (where they exist). You can toggle between 'Value' and 'Trans' (translation) using the button shown to the right of the parameter. If you elect to specify the parameter's value using a translation, a dropdown, listing translated and raw values, is shown. Note, however, that when you choose a translated value, the raw value is shown in the preview; RPI only supports the output of raw database values, and not translated values.

- Refresh Preview

18.11 Content Panel – Image Asset

When you elect to create a new image asset, the Image section initially displays no image.

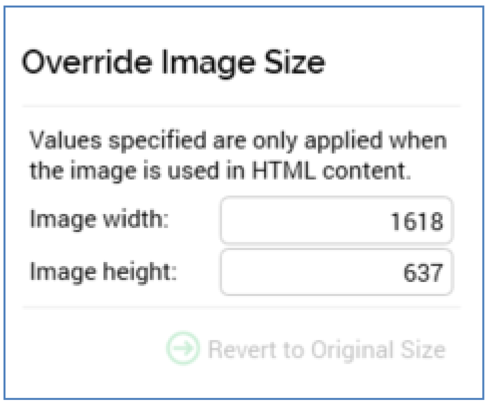


You can browse for an image to upload. This displays the Load Image Windows file system dialog, which allows you to browse for an image file. The maximum size of an image that may be uploaded is controlled by system configuration setting MaxFileAssetUploadSize. If you attempt to upload a non-image file a warning message is shown.

Provision of an image is mandatory and a validation error is shown when an image has not been uploaded.

When an image is displayed, the toolbar shown immediately above it exposes the following:

- Browse: if desired, you can change the image with which the image asset is configured.
- Override Image Size: invocation of this option displays the Override Image Size dialog.



A label displayed at the top of the dialog advises that the values specified are only applied when the image is used in HTML content – any changes made to the image's dimensions in the Asset Designer are not reflected in the image displayed therein.

The following image properties can be controlled:

  - Image width
  - Image height

A button is displayed at the bottom of the dialog:

  - Revert to Original Size: the button is enabled when one or both of width or height is/are overridden. Invocation reverts the image's dimensions to their original values, removes the 'Override' label shown below the image (documented below) and disables the Revert... button.

Note that resizing an image asset in this context is not the recommended approach for image size management. Rather, it is recommended that images be resized in their context of use within e.g. the email Offer and Landing Page Designers. Please see those interfaces' documentation for further information.

- Clear the current Image

The following properties are displayed below the image:

- Original: the original dimensions of the image
- Override: only displayed if the image's dimensions were overridden in the Override Image Size dialog.
- [Zoom]: the size of the image as displayed (RPI may have to change its dimensions to accommodate it within the Asset Designer).

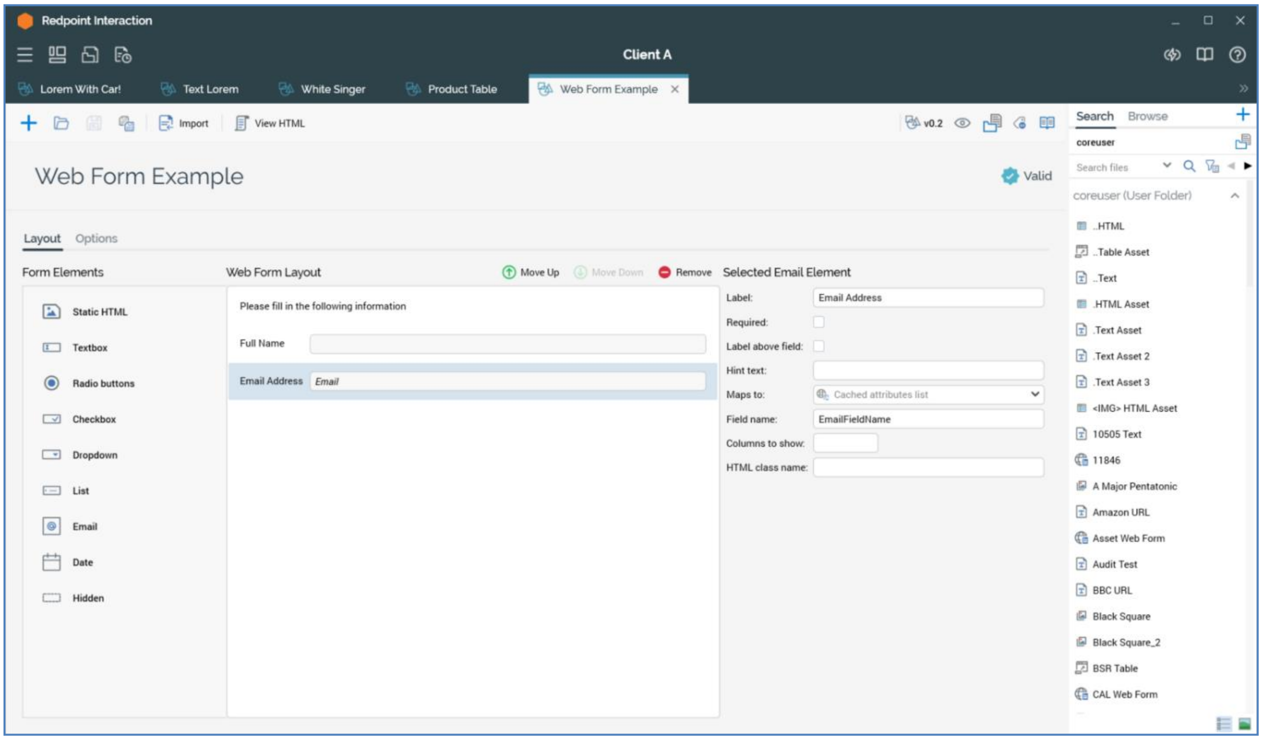
These values are reset when the image with which the asset is configured is changed.

Note that you cannot drag attributes or assets from the toolbox onto the image asset.

When used in HTML content, the image asset will be displayed as per its original dimensions, unless overridden (in which case the new dimensions will be applied).

18.12 Content Panel – Web Form Asset

The Web Form Asset Designer allows you to build new and modify existing web forms.



RPI web forms can be hosted inside landing pages (created and managed in the Landing Page Designer), published to a website and then used to capture data from both anonymous visitors, and those directed to the site via RPI communications.

Web forms support a number of form elements that can be customized to capture a variety of data. On submission of a web form and following execution of the Web form processor system task, data entered therein is written to tables within the RPI data warehouse, where it can be leveraged for later communication purposes.

The Web Form Asset Designer consists of the following:

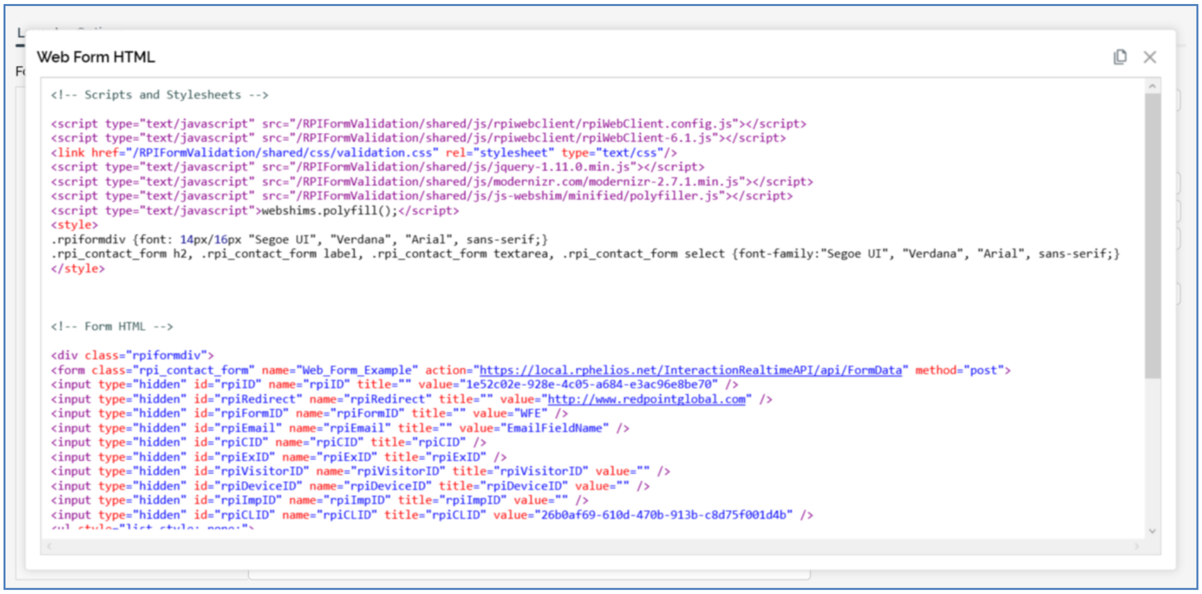
- Toolbar
- Layout tab
- Options tab

Each is described separately.

18.12.1 Toolbar

An additional toolbar button is available at the Web Form Asset Designer:

- View HTML: clicking this button displays the Web Form HTML overlay.



The overlay contains the following:

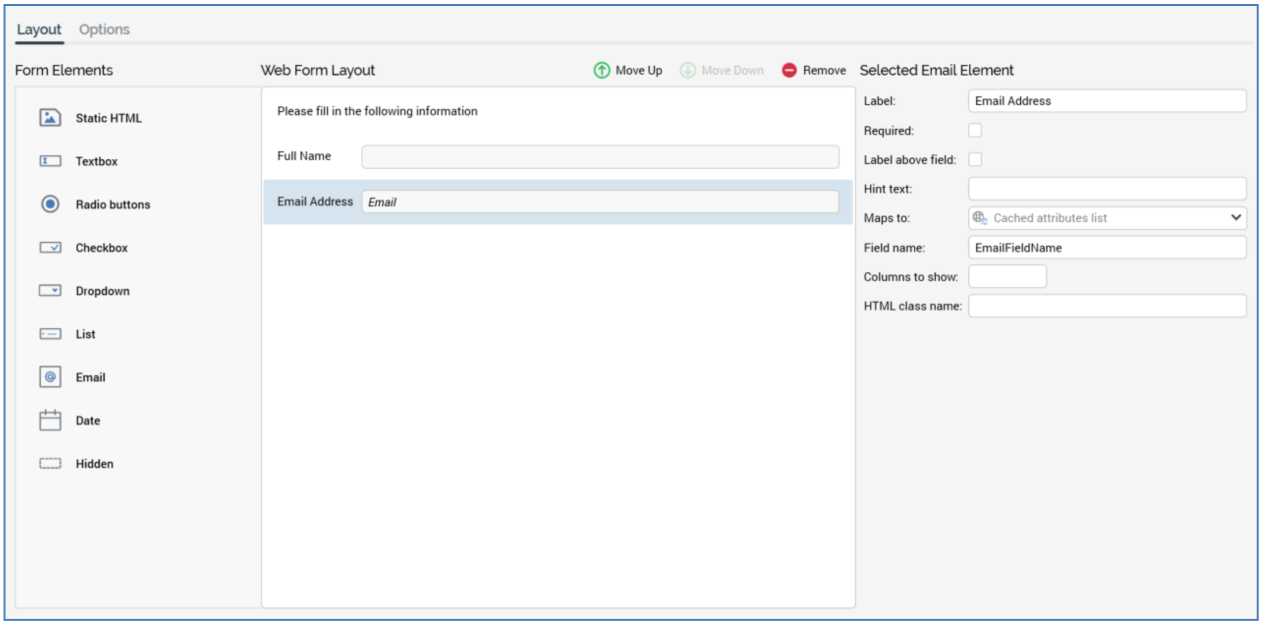
- Toolbar: exposing the following options:
  - Copy HTML to clipboard: invocation of this option copies the HTML displayed in the dialog to the clipboard. Having done so, an informational message is displayed.
  - Close: invocation of this option removes the dialog from display.
- HTML: a read-only representation of the web form's HTML is displayed.

Having copied the web form's HTML to the clipboard, you can paste it into an external web page, allowing you to make use of RPI web form functionality in that context. Copied HTML must be pasted into the appropriate sections within the web page:

- Scripts must be pasted into the page's <head>.
- The rest of the HTML must be pasted into the page's <body>.

18.12.2 Layout Tab

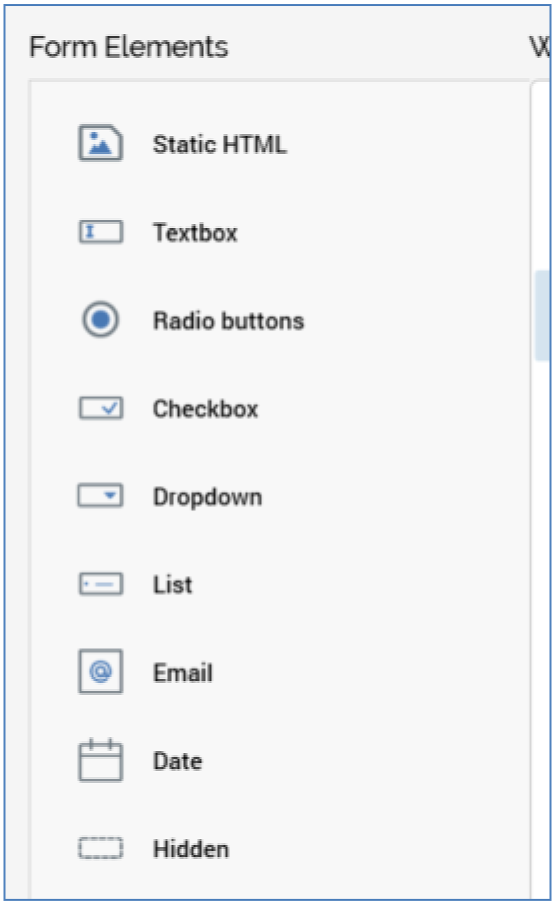
The layout tab allows you to drag form elements from the top section of the toolbox, and drop them into a form elements list to construct your web form.



The section consists of Form Elements, Web Form Layout and Selected Element sections, each of which are described separately.

18.12.3 Layout Tab – Form Elements Section

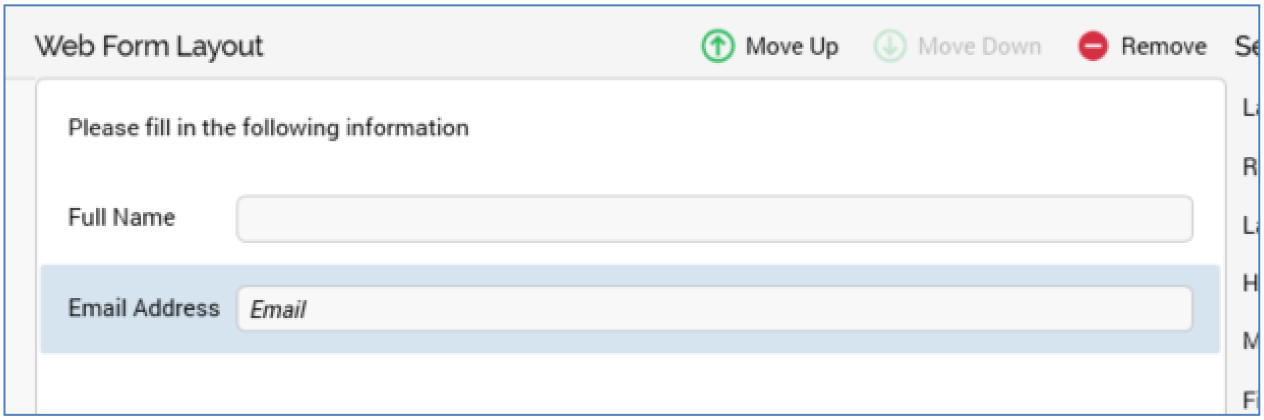
The web form's Form Elements section exposes a series of elements that can be included in a web form.



You can drag a form element from the list and drop it onto the Web Form Layout section to include it in a web form.

18.12.4 Layout Tab – Web Form Layout Section

The Web Form Layout section consists of a toolbar and form elements list.



The toolbar is displayed at the top of the section. It exposes the following options:

- Move Up: this button is enabled when an element other than the first in the list is selected. Invocation moves the element up one position in the list.
- Move Down: this button is enabled when an element other than the last in the list is selected. Invocation moves the element down one position in the list.
- Remove: invocation of this option removes the selected element without displaying an 'Are You Sure?' dialog.

The form elements list occupies the majority of the Web Form Layout section.

It allows you to specify the form elements that will make up your web form.

When displayed initially, the form elements list contains a message:

> Build a web form as follows:
> 1. Configure the web form properties
> 2. Drag and drop web form elements from the toolbox into this section
> 3. Configure each web form element by selecting it and modifying its details on the right

You can drag the form elements you require from the top section of the toolbox and drop them onto the form elements list. You can then customize each element in turn by selecting it and changing its properties in the Selected Element section.

All form element types in the list, other than static HTML or hidden elements, display the label with which they have been configured. If the label property has been set to blank, '*No label*' is shown (other than at a right-aligned checkbox, where it is not shown at all). Note that labels are displayed in accordance with elements' Label above field settings.

In addition, and also at all elements other than static HTML or hidden elements, if a field has been defined as required, an asterisk (*) is shown next to its label.

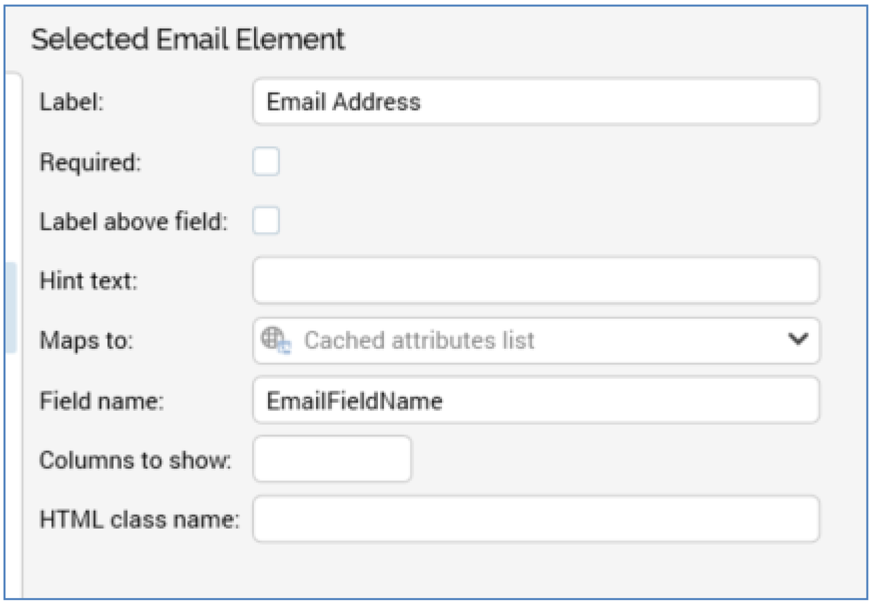
All form elements in the list are read-only. The display of a form element within the list depends on its type:

- Static HTML: static HTML as entered is displayed. No label is shown. The maximum height of a static HTML element within the list is 100 pixels.
- Textbox: a single- or multi-line textbox control is shown (as required). If Placeholder text has been defined, it is shown within the field.
- Radio buttons: one radio button per row in the Values list is displayed, across a single or multiple lines, as required.
- Checkbox: a checkbox is shown, with the label to the left or right as specified. The checkbox reflects the element's Checked by default setting.
- Dropdown: a non-functional dropdown control, reflecting the first row in the Values list, is displayed.
- List: one checkbox per row in the Values list is displayed, across a single or multiple lines, as required.
- Email: a textbox control, displaying the string 'Email', is displayed.
- Date: a textbox control, displaying the string '*Date*', is shown.
- Hidden: displays the text '*Hidden [Field name]*'.

18.12.5 Layout Tab – Selected Element Section

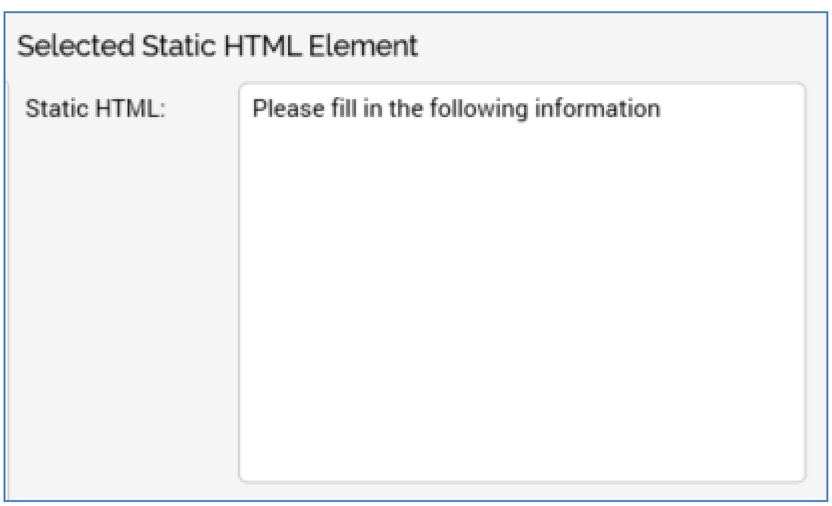
This section, displayed to the right of the form elements list, displays details of the currently-selected form element.

If a form element is not selected, a message is displayed:



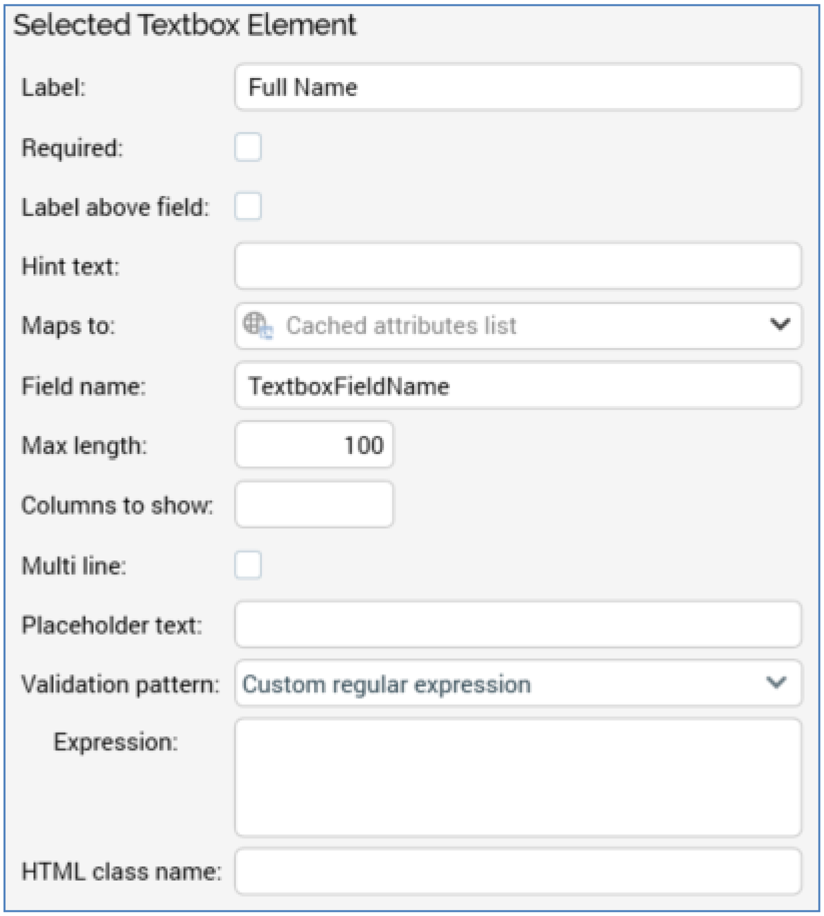
Its contents depend on the type of element selected:

- Static HTML:



    - Static HTML: you can enter raw HTML in this field. Provision of a value is mandatory. The field defaults to the value ‘Static HTML’.

- Textbox:

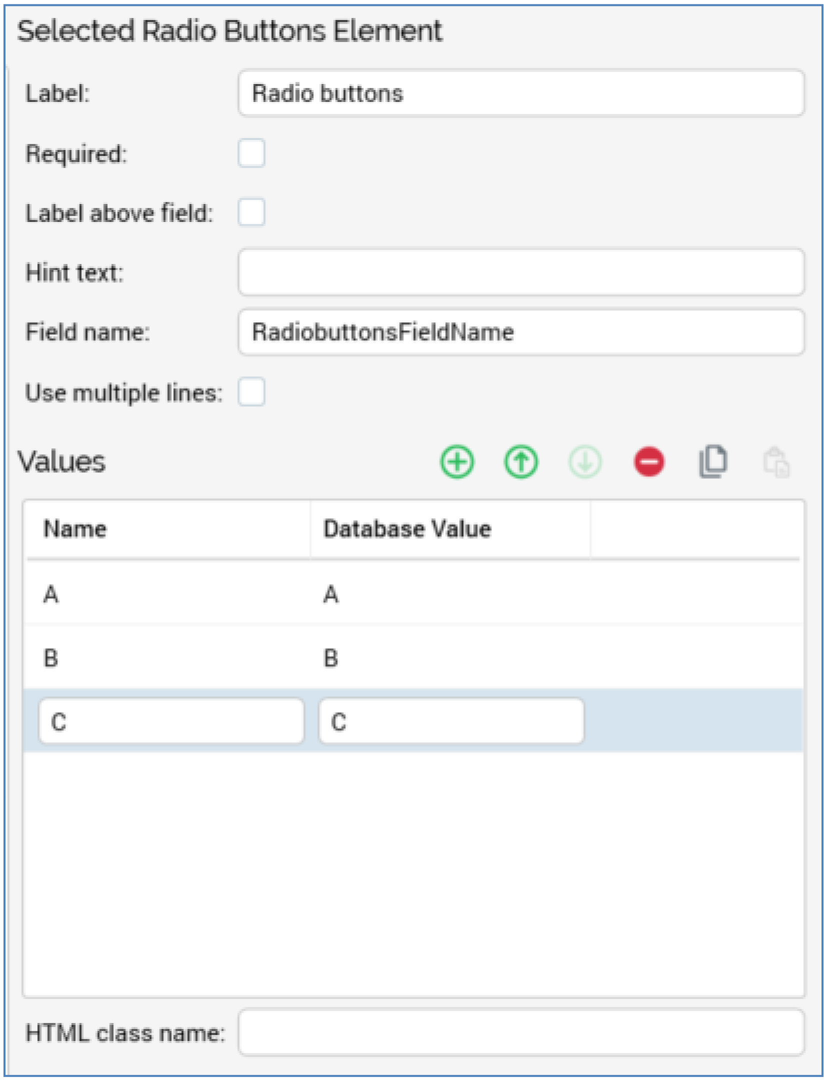


  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Required: this checkbox is unchecked by default. It allows you define whether the field is to be mandatory.
  - Label above field: this checkbox is unchecked by default. If checked, the form element's label is displayed above the field; if unchecked, to the left of the field.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Maps to: this dropdown property allows you to define a web form element as serving as a lookup key to retrieve data, defined by a cached attribute list, into the realtime cache. By doing so, you can then use the persisted attribute values, stored on a site visitor basis, to vary content using the RPI Realtime API.

    By default, the property is set to the text ‘Cached attribute list’. Cached attribute lists are presented in alphabetical order. Having selected a list, you can Clear the property.

- Field name: this mandatory property defaults to ‘TextboxFieldName’. Its maximum length is 50 characters, and it must be unique within the form.
- Max length: this integer field, which defaults to value 100, is mandatory. It has a maximum value of 5000. Note that this setting controls the maximum length of the element's Placeholder text (if decreased to below the length of existing Placeholder text, the existing text is not affected).
- Columns to show: this optional integer property allows you to define the width of the field. It is blank and accepts a maximum value of 100.
- Multi-line: this checkbox is unchecked by default. When checked, the Lines to show field is displayed.
- Lines to show: when displayed, this integer property is mandatory. It provides control over the height of a multi-line textbox. It defaults to 2 and can be a maximum value of 100.
- Placeholder text: this optional text field is blank by default. Its maximum length is defined by the element's Max length setting.
- Validation pattern: a dropdown field, exposing the following values:
  - Custom regular expression (default)
  - Single alpha word
  - Single alphanumeric word
  - Single whole number
  - Zip code (5)
  - Zip code (5 or 5+4)
- Expression: optional; used by Validation pattern. If a RegEx is supplied, it should be entered without enclosing forward slash characters.
- HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

- Radio buttons:



  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Required: this checkbox is unchecked by default. It allows you define whether the field is to be mandatory.
  - Label above field: this checkbox is unchecked by default. If checked, the form element's label is displayed above the field; if unchecked, to the left of the field.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Field name: this mandatory property defaults to ‘RadiobuttonsFieldName’. Its maximum length is 50 characters, and it must be unique within the form.

- Use multiple lines: this checkbox is unchecked by default. It allows you to define whether the radio buttons are to be displayed on a single, or across several, lines.

- Values: you can define a series of Name and Database Value pairs for the radio buttons to be displayed within the form element by adding rows to the Values grid. One radio button is shown per row in the grid, which is accompanied by a toolbar.

  The Toolbar exposes the following options:

  - Add new Value: adds a new entry to the grid. Its default Name is 'Name', and its Database Value is blank.

  - Move selected Value up: this option is only available if the selected row is not the first in the list. Invocation moves the row up one position in the list.

  - Move selected Value down: this option is only available if the selected row is not the last in the list. Invocation moves the row down one position in the list.

  - Remove selected Value: invocation of this option removes the currently-selected value from the grid.

  - Copy Values to clipboard: this option is available when one or more values are present in the grid. Invocation copies the values to the clipboard.

  - Paste Values from clipboard: clicking this button displays two context menu options:

    - Replace existing Values: this option replaces all existing Values with the values copied to the clipboard.

    - Add to existing Values: this option appends any new values on the clipboard to the existing Values list. If a name already exists, it is not appended.

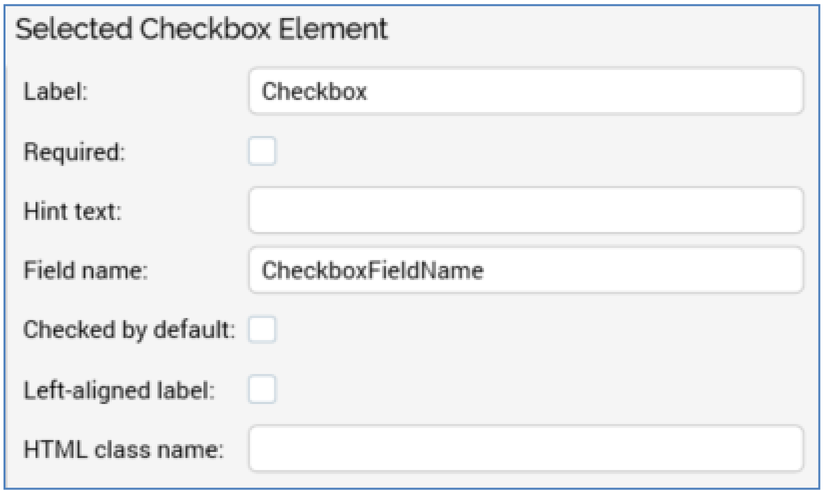
  Provision of at least one row in the grid is mandatory. The following writeable columns are shown:

  - Name: mandatory, and unique within the element. Name can be a maximum of 100 characters in length. On update of Name when Database Value is blank or set to the same value as Name, Database Value is set to the same value as Name. Note that Name is case sensitive in this context.

  - Database Value: mandatory. Database value can be a maximum of 1000 characters in length.

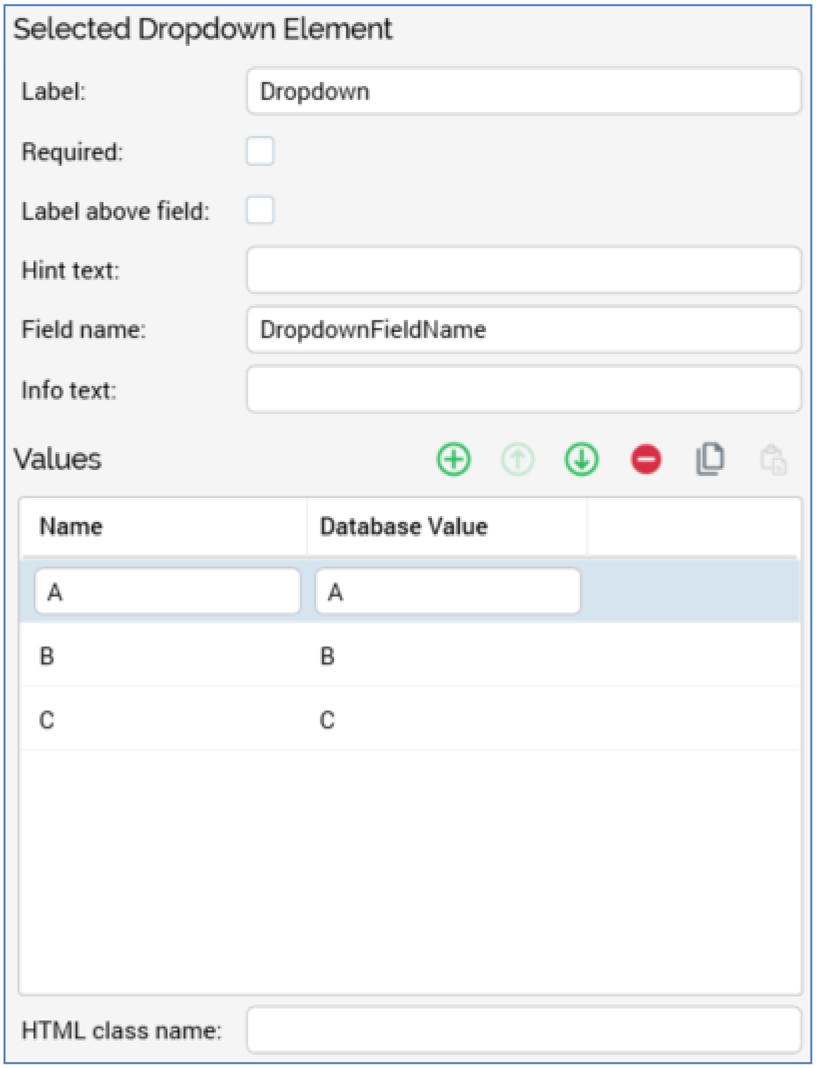
- HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

- Checkbox:



  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Required: this checkbox is unchecked by default. It allows you define whether the field is to be mandatory.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Field name: this mandatory property defaults to 'CheckboxFieldName'. Its maximum length is 50 characters, and it must be unique within the form.
  - Checked by default: this checkbox is unchecked by default. If checked, the checkbox will be shown as checked when rendered in a browser.
  - Left-aligned label: this checkbox is unchecked by default. If checked, the element's label is shown to its left; if unchecked, to its right.
  - HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

- Dropdown:



  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Required: a checkbox, unchecked by default.
  - Label above field: this checkbox is unchecked by default. If checked, the form element's label is displayed above the field; if unchecked, to the left of the field.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Field name: this mandatory property defaults to 'DropdownFieldName'. Its maximum length is 50 characters, and it must be unique within the form.
  - Info text: this optional field is blank by default. It can be a maximum of 100 characters in length, and a space can be used to represent a blank value.

- Values: you can define a series of Name and Database Value pairs for the dropdown by adding rows to the Values grid. One dropdown value is shown per row in the grid, which is accompanied by a toolbar.

  The Toolbar exposes the following options:

  - Add new Value: adds a new entry to the grid. Its default Name is 'Name', and its Database Value is blank.
  - Move selected Value up: this option is only available if the selected row is not the first in the list. Invocation moves the row up one position in the list.
  - Move selected Value down: this option is only available if the selected row is not the last in the list. Invocation moves the row down one position in the list.
  - Remove selected Value: invocation of this option removes the currently-selected value from the grid.
  - Copy Values to clipboard: this option is available when one or more values are present in the grid. Invocation copies the values to the clipboard.
  - Paste Values from clipboard: clicking this button displays two context menu options:
    - Replace existing Values: this option replaces all existing Values with the values copied to the clipboard.
    - Add to existing Values: this option appends any new values on the clipboard to the existing Values list. If a name already exists, it is not appended.

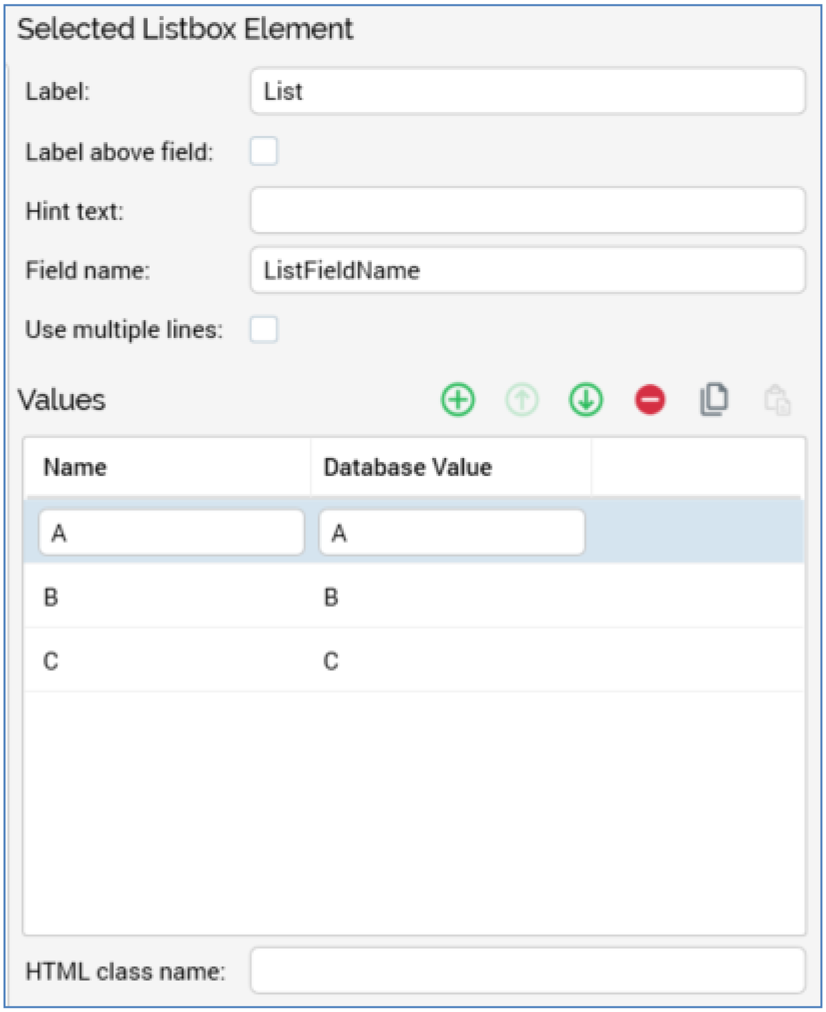
  Provision of at least one row in the grid is mandatory. The following writeable columns are shown:

  - Name: mandatory, and unique within the element. Name can be a maximum of 100 characters in length. On update of Name when Database Value is blank or set to the same value as Name, Database Value is set to the same value as Name. Note that Name is case sensitive in this context.
  - Database Value: mandatory. At least two different values must be supplied. Database value can be a maximum of 1000 characters in length.
- HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

When a dropdown field is displayed in a landing page, if an Info text value is not supplied, the field's initial value is displayed by default.

If an Info text value is supplied, it is displayed by default at the field, and is non-selectable. If the field is not Required, the form can be submitted without selecting a value. If the field is Required, it is necessary to select a value before submitting the web form.

- List:



  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Label above field: this checkbox is unchecked by default. If checked, the form element's label is displayed above the field; if unchecked, to the left of the field.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Field name: this mandatory property defaults to 'ListFieldName'. Its maximum length is 50 characters, and it must be unique within the form.
  - Use multiple lines: this checkbox is unchecked by default. It allows you to define whether the list is to be displayed on a single, or across several, lines.

- Values: you can define a series of Name and Database Value pairs for the checkboxes to be displayed within the list by adding rows to the Values grid. One checkbox is shown per row in the grid, which is accompanied by a toolbar.

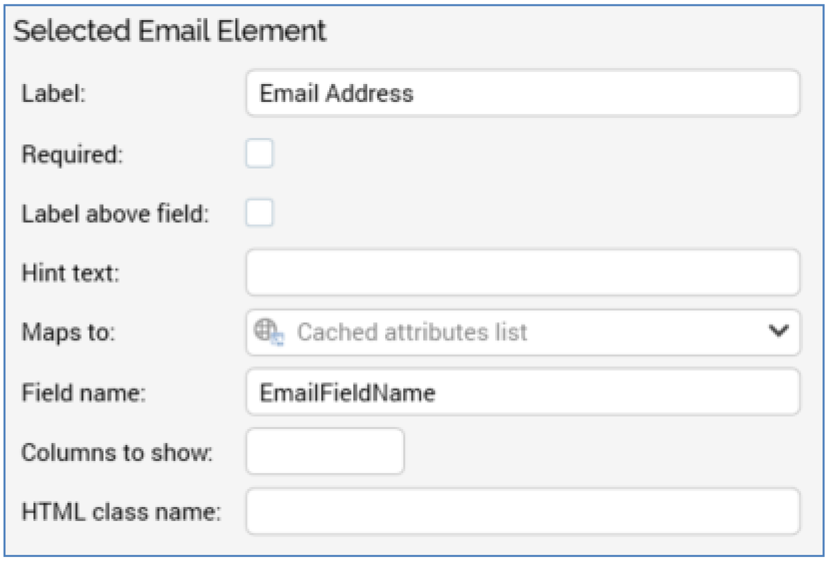
  The Toolbar exposes the following options:

  - Add new Value: adds a new entry to the grid. Its default Name is 'Name', and its Database Value is blank.
  - Move selected Value up: this option is only available if the selected row is not the first in the list. Invocation moves the row up one position in the list.
  - Move selected Value down: this option is only available if the selected row is not the last in the list. Invocation moves the row down one position in the list.
  - Remove selected Value: invocation of this option removes the currently-selected value from the grid.
  - Copy Values to clipboard: this option is available when one or more values are present in the grid. Invocation copies the values to the clipboard.
  - Paste Values from clipboard: clicking this button displays two context menu options:
    - Replace existing Values: this option replaces all existing Values with the values copied to the clipboard.
    - Add to existing Values: this option appends any new values on the clipboard to the existing Values list. If a name already exists, it is not appended.

  Provision of at least one row in the grid is mandatory. The following writeable columns are shown:

  - Name: mandatory, and unique within the element. Name can be a maximum of 100 characters in length. On update of Name when Database Value is blank or set to the same value as Name, Database Value is set to the same value as Name. Note that Name is case sensitive in this context.
  - Database Value: mandatory. At least two different values must be supplied. Database value can be a maximum of 1000 characters in length.
- HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

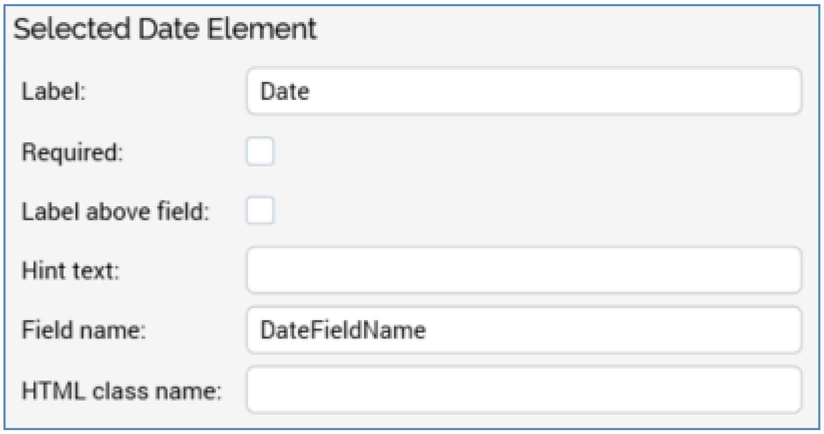
- Email:



  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Required: this checkbox is unchecked by default. It allows you define whether the field is to be mandatory.
  - Label above field: this checkbox is unchecked by default. If checked, the form element's label is displayed above the field; if unchecked, to the left of the field.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Maps to: this dropdown property allows you to define a web form element as serving as a lookup key to retrieve data, defined by a cached attribute list, into the realtime cache. By doing so, you can then use the persisted attribute values, stored on a site visitor basis, to vary content using the RPI Realtime API.

    By default, the property is set to the text 'Cached attribute list'. Cached attribute lists are presented in alphabetical order. Having selected a list, you can Clear the property.
  - Field name: this mandatory property defaults to 'EmailFieldName'. Its maximum length is 50 characters, and it must be unique within the form.
  - Columns to show: this optional integer property allows you to define the width of the field. It is blank and accepts a maximum value of 100.
  - HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

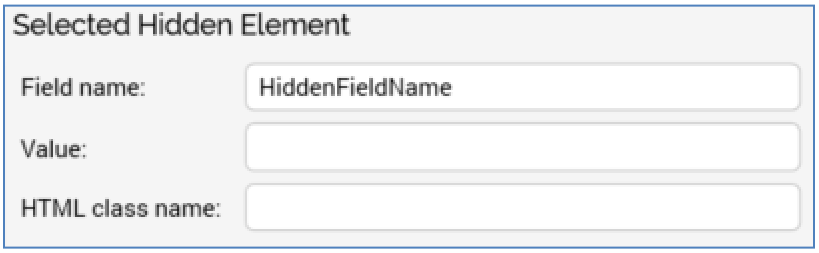
- Date:



  - Label: this property defaults to the name of the form element. Its provision is optional, and it can be a maximum length of 500 characters.
  - Required: this checkbox is unchecked by default. It allows you define whether the field is to be mandatory.
  - Label above field: this checkbox is unchecked by default. If checked, the form element's label is displayed above the field; if unchecked, to the left of the field.
  - Hint text: this optional property is blank by default. When set, it is shown as a tooltip at the form element when displayed in a browser; if not set, the element's label is displayed instead.
  - Field name: this mandatory property defaults to ‘DateFieldName’. Its maximum length is 50 characters, and it must be unique within the form.
  - HTML class name: this property is blank by default. When the form is used in a web page, styles/scripts are applied to the form element in accordance with the assigned HTML class value.

- Hidden: this element is used to persist a piece of information that you wish to keep hidden from the site visitor, but which you wish to be stored alongside the rest of the submitted data in the database.

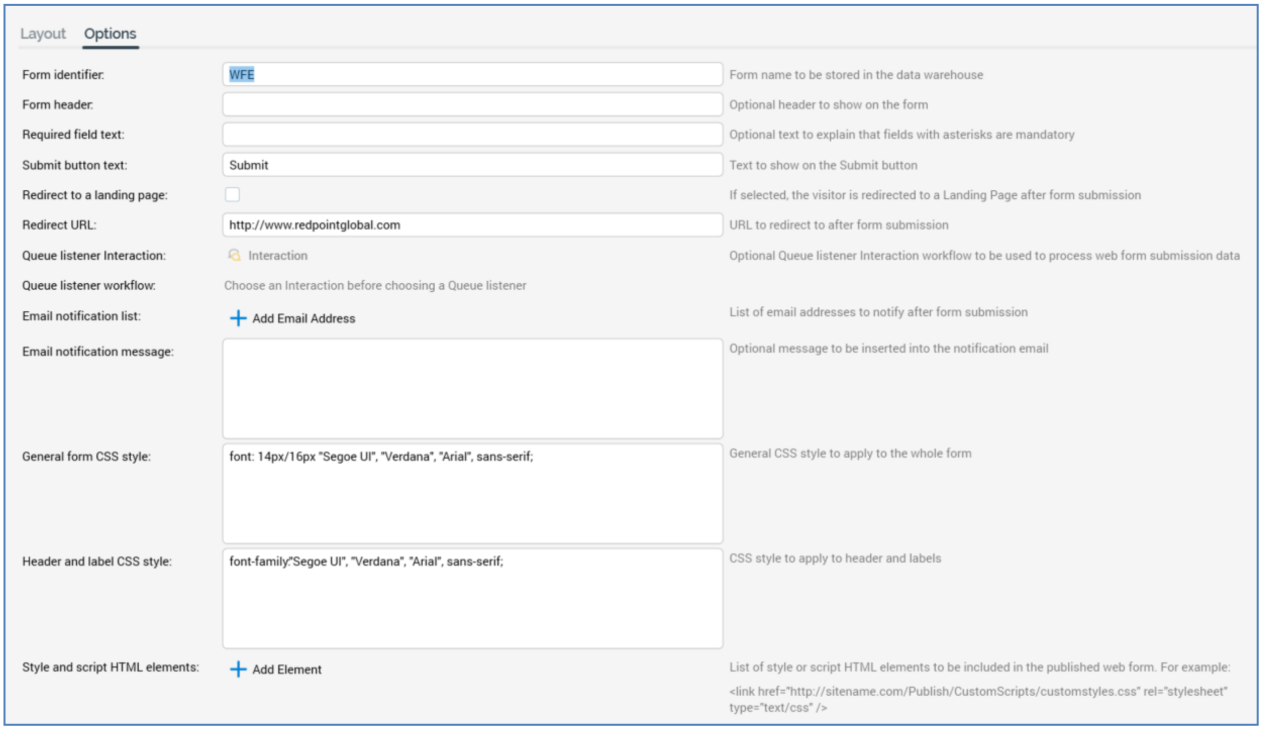
  For example, you might want to store a code alongside the submitted web form data for internal use only. You can use a hidden form element for this purpose.

  - Field name: this mandatory property defaults to 'HiddenFieldName'. Its maximum length is 50 characters, and it must be unique within the form.
  - Value: the field is blank by default. A value must be provided for the hidden field.
  - HTML class name: this property is blank by default. When the form is used in a web page, scripts can be applied to the form element in accordance with the assigned HTML class value.

18.12.6 Options Tab

The Options tab allows you to define a series of properties for the web form.



- Form identifier: this is the value that will be used to identify the form when data relating submitted from it are written to the data warehouse. It is mandatory and can be a maximum of 100 characters.

- Form header: allows you to define an optional header to be shown on the form. It can be a maximum of 100 characters.

- Required field text: this optional field allows you to define a string, shown at all times on the web form, that explains that fields accompanied by an asterisk are mandatory. It can be a maximum of 100 characters in length.

- Submit button text: this property allows you to define the text to be displayed on the form's Submit button. It is optional and can be a maximum of 100 characters long.

- Redirect to a landing page: this checkbox allows you to specify that a site visitor be redirected to a landing page after form submission. It is unchecked by default. When unchecked, the Redirect URL property is displayed. When checked, the Redirect landing page property is displayed.

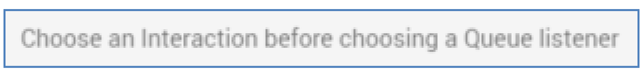
- Redirect URL: this property is shown when Redirect to a landing page is unchecked. It defines a URL to which the browser will be redirected following submission of the form. It is mandatory when shown, must be a well-formed URL, and can be a maximum of 1000 characters in length.

- Redirect landing page: this property is displayed instead of Redirect URL when Redirect to a landing page is checked. It allows you to select a landing page to which to direct after form submission. It is mandatory when shown. You can choose a landing page using browse or drag and drop.

- Queue listener interaction: you can optionally utilize the submission of a web form as the trigger for the placing of a message onto a queue listener queue. Full details of queue listeners can be found within the Interaction Designer documentation. To do so, you must first select the interaction in which the queue listener is to be found. You can browse for an interaction, or populate the property using drag and drop. Having selected an interaction, you can view its latest details in the Interaction Designer. You can also Clear the interaction you selected. If you choose an interaction that does not contain a queue listener, a validation error is raised.

  Note that, if the web form is intended for use with a queue listener, by setting one of its elements' Field name to 'sendaddress', it will be used as the send address in the queue listener's JSON payload.

- Queue listener workflow: prior to selection of a Queue listener interaction, a message is displayed at the property:

  When an interaction containing one or more queue listeners has been selected, a dropdown is displayed, listing all of the queue listeners in the chosen interaction. If the selected interaction contains no queue listeners, a message is displayed.

- Email notification list: this property allows you to specify a list of email addresses to which notification will be sent that the form has been submitted.

  Clicking the Add Email Address button adds a new, unconfigured list entry. An inline Options button gives access to a single Remove option.

  The list displays the email addresses to which a web form notification email will be sent. All entries must be unique. Note that the provision of email addresses in this context is optional.

- Email notification message: this property allows you to specify an optional message that will be inserted into the web form's notification email. A multiline field, it can be a maximum of 5000 characters in length.

- General form CSS style: this property allows you to define a general CSS style to apply to the whole form. By default, it is set to 'font: 14px/16px "Segoe UI", "Verdana", "Arial", sans-serif;'.

- Header and label CSS style: this property allows you to define a CSS style to apply to the form's header and labels. By default, it is set to 'font-family:"Segoe UI", "Verdana", "Arial", sans-serif;'.

- Style and script HTML elements: this optional property allows you define a list of style or script HTML elements to be included in the published web form. For example:

```
<link href="http://sitename.com/Publish/CustomScripts/customstyles.css/>"
rel="stylesheet" type="text/css" />
```

  Clicking the Add Element button adds a new, unconfigured list entry. An inline Options button gives access to a single Remove option.

  Having added an element, provision of text at the same is mandatory.

18.12.7 Web Form Styles

The default RPI form CSS styles are contained in the stylesheet '/RPIFormValidation/shared/css/validation.css'

The following table contains the HTML class names used by RPI to control web forms and their elements:

Class Name	HTML Element
rpi_contact_form	Form
rpi_label	Standard from label
rpi_longlabel	Long label, with corresponding input below label
rpi_static	Static html

For each form element, the Field name property is used as the element's ID.

18.12.8 Submitting a Web Form

When displayed in a landing page in a web browser, a web form contains the following:

- Form header, with CSS applied as defined at the web form.
- Elements, accordant with their properties at the web form, and any CSS settings applied, are listed in the order defined by the web form. These can include:
  - Static HTML
  - Textbox: if a RegEx is supplied, the value entered must be accordant with its stipulations.
  - Radio buttons
  - Checkbox

- Dropdown: the first value in the Values list is selected by default.
- List: shown as a series of checkboxes
- Email: the value entered must be a valid email address.
- Date
- Hidden: the form element is not shown

If a form element is required, its label is accompanied by an asterisk. If the form's Required field text property was set, it is displayed at the top of the form.

If any elements' HTML class name properties have been set, the class style or scripts thus referenced are applied to the elements. Classes referenced can be included in the form's Style and script HTML elements property, the WebFormDefaultStyleScripts system configuration setting, or a manually-supplied reference. This applies when the form is used in an RPI landing page, or an external web page.

Note that it is necessary for a site visitor to clear his or her browser cache to pick up any changes to a forms' referenced style sheets. Also, if style sheets are changed, you will need to clear your local Internet Explorer cache to view such changes at the form's usage within the Landing Page Designer, at that interface's Preview section.

- Submit button

A web form can only be submitted when all required fields have been completed, and when the values in all fields are valid.

On submission of a web form:

- The browser is redirected to the URL configured in the form's Redirect URL property
- Notification of the form's submission is sent to all email addresses configured in the form's Email notification list property.

  The mail sent has the following properties:

  - Subject: 'Web form submission – [Form Name]'
  - Body:

    'A new web form submission for form [Form Name] has been processed

    [Email notification message]

    Form details:

    - Form identifier

        - [Details of each field in form, with value(s)]'

- The data in the form are passed to a private Microsoft Message Queue called rpiwebformsubmission. This queue is flushed every time system task Web form processor is run.
- On flushing the queue, the Web form processor task writes the form data to three data warehouse tables:
    - RPI_WebForm: this table contains one row per unique web form. It contains the following columns:
        - FormID (PK)
        - FormName
    - RPI_WebFormSubmission: this table contains one row per unique instance of a web form's being submitted. It contains the following columns:
        - FormSubmissionID (PK)
        - FormID
        - SubmissionDate
        - EmailAddress: populated if email is provided in the form.
        - ChannelExecutionID: populated if directed to the web form by an RPI email.
        - RPContactID: populated if directed to the web form by an RPI email.
        - VisitorID
        - Fields: this field is used when system configuration setting FormSubmissionPersistFieldsAsJSON is set to True. It is used to persist form field submission data in JSON format, e.g.:

```
{
  "FieldName": "email",
  "EmailFieldName": "some.one@redpointglobal.com"
}
```

    - RPI_WebFormFieldSubmission: this table is used when system configuration setting FormSubmissionPersistFieldsAsJSON is set to False. It contains one row per piece of data submitted within a web form. It contains the following columns:
        - FormFieldSubmissionID (PK)
        - FormSubmissionID
        - FormID
        - FieldName

- FieldValue: note that checkbox values are shown as ‘True’ or ‘False’. If multiple values are selected within a list, one row per selected value is added. A hidden field is always set to its Value, as defined at the web form.

  If a web form is hosted on a landing page configured with a Matomo adapter, a form field called ‘rpiTrkPiwikVisitorID’ is used to track the Matomo visitor ID.

- You can optionally define that any submitted web form data are written to the realtime cache. This is carried out by setting the value of the following web processing website web.config setting to True:

```
<setting name="CacheWebFormData" serializeAs="String">
  <value>True</value>
</setting>
```

  When set in this way, the realtime cache is populated with all data submitted at web forms. You can then leverage this data to execute generic realtime decisions in respect of the same. For further information on realtime decisions, please see the Realtime Decisions documentation.

On submission of a web form at which a Queue listener interaction and workflow is selected, a JSON package is automatically placed on the listener queue and is picked up by the queue listener with which the web form is submitted. Any queue activities downstream from the queue listener are fulfilled.

If such a queue activity is configured with an email offer, the email is delivered to the email address as submitted in an Email form element. If any web form element parameters are included in the email offer's content, the values submitted in the web form are substituted. If the web form does not contain an Email element, emails are unable to be delivered (the queue activity's Log, as displayed in the Results Window, advises of this fact).

18.12.9 Web Form File Metadata

When a web form associated with file metadata is published, a row is added at data warehouse table RPI_WebForm_Meta:

- PublishHistoryID: you can use this field to join to RPI_WebFormSubmissions
- PublishDate
- FormName
- FormMeta: stored as JSON; large varchar field by default

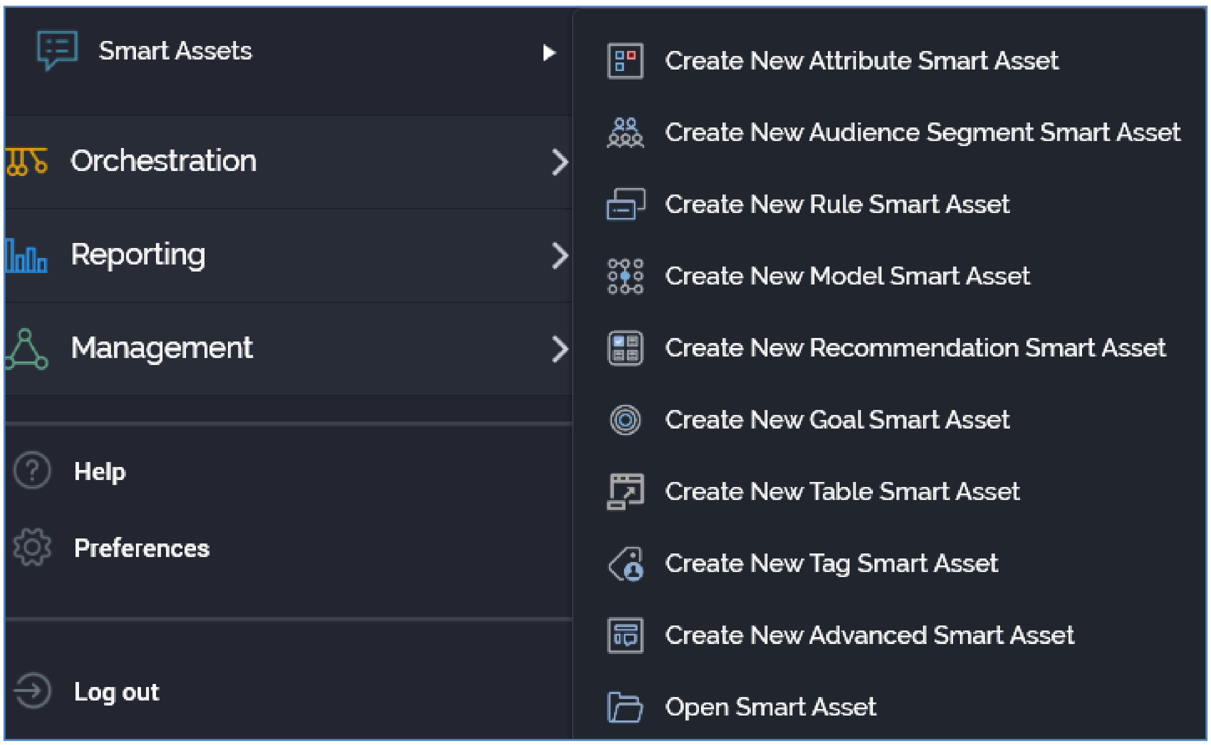
19 Smart Asset Designer

The RPI Asset Designer allows you to create and maintain Attribute, Audience Segment, Rule, Mode, Goal and Advanced Smart Assets. Smart Assets intrinsically facilitate dynamic content personalization, unlike Asset files, in which content must be personalized by the inclusion of attributes or nested smart assets.

19.1 Invoking the Smart Asset Designer

You can invoke the Smart Asset Designer in the following ways:

- From the quick access menu's Smart Assets menu. The menu exposes the following options:



- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.
- By double-clicking a smart asset file in the File System Dialog, or by highlighting a smart asset and clicking OK in the same context.
- By viewing the latest version of a smart asset contextually – for example, from an orchestration realtime decision's Smart Asset property.

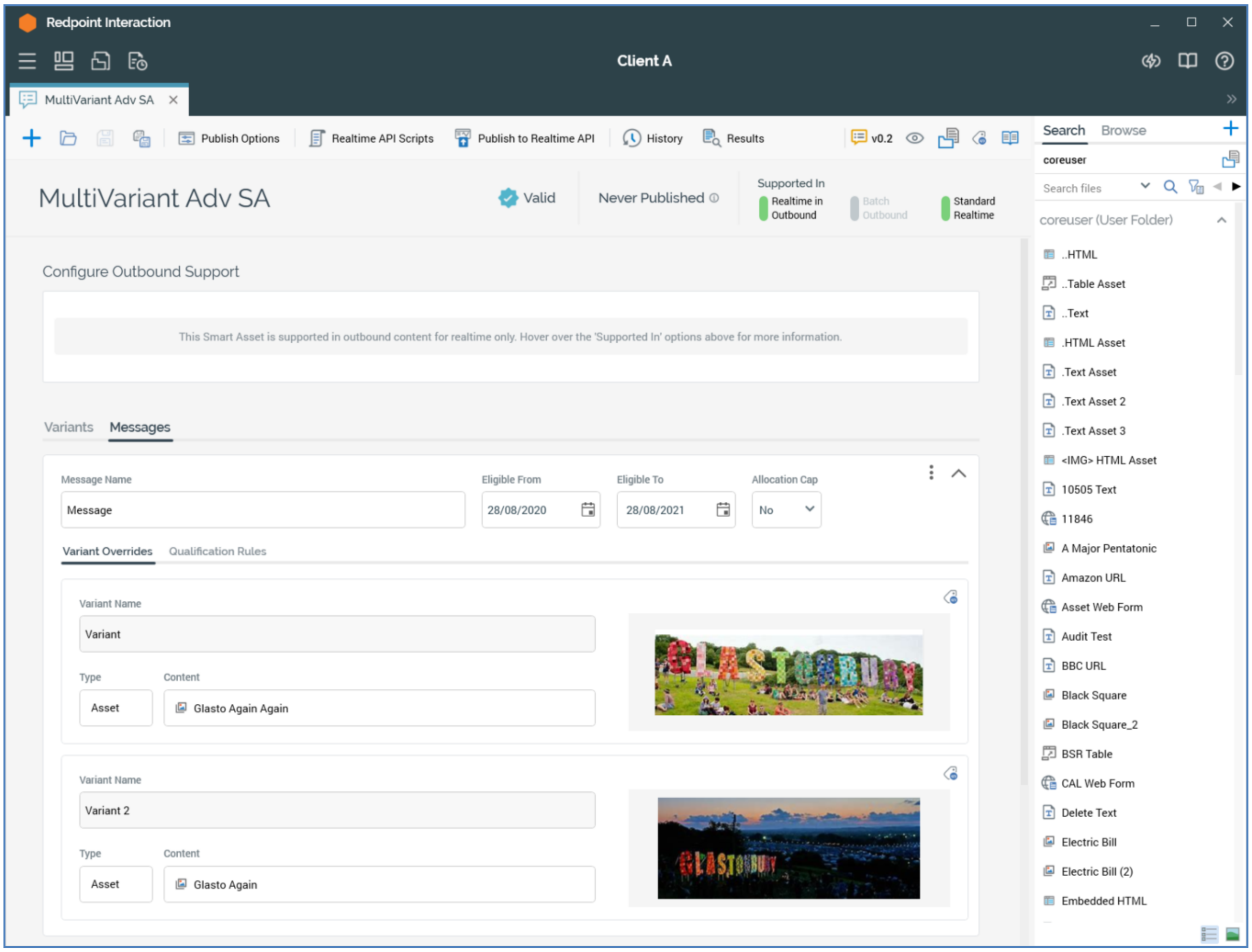
Access to the Smart Asset Designer is protected by a series of functional permissions:

- The Smart Asset - Design permission gives access to the Asset designer, but does not allow you to open, edit or create assets. You may import assets if required.

