STIBO SYSTEMS
MASTER DATA MANAGEMENT

USER GUIDE

Data Governance

Rel. 10.3-MP4 (March 29, 2022)

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Data Governance

To properly manage data, an MDM system provides support for information governance functionality such as policy evaluation, creation, and collaboration, as well as policy change management and impact analysis.

To meet these needs, the following functionality is available for use in STEP:

- Policies that monitor data and data streams
- Notifications in the UI and via email that inform users of deviations in the data quality
- Metrics to define data quality

Initial Workbench Configuration

To set up Data Policies, on a Customer MDM-supported system, some objects must be created and some permissions must be added for the associated users. For information on configuring the workbench, see the Configuring Workbench to Create Data Policies section in the **Data Policies** topic.

Configuring a Data Policy

For general guidelines on Data Policies, see the **Data Policies** topic in this documentation.

To begin, a completeness, value, or function metric must be configured. For information on configuring a metric, see the **Completeness Metrics** topic, the **Value Metrics** topic, or the **Business Function Metrics** topic of the **System Setup** documentation.

Data Policies

Data policies allow users like data stewards to define thresholds and monitor breaches and deviations in the quality of the master data as well as incoming data streams. Prior to configuring these components, some system setup object types must be created.

Configuring Workbench for Data Policies