- To open, edit or create assets, you must be associated with an appropriate functional permission. For example, to work with attribute smart assets, you must be associated with the Smart Asset - Attribute - Design functional permission. The following smart asset type-specific functional permissions are provided:
  - Smart Asset - Advanced - Design
  - Smart Asset - Attribute - Design
  - Smart Asset – Audience Segment - Design
  - Smart Asset - Goal - Design
  - Smart Asset - Model – Design
  - Smart Asset - Recommendation – Design
  - Smart Asset - Rule – Design
  - Smart Asset - Table – Design
  - Smart Asset - Tag – Design
- The Smart Asset – Publish functional permission allows you to publish smart assets. More information on publishing smart assets can be found elsewhere in this documentation.

19.2 Smart Asset Designer Basics

The Smart Asset Designer is displayed in a separate tab in the RPI framework.



It is composed of the following elements:

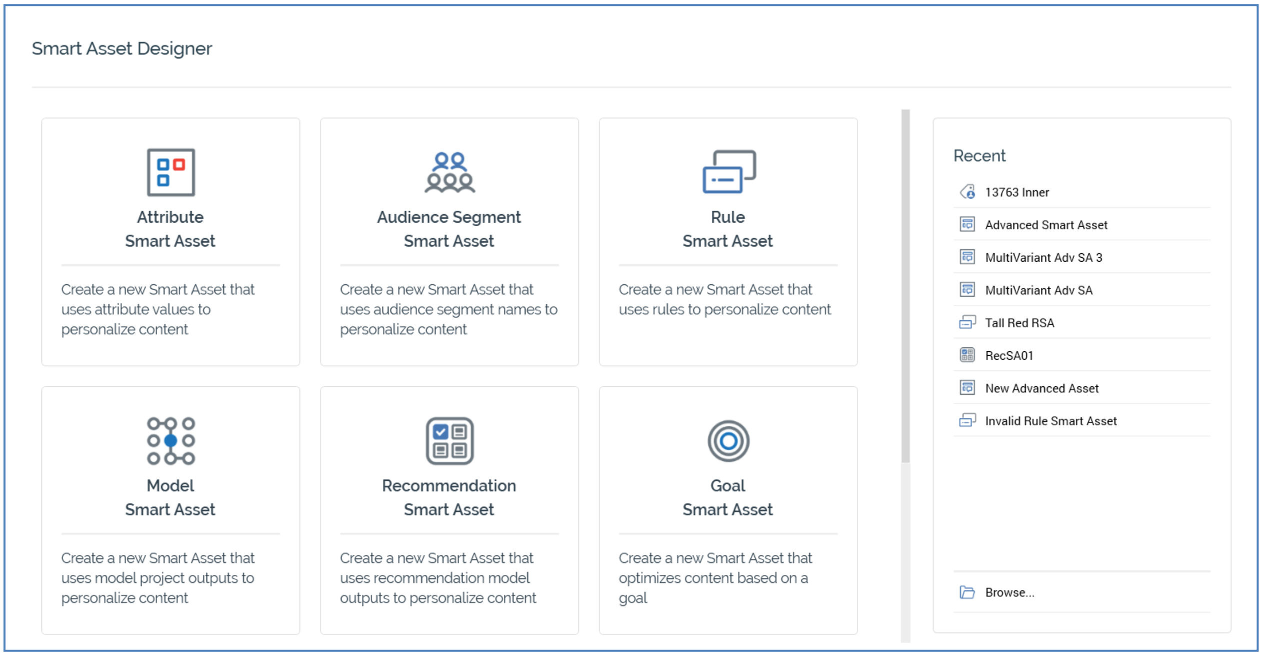
- Toolbar
- Name
- Validation status indicator
- Published section
- Supported In section
- Toolbox
- Content panel

If you close a tab containing the Smart Asset Designer, within which a smart asset to which changes have been made is displayed, or you close RPI itself under the same circumstances, a dialog is displayed. You can:

- Save the changes and proceed with closing the tab or RPI.
- Abandon the changes and proceed with closing the tab or RPI.
- Cancel closing the tab or RPI.

19.3 Start Page

The Smart Asset Designer Start Page is shown upon invocation of Smart Assets at the quick access menu, and also on clicking Create new Smart Asset at the Smart Asset Designer toolbar. It contains the following:



- Buttons facilitating creation of the following smart asset types:
  - Attribute Smart Asset
  - Audience Segment Smart Asset
  - Rule Smart Asset
  - Model Smart Asset
  - Recommendation Smart Asset
  - Goal Smart Asset
  - Tag Smart Asset
  - Table Smart Asset
  - Advanced Smart Asset
- Recent: lists recently-accessed smart assets, facilitating the opening of the same.
- Browse: displays the Open Asset File System Dialog, allowing you to select an asset to open.

A Cancel button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and redisplays the Smart Asset Designer. The Cancel button is only shown on invocation of the Start Page by clicking Create new Smart Asset at the Smart Asset Designer toolbar.

19.4 Toolbar

The Smart Asset Designer toolbar exposes the following options by default:

- Create new Smart Asset: displays the Smart Asset Designer Start Page (covered separately in this documentation). If a smart asset containing unsaved changes is displayed at invocation of Create New, an 'Are You Sure?' dialog is shown, from which you can::
  - Save the changes and create the new smart asset.
  - Abandon the changes and create the new smart asset.
  - Abandon creating the new smart asset.
- Open an existing Smart Asset: displays the Open Smart Asset File System Dialog, allowing you to navigate those folders within the RPI file system to which you have access in order to locate a smart asset to open. Only smart asset files are displayed in the File System Dialog.

  When you open a smart asset, if changes have been made to a smart asset displayed currently in the Smart Asset Designer, a dialog is displayed. You can:
  - Save the changes and proceed with opening the smart asset.
  - Abandon the changes and proceed with opening the smart asset.
  - Abandon opening the smart asset.
- Save current Smart Asset: saves the current smart asset to an existing filename; if the smart asset is yet to be saved, Save behaves like Save as.
- Save current Smart Asset as...: allows you to specify the smart asset's filename and storage location within the RPI file system by displaying the File System Dialog. Save as creates a new, independent smart asset based on the original.

In addition, the following toolbar buttons are shown for all smart asset types other than attribute and audience segment:

- Publish Options: covered separately in this documentation.
- Realtime API Scripts: covered separately in this documentation.
- Publish to Realtime API: covered separately in this documentation.

- History: covered separately in this documentation.
- Results: clicking this button displays results relating to the current smart asset in the Realtime Details Report, which is shown in separate tab. More information can be found in that interface's own documentation.
- Version number
- Follow/Unfollow File: please see the RPI Framework Documentation.
- File options: please see the RPI Framework Documentation.
- File Metadata: please see the RPI Framework Documentation.
- Linked File options: please see the RPI Framework Documentation.

19.5 Name

A smart asset's name is set using the property displayed at the top of the Smart Asset Designer interface:

By default, a smart asset is named 'New [Type] Smart Asset'.

You can edit a smart asset's name by clicking the property. This make it editable. A smart asset's name can be a maximum of 100 characters in length. Provision of a name is mandatory.

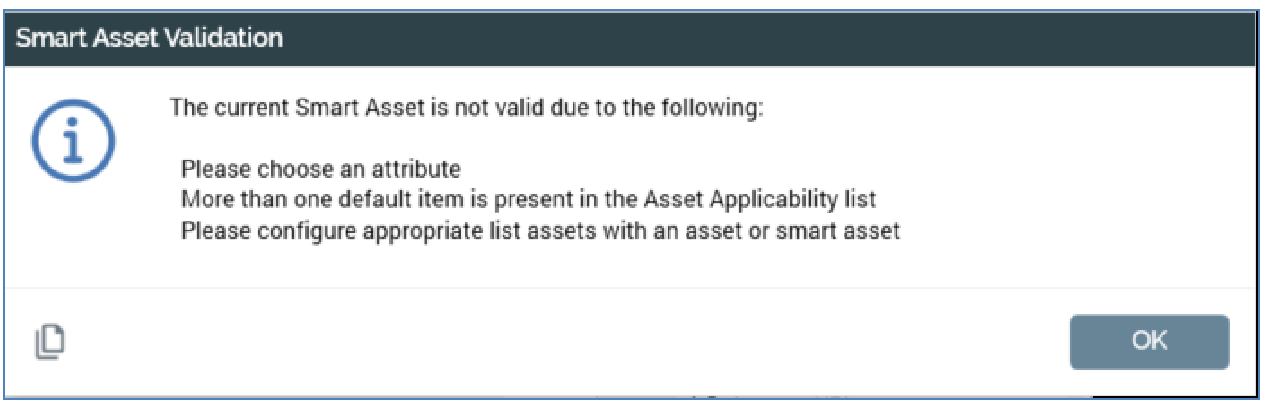
19.6 Validation Status Indicator

Before a smart asset can be used, it must be valid.

A validation status indicator is provided at the top right corner of the Smart Asset Designer. When the smart asset is valid and contains no validation errors, the validation status indicator is shown like this:

Specific validation errors are outlined in the documentation provided for each specific smart asset type. When one or more validation errors is present, the validation status indicator is shown like this:

Clicking the indicator lists the validation errors in a dialog:

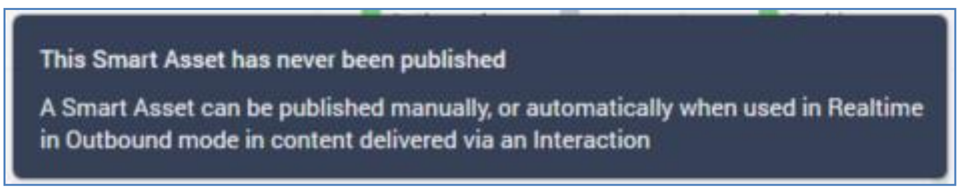


You can use the button at the bottom left of the dialog to copy the validation error details to the clipboard. You can close the dialog using the OK button

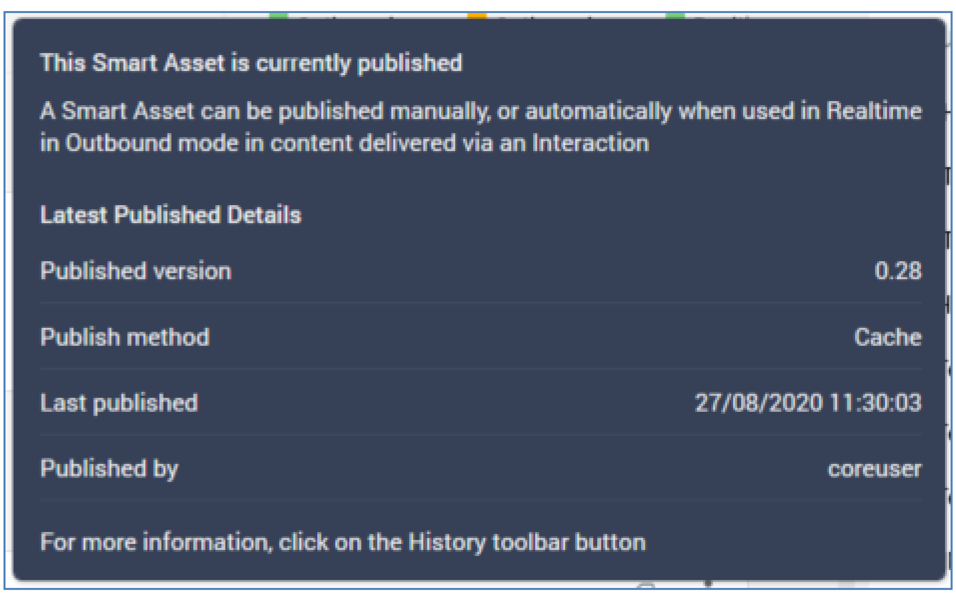
19.7 Published Section

This section provides information on the current published status of the smart asset. It is not shown at attribute and audience segment smart assets. A smart asset can have one of three published statuses:

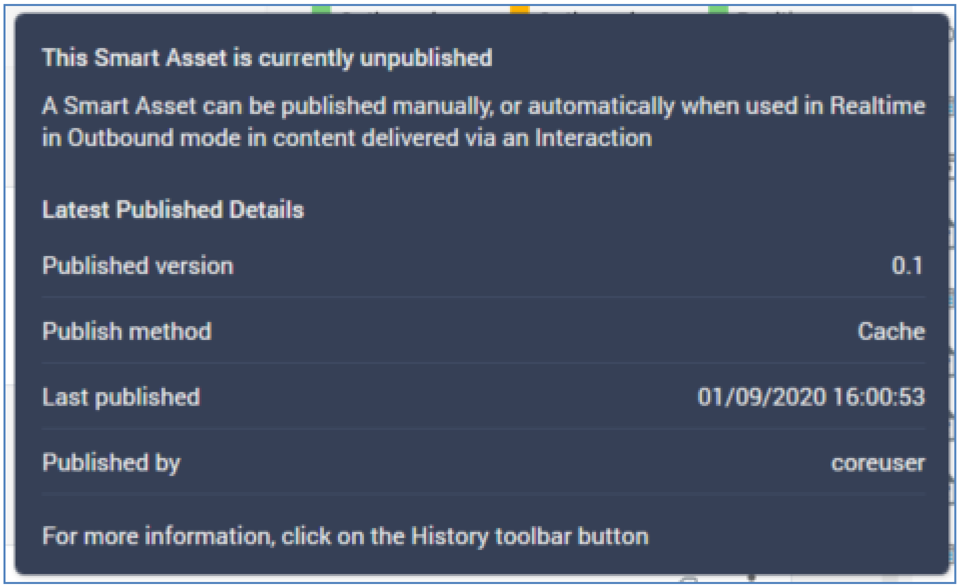
When hovering over the information icon to the right of the Never Published status, the following is displayed in a tooltip:



When hovering over the information icon to the right of the Published status, the following is displayed in a tooltip:



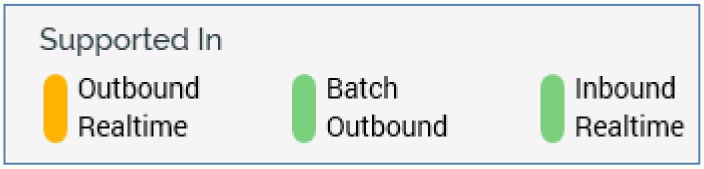
When hovering over the information icon to the right of the Unpublished status, the following is displayed in a tooltip:



The published status is updated after 30 seconds, which may mean a slight delay prior to display of the correct status having published a smart asset.

19.8 Supported In Section

This section provides a summary of three contexts in which smart assets can be used, and the current smart asset's ability to be utilized in each of them.



The three contexts in which smart assets are supported are:

- Outbound realtime: the smart asset in included in an outbound message (e.g. an email offer), and the RPI Realtime API is used to make content applicability decisions when the message is consumed by its recipient. This means that an image rendered to an email recipient can be changed dynamically when the mail is viewed in her or his inbox.
- Batch Outbound: the smart asset is included in an outbound message (e.g. an email offer), and the decision as to which content to serve is made prior to the message being sent.
- Inbound Realtime: the smart asset is used in a realtime capacity - e.g. via a call to an RPI Realtime Decision endpoint, or when hosted in a landing page.

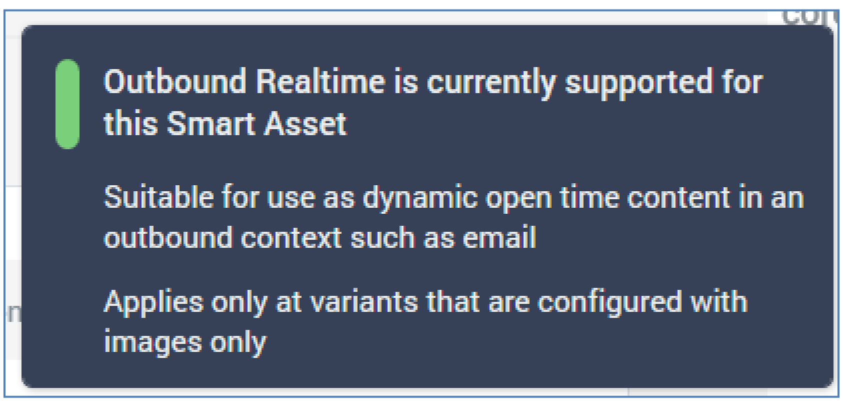
Each context is accompanied by a status indicator, indicating the following:

- Green: the current asset is fully supported in the context.
- Gray: the current asset is not supported in the context.
- Yellow: shown at Outbound realtime and Batch Outbound; indicates that the smart asset can be supported in the context but is not currently.

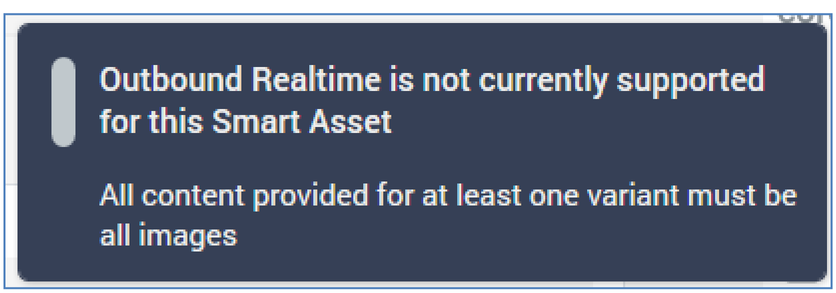
Statuses are calculated in real time, as a smart asset is updated. They are determined as follows:

- Outbound realtime:
  - If an Attribute or Audience Segment smart asset:
    - Not Supported
  - If a Rule or Model smart asset:
    - If all content is set to image assets, or to inline absolute URLs:
      - If When...used in Outbound is set to 'Determine...once...':
        - Can be supported, but is not currently
      - If When...used in Outbound is set to 'Determine...in realtime...':

        - Fully Supported
    - Else:
        - Not supported
- If a Goal smart asset:
    - If all content is set to image assets, or to inline absolute URLs:
        - Fully Supported
    - Else:
        - Not Supported
- If an Advanced smart asset:
    - If at least one variant and its messages are configured with all image content:
        - Fully Supported
    - If Outbound realtime is supported, the tooltip shown on hovering over the same displays the following:



    - If Outbound realtime is not supported, the same tooltip displays the following:



- Batch Outbound:
    - If an Attribute or Audience Segment smart asset:
        - Fully Supported
    - If a Rule smart asset:
        - If all content is configured with selection rules:
            - If When...used in Outbound is set to 'Determine...once...':
                - Fully Supported
            - If When...used in Outbound is set to 'Determine...in realtime...':
                - Can be supported, but is not currently
        - Else:
            - Not supported
    - If a Model smart asset
        - If When...used in Outbound is set to 'Determine...once...':
            - Fully Supported
        - If When...used in Outbound is set to 'Determine...in realtime...':
            - Can be supported, but is not currently
    - If a Goal smart asset:
        - Not Supported
    - If an Advanced smart asset:
        - Not Supported
- Inbound Realtime:
    - If an Attribute or Audience Segment smart asset:
        - Not Supported
    - If a Rule, Model, Goal or Advanced smart asset
        - Fully Supported

Note that wider caveats about smart assets' suitability for inclusion in offer content also apply; for example, to use an outbound realtime asset in an SMS offer, it would be necessary to use it to personalize a link with dynamically determined URL content. Inclusion of standard text content is precluded by the statements above, and images cannot be used in SMS offers.

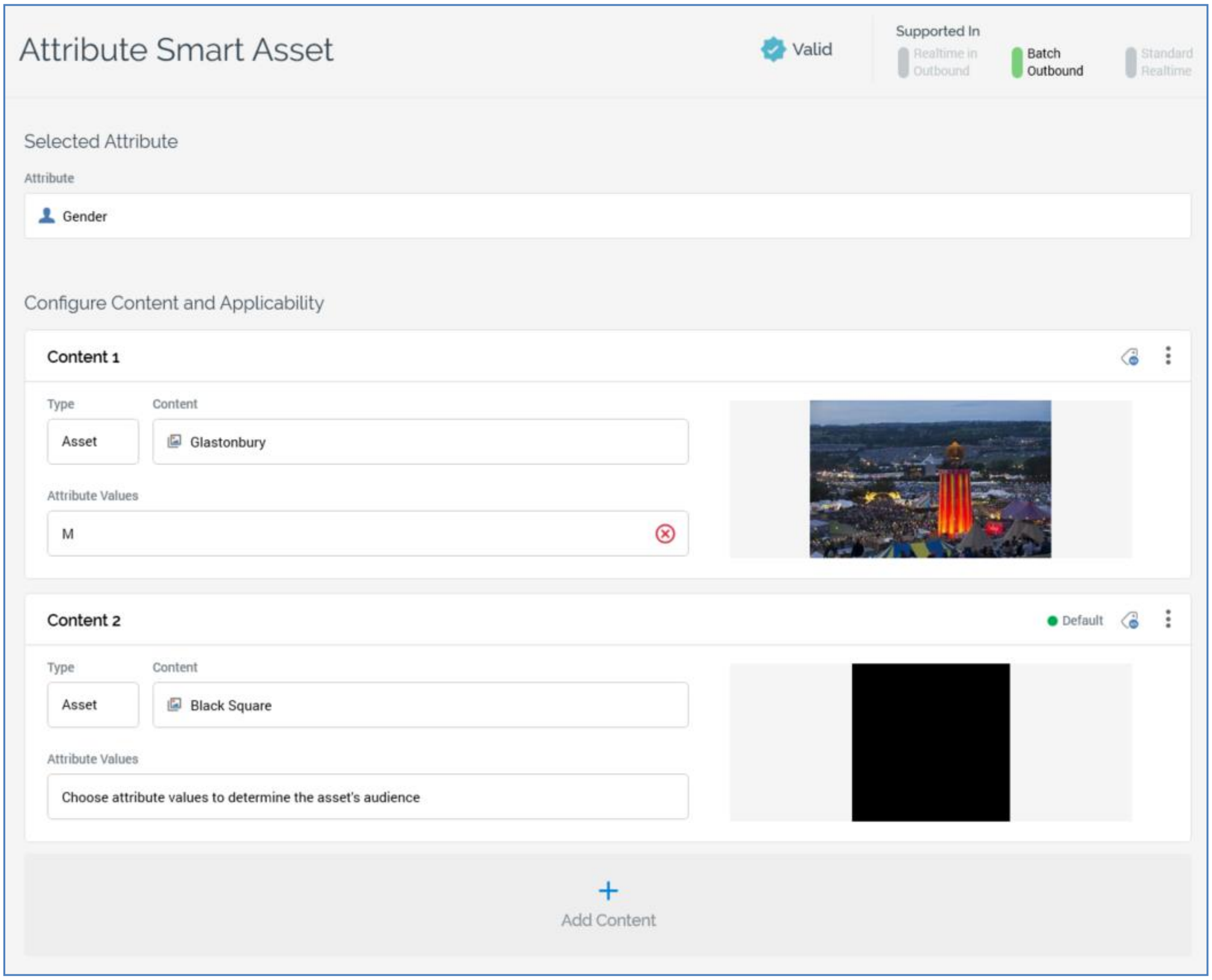
19.9 Toolbox

The Smart Asset Designer toolbox exposes a Folder Search component. For more information, please see the Framework documentation.

The toolbox is your source of the other files you will need when building a smart asset.

19.10 Content Panel – Attribute Smart Asset

An attribute smart asset's content panel contains the following:



- Selected Attribute section: exposing a single property:
  - Attribute: you must choose an attribute, values from which will be used to determine content applicability in the attribute smart asset. You can choose an attribute using browse or drag and drop. You cannot select an exists in table attribute or a function attribute that provides a constant value. If you change or clear the Attribute, any attribute values specified at content are removed.

- Configure Content and Applicability Section: the following specific property is displayed when configuring an attribute smart asset's content and applicability:
  - Attribute values: you can configure a content element with one or more attribute values that are used to determine the audience to which the content will apply.

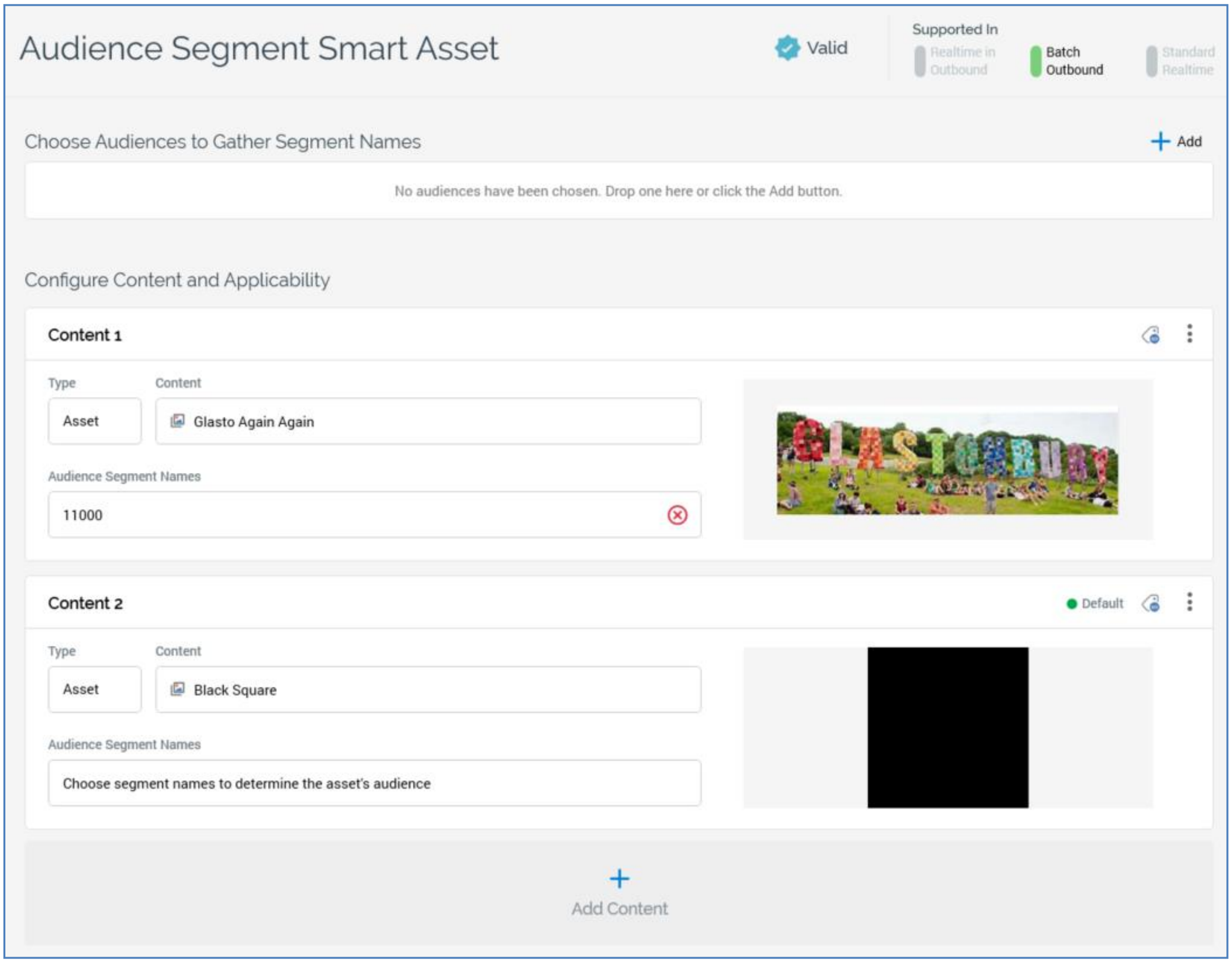
When attribute values have not been selected, the following text is displayed at the property:

Having selected an Attribute other than a parameter attribute, when you click the button the Choose Database Values dialog is displayed. You can use the dialog to choose from the list of attribute values presented, or you can specify custom attribute values. More information on the Choose Database Values dialog is provided in the Framework documentation.

If you selected a parameter Attribute, values are provided using the Specify Values dialog, which is also covered in the Framework documentation.

19.11 Content Panel – Audience Segment Smart Asset

An audience segment smart asset's content panel contains the following:



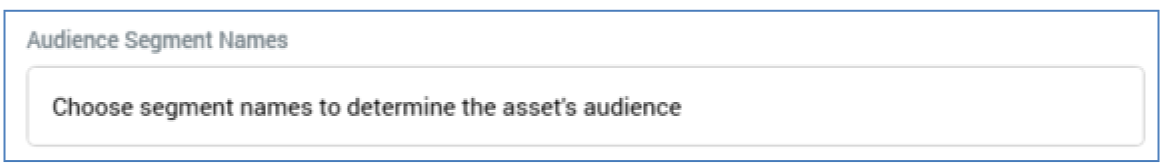
- Choose Audiences to Gather Segment Names section: containing a single property:
  - [Audiences]: you can select one or more audiences, which will serve as a source of the audience segments names that are to be used to determine content applicability in the smart asset. For example, if an audience outputs two segments – 'A' and 'B' – and a content element is configured with audience segment value 'B', then records from that segment will be provided with the content in question. The property consists of a toolbar and a list.
    - Toolbar: exposing a single option:
      - Add: clicking this button displays the Add Audience File System Dialog, which you can use to add an audience to the list.
      - List: the following text is shown at the list when it is empty:

You can populate the list using the toolbar's Add button, or by dragging an audience from the toolbox and dropping it onto the list. Once one or more audiences are present in the list, you can configure content elements with the segment names that they expose. Two inline buttons are available at audiences within the list:

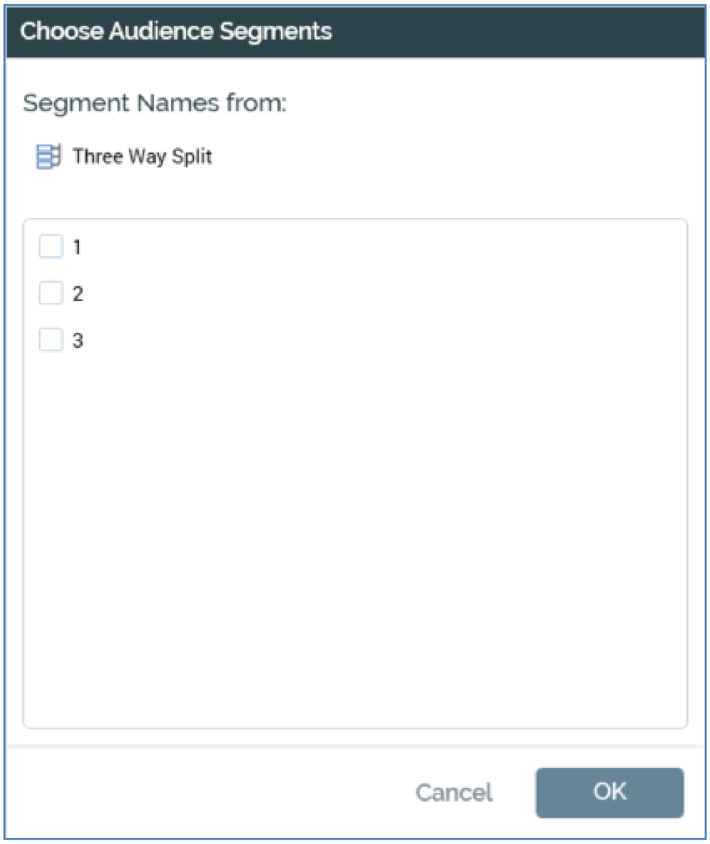
- Open Latest Version: displays the audience in the Audience Designer.
- Remove this Audience from the List: removes the audience without displaying an "Are You Sure?' dialog.

Note that any audiences selected are not persisted as part of the smart asset. When you save, close and re-open such an asset, any associated audiences will no longer be present. They are used only for configuration to determine the names of audience segments. The audience segment names selected at content elements are saved as part of the smart asset.

- Configure Content and Applicability Section: the following specific property is displayed when configuring an audience segment smart asset's content and applicability:
  - Audience Segment Names: prior to the specification of one or more audience segment names, the following text is shown at a content element:



Clicking the property displays the Choose Audience Segments dialog.



If no Audiences have been selected, an information message is displayed instead:

The dialog contains the following:

- Segments Names from: all audiences currently selected at the smart asset are listed.
- List: all unique segment names as sourced from the currently-selected audiences are listed. A segment name made available by more than one audience is only displayed once. Segment names are listed alphabetically. Each list entry is accompanied by a checkbox, the checked status of which reflects the current selection at the content element.

  If the selected segment name is no longer present in the current-selected audiences (remember that they are not persisted as part of the smart asset), it is still listed at the Choose Audience Segments dialog. Similarly, if you remove an audience, and a segment name that it provides is not available within another selected audience, and the segment name was not checked, it is no longer displayed at the dialog.

- Cancel: invocation removes the dialog from display without applying choosing segments.
- OK: invocation selects the checked list items, closes the dialog and returns to the smart asset.

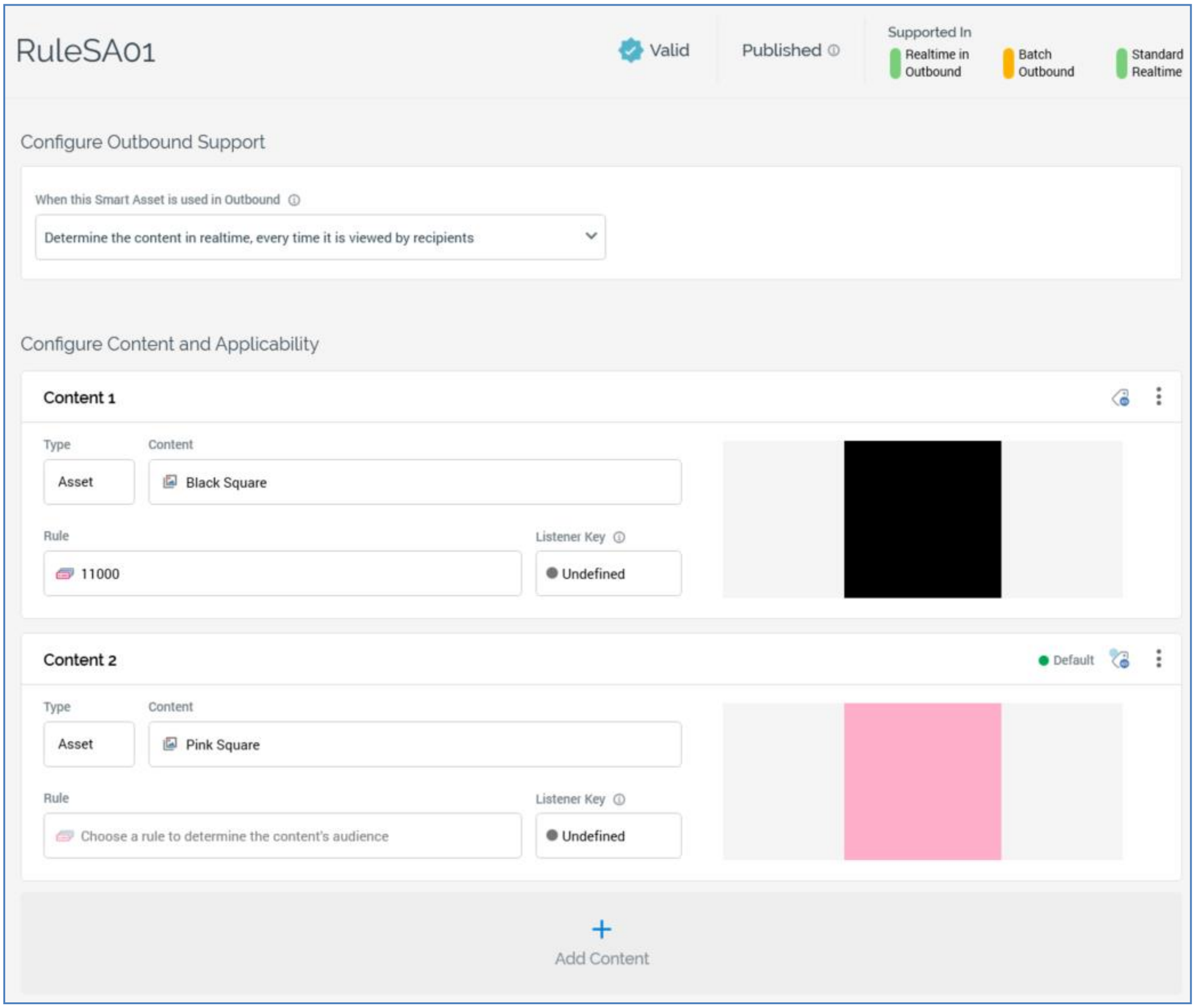
Selected segment names are displayed at the content element:

A Clear values button is displayed to the right of the Audience Segment Names property. Clicking it clears its selected audience segment values and reinstates the 'Choose segment names...' text.

Note that a validation error is raised if the same audience segment name is associated with more than one content element.

19.12 Content Panel – Rule Smart Asset

A rule smart asset's content panel contains the following:



- Configure Outbound Support section: exposing a single property:
  - When this Smart Asset is used in Outbound: this property is used to specify when determination of the content to be served by the smart asset is to be made, when the smart asset is included in an outbound fulfillment activity such as an email offer. A dropdown property, it exposes the following values:
    - Determine the content only once, when it is initially sent to recipients: this is the default option. Smart asset content applicability will be made a single time, at the point of an outbound message being sent. Any content rendered will remain the same, no matter how many times viewed.

        - Determine the content in realtime, every time it is viewed by recipients: smart asset content applicability will be made dynamically, via calls to the RPI Realtime API. Served content can be changed according to a recipient's current characteristics.

    Note that this property's value can affect the smart asset's Supported In properties.

    If Batch Outbound is not supported at the smart asset, due to e.g. a content element being configured with a realtime decision, the following message is displayed at the property:

- Configure Content and Applicability Section: the following specific property is displayed when configuring a rule smart asset's content and applicability:

    - Rule: this property can be used to specify a selection rule (standard, basic or NoSQL) or realtime decision that will be used to determine if a content element is to be served to a recipient or visitor. If a recipient is targeted by the selection rule provided, they will receive the specified content. If a visitor is targeted by the realtime decision or selection rule provided, they will similarly receive the specified content.

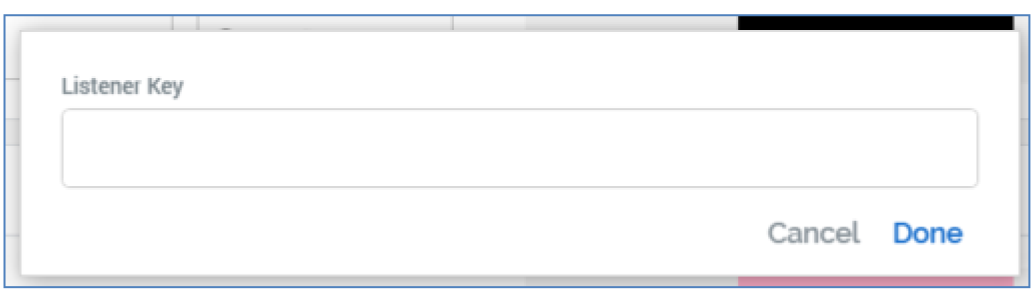
        Having selected a rule, the following inline buttons are displayed at the property:

        - Open Latest Version: displays the rule in the Rule Designer.
        - View Insights: only available at a selection rule. Displays insights gleaned about the rule in the Insights Window.
        - Clear: removes the selected rule.

        In addition, a context menu gives access to options appropriate to the selected file's type.

        Note that the use of an auxiliary database NoSQL rule to make rule smart asset applicability decisions when running in an outbound interaction in a SQL environment is not supported.

    - Listener Key: this property allows you to specify a GUID Listener Key, as provided by an interaction's Queue Listener activity. Clicking the property displays a popup dialog, into which you can enter a listener key:



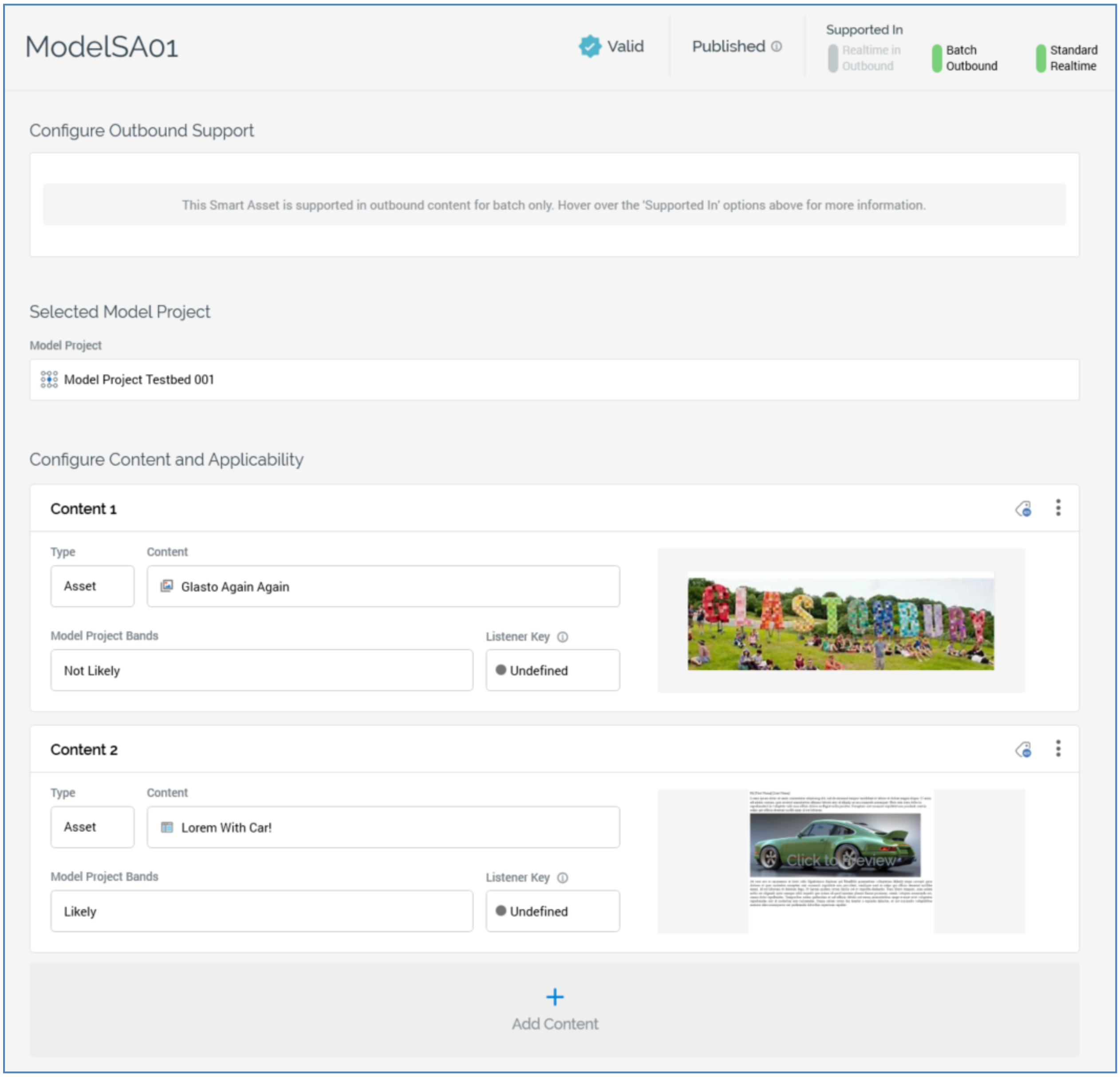
The value entered must be a GUID.

When a smart asset is invoked via an RPI Realtime decision, and the rendered content has been configured with a Listener Key, a message is placed on the listener queue and is available to any downstream queue activities.

Any message content parameters are defined by the realtime appsettings QueueListenerConfiguration setting. The 'Default' setting is used by default, unless specific a specific QueueListenerConfiguration was specified in the method's QueueListener parameter. Any required parameters are retrieved from the realtime cache if not passed in the method call payload.

19.13 Content Panel – Model Smart Asset

A model smart asset's content panel contains the following:



- Configure Outbound Support section: please see the Rule smart asset documentation.
- Selected Model Project section: exposing the following properties:
    - Model Project: a model smart asset must be configured with a valid model project, in which bands have been configured. The bands exposed by the model project can be selected at content elements to determine whether a recipient or visitor should be served a specific piece of content.

The Model Project property can be populated using browse or drag and drop. Having chosen a Model Project, the following inline buttons are available:

- Open Latest Version: displays the model project in the Model Project Designer.
- Clear: clears the selected model project.

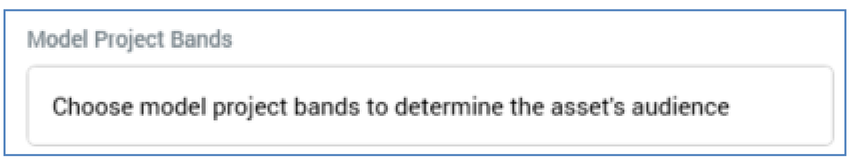
A context menu is also available when right-clicking a model project at the property.

- Default Recommendation Rank: this mandatory integer property is only displayed when the selected model project uses a Redpoint Automated Machine Learning (AML) Recommender model. It represents the default recommendation rank that will be used when the smart asset generates content. The property defaults to the value '1'.

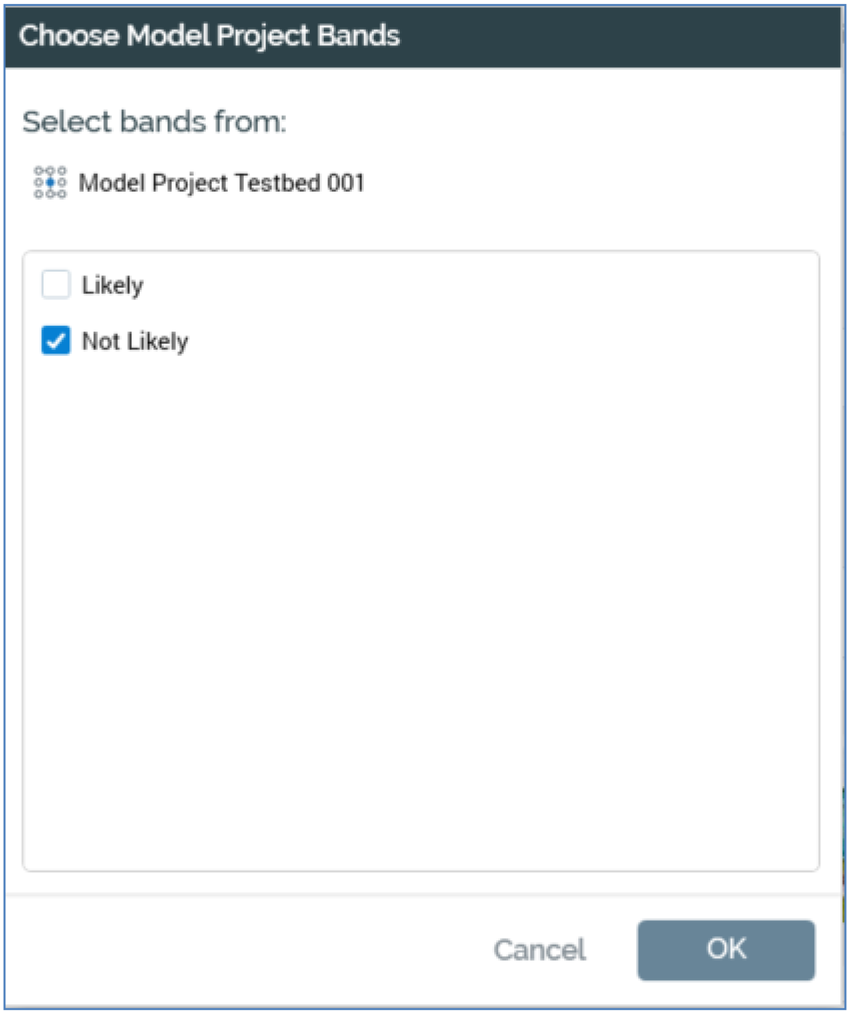
- Configure Content and Applicability Section: the following specific property is displayed when configuring a model smart asset's content and applicability:

  - Model Project Bands: at each content element, you can choose the bands from the selected Model Project that are to be used to determine whether a specific piece of content should be served to a recipient or visitor.

    Prior to selecting a Model Project, the following is displayed at the property:



    Having selected a model project, clicking the property displays the Choose Model Project Bands dialog.

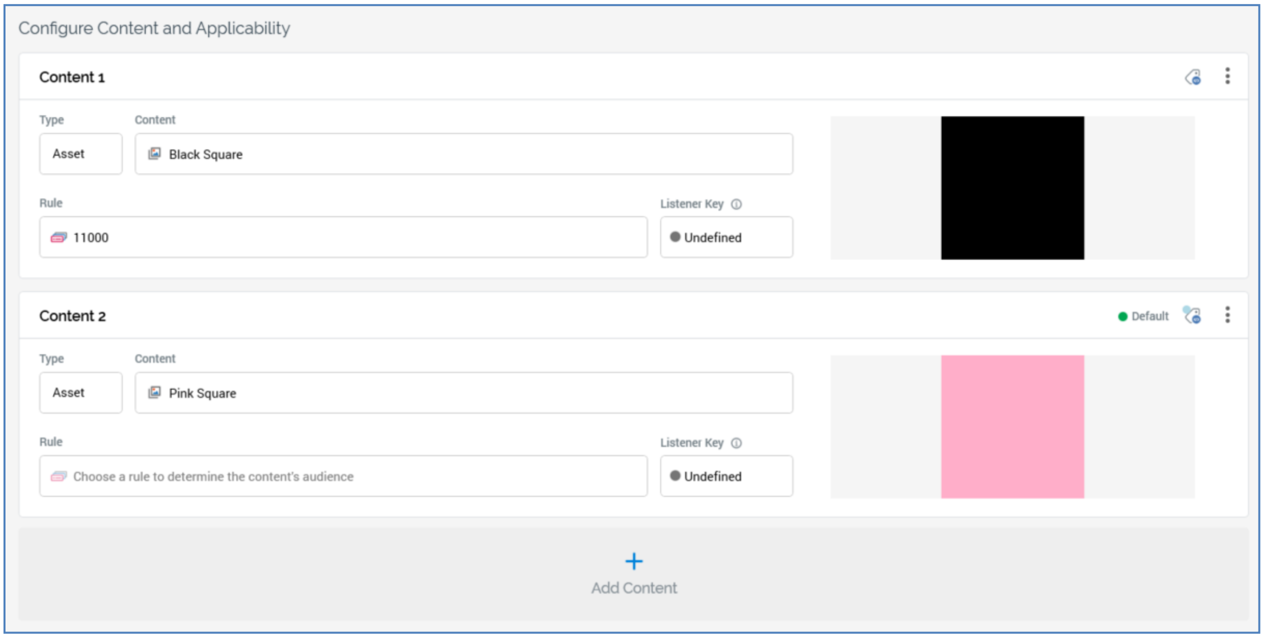


You can select the bands to apply to the content using the checkboxes provided. If a recipient or visitor falls within a selected band, they will be served the content defined at the content element.

- Listener Key: please see the Rule smart asset documentation.

19.14 Content Panel – Configure Content and Applicability Section

The Configure Content and Applicability section is shown at Attribute, Audience Segment, Rule and Model smart assets. The following common features are present in the section at all of the aforementioned asset types. Specific properties are documented separately for each asset type.



The Configure Content and Applicability section is used to define the content to be served by the smart asset, and the specific rules that govern the rendering of each element. It contains a list of content elements. Each content element exposes the following properties, shared by all relevant smart asset types:

- 'Content [n]': each position is given a unique identifier in the list, starting at 1. This always remains the same, even when content elements are moved up and down - so that the first content element is always shown as 'Content 1'.
- Toolbar: a toolbar is shown to the top right of each content element. It exposes the following:
  - Default indicator: a small green indicator and the label 'Default' is displayed at a content element where no applicability rule (e.g. attribute value or selection rule) has been defined. Only one default content element can be defined.
  - Manage Metadata for this Content: clicking this button displays the '[Smart Asset Name] - Content Metadata Editor' dialog, allowing you specify file metadata values and a description at a specific content element. More information on file metadata can be found in the Framework documentation.
  - Options: this menu provides access to the following:
    - Move up

- Move down
- Remove: invocation removes the content element without display of an 'Are You Sure?' dialog.

- Type: this toggle button allows you to specify whether the content element will serve content defined by an Asset (the default), or by Inline content.

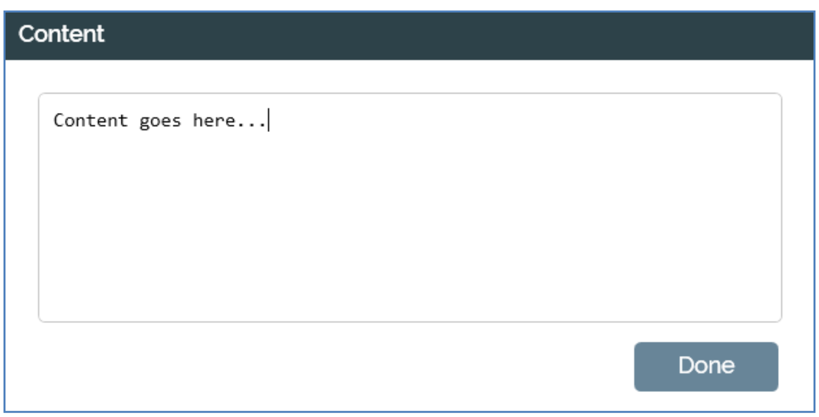
- Content: if Type is set to asset, you can select an Asset or Smart Asset file to configure this property. Provision of a file is mandatory. Note that the smart asset's Supported In property will be updated dynamically to reflect the type of file selected.

  You can populate the property using browse or drag and drop. Once populated, you can undertake standard file property functionality in respect of the selected file. You can also clear your selection.

  If Type is set to Inline, a dropdown is displayed to the left of the Content property.

  This allows you to specify the type of inline content to be entered as one of Text (the default), JSON or XML. The selected value is used to describe the type of payload returned from RPI Realtime API calls made to the smart asset.

  Inline content is set using the Content dialog:



  You can drop attributes (other than Exists in table attributes) into inline content. When rendered in an outbound context, attributes used in this way are sourced from the database. When rendered in an inbound context, attribute values are sourced from a visitor profile's parameter or database values. You can right-click an attribute used in this way to access a View File Information context menu option.

- Preview: if a content element is configured with an image asset, a preview is shown to the right of the content element. No preview is provided for inline content. If a preview is available, but not able to be displayed inline, you can click the property to view a Preview in the File Information Dialog.

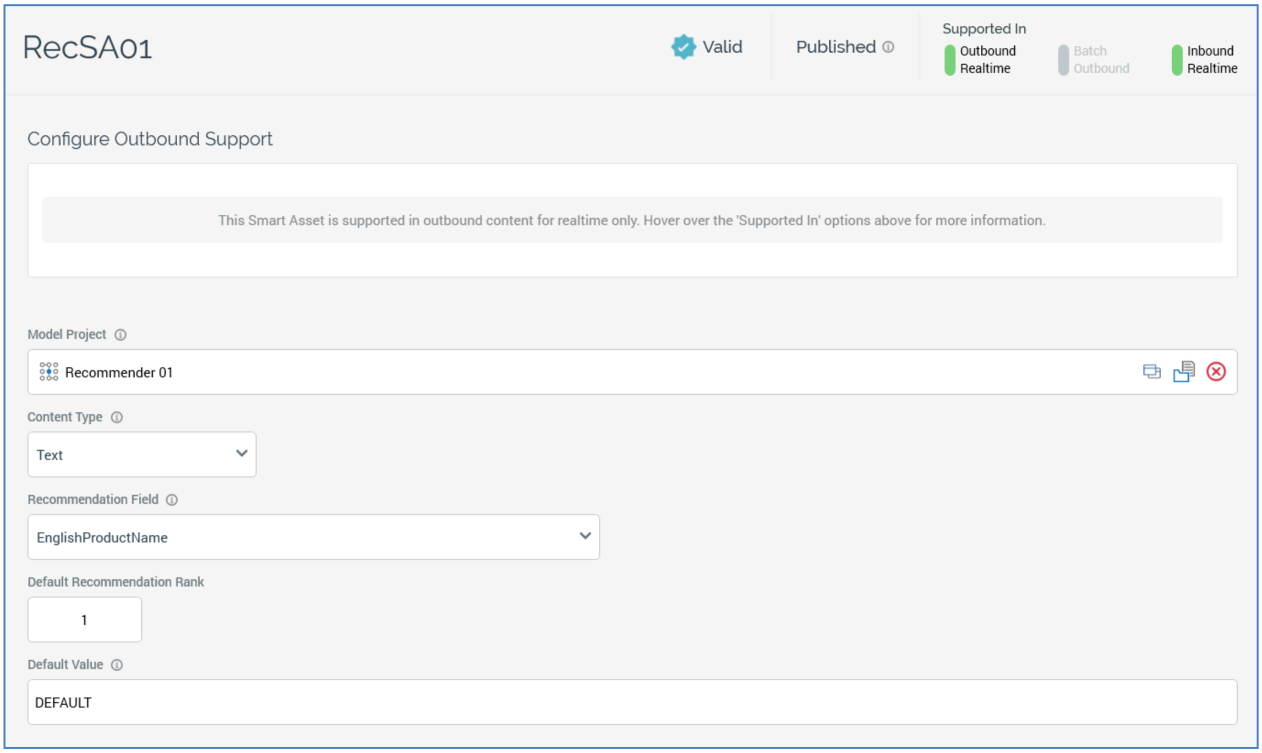
An Add Content button is displayed at the bottom of the content elements list:

Clicking it appends a new content element to the list. Its position indicator is set appropriately to ‘Content [n]’ (where [n] is the current highest position indicator + 1).

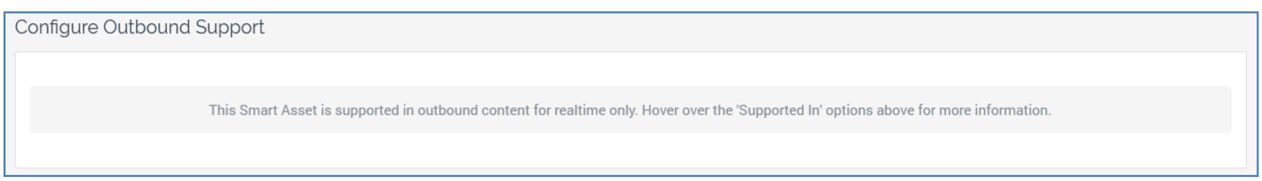
19.15 Content Panel – Recommendation Smart Asset

Recommendation smart assets use AML Recommender model outputs to personalize inbound and outbound realtime content. Recommender models provide a series of ranked recommendations based on a series of input data.

A recommendation smart asset's content panel contains the following:



Configure Outbound Support section: the following is displayed:



Note that recommendation assets are supported in Outbound Realtime and Inbound Realtime.

- Model Project: a mandatory Recommender model project, which supports Database table or Value list lookups. You can populate the property by browsing the file system for a Recommender model or using drag and drop. A Create New Item option is available. Note that only Recommender model projects are supported. For more information on model projects, please see the Model Project Designer documentation.
- Content Type: this dropdown allows you to define the type of lookup content that will be served by the smart asset. The following values are available:

- Text (the default)
- Image URL
- Link URL
- HTML
- JSON
- XML

Note that this property is output as ContentType in the payload returned from the RPI Realtime API, e.g.:

Image URL: ''

- Recommendation Field: allows you to select a field from the recommendation record output by the smart asset. The property is only displayed if the selected Model Project's Recommendation Lookup Type is set to 'Database table'. A mandatory dropdown field lists the fields sourced from the model project's Database Lookup table.
- Default Recommendation Rank: this integer property is set to 1 by default, and accepts a value range from 1 to 99. It allows you to specify the rank of the recommendation to be output by default by the asset. You can edit the embedded smart asset in the same context to change this default value.
- Default Value: this optional string property allows you to specify a default value to be returned by the smart asset when unable to return a recommendation lookup value. It accepts a maximum of 1000 characters.

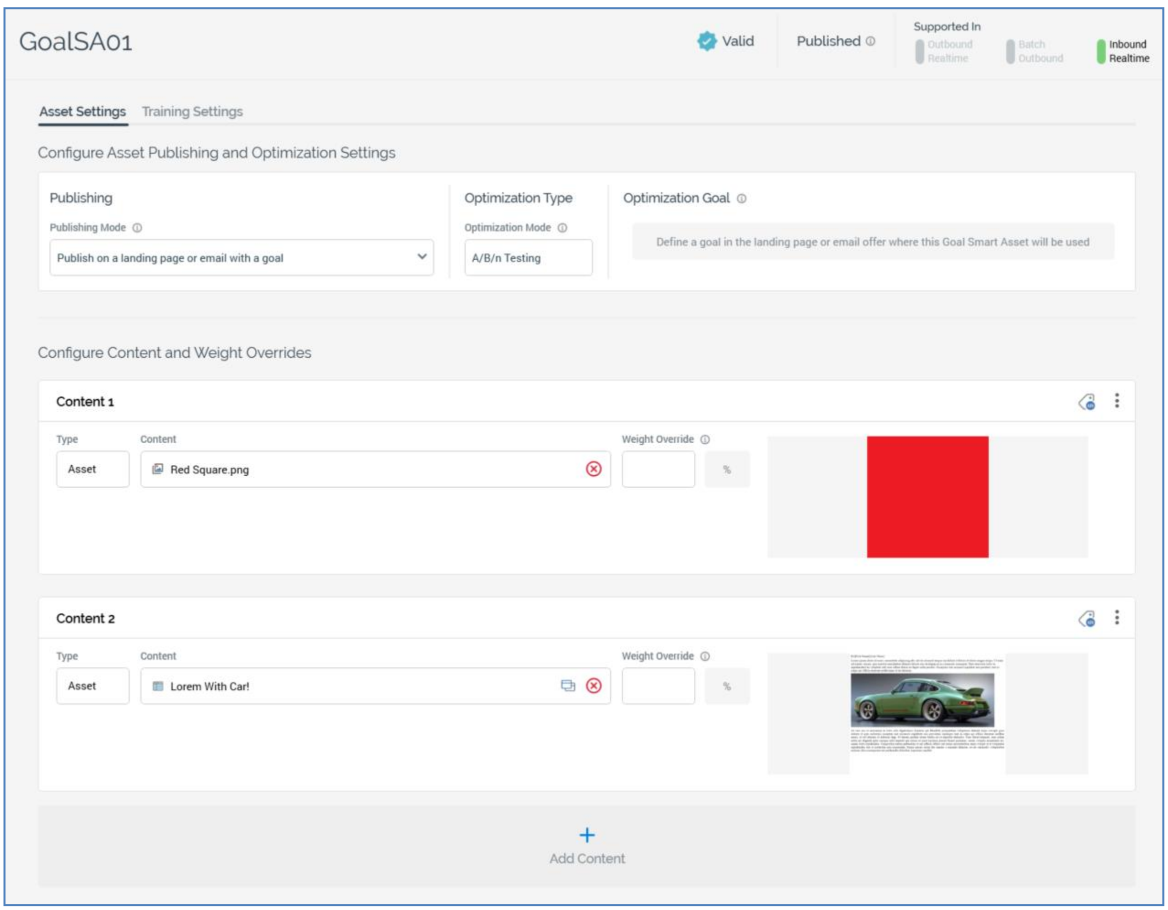
19.16 Content Panel – Goal Smart Asset

Goal smart assets operate in one of two modes – A/B/n Testing and Machine learning.

When operating in A/B/n testing mode, a goal smart asset initially serves random content from a series of content elements for the duration of a test phase. During this time, visitors are monitored to determine whether they attain a defined goal – e.g., clicking a link. At the end of the test phase, the results are analyzed by RPI to determine whether one of the content elements was statistically significant in influencing behavior regarding the defined goal. If so, the winning content element will henceforward be served by the goal smart asset. After the initial test phase's completion, a percentage of targets can continue to be tested at a defined interval. If another content element proves more successful than the winning asset, it becomes the winner, and is served thereafter.

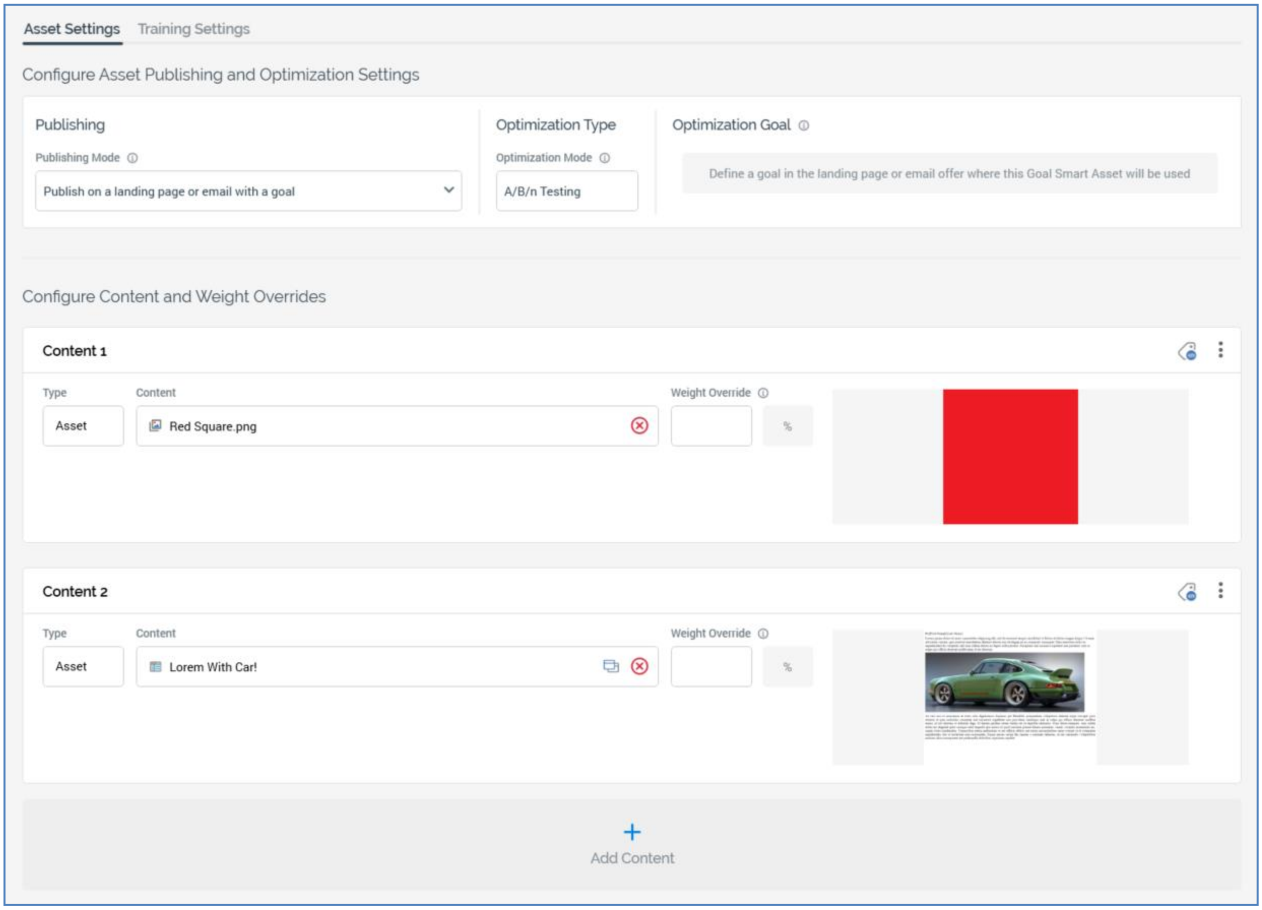
When operating in machine learning mode, the content element served to a visitor is based on an analysis of their visitor profile. A machine learning algorithm is used instead of the statistical approach employed when using A/B/n testing.

The goal smart asset content panel contains the following:



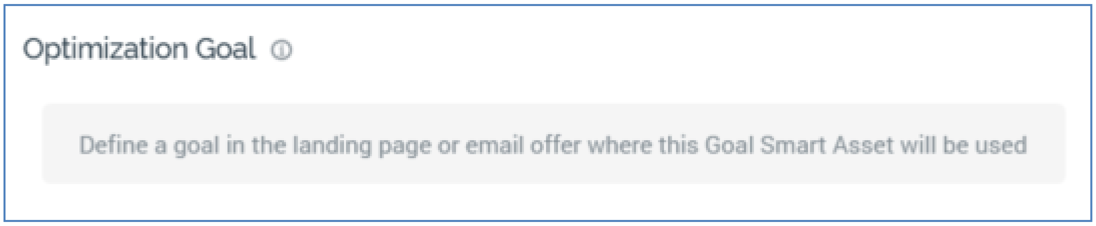
- Tabset: exposing Asset Settings and Training Settings tabs.

19.16.1 Asset Settings Tab

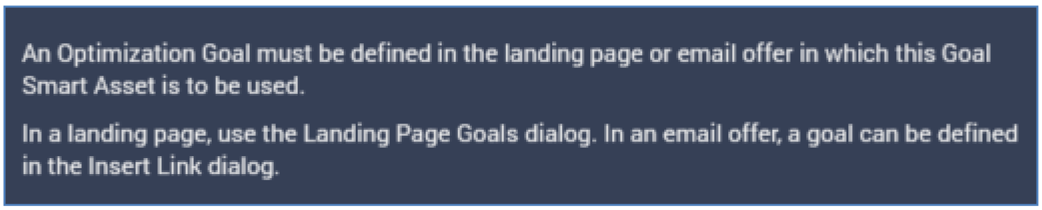


- Configure Asset Publishing and Optimization Settings section: containing the following:
  - Publishing section: exposing a single property:
    - Publishing Mode: this dropdown property allows you to specify how the asset will be published and associated with a goal. It exposes the following values:
      - Publish on a landing page or email with a goal (the default)
      - Publish for use on an external page with a goal
      - Publish for any page or email and for use with a separate remote goal
  - Optimization Type section: also exposing a single property:
    - Optimization Mode: this read-only property specifies the method by which the relative success of competing content elements is to be measured. it is set to the value ‘A/B/n Testing’.
  - Optimization Goal section: the contents of this section depend on the Publishing Mode property's value.

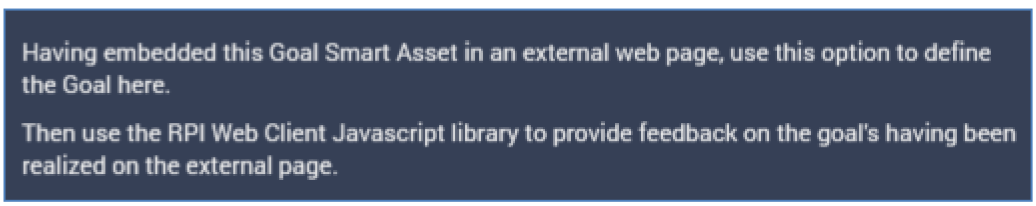
- If set to 'Publish on a landing page...', the section displays the following text:



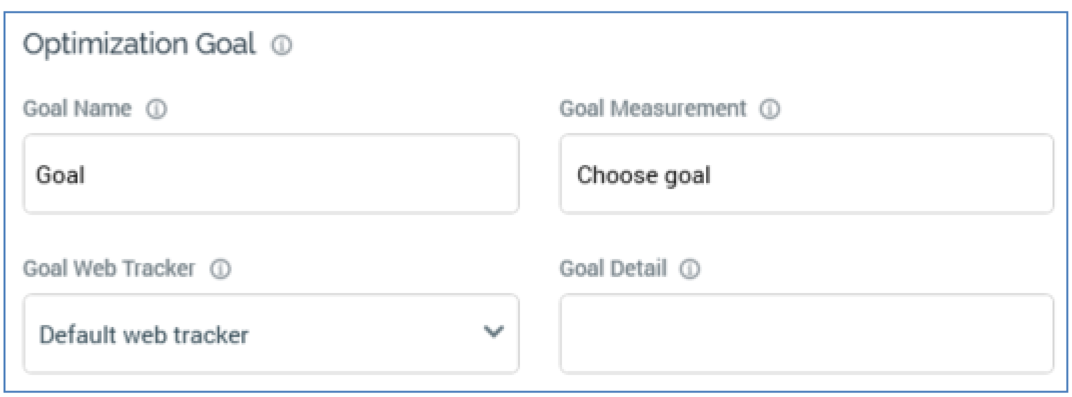
Additional information is shown in a tooltip shown when hovering over the information icon:



- If set to 'Publish for use on an external page...', the information tooltip displays the following:



The following properties are displayed:



- Goal Name: this property allows you to define the name of the goal. It is the name by which the goal will be referred to when the goal smart asset's performance is viewed in the Realtime Details report. Goal name is mandatory, can be a maximum of 100 characters, and defaults to the value 'Goal'. Note that Goal name is used as a parameter in the call to the setPageGoalDetails function in the scripts generated when clicking the Scripts toolbar button.

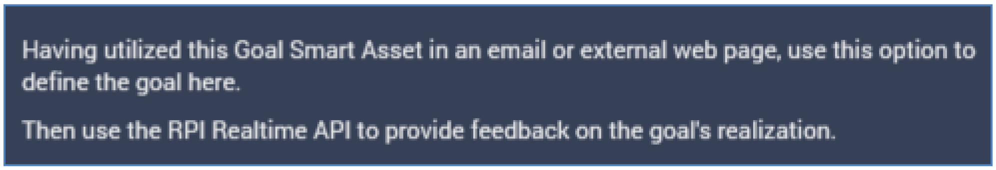
- Goal measurement: represents the goal by which the comparative success of competing content elements is to be measured. You can click it to choose a goal in the Choose Fulfillment State dialog. The standard goals supported by RPI are Link Click and Form Submission. For example, if Link Click is selected, it is the goal smart asset's responsibility to determine which of its content elements is most effective in causing site visitors to click a web page link, and, having done so, to serve that content to visitors thereafter.

  In addition to the standard goals described above, the Choose Fulfillment State dialog also lists any custom metrics made available by the selected web events adapter. Custom metrics can be generated by inserting JavaScript into a web page and are tracked by a web events adapter (for more information, please see the Web Adapters configuration interface and RPI Realtime documentation). Goal measurement is a mandatory property. Once populated, you can clear the value you selected.

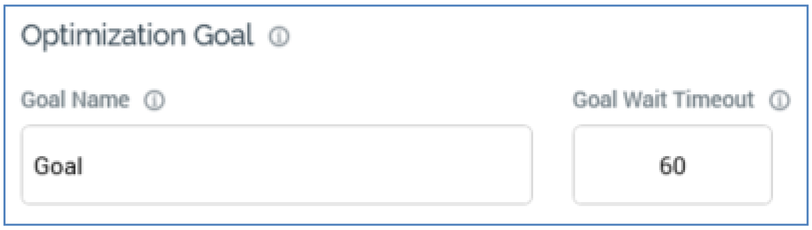
- Goal Web Tracker: you must select a web events adapter for a goal smart asset that is to be published separately. The web events adapter will be used to supply RPI with metrics pertaining to site visitors' attainment of the asset's goal. Only web events adapters are supported in this context, and the property is set automatically if the default web tracker is a web events adapter.

- Goal Detail: this property allows you to optionally qualify the selected Goal measurement through specification of all or part of a link address or a web form name. For example, if your web page contained a number of hyperlinks, one of which linked to 'http://redpointglobal.com', qualifying your Link Click goal with Goal detail 'redpoint' would ensure that the asset's goal was only achieved on the Redpoint link being clicked, and not the others.

- If Publishing Mode is set to 'Publish for use on any page...', the information tooltip displays the following:



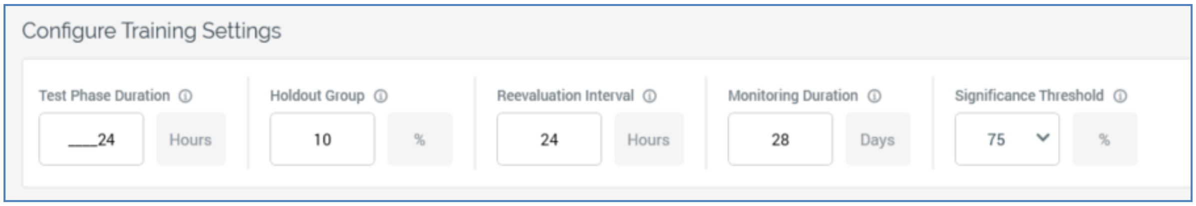
The following properties are displayed:



- Goal Name: as above; the value provided must match that of the name of the goal event raised on a remote web page.
- Goal wait timeout: this integer property represents the maximum time, in minutes, from the point at which the remote page's content is rendered, within which the goal may be registered. It is mandatory when displayed. It accepts a minimum value of 1, a maximum value of 999,999, and defaults to 60.

19.16.2 Training Settings Tab

- Configure Training Settings section: containing the following:



  - Test Phase Duration (hours): this property represents the initial number of hours during which random content elements will be served, and their relative effectiveness measured. An integer, the property can have a minimum value of 0 and a maximum value of 999,999. It defaults to 24.
  - Holdout Group (%): this property represents the proportion of visitors who will continue to be tested after the testing phase is complete. An integer, the property can have a minimum value 0 and a maximum value of 100. It defaults to 10.
  - Reevaluation Interval (hours): this property represents the cyclical period, following the test phase, after which results data will be reevaluated to determine whether the winning content element has changed. An integer, the property can have a minimum value of 0 and a maximum value of 999,999,999. It defaults to 24.
  - Monitoring Duration (Days): this property represents the number of days the goal smart asset will be monitored and evaluated by the Goal smart asset Monitor system task. An integer, the property can have a minimum value of 1 and a maximum value of 999. It defaults to 28.
  - Significance Threshold: the level of certainty that defines that the winning content element has a greater conversion rate than other available assets. The higher the significance level, the more certain RedPoint Interaction must be that the winning content element is more effective in persuading visitors to attain the optimization goal. Significance threshold defaults to 75%.

- Configure Content and Weight Overrides section: this section is used to define a goal smart asset's content elements. The following properties are displayed (and, unless otherwise indicated, are documented in the Configure Content and Applicability Section, elsewhere in this documentation:
  - Content [n]
  - Toolbar
  - Type
  - Content
  - Weight Override (%): this property allows you to weight certain content elements so that they are rendered more or less frequently during a goal smart asset's test phase. Content

elements with higher weight overrides are rendered more frequently...for example, a content element with a weight override of 50% will be rendered approximately twice as often as one with a weight override of 25%. Weight override is an optional decimal property, which defaults to a blank value, and which accepts a range of values from 0.01 to 99.99. Note that the sum of all supplied Weight overrides must be less than or equal to 100.

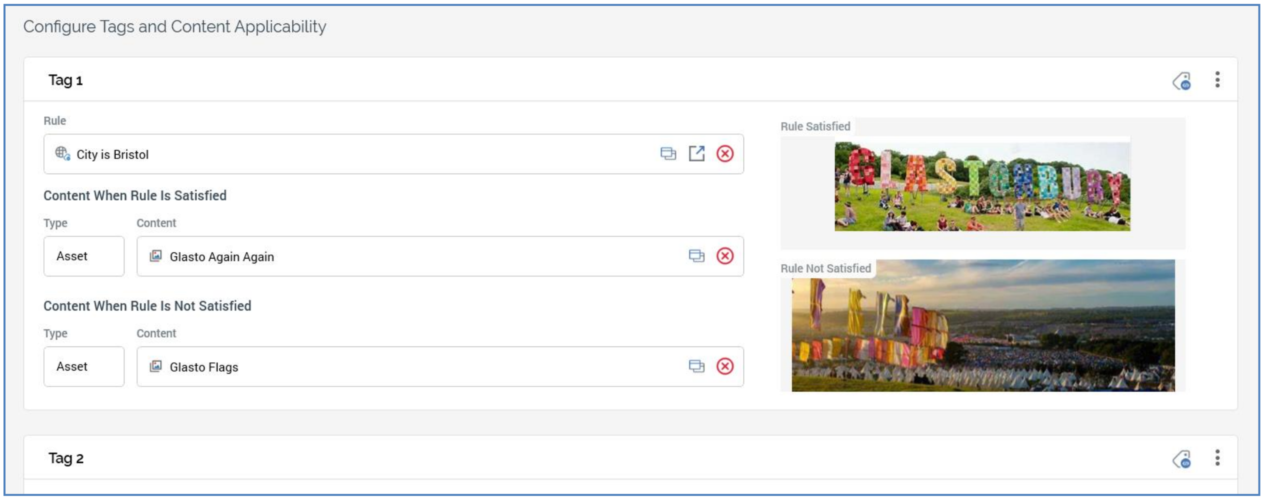
Note that, during the training phase, any content elements with blank weight values are weighted evenly; for example, if a goal smart asset contains three content elements, one with a weight override of 50% and two with blank weight overrides, during the asset's training phase the 50% content element will be rendered approximately twice as often as either blank content element (each of which will be rendered at approximately the same frequency). Note also that weight overrides apply irrespective of the asset's Optimization mode.

- Preview

An Add Content button is provided at the bottom of the list.

19.17 Content Panel – Tag Smart Asset

Tag smart assets allow you to define a series of ‘tags’, for each of which separate content will be returned if the tag’s rule is or is not satisfied.



Tag assets are supported in Inbound Realtime only.

A tag smart asset's content panel contains a Configure Tags and Content Applicability section, which lists all tags configured within the smart asset. Two tags ('Tag 1' and 'Tag 2') are provided by default.

The following are displayed at a tag:

- Tag Name: this mandatory property must be unique within the tag smart asset and can be a maximum length of 100 characters.
- Manage Metadata for this Tag: this button allows you to manage file metadata at the tag level. Clicking it allows you to update file metadata values in the Content Metadata Editor.
- Actions: this button provides access to the following options:
    - Move up
    - Mode down
    - Remove: not protected by 'Are You Sure?'
- Rule: you must associate each tag with a selection rule or realtime decision.
- Content When Rule Is Satisfied: you can define asset or inline content to be served for the tag when its Rule is satisfied.
- Content When Rule Is Not Satisfied: you can also define asset or inline content to be served for the tag when its Rule is not satisfied.

- Preview: separate previews are shown for the content to be served when the tag's Rule is satisfied or not satisfied.

An Add Tag button is provided at the bottom of the list of tags. Clicking it adds a new tag to the bottom of the list. Its default name is 'Tag n' (where 'n' is the existing highest tag number +1).

On invocation of a tag asset via the RPI Realtime API, ResultContent is returned as name/value pairs, e.g.:

```
"ResultContent": {
"Tag 1": "A",
"Tag 2": "C"
}
```

19.18 Content Panel – Table Smart Asset

Table smart assets facilitate the output of series of repeated data entities in RPI inbound or outbound content.

Three types of table smart asset are available in RPI:

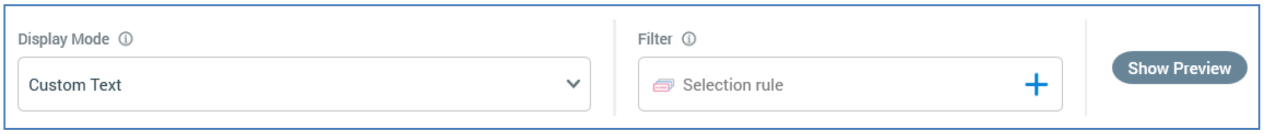
- The Predefined table smart asset is used to display two-dimensional tabular data. Typically, a table smart asset might be rendered in email content – e.g. to display transactional information in a customer statement.
- The Custom HTML table smart asset provides complete control over an HTML-based table smart asset's:
    - Header
    - Content – including the number of columns across which transactional entities will be displayed.
    - Footer
- The Custom Text table smart asset provides for additional control over a text table's header, content and footer.

Table smart assets can be used in the following Batch Outbound contexts:

- Text asset
- HTML asset
- Email offer
    - HTML content
    - Text content
- SMS offer

Table smart assets can also be used in Inbound Realtime.

All table smart asset types' content panels contain a Configure Table Smart Asset Settings section, within which the following are always shown:



- Display Mode: this dropdown field controls the type of table content that will be served by the smart asset. Three options (as described above) are available:
  - Predefined (supported at HTML and Text)
  - Custom HTML
  - Custom Text

  Each Display Mode is described separately.

- Filter: optional provision of a standard or basic selection rule at this property allows you to limit the data to be displayed within the table smart asset. For example, if displaying a list of product recommendations within an email offer, you could apply a filter to limit the list to only products with a list price of more than $100.00.

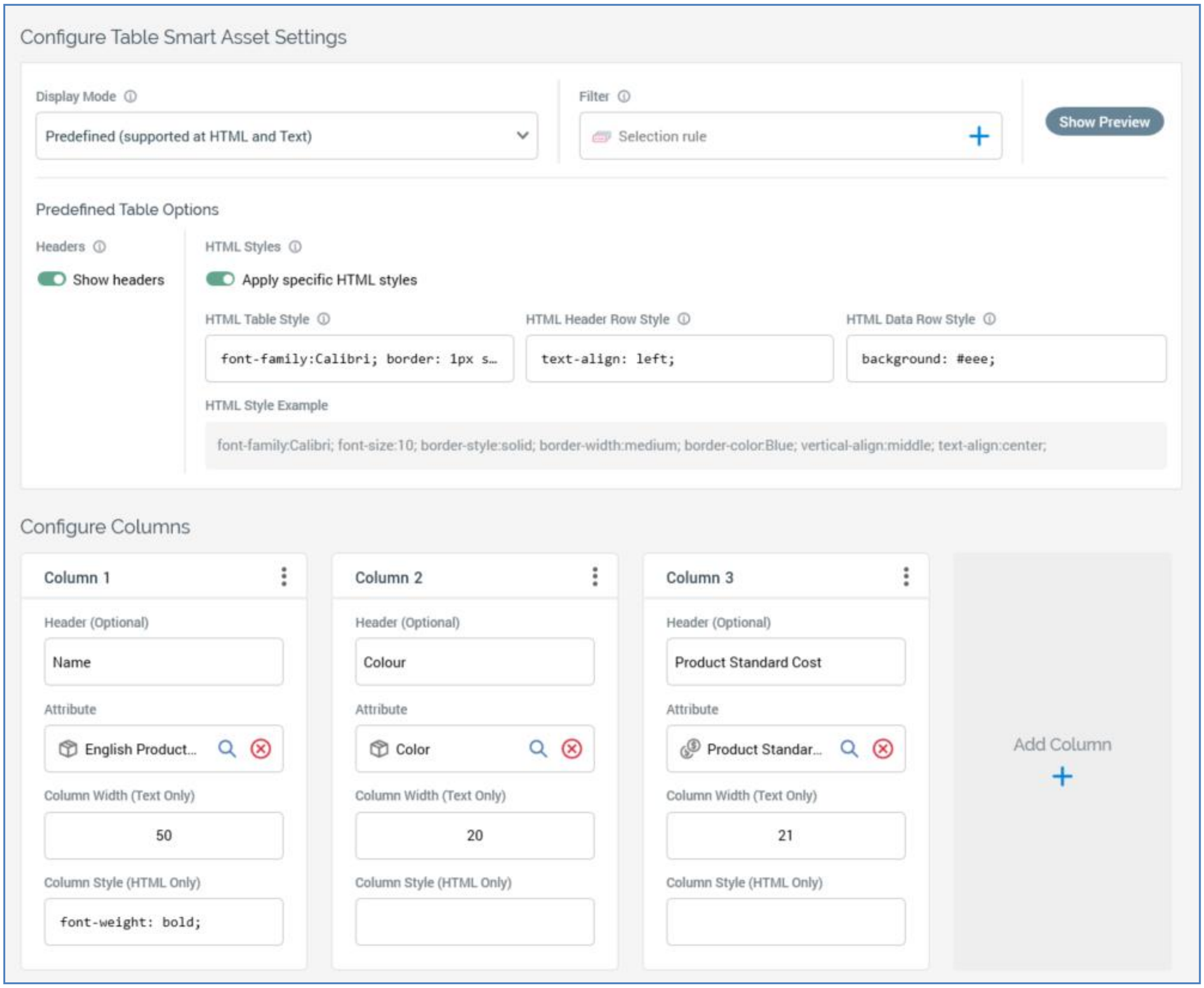
  Note that NoSQL selection rules are not supported. Filter is not shown when running in NoSQL mode.

  You can populate the property using drag and drop, or by browsing for an existing selection rule. You can also initiate the creation of a new selection rule. Once populated, you can open the latest version of the rule in the Rule Designer; you can also invoke Clear to remove the Filter.

- Show Preview: clicking this button displays a preview of the table smart asset in the Table Smart Asset Preview dialog (covered separately).

19.18.1 Predefined Table Smart Asset

When the table smart asset's Display mode is set to Predefined, the table smart asset content panel contains the following:



Predefined Table Options section, containing the following:

- Headers: this toggle control determines whether headers defined for each column will be shown. Its default setting is On.
- HTML Styles: this section allows you to apply specific HTML styles to the table when it is used in HTML content. It contains the following:
  - Apply specific HTML styles: this toggle control determines whether HTML styles will be applied. Its default setting is Off.

  The following properties are shown when Apply specific HTML styles is switched on:

- HTML Table Style: defines the style to be applied to the <table> HTML element.
- HTML Header Row Style: defines the style to be applied to the <th> HTML element.
- HTML Data Row Style: defines the style to be applied to the <td> HTML element.
- HTML Style Example: an example style is provided

Configure Columns section, which allows you to specify the columns that will be output within the table. It contains the following:

- Add Column: this button is shown to the right of any existing columns. Invocation adds a new column to the right of the same.

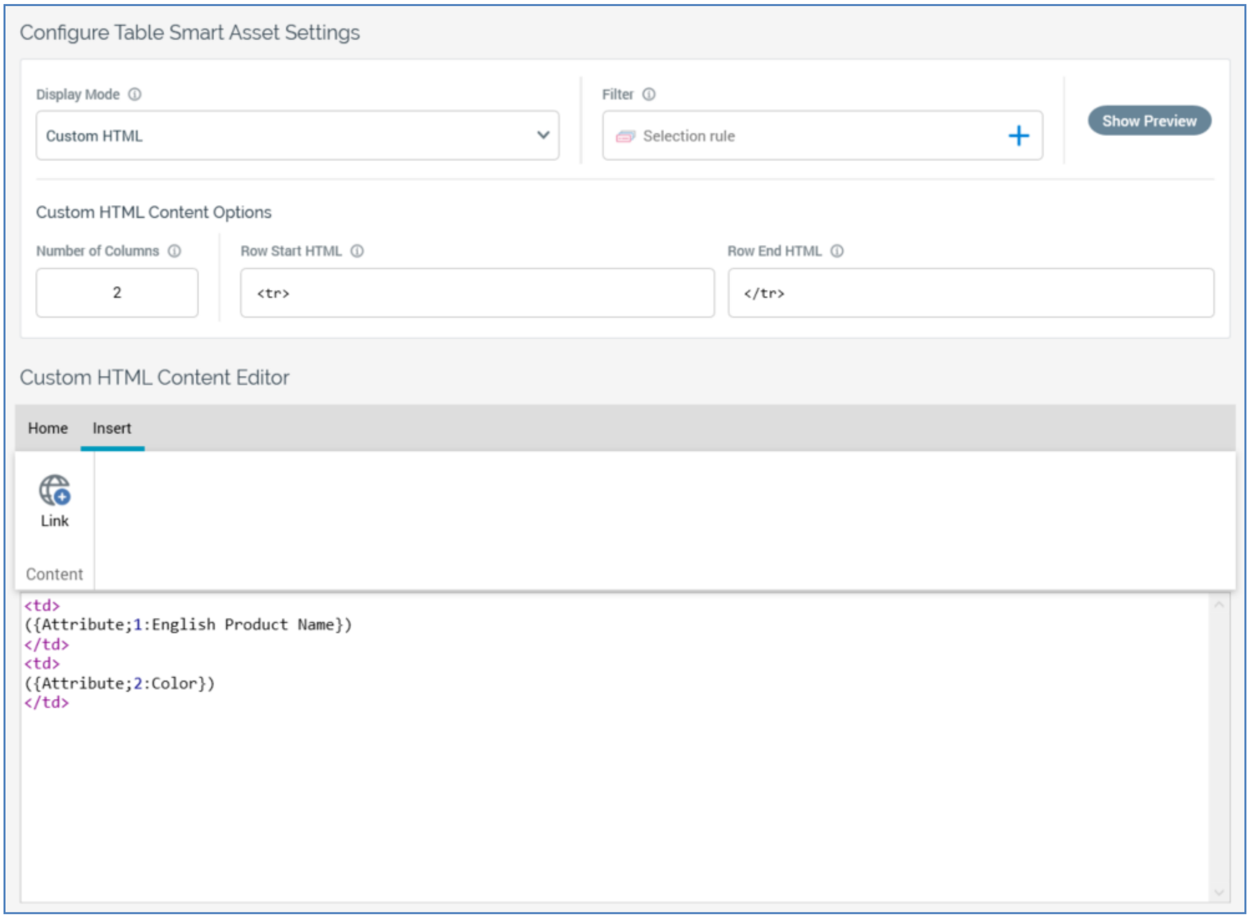
The following are displayed at a column:

- Column [n]: columns are numbered automatically from left to right
- Actions: this button provides access to the following options:
- Move left
- Move right
- Remove
- Header (Optional): you can optionally provide a header value to be displayed at the top of the column.
- Attribute: this mandatory property defines the data that will be output within a column. You can select an attribute using drag and drop or Browse. Once populated, you can view the attribute's information in the File Information Dialog. You can also clear the attribute. Note that you cannot populate Attribute with an Exists in table or an anonymous auxiliary database attribute.
- Column Width (Text Only): the number of characters displayed for a fixed-width column when used in text content. An integer, Column Width is set in accordance with the length of attribute with which configured (only when a column is added using drag and drop).
- Column Style (HTML Only): an optional text field, in which you can apply an HTML style to the column.

  Note that it is mandatory to supply at least one column within a table smart asset.

19.18.2 Custom HTML Table Smart Asset

When the table smart asset's Display mode is set to Custom HTML, the table smart asset content panel contains the following:



Custom HTML Content Options: this section contains the following:

- Number of Columns: this property defines the number of columns across which transactional entities are to be shown before a new row is started. Each 'Content' element, as defined using the content editor, represents a single transactional entity. For example, a table smart asset is intended to list the products a customer has purchased. The asset contains three columns. Customer A has purchased five products. When the custom table smart asset is rendered in an email received by Customer A, the first row therein displays three products across the page. The next row shows two products.

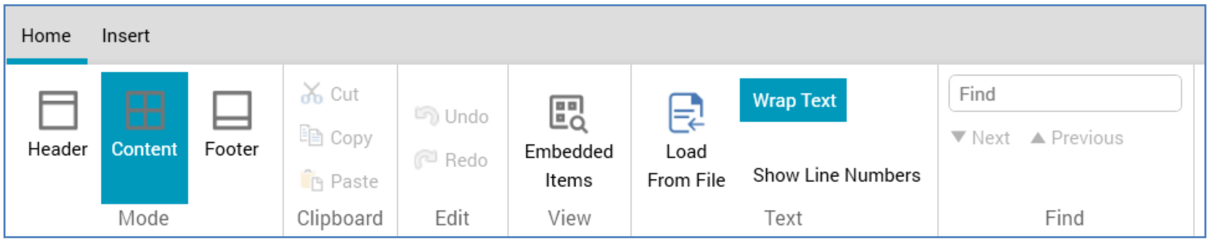
  A mandatory integer field, Number of columns can be a minimum value of 1 and a maximum value of 999.

- Row start HTML: this optional property can be used to apply a style at table row level. It is set by default to the value '<tr>'.

- Row end HTML: this optional property can be used in conjunction with Row start HTML to apply a style at table row level. It is set by default to the value '</tr>'.

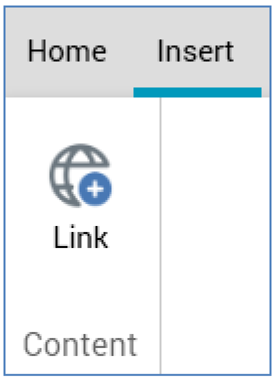
Custom HTML Content Editor: an RPI content editor is shown at the bottom of the content panel. Its toolbar exposes the following:

- Home tab: containing Mode, Clipboard, Edit, View, Text and Find sections.



  - Mode section: containing the following toggle buttons, which facilitate the selection of the context within which content may be entered:
    - Header: this section enables you to define the table's header row. It is set by default to `'<br>Header<br><table>'`. Provision of a Header is optional.
    - Content: this section is selected by default. It allows you to define the content used to represent a transactional entity (e.g. a customer's purchased products). It is set by default to '<td>Cell Content</td>'. Provision of Content is mandatory.
    - Footer: this section enables you to define the table's footer row. It is set by default to `'</table><br>Footer'`. Provision of a Footer is optional.
  - Clipboard section: exposing the following:
    - Cut
    - Copy
    - Paste
  - Edit section: exposing the following:
    - Undo
    - Redo
  - View section: exposing the following:
    - Embedded Items
  - Text section: exposing the following:
    - Load From File
    - Wrap Text

- Show Line Numbers
  - Find section: exposing the following:
    - Find
    - Next
    - Previous
- Insert tab: containing a single Content section.



  - Content section: exposing a single option:
    - Link

For more information on the options listed above, please see the RPI Content Editor documentation.

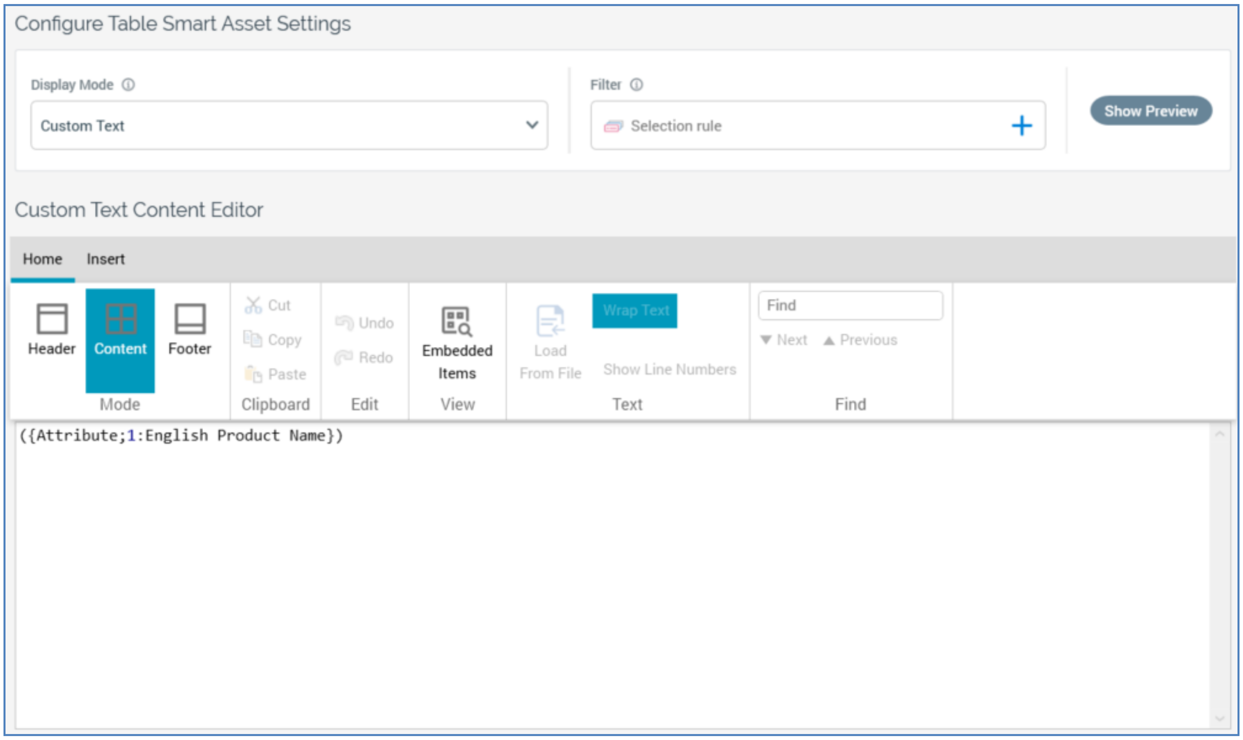
You can enter content as required in the editor shown below the toolbar. The context in which content is added is defined by the selected Mode toggle button.

You can include the following in custom HTML table smart asset content:

- Attribute (other than or an anonymous auxiliary database attributes)
- HTML asset
- Image asset
- Smart assets in which Batch Outbound supported (including nested)

19.18.3 Custom Text Table Smart Asset

When the table smart asset's Display mode is set to Custom Text, the table smart asset content panel contains the following:

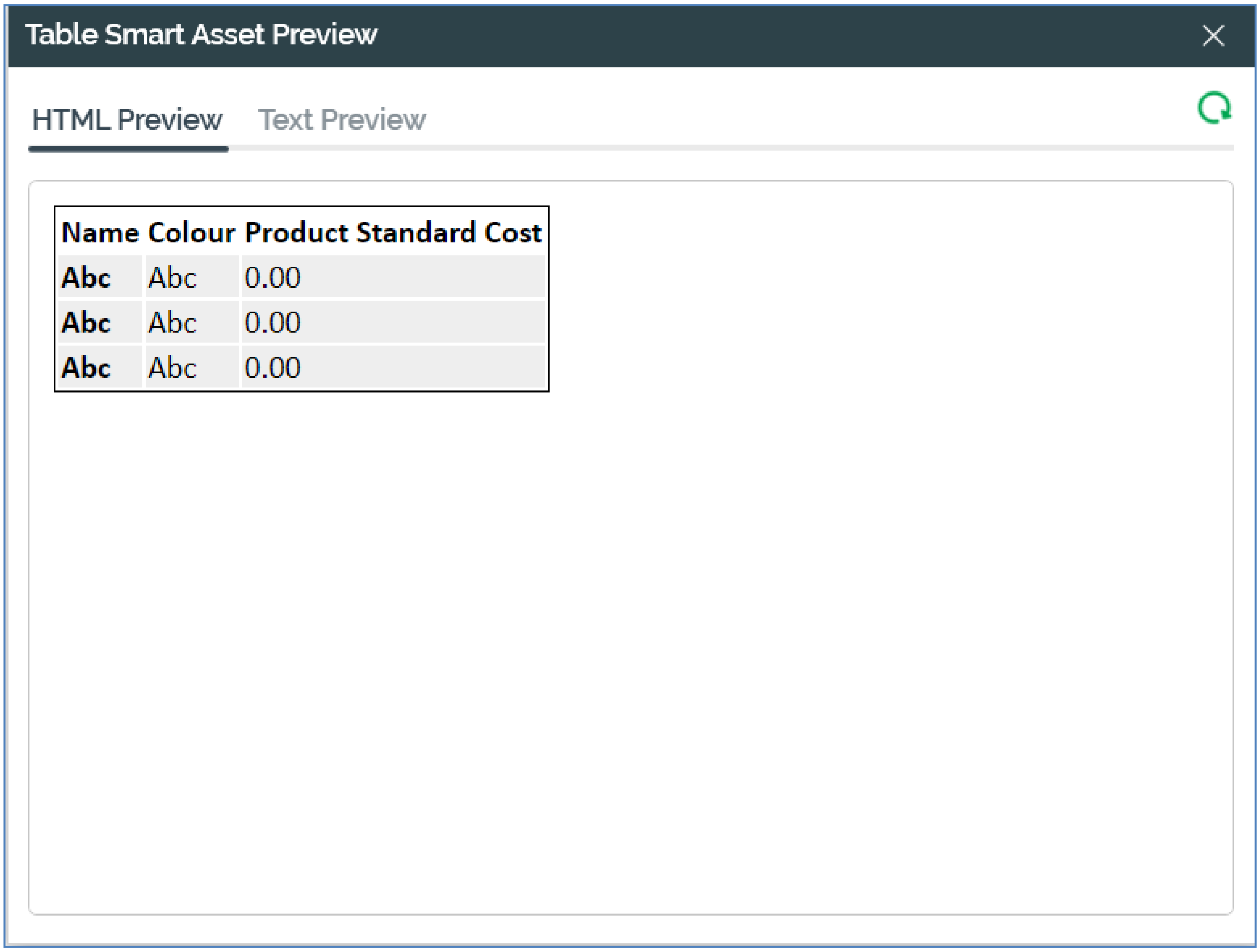


In addition to the list documented in the Custom (HTML Based) Content Editor section, you cannot include the following asset types in custom text table smart asset content:

- HTML
- Image
- Smart assets with non-text content

19.18.4 Table Smart Asset Preview Dialog

When displayed for a Predefined table smart asset, the modeless Table Smart Asset Preview dialog contains HTML and Text Preview tabs:



Three rows are displayed. A Refresh button is provided.

The HTML Preview and Text Preview tab only are provided when previewing a Custom HTML and Custom Text table smart asset, respectively.

19.18.5 Table Smart Asset – Miscellanea

The following apply at table smart assets:

- You can include collection parameter attributes in table smart asset content. When you do so, the number of elements must be the same across all attributes.
- The use of Recommender model project attributes in a table smart asset is supported. When included, all ranked attribute values are returned in the table.
- When used in an Inbound Realtime context, you can include attributes sourced from a cached attribute list within a table smart asset.

19.19 Content Panel – Advanced Smart Asset

Advanced Smart Assets differ from other smart assets in two main regards:

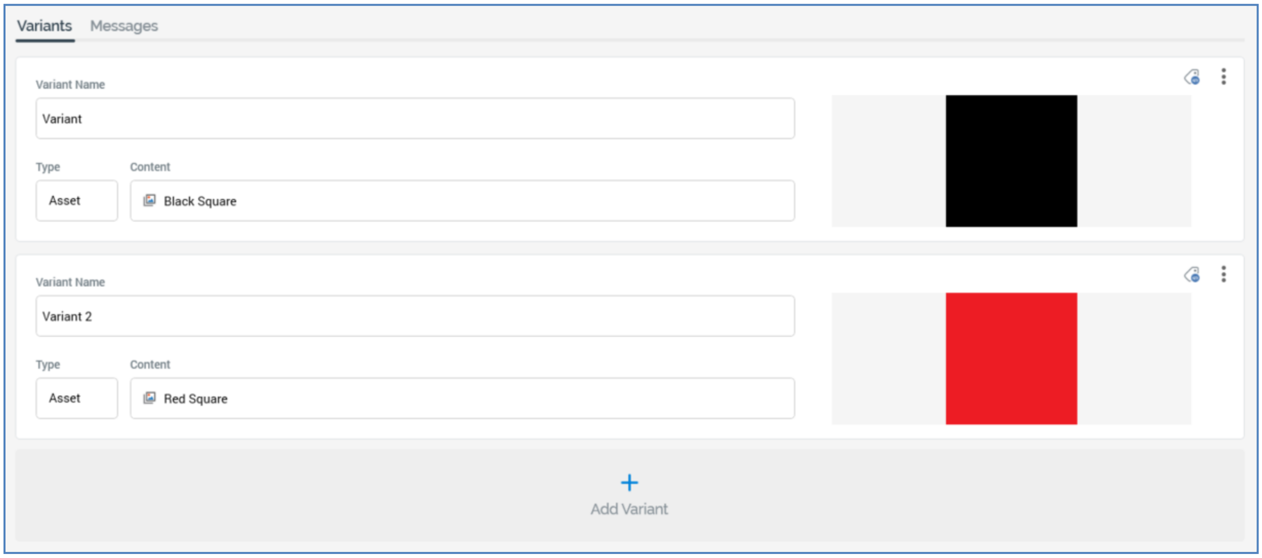
- They allow for the definition of a series of 'variants'. These typically might represent elements within a web page (such as a hero image or banner). Default content can be defined for each variant. 'Messages' can then be created, which allow for the overriding of each variant when a message is determined to be appropriate to be served.
- They allow for the definition of qualification rules at messages. These can be used to determine whether a specific message is appropriate to be served, in accordance with a recipient or visitor's being targeted by an RPI rule, or having previously received messages.

An advanced smart asset's content panel contains the following:

- Configure Outbound Support section: please see the Rule smart asset documentation. Note that advanced smart assets are never supported in Batch Outbound mode.
- Tabset: exposing Variants and Messages tabs.

19.19.1 Variants Tab

This tab contains a list of the Variants supported by the advanced smart asset.



Variants typically might represent elements within a web page (such as a hero image or banner).

One variant is present in the list by default. At least one variant must be defined. The following are displayed at each variant in the list. Note that properties not documented below are covered in the Configure Content and Applicability Section (see elsewhere in the Smart Asset documentation).

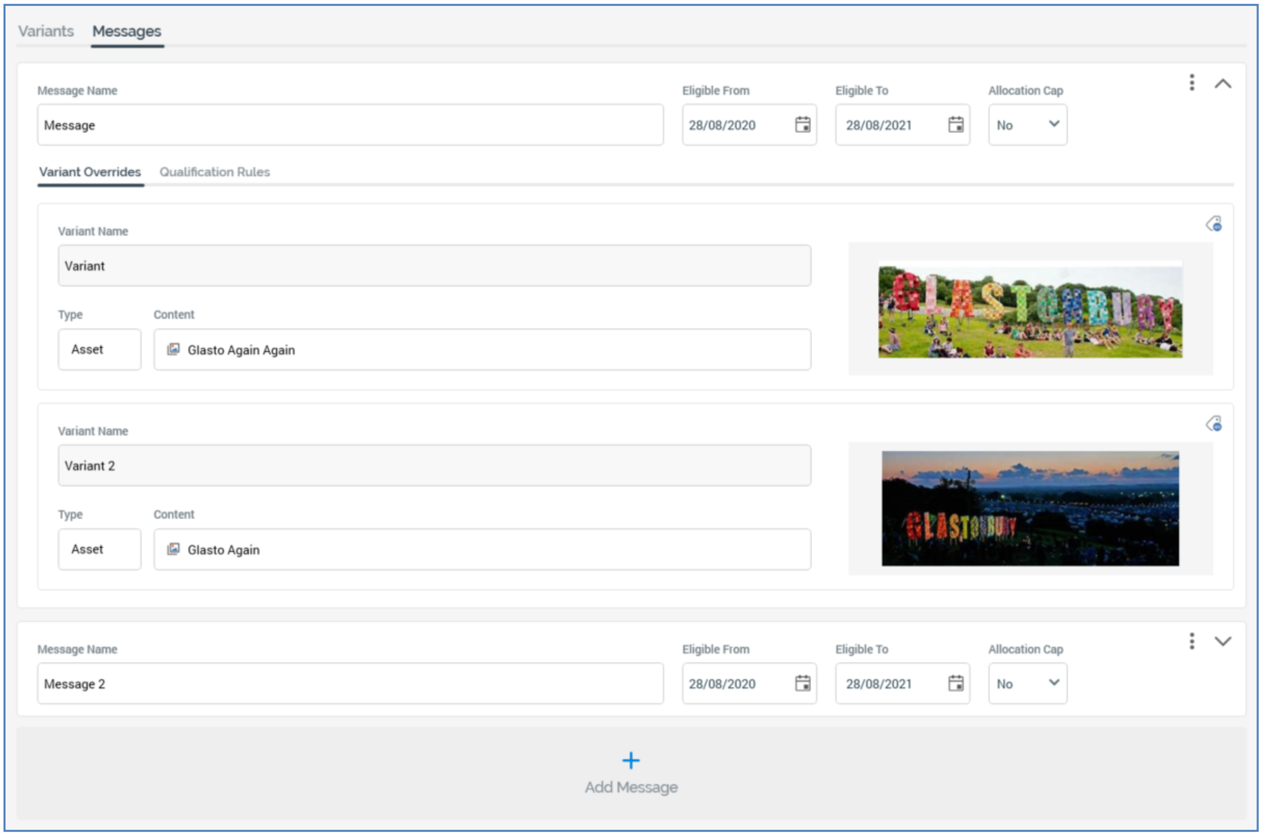
- Toolbar: exposing the following:
  - Manage Metadata for this Variant: clicking this button displays the '[Smart Asset Name] - Variant Metadata Editor' dialog, allowing you specify file metadata values and a description at a specific variant. More information on file metadata can be found in the Framework documentation.
  - Options: this menu provides access to the following options:
    - Move up
    - Move down
    - Remove
- Variant Name: provision of a name for the variant is mandatory. The maximum supported length is 100 characters, and the name provided must be unique within the current asset.
- Type
- Content

- Preview

An Add Variant button is displayed at the bottom of the variants list. Clicking it appends a new variant to the list. Its default Variant Name is 'Variant' (this can be made unique through the appending of an incrementing integer).

19.19.2 Messages Tab

This tab lists all of the messages provided by the advanced smart asset.



Messages allow for the overriding of default variant content.

One message is present in the list by default. At least one message must be defined. The following are displayed at each message in the list.

- Toolbar: exposing the following:
  - Options: this menu provides access to the following options:
    - Move up
    - Move down
    - Remove
- Expand/Roll Up: this toggle button controls whether the Variant Overrides/Qualification Rules tabset is displayed.
- Message Name: provision of a name for the message is mandatory. The maximum supported length is 100 characters, and the name provided must be unique within the current asset.

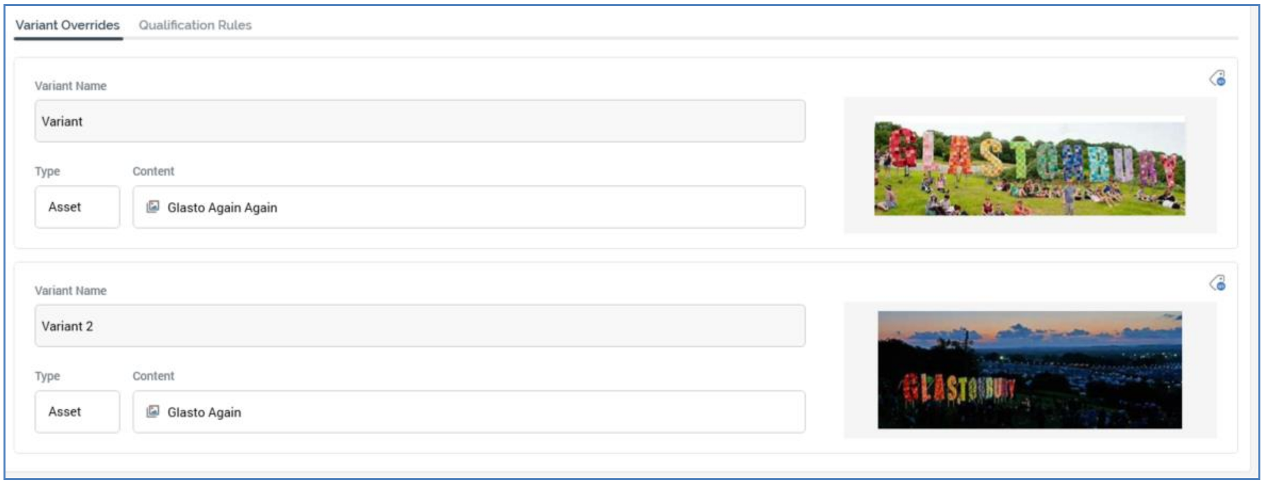
- Eligible From: this property allows you to specify the date from which the message will be available to be served to recipients or visitors. It defaults to today.
- Eligible To: this property allows you to specify the date up to which the message will be available to be served to recipients or visitors. It defaults to today + 1 year.
- Allocation Cap: this dropdown property exposes values No (the default) and Yes. It allows you to specify that the message is only able to be served a limited number of times.
- Cap Value: this integer property is only shown if Allocation Cap is set to 'Yes', and is mandatory when displayed. It represents the maximum number of times that a message can be served. It defaults to 100, and a range of values from 1 to 999,999 is supported.
- Tabset: exposing Variant Overrides and Qualification Rules tabs (each covered separately).

An Add Message button is displayed at the bottom of the messages list. Clicking it appends a new message to the list. Its default Variant Name is 'Message' (this can be made unique through the appending of an incrementing integer).

Note that, if an advanced smart asset is configured such that it is not possible that a message could ever be served, due to preceding messages containing no qualification rules, no allocation caps or the same eligibility dates, the asset will be invalid.

19.19.3 Variant Overrides Tab

This tab is used to specify alternative variant content to be served in the event of a message being deemed appropriate for rendering to a recipient or visitor.



Each variant defined in Variants tab is listed. If no variants have been configured, the following message is shown:

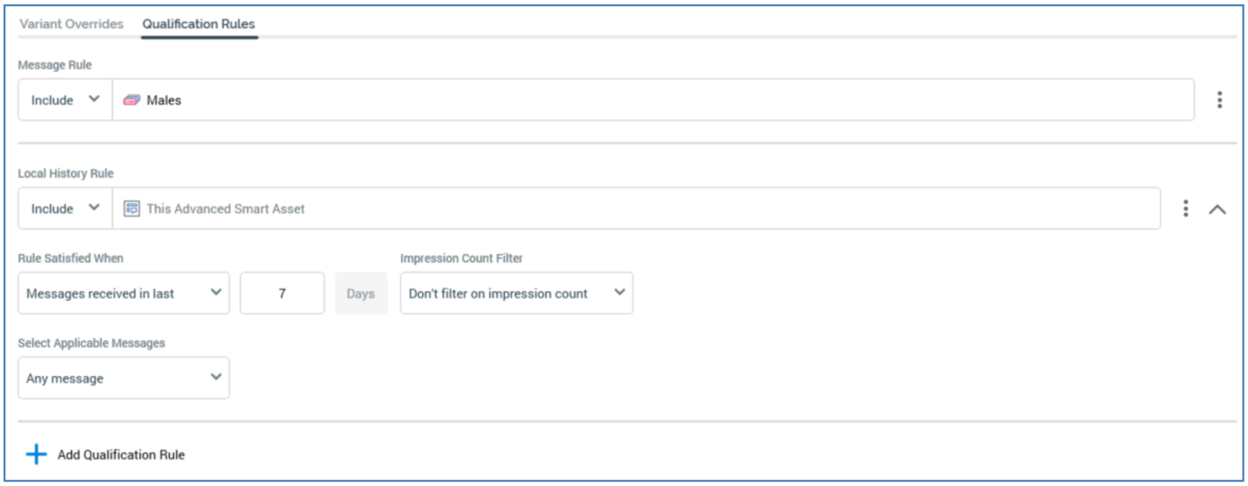
> No Variants to override have been added to this Advanced Smart Asset. Add at least one Variant by clicking on the 'Variant' tab above, and then clicking 'Add Variant'.

The following is displayed at each variant override. Note that properties not documented below are covered in the Configure Content and Applicability Section (see elsewhere in the Smart Asset documentation).

- Manage Metadata for this Variant Override: clicking this button displays the '[Message Name] - Variant Override Metadata Editor' dialog, allowing you specify file metadata values and a description at a specific variant override. More information on file metadata can be found in the Framework documentation.
- Variant Name: read-only.
- Type
- Content: enables you to override the variant's default content with specific content to be supplied when this message is served.
- Preview

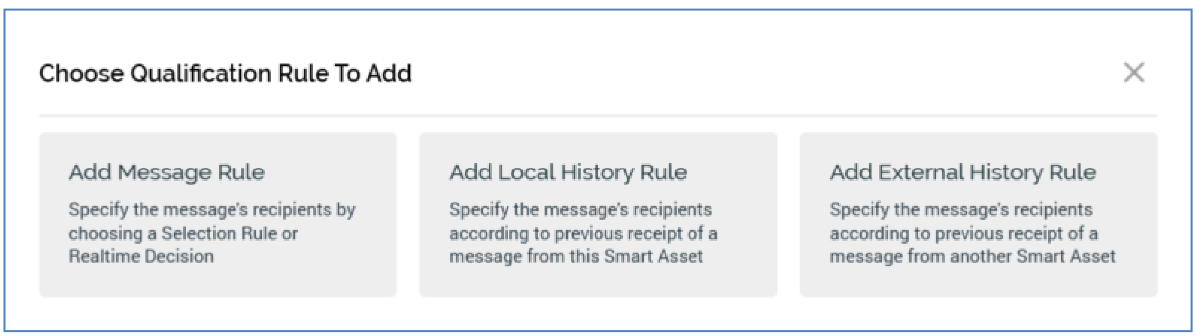
19.19.4 Qualification Rules Tab

Qualification rules are used to determine whether a specific message is appropriate to be served, in accordance with a recipient or visitor's being targeted by an RPI rule, or having previously received messages.



The tab contains the following:

- Add Qualification Rule: clicking this button displays the Choose Qualification Rule to Add dialog:



  Three options are presented:

  - Add Message Rule: limits the message's audience through a Selection Rule or Realtime Decision. Only individuals targeted by the selected rule will qualify to receive the message.
  - Add Local History Rule: limits the message's audience according to previous receipt (or non-receipt) of a message from the current advanced smart asset. For example, you may only want a message to apply to a visitor who has not previously been served a message from the asset.
  - Add External History Rule: the message's audience according to previous receipt (or non-receipt) of a message from another advanced smart asset.

You can select an option to add a qualification rule of the appropriate type to the message. You can also close the dialog using the button provided (clicking off the dialog has the same effect).

- Qualification rules list: all qualification rules defined for the current message are listed. The following sections describe the properties at each qualification rule type.

19.19.5 Message Rule

A Message Rule qualification rule exposes the following properties:

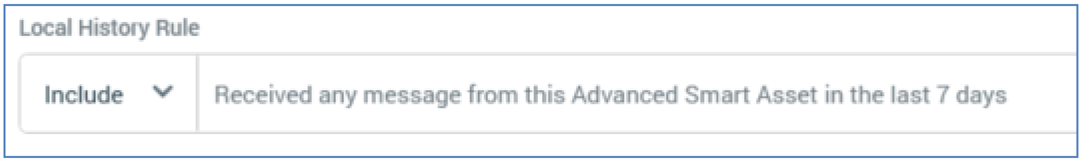
- Include/Exclude: this dropdown property, which defaults to 'Include', allows you specify whether potential recipients should qualify to receive or be disqualified from receiving the message on the basis of being targeted by the rule's selection rule or realtime decision.
- Selection Rule/Realtime Decision: it is mandatory to associate a Message Rule with a selection rule or realtime decision file. You can populate the property using browse or drag and drop. You can also initiate the creation of a new standard selection rule. Having selected a rule, standard inline and context menu file property features are available at the same. You can also clear your selection.
- Options: exposing the following:
    - Remove
    - Move Up
    - Move Down

19.19.6 Local History Rule

A Local History Rule qualification rule exposes the following properties, which are all displayed when the rule is expanded.

- Include/Exclude: as message rule.
- 'This Advanced Smart Asset'
- Options
  - Move up
  - Move down
  - Remove
- Expand/Roll Up
- Rule Satisfied When: two properties are displayed here
  - Messages [received/not received] in the last: this dropdown property defines as to whether the qualification rule will be satisfied when appropriate messages from the current rule have either been, or have not been, received. The default setting is 'received'.
  - [Number of days]: this integer property accompanies 'Messages [not] received...'. It defaults to 7, and accepts a range of values between 1 and 999.
- Impression Count Filter: this dropdown property allows you to specify whether the rule is to further qualify potential message recipients on the basis of the number of impressions of appropriate messages from the current rule with which they have been served. The dropdown exposes values 'Don't filter on impression count' (the default) and 'Filter on impression count'.
- Where Impression Count: these properties are shown when Impression Count Filter is set to 'Filter on impression count':
  - [Operator]: defaulting to 'Is more than'.
  - [Value]: defaulting to 0, and accepting a value range between 0 and 999,999.
- Select Applicable Messages: this property allows you to specify which messages from the current advanced smart asset are to be used when evaluating the local history rule. A dropdown property, the values 'Any messages' (the default) and 'Specific messages' are available for selection.
- Choose Specific Messages: this property is shown when Select Applicable Messages is set to 'Specific messages'. It lists all messages in the current advanced smart asset. Each is accompanied by a checkbox. Selection of at least one message is mandatory. Note that the current message can be selected in this context.

When a local history rule is rolled up, it appears as per the following example:



19.19.7 External History Rule

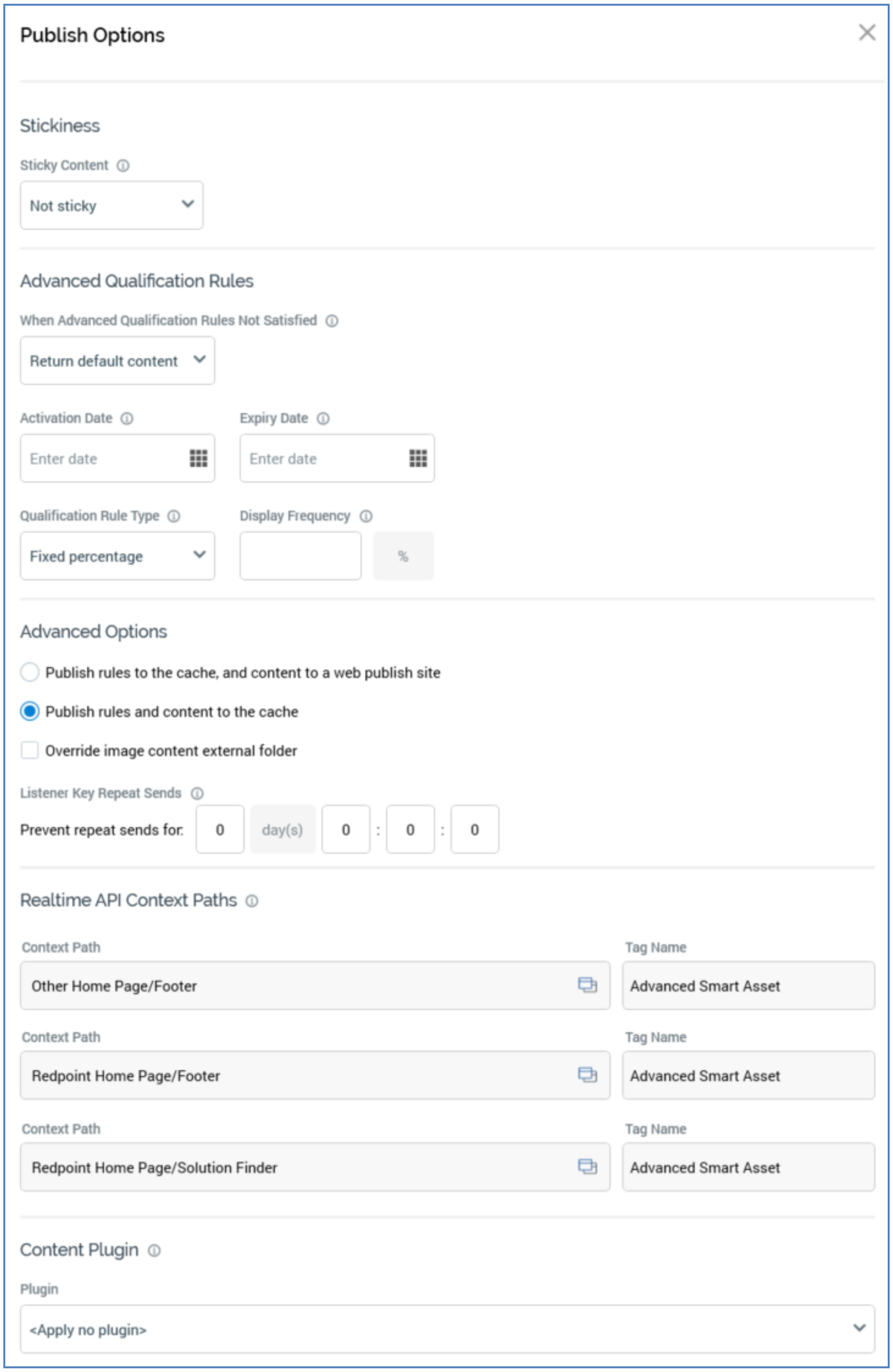
An External History Rule fulfills the same role as a local history rule, except for the fact that the messages to which it relates are provided by another advanced smart asset. As such, it exposes as single additional property:

- Advanced Smart Asset: selection of an advanced smart asset from which to source messages is mandatory. The current asset cannot be chosen. You can populate the property using browse or drag and drop. Having selected an advanced smart asset, standard inline and context menu file property features are available at the same. You can also clear your selection.

Other properties are as the Local History Rule.

19.20 Publish Options

The Publish Options overlay is used to configure advanced settings related to the publishing of a smart asset.



It contains the following:

- Stickiness section:
  - Sticky Content: this property is accompanied by an information icon, hovering over which displays the following tooltip:

    A dropdown property, the following values are available:

    - Not sticky (the default)
    - Sticky (with timeout)
    - Sticky (permanent)
  - Timeout: shown when Sticky Content is set to 'Sticky (with timeout)'. This integer property defaults to 60 and accepts a range of values from 1 to 999,999. It represents the number of minutes for which the same sticky content will be served.
- Advanced Qualification Rules section:
  - When Advanced Qualification Rules Not Satisfied: this dropdown property allows you to control what to display in the event of any applied Advanced Qualification Rules not being met For example, if Display Frequency is set to 50%, and Advanced Qualification Rules determine not to show applicable content, the action defined by the dropdown will be taken on 50% of instances of smart asset content being rendered. Available values are 'Return no content' and 'Return default content' (the default).
  - Activation Date: this property allows you specify an optional date and time from which advanced qualification rules will apply. The date and time provided must be before the Expiry Date (if supplied).
  - Expiry Date: this property allows you to specify an optional date and time at which advanced qualification rules will cease to apply. The date and time provided must be after the Activation Date (if supplied).
  - Qualification Rule Type: this dropdown allows you to define how advanced qualification rules are to apply. For example, if set to a fixed percentage of 50%, applicable content will only be shown 50% of the time; if set to a ramp-up value, the frequency at which applicable content will be display will increase over time. The following values are available:
    - Fixed percentage (the default)
    - Linear ramp-up
    - Exponential ramp-up

  - Display Frequency: allows you to specify a percentage value (n%); when content is determined to be appropriate for rendering, it should only be served n% of the time. If set to blank, appropriate content will be served all of the time. The property is only shown when Qualification Rule Type is set to 'Fixed percentage'. A decimal property, it accepts a range between 0.1 and 99.99.

- Ramp-up Options section: this section is shown when Qualification Rule Type is set to one of 'Linear ramp-up' or 'Exponential ramp-up'. It allows you to increase through time the frequency at which content will be rendered to a visitor.

  It exposes the following properties:

  - Start Date: this mandatory property allows you to specify a date and time from which ramp-up will be applied. The date and time applied must be before Expiry Date (if supplied).

  - End Date: this mandatory property allows you to specify a date and time from which ramp-up will be cease to be applied. The date and time applied must be before the Expiry Date (if supplied).

  - Initial Display Frequency: this percentage field represents the initial frequency at which applicable content will initially be rendered. The value supplied must be less than Final Display Frequency.

  - Final Display Frequency: this percentage field represents the frequency at which applicable content will cease to be rendered. The value supplied must be less than Initial Display Frequency.

  - Maximum Display Frequency: this percentage field represents the maximum frequency at which applicable content will be rendered, prior to tapering to Final Display Frequency. The value supplied must be more than Final Display Frequency.

- Advanced Options section: exposing the following:

  Two radio buttons are initially presented within this section.

  - Publish rules to the cache, and content to a web publish site: when this option is selected, outbound realtime will not be supported at the current smart asset. The Publish To property is shown when selected.

  - Publish rules and content to the cache

  The section also contains the following:

  - Publish To: allows you to specify a web publish site to which content will be published, using the Choose Publish Location dialog.

  - Override image content external folder: this checkbox is unchecked by default. When checked, the External Folder property is displayed.

- External Folder: this property is mandatory when displayed. It allows you to select an external folder in which smart asset content will be hosted using the External Folders dialog.

- Listener Key Repeat Sends: this sub-section contains single property: Prevent repeat sends for, which allows you to define a time limit within which repeat sends to same recipient are disregarded when using a listener key to invoke a queue listener. Day, hour, minute and second fields are provided, and the property defaults to 1 hour.

  When defined, upon invoking queue listener functionality using a listener key, queue listener functionality cannot be invoked for the same SendAddress within the specified time period.

- The Realtime API Context Paths section lists the smart asset's association with Realtime Context Paths. These provide an optional approach to accessing published Smart Assets when using the RPI Realtime API. Smart Assets are associated with Realtime API Context Paths at layouts and areas in the Realtime Layouts interface. For more information, please see that section's documentation.

  All Realtime API Context Paths with which the smart asset is associated are listed.

  For each, the following read-only information is displayed:

  - Context Path: of the layout or area with which associated.

  - Open in the Realtime Layout designer: clicking this inline button displays the layout or area in the Manage Realtime Layout overlay in the Realtime Layouts interface.

  - Tag Name

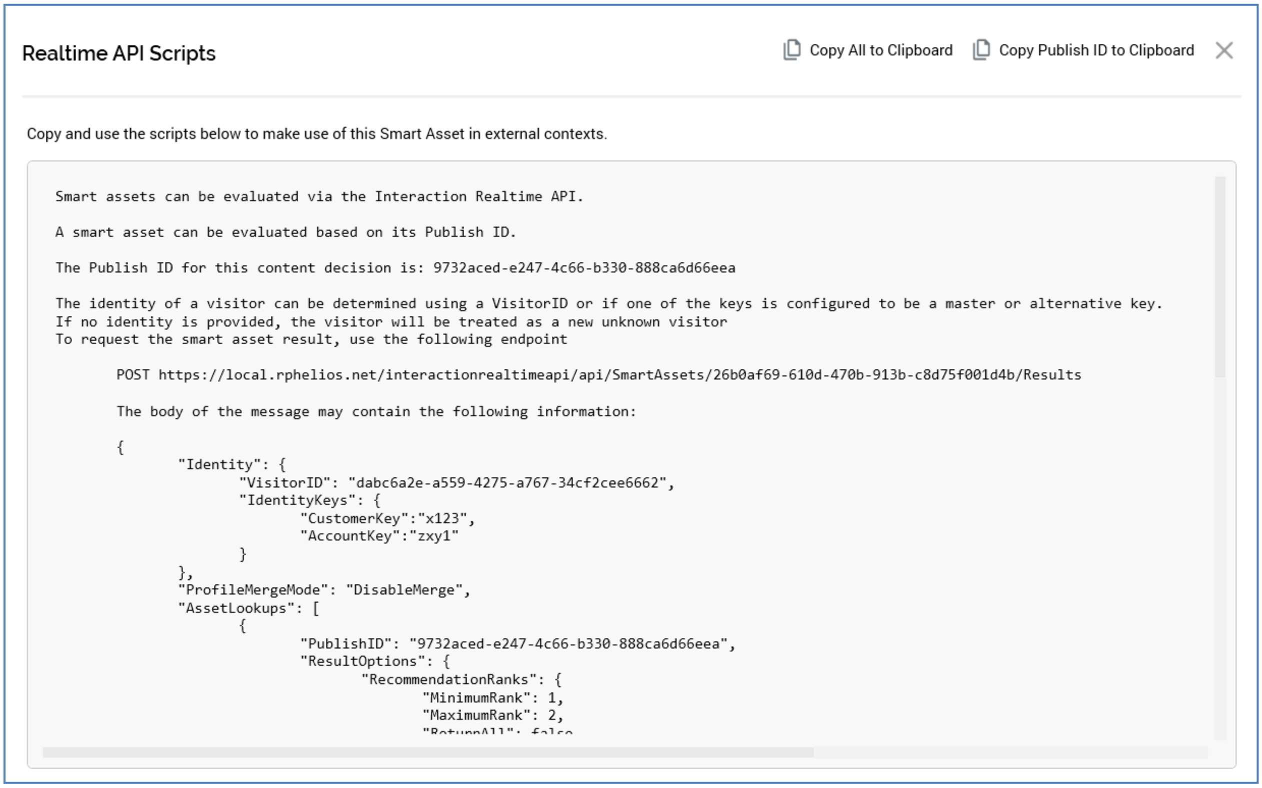
- The Content Plugin section allows you to select a plugin to which the content served by the dynamic asset will be passed. A plugin is a piece of custom code, written to perform a specific task to a client's requirements. The section is only displayed if system configuration setting RealtimeContentPlugins has been configured with a managed list. For more information, please see the Configuration documentation.

The section contains a single property:

- Plugin: a dropdown field, which allows you to select a plugin to apply to content returned by the dynamic asset. If no Default value has been defined at the RealtimeContentPlugins configuration setting, it is set by default to the value '<Apply no plugin>'. If a default has been defined, it is set to '<Use default>'. The list of plugins configured in the managed list used by RealtimeContentPlugins is shown in in alphabetical order.

19.21 Realtime API Scripts

Clicking the Realtime API Scripts button displays the Generated Scripts overlay. The overlay provides a series of scripts, which can be used by developers or other interested parties to use the smart asset in a context outside RPI - e.g., in an external web page, or via the RPI Realtime API.



A toolbar is shown at the top of the overlay, exposing the following options:

- Copy All to Clipboard: clicking this button copies all of the generated scripts to the clipboard.
- Copy Publish ID to Clipboard: this button is not displayed when the Generated Scripts overlay is displayed for an Advanced smart asset. It copies the smart asset's Publish ID to the clipboard.

19.22 Publish to Realtime API

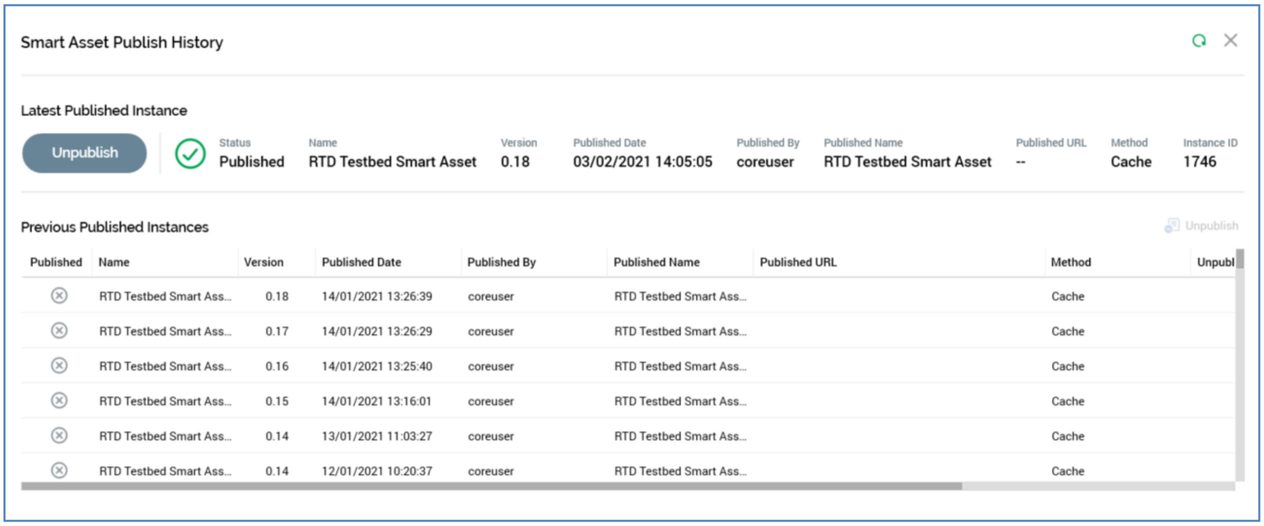
Clicking the Publish to Realtime API button initiates the process of publishing the smart asset to the Realtime API. A 'Publish Smart Asset '[name]'' job is created and displayed in the My Jobs dialog:

On the job's successful completion, you can copy location to which the asset was published to the clipboard.

Note that there is no need to have configured a web publish site if a smart asset is being published to the cache.

19.23 History

Clicking the History button displays the Smart Asset Publish History overlay.



The History dialog is described fully in the Landing Page Designer documentation.

If content was published to a web publish location, the folder to which the asset was published is assigned a GUID name and is displayed as the instance's Published URL. If content was published to the cache only, this property is blank (Method is set to 'Cache' in this case).

You can unpublish a smart asset in the History dialog, using the toolbar button provided . When you unpublish a smart asset, if the asset's content had been published to a web publish location, it is deleted. Cached asset details are not affected by unpublish. An audit record with Audit Type 'Object Execution' and Audit Sub Type 'Smart Asset Unpublish' is created.

Unpublishing a landing page has no effect on the published status of any published smart assets therein.

19.24 Smart Asset Utilization – Outbound

Where outbound content contains a smart asset, other than a goal or advanced smart asset, content is inserted appropriately in accordance with the smart asset's content elements list. RPI works through the list of content elements, starting at Content 1 and moving down the list. Each is checked in turn to determine whether a recipient qualifies to receive the content defined at the content element. Content is served by the first content element at which a recipient qualifies to receive it.

Determination of applicability at a content element is carried out in accordance with the smart asset type:

- Attribute smart asset: the content is applicable if the recipient's attribute value matches one of the content element's configured attribute values.
- Audience segment smart asset: the content is applicable if the recipient was targeted within an audience segment matching one of the content element's listed segment names.
- Rule smart asset: the content is applicable if the recipient is targeted by the content element's selection rule or realtime decision.
- Model smart asset: the content is applicable if the recipient falls within a model project band.

Default content, where provided, is served where no match occurs; if no default content is specified, no content is delivered. If a content element itself is configured with another smart asset, the rules in the nested smart asset are themselves executed to determine asset applicability.

If the smart asset is executed in Batch Outbound mode, content applicability is determined at interaction workflow execution, prior to message delivery. This means, e.g. in the case of an email, that email content will remain the same, no matter how many times viewed by a recipient.

If the smart asset is executed in outbound realtime mode, content applicability is determined using the RPI Realtime service. This means, e.g. in the case of an email, that email content can be varied dynamically when viewed a number of times by a recipient (subject to any stickiness settings).

Note that a runtime validation error will be raised at interaction execution if attempting to execute a workflow containing a smart asset using outbound realtime, when system configuration setting EnableRPIRealtimeServices is set to False, and when RealtimeAPIAddress has not been configured.

Smart assets used in outbound realtime mode are published automatically at interaction execution. When a smart asset contains local image content, that content is published to the Default smart asset location, as defined at an external content provider. If this property has not been set, a runtime validation error is raised.

Note that, if using outbound realtime at an email offer, certain email client applications may by default cache image content. This means that the dynamic variation of such content in the inbox may be compromised. This can be avoided by setting HTTP headers appropriately at the provider at which image content is hosted.

19.25 Smart Asset Utilization – Inbound

Smart assets can be used, if appropriate, to vary content in an inbound contexts – for example, if hosted in an RPI landing or external page, or of invoked via the RPI Realtime API. Content applicability is determined as documented in the Smart Asset Utilization – Outbound section (note that the method by which content is deemed to be appropriate will vary according to asset type).

19.26 Goal Smart Asset Utilization

When a goal smart asset is published in a landing page, the following sequence of activities occur:

If Optimization mode is set to A/B/n test , the test phase begins immediately, and lasts for a period defined by the asset's Test phase duration property. During this time, 100% of page visitors receive randomized content element content.

At end of the test phase, an initial test is performed. Testing is carried out by the Goal smart asset Monitor system task.

The number of goals achieved is considered in the context of number of impressions of each content element, thereby determining each piece of content's relative efficacy in driving page visitors towards goal attainment. The content element with the highest goal conversion rate is selected as the winning index. Its conversion rate needs to be statistically better than the alternative assets, to a degree defined by its significance threshold.

The content element with the highest proportion of goals proportionate to the number of impressions is declared the winner.

If the result was not deemed to be statistically significant, the test phase continues, with a test being performed at a frequency accordant with the asset's Reevaluation interval property. Random content elements continue to be served during this time

If a winner was declared, the content element in question is served to site visitors other than the holdout group, unless the result changes due to ongoing testing of the holdout group (see below).

When the initial test phase is complete, tests continue to be executed, with a random content element being served to a percentage of site visitors defined by the asset's Holdout group property. Tests are performed at a frequency accordant with the asset's Reevaluation interval

If the ongoing testing of the asset's holdout group results in different content element being declared the winner, the new winner is thereafter served to site visitors (other than the holdout group).

Testing continues in this way for a period defined by the asset's Monitoring duration property

Republishing the landing page in which the goal smart asset is utilized causes the asset to re-enter the test phase.

If Optimization mode is set to Machine Learning, RedPoint Interaction uses a machine learning algorithm to match a visitor's profile to the content element that is most likely to provide the highest goal conversion rate. Visitor profile and goal results data serve as inputs to the algorithm, which looks for patterns to facilitate matching the visitor's profile to the most appropriate content element to maximize the goal conversion rate.

Note that calls to the machine learning algorithm are managed by the Goal smart asset Monitor system task.

When a visitor is served a goal smart asset, if he or she refreshes or revisits the landing page, the same content element continues to be shown in the same browser on the same machine. The cookie used to persist the asset in this way lasts 24 hours, after which different content may be shown.

When a goal smart asset is published for use in an external web page, RedPoint Interaction uses A/B/n Testing or Machine Leaning to optimize content in the same way as if published in a RedPoint Interaction landing page. Note that, in this case, the asset’s goal is defined within the asset itself, and not within the page within which it is hosted.

Goal smart assets can only be nested in the following fil types:

- Landing Page: a validation error is raised if a landing page contains a goal smart asset that is configured to be published externally.
- HTML asset: a validation error is raised at a landing page if an HTML asset therein contains a goal smart asset that is configured to be published externally

19.27 Advanced Smart Asset Utilization

Advanced smart asset content is assessed for applicability in the same manner as other smart assets, with the following caveats:

- Content applicability is considered on a variant basis, as, when an advanced smart asset is included in an offer or web page, it is a variant that is added to these contexts.
- Message qualification rules are assessed as part of this process (for more information, please see that subject's documentation).
- Any message eligibility restrictions and allocation caps are also applied

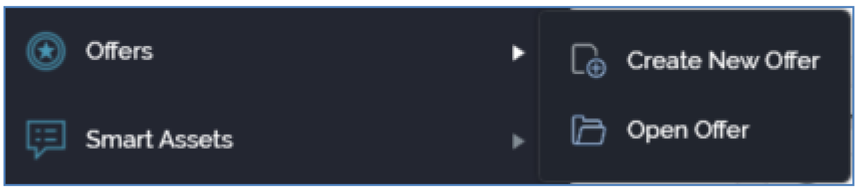
20 Offer Designer

The RPI Offer Designer allows you to create and maintain offers. Offers are tailored collections of content, which can be personalized and which are designed to deliver targeted messages to their intended audience.

20.1 Invoking the Offer Designer

You can invoke the Offer Designer in the following ways:

- From the quick access menu's Offers menu. The menu exposes the following options:

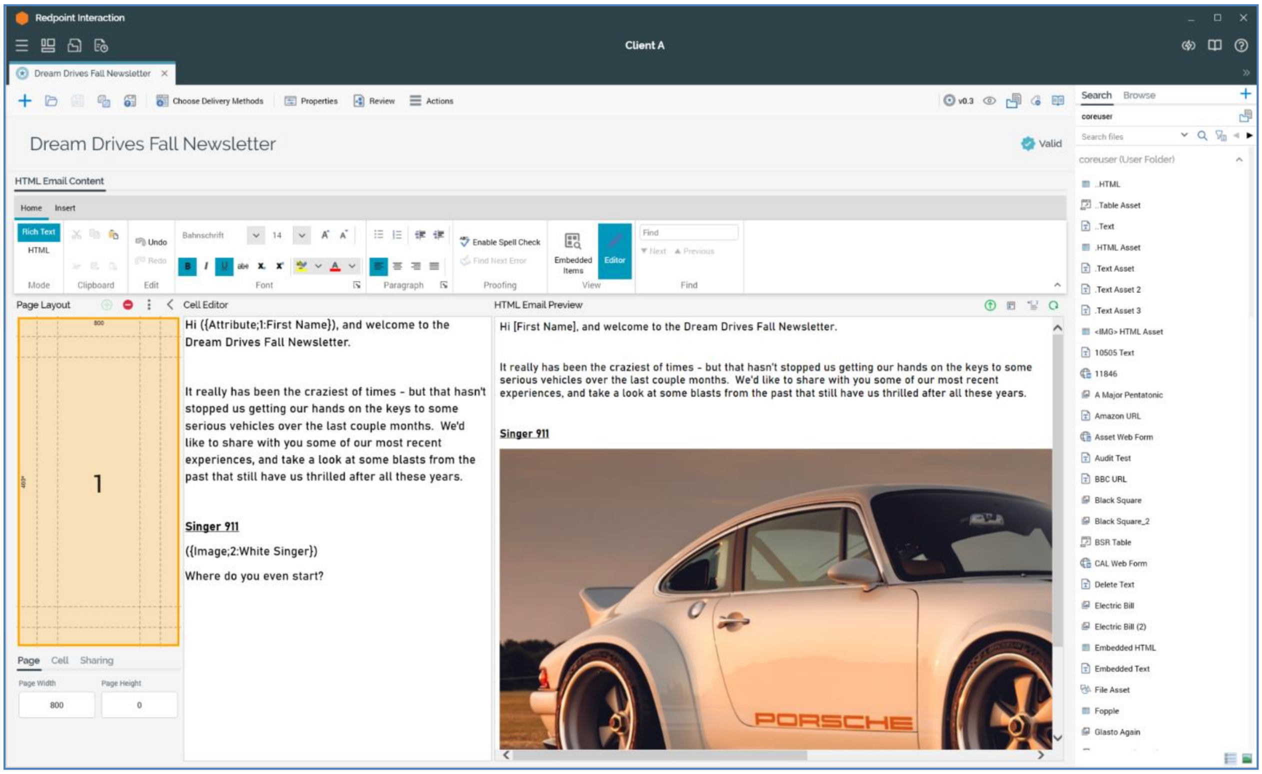


- From a Tasks or File Type widget. Typically, these might be displayed at your Home Page. For more information on widgets, please see the Dashboard Designer documentation.
- By double-clicking an offer file in the File System Dialog, or by highlighting an offer and clicking OK in the same context.
- By viewing the latest version of an offer contextually – for example, from an offer activity's configuration panel in the Interaction Designer.

Note that access to the Offer Designer is controlled via the Offer – Design functional permission. If none of the user groups of which you are a member are associated with this permission, you will not be able to able to access the Offer Designer.

20.2 Offer Designer Basics

The Offer Designer is displayed in a separate tab.



It is composed of the following elements:

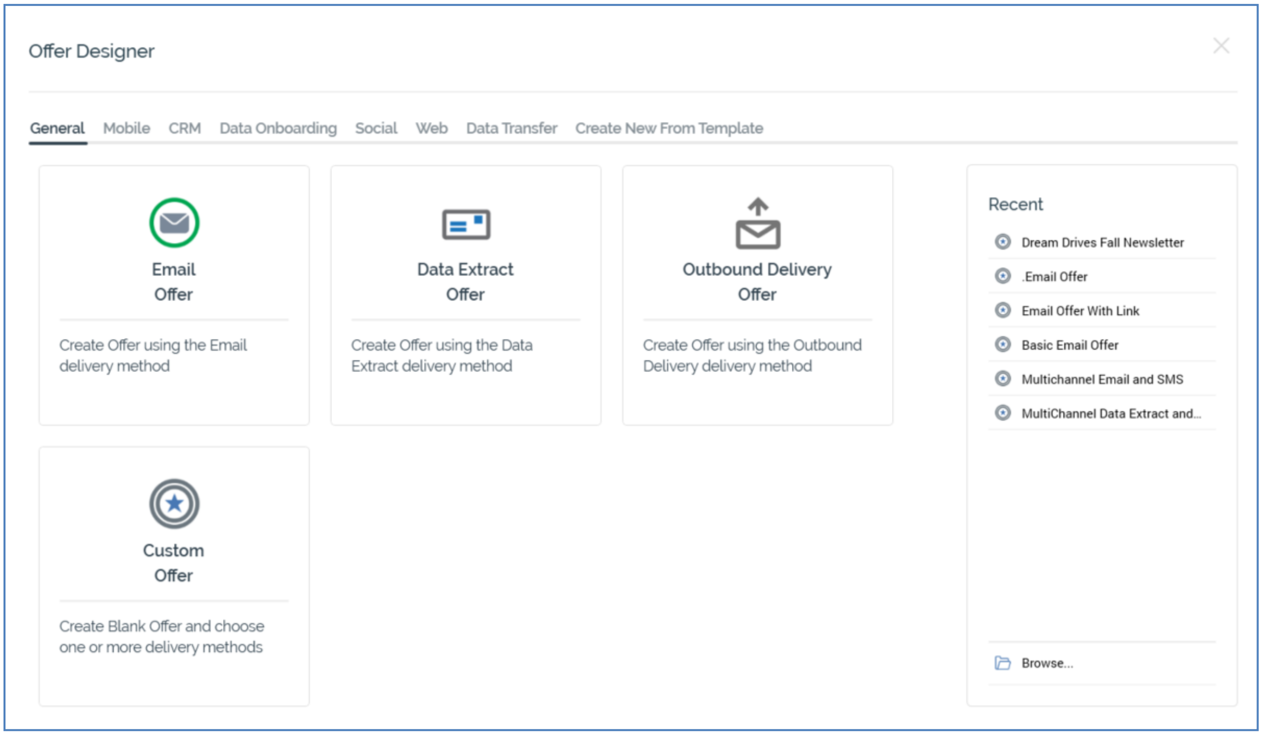
- Toolbar
- Properties panel
- Toolbox
- Offer content (if single delivery method supported) or tabset (if multiple delivery methods supported).

If you close a tab containing the Offer Designer, within which an offer to which changes has been made is displayed, or you close RPI itself under the same circumstances, a dialog is shown. You can:

- Save the changes and proceed with closing the tab or RPI.
- Abandon the changes and proceed with closing the tab or RPI.
- Cancel closing the tab or RPI.

20.3 Start Page

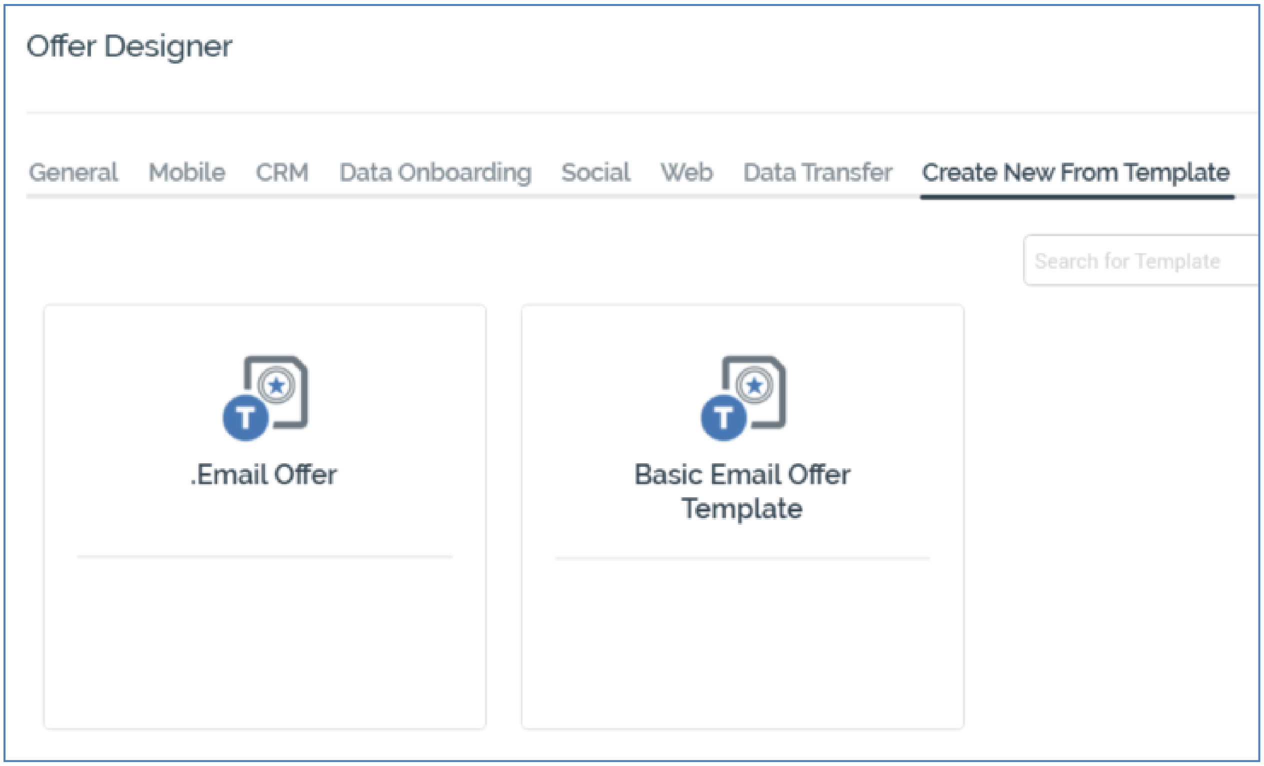
The Offer Designer Start Page is shown upon invocation of Offers at the quick access menu, and also on clicking Create new Offer at the Offer Designer toolbar. It contains the following:



- Separate tabs facilitating creation of the following Offer types. Selection of a specific offer type creates a single-channel offer supporting the delivery method in question.
  - General
    - Email Offer
    - Data Extract Offer
    - Outbound Delivery Offer
    - Custom Offer: clicking this option displays the Choose Delivery Methods overlay. This allows you to select one or more delivery methods of your choice. It is covered elsewhere in this documentation.
  - Mobile
    - SMS Offer
    - Push Notification Offer
    - Push Notification Direct Offer

- CRM
  - Microsoft Dynamics CRM Offer
  - Salesforce Offer
- Data Onboarding
  - Facebook Audience Offer
  - Google Ads Customer Match Offer
  - LiveRamp Offer
  - Realtime Cache Offer
  - Twitter Tailored Audience Offer
- Social
  - Facebook Offer
  - LinkedIn Offer
  - Twitter Offer
  - Twitter Direct Offer
  - YouTube Offer
- Web
  - RSS Offer
- Data Transfer
  - Salesforce Marketing Cloud Data Transfer Offer

- Create New From Template tab: lists any offer templates configured at the current RPI client:



More information on offer templates is provided elsewhere in this documentation.

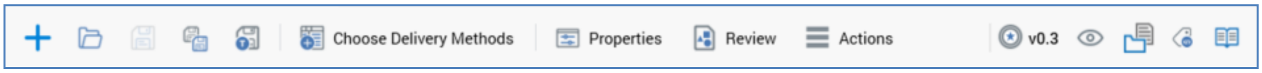
You can search for a template using the field and button provided. If multiple search results are displayed, they can be accessed using the Previous and Next buttons.

- Recent: lists recently-accessed offers, facilitating the opening of the same.
- Browse: displays the Open Offer File System Dialog, allowing you to select an offer to open.

A Cancel button is shown at the top of the Start Page. Clicking it removes the Start Page from display, and redisplays the Offer Designer. The Cancel button is only shown on invocation of the Start Page by clicking Create new Offer at the Offer Designer toolbar.

20.4 Toolbar

The Offer Designer toolbar exposes the following options:

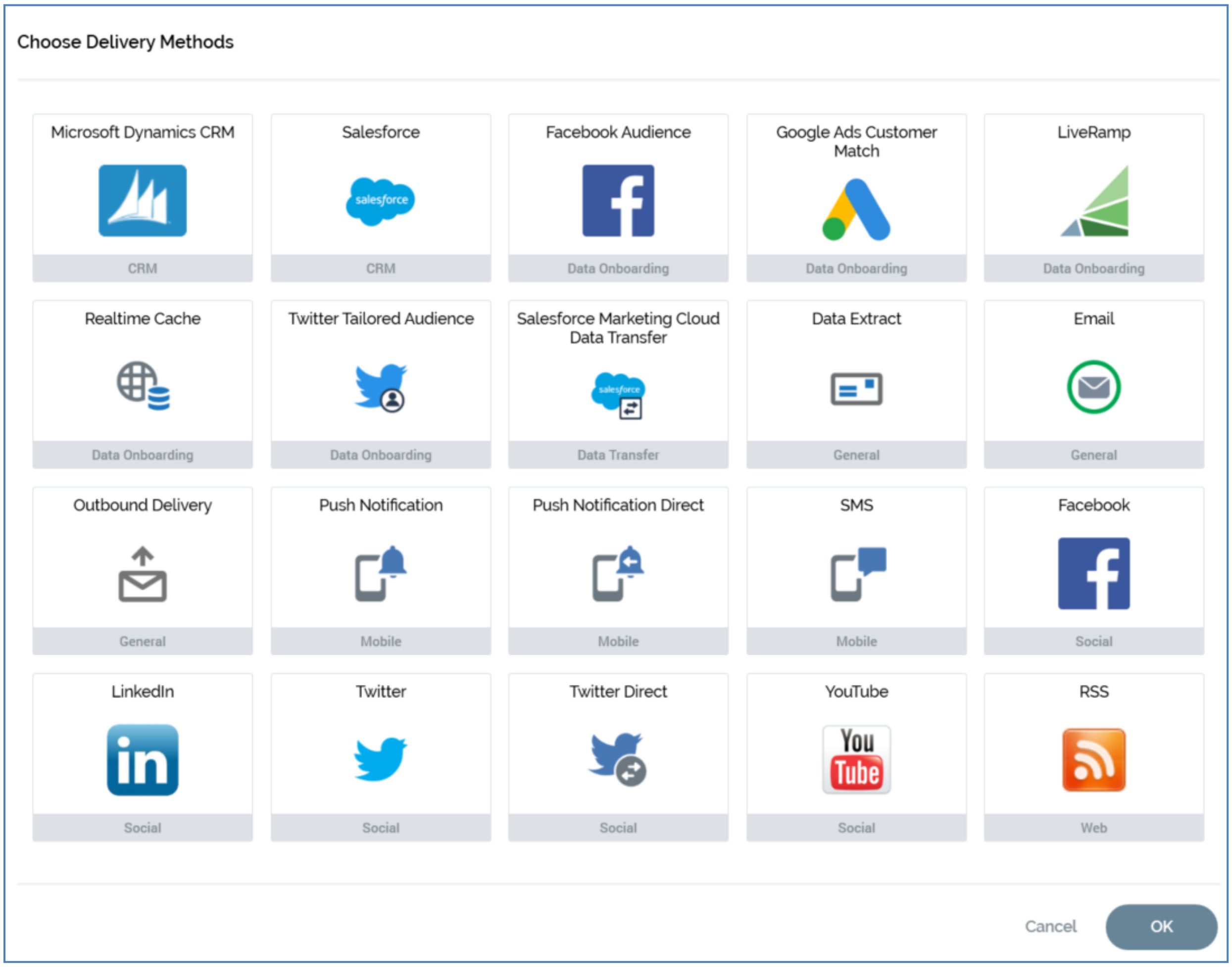


- Create new Offer: clicking this button displays the Offer Designer Start Page. A close button is shown to its top right; clicking it removes the overlay from display. If an Offer containing unsaved changes is displayed at invocation of Create New, an 'Are You Sure?' dialog is shown, from which you can:
  - Save the changes
  - Abandon the changes
  - Abandon creation of the new Offer
- Open an existing Offer: displays the File System Dialog, allowing you to navigate those folders within the RPI file system to which you have access in order to locate an offer to open.
- Save the current Offer: saves the current offer to an existing filename; if the offer is yet to be saved, Save behaves like Save as…
- Save the current Offer as...: allows you to specify the offer's filename and storage location within the RPI file system by displaying the File System Dialog.
- Save the current Offer as a Template...: allows you to specify a filename and storage location within the RPI file system by displaying the File System Dialog, and then to create a new offer template based on the current offer. More information can be found elsewhere in this documentation.
- Choose Delivery Methods: displays the Choose Delivery Methods overlay, allowing you to define the types of content that the offer will provide. Any previously-selected delivery methods are selected. Note that if you deselect a previously-selected delivery method having added content to its content panel, any unsaved content you added is lost – no 'Are you sure?' warning is provided. Full details of the Choose Delivery Methods dialog are provided elsewhere.
- Properties: displayed for email offers only, and covered separate in this documentation.
- Review: displayed for email offers only, and covered separate in this documentation.
- Actions: displayed for email offers only, and covered separate in this documentation.
- Version number: the version number of the offer currently being viewed is always displayed, irrespective of the offer file type's approval status.
- Approval panel: if offer file approval is enabled in the current RPI installation, the approval panel is shown to the right of the Offer Designer toolbar. Full details of the approval panel can be found in the File Approval documentation.

- Follow/Unfollow File: covered in the RPI Framework documentation.
- File options: covered in the RPI Framework documentation.
- File Metadata: covered in the RPI Framework documentation.
- Linked Page options: covered in the RPI Framework documentation.

20.5 Choose Delivery Methods

Selection of an offer's delivery methods is carried out in the Choose Delivery Methods overlay.



A list of the supported delivery methods is displayed. By default, the following delivery methods are supported:

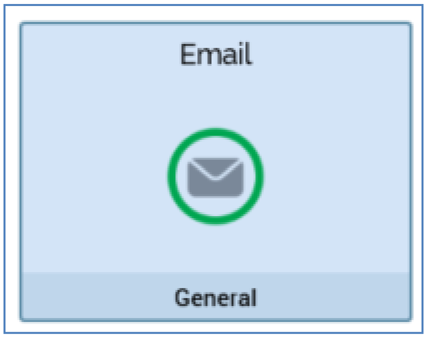
- CRM
  - Dynamics CRM
  - Salesforce
- Data Onboarding
  - Facebook Audience
  - Google Ads Customer Match
  - LiveRamp

- Realtime Cache
- Twitter Tailored Audience

- Data Transfer
  - Salesforce Marketing Cloud Data Transfer
- General
  - Data Extract
  - Email
  - Outbound Delivery
- Mobile
  - Push Notification
  - Push Notification Direct
  - SMS
- Social
  - Facebook
  - LinkedIn
  - Twitter
  - Twitter Direct
  - YouTube
- Web
  - RSS

You cannot define offer content for control channels.

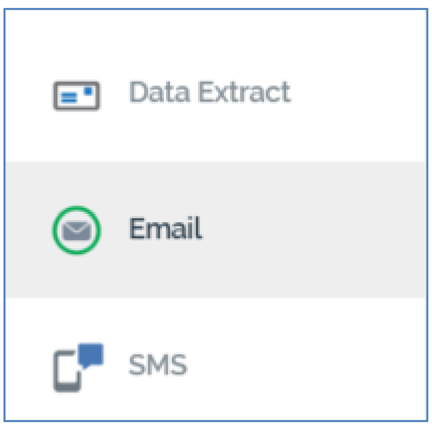
You can select one or more delivery methods from the list. Clicking on a delivery method icon surrounds the delivery method with a border.



Clicking the delivery method again removes both of these.

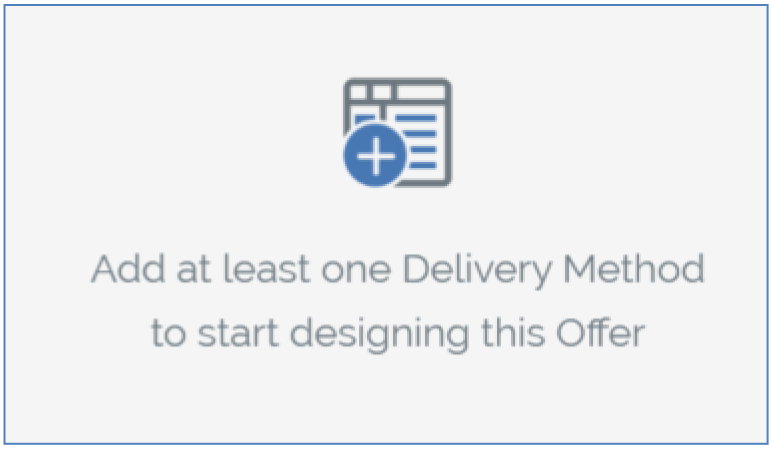
When you invoke Apply changes and close:

- If you selected a single delivery method, a content panel supporting your selection is displayed. The tabset is not shown.
- If you selected more than one delivery method, one tab per selected delivery method is displayed in the Offer Designer.



Tabs are entitled in accordance with selected delivery method names and are displayed in alphabetical order.

If you Cancel the Choose Delivery Methods dialog, or invoke Apply… without selecting at least one method, an empty Offer Designer is shown, in which is displayed the following message:



Having selected a new offer's delivery methods, it is displayed in the Offer Designer. By default, its name is 'New Offer'.

20.6 Saving an Offer as a Template

This button is only shown when a non-template offer is displayed in the Offer Designer. Clicking it displays the Save Offer as Template File System Dialog. You can specify a name for the new template file and click Save. When you do so, the file is saved with a modified icon that indicates that it is a template. For more information on offer templates, please see Offer Templates.

20.7 Toolbox

The Offer Designer toolbox exposes a Folder Search component. For more information, please see the Dashboard Designer documentation.

The toolbox is your source of the attributes, assets, smart assets, subscription groups and landing pages that you will need when building offers.

20.8 Workspace

The Offer Designer workspace is displayed to the right of the toolbox and below the toolbar, and contains the following sections:

20.8.1 Name

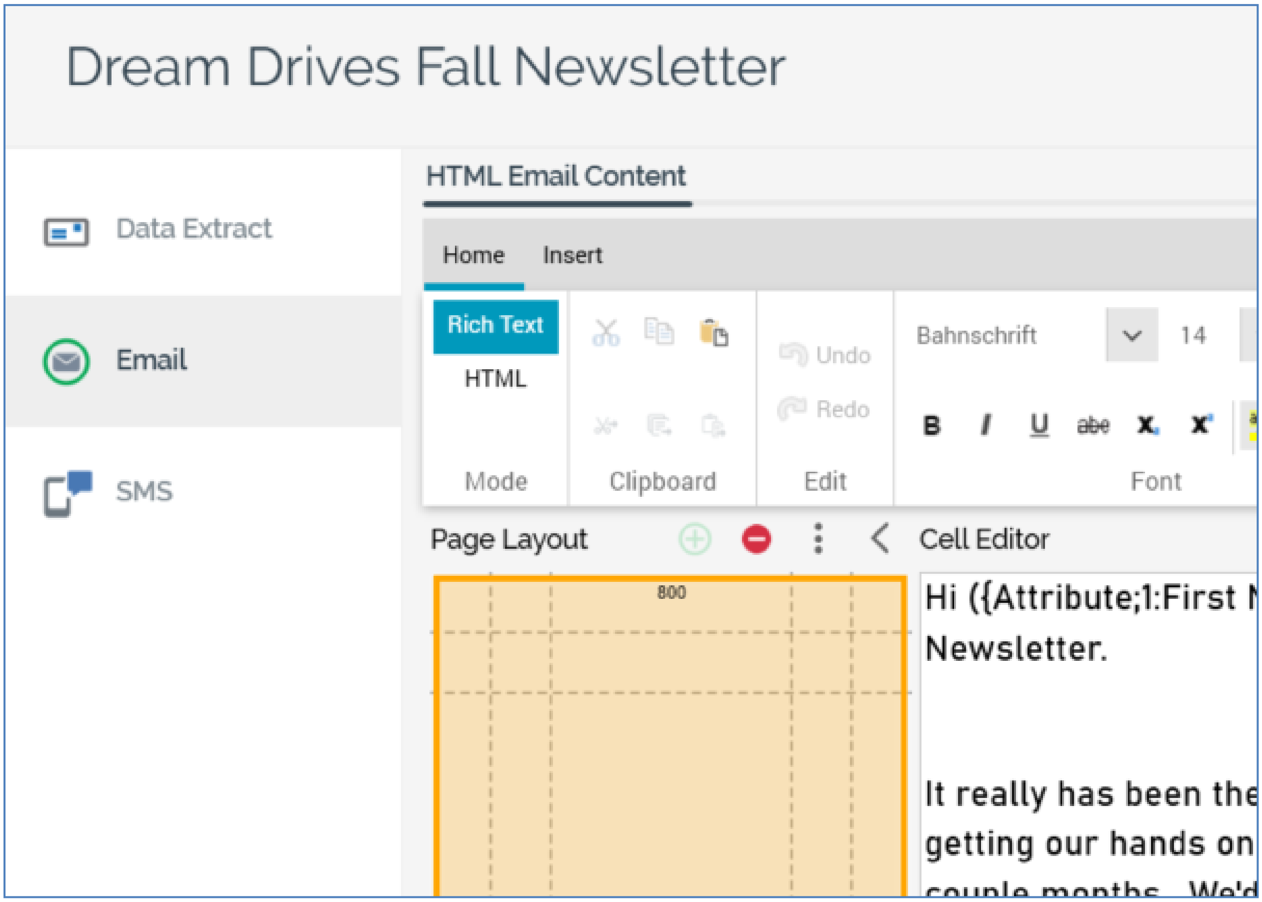
An offer's name is configured in the large property shown at the top of the Offer Designer, below the toolbar:

Provision of a name is mandatory, and the value provided may be a maximum of 100 characters. The offer's name is the same as the filename under which it is saved within the RPI file system. As such, it must be unique amongst the offers in the folder within which saved.

You can edit an offer's name by clicking the property. Complete the edit by clicking off the property, or by hitting return.

20.8.2 Tabset

The Offer Designer tabset is only displayed when the offer supports multiple delivery methods. Each tab contains a delivery method-specific content panel.



If a single delivery method is supported, a single content panel is shown instead.

Each content panel allows you to define content tailored for a specific delivery method; each delivery method is documented separately.

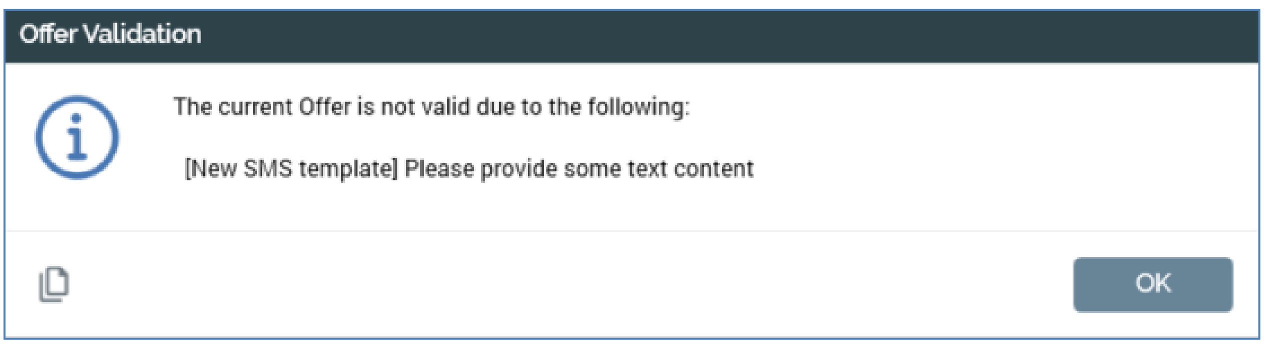
20.9 Offer Validation

Before an Offer can be used, it must be valid.

A validation status indicator is displayed to the right of the Offer's name. When the Offer is valid and contains no validation errors, the validation status indicator is shown as follows:

Specific validation errors are outlined in the Offer documentation. When one or more validation errors is present, a validation error indicator is shown:

Clicking the indicator lists the validation errors in a dialog:

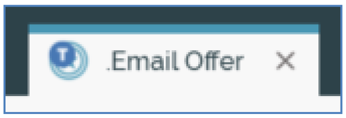


You can use the button at the bottom left of the dialog to copy the validation error details to the clipboard. You can close the dialog using the OK button.

20.10 Offer Templates

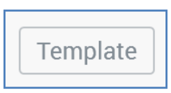
An offer template is a special type of offer file that cannot be executed in an interaction. Offer templates allow you to create a base offer, save it as a template file, and then create offers based on the template.

When an offer template file is shown in the Offer Designer, the icon shown at the tab identifies it as a template.



The following differences are manifest at an offer template when it is displayed in the Offer Designer:

- The Save Offer button is replaced by a Save Offer Template button, allowing you to save any changes you make to the current offer template file.
- The Save Offer As button is replaced by a Save Offer Template As button, allowing you to save the offer template to a different filename.
- The Save Offer as Template button is not shown.
- A 'Template' watermark is shown to the right of the offer's Name.



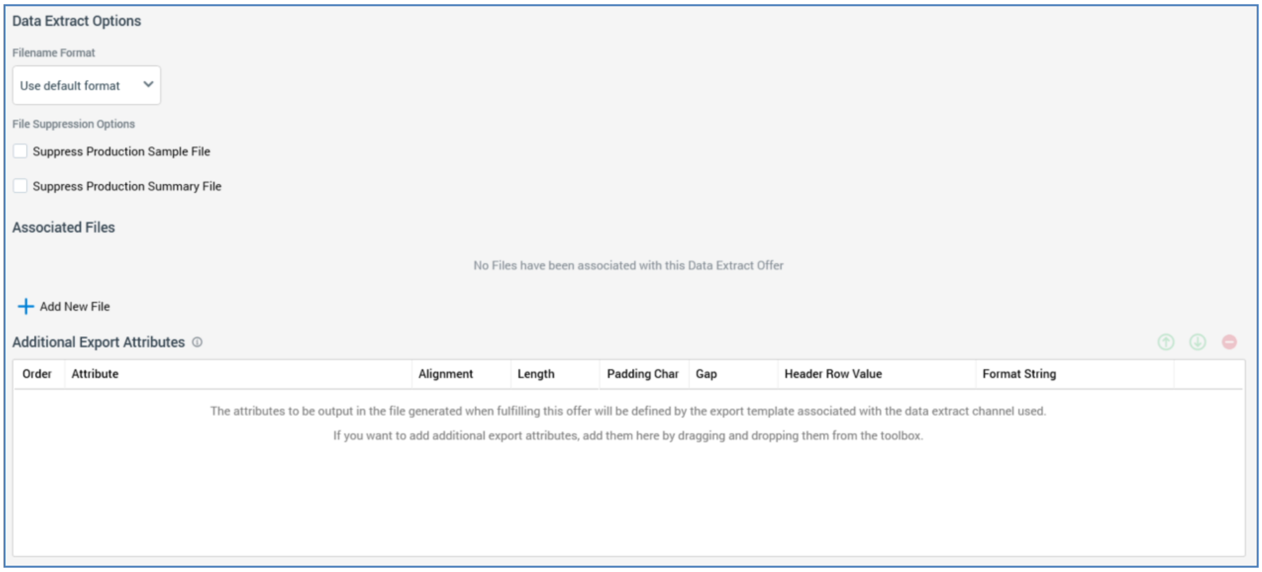
The following considerations apply in respect of offer templates:

- Offer template files are not shown at designer toolboxes.
- Approval of offer templates is supported.
- Use of offer templates is not supported in the following Interaction Designer contexts:
    - Offer activity
    - Broadcast activity
    - Queue activity
- Use of offer templates is not supported at the Workflow Builder's Choose your Offer interface.
- Use of offer templates is not supported when using a realtime cache offer at a database realtime decision.
- Use of offer templates is not supported at the Send Emails Training Aid's Choose an existing Email interface.

- Use of offer templates is not supported at the Channel Overview widget's Filter on offer/interaction property.
- Email delivery method:
  - The sending of test emails is supported
  - The testing of links within an email is supported
  - Inbox delivery testing is supported
  - Viewing inbox results is supported
  - The Review button is not shown
  - The Send Emails option is not available
- SMS delivery method:
  - The sending of test SMS messages is supported

20.11 Data Extract

The Data Extract content panel contains the following sections:



- Data Extract Options: this section contains the following:
  - Filename Format: this dropdown property allows you to specify whether the data extract offer should use the default or a specific filename format. When set to 'Use specific format', a property allowing you to specify the format is displayed to the right.
  - [Filename format override]: this property is shown when Filename Format is set to 'Use specific format'. You can click the property to set the offer's format using the Design Filename Format dialog (covered separately). Having set the format, example text is displayed at the property.
  - File Suppression Options: two checkboxes are displayed here:
    - Suppress production sample file: this checkbox is unchecked by default. If checked, when the data extract offer is executed in a production interaction workflow, the sample file is not produced.
    - Suppress production summary file: this checkbox is unchecked by default. If checked, when the data extract offer is executed in a production interaction workflow, the summary file is not produced.
- Associated Files: this section contains the following:
  - Associated Files list: an icon and name are displayed for each associated file. Icons are specific to the file's type. The following inline buttons are displayed at each file:

        - Download and open the associated file button is also shown; invocation displays the file using an appropriate application. If the file cannot be displayed a warning message is shown.

        - Options, giving access to a Remove button. Selecting this option removes the file without displaying an 'Are You Sure?' dialog.

    - Add New File button: displays a Windows file system dialog. By default, it is filtered to display document files (these include .doc, .docx, .xls. .xlsx and .pdf); you can switch to display of all files if required. In the dialog, you can select a single file to associate with the offer. Doing so displays the file in the associated files list. If you select a file that is already open, a warning message is shown. Note that the maximum size of a single file is controlled by system configuration setting MaxFileAssetUploadSize. You can also cancel selection of the document.

- Additional Export Attributes: this section contains the following:

    - Toolbar: the Export Attributes toolbar exposes the following options:

        - Move attribute up/down: allows you to order attributes within the attributes grid.

        - Remove selected attributes: removes the selected attributes from the attributes grid.

    - Attributes grid: by default, each data extract channel is configured with a specific export template. When an offer activity using the channel executes, data is exported in accordance with this export template.

      You can also specify offer-specific attributes that will be appended to the default columns provided by the data extract channel's export template. This is carried out by dragging attributes from the Offer Designer toolbox and dropping them into the export attributes grid.

      Note that it is not possible to add an Exists in table attribute to an offer. Parameter attributes are supported.

      The following columns are displayed within the offer attributes grid:

        - Order: derived automatically based on the attribute's ordinal position within the grid.

        - Attribute name: read-only. When you hover over an attribute a button is displayed to the right of its name, which you can click to view its details in the File Information dialog.

        - Alignment: specified using a drop-down exposing values Left (the default if a string, or date attribute) and Right (the default if a numeric attribute).

        - Length: must be a positive integer.

- Padding char: Mandatory. May be a single character only. Defaults to space. Used to pad white space in string fields in a fixed-width export template.
- Gap: must be a positive integer value. Gap defaults to 0. It is used to define the space to be provided between attributes in a fixed-width export template.
- Header Row Value: this value defaults to the value of an attribute’s underlying database column. Its provision is optional, and it can be a maximum of 100 characters in length.
- Format String: this optional property can be a maximum of 100 characters in length. It supports provision of standard Microsoft .NET format strings.

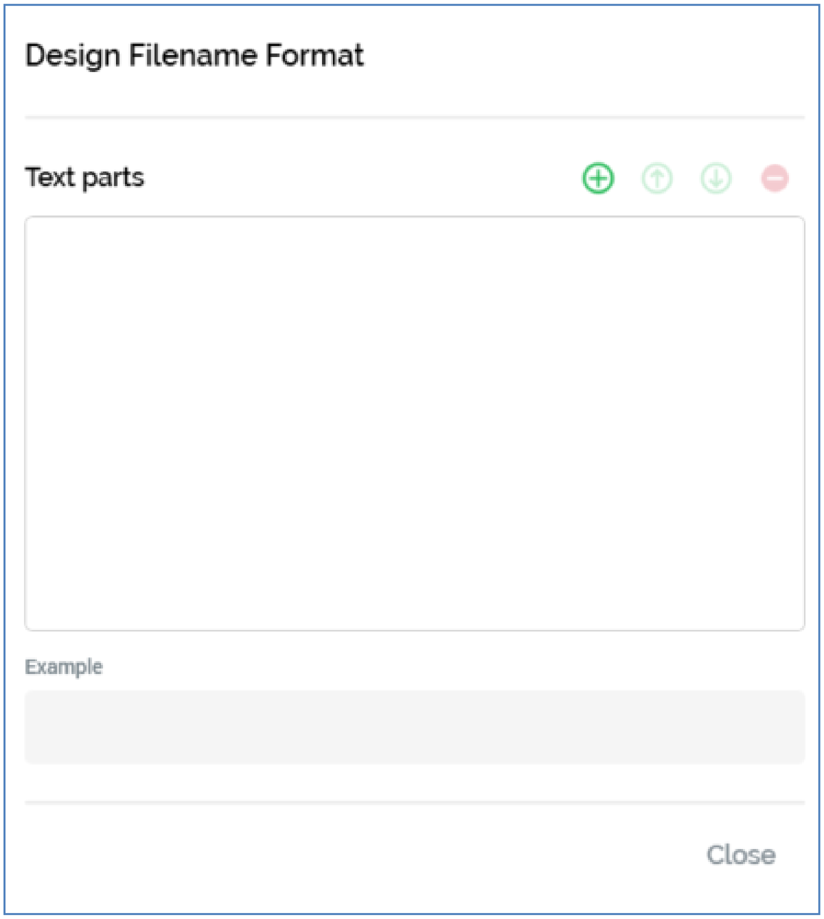
You cannot use anonymous auxiliary database attributes at a data extract offer's Additional export attributes.

The following data extract validation criteria are applied when an offer is saved:

- Export attribute must have a length greater than zero
- Export attribute must have a gap greater than or equal to zero

20.11.1 Data Extract – Design Filename Format Dialog

The Design Filename Format dialog is displayed when overriding the filename's format.



The dialog contains the following:

- Text parts toolbar: exposing the following options:
  - Add a new Text Part: invocation of this option displays a submenu:
    - Add String
    - Add Date part
    - Add Interaction name
    - Add Trigger name
    - Add Activity name
    - Add Offer name
    - Add Channel name

        - Add Offer channel name
        - Add Execution ID
        - Add Workflow ID
        - Add Audience ID
        - Add Test indicator

      Selection of a submenu option adds a text part of the appropriate type to the Text parts list. The example cell code formats displayed at the bottom of the dialog and on the invoking button are updated immediately.

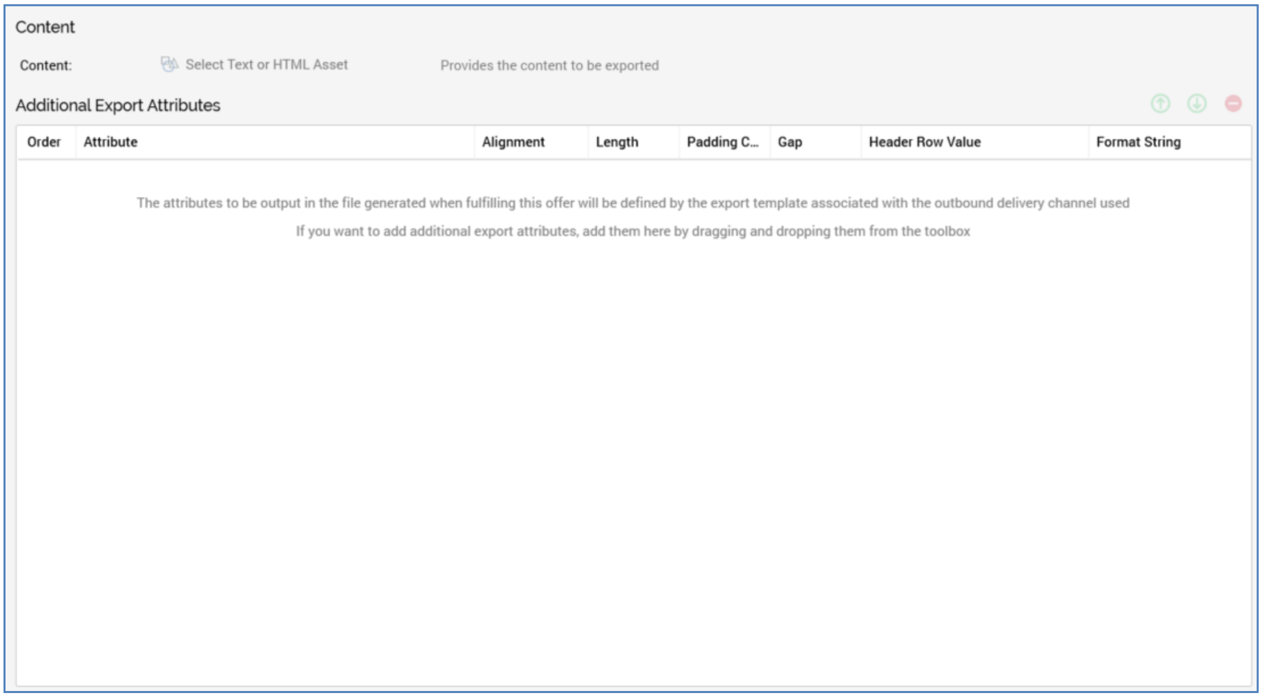
    - Move the selected Text Part up: this option is enabled when a text part other than the first in the list is selected. Invocation moves the text part up one position in the list. Example cell code formats are updated immediately.
    - Move the selected Text Part down: this option is enabled when a text part other than the last in the list is selected. Invocation moves the text part down one position in the list. Example cell code formats are updated immediately.
    - Remove the selected Text Part: this option is enabled when a text part is selected in the list. Invocation removes the selected text part and is not protected by 'Are You Sure?'.

- Text parts list: displays all text parts configured for the current context. For each, the following are displayed:
    - [Ordinal position indicator]: a read-only, system-supplied integer
    - [Text part type]: read-only
    - [Value]:
        - If a String text part: a text field is displayed, provision of a value within which is mandatory. The default value is blank. The value provided cannot contain illegal characters (e.g. '/'), and can be a maximum of 100 characters in length
        - If a Date text part: a dropdown is displayed, exposing DayOfTheMonth (default), DayNameShort, DayNameFull, Month, MonthNameShort, MonthNameFull, Year2Digits, Year4Digits, Hour, Minute, Second and Millisecond. Examples default to the current date and time.
        - If another type of text part, the examples are shown as e.g. '[Interaction]'
- Example: a read-only field that displays an example of the export path or filename format. String values are displayed as entered. Date part values displayed in accordance with dropdown setting and show the current date and time. Other text parts are displayed as e.g. '[Interaction]'. The example's maximum length is 100 characters. The example is also displayed at the invoking button.

- Close: invocation of this button removes the dialog from display. Clicking off the dialog has the same effect.

20.12 Outbound Delivery

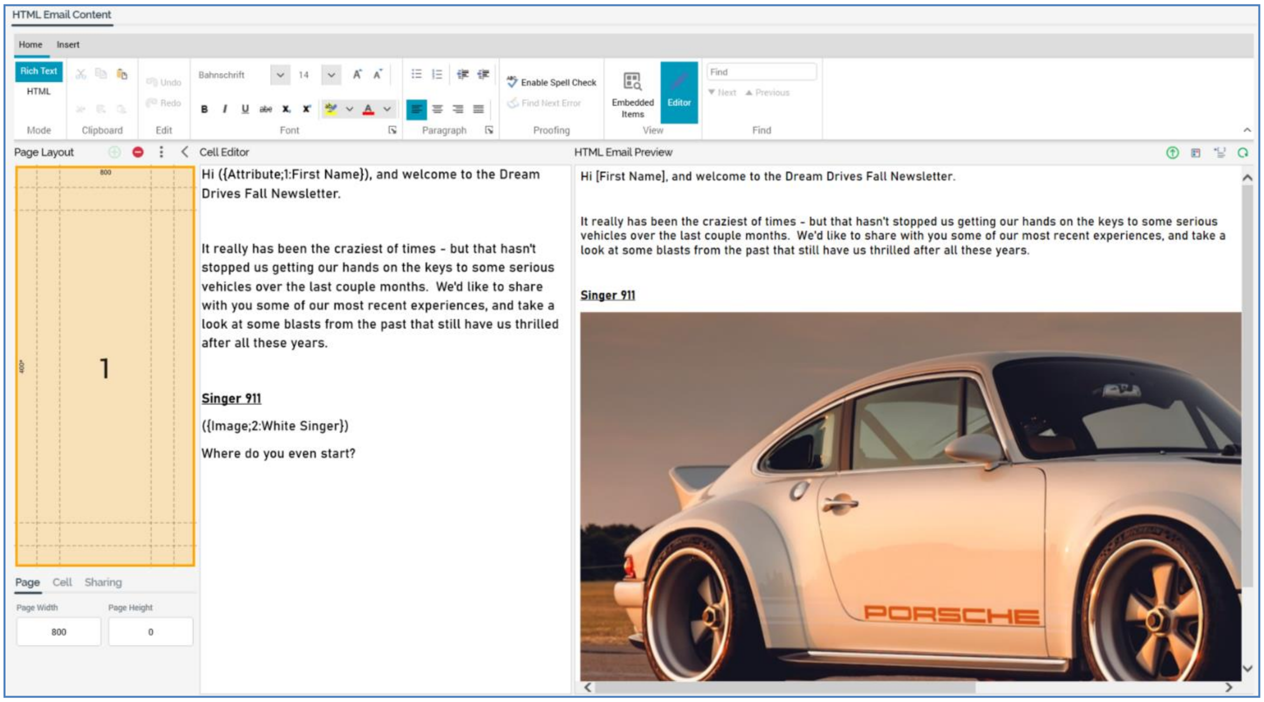
The Outbound Delivery content panel contains the following:



- Content section: containing the following:
  - Content: you can select an HTML or Text asset to serve as the outbound delivery offer's content. You can browse for an asset or drag one onto the property from the toolbox. Having selected an asset, you can open its latest version in the Asset Designer. You can also clear your selection. On selection of a Content asset, the Preview property is displayed.
  - Preview: a preview representation of the selected Content is displayed. If appropriate, you can provide preview values for any attributes embedded therein. You can also refresh the Preview to pick up any changes made to the asset externally.
- Additional Export Attributes section: this section is functionality equivalent to the same section in the data extract Offer Designer. For more information, please see that interface's documentation.

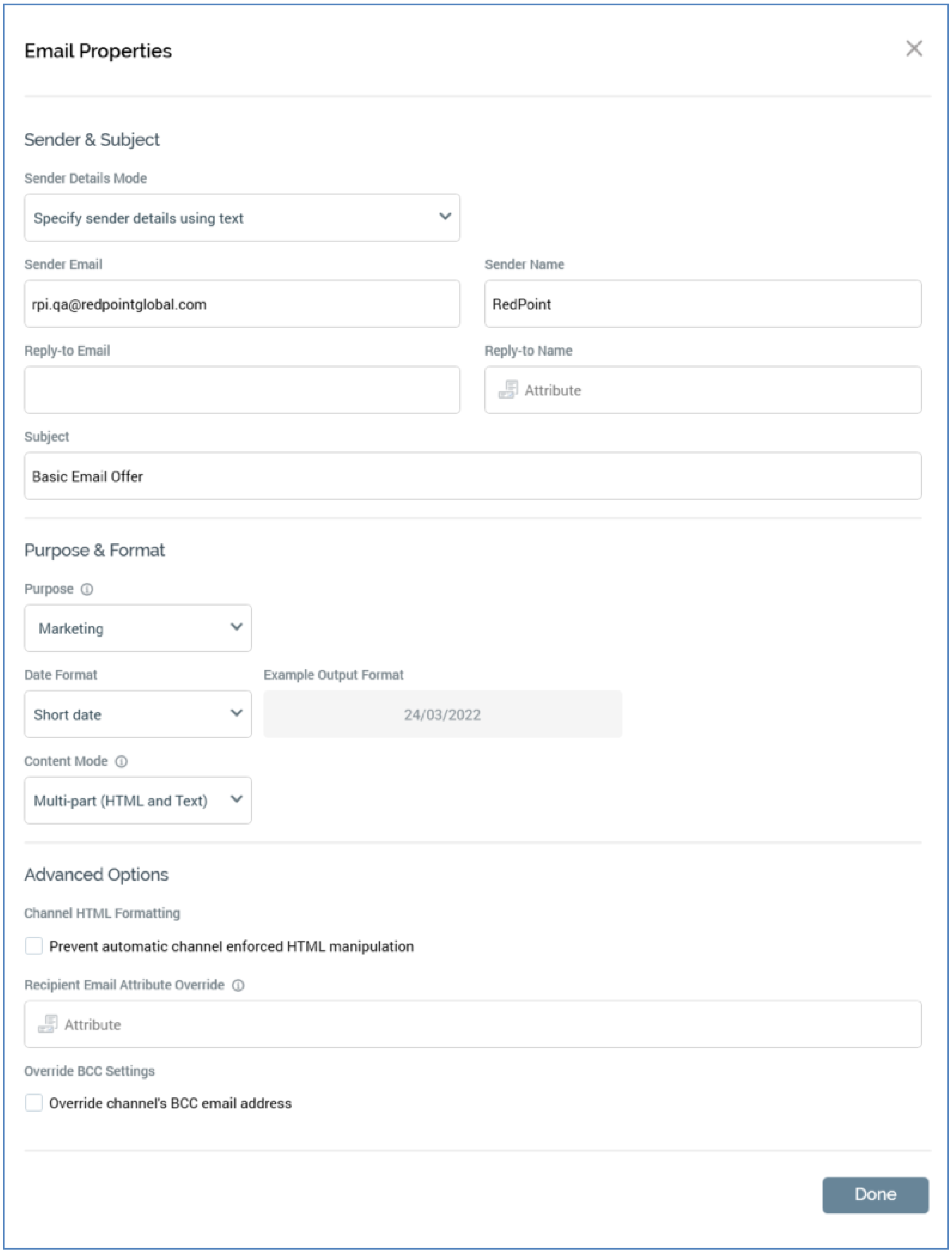
20.13 Email

The Email content panel contains the following sections:



20.13.1 Properties Toolbar Button

Clicking the Properties toolbar button displays the Email Properties overlay.



The dialog contains the following:

<u>Sender & Subject section:</u>

- Sender Details Mode: this dropdown allows you to specify how the email will source its sender details. Two values are offered:
    - Specify sender details using text: the default, selecting this option displays Sender Email and Sender Name text properties.
    - Specify sender details using attributes: selecting this option displays Sender Email and Sender Name attribute properties.
- Sender Email: if Sender Details Mode is set to 'Specify sender details using text', this is a text field, which is mandatory and a maximum of 100 characters. Sender email must be a valid email address. If Sender Details Mode is set to 'Specify sender details using attributes', this is a mandatory attribute property, which accepts only database column attributes. Anonymous auxiliary database attributes are not supported in this context.
- Sender name: if Sender Details Mode is set to 'Specify sender details using text', this is a text field, which is mandatory and a maximum of 100 characters. If Sender Details Mode is set to 'Specify sender details using attributes', this is a mandatory attribute property, at which the same restrictions as Sender Email apply.
- Reply-to Email: this optional text property accepts a maximum of 100 characters. The value provided must be a valid email address.
- Reply-to Name: you can optionally specify an attribute from which to source the email offer's reply-to name, by browsing or using drag and drop. Having populated the property, you can view information relating to the attribute in the File Information Dialog. You can also clear your selection.

  Note that reply-to is only supported at the following email providers:
    - Amazon SES
    - Instiller
    - SendGrid
    - SparkPost
- Subject: mandatory and also a maximum of 256 characters.

  If required, you can customize the subject line by dragging one or more attributes from the toolbox and dropping them into the field. On email delivery, the subject line is resolved to show appropriate values for the included attributes. Anonymous auxiliary database attributes are not supported in this context.

You can also customize the subject line by dragging and dropping text or smart assets therein.

If a smart asset is used in this way, all of the content elements with which it is configured must be in turn configured with text assets. On delivery of the email, the content text that is relevant to the recipient will be displayed at its subject line.

<u>Purpose & Format section</u>

- Purpose: a drop-down field that exposes values ‘Marketing’ (the default) and ‘Operational’. Purpose is accompanied by explanatory text: 'Marketing emails will include opt-out information when delivered; operational will not'. When email offer content is executed in an interaction workflow, if Purpose is set to 'Marketing', the delivered email will contain opt-out and contact details. If Purpose is 'Operational', opt-out and contact details are not included. The property is disabled if you do not have the Offer - Email Purpose functional permission.
- Date Format: you can specify a date format that will be used by all date attributes (whether inserted directly into HTML (raw or rich text) or text content, or from an embedded text, HTML or smart asset) included in the email content.

  Date format is set using a dropdown, which exposes the following values:

  - Use custom format: selecting this value displays the [date format] field.
  - Long date
  - Long date and long time
  - Long date and short time
  - Long time
  - Month day
  - Short date: the default value
  - Short date and long time
  - Short date and short time
  - Short time
  - Sortable
  - Year month

  The following fields accompany Date format:

  - Custom Format: this field is visible and enabled if Use custom format is selected. If enabled, provision of [date format] is mandatory.

  - Example Output Format: this read-only field displays the current date and time formatted in accordance with the specified date format settings. If no format is provided, an advisory message is shown (this is also the case if an invalid date format is provided). Literals that do not form part of the date format are shown verbatim.

  Dates included in email offer content are formatted in accordance with Date format settings at:

  - Preview (HTML and Text)
  - Email delivery via an offer activity within an interaction workflow
  - Email test delivery

- Content Mode: this property allows you to define whether the email offer is to be multi-part, text only or HTML only. A dropdown field, it exposes the following values:
  - Multi-part (HTML and Text) (the default): when selected, you must supply both HTML and Text content for the email offer.
  - HTML only: when selected, only the HTML Email Content tab is displayed. HTML content must be provided.
  - Text only: when selected, only the Text Email Content tab is displayed. Text content must be provided.

<u>Advanced Options section:</u>

- Channel HTML Formatting: a checkbox, accompanied by the text 'Prevent automatic channel enforced HTML manipulation'. It allows you to prevent a Salesforce Marketing Cloud email channel performing unwanted automatic HTML manipulation. It is unchecked by default. At delivery of an email through a Salesforce Marketing Cloud email channel, if the offer's property was checked, it is necessary to supply the following Salesforce Marketing Cloud variables manually in HTML email content:
  - %%Member_Busname%%
  - %%Member_Addr%%
  - %%Member_City%%
  - %%profile_center_url%%
  - %%subscription_center_url%%
- Recipient Email Attribute Override: this property allows you to override an email channel's recipient email attribute. You can populate it using drag and drop, or by browsing for an attribute. Once populated, you can view information about the attribute in the File Information Dialog. You can also clear the property. You cannot populate the property using a model project, exists in table or parameter attribute.

If provided, on execution of a production email offer, the email address to which the offer is sent is defined by the offer-level override, rather than by the channel's Recipient email attribute.

Anonymous auxiliary database attributes are not supported in this context.

- Override BCC settings: this checkbox, which is unchecked by default, allows you to override the BCC settings at the channel through which the email offer will be executed (note that only the Salesforce Marketing Cloud, SendGrid, SparkPost and LuxSci email channels support BCC). When checked, the BCC Details Mode and BCC Email Address properties are displayed.

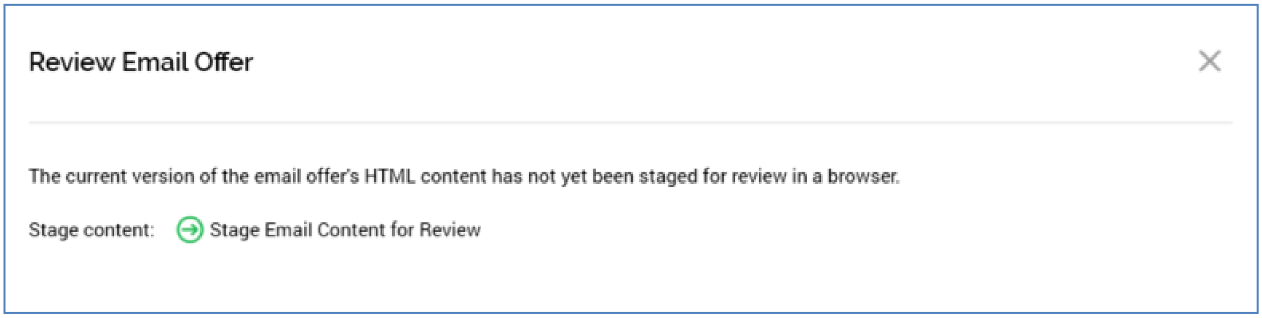
- BCC Details Mode: this dropdown property exposes two values: 'Specify email address using text' (the default) and 'Specify email address using attribute'. If the former is selected, a BCC Email Address text property is shown; if the latter, an attribute property is displayed.

- BCC Email Address: either a text or an attribute property is displayed, depending on the value you selected in BCC Details Mode. The value provided must be a valid email address string or attribute.

Note that the Email Properties overlay is also displayed at creation of a new email offer (but not when creating an email offer based on an offer template).

20.13.2 Review Toolbar Button

Clicking the Review toolbar button displays the Review Email Offer overlay.



The overlay allows you to create one or more representations of the email offer's HTML content and stage them to a web publish site or folder (as defined by the default email offer review location – see the Web Publish Sites configuration documentation for further information). This can be done to facilitate review of the email offer. For further information, please see the File Approval documentation.

The button is not shown if the email offer's Content mode property is set to Text only.

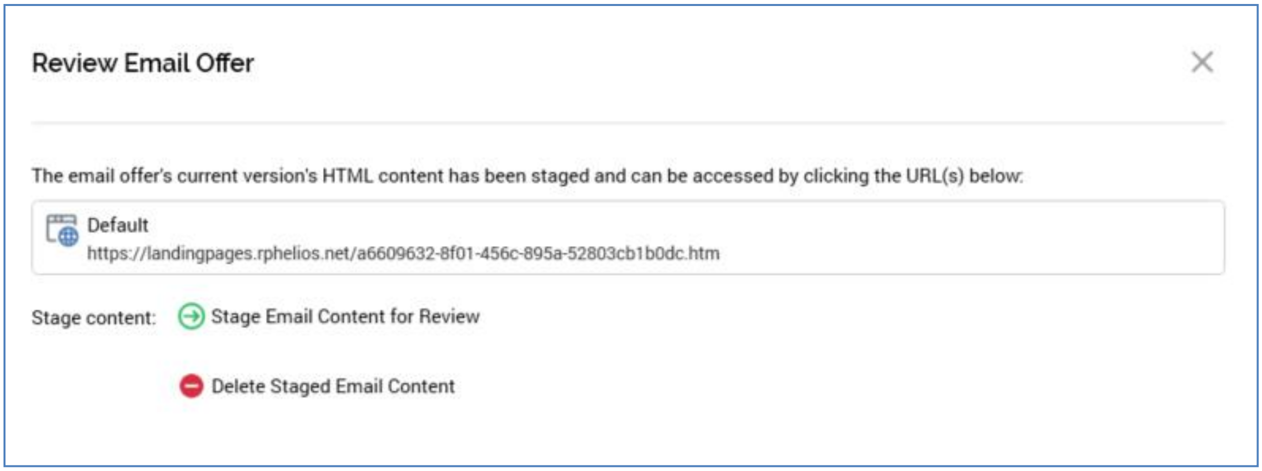
Prior to the email offer having been staged, the Review Email Offer overlay appears as per the image above. It contains the following:

- Text: 'The current version's HTML content has not yet been staged for review in a browser'.
- [Save & Stage] Stage Email Content for Review: this button is enabled when the email offer is valid. If there are no unsaved changes in email offer, the button's text reads 'Stage Email Content for Review'; otherwise it is reads 'Save & Stage Email Content for Review'.

  Clicking the button closes the dialog, saves the email offer (if appropriate) and creates a 'Stage email content for '[offer name]'' job and displays it in the My Jobs Dialog. The job fails if a default email offer review location is not defined.

  On successful completion of the job, one or more HTML representation(s) of the current version of the email offer is/are added to the Default email offer review location. Each file is named '[GUID].htm'. If the email offer contains dynamic content, one file per dynamic variation is created.

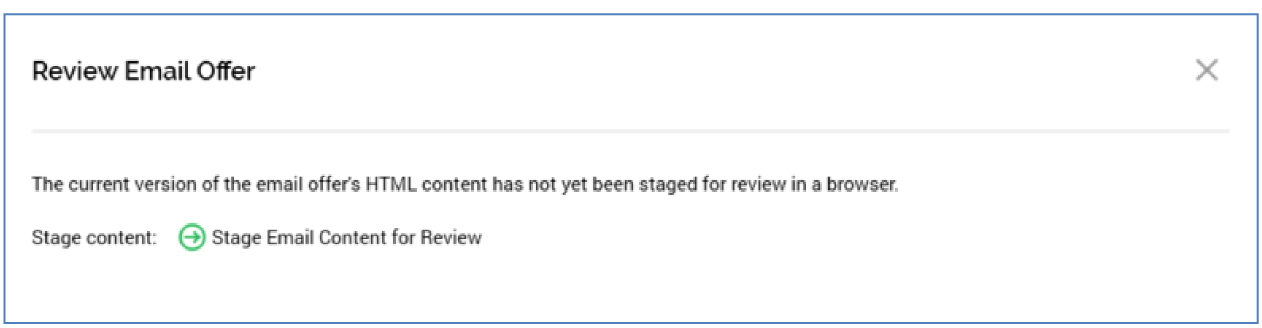
Post-having been staged, and prior to version increment, the Review Email Offer overlay appears as follows:



The dialog contains the following:

- Text: The email offer's current version's HTML content has been staged and can be accessed by clicking the URL(s) below
- URLs list: the URL(s) of the HTML representation(s) of the current version of email offer are listed. If the offer contains no dynamic content, a single, Default, HTML file is shown. If dynamic variations of the email offer exist, Default is augmented with Dynamic Variations 1 ton. You can click the hyperlink to view a HTML representation of the email offer in your default browser. Any supplied preview parameters are rendered within the staged content.
- [Save & Stage] Stage Email Content for Review: invocation of this option creates new staged HTML files. Existing staged files are not affected.
- Delete Staged Email Content: invocation of this option deletes all of the staged content produced for the email offer. It is protected by an 'Are You Sure?' dialog. Proceeding with the delete creates a 'Delete staged email content for '[Offer name]'' job and displays it in the My Jobs Dialog. On the job's completion, the email offer's staged content will have been removed.

Post-having been staged, and post-version increment, the Review Email Offer dialog appears as follows:



- Text: 'The current version's HTML content has not yet been staged for review in a browser.'

- The URLs list is not shown.
- Stage content: see above.

Note that you can access previously-staged files from a previous version of an email offer.

If offer file type approval is enabled, and its Require staged offers property is checked, an email offer must be staged for review prior to being approved. If you attempt to approve an email offer that has not been staged in this context, a warning message is displayed.

20.13.3 Actions Toolbar Button

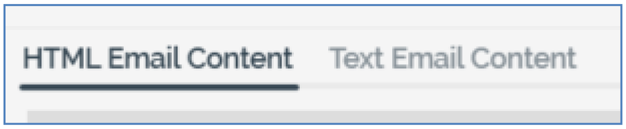
The Actions toggle button is displayed to the right of the Review toggle button. Clicking it displays a menu exposing the following options:

- Send Emails
- Send Test Emails
- Preview By Recipient
- Test Email Links
- Test Inbox Delivery
- View Inbox Results

Each of these is documented in its own separate section.

20.13.4 Email Tabset

If an email offer supports both HTML and Text content, two tabs are shown in the email Offer Designer:

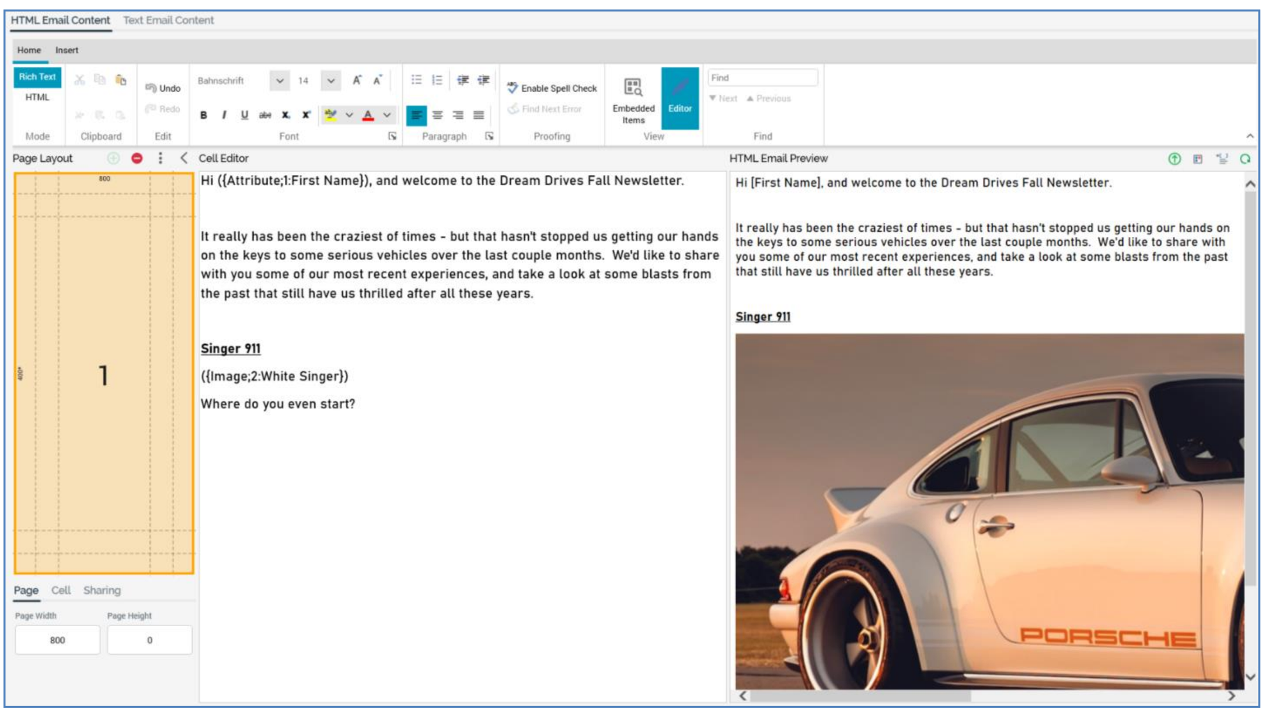


Each is documented in its own separate section.

20.13.5 HTML Email Content Tab

HTML email content can be entered in a series of 'cells', defined within the Page Layout section. Cells can be grid-based or sited within an HTML template (for more information on creating HTML templates, please see the HTML asset within the Asset Designer documentation).

A cell can contain content entered via a rich text editor, or as raw HTML. In addition, an asset or smart asset can be assigned directly to a cell. A preview panel, displayed to the right of the HTML Email Content tab, provides a visualization of the email's final assembly from its constituent parts.



The HTML Email Content tab contains the following elements:

- Content Editor Toolbar
- Page Layout section

- Cell Editor
- HTML Email Preview section

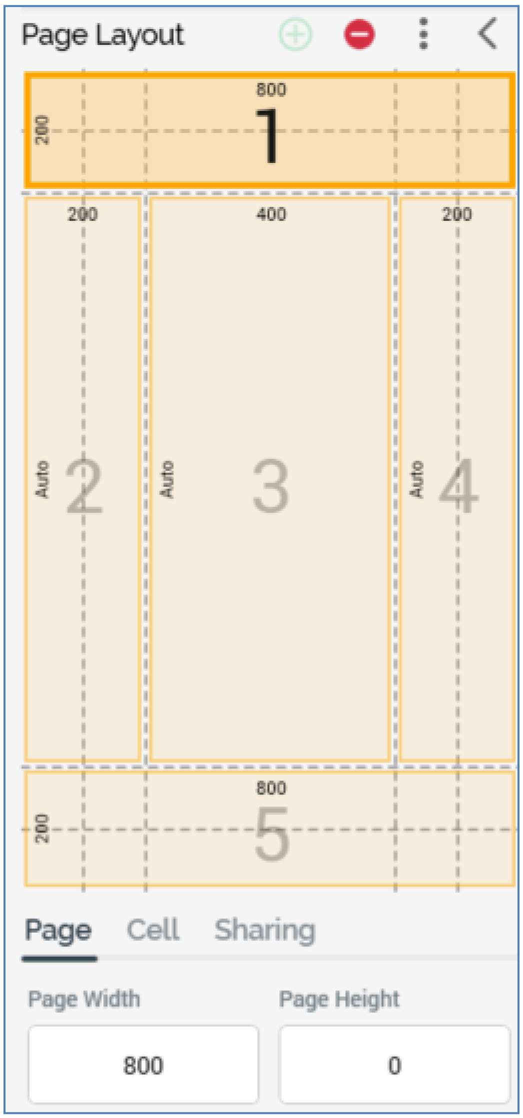
Each of these is documented separately.

20.13.6 HTML Content Editor Toolbar

The content editor toolbar is described within the RPI content editor documentation.

20.13.7 Page Layout Section

The page layout section is shown to the left of the HTML content workspace:



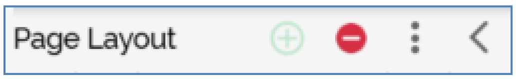
It contains the following elements, each of which is documented separately:

- Toolbar
- Cells (Pre-built or HTML template)
- Tabset

Each is covered separately.

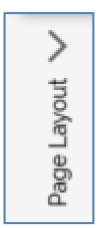
20.13.8 Page Layout – Toolbar

A toolbar is shown at the top of the Page Layout section.



It exposes the following options:

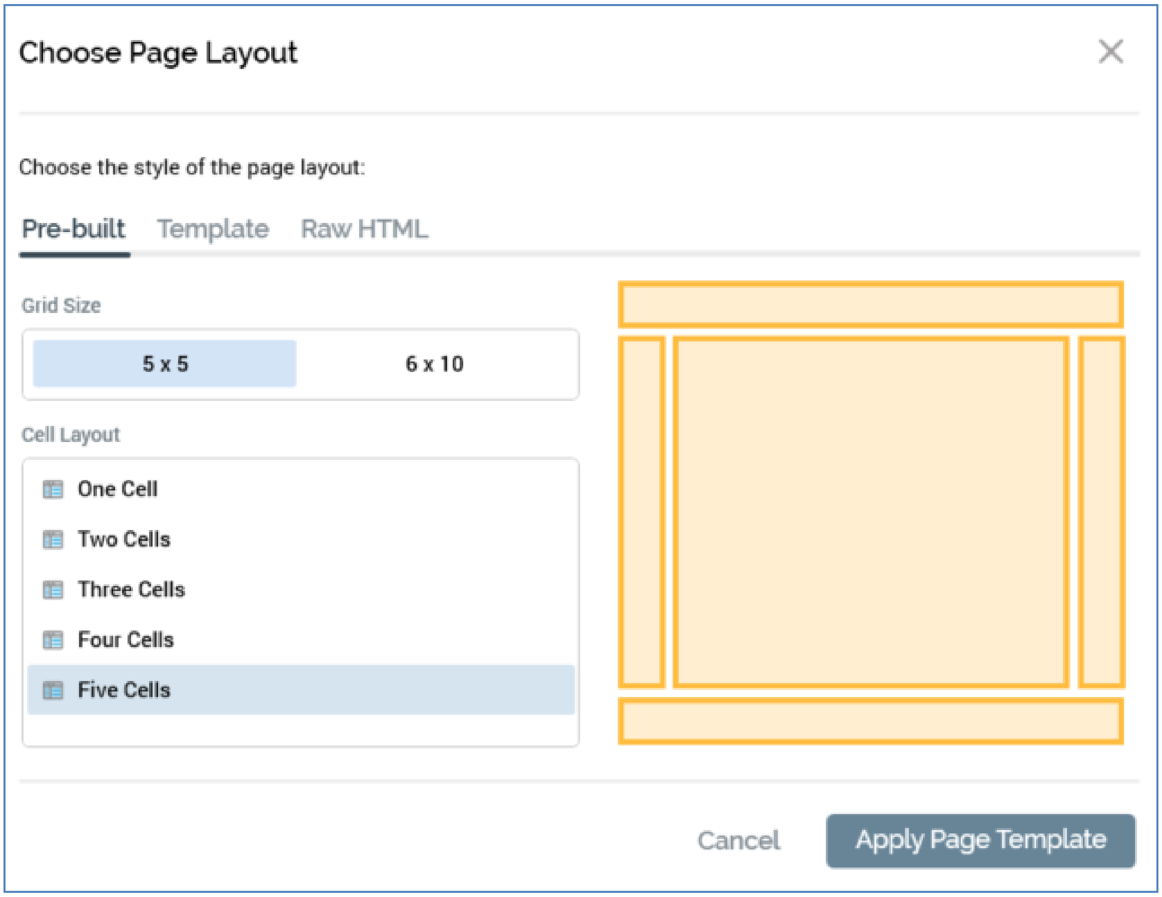
- Add a new cell: this button is only available when a Pre-built page layout is selected. Clicking it adds a new cell to the page layout panel, at the first available empty position as defined by the rows/columns grid. The new cell occupies one grid cell only. The option is enabled when one or more available empty positions exist. Available positions are populated from the top left, then across the row.
- Remove the selected cell: this button is only available when a Pre-built page layout is selected. It is enabled when a cell is selected in the page layout panel. Invocation removes the selected cell from the panel. Any content therein is lost.
- Choose page layout: this button allows you to choose a page layout for the offer. Clicking it displays the Choose Page Layout dialog, which is covered separately.
- Hide/Show: clicking this button when the Page Layout section is shown causes it to be hidden.

  A vertical 'Page Layout' is displayed to the left of the cell editor, at which you can click Show to redisplay the Page Layout section.

20.13.9 Page Layout – Choose Page Layout Dialog

The Choose Page Layout dialog allows you to select a page layout upon which to base your email offer.



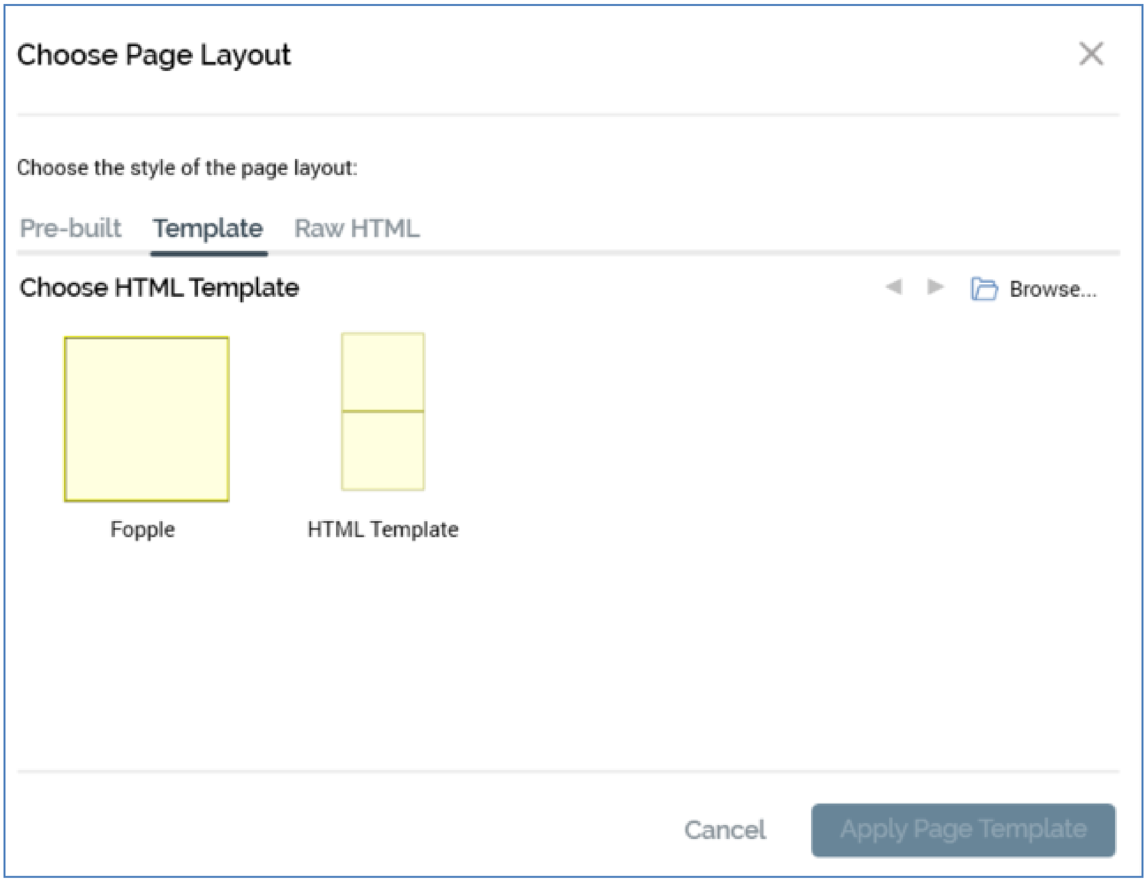
The dialog contains the following:

- Choose the style of the page layout: you can select from a Pre-built, HTML template or Raw HTML based layout (the most-recently used grid layout is selected by default).

When specifying a Pre-built layout, the following are shown:

- Grid size: two grid sizes – 5x5 (the default) and 6x10 – are available for your selection.
- Cell layout: you can specify a one- to five-cell layout for your offer.
- Grid preview: when you select a Cell layout, a preview representation thereof is shown to the right of the dialog.

When specifying an HTML template-based layout, the following are shown:



- Toolbar: exposing the following options:
  - Previous Page: this button is available when a page other than the first is displayed. Clicking it displays the previous page's worth of HTML templates. The page size controlled by system configuration setting MaxFileSearchPageSize.
  - Next Page: this button is available when a page other than the last is displayed. Clicking it displays the next page's worth of HTML templates. The page size controlled by system configuration setting MaxFileSearchPageSize.
  - Browse: clicking this button displays the Choose HTML Template File System Dialog, which is limited to the display of asset files only. You can select an HTML template to use. If you select a non-template HTML asset, a warning is displayed. If you select a non-HTML asset, a warning is also displayed.
- Choose the template to use: a list of all HTML assets defined for use as HTML templates across all accessible folders in file system is displayed. A thumbnail is shown for each. Templates are listed in alphabetical order, and an informational tooltip is displayed on hover.

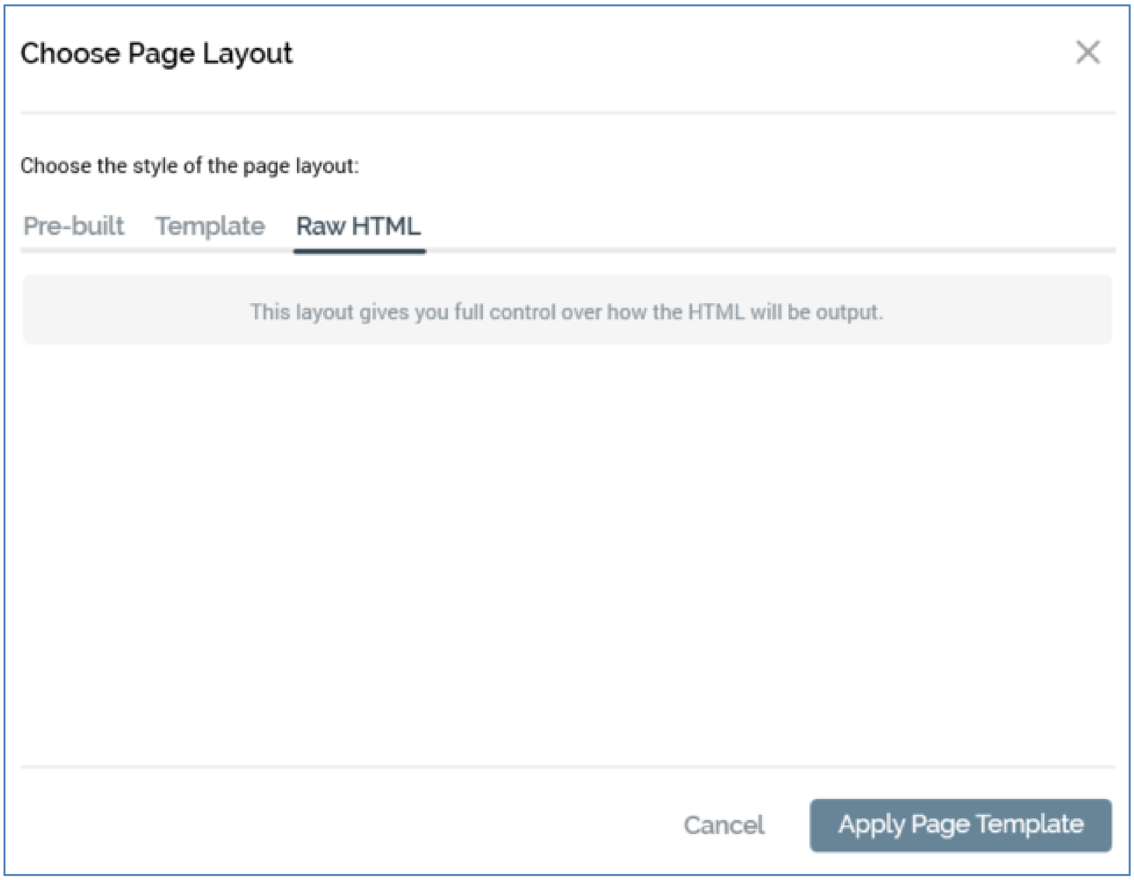
  The following context menu options are available when you right-click an HTML template:

  - View File Information...
  - Open File Location...

○ Open Latest Version

You can select the HTML template you wish to use by clicking it. Doing so enables the Apply Page Template button.

When specifying a Raw HTML-based layout, the following are shown:



Having chosen to use Raw HTML, you have full control over the structure of the HTML email's <body> tag.

Two buttons are shown at the bottom of the dialog:

- Apply Page Template: having specified a grid layout or chosen an HTML template, clicking this button applies your selection to the email offer. When you do so, all previous content that you entered will be lost; an 'Are You Sure?' dialog asks you to confirm that you wish to proceed.

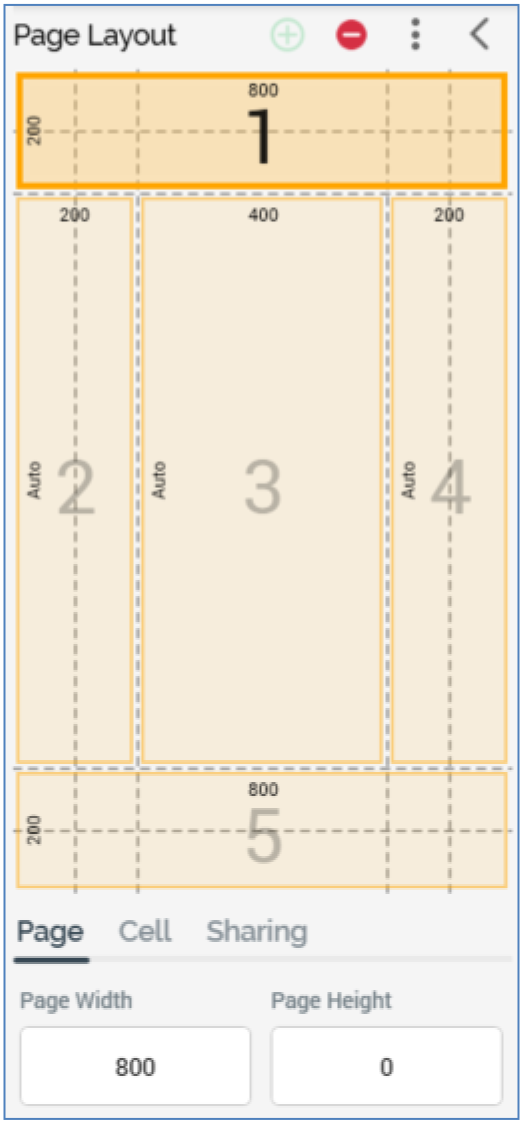
- Cancel: invocation of this option removes the dialog from display without applying the layout change (clicking off the dialog has the same effect).

Note that, on creation of an email offer, following clearing of the Email Properties dialog, the Choose Page Layout dialog is displayed. This applies only if the last layout used was Pre-built or

HTML Template; the dialog is not shown if the last layout used was Raw. Within the dialog, the most recently-used option is selected automatically.

20.13.10 Page Layout – Grid

When a grid-based cell layout is selected, the Page Layout section appears as follows:



The following are shown:

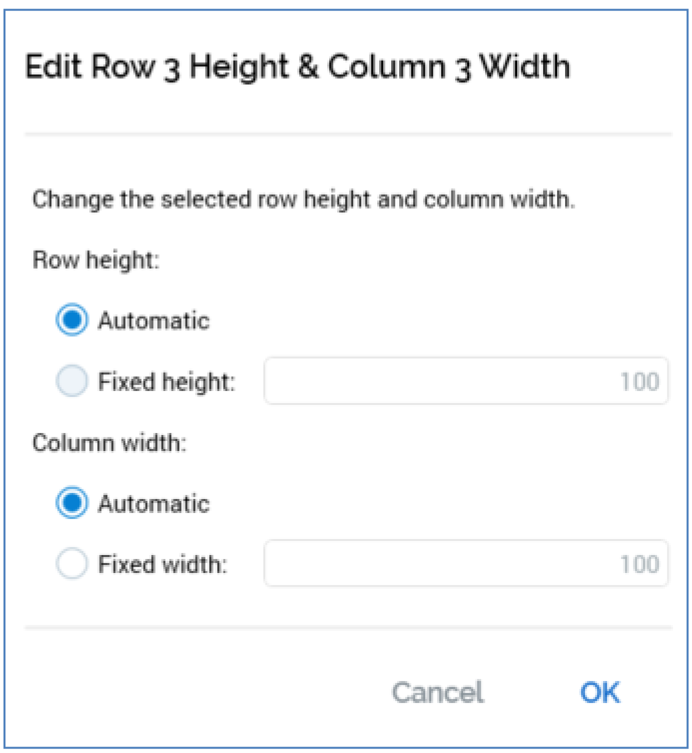
- Toolbar – exposing three options and covered separately.
- Cells list: cells are shown below the Page Layout toolbar. Each cell is automatically assigned an ordinal number, which is incremented or decremented as cells are added and removed.

You can populate a cell directly with an asset (other than a web form asset) or smart asset by dragging the required file from the toolbox and dropping it onto a cell. When you do so, any existing content in the cell is lost, and the file's name is displayed below the cell number.

You can also select a cell within the cells grid. When you do so, the Cell Editor section is populated with the contents of the selected cell.

A context menu is shown when you right-click a cell in a grid-based layout, exposing a single option:

- Edit row/column size: clicking this button displays the Edit Row [y] Height & Column [x] Width dialog:

  The dialog allows you to set the following cell properties:

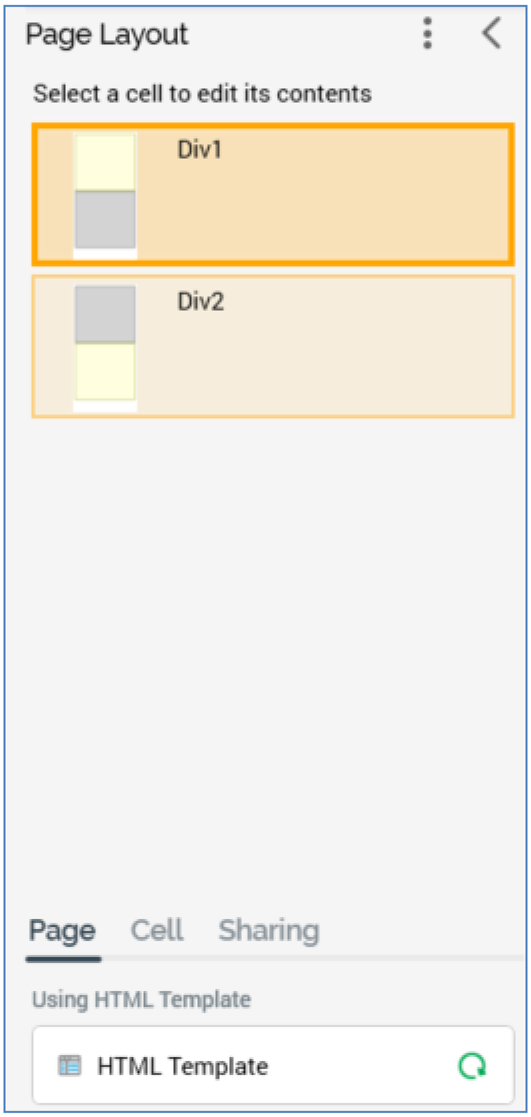
  - Row height: two buttons allow you to specify that the row's height should be set automatically (in accordance with the overall page height), or to a fixed value. If the latter is selected, you must specify a value, which defaults to 100, and which must be greater than or equal to 50.

- Column width: as row height.

- Tabset: covered separately.

20.13.11 Page Layout – HTML Template

When an HTML template-based cell layout is selected, the Page Layout section appears as follows:



The following are shown:

- Toolbar – exposing a single option (Choose page layout). Covered separately.
- Message: advising you to 'Select a cell to edit its contents'.
- Cells list: each cell within the HTML template is listed, in the order in which it appears therein. The currently-selected cell is selected. The following properties are shown for each:

- Thumbnail: a thumbnail image provides an impression of the position of the cell (shown in yellow) within the HTML template relative to the other cells therein (displayed in gray).
  - Name
  - Description

  You can select a cell, and then enter content manually therein using the Cell Editor. You can also assign an asset or smart asset directly to an HTML template cell. Note that, if you wish to edit the properties of a directly-assigned image asset, you should access it via the Embedded Items dialog.

  A validation error is raised if you configure a cell with an HTML asset that is defined as for use as an HTML template.

- Tabset: covered separately.

20.13.12 Page Layout – Tabset

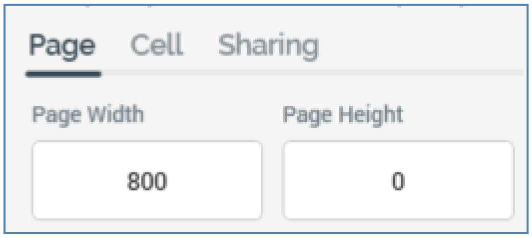
The tabset is displayed below the Cells list. It contains the following tabs, each of which is documented separately:

- Page
- Cell
- Sharing

20.13.13 Page Layout – Page Tab

This tab allows you to control the dimensions of the email page itself.

If a grid-based page layout is selected, the tab contains the following:



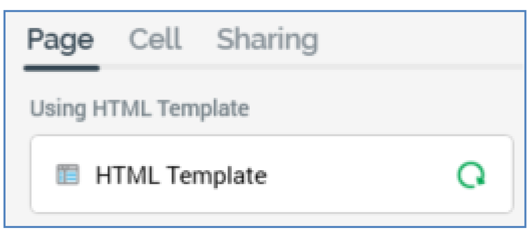
- Size: displayed as [Width] x [Height].

  [Width] is a mandatory numeric property with a maximum value of 5000, a minimum value of 400 and a default value of 800. If the page's width is defined as less than or equal to the sum of the widths of columns 1, 2, 4 and 5, an asterisk is appended to widths as shown in page layout cells.

  If the width is less than the sum of the widths of columns 1, 2, 4 and 5, the total of widths shown in page layout cells are set to the sum of the widths of the aforementioned columns.

  [Height] is a mandatory numeric property with a maximum value of 5000 and a default value of 0. When the page's height is less than or equal to sum of the heights of rows 1, 2, 4 and 5, row 3's height is shown as 'Auto'. When it exceeds that value, row 3's actual height is displayed, and is calculated as the sum of the heights of rows 1, 2, 4 and 5.

If an HTML template-based page layout is selected, the tab contains the following:



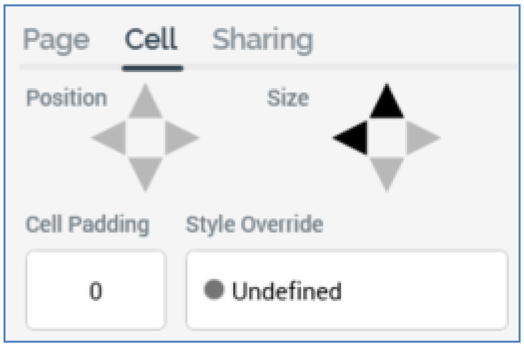
- Using HTML template: the name of the currently-selected HTML template is shown. You can open the latest version of the template in the Asset Designer. You can also view information about the template in the File Information Dialog.

- Refresh template: applies the latest version of the template to the current email offer.

20.13.14 Page Layout – Cell Tab

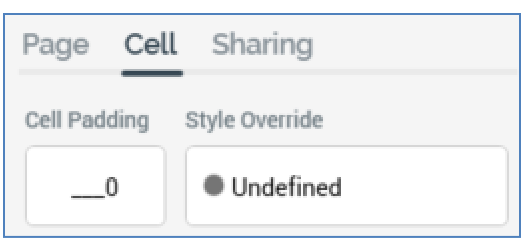
This tab allows you to control the size and position of the cells that make up the email's layout, using two sets of arrow controls. Cell sizes and positions are based on the underlying dashed grid.

If a grid-based page layout is selected, the tab contains the following:



- Position: set using up, down, left and right arrow controls. The controls are only enabled if the cell size is less than the available area within the page layout. Individual arrow controls are enabled in accordance with the current cell position. You can move the cell within the available area. Arrows are enabled or disabled when the cell is moved to its new position.
- Size: set using up, down, left and right arrow controls. The controls are enabled in accordance with cell's size compared to its current position. You can increase or decrease a cell's size one column or row at a time. Cell size is increased or decreased from its right or bottom boundary. Note that you cannot change a cell's height when set to 'Auto'. The minimum cell width is one column, and the minimum cell height is one row.
- Cell padding: you can specify an integer cell padding value on a cell-by-cell basis. Cell padding can be used to surround a cell with an empty border of a given number of pixels.
- Style override: if you wish, you can optionally apply a CSS (Cascading Style Sheets) style directly to the cell.

If an HTML template-based page layout is selected, the tab contains the following:

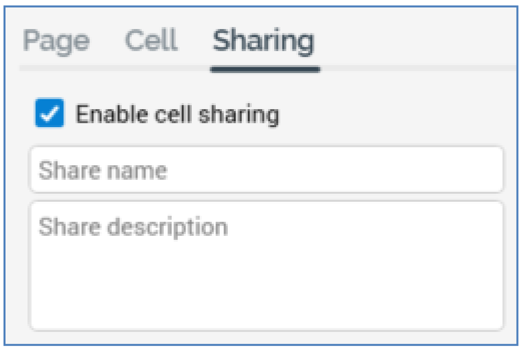


- Cell padding: as per grid-based page layout.
- Style override: as per grid-based page layout.

20.13.15 Page Layout – Sharing Tab

The third tab allows you define cells as shareable. Shared cells are used when including a Share (to Facebook or Twitter) Content button in email content. A cell that is marked as shareable can be specified in the button's configuration. On receipt of an email containing such a button, and on clicking the same, the user is able to share the content of the cell in question to his or her Facebook page or Twitter account.

The tab's contents are identical, irrespective of whether a grid- or HTML template layout is currently selected:



- Enable cell sharing: this checkbox, which is unchecked by default, allows you to define that the cell is shareable.
- Share name: this field allows you to provide a name for the share, to be used when configuring a Share Content to Facebook or Twitter button, and also when viewing the cell's contents in the View Embedded Items dialog. It is enabled when Enable cell sharing is checked, and, when so, is mandatory. The field accepts a maximum value length of 100 characters.
- Share description: this field allows you to provide an optional description to accompany the Share name. The field is enabled when Enable cell sharing is checked, and its maximum length is 1000 characters.

20.13.16 HTML Content Editor

The HTML content editor allows you to edit the contents of an email offer cell. It is described in its own section within the RPI documentation.

You can use SQL and NoSQL auxiliary attributes in email offer content in the following contexts:

- Embedded attributes
- Embedded attributes within a text asset
- Embedded attributes within an HTML asset
- Embedded attributes within a smart asset's content
- Attributes in a table asset

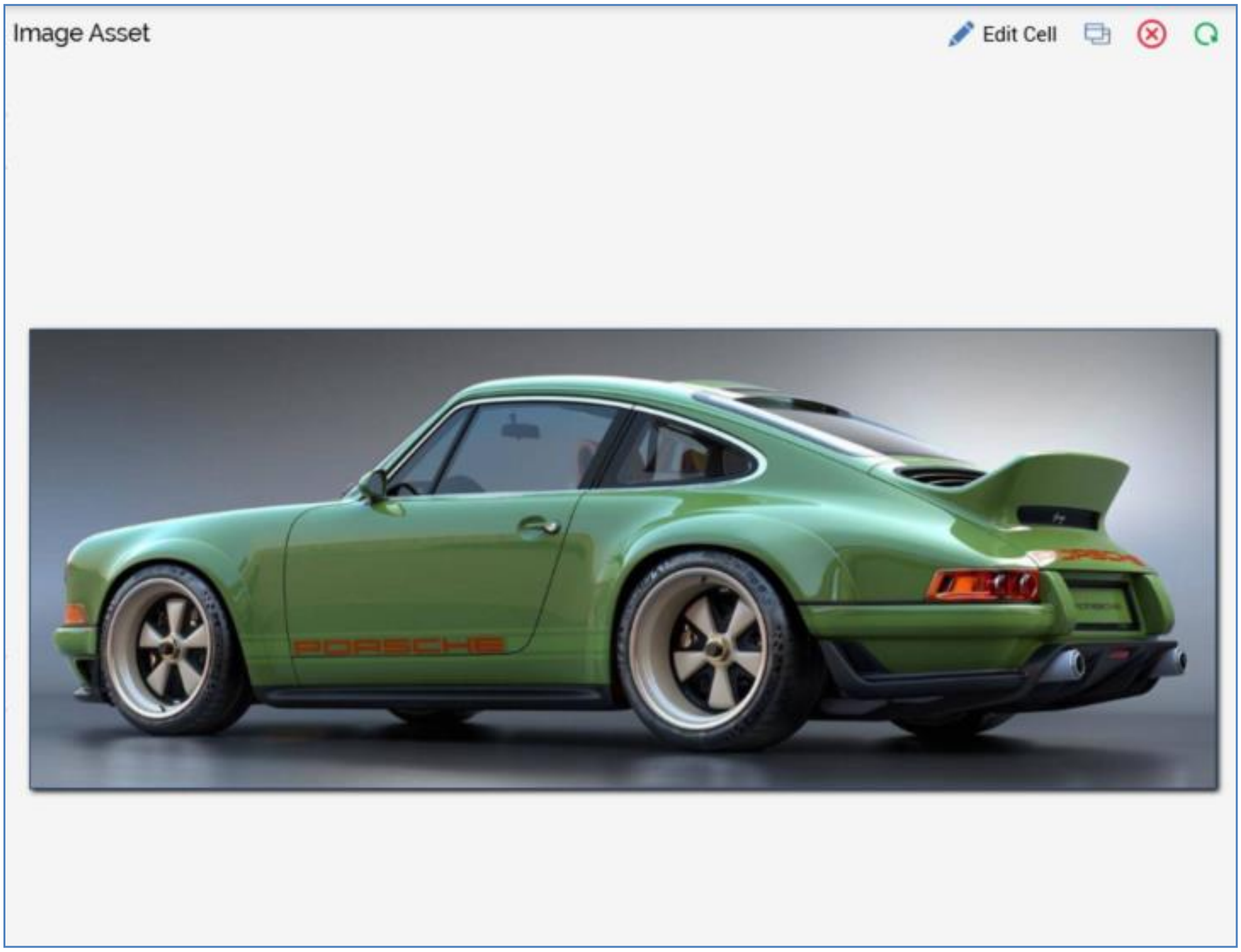
Note that you can create a link to a landing page by dragging a landing page from the toolbox and dropping it into the Cell Editor. When you do so, the link's Display text property is set automatically to the name of the landing page.

When including personalized links to external pages in email offer content, it is recommended to use the Insert Link functionality, to ensure that links are tracked correctly by RPI. For more information, please see the Content Editor documentation.

Note also that anonymous auxiliary database attributes are not supported in this context.

20.13.17 Content Editor – Asset Assigned Directly To Cell

When a cell (grid or HTML template) has been configured directly with an asset or smart asset, the content editor section is entitled in accordance with the file type in question.



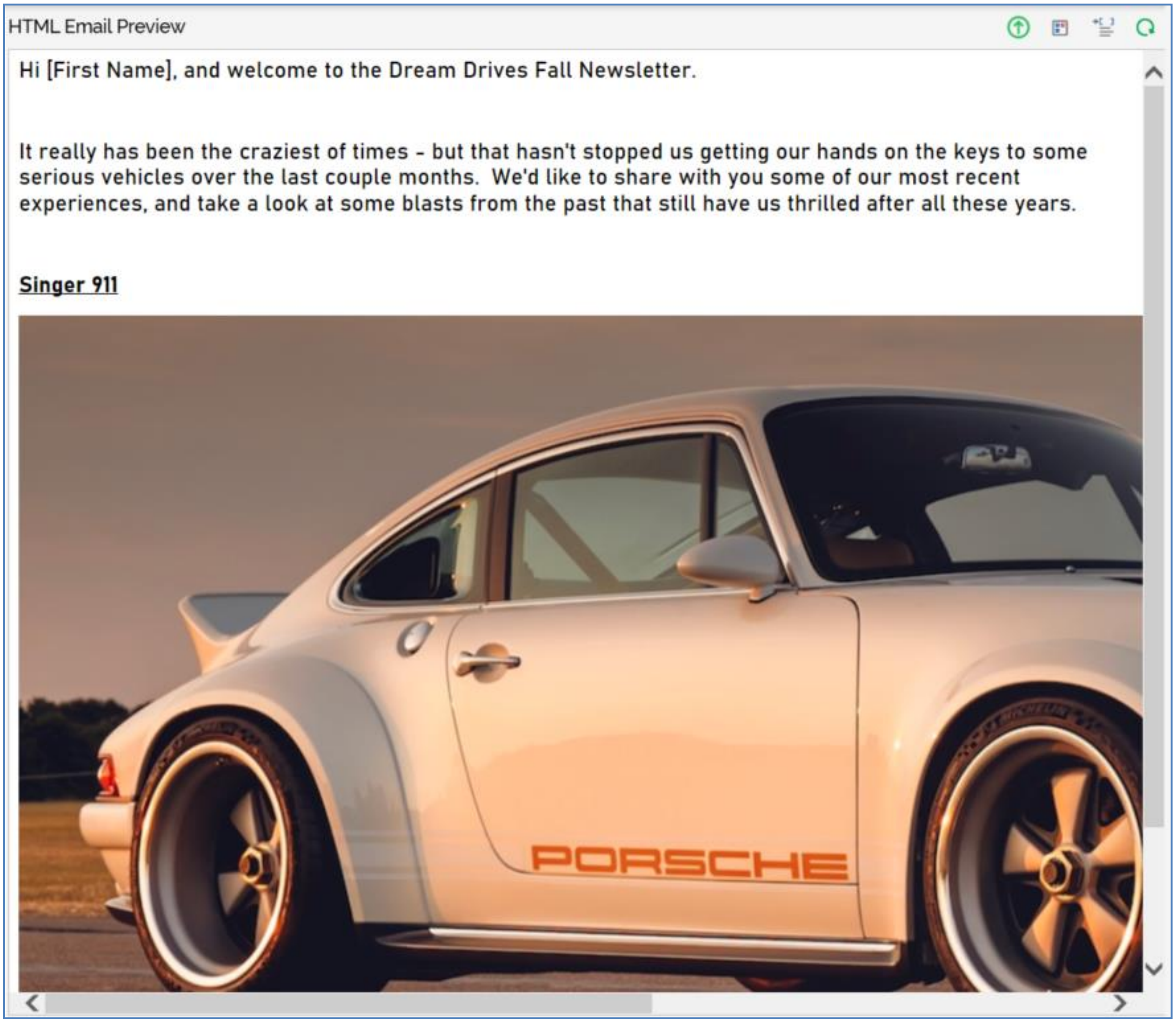
A toolbar is shown at the top of the section, exposing the following options:

- Edit Cell: clicking this option displays the Cell Editor, with the embedded file displayed as a tag therein. Note that, once you have done this, you cannot revert to the asset/smart asset preview.
- Open latest version: clicking this button displays the latest version of the asset or smart in an appropriate designer.
- Clear Asset from Cell: removes the file from the cell and removes its name from the cell in the Page Layout section.
- Refresh

A read-only preview of the file is displayed instead of the content editor.

20.13.18 HTML Email Preview Section

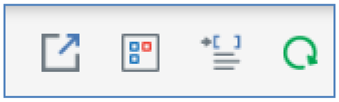
The HTML Email Preview section is displayed to the right of the email Offer Designer's HTML tab:



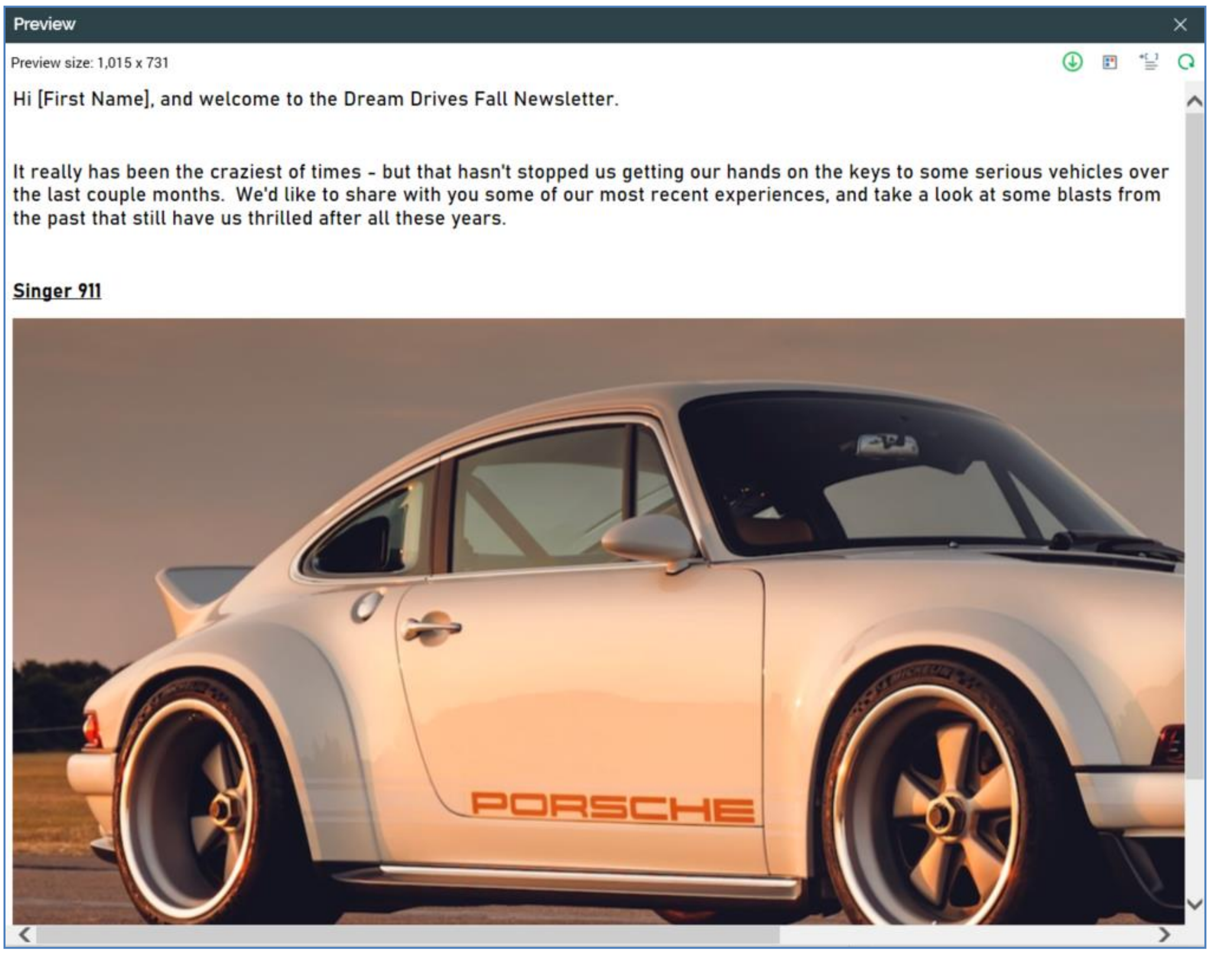
The section consists of a toolbar and Preview panel, which are documented separately.

20.13.19 HTML Email Preview Toolbar

The toolbar at the top of the HTML Email Preview section exposes the following options:



- Show the Preview Window as a Popout: clicking this button removes the inline HTML Email Preview from display, and displays it instead in a non-modal, floating Preview Window.

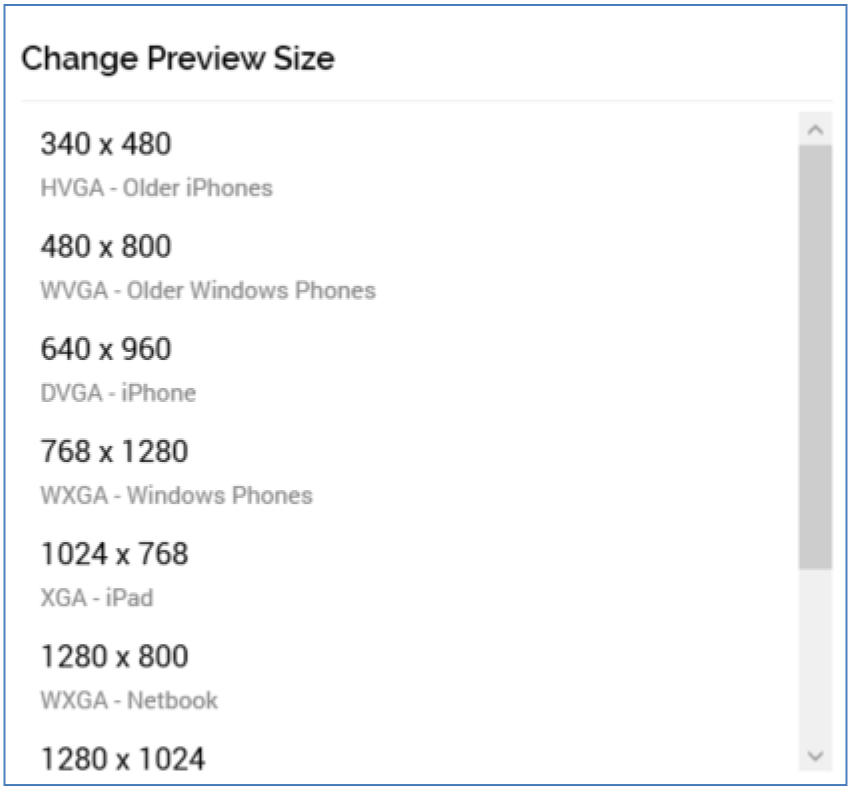


The floating Preview Window contains the following:

- Close button: clicking this button docks the Preview Window as per invocation of Dock the Preview Window.

A toolbar exposes the following options:

- Preview size: the current size of the Preview Window is displayed. You can click it to change the size of the Preview Window. Doing so displays the Change Preview Size dialog.



The following sizes are available:

- 340 x 480: HVGA (Older iPhone)
- 480 x 800: WVGA (Older Windows Phone)
- 640 x 960: DVGA (iPhone)
- 768 x 1280: WXGA (Windows Phone)
- 1024 x 768: XGA (iPad)
- 1280 x 800: WXGA (Netbook)
- 1280 x 1024: SXGA (small desktop)
- 1366 x 768: WXGA (tablet)
- 1680 x 1050: WSXGA+ (large desktop)

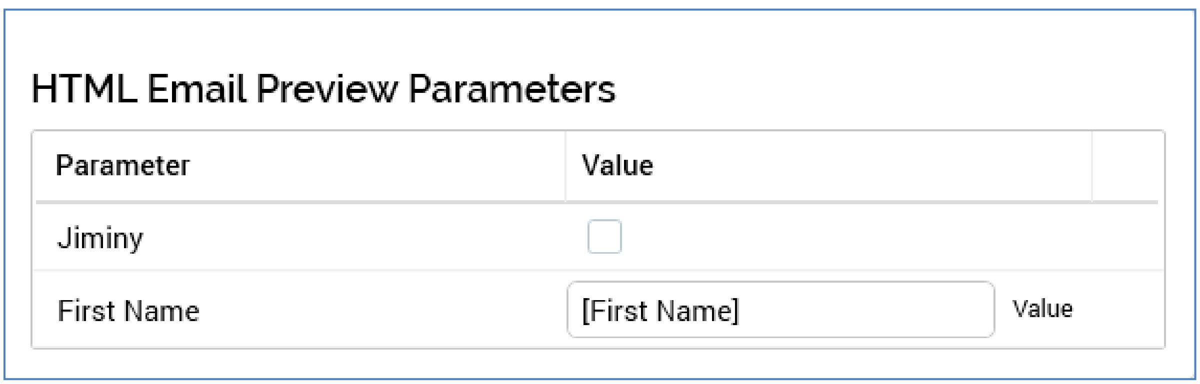
You can click a size to select it, whereupon it is applied at the Preview Window.

By default, the Preview Window is displayed with a width of 800px. On re-invocation of Change Size, if the size was selected manually, the Preview Window is sized in accordance with your most recently-used selection.

- Dock the Preview Window: clicking this button removes the floating Preview Window from display and redisplays the inline HTML Email Preview.
- View Dynamic Content Previews: documented separately.
- Show Preview Parameters: documented separately.
- Refresh

Content within the floating Preview Window is updated dynamically as it is changed within the email Offer Designer. The Window is closed when the current RPI tab focus is changed.

- View Dynamic Content Previews: invocation of this option displays the Preview HTML Dynamic Content dialog (covered separately).
- Show Preview Parameters: invocation of this option displays the HTML Email Preview Parameters dialog:



All attributes within the current HTML email content are displayed. You can specify parameter values for each, allowing you to gain a more accurate impression of the final email's appearance.

You can also supply preview parameters for inclusion in a test email send. If sending to one or more seed groups, the names of attributes included within content, or to be used by smart assets to make personalization decisions, must match the names of seed attributes for delivered test emails to be personalized.

Provision of preview values is constrained by data type (string, integer, decimal or date/time). By default, an attribute's value is shown as [attribute name]. The preview is updated with a new parameter value immediately as you type.

Parameter values are specified using raw database values, rather than translated values (where they exist). You can toggle between 'Value' and 'Trans' (translation) using the button shown to the right of the parameter. If you elect to specify the parameter's value using a translation, a dropdown, listing translated and raw values, is shown. Note, however, that when you choose a translated value, the raw value is shown in the preview; RPI only supports the output of raw database values, and not translated values.

In addition, if the email offer contains one or more smart assets, parameters that facilitate determination of the content that a target will receive are also displayed.

Any selection rules used in the smart asset's content list are listed and accompanied by checkboxes. You can check a checkbox to gain an understanding of what the final email will look like when the recipient is targeted by the selection rule in question. If multiple selection rules are checked, the content displayed will reflect the order in which selection rules appear within the smart asset's content list (the recipient will be targeted with the content associated with the first selection rule in the asset applicability list by which targeted).

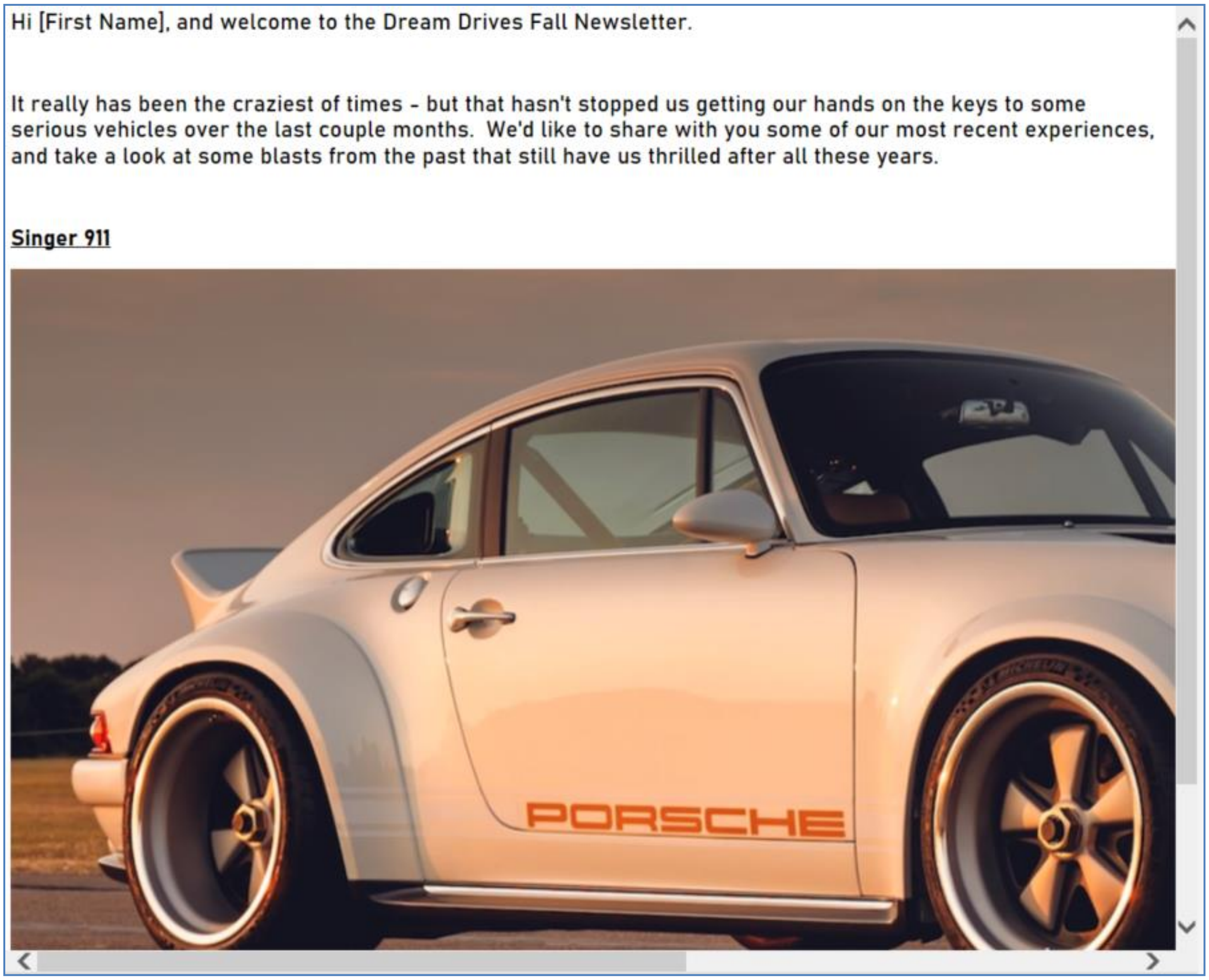
You can also manually provide values for any of the attributes used in a smart asset's content list to achieve the same goal. If an attribute is used both within a smart asset's asset content list, and also embedded within email content, it is displayed once only in the Parameters list; supplying a value for the attribute has the dual purpose of determining asset applicability and providing preview content for illustrative purposes.

Note that, when previewed initially, email content that contains a smart asset will display the asset's default content.

- Refresh: refreshes the HTML Email Preview panel with a visualization of the current state of the email offer.

20.13.20 HTML Email Preview Panel

The HTML Email Preview panel displays an inline preview of the assembled contents of the entire email.



HTML content is assembled from the content entered into page layout cells, with any cell padding rendered appropriately.

The preview is updated automatically in near-time as content within the email offer is updated.

Any embedded attributes are illustrated using the dummy parameters you have supplied. Any assets you have embedded within the selected content type are rendered and shown within the preview. Any asset applicability rules relating to embedded smart assets are applied and content rendered accordingly (if default content is not provided, nothing is shown).

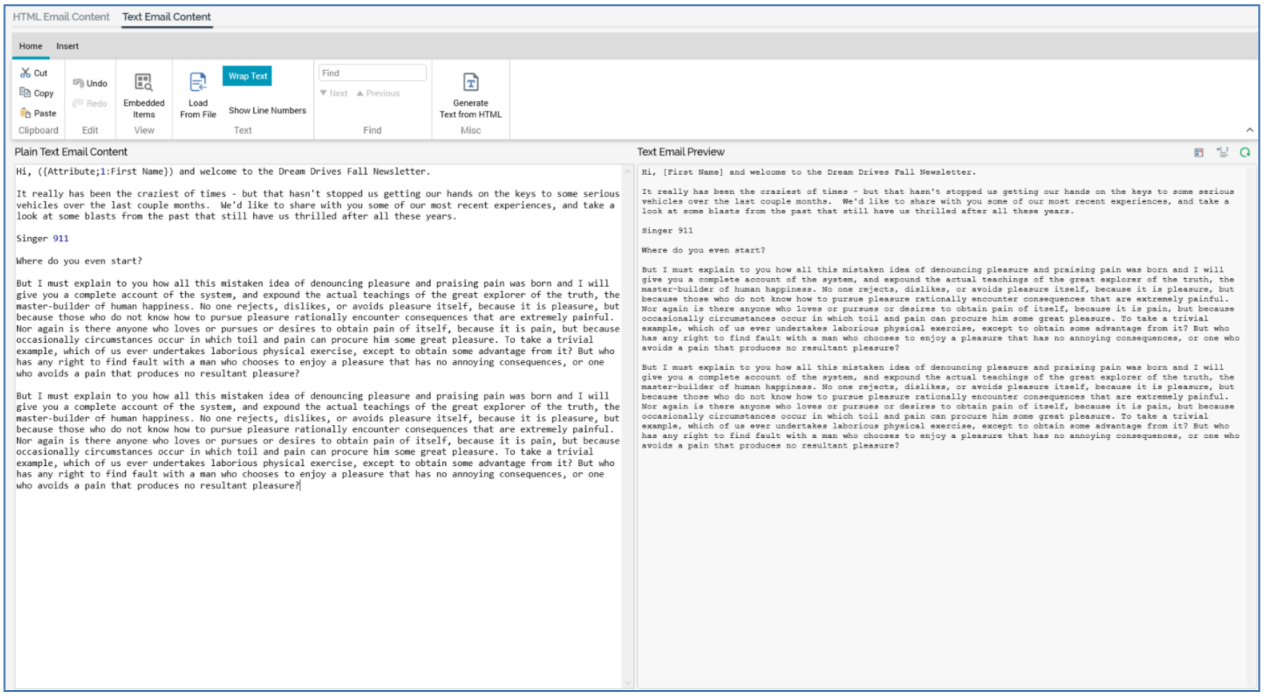
No vertical cropping of text is performed within a cell – height stipulations will be overridden when content is larger than the available space. Any cell paddings defined within the page's layout are taken into account when the page is rendered.

If you click a link in email preview content it is opened in an instance of your default browser. If the link contains URL parameters, parameters values within the URL are rendered as follows:

- Strings: '[ParameterName]'
- Integer: '0'

20.13.21 Text Email Content Tab

Plain Text email content must also be provided to complement an email offer's HTML content. It is required to support those email recipients whose email clients do not support HTML, and also those who prefer to receive their communications as plain text.



The Text Email Content tab contains the following elements:

- Content Editor Toolbar
- Content Editor
- Text Email Preview section

Each of these is documented separately.

20.13.22 Text Content Editor Toolbar

The content editor toolbar is described within the RPI Content Editor documentation.

20.13.23 Text Content Editor

The text content editor allows you to edit an email's text content. It is described in its own section within the RPI documentation.

You can use SQL and NoSQL auxiliary attributes in email offer content in the following contexts:

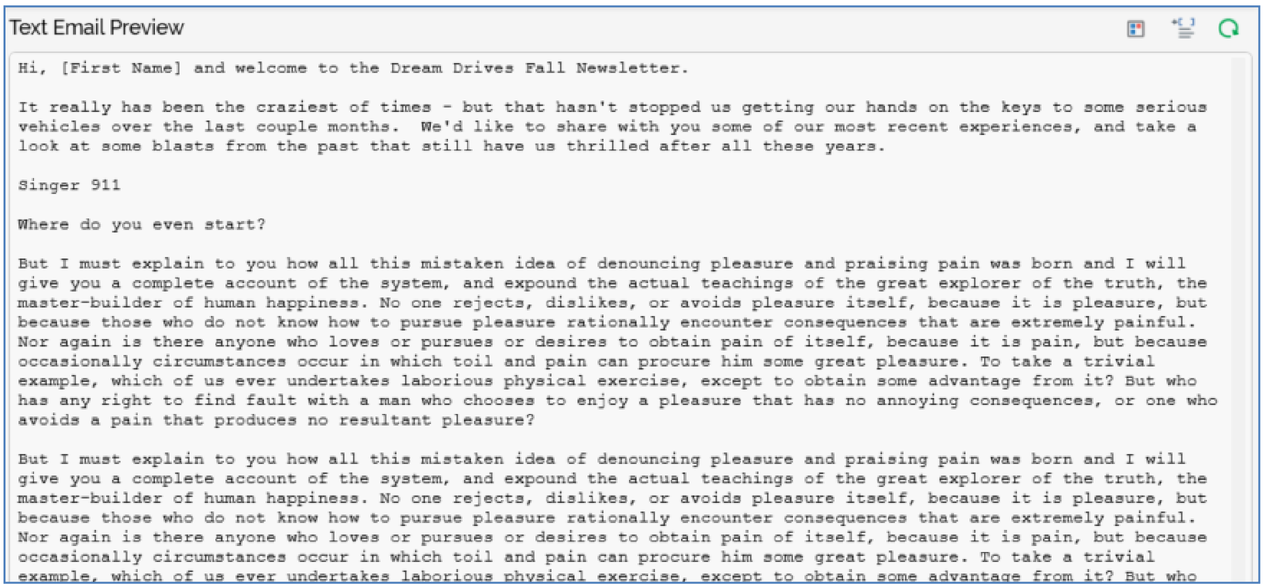
- Embedded attributes

- Embedded attributes within a text asset
- Embedded attributes within a smart asset's content
- Attributes in a table asset

Similarly, anonymous auxiliary database attributes are not supported in this context.

20.13.24 Text Email Preview Section

The Text Email Preview section is displayed to the right of the email Offer Designer’s Text tab:



It is functionally identical to the HTML Preview tab, other than that the Show the Preview Window as a Popup is not supported, and that it is not possible to traverse hyperlinks from the Preview. Please refer to that section for further information.

20.13.25 Using Parameter Attributes in an Email Offer

You can embed parameter attributes in email offer content. Parameter attributes are used to personalize content based on parameters passed to a queue activity, executing within a queue listener workflow. For more information on parameter attributes, please see the Attributes documentation. For more information on queue listeners and queue activities, please see the Interaction Designer documentation (which also covers execution of the same, and personalization of offer content based on parameter attributes in the same context).

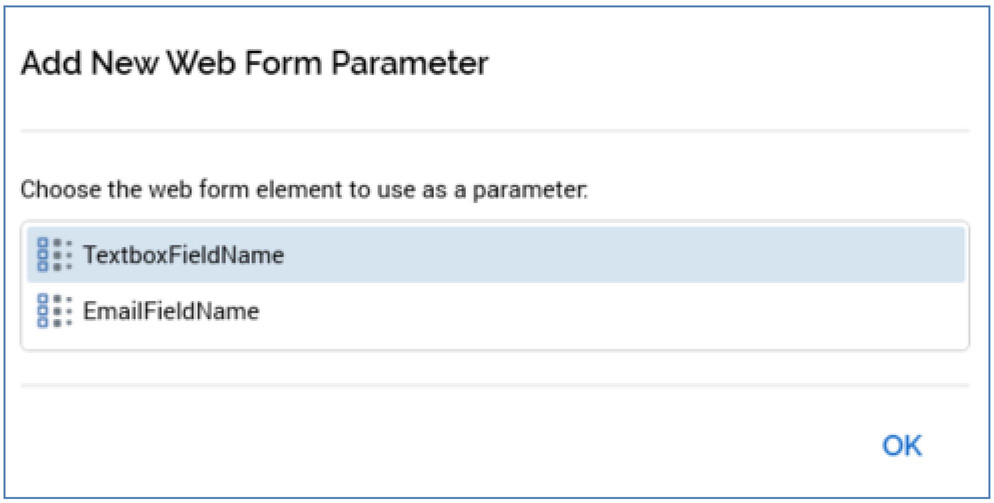
Note that the Value/Trans toggle button is not displayed at parameter attributes at the email offer Preview.

20.13.26 Using Web Form Elements in an Email Offer

You can customize an email offer by adding web form elements to its HTML or text content. When you do so, web form elements are represented as parameter attributes in the email content. An email delivered using an interaction queue activity can be triggered by the submission of a web form, and the web form elements added to email content can be customized to use the data submitted in the web form.

For more information on web forms and how they can be used with queue listeners and queue activities, please see the Asset Designer documentation. For more information on queue listeners and queue activities, please see the Interaction Designer documentation.

When you drag a web form from the toolbox and drop it onto email offer content, the Add New Web Form Parameter dialog is displayed:



The dialog lists all elements within the web form (other than any Static HTML elements). You can add an element to the email offer content by double clicking it, or by selecting it and clicking the OK button. The dialog is closed when you click off it; the currently-selected element is automatically added to offer content when you do so. Having added a web form element to email offer content, its Field name is displayed at the offer's Preview.

When a web form element is added to email offer content, a parameter attribute is automatically created to represent it (form more information on parameter attributes, please see the Attributes documentation). Parameter attributes created in this way are not accessible at the RPI file system.

You can edit an existing email offer web form element, using the Edit Web Form Parameter dialog. The currently-selected element is selected; you can change the selected element if you wish.

You cannot assign a web form element directly to an email offer cell.

20.13.27 Send Emails

The Send Emails option can be invoked from the Actions menu.

It is only displayed if training aids are configured to be shown within the RPI client (for details of how to turn training aids on or off, please see the Preferences documentation).

If clicked when the current Offer Designer contains unsaved changes, or when the offer therein is invalid, a warning message is displayed.

Clicking the button at a valid, saved offer displays the Send Emails training aid, in which the following interfaces are shown in sequence:

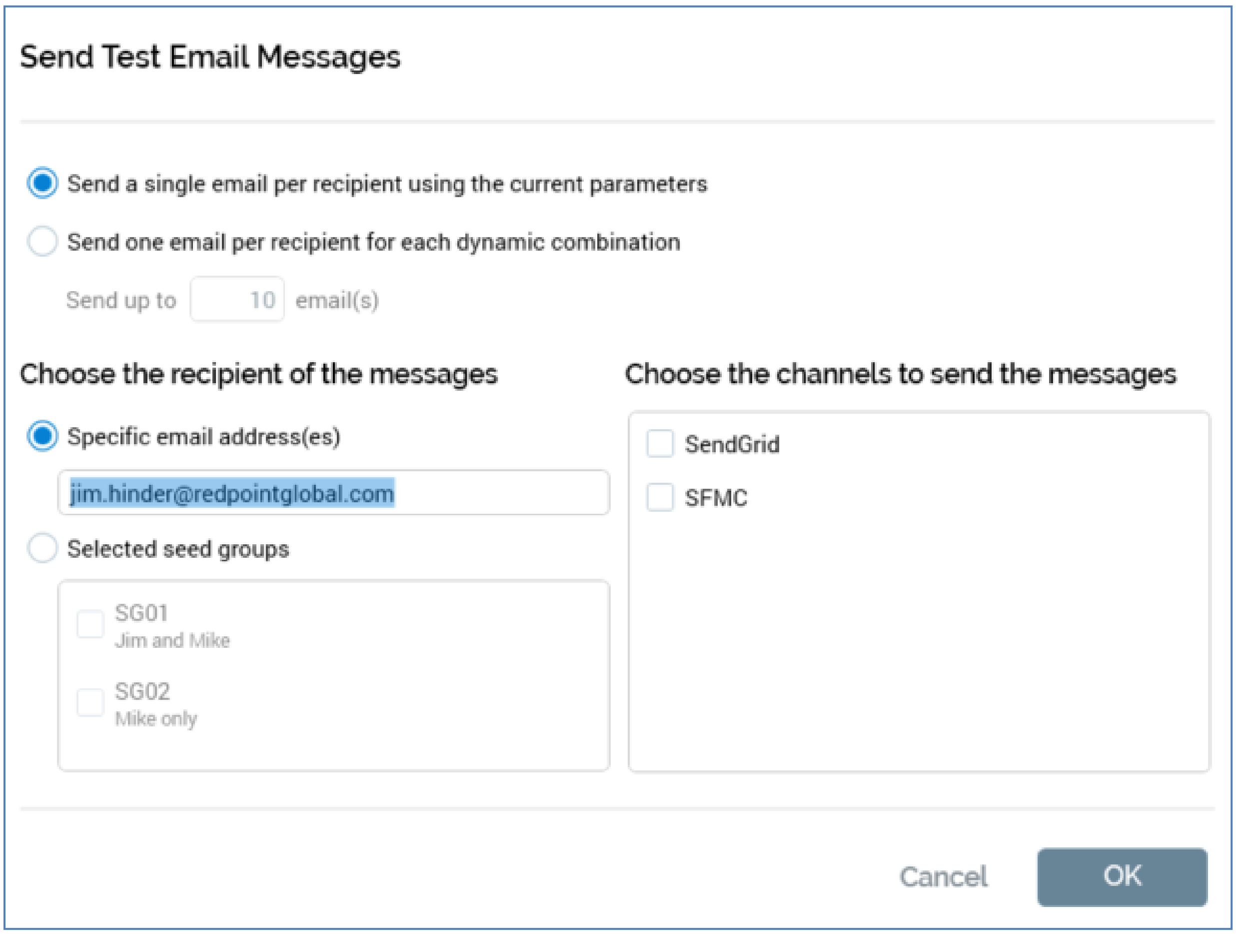
- Ready to send some emails?
- Choose an existing Audience
- Configure your Interaction
- Running your Interaction
- Interaction Created

For full details of the Send Emails training aid, please see the Training Aids documentation.

20.13.28 Send Test Emails

This button allows you to send the email content to a specified email address, or series of email addresses configured within (a) list(s) of seeds in order to check the display of the final, delivered email. If you attempt to send test emails prior to the offer being saved, a warning dialog is displayed, advising you that it is necessary to invoke save first. Similarly, if you attempt to send test emails before the offer is valid, you are advised to resolve the validation issues before sending.

Clicking the button displays the Send Test Email Messages dialog.



The dialog contains the following:

- Send a single email per recipient using the current parameters: this option is selected by default. If selected, a single email is sent per recipient using the parameters provided at the Preview tab.
- Send one email per recipient for each dynamic combination: selecting this option enables the Send up to... field. It also disables the Selected seed groups radio button and accompanying list (it is not possible to send dynamic email combinations to seed groups). If this option is selected, one email of each format for each dynamic combination is sent to recipient (up to a

maximum number of emails defined by the Send up to... value; note that text and HTML versions are counted separately).

- Send up to [n] emails: this field is mandatory if enabled. If system configuration setting MaxNoDynamicTestSendEmails is greater than or equal to 10, its default value is 10, otherwise its default value is accordant with the setting. Note that you cannot specify a value therein that is greater than MaxNoDynamicTestSendEmails.

- Specific email address: a radio button that is selected by default, and which denotes that the test emails are to be sent to one or more specified email address. When selected, the [Email address] text field is enabled.

- [Email address]: a text field that defaults to the current user's configured email address. If you wish, you can overwrite the default value with one or more other email addresses, which must be separated by semi-colons.

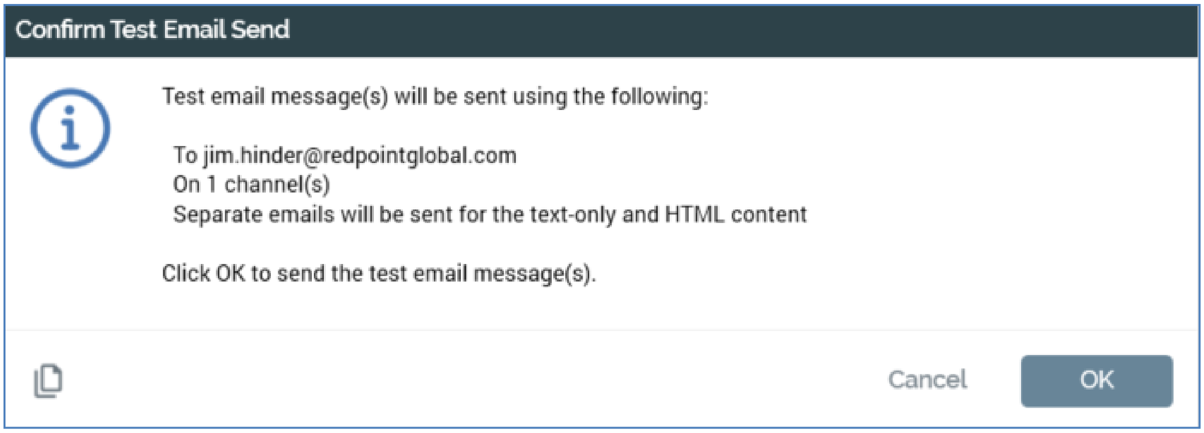
- Selected seed groups: a radio button, unselected by default. Selecting enables the [Seed groups] list. The button is disabled if Send one email per recipient for each dynamic combination is selected. Note that the personalization of test emails sent to seed groups on the basis of having been targeted by a selection rule is not supported.

- [Seed groups] list: all seed groups configured within the current RPI installation are listed. Each seed group is accompanied by a checkbox. You can select the seed groups to which test emails are to be sent. Note that the name of the email address column at the seeds table must match the name of any email channels' Recipient email attribute. Note that this field is disabled if Send one email per recipient for each dynamic combination is selected.

- Choose the channels to send the messages: all configured email channels are listed, and each is accompanied by a checkbox. If a single channel is listed, it is selected by default. If multiple are listed, none are selected. You can choose the channel(s) by which the emails to be sent.

  Email channels with no Recipient email are still available for selection. You can use the same to send a test email to a single email address; however, if you attempt to use such a channel to send a test email to one or more seed groups, a validation error is displayed at the bottom of the Send Test Email Messages dialog.

- OK: invocation of this button initiates the sending of test emails to the specific email address or seed groups, and displays the Confirm Test Email Send dialog:



You can click OK to proceed with sending the test emails; doing so creates a Fulfillment test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

You can also click Cancel to remove the dialog from display without sending test emails.

The emails to be sent will depend on the offer's Content mode setting:

- If set to Multi-part, both HTML and text emails will be sent.
- If set to Text only, only text emails will be sent.
- If set to HTML only, only HTML emails will be sent.

Any BCC settings at the selected channel and current offer are taken into account at the sending of test emails, with BCC emails being delivered as appropriate.

Validation errors are shown when attempting to send test emails in the following circumstances:

- A specific email address is chosen and [Email address] is blank ('Please enter an email address to send the test email messages to and try again').
- [Email address] contains an invalid email address ('Please enter a valid email address and try again').
- Selected seed groups is chosen and no seed groups are selected ('Please select at least one seed group to which to send the test email messages and try again').
- No channels are selected ('Please select at least one channel to send the test email messages and try again').
- A BCC override email address is set at the offer's Properties section, and the selected channel provider does not support BCC.

If you attempt to send test emails and the selected channel does not support a feature within the offer, a runtime validation error is raised and you cannot proceed with the test.

If no seeds are present in a seed group, the Send test emails… job fails and the error advises of the nature of the problem.

The sending of email offer content containing a table asset to seed groups is not supported.

When a test email that contains an embedded email address attribute is delivered, the attribute in the delivered mail displays the recipient's actual email address (to which the test mail was sent).

Note that web adapters are only applied during the sending of test emails when sending to seed groups, and not to a specific email address.

- Cancel: removes the dialog from display and abandons sending the test emails

Note that, if sending a test email via Salesforce Marketing Cloud, and having checked the channel's Remove default footer property, you must supply an alternative text footer or execution will fail.

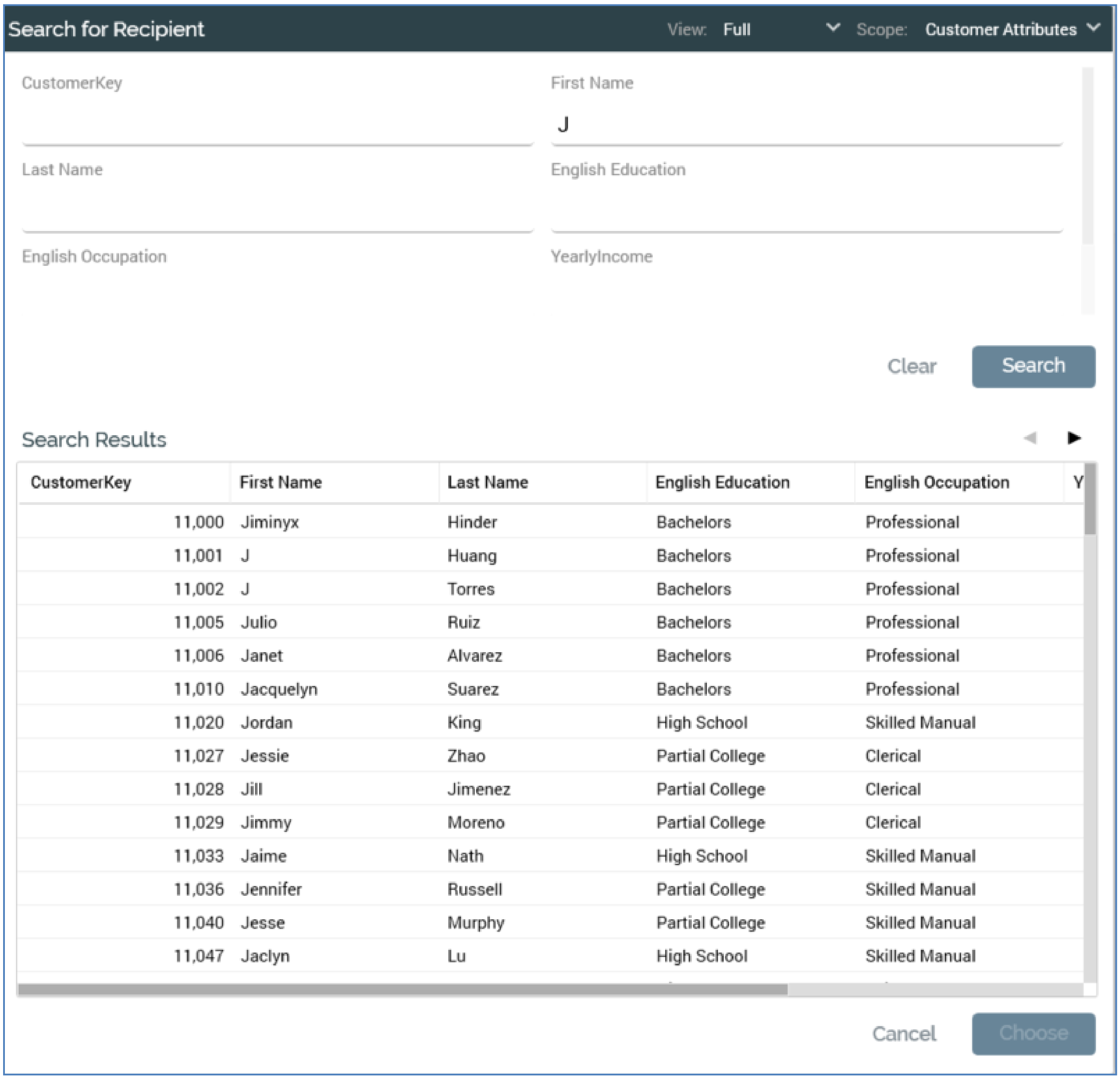
Certain email features are not supported when sending test content via certain email channel providers. Please see the RPI Plugin Features Matrix for more details.

20.13.29 Test Email Links

Clicking this button creates an Email link test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

20.13.30 Preview By Recipient

This option allows you to preview the current email, as it would be rendered to a specific recipient. Clicking it displays the Single Customer View Search overlay (for more information on the Single Customer View, please see that interface's own documentation).



The overlay is entitled 'Search for Recipient' and is functionally equivalent to its equivalence in the Single Customer View.

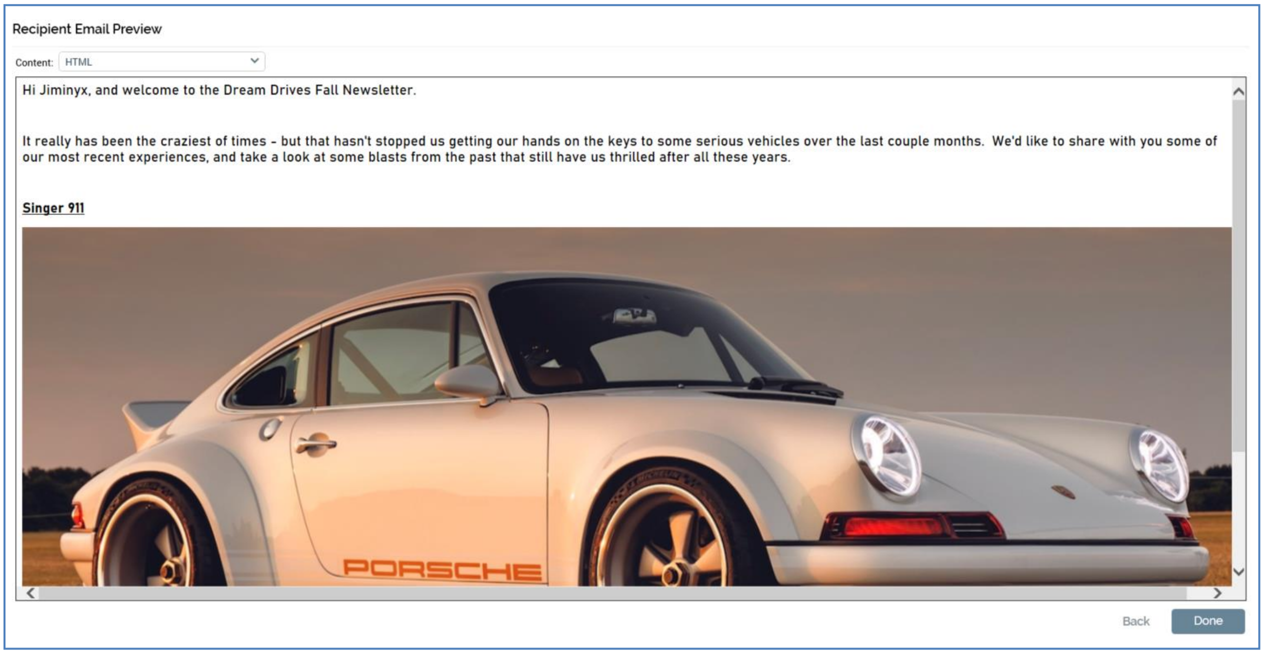
Two buttons are shown at the bottom of the overlay:

- Cancel: clicking this button removes the overlay from display.

- Choose: this button is enabled when a record is selected. Clicking it displays the Recipient Email Preview overlay (see below).

Note that, on subsequent invocation of Preview by Recipient within the same tab following the Search overlay's initial population, the previous search results are retained.

The Recipient Email Preview overlay contains the following:



- Content: this dropdown field is constrained to expose only content types supported by the current email offer (HTML and Text can be shown).
- Rendered email content: customized in accordance with the selected record.
- Buttons:
  - Back: clicking this button returns to the Search overlay.
  - Close: clicking this button removes the overlay from display.

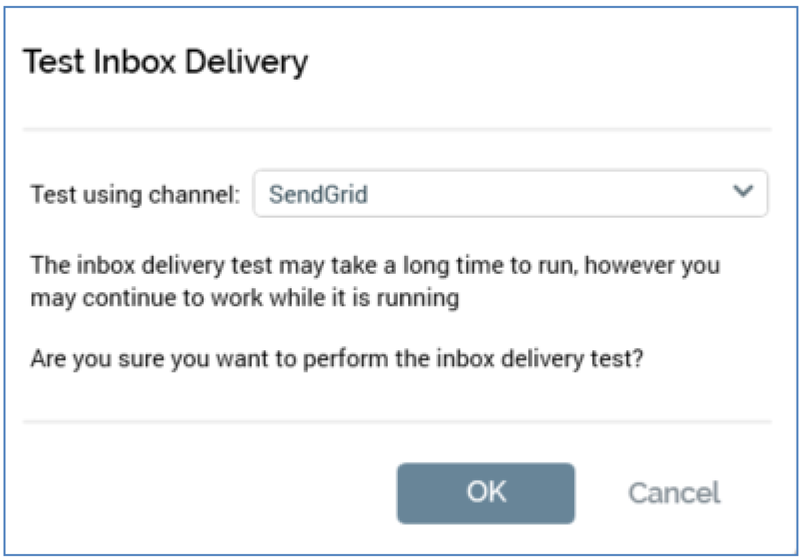
Note that the email Offer Designer's right-hand toolbar buttons are disabled when either overlay is displayed.

20.13.31 Test Inbox Delivery

This button allows you to request an inbox preview report and spam check for the current email offer. Access to this functionality is controlled by the Offer Inbox Preview functional permission. If you click the button when the offer contains unsaved changes, or when it is invalid, a warning is displayed.

A warning is also shown when system configuration setting EmailTestCredentials, which is used to persist details of the credentials to be used to connect to the third-party inbox delivery provider, is not configured with a valid API login and password.

Invocation of Test Inbox delivery displays a dialog:



You can select the email channel you wish to use to test inbox deliverability. Note display of the message advising that the test may take a period of time.

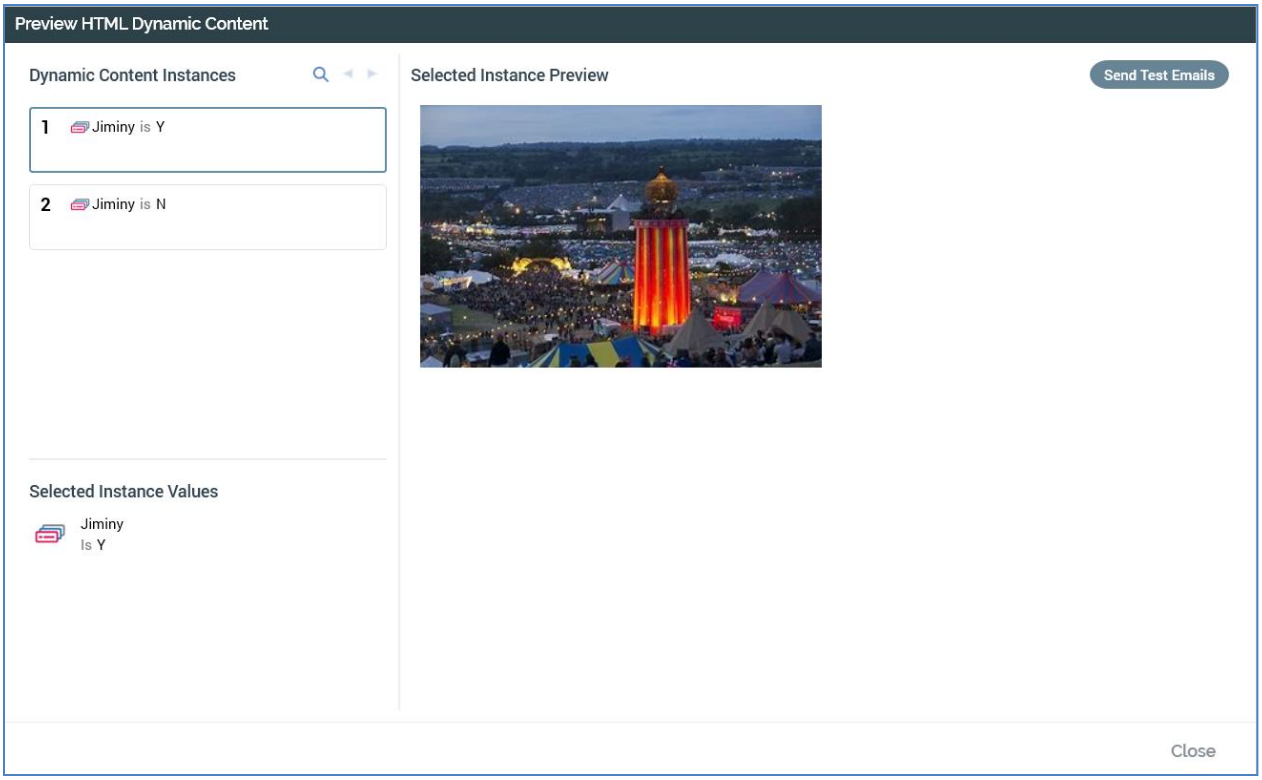
If you elect to proceed, an Email delivery test job is created and displayed in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

20.13.32 View Inbox Results

Clicking this button allows you to view previous inbox delivery results generated for the current email offer. Invocation displays the Email Delivery Results dialog, which is covered in detail in the My Jobs documentation.

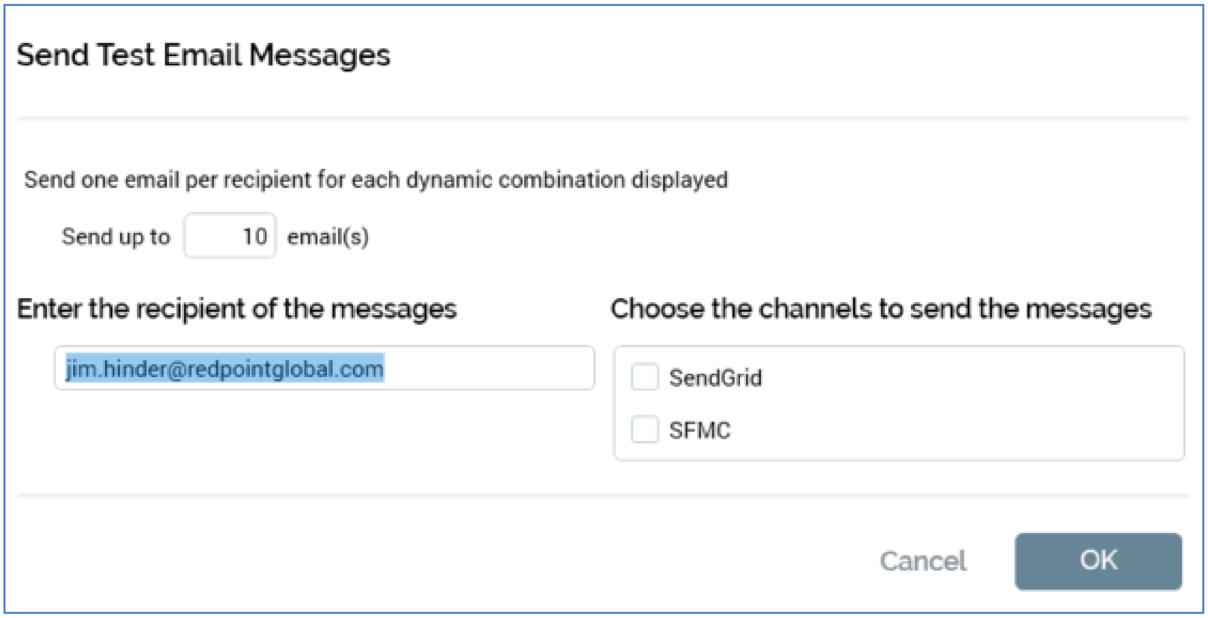
20.13.33 Dynamic Previews

View Dynamic Previews: this button is available when no outstanding changes exist within the currently-displayed offer. Invocation displays the Preview HTML or Text Dynamic Content dialog (illustration shows HTML).



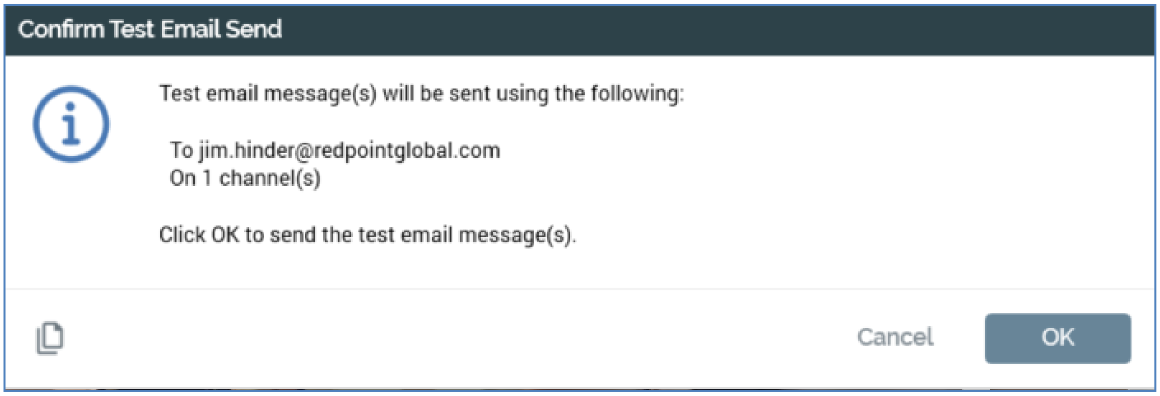
The dialog contains the following:

- Send Test Emails: this button is available for both HTML and Text versions of the dialog. Invocation displays the Send Test Email Message dialog:



It contains the following:

- A label advises that one email per recipient will be sent for each displayed dynamic email combination.
- Send up to [n] email(s): provision of a value in this field is mandatory. If system configuration setting MaxNoDynamicTestSendEmails is greater than or equal to 10, its default value is 10, otherwise its default value is accordant with the setting. Note that you cannot specify a value therein that is greater than MaxNoDynamicTestSendEmails.
- Enter the recipient of the messages: a text field that defaults to your configured email address. If you wish, you can overwrite the default value with one or more email addresses, separated by semi-colons.
- Choose the channels to send the messages: all configured email channels are listed, and each is accompanied by a checkbox. If a single channel is listed, it is selected by default. If multiple are listed, none are selected. You can choose the channel(s) by which the emails to be sent.
- OK: clicking this button initiates the sending of test emails to the specified email address and displays the Confirm Test Email Send dialog:



You can click OK to proceed with sending the test emails; doing so creates a Fulfillment test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

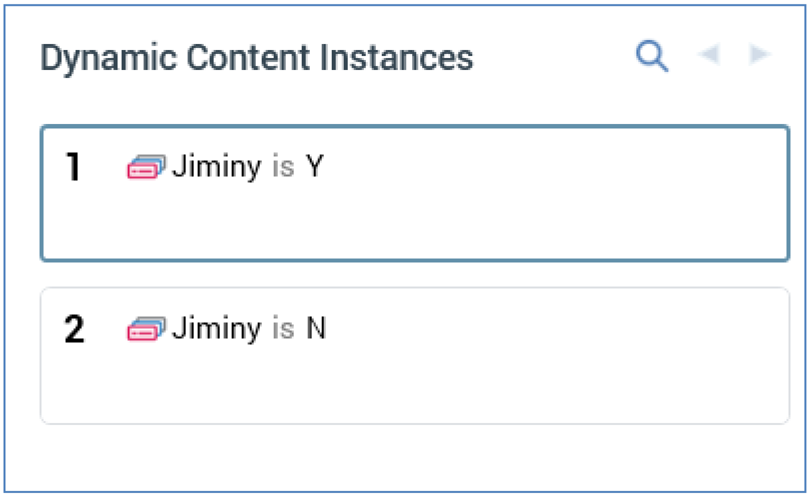
You can also click Cancel to remove the dialog from display without sending test emails.

Validation errors are shown when attempting to send test emails in the following circumstances:

- [Email address] is blank ('Please enter an email address to send the test email messages to and try again').
- [Email address] contains an invalid email address ('Please enter a valid email address and try again').
- No channels are selected ('Please select at least one channel to send the test email messages and try again').

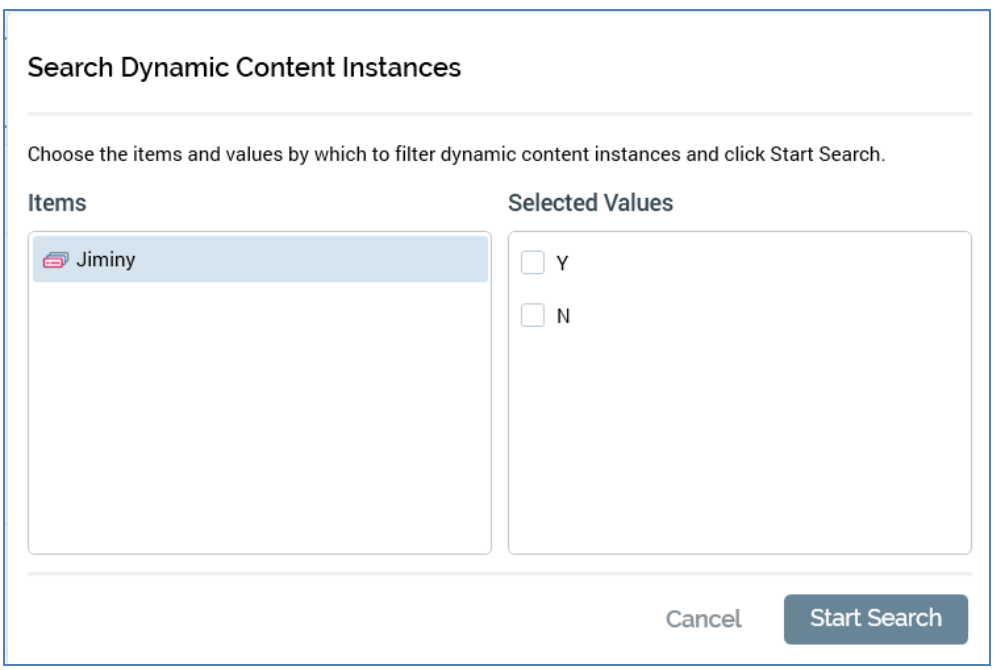
- Cancel: removes the dialog from display and abandons sending the test emails.

- Dynamic Content Instances section: this is displayed to the top left.



It contains the following:

  - Toolbar: the Dynamic Content Instances section toolbar exposes the following options:
    - Search: invocation displays the Search Dynamic Content Instances dialog.



The dialog contains two lists – Items and Selected Values.

The Items list lists all permutation determinants (the selection rules, realtime decisions, audience segments and attributes used in smart assets to determine content applicability).

For each, the following are displayed:

- Icon
- If a selection rule or attribute: Name
- If an audience segment: 'Audience segment'.

The first item in the Items list is selected by default.

The Selected Values list lists possible values for the selected Item. Each is accompanied by a checkbox. By default, all are unchecked. You can check the values you require; checking at least one value for an item causes the display of a green indicator against the item in the Items list. The indicator is removed when all of an item's Selected Values are unchecked.

A Start Search button is shown at the bottom of the dialog. Clicking it removes the dialog from display, and applies the selected filter criteria to the list of Dynamic Content Instances. The first instance is selected by default, and the Selected Instance Preview is updated to reflect this selection

A Cancel button is shown alongside Start Search. Clicking it removes the dialog from display without applying filter criteria.

If you re-invoke Search having previously applied filter criteria, your prior selections are maintained.

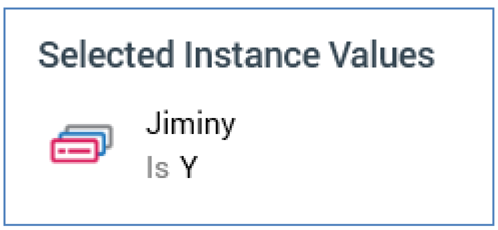
- Previous page: this option is available when more instances exist than may be displayed on a single page, and when you are not currently viewing the first page of instances. Invocation displays the previous page of instances.
- Next page: this option is available when more instances exist than may be displayed on a single page, and when you are not currently viewing the last page of instances. Invocation displays the next page of instances.

- [Permutations]: the Dynamic Content Instances section lists dynamic email content permutations. Up to [n] permutations are displayed (where [n] is defined by system configuration setting MaxNoDynamicContentInstances). The first permutation is selected. For each permutation, the following are displayed:
  - Number: a read-only, system provided incrementing integer.
  - Permutation determinants: the combination of unique values used to determine each permutation is displayed. What is shown depends upon how dynamic content applicability is determined.
    - If applicability is decided by a selection rule, for each selection rule used to determine a permutation, the selection rule's name is shown.
    - If applicability is decided by an attribute's values, the attribute's name is shown.

- If applicability decided by an audience segment, the term ‘Audience segment’ is shown.

For each permutation determinant in email content, the following is displayed:

- Icon: illustrating the determinant's type
- A list of asset values:
    - If the determinant type is attribute or audience segment:
        - If an explicit value, shown as '[att|segment] is [value 1 (, value2...)]
        - If the default value, shown as '[att|segment] is not [list of all explicit values]'
- Selected Instance Values section: this section lists the current permutation's determinant values.



- Selected Instance Preview section: this section displays the rendered selected dynamic content instance.

20.13.34 Using External Files in Email Offers

The following external file types can be used in email offers:

- Image
- HTML
- Text

In addition, the following file types can be included if public:

- Audio
- Video

Both are rendered in delivered emails as hyperlinks.

You can drag an external file from an external content provider folder and drop it as follows:

- In HTML email offer content:
    - Directly onto a cell in the Page Layout section
    - Into a rich text or HTML Cell Editor
- In Plain Text email offer content, you can drop text external files only into text content.

At delivery of an email offer containing an external file, content is sourced as follows:

- If the file is private, it is downloaded, cached and transferred to the email service provider.
- If a public file, the delivered mail references content on a public server.
- If an Amazon Web Services (AWS) S3 file, with CloudFront enabled at the external content provider and configured appropriately at the AWS bucket, the file is sourced from the content delivery network.

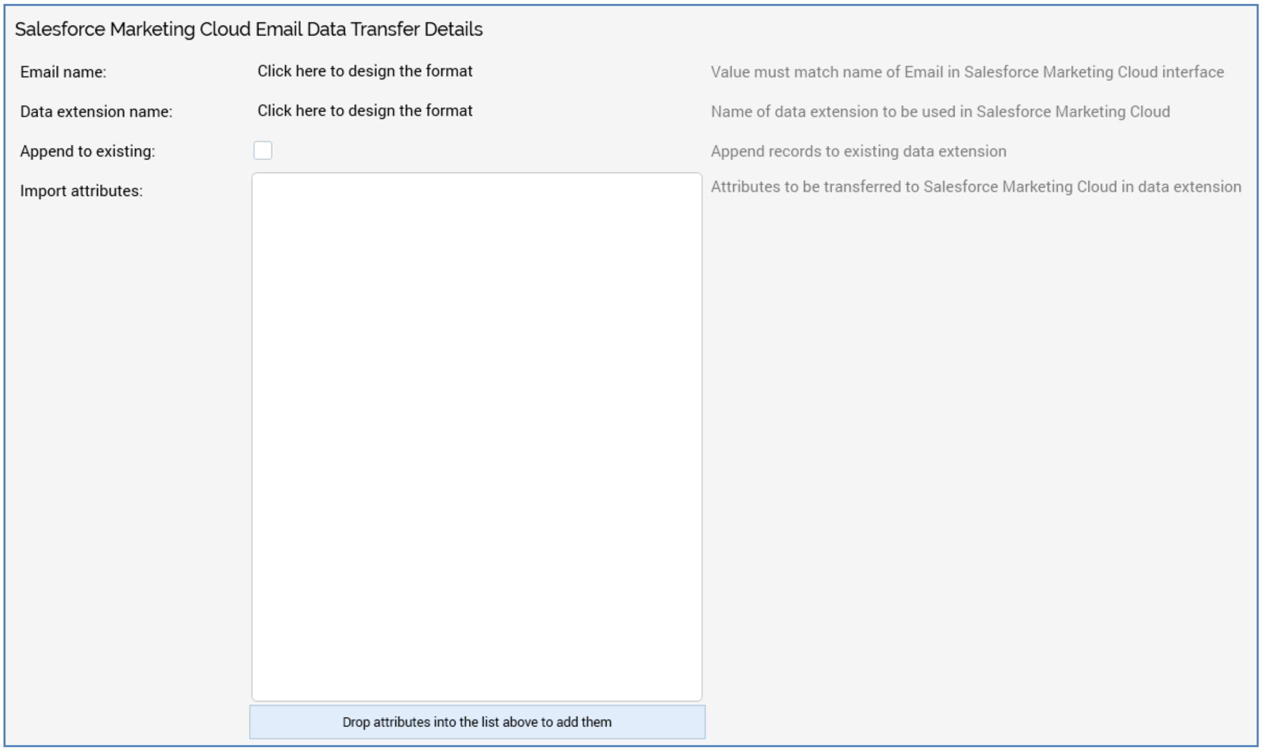
20.13.35 Email Offer Validation

The following email validation criteria are applied when an offer is saved:

- Sender's email address is invalid
- Email subject is missing
- No email text content has been provided
- No email HTML content has been provided
- Parameter parentheses contain an invalid parameter
- Parentheses should contain an integer followed by:
- Parameter does not match embedded content
- Content contains open parameter brackets e.g.
- Parameter brackets do not contain a parameter id and name

20.14 Salesforce Marketing Cloud Email Data Transfer

The Salesforce Marketing Cloud Data Transfer tab contains a Salesforce Marketing Cloud Email Data Transfer Details section, which exposes the following properties:



- Email name: this mandatory property is set using the Design Email Name Format fixed dialog. You can construct the name using String and Date Part text parts as required. The value provided must match the name of the Email in the Salesforce Marketing Cloud user interface.

- Data extension name: the name of the data extension to be used by Salesforce Marketing Cloud. This mandatory property is set using the Design Data Extension Name Format fixed dialog. You can construct the name using String and Date Part text parts as required.

  Note that, when a Salesforce Marketing Cloud Data Transfer offer is executing in a recurring workflow, an incrementing integer will be added to the offer's Data extension name, thereby ensuring uniqueness.

- Append to existing: this property allows you to specify whether records are to appended to an existing data extension. A checkbox, it is unchecked by default. Checking the property displays the Update type dropdown.

- Update type: this dropdown allows you to define how to handle new and existing data during the import process. It is only displayed when Append to existing is checked. It exposes the following values:

  - Overwrite (the default)

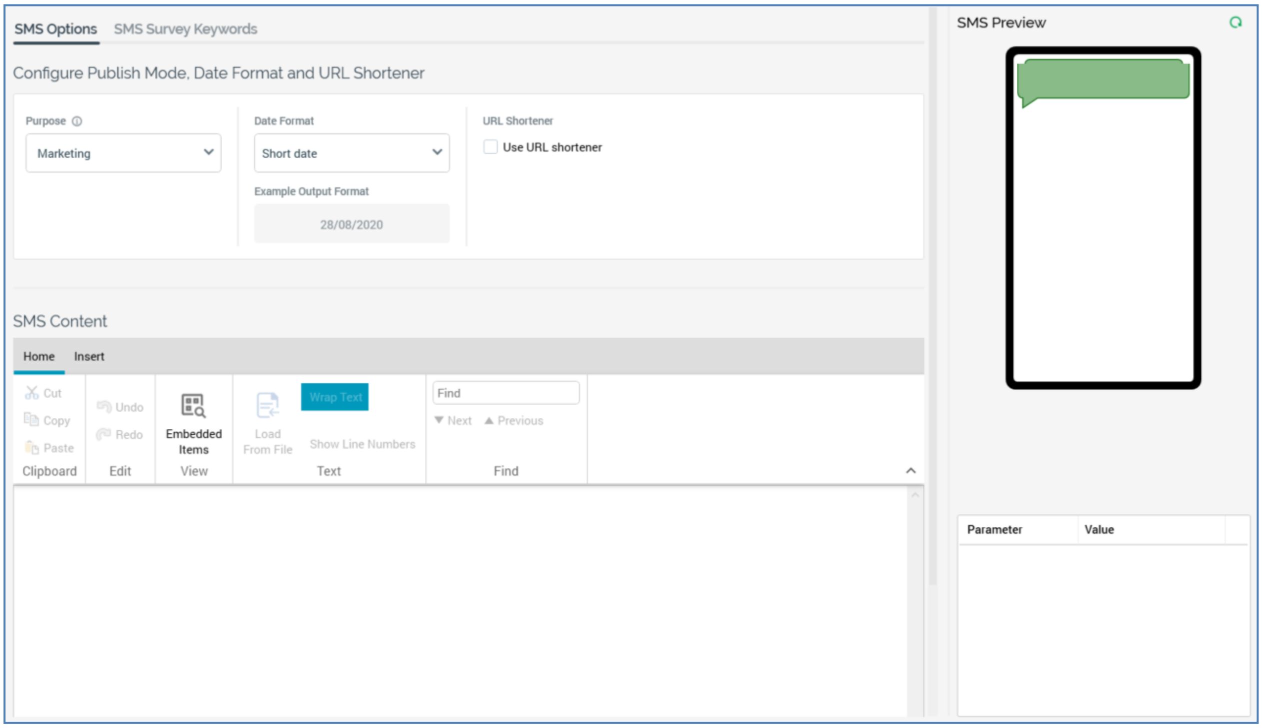
- Add only
- Update only
- Add and update

- Import attributes: this list is used to define the attributes to be transferred to Salesforce Marketing Cloud in the data extension. You can add attributes to the list using drag and drop.

  Each attribute's name is shown in the list. You can view information about each attribute you add in the File Information dialog, and you can also remove any erroneously-added attributes. You can also move attributes up and down using the inline buttons provided. Duplicate attributes are not allowed, and you cannot add an exists in table attribute to the list.

20.15 SMS

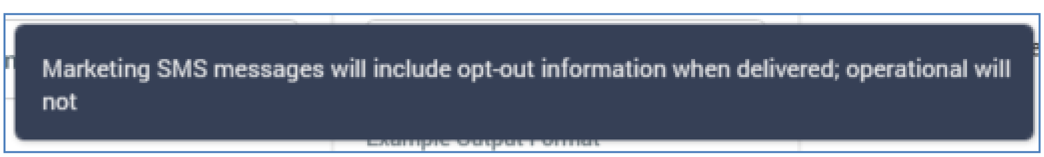
The SMS content panel contains the following sections:



- Tabset, containing SMS Options and SMS Survey Keywords tabs.
- SMS Content section.
- SMS Preview section.

<u>SMS Options Tab</u>

- Purpose: set using a drop-down field exposing the values Marketing (default) and Operational. An information icon accompanies the field; hovering over the same displays a tooltip:



At SMS offer execution, if Purpose is set to 'Marketing', the opt-out message configured at the SMS channel is appended to the message. The message is not appended if the offer's purpose is 'Operational'. The property is disabled if you do not have the Offer - SMS Purpose functional permission.

- Date Format: you can specify a date format that will be used by all date attributes (whether inserted directly into SMS message, or from an embedded text or smart asset) included in the SMS content.

  Date format is set using a dropdown, which exposes the following values:

  - Use custom format: if selected, the [date format] field is displayed and enabled.
  - Long date
  - Long date and long time
  - Long date and short time
  - Long time
  - Month day
  - Short date: the default value
  - Short date and long time
  - Short date and short time
  - Short time
  - Sortable
  - Year month

  The following fields accompany Date format:

  - [date format]: this field is visible and enabled if Use custom format is selected. If enabled, provision of [date format] is mandatory.
  - Example output format: this read-only field displays the current date and time formatted in accordance with the specified date format settings. If no format is provided, an advisory message is shown (this is also the case if an invalid date format is provided). Literals that do not form part of the date format are shown verbatim.

  Dates included in SMS offer content are formatted in accordance with Date format settings at:

  - Preview
  - SMS delivery via an offer activity within an interaction workflow
  - SMS test
- URL Shortener section:

- Use URL shortener: this checkbox is unchecked by default. Checking it displays the URL shortener property.
- URL shortener: this dropdown list is shown when Use URL shortener is checked. It allows you to select a URL shortener to use with the SMS offer. It is accompanied by an information icon; hovering over the same displays a tooltip:

SMS Survey Keywords Tab

- Use survey keywords: this checkbox is unchecked by default. When checked, the Primary and Additional keywords properties are shown.
- Primary keyword: this text field, which accepts a maximum of 20 characters, is displayed and mandatory when Use survey keywords is checked. The primary keyword is used during data synchronization to determine which inbound messages to the Twilio number are in response to a given survey.
- Additional keywords: this optional property allows you to specify additional keywords to use with the SMS offer. You can use the Add Additional Keyword button to add a new keyword to the list. All list entries must be configured with a value, and must be unique. A Remove option is available at the right-hand Options menu.

  Additional keywords are used during data synchronization to determine which inbound messages to the Twilio number are in response to the survey and are also to be listed as custom states when viewing offer results.

SMS Content Section

The SMS Content section allow to specify the SMS message's content using a content editor. For more information, please see the Content Editor documentation.

The following specific features are of note:

- Insert Link: this option allows you to include an (optionally personalized) link in SMS offer content.
- SMS Content: you can enter the SMS-specific content itself in a multi-line field. No default content is provided. SMS content must be provided if the SMS delivery method is supported.

  You can also embed attributes within SMS content. Attributes are sourced from the toolbox.

  You can embed text assets in SMS content – other asset types are not supported. If required, you can include an external text file.

You can also include smart assets in SMS offer content, if the content elements served by the same are all valid URLs. If you embed a smart asset that does not meet these requirements, a validation error is displayed. Assets and Smart assets can be sourced from the toolbox.

Content is spellchecked as you enter it. The dictionary used is dependent on your local machine's settings.

SMS Preview Section

A Preview section is provided to the right of the SMS content panel. It contains the following:

- Smartphone preview: text is previewed immediately as it is entered within the SMS content field.

  If any attributes, assets or smart assets are included in the content, they are resolved in the mock-up. Any attribute parameter values provided are displayed inline within the preview.

  The time at invocation of the Offer Designer is shown at the top of the preview. If the offer's Purpose is Marketing, the preview automatically appends an opt-out message to the end of the content. The opt-out message used is the longest available across all existing SMS channels. When they entered content exceeds 160 characters, a warning message with an orange background is displayed above the smartphone preview.

- Parameters grid: populated with one row per attribute embedded within the SMS content. The grid contains the following columns:

  - Parameter: read-only. The name of the attribute.

  - Value: updateable string; defaults to [attribute name]. You can specify a dummy value for the attribute; as you type, the value is shown inline in the phone mock-up.

  When SMS offer content contains one or more smart assets, the parameters grid is enhanced to allow you to gain insight into what the final SMS message will look like.

  All selection rules listed in the smart asset's content list are listed and accompanied by checkboxes. You can check a checkbox to gain an understanding of what the final SMS message will look like when the recipient is targeted by the selection rule in question. If multiple selection rules are checked, the content displayed will reflect the order in which selection rules appear within the smart asset's content list (the recipient will be targeted with the content associated with the first selection rule in the content list by which targeted).

  You can also manually provide values for each of the attributes contained in the smart asset's asset applicability list to achieve the same goal. If an attribute is used both within a smart asset's content list, and also embedded within SMS content, it is displayed once only in the Parameters list; supplying a value for the attribute has the dual purpose of determining content applicability and providing preview content for illustrative purposes.

Toolbar

Two additional toolbar options are available in the SMS Offer Designer:

- Send Test SMS Message: this option is only available when the current offer is valid and contains no outstanding changes. Upon invocation, the Send Test SMS Message dialog is displayed.

  The dialog contains the following:

  - Specific phone number: this radio button, selected by default, specifies that the test SMS will be sent to a single, specific cellphone number. When selected, the [Phone number] text field is enabled.
  - [Phone number]: this text field, blank by default, allows you to specify a cellphone number to which the test SMS message will be sent.
  - Selected seed groups: this radio button is unselected by default. It defines that the test SMS message will be sent to one or more seed groups' seeds. When selected, the [Seed groups] list is enabled.
  - [Seed groups] list: all seed groups configured within the RPI installation are listed. Each is accompanied by a checkbox. You can select seed groups to which test SMS messages are to be sent.
  - Choose the channels to send the message: all configured SMS channels are listed, and each is accompanied by a checkbox (none are checked by default). You can choose the channel(s) by which the test SMS message is to be sent.
  - OK: invocation of this button initiates the sending of test SMS messages to the specific phone number or seed groups. This displays the Confirm Test SMS Send dialog.

    You can click OK to proceed with sending the test SMS messages; doing so creates a Fulfillment test job and displays it in the My Jobs Dialog. Full details of the job and Dialog can be found in the My Jobs documentation.

    You can also click Cancel to remove the dialog from display without sending the test SMS messages.

    Validation errors are shown when attempting to send test SMS messages in the following circumstances:

    - A specific phone number is specified, and [Phone number] is blank ('Please enter a phone number to send the test SMS message to and try again).
    - Selected seed groups is selected and no seed groups have been checked ('Please select at least one seed group to send the test SMS message to and try again').
    - No channels are selected ('Please select at least one channel to send the test SMS messages and try again').

If no seeds are present in the seed group, the job fails and the error advises of nature of problem.

- Cancel: removes dialog from display and abandons sending test SMS messages.

- View Dynamic Previews: when an SMS offer contains smart asset content, you can invoke this option to preview the various permutations thereof, which are displayed in the Preview SMS Dynamic Content dialog.

  Functionally the dialog behaves as per its equivalence when invoked from the HTML tab in the Email offer content panel in the Offer Designer. For full details please see its documentation in that context.

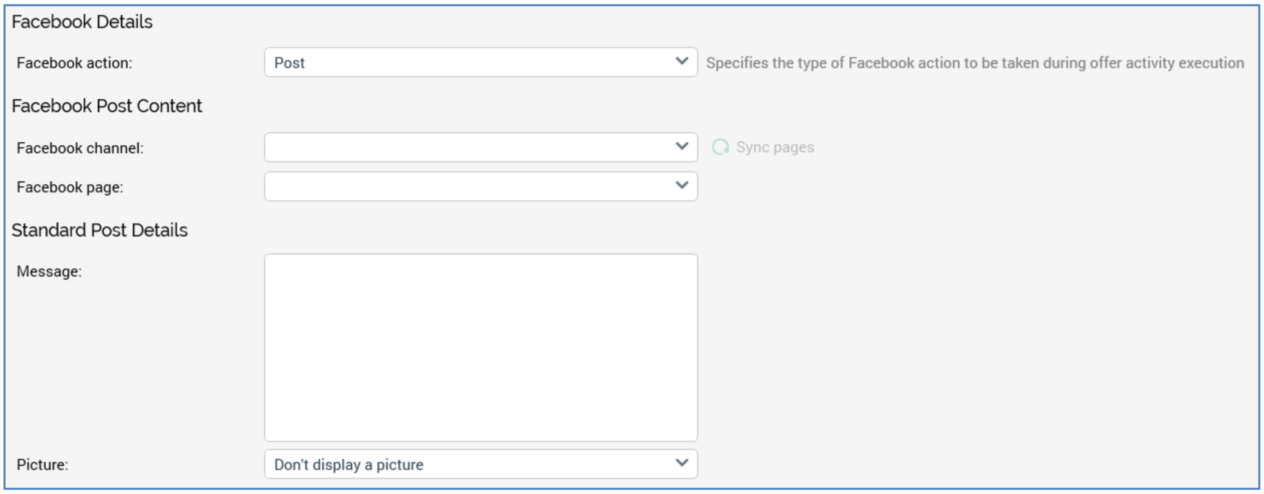
<u>Validation</u>

The following SMS validation criteria are applied when an offer is saved:

- No SMS content has been provided
- SMS content must be a maximum of 1000 characters

20.16 Facebook

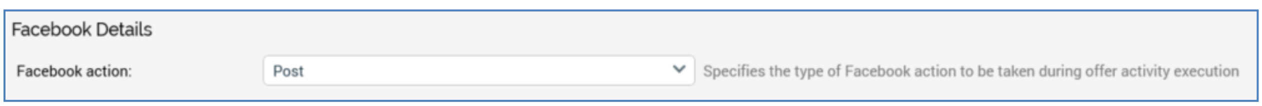
A Facebook offer allows you execute Facebook Post, Marketing or Lookalike Audience actions.



The Facebook Offer Designer contains the following:

20.16.1 Facebook Details Section

This section exposes a single property:

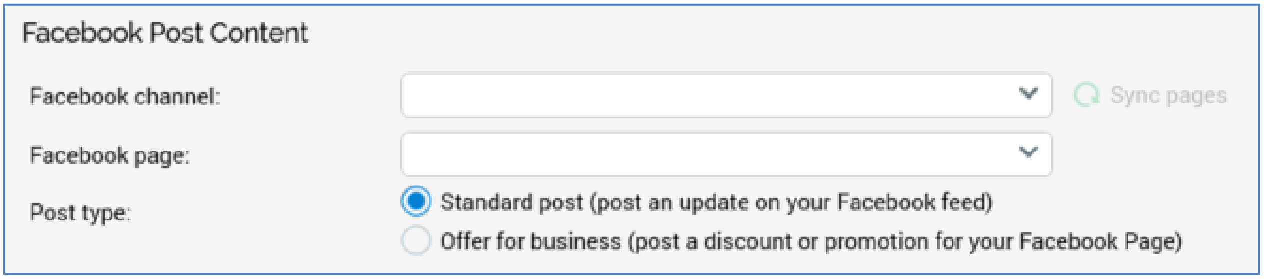


- Facebook action: a dropdown, exposing the following values:
  - Post (the default)
  - Marketing
  - Lookalike Audience

The property allows you to specify the type of action to be taken at offer activity execution. Selection of value displays a series of properties to support the type of action to be undertaken.

20.16.2 Facebook Post Content Section

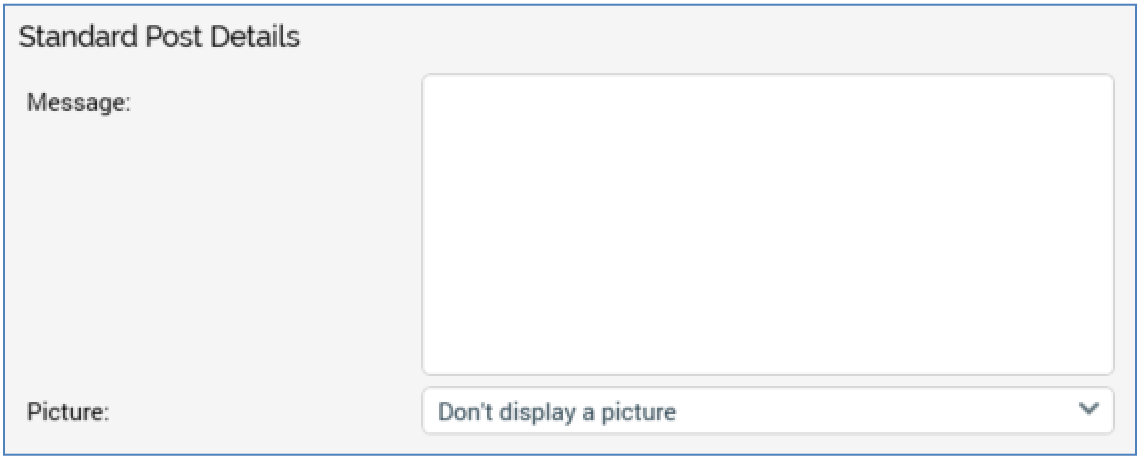
This section is shown if Facebook action is set to Post. It exposes the following:



- Facebook channel: this mandatory dropdown is populated with a list of all Facebook channels configured at the current RPI installation. On selecting a channel, click the accompanying Sync Pages button to populate the Facebook page dropdown.
- Facebook page: this mandatory dropdown is populated upon clicking the Sync Pages button. It lists all Facebook pages associated with the selected Facebook channel, and is set by default to the name of the Facebook page defined at the channel's Page name property.

20.16.3 Standard Post Details Section

This section contains the following:

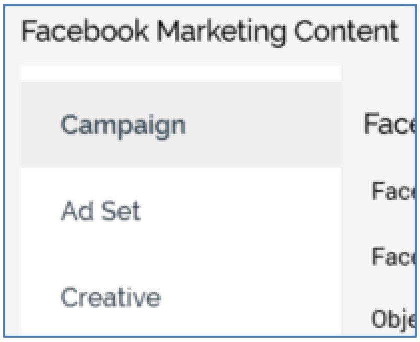


- Message: to be posted to the wall of the account defined by the Facebook channel. A mandatory, multi-line text field, the message can be a maximum of 2000 characters.
- Picture: this is shown alongside the link in the posted wall message. A dropdown field, it exposes the following values:
    - Don't display a picture (default)
    - Display picture from URL: if this value is selected, a text field is displayed within which you can specify a picture URL. The field is mandatory and can be a maximum length of 1000 characters. The value entered must be a valid URI.
    - Display picture using an image asset: if this value is selected, an image asset field is displayed. Provision of an image asset is mandatory. You can browse for an image asset; only asset files are displayed in the File System Dialog, and if you select a non-image asset, a warning message is displayed. You can also populate by dragging an image asset from toolbox and dropping it directly onto the field. Once you have selected an image asset, you can clear it. You may also open its latest version in the Asset Designer.

  Note that you can use an external image to populate the Facebook offer’s image asset.

20.16.4 Facebook Marketing Content Section

This section is displayed when Facebook action is set to Marketing. It contains three tabs:

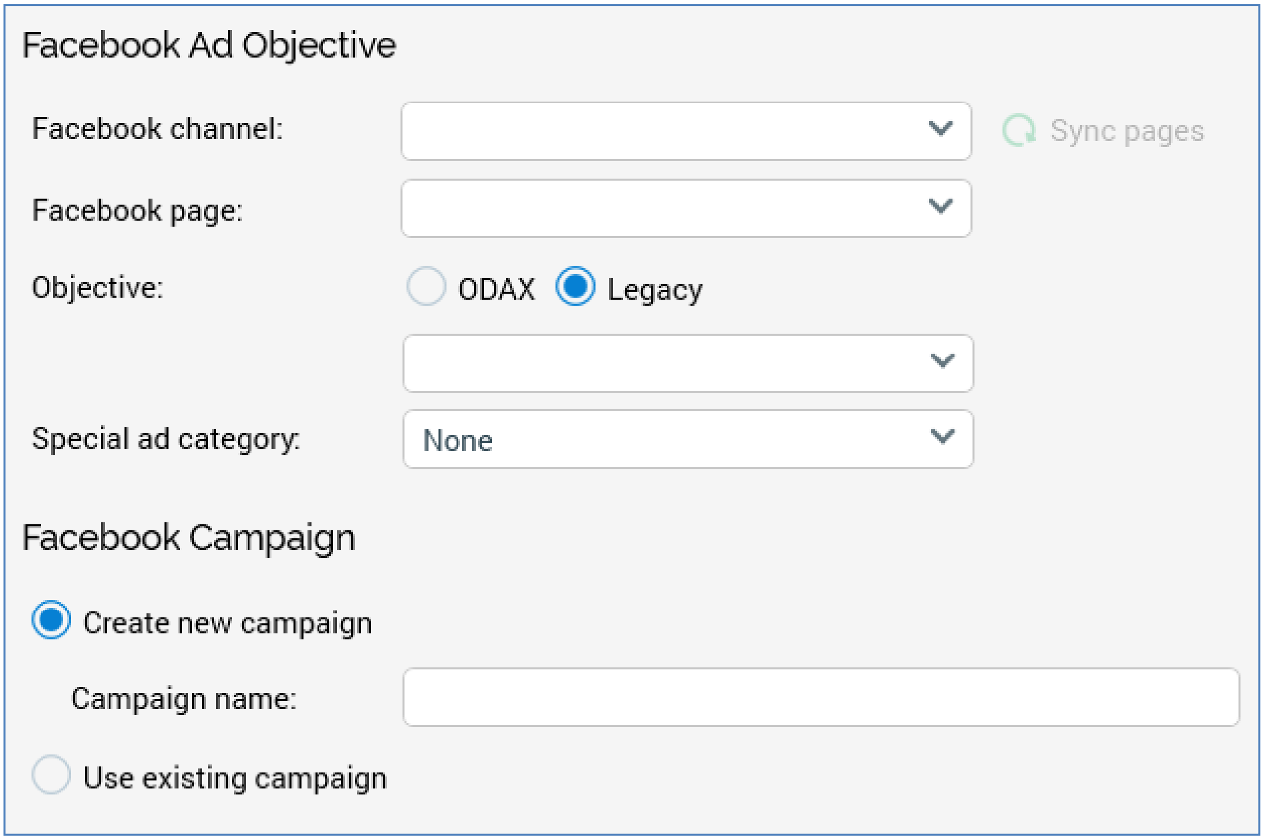


- Campaign
- Ad Set
- Creative

Each of these is covered separately.

20.16.5 Campaign Tab

The Campaign tab is used to set the Facebook ad's objective and campaign. It contains the following:



- Facebook Ad Objective section:
  - Facebook channel: this dropdown field presents a list of the existing Facebook Marketing channels. Selection of a channel is mandatory.
  - Sync pages: this button, when clicked, loads the Facebook pages associated with the selected Facebook channel.
  - Facebook page: this dropdown field lists the Facebook pages associated with the selected Facebook channel. Selection of a Facebook page is mandatory.
  - Objective: this property defines the objective of the Facebook ad and identifies the information required to create the ad. It is accompanied by two radio buttons and a dropdown field, used to select the objective itself.

    Selection of an Objective may also display one or more parameter fields, which are documented separately.

- ODAX: selection of this radio button, which is not selected by default at a new offer, exposes the following options at the dropdown:
  - Awareness - Increase overall awareness for your brand by showing ads to people who are more likely to pay attention to them.
    - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
  - Traffic - Grow the number of people who are visiting your site, app or Messenger conversation, and increase the likelihood they'll take a valuable action when they get there.
    - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
    - Pixel ID: this ID is used by Facebook for pixel conversions. The ID must be created using Facebook Business Manager. A mandatory text field, it can be a maximum of 50 characters in length.
    - Custom Event Type: this property instructs Facebook as to the types of activities that are to be monitored and measured on the website provided. A mandatory dropdown field, it exposes the following values:
      - View Content
      - Search
      - Add to Cart
      - Add to Wishlist
      - Initiate Checkout
      - Add Payment Info
      - Purchase
      - Lead
      - Complete Registration
  - Engagement - Get more people to follow your Page or engage with your posts through comments, shares and likes.
    - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.

- Pixel ID: this ID is used by Facebook for pixel conversions. The ID must be created using Facebook Business Manager. A mandatory text field, it can be a maximum of 50 characters in length.
- Custom Event Type: this property instructs Facebook as to the types of activities that are to be monitored and measured on the website provided. A mandatory dropdown field, it exposes the following values:
  - View Content
  - Search
  - Add to Cart
  - Add to Wishlist
  - Initiate Checkout
  - Add Payment Info
  - Purchase
  - Lead
  - Complete Registration

- Leads - Make it easy for interested people to learn more about your business. Encourage them to sign up for more info or spend time with your app or website.
  - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
  - Pixel ID: this ID is used by Facebook for pixel conversions. The ID must be created using Facebook Business Manager. A mandatory text field, it can be a maximum of 50 characters in length.
  - Custom Event Type: this property instructs Facebook as to the types of activities that are to be monitored and measured on the website provided. A mandatory dropdown field, it exposes the following values:
    - View Content
    - Search
    - Add to Cart
    - Add to Wishlist
    - Initiate Checkout
    - Add Payment Info
    - Purchase

        - Lead
        - Complete Registration

    - App Promotion - Drive more installs of your app by linking directly to the App Store and Google Play Store.
        - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
    - Sales - Show ads to the maximum number of people in your audience while staying within your budget.
        - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
        - Pixel ID: this ID is used by Facebook for pixel conversions. The ID must be created using Facebook Business Manager. A mandatory text field, it can be a maximum of 50 characters in length.
        - Custom Event Type: this property instructs Facebook as to the types of activities that are to be monitored and measured on the website provided. A mandatory dropdown field, it exposes the following values:
            - View Content
            - Search
            - Add to Cart
            - Add to Wishlist
            - Initiate Checkout
            - Add Payment Info
            - Purchase
            - Lead
            - Complete Registration

- Legacy: selection of this radio button, which is selected by default at a new offer, exposes the following options at the dropdown:
    - App Installs: displays ads to an audience which has yet to install a mobile app.
        - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.

- Brand awareness: reaches people more likely to pay attention to the ads and increase awareness for the brand.
- Conversions: displays ads to an audience while also tracking what they do on the website – such as browsing web pages, registering or making a purchase – after seeing the Facebook ad.
    - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
    - Pixel ID: this ID is used by Facebook for pixel conversions. The ID must be created using Facebook Business Manager. A mandatory text field, it can be a maximum of 50 characters in length.
    - Custom Event Type: this property instructs Facebook as to the types of activities that are to be monitored and measured on the website provided. A mandatory dropdown field, it exposes the following values:
        - View Content
        - Search
        - Add to Cart
        - Add to Wishlist
        - Initiate Checkout
        - Add Payment Info
        - Purchase
        - Lead
        - Complete Registration
- Event Responses: displays events that the audience can add to their Facebook calendars.
    - Event: this property represents one of the events posted on the selected Facebook page that is to be promoted by the ad. A mandatory dropdown, it exposes a list of events tied to the selected Facebook page.
- Link Clicks: displays ads to audience to send them to any section of your website.
    - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
- Page Likes: displays ads to an audience to get them to like a Facebook page.

        - Post Engagement: displays ads to an audience promoting a Facebook page's post to attract likes, comments, and shares.
            - Page Post: this property represents the post on the selected Facebook page that is to be promoted by the ad. A mandatory dropdown field, it lists posts made to the currently-selected Facebook page.
        - Reach: reaches the largest target audience with the specified budget.
            - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.
        - Video Views: displays video ads to an audience to help build your brand.
            - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. A mandatory text field, it can be a maximum of 200 characters in length.

    Selection of an Objective is mandatory.

    Doing so refreshes the existing campaigns and ad sets dropdowns below (if shown).

    - Special ad category: this dropdown exposes the following options:
        - None: the default value
        - Housing
        - Credit
        - Employment

      When the offer is executed, the ad campaign will be assigned the special ad category. This info will be reflected at the Ads Manager website.

      In addition, if a value other than the default is selected, two additional checkboxes (Are you based in the United States? and Is your ad targeted to the United States?) will be shown in the Ad Set tab.

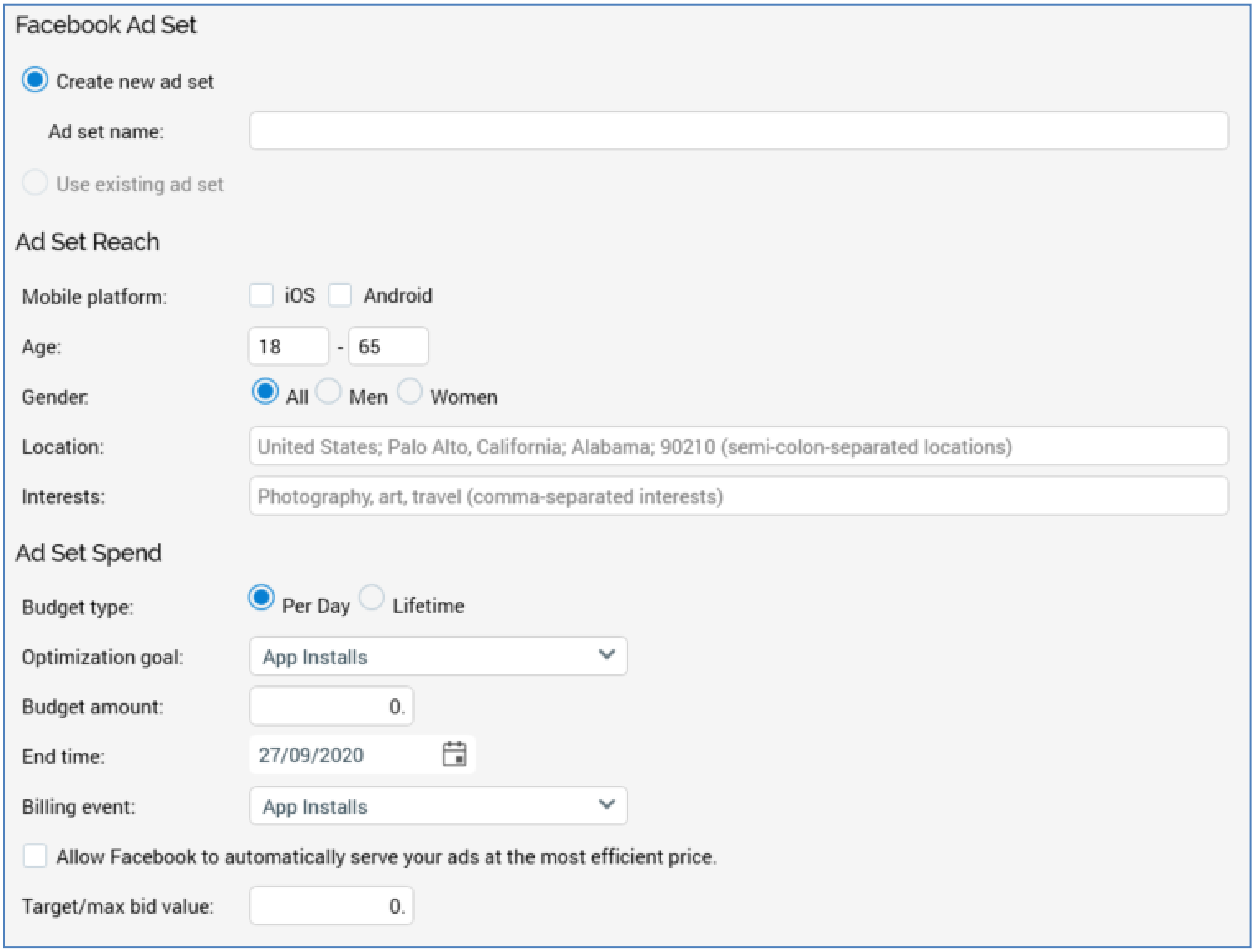
    - App/store/website URL: this property represents the App Store, Google Play store or external website URL to be used by the Facebook ad. An optional text field, it can be a maximum of 200 characters in length. After you add a website URL, you'll have the option to add a call-to-action button to your ad. Keep in mind that If you don't add a website URL, your ad won't have a call-to-action button.

- Facebook Campaign section: a Facebook ad campaign is a grouping of ad sets which can be used to organize several sets of ads for planning purposes (usually those which have the same business objective).

- Create new campaign/Use existing campaign: these two mutually-exclusive radio buttons allow you to define whether execution of the Facebook Marketing offer will create a new, or leverage an existing, Facebook campaign. The default selection is Create new.
- Campaign name: this property is visible and mandatory when the Create new campaign radio button is selected.
- [Existing campaign]: this dropdown field is visible and mandatory when the Use existing campaign radio button is selected. It lists existing campaigns tied to the selected Facebook Marketing channel. Choosing an existing campaign refreshes the existing Ad sets dropdown below (if shown).

20.16.6 Ad Set Tab

The Ad Set tab is used to define the Facebook Marketing offer’s targeting and budget.



- Facebook App Ad Set section: an ad set is a group of ads that share the same daily or lifetime budget, schedule, bid type, bid info, and targeting data.
  - Create new ad set/Use existing ad set: these two mutually-exclusive radio buttons allow you to define whether execution of the Facebook Marketing offer will create a new, or leverage an existing, Facebook ad set. The default selection is Create new.
  - Ad set name: this property is visible and mandatory when the Create new ad set radio button is selected. It supports a maximum length of 100 characters.
  - [Existing ad set]: this dropdown field is visible and mandatory when the Use existing ad set radio button is selected. It lists existing ad sets tied to the selected Facebook Marketing campaign and accordant with the selected. Choosing an existing ad set refreshes the fields displayed below.
- Ad Set Reach section: this section is displayed if the Create new ad set radio button is selected. It defines the audience to which the Facebook ad will be targeted.

- Are you based in the United States?: this checkbox is shown if a Special ad category is selected in the Campaign tab. A checkbox, it is unchecked by default. If checked, the Age fields are disabled, and, during execution, age will not be used for targeting.
- Is your ad targeted to the United States?: this checkbox is shown if a Special ad category is selected in the Campaign tab. A checkbox, it is unchecked by default. If checked, the Age fields are disabled, and, during execution, age will not be used for targeting.
- Mobile platform: two checkboxes are shown when Objective is set to App Installs:
  - iOS
  - Android

  When displayed, it is mandatory to select at least one checkbox.
- Age: two fields (minimum and maximum age) are shown. They default to 18 and 65, respectively. When displayed, provision of values therein is mandatory.
- Gender: three mutually-exclusive radio buttons are shown:
  - All
  - Men
  - Women

  When displayed, selection of one is mandatory.
- Location: this text box accepts a maximum of 200 characters. Example text is provided therein. It is mandatory when displayed.
- Interests: this text box accepts a maximum of 200 characters. Example text is provided therein. It is mandatory when displayed,

* Ad Set Spend section: this section is displayed if the Create new ad set radio button is selected. It defines how the ad set will be priced and managed.
  - Budget type: two mutually-exclusive radio buttons are shown:
    - Per Day
    - Lifetime

    When displayed, selection of one is mandatory.
  - Optimization goal: this dropdown list is only displayed if the offer's Objective is Reach. It exposes the following values:
    - App Installs
    - Ad Recall Lift

    - Event Responses
    - Impressions
    - Link Clicks
    - Page Likes
    - Post Engagement
    - Reach
    - Social Impressions
    - Video Views

  If displayed, selection of a value is mandatory.

- Frequency cap: this property is also only displayed if the offer's Objective is Reach. It is accompanied by two numerical fields, which allow you to express a cap in terms of the number of impressions displayed every *n* days.
- Budget amount: when displayed, provision of a numeric amount is mandatory.
- End time: when displayed, selection of an end date is required.
- Billing event: this dropdown field advises Facebook of the types of activities that are to be monitored on the ad for billing purposes. It exposes a number of the following values:
    - App Installs
    - Impressions
    - Link Clicks
    - Offer Claims
    - Page Likes

  The available values are constrained by the currently-selected Objective:

    - App Install: App Installs, Impression, Link Clicks
    - Brand Awareness: Automatic
    - Conversions: Impressions
    - Event Responses: Impressions
    - Link Clicks: Impressions, Link Clicks
    - Offer Claims: Automatic

        - Page Likes: Impressions, Page Likes
        - Post Engagement: Impressions
        - Video Views: Automatic

    Objectives with automatic billing event are assigned in code and not shown in the UI.

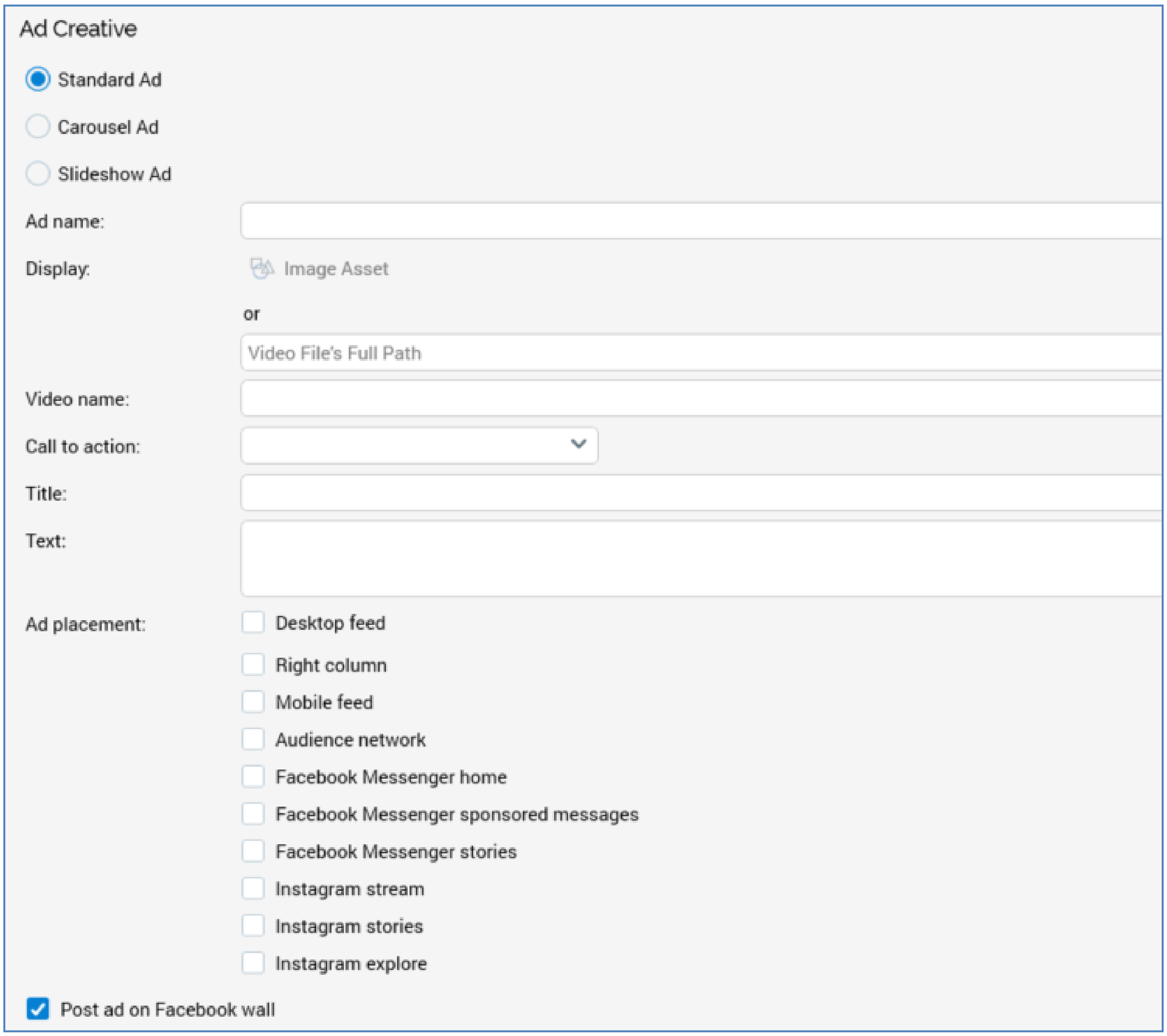
    - Allow Facebook to automatically serve your ads at the most efficient price: a checkbox, unchecked by default.
    - Bid strategy: this property is only shown when Allow Facebook... is checked. A dropdown field, it exposes the following values:
        - Lowest Cost Without Cap (default)
        - Lowest Cost With Bid Cap
        - Target Cost
    - Target/max bid value: when displayed, provision of a numeric amount is mandatory. This property is enabled when Allow Facebook… is unchecked.
- Ad Set Details: this section displays an existing ad set's read-only details. It is displayed when Use existing ad set is selected, and a specific existing ad set has been chosen. The following read-only properties are shown:
    - Age
    - Budget type
    - Budget amount
    - End time
    - Bid type
    - Target/max bid value

20.16.7 Creative Tab

The Creative tab is used to defined how the Facebook ad is to be rendered.

Three radio buttons are displayed at the top of the tab.

- Standard Ad: this option is selected by default. The properties displayed define the data necessary to visually display an ad and associate it with a corresponding ad set.



  - Ad name: a mandatory field, which supports a maximum length of 100 characters.
  - Display: either an Image asset, or the full path to a video file. Provision of one or the other is mandatory. The properties are not shown if the offer's Objective is set to Post Engagement. If Video File's Full Path is supplied, a thumbnail image for the video is required.

- Video name: provision of a video name is mandatory when a video is specified. Its maximum length is 100 characters.
- Call to action: a dropdown field. The property is not shown if the offer's Objective is Brand Awareness, Event Responses, Offer Claims, Page Likes, Post Engagement or Reach.

  The values exposed are accordant with the offer's selected Objective:

  - App Install: Play Game, Use App
  - Conversions: Shop Now, Learn More, Sign Up, Download, Watch More, No Button, Book Now, Apply Now
  - Link Clicks: Shop Now, Learn More, Sign Up, Download, Watch More, Book Now
  - Video Views: Shop Now, Learn More, Sign Up, Download, Watch More, Book Now
- Title: this mandatory text field represents the heading shown within the ad. It is only displayed if the offer's Objective is set to Link Clicks. It can be a maximum of 40 characters in length.
- Text: this mandatory text field represents the ad's description. It is not shown if the offer's Objective is set to Event Responses or Post Engagement.
- Ad placement: a series of checkboxes allows you to specify where ads will appear:
  - Desktop feed: the News feed on Facebook Desktop.
  - Right column: the right column on Facebook Desktop.
  - Instagram stream: the media stream on the Instagram mobile app. Checking this option displays a mandatory Instagram username text field.
  - Mobile feed: other mobile apps in which Facebook ads are to be shown.
  - Audience network: apps and websites on Facebook's Audience Network.
  - Facebook Messenger sponsored messages: messages to people who have an existing conversation with you in Messenger.
  - Facebook Messenger stories: people's Stories on Messenger.
  - Instagram stories: people's Stories on Instagram. Checking this option displays a mandatory Instagram username text field.
  - Instagram explore: the browsing experience when someone clicks on a photo or video. Checking this option displays a mandatory Instagram username text field.

  The checkboxes displayed are accordant with the offer's selected Objective:

  - App Installs:

- Standard Ad – not applicable
- Carousel Ad:
  - Desktop feed
  - Mobile feed
  - Audience network
  - Facebook Messenger stories
  - Instagram stream
  - Instagram stories
  - Instagram explore
- Slideshow Ad:
  - Desktop feed
  - Mobile feed
  - Audience network
  - Facebook Messenger stories
  - Instagram stream
  - Instagram stories
  - Instagram explore

▪ Brand Awareness:

- Standard Ad:
  - Desktop feed
  - Mobile feed
  - Audience network
  - Facebook Messenger sponsored messages
  - Instagram stream
  - Instagram stories
  - Instagram explore
- Carousel Ad:
  - Desktop feed

        - Mobile feed
        - Audience network
        - Facebook Messenger sponsored messages
        - Instagram stream
        - Instagram stories
        - Instagram explore
- Conversions:
    - Standard Ad:
        - Desktop feed
        - Right column
        - Mobile feed
        - Facebook Messenger stories
        - Instagram stream
        - Instagram stories
        - Instagram explore
    - Carousel Ad:
        - Desktop feed
        - Right column
        - Mobile feed
        - Facebook Messenger stories
        - Instagram stream
        - Instagram stories
        - Instagram explore
    - Slideshow Ad:
        - Desktop feed
        - Right column
        - Mobile feed
        - Facebook Messenger stories

        - Instagram stream
        - Instagram stories
        - Instagram explore
- Event Responses:
    - Standard Ad
        - Desktop feed
        - Mobile feed
    - Carousel Ad: not applicable
    - Slideshow Ad: not applicable
- Link Clicks:
    - Not applicable to any ad
- Offer Claims:
    - Standard Ad:
        - Desktop feed
        - Mobile feed
    - Carousel Ad: not applicable
    - Slideshow Ad: not applicable
- Page Likes:
    - Standard Ad:
        - Desktop feed
        - Mobile feed
    - Carousel Ad: not applicable
    - Slideshow Ad: not applicable
- Post Engagement:
    - Standard Ad:
        - Desktop feed
        - Mobile feed
    - Carousel Ad: not applicable

        - Slideshow Ad: not applicable
    - Reach:
        - Standard Ad:
            - Desktop feed
            - Mobile feed
            - Facebook Messenger stories
        - Carousel Ad:
            - Desktop feed
            - Mobile feed
            - Facebook Messenger stories
        - Slideshow Ad:
            - Desktop feed
            - Mobile feed
            - Facebook Messenger stories
    - Video Views:
        - Standard Ad:
            - Desktop feed
            - Mobile feed
            - Facebook Messenger sponsored messages
            - Instagram stream
            - Instagram stories
            - Instagram explore
  - Post app ad on Facebook wall: a checkbox, checked by default, which defines whether the ad will be posted on the account's page's timeline.
- Carousel Ad: selection of this radio button enables Facebook Marketing Carousel ads, and displays the following properties:
  - Message: this mandatory textual field, which can be a maximum of 50 characters in length, represents the main body of the Facebook post (i.e. the status message).

- Link: this mandatory textual field, which can be a maximum of 500 characters in length, represents the URL of a link which can be clicked to 'See more' about the message.
- Call to action: this dropdown field exposes values in accordance with the selected Objective:
  - App Install: Play Game, Use App
  - Conversions: Shop Now, Learn More, Sign Up, Download, Watch More, No Button, Book Now, Apply Now
  - Link Clicks: Shop Now, Learn More, Sign Up, Download, Watch More, Book Now
  - Video Views: Shop Now, Learn More, Sign Up, Download, Watch More, Book Now

  Note that Call to action is hidden when the current Objective is one of Brand Awareness, Event Responses, Offer Claims, Page Likes, Post Engagement or Reach.
- Ad Placement: this property is accompanied by a series of checkboxes:
  - Desktop Feed
  - Right Column
  - Mobile Feed
  - Instagram Stream: if this checkbox is checked, a mandatory Instagram username property is displayed.
  - Mobile External

  The checkboxes displayed will vary in accordance with the offer's current Objective:
  - App Install: Desktop Feed, Right Column, Mobile Feed, Mobile External
  - Brand Awareness: Desktop Feed, Mobile Feed, Instagram Stream
  - Conversions: Desktop Feed, Right Column, Mobile Feed, Instagram Stream.
  - Post Engagement: Desktop Feed, Right Column, Mobile Feed, Mobile External
  - Reach: Desktop Feed, Mobile Feed, Instagram Stream

  Checkboxes are not shown if the selected Objective is one of Event Responses, Link Clicks, Offer Claims, Page Likes or Video Views.
- Automatically show the best performing images first: this checkbox is unchecked by default. When checked, cards with the most clicks are shown first.
- Add a card at the end with the Page profile picture: this checkbox is unchecked by default. When checked, the profile page icon is displayed at the end.

- Carousel Cards section: containing the following:
  - Radio buttons: defining the type of carousel cards to be supported by the offer. Two are available:
    - Use images: selected by default.

      Image cards are supported when the offer's Objective is one of the following:
      - App Installs
      - Brand Awareness
      - Conversions
      - Link Clicks
      - Reach

    Video cards are supported when the offer's Objective is one of the following:
      - App Installs
      - Brand Awareness
      - Conversions
      - Link Clicks
      - Reach
  - Toolbar: exposing the following options:
    - Add new card: invocation of this option adds a new, unconfigured card to the Cards list.
    - Remove selected item: invocation of this option removes the selected card from the list.
  - Cards list: a minimum of 2 cards (3 cards for mobile app ads) must be supplied. A maximum of 10 cards is supported.

    Each card within the list exposes the following properties:
    - Name: this mandatory text field can be a maximum of 35 characters in length and represents the title of the link preview.
    - Link: this optional text field can be a maximum of 500 characters in length and represents the link URL or App Store URL to attach to the post.
    - Picture: a mandatory image asset must be selected to be displayed for the card.

        - Description: this mandatory text field can be a maximum of 100 characters in length, and can be used to show either a price, discount or website domain.

- Slideshow Ad: selection of this option allows you to define the current Facebook Marketing offer as a Slideshow Ad. The following properties are shown when it is selected:
    - Title: a mandatory text field, which accepts a maximum of 40 characters.
    - Text: another mandatory text field, this time accepting a maximum of 90 characters.
    - Image duration: allows you to specify, in milliseconds, the duration for which each image in the slideshow will be displayed. An integer field, it defaults to 1000, and accepts values in the range of 1 - 9,999,999.
    - Transition duration: allows you to specify, in milliseconds, the duration of the crossfade transition between each image in the slideshow. An integer field, it defaults to 1000, and accepts values in the range of 1 - 9,999,999.
    - Ad placement: this property allows you to specify where ads based on this offer are to be presented. It is accompanied by a number of checkboxes, which are all unchecked by default.
        - Desktop feed
        - Right column
        - Mobile feed
        - Mobile external
        - Instagram stream: checking this checkbox displays an additional property:
            - Instagram username: this text property is mandatory when Instagram stream is checked.

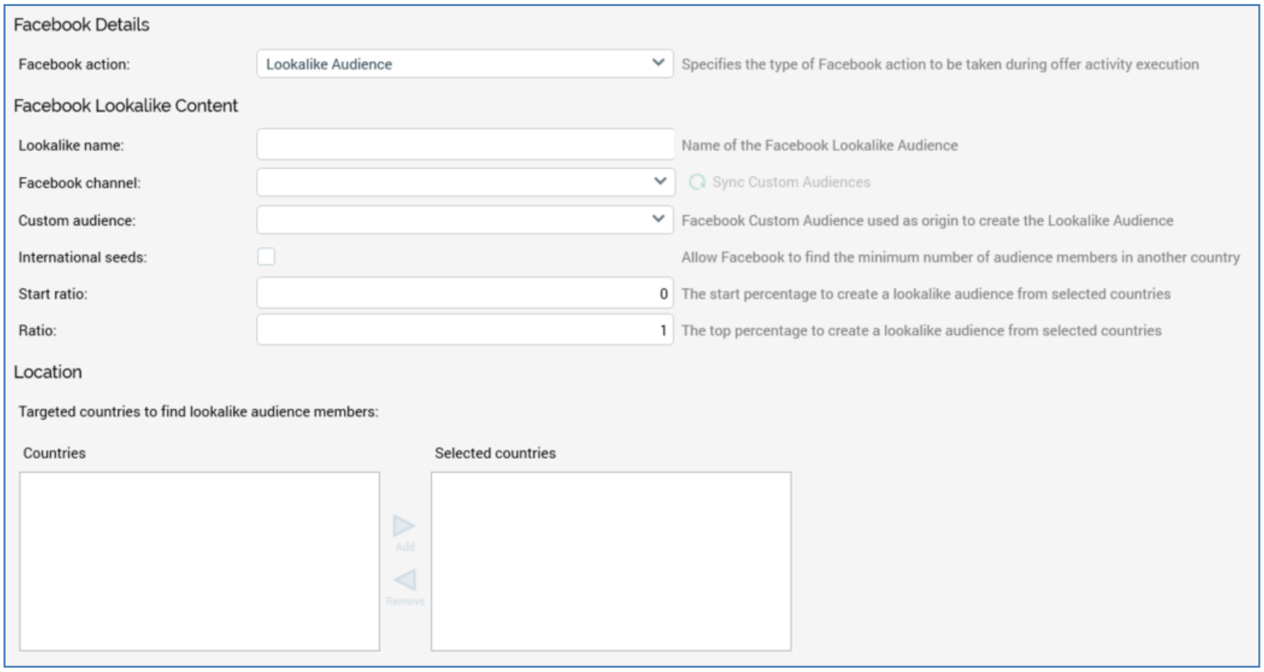
      Note that not all checkboxes may be displayed, depending on the offer's Objective.
    - Slideshow Images section: this section is shown at the bottom of the tab. It allows you to specify the images to be used within the slideshow.

      A toolbar appears at the top of the section, exposing the following buttons:
        - Add image: clicking this button adds a row to the slideshow images list. You must choose an image asset to populate its Image property.
        - Remove selected image: clicking this button removes the selected image from this list, without displaying an 'Are You Sure?' dialog.

    Note that at least 3, and a maximum of 10, images must be provided.

20.16.8 Facebook Lookalike Content Section

This section is used to create an audience that closely matches a selected Custom Audience. It is displayed when Facebook action is set to Lookalike Audience. It contains the following:



- Lookalike name: this mandatory property can be a maximum of 200 characters in length. It represents the name of the Facebook Lookalike Audience to be used by the offer.

- Channel: you must select a Facebook channel to be used by the offer. Having selected a channel, click the accompanying Sync Custom Audiences button to load the Custom audience dropdown.

- Custom audience: you must select a custom audience to serve as the basis for the lookalike audience to be created at execution of the offer. A dropdown list, it is populated on clicking Sync Custom Audiences.

- International seeds: this checkbox is unchecked by default. When checked, Facebook will source lookalike audience members from other countries. Facebook requires a minimum of at least 100 seed audience members (based on the selected Custom Audience) from a selected country for a Lookalike Audience to be created. If the seed count is below 100 and this is option is checked, Facebook finds the minimum number of audience members from another country.

- Start ratio: this numeric property allows you to specify the starting percentage for the portion of Facebook users who are most likely similar to your selected Custom Audience. When creating a Lookalike audience, Facebook takes the selected Custom Audience's users, then matches with users that closely resemble the Custom Audience in a selected country. This matching is expressed as a percentage. A Start ratio of 0 and Ratio of 1 means you want your Lookalike audience to take the top 1% of users that most closely resemble your Custom

Audience. A lower percentage has a lower reach but has a higher degree of similarity to the selected Custom Audience. The property defaults to 0, which is also the minimum permitted value, and accepts a maximum value of 9. Note that Start ratio must be lower than Ratio.

- Ratio: this numeric property is used in conjunction with Start ratio. It defaults to 1, which is also the minimum permitted value, and accepts a maximum value of 10.

20.16.9 Location Section

This section is used to specify the list of countries that Facebook can use to find a match to the selected Custom Audience when creating a Lookalike Audience. It is displayed when Facebook action is set to Lookalike Audience. It contains the following:

- Countries: a list of possible countries from which to source lookalike audience members is supplied. It is populated with an alphabetical list of country names when Sync Custom Audiences is clicked.

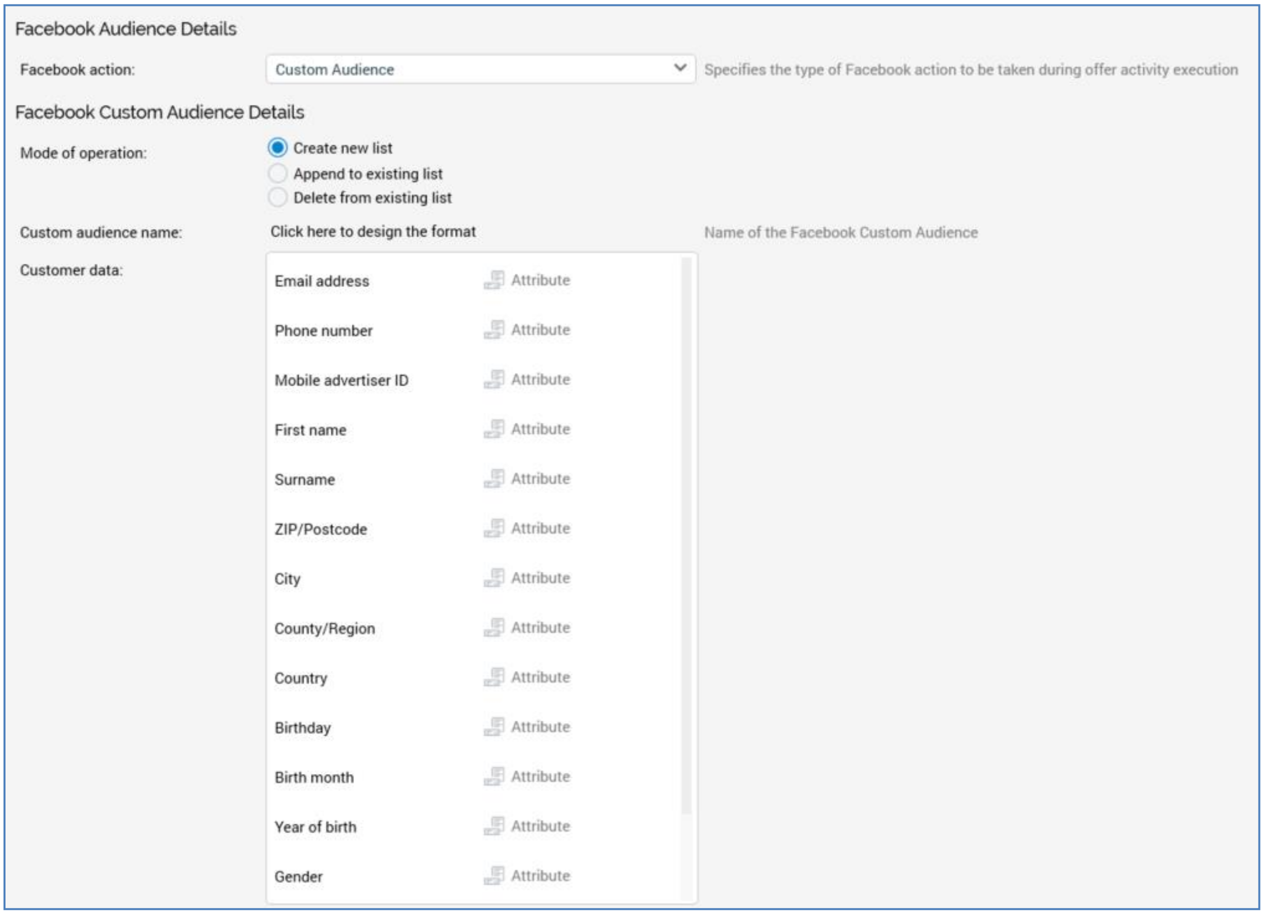
- Add: clicking this button, which is enabled on selection of one or more Countries, adds the selection to the Selected countries list.

- Remove: clicking this button, which is enabled on selection of one or more Selected countries, removes the selection from the Selected countries list.

- Selected countries: the list of selected countries from which to source lookalike audience members.

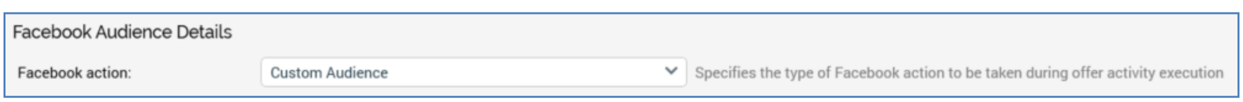
20.17 Facebook Audience

The following properties are presented at a Facebook Audience offer:



20.17.1 Facebook Audience Details Section

This section exposes a single property:

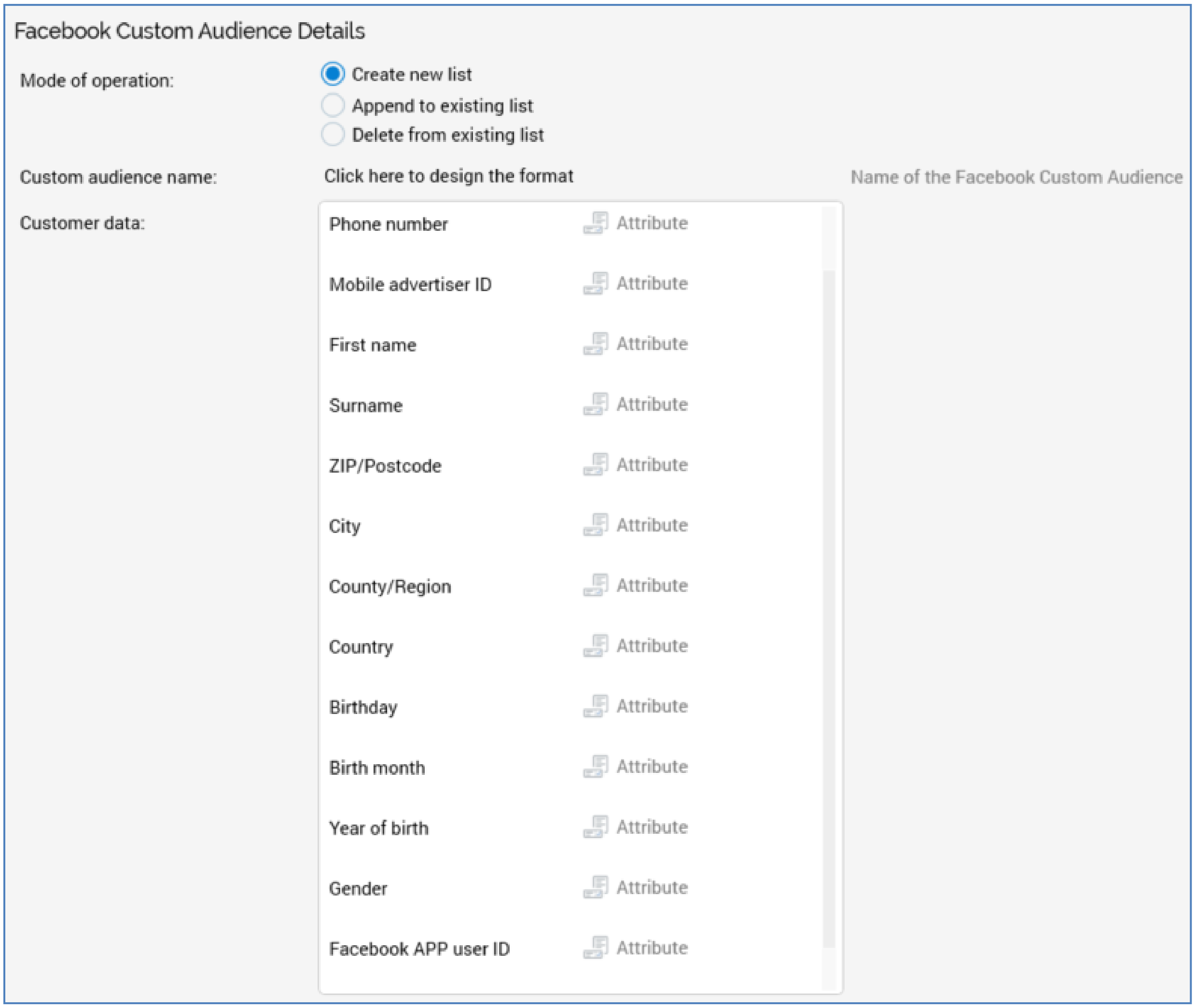


- Facebook action: a dropdown, exposing the following values:
  - Custom Audience(the default)
  - Offline Event

The property allows you to specify the type of action to be taken at offer activity execution. Selection of value displays a series of properties to support the type of action to be undertaken.

20.17.2 Facebook Custom Audience Details Section

This section is displayed when Facebook action is set to Custom Audience. It contains the following:



- Mode of operation: three radio buttons accompany this property:
  - Create new list: this option is selected by default. When selected, Channel, Synchronize with Facebook and Custom Audience are hidden, and Custom audience name is shown. When this option is selected, uploaded users will be added to a new custom audience (unless a custom audience with the name provided already exists)
  - Append to existing list: when selected, Channel, Synchronize with Facebook and Custom Audience are shown, and Custom Audience name is hidden. When this option is selected, uploaded users will be appended to an existing custom audience.
  - Delete from existing list: when selected, Channel, Synchronize with Facebook and Custom Audience are shown, and Custom Audience name is hidden. When this option is selected, uploaded users will be deleted from an existing custom audience

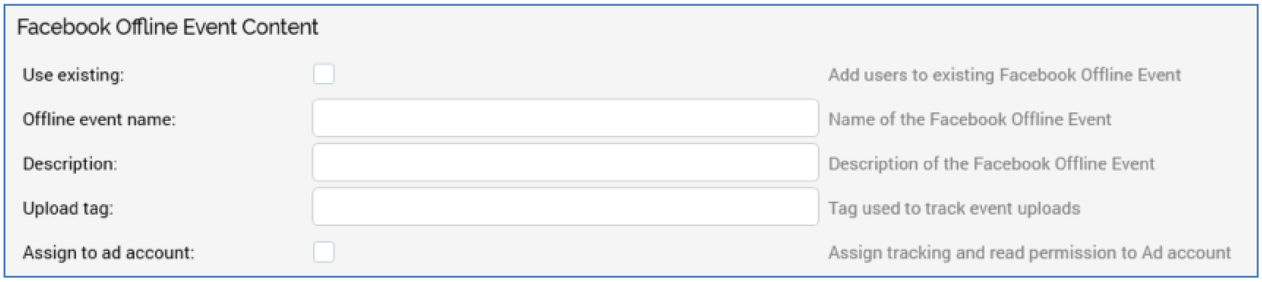
- Custom audience name: you can specify the name of a new Facebook custom audience to be created at offer execution using the Design Custom Audience Name Format dialog. The following text parts are supported:
  - String
  - Date part
  - Age range (requires Year of birth attribute to be provided at the Customer Data property)
- Channel: this dropdown field is shown when Mode of operation is set to Append to or Delete from existing list. It is accompanied by, and populated on invocation of, a Synchronize with Facebook button. Clicking the button populates the field with a list of available Facebook Custom Audience channels.
- Custom Audience: this editable combo box accompanies, and its dropdown values are populated at the same time as, Channel. It facilitates selection or specification of a Facebook custom audience to or from which user data will be appended or deleted (note that a manually-specified Custom Audience must exist in the list).
- Customer data: this property is pre-populated with a list of Facebook field names. Each can be mapped to an RPI attribute file (using browse or drag and drop). Having mapped a field to an attribute, the attribute's details can be viewed in the File Information Dialog; the selection can also be cleared. At least one field must be mapped to an attribute.

  The 'Limited Data Use' field can be used to map a Boolean attribute, which controls whether a record is subject to Facebook's feature of the same name. Its mapping is mandatory when 'US states' has been mapped to an attribute (and vice versa).

- App IDs: this text field is visible and mandatory when the Facebook app user ID field is mapped to an attribute. It allows you specify a comma-separated list of the Facebook app IDs associated with the Facebook app user ID.
- Page IDs: this text field is visible and mandatory when the Facebook page user ID field is mapped to an attribute. It allows you specify a comma-separated list of the Facebook page IDs associated with the Facebook page user ID.

20.17.3 Facebook Offline Event Content Section

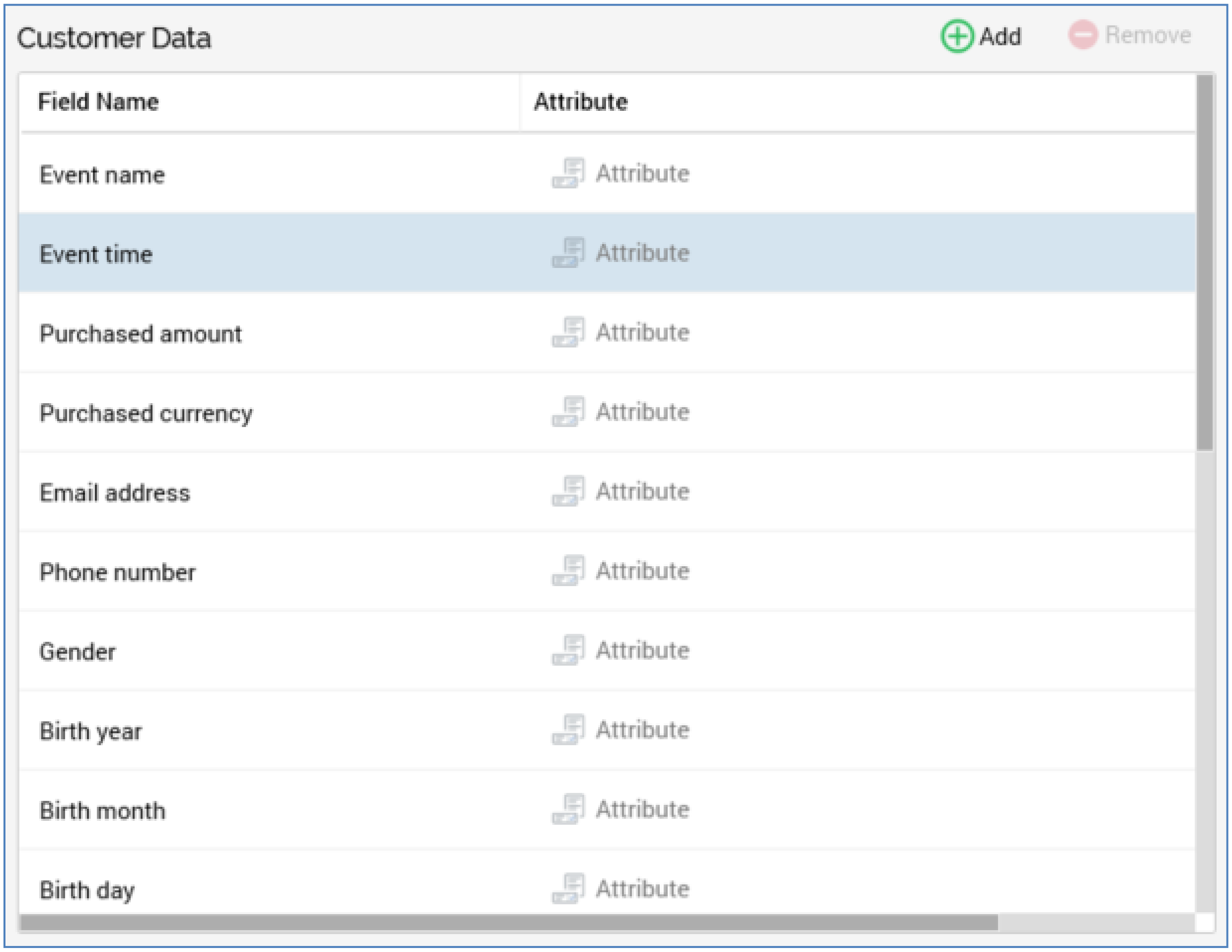
This section is displayed when Facebook action is set to Offline Event. It contains the following:



- Use existing: this checkbox allows you to specify whether execution of the offer will add users to an existing event. It is unchecked by default. When checked, Offline event name and Description fields are replaced with Channel and Offline Event dropdowns.
- Offline event name: this property is shown when Use existing is unchecked. It can be a maximum of 100 characters in length and allows you to specify the name of the offline event.
- Description: this property is shown when Use existing is unchecked. It can be a maximum of 1000 characters in length and allows you to specify the offline event's description.
- Channel: this dropdown property is shown when Use existing is checked and allows you to select from a list of the Facebook Offline Event channels configured at the current RPI client.
- Offline Event: this dropdown property is shown when Use existing is checked. It is populated at invocation of the Synchronize with Facebook button, which is shown to the right of the Channel dropdown. It allows you to choose from an existing Facebook offline event associated with the selected channel.
- Upload tag: this mandatory text field can be a maximum of 100 characters in length, and represents the tag used to track event uploads.
- Assign to ad account: this checkbox, which is unchecked by default, allows you to assign tracking and read permission to a Facebook Ad account.

20.17.4 Customer Data Section

This section is displayed when Facebook action is set to Offline Event. It contains the following:



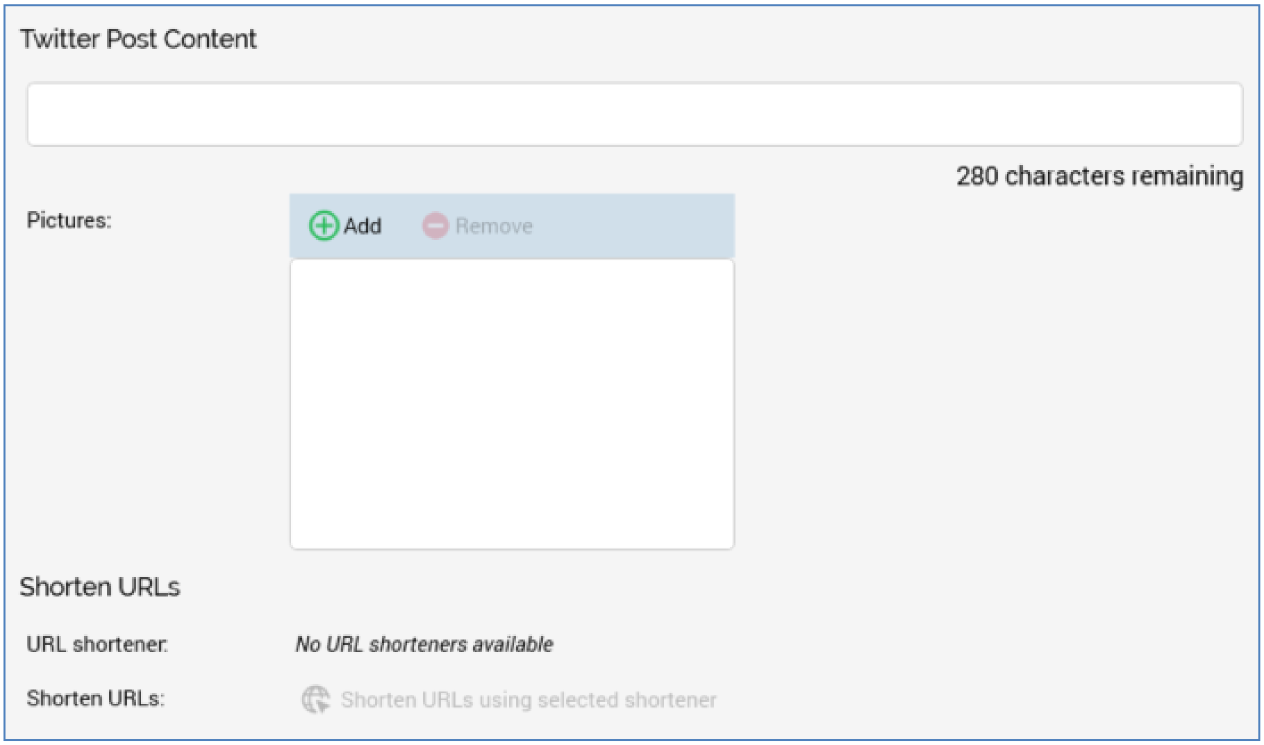
- Toolbar: exposing the following:
  - Add: clicking this button adds a new custom entry to the Customer Data list.
  - Remove: this button is enabled when a custom entry is selected in the list. Clicking it removes the entry.
- List: contains a list of predefined, and optionally custom, Customer Data. For each, Field Name and Attribute properties are shown.

  Field names are read-only for predefined data, and writeable for custom data. Event name and Event time are required.

  Each field must be mapped to an RPI Attribute.

20.18 Twitter

The Twitter content panel contains the following sections:



- Twitter Post Content: the content to be posted to Twitter. This mandatory text field extends to become a multi-line field as required. It is accompanied by a label ('[*n*] characters remaining'). The starting value of [*n*] is 280; as characters are typed into the field it is decremented dynamically. When [*n*] reaches 20 characters, the label is displayed in red. When [*n*] reaches 10 characters, it is displayed in bold dark red. When [*n*] reaches 0 characters, the label 'No characters remaining' is displayed in bold bright red. When [*n*] is less than 0, the label is shown as '[*n*] characters over'.
- Pictures: this optional property consists of toolbar and a list.
    - Toolbar: exposing the following:
        - Add: clicking this button adds an unconfigured Image Asset to the list. A maximum of 4 image assets can be added.
        - Remove: this button is enabled when an image asset is selected in the list. Clicking it removes the selected image asset from the list, without displaying an 'Are You Sure?' dialog.
    - List: containing a list of image assets.

        - Image Asset: each list entry must be configured with an image asset. You can populate using browse or drag and drop. Having populated the property, you can Clear your selection.

- Shorten URLs section: this section allows you to shorten, on demand, URLs entered in the Twitter Post Content. Note that this capability complements the ability to attach a Bitly or Rebrandly adapter to the Twitter channel, the effect of which will be to shorten all (or only relevant) URLs in content executed via that channel. Any URLs shortened manually at the offer will be ignored by the channel adapter.

  The section contains the following:

    - URL shortener: this dropdown field lists all Bitly and Rebrandly adapters configured within the current RPI installation. If none exist, a message advises that no URL shorteners are available.

      You can choose an adapter to use to shorten URLs in the Twitter Post Content.

    - Shorten URLs: this button is enabled when content is provided. On invocation, any valid URLs in post content are shortened using the adapter's shortening service, to which connection is made using the selected adapter's credentials.

      If the selected adapter is not configured with a URL, all URLs are shortened. If the selected adapter is configured with URL, only matching URLs are shortened. Clicking the button does not shorten previously-shortened URLs.

      If no URLs shortened, an advisory message is displayed

  Note that if you intend to shorten Twitter posts containing a URL when a non-shortener web adapter is attached to the Twitter channel, you should do so by attaching a Bitly or Rebrandly adapter to the channel, rather than shortening in the context of the offer.

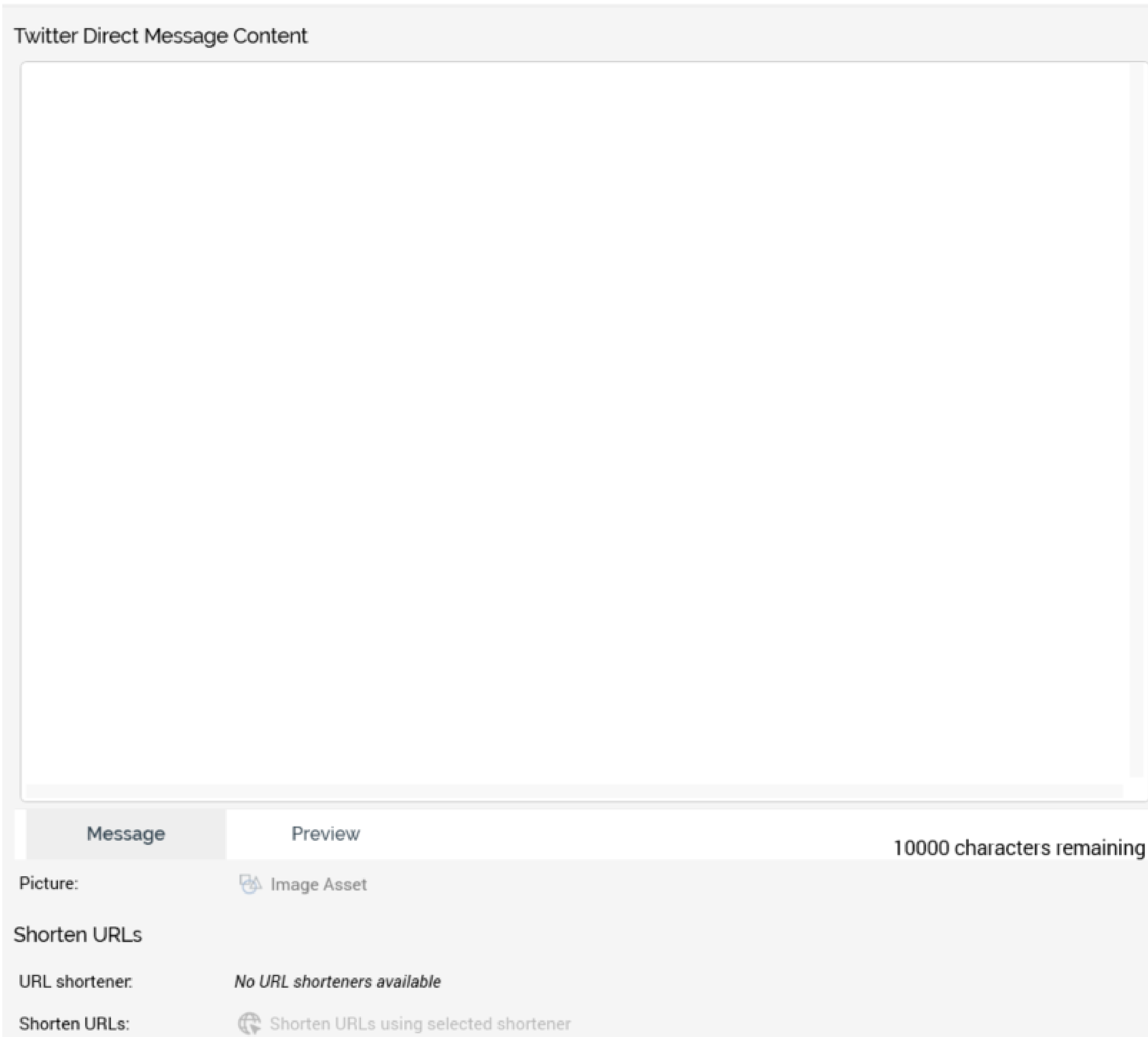
If the Twitter Post Content contains no URLs, a 'hard' 280-character limit is enforced; a validation error is raised and you will not be able to execute the offer.

If the Twitter Post Content contains one or more URLs, when the Twitter Post Content exceeds 280 characters, a message is displayed. Note that the offer remains valid…the channel through which the offer is to be executed may be associated with a shortener adapter, which will reduce the overall length of the post to fewer than 280 characters.

20.19 Twitter Direct

Twitter Direct offer content is similar to Twitter content; however, the maximum message length supported is increased from 280 to 9,970 characters. Where a Twitter offer is broadcast to an anonymous audience, a Twitter Direct message is sent to specific targets.

The Twitter Direct Offer Designer interface contains the following:



- Twitter Direct Message Content: this property contains a tabset, with Message and Preview tabs.
    - Message: you can specify the message to be sent to offer recipients in this mandatory, updateable, multi-line field. You can include database column attributes, and text and text smart assets in offer content. The maximum length of content supported is 10,000 characters.

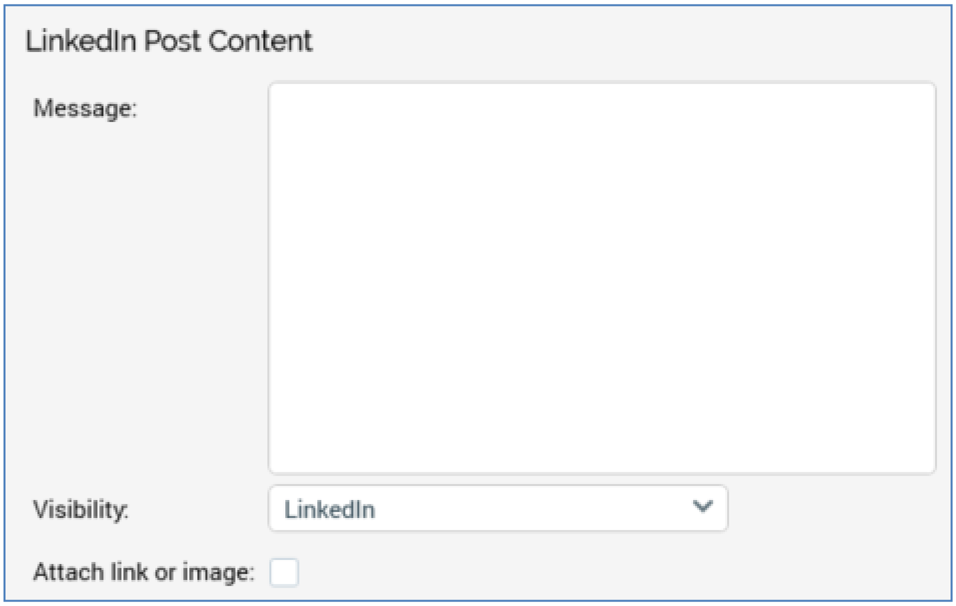
  - Preview: you can visualize a preview of the offer's content using this tab. Each attribute, included directly or via another asset, in the offer content is listed to the right of the Preview tab. For each such parameter you can provide an illustrative Value to give an impression of the final delivered content.

- Picture: you can optionally include an image asset in your offer's content. You can browse for the same, or populate the property using drag and drop. Having chosen a Picture, you can clear your selection. When a Picture has been selected, the offer's maximum message length is set to 9,970.

- Shorten URLs: this section is as per the equivalent in the Twitter Offer Designer. Please see elsewhere in this documentation for further details.

20.20 LinkedIn

The LinkedIn content panel contains the following:



- Message: to be posted by the LinkedIn account defined by the LinkedIn channel through which the offer is executed. A mandatory, multi-line text field, the message can be a maximum of 700 characters.

- Visibility: a dropdown field that defines to whom the message will be visible. Values are LinkedIn (the default) and Connections.

- Attach link or image: this checkbox, unchecked by default, determines whether a link or image will be shown below the message. If checked, the following fields are shown:

  - Title: the link text displayed below the message. A mandatory text field that can be a maximum of 200 characters.

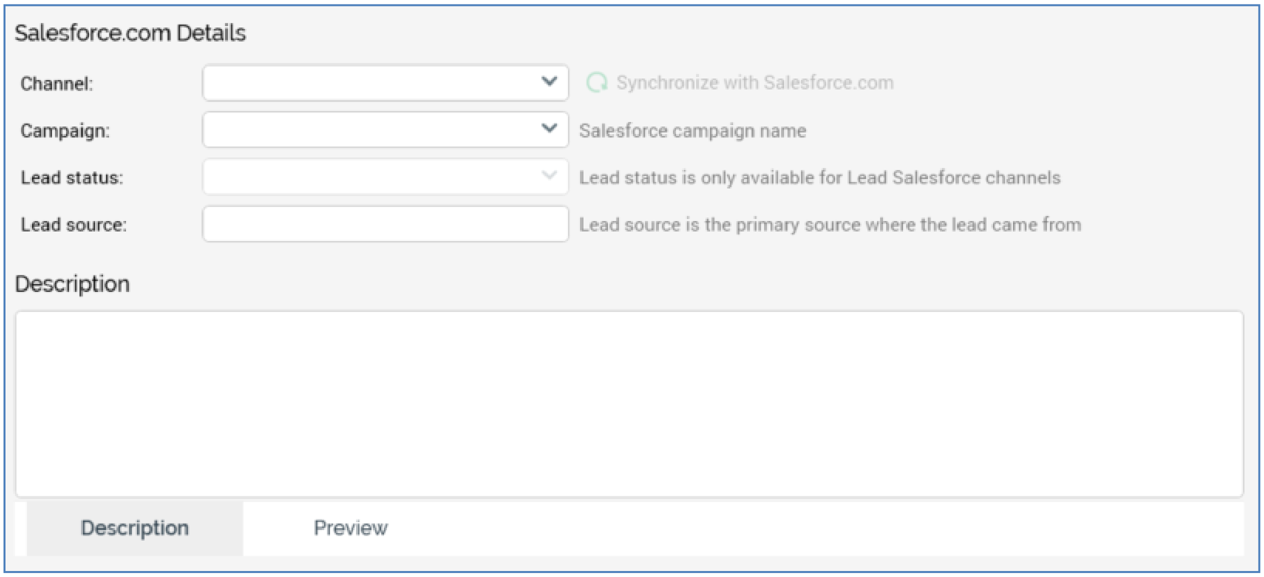
  - Article URL: the link's URL. A mandatory text field that can be a maximum of 1000 characters. Address must be a valid URI.

  - Image URL: a URL for an image accompanying the link.

  - Description: as displayed below the link, Description is optional text field that can be a maximum of 250 characters.

20.21 Salesforce.com

The Salesforce.com content panel contains the following:



- Channel: a dropdown field that is populated with all Salesforce.com channels as defined at the Channels configuration interface. Selection of a channel is mandatory and enables the Synchronize with Salesforce.com button.
- Synchronize with Salesforce.com: invocation of this button displays a message and rotating icon. Fields are disabled while the Campaign and Lead Status dropdowns are loaded with data from Salesforce.com.
- Campaign: this dropdown is initially empty and is populated on invocation of Synchronize with Salesforce.com. It lists all existing campaigns from the selected Salesforce.com Channel that have a status of Planned or In Progress. In addition, a default list entry, Create New Campaign, is made available at the beginning of the list. Selection of this value displays the Campaign Details section.
- Campaign Details section: only displayed if Campaign is set to Create New Campaign. It contains the following properties:
    - Name: a mandatory text field that can be a maximum of 80 characters in length.
    - Status: a mandatory dropdown field, exposing the values Planned (the default), and In Progress.
    - Start date: provision of a Start date for the new campaign is mandatory, and defaults to today's date.
    - End date: provision of an End date for the new campaign is mandatory, and defaults to today's date + 6 days (i.e. 1 week's duration).
    - Description: optional, and a maximum of 1000 characters.

- Lead Details section: this section is only enabled when the selected channel's Salesforce data to sync property is set to Leads.

  It contains the following fields:

  - Lead status: the initial status that will be assigned to all Salesforce leads created by execution of the offer. Lead status is a dropdown that is initially empty. It is populated by invocation of Synchronize with Salesforce.com, with data sourced from a constrained list of values defined at the Salesforce user interface, having logged in using the channel's login credentials. Provision of a Lead status is mandatory.

  - Lead Source: an optional text field, applied to all leads created by execution of the offer. Lead source may be a maximum of 40 characters.

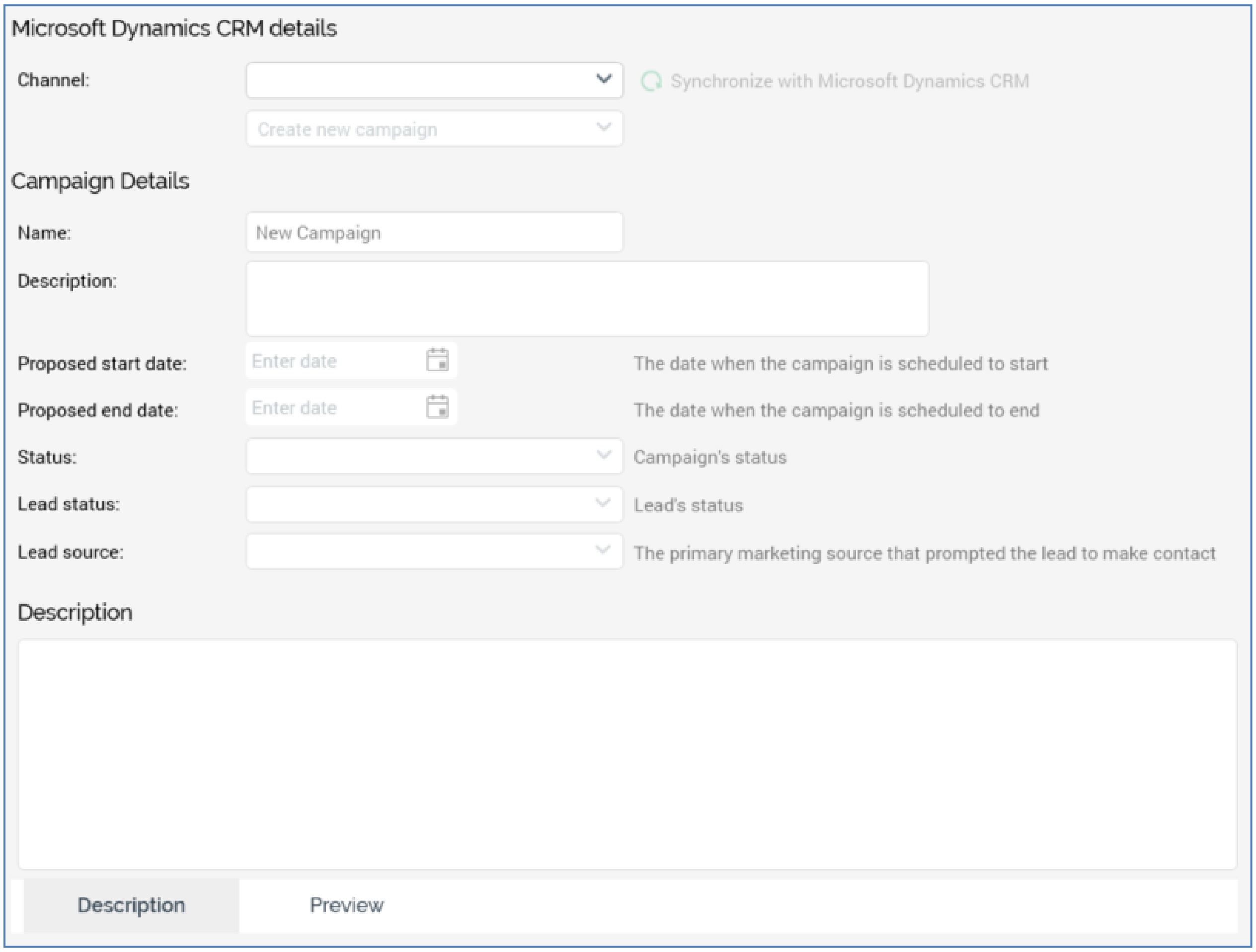
  - Lead Description Content section: this contains a tabset, exposing the following tabs.

    - Lead Description: this tab allows you to specify an optional Description to be applied to all new leads created by execution of the offer. You can embed attributes in the Lead Description using drag and drop, thereby customizing individual leads' descriptions. Lead Description may be a maximum of 1000 characters in length.

    - Preview: this tab allows you to preview the Lead Description entered in its companion and provide values to illustrate the attribute parameters contained therein.

20.22 Microsoft Dynamics CRM

The Microsoft Dynamics CRM content panel contains the following:



- Channel: a dropdown field that is populated with Microsoft Dynamics CRM channels as defined at the Channels configuration interface. Selection of a channel is mandatory and enables the Synchronize with Microsoft Dynamics CRM button.

- Synchronize with Microsoft Dynamics CRM: invocation of this button displays a message and rotating icon. The following data is loaded from Microsoft Dynamics CRM: Campaigns, Campaign Status, Lead Status and Lead Source.

- Use existing campaign/Create new campaign: this dropdown is set to Use existing campaign by default. It allows you to define whether the Microsoft Dynamics CRM offer will utilize a pre-existing campaign or will create a new campaign.

The following properties are only displayed if Use existing campaign is selected:

- Campaign: this property is only available if Use existing campaign is selected. The dropdown is initially empty and is populated on invocation of Synchronize with Microsoft Dynamics

CRM. It lists all existing campaigns from the selected Microsoft Dynamics CRM Channel that have statuses accordant with the selected channel's Use campaign with status setting.

- Lead status: this editable combo box is only enabled when the selected channel's Data to synchronize property is set to the value 'Lead'. The combo box is initially empty and is populated with the following values as sourced from Microsoft Dynamics CRM's Lead status lookup: 'New', and 'Contacted'. A new custom Lead Status can also be defined.

- Lead source: this editable combo box is populated with values sourced from Microsoft Dynamics CRM. The available values are constrained in accordance with the selected channel's Data to synchronize property.

  If the property is set to 'Contact', Lead Source represents the primary marketing source that directed the contact to the organization.

  If the property is set to 'Lead', Lead Source represents the primary marketing source that prompted the lead to make contact.

  Lead source is set by default to the default value set at the Microsoft Dynamics CRM Lead Source lookup. A new custom Lead Source can also be defined.

The following properties are only displayed if Create new campaign is selected:

- Name: a mandatory text field that can be a maximum of 100 characters in length. Name defaults to 'New Campaign'.

- Description: optional, and a maximum of 1000 characters.

- Proposed start date: provision of a start date for the new campaign is mandatory. The field is blank by default.

- Proposed end date: provision of an end date for the new campaign is mandatory. The field is blank by default, and the value provided cannot be before the Proposed start date.

- Status: a dropdown field, exposing values sourced from Microsoft Dynamics CRM's Campaign status lookup. It is initially empty.

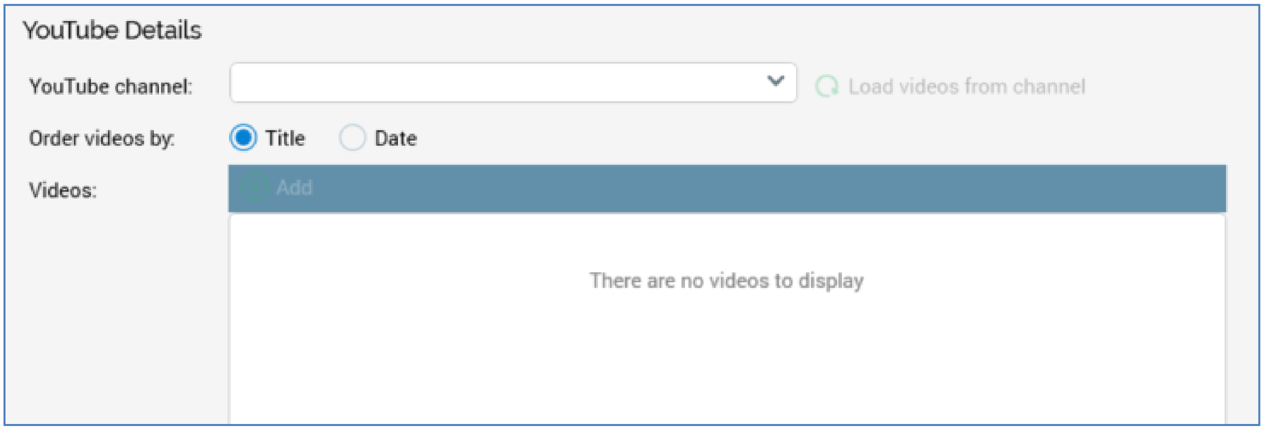
- Description section: this contains a tabset, exposing the following tabs.

  - Description: this tab allows you to specify an optional Description to be applied to all new records created by execution of the offer. You can embed attributes in the Description using drag and drop, thereby customizing individual descriptions. Description may be a maximum of 1000 characters in length.

  - Preview: this tab allows you to preview the Description entered and provide values to illustrate the attribute parameters contained therein.

20.23 YouTube

The YouTube delivery method allows you to post videos to and monitor metrics collected in respect of an existing YouTube channel.



The following properties are available at the YouTube Offer Designer:

- YouTube channel: you can select an RPI YouTube channel in respect of which to gain visibility of metric values. All of the current client's YouTube channels are listed in a dropdown field.
- Load videos from channel: this button is enabled when a YouTube channel has been selected. Clicking it displays the channel's videos in the Videos field, ordering them in accordance with the Order videos by setting.
- Order videos by: two radio buttons allow you to specify how videos are to be ordered:
  - Title: the default
  - Date
- Videos: consisting of a toolbar and videos list
  - Toolbar, exposing a single option:
    - Add: adds a new entry to the list. You can select a video, then provide a title and optional description. If checked, on execution of the YouTube offer in a broadcast activity, the video will be posted to the selected YouTube account.
  - Videos list: a list of the videos already uploaded by the selected channel is displayed. Each video is accompanied by a checkbox, which is unchecked by default. When an existing video is selected using the checkbox, it will be counted in the metrics collated at a resultant broadcast.

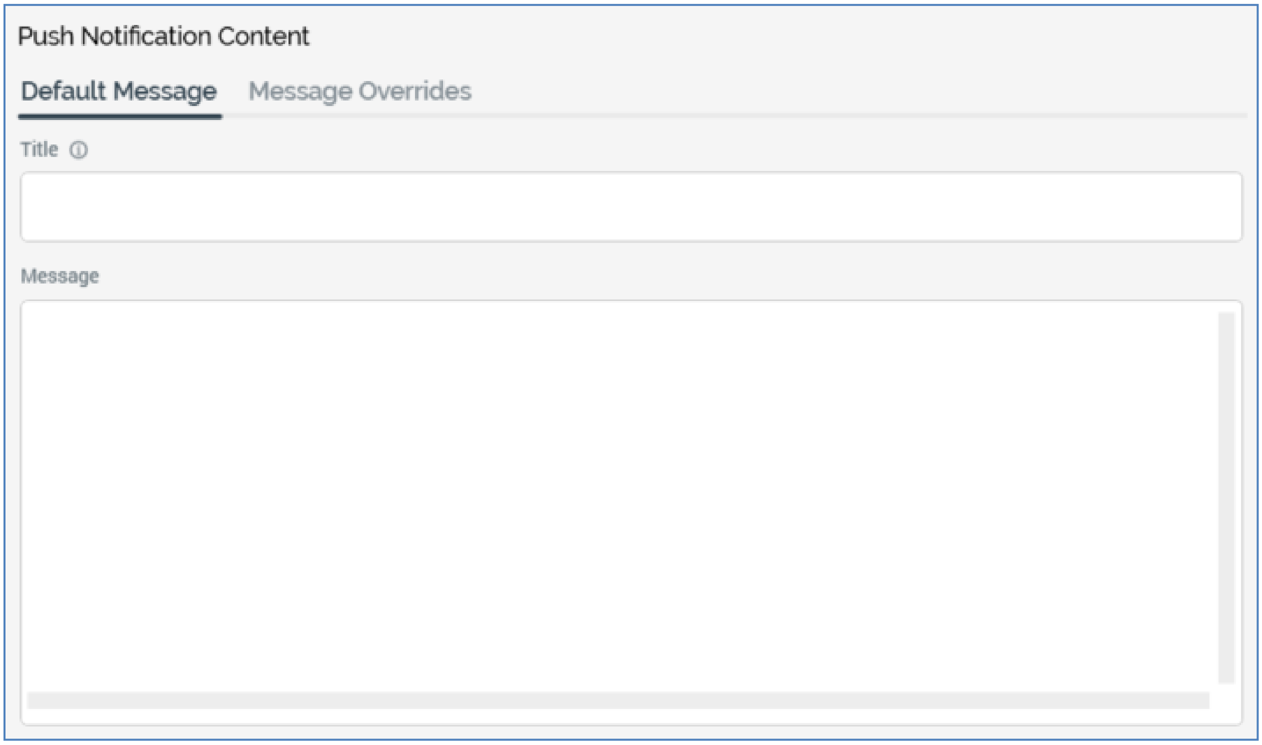
    A thumbnail of the video, and its duration, are shown, along with its title, the channel name, the uploader's name (if available), and a description.

    If you add a new video to the list, the following properties are shown:

- Icon: a default video icon, and the text ‘to be uploaded’, is shown at a newly-created entry in the videos list.
- Video: you must select a video file from an external content provider using the Choose Asset File System Dialog. Other asset and external file types are not supported. Once a video has been selected, you can clear the property.
- Title: this mandatory text property can be a maximum of 100 characters in length.
- Description: this optional text property can be a maximum of 1000 characters in length.
- Remove this video: this button is shown to the right of the list entry, when you hover over it. Invocation removes the video from the list without display of an ‘Are You Sure?’ dialog.

20.24 Push Notification

The Push Notification delivery method allows you to execute push message broadcasts using a supported provider.



Two tabs appear within the Push Notification Offer Designer. Each is described separately.

20.24.1 Default Message Tab

The Push Notification Offer Designer’s Default Message tab exposes the following properties:

- Title: this optional text property allows you to specify the notification's heading. It can be a maximum of 200 characters in length.
- Message: a mandatory text field that can be a maximum of 4000 characters in length.

20.24.2 Message Overrides Tab

The Push Notification Offer Designer’s Message Overrides tab allows you to specify platform-specific message content overrides.

You can specify alternative message content for each of the following by checking the relevant checkboxes:

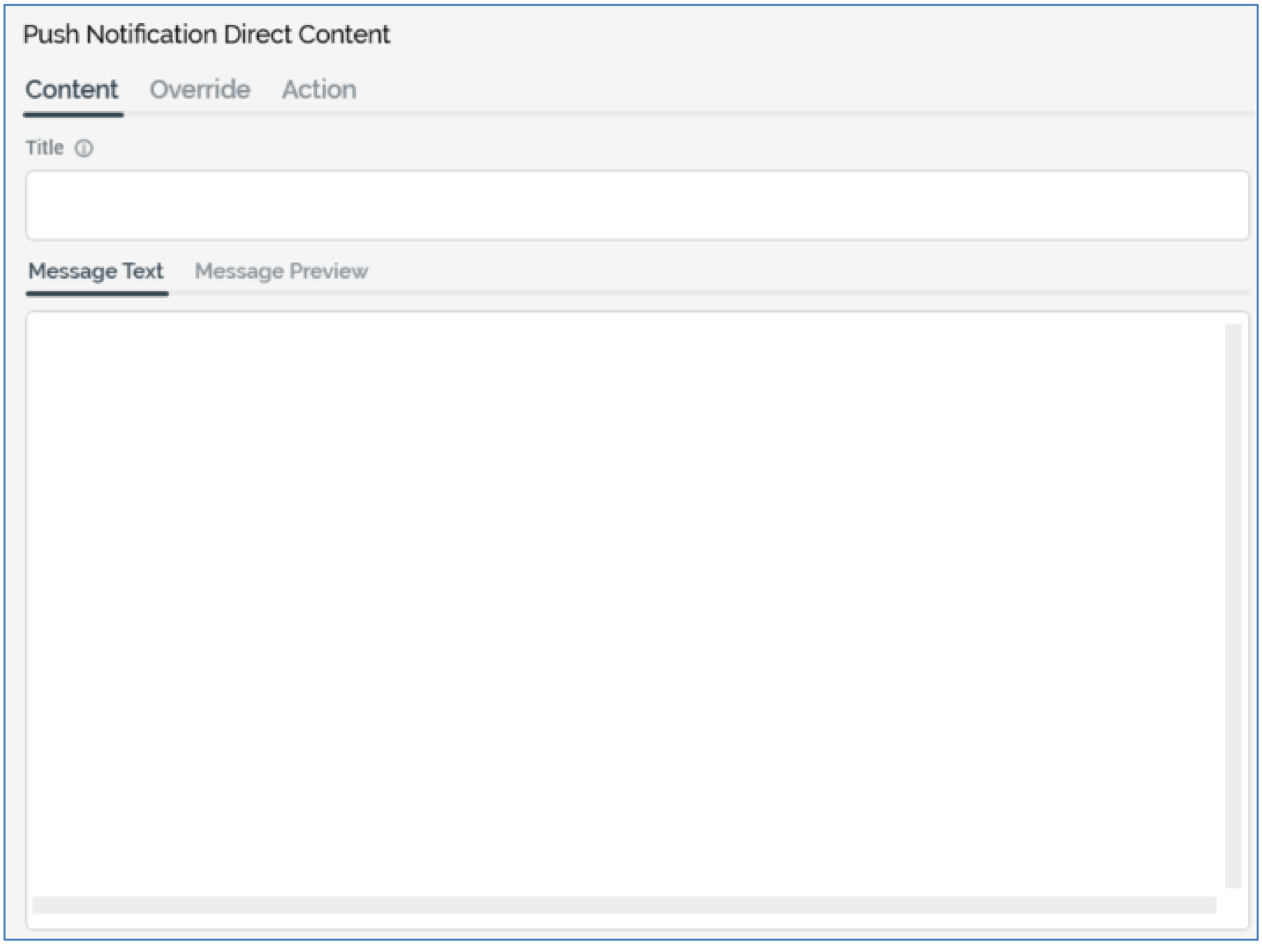
- Apple iOS

- Android
- SMS
- Facebook Messenger

Access to each of the above is contingent on their support by currently-configure push notification channels.

20.25 Push Direct Notification

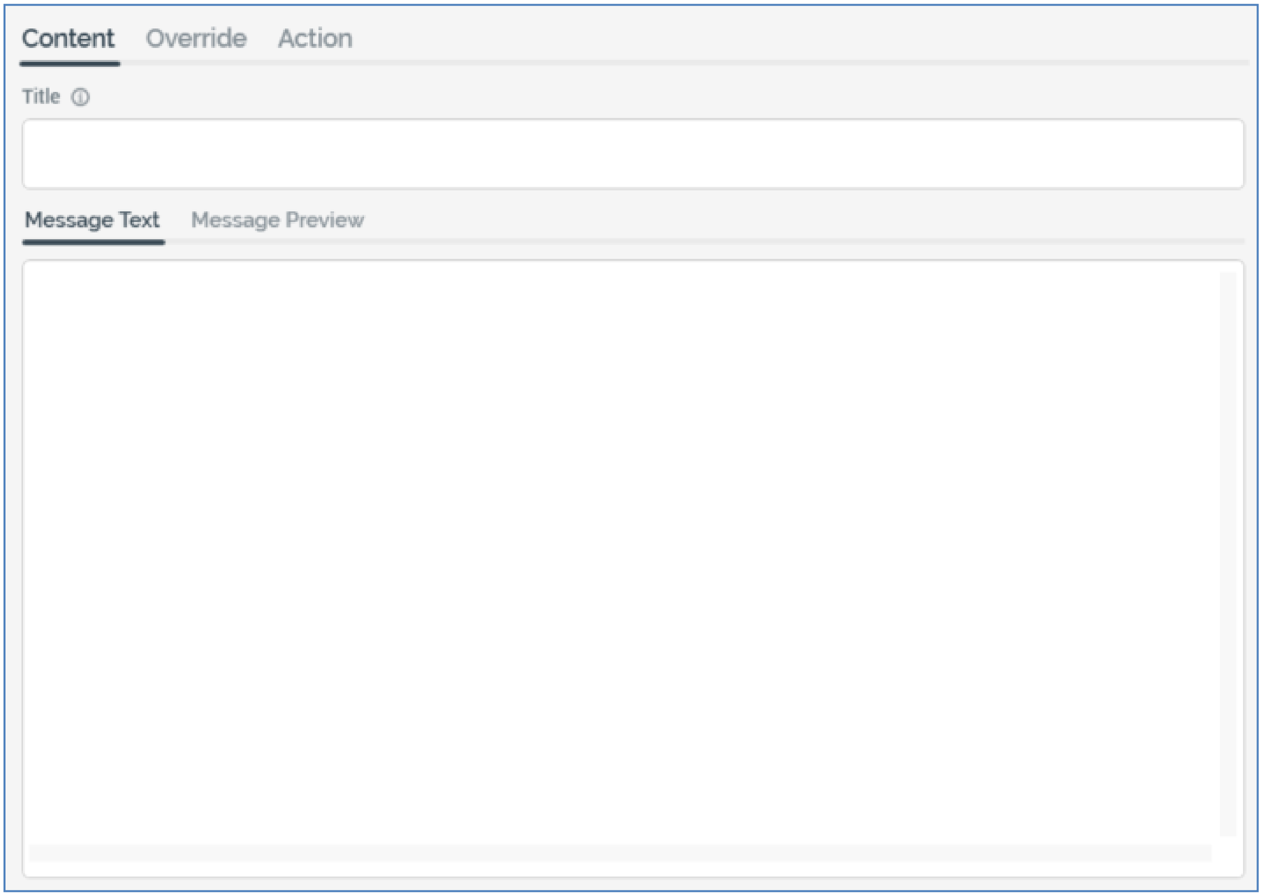
The Push Direct Notification delivery method allows you to send direct push messages using a supported provider.



Three tabs appear within the Push Notification Offer Designer. Each is described separately.

20.25.1 Content Tab

The Push Direct Notification Offer Designer’s Content tab exposes the following properties:



- Title: this optional text property allows you to specify the notification's heading. It can be a maximum of 200 characters in length.
- Message: a mandatory text field that can be a maximum of 4000 characters in length.

20.25.2 Override Tab

The Push Direct Notification Offer Designer’s Override tab allows you to specify platform-specific message content overrides.

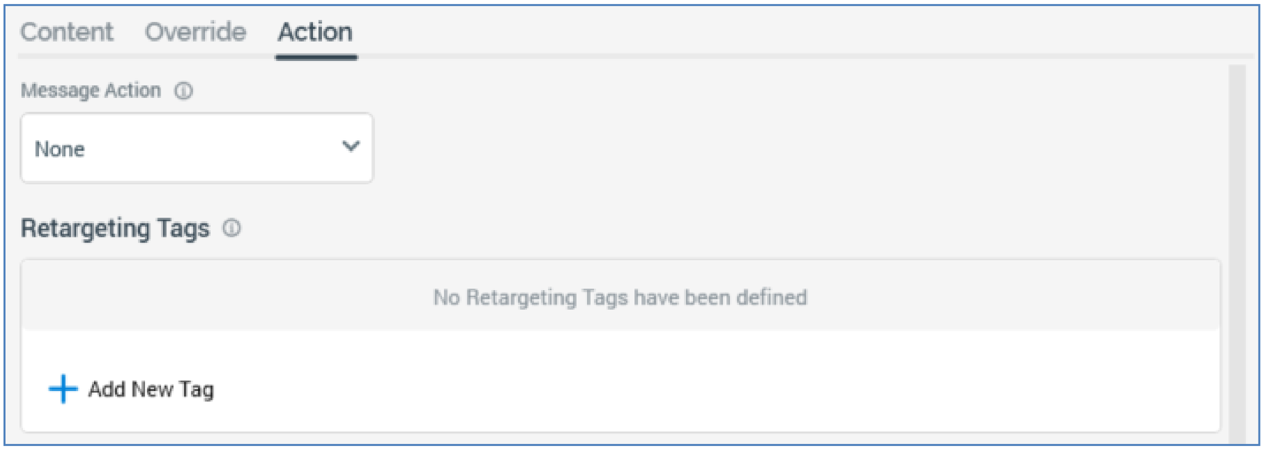
You can specify alternative message content for each of the following by checking the relevant checkboxes:

- Apple iOS
- Android
- SMS
- Facebook Messenger

Access to each of the above is contingent on their support by currently-configured push notification channels.

20.25.3 Action Tab

The Push Direct Notification Offer Designer's Action tab allows you to specify where a message recipient should be directed when clicking or tapping on a push notification.



Access to the tab's properties is contingent on their support by currently-configured push notification channels.

- Message Action: this dropdown list allows you to define to where a message recipient should be directed when clicking or tapping on a push notification. A dropdown list, it exposes the following values:
  - Home: the default value; opens the web homepage URL and app home screen.
  - Landing page: opens an HTML landing page within your app. When selected, the Landing page content property is shown.
  - Web page: opens a web page in a browser. When selected, the Web page URL property is shown.
  - Deep link: opens a configured screen within your app or on the web. When selected, the Deep link property is shown.
  - Share: prompts user to share this on social networks. When selected, the Share property is shown.
- Landing Page Content: this rich text editor property is shown when Message action is set to Landing page.
- Web Page URL: this text property is shown when Message action is set to Web page. It accepts a maximum of 1000 characters.
- Deep Link: this text property is shown when Message action is set to Deep link. It accepts a maximum of 1000 characters.

- Share Text: this multi-line text property is shown when Message action is set to Share. It accepts a maximum of 1000 characters.

- Retargeting tags: this property allows you to set tags, when the user interacts with the notification, for later retargeting purposes. You can add a new retargeting tag using the button at the bottom of the list. The following are shown at a retargeting tag:

  - Tag: a text field, which can be a maximum of 100 characters in length.

  - Action: a dropdown field, which exposes values Add and Remove.

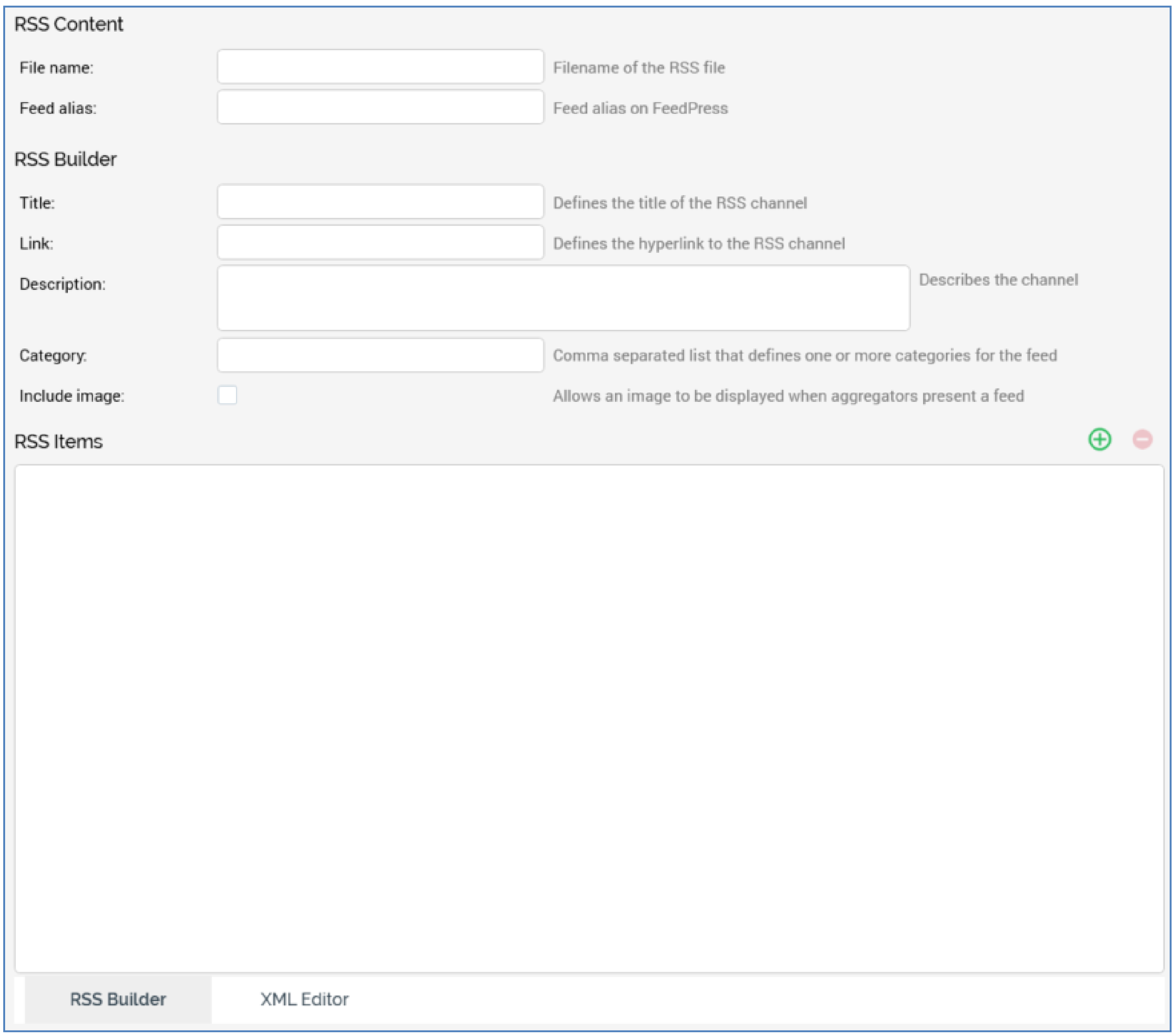
  - Actions menu, exposing a single Remove option.

20.26 RSS

The RSS delivery method allows you to create and load RSS documents, and monitor counts of subscribers and readers thereof.

Note that FeedPress is used to track the count of the subscriptions to and reads of the RSS document. This is done by replacing the document's links with tracking links when the original RSS URL is passed to FeedPress. By using the feed alias, RPI can request subscriber and read counts from FeedPress.

The following properties are displayed for RSS offers:



- RSS Items section:
  - Filename: this mandatory property represents the filename of the RSS document with which the offer is configured. It can be a maximum length of 250 characters.

- Feed alias: this mandatory property represents the alias by which the RSS feed is known on FeedPress. It can be a maximum of 50 characters in length. Feed alias is used to retrieve metrics during RSS channel synchronization. When the supplied Feed alias does not exist in FeedPress, the feed will be created in FeedPress using the RSS URL. When the Feed alias already exists in FeedPress and the feed URL is different from the expected output URL, the feed URL in FeedPress must be manually updated so that subscribers can see the feed update.

- RSS Content section

  This section contains two tabs: RSS Builder and XML Editor. If you switch from the XML Editor tab to the RSS Builder tab, a warning dialog is displayed.

- RSS Builder tab: allows you to define RSS items through a series of properties.

  - Title: this mandatory property allows you to set the title of the RSS channel. It can be a maximum of 250 characters in length.

  - Link: this mandatory property allows you to set the hyperlink to the RSS channel. It can be a maximum of 1000 characters in length.

  - Description: a mandatory property that can be a maximum of 1000 characters in length.

  - Category: this optional, comma-separated list defines one or more categories for the feed. It can be a maximum of 250 characters in length.

  - Include image: this checkbox is unchecked by default. If checked, the image properties are shown.

  - URL: displayed and mandatory if Include image is checked. This property defines the URL to the image. It can be a maximum of 1000 characters in length.

  - Title: displayed and mandatory if Include image is checked. This property defines the text to be shown if the image cannot be displayed. It can be a maximum of 250 characters in length.

  - Link: displayed and mandatory if Include image is checked. This property allows you to specify a hyperlink to the website offering the RSS channel. It can be a maximum of 1000 characters in length.

  - RSS Items: this property allows you to specify a series of RSS items to be displayed in the feed at RSS offer execution. It consists of a toolbar and a list.

    - Toolbar:

      - Add new item: invocation of this option add a new, unconfigured RSS item to the list.

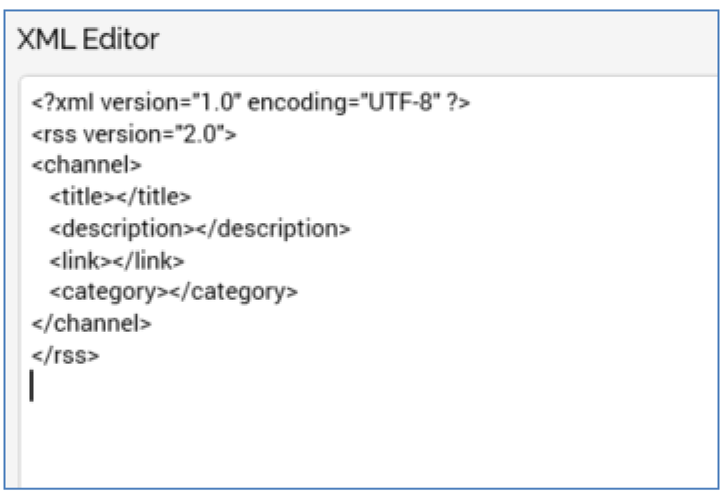
      - Remove selected item: enabled when an RSS item is selected. Invocation removes the item from the list without displaying an 'Are You Sure?' message.

    - List: displays all of the RSS items with which the offer is configured.

    Each item has the following properties

    - RSS icon
    - Title: mandatory, and a maximum of 250 characters in length.
    - Description: mandatory, and a maximum of 1000 characters in length.
    - Link: mandatory, and a maximum of 1000 characters in length.
    - Author: optional, and a maximum of 250 characters in length.
    - Category: optional, and a maximum of 250 characters in length.
    - Include image: a checkbox, which is unchecked by default. If checked, the RSS item image properties are shown.
    - URL: displayed and mandatory if Include image is checked. The property can be a maximum of 1000 characters in length.
    - Title: displayed and mandatory if Include image is checked. The property can be a maximum of 250 characters in length.
    - Link: displayed and mandatory if Include image is checked. The property can be a maximum of 1000 characters in length.

- XML Editor tab: allows you to define RSS items using XML.

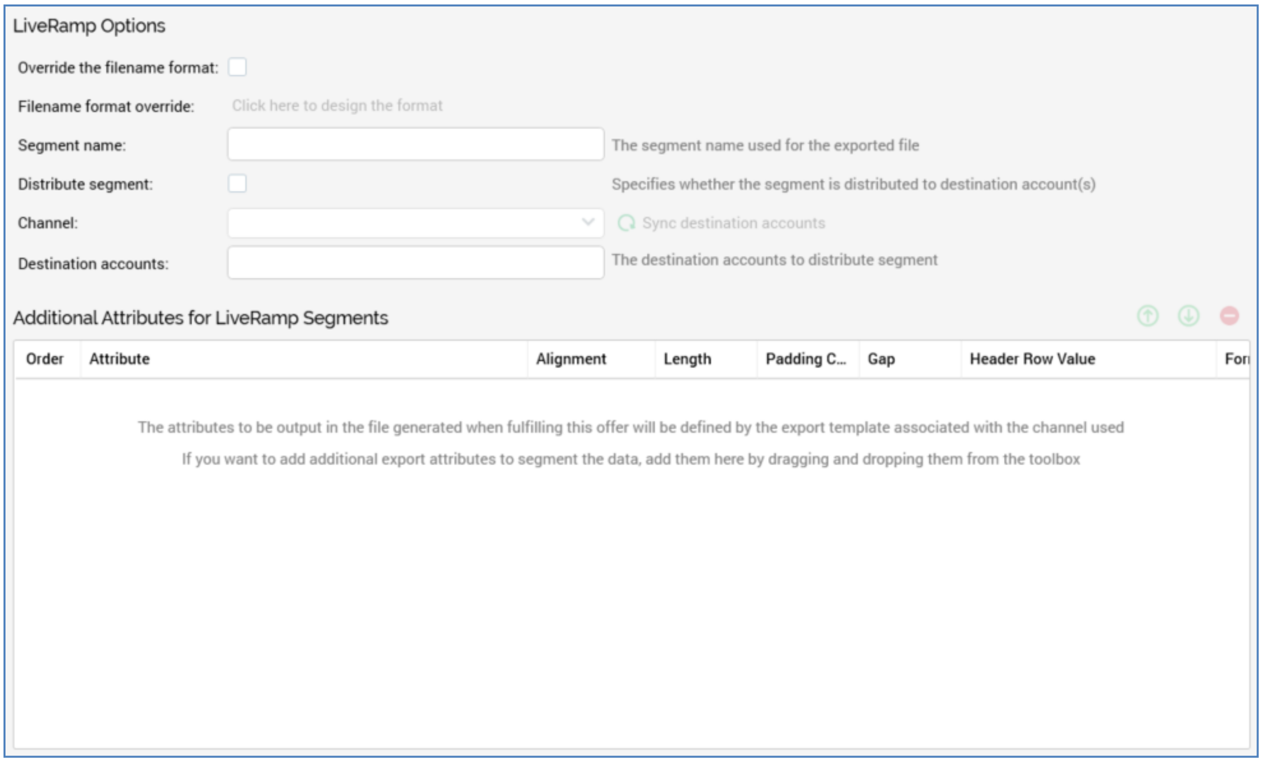


A single multiline entry field is supplied, within which you can add and edit XML RSS content.

20.27 LiveRamp

Upon execution, a LiveRamp Data Onboarding offer generates a data file suitable for uploading to the LiveRamp data management platform.

The following properties are displayed for LiveRamp offers:



- LiveRamp Options section:
  - Override the filename format: as per the Data Extract offer.
  - Filename format override: as per the Data Extract offer.
  - Segment name: this mandatory text field can be a maximum of 250 characters in length. It represents the segment name used for the exported file.
  - Distribute segment: this checkbox is unchecked by default. When checked, Channel, Sync destination accounts and Destination account are enabled. The property allows you specify whether the segment is to be distributed to the specified destination account(s).
  - Channel: this dropdown property exposes the list of LiveRamp channels configured at the current client.
  - Sync destination accounts: having selected a channel, clicking this button populates the list of LiveRamp destination accounts.

- Destination accounts: this listbox exposes a list of the LiveRamp destination accounts associated with the selected channel. You can select one or more destination accounts to which the specified segment will be distributed.

- Additional Attributes for LiveRamp Segments grid:

  This section enables you to augment the set of attributes defined by the LiveRamp channel's export template with additional data items you wish to include in extract files generated by the current offer.

  Initially, a message is displayed in the empty grid:

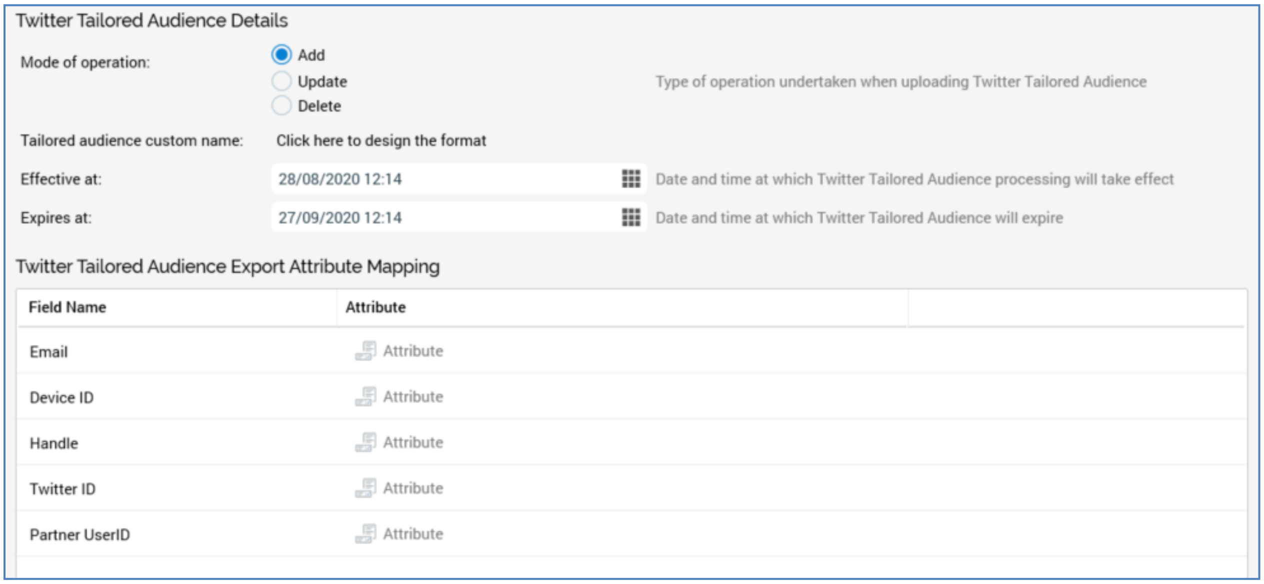
  > The attributes to be output in the file generated when fulfilling this offer will be defined by the export template associated with the channel used
  > If you want to add additional export attributes to segment the data, add them here by dragging and dropping them from the toolbox

  You can drag additional attributes from the toolbox and add them to the list. Once displayed therein, you can re-order or remove attributes as required using the toolbar buttons.

  For more information, please see the Additional Export Attributes grid in the Data Extract channel documentation.

20.28 Twitter Tailored Audience

The following properties are displayed for Twitter Tailored Audience offers:



<u>Twitter Tailored Audience Details Section</u>

- Mode of operation: three radio buttons appear at this property, which allows you to specify the type of operation to be performed when uploading the Twitter Tailored Audience.
  - Add (selected by default)
  - Update
  - Delete
- Channel: this dropdown property is displayed and mandatory when Mode of operation is set to one of Update or Delete. You can select the Twitter Tailored Audience channel to use when executing the offer.
- Synchronize with Twitter Ads: this button is displayed and enabled when Mode of operation is set to one of Update or Delete, and a Channel has been selected. When clicked, the Twitter Tailored Audiences associated with the channel are sourced from Twitter Ads, and the Twitter tailored audience property is populated.
- Twitter tailored audience: this dropdown property is populated on clicking Synchronize with Twitter Ads. It allows you to select a Twitter tailored audience in respect of which to perform the specified action (Update or Delete). The property is disabled when no values are available.
- Tailored audience custom name: a mandatory property, which is populated using the Design Tailored Audience Custom Name Format dialog. The following text parts are supported:
  - String

- Date part
- Interaction name
- Trigger name
- Activity name
- Offer name
- Channel name
- Offer channel name
- Execution ID
- Workflow ID
- Audience ID
- Test indicator

- Effective at: this property allows you to specify the date and time at which Twitter Tailored Audience processing will take effect. A validation error is raised when the value is set to an earlier value than the current date & time.
- Expires at: this property allows you to specify the date and time at which the Twitter Tailored Audience will expire. It defaults to Effective date + 30 days. A validation error is raised when the value provided is before the specified Effective at date/time.

Twitter Tailored Audience Export Attribute Mapping Section

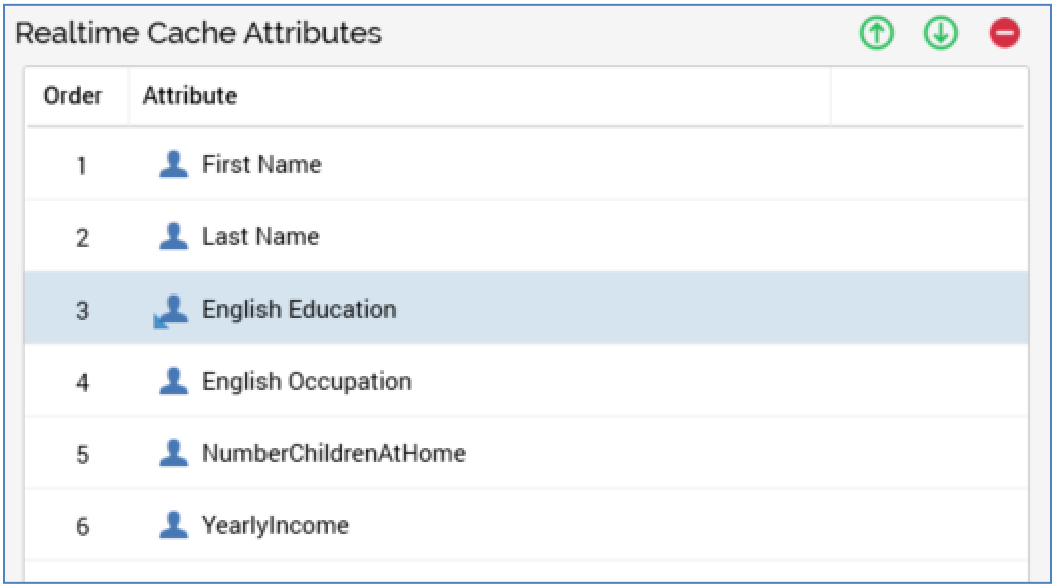
This list is used to map expected Twitter Tailored Audience parameters to RPI attributes. Two columns are shown:

- Field Name: exposing the following preset values:
  - Email
  - Device ID
  - Handle
  - Twitter ID
  - Partner UserID

Attribute: you must map an attribute to each Field Name. Attributes can be mapped using browse or drag and drop. A validation error is raised when you map the same attribute more than once.

20.29 Realtime Cache

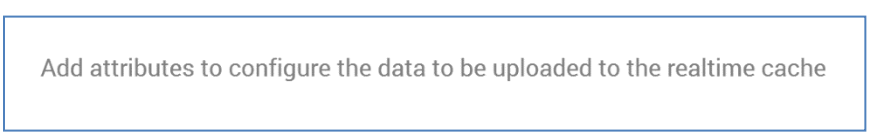
The Realtime Cache delivery method allows you to populate the RPI Realtime cache with data in advance of website visitors visiting your site.



Visitors' online experiences can then be tailored to their specific needs using this cached data, by leveraging RPI realtime decisions and smart assets. Full details of these can be found elsewhere in the documentation.

A Realtime Cache offer consists of a single property:

- Realtime Cache Attributes list: the property consists of a toolbar and a list.
    - Toolbar: exposing the following:
        - Move attribute up: this button is enabled when a single attribute other than the first in the list is selected. Invocation moves the selected attribute up one position in the list.
        - Move attribute down: this button is enabled when a single attribute other than the last in the list is selected. Invocation moves the selected attribute down one position in the list.
        - Remove selected attributes: this button is enabled when one or more attributes are selected. Invocation removes the selected attribute(s) without display of an Are You Sure? dialog.
    - List: when the list is empty, a message is displayed:



You can drag attributes from the toolbox and drop them onto the list. You must configure the offer with at least one attribute. Exists in table attributes are not supported.

The following columns are shown:

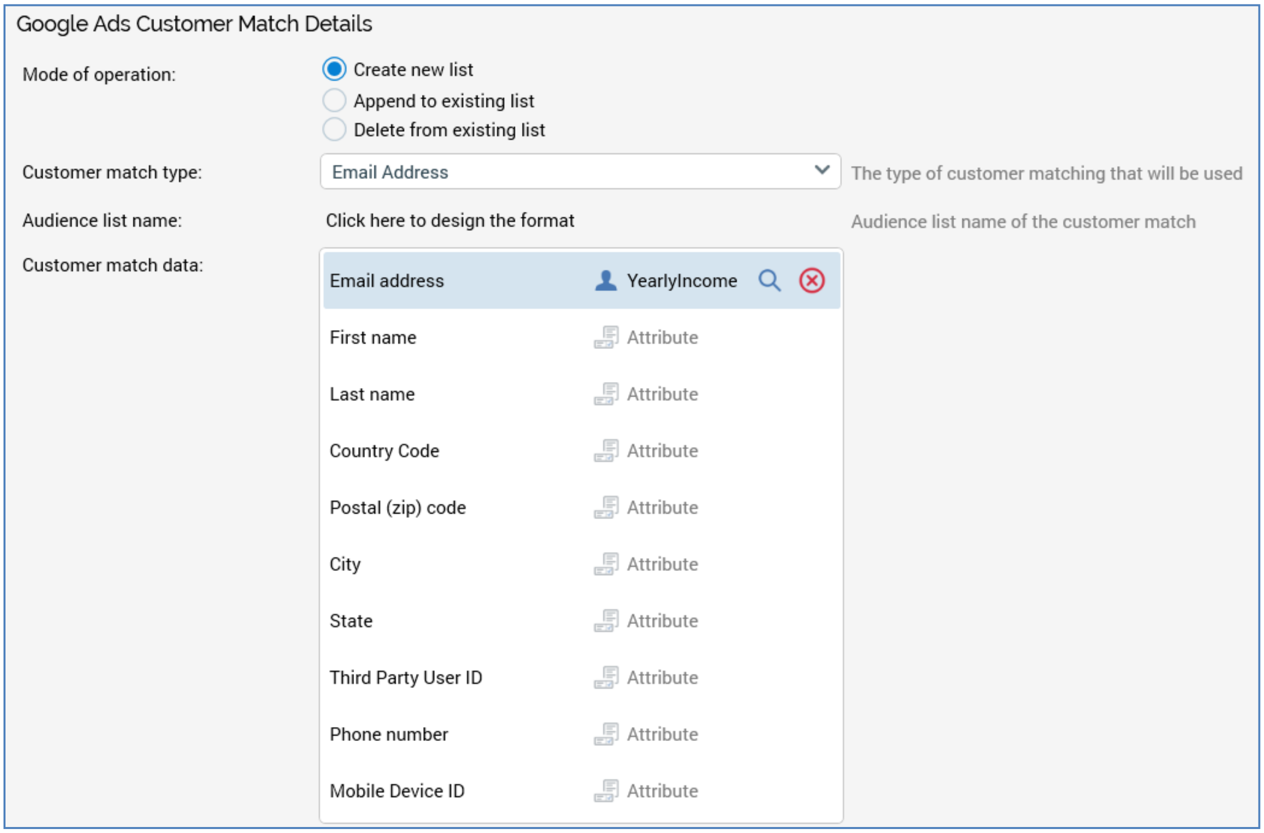
- Order: a read-only, incrementing integer.

- Attribute: having provided an attribute file, you can invoke the viewing of its details in the File Information Dialog.

Anonymous auxiliary database attributes are not supported in this context.

20.30 Google Ads Customer Match

The following properties are displayed for Google Ads Customer Match offers:



- Mode of operation: three radio buttons accompany this property:
  - Create new list (selected by default)
  - Append to existing list
  - Delete from existing list
- Customer match type: this dropdown property exposes the following values:
  - Email address (the default)
  - Physical address
  - Third-party ID
  - Phone number
  - Mobile device ID
- Audience list name: this text property, which accepts a maximum of 100 characters, is only displayed if Mode of operation is set to 'Create new list'.

- App ID: this mandatory text property, which accepts a maximum of 200 characters, is only displayed if Customer match type is set to 'Mobile Device ID'. It is used to identify the mobile application from which the data is to be collected by the Google Ads API.
- Channel: this dropdown property is populated on invocation of the accompanying Synchronize with Google Ads button. It is populated with a list of the currently-configured Google Ads Customer Match channels, and is only displayed when Mode of operation is set to one of 'Append to existing list' or 'Delete from existing list'.
- Audience list: this dropdown field allows you to select the Google Ads audience list to which data will be uploaded.
- Customer Match Data: this list property is populated with the following customer data properties, each of which can be mapped to an RPI attribute:
  - Email address (required if the customer match type is 'Email address')
  - First name (required if the customer match type is 'Physical address')
  - Last name (required if the customer match type is 'Physical address')
  - Country code (required if the customer match type is 'Physical address')
  - Postal (zip) code (required if the customer match type is 'Physical address')
  - City (optional if the customer match type is 'Physical address')
  - State (optional if the customer match type is 'Physical address')
  - Third-party ID (required if the customer match type is 'Third-party ID')
  - Phone number (required if the customer match type is 'Phone number')
  - Mobile device ID (required if the customer match type is 'Mobile device ID')

  You can browse for RPI attributes, or populate them using drag and drop. Having supplied an attribute, you can view file information about the attribute. You can also clear your selection.

20.31 The Offer Designer and NoSQL Databases

When running against a NoSQL data warehouse with one or more SQL auxiliary databases, only the following delivery methods are supported:

- CRM:
  - Microsoft Dynamics CRM
- Data Onboarding:
  - Facebook Audience
  - Google Ads Customer Match
  - LiveRamp
  - Realtime Cache
- Data Transfer
  - Salesforce Marketing Cloud Data Transfer
- General:
  - Data Extract
  - Email: note that the Send Emails training aid is not supported.
  - Outbound Delivery
- Mobile:
  - Push Notification
  - Push Notification Direct
  - SMS
- Social:
  - Facebook
  - Twitter
  - Twitter Direct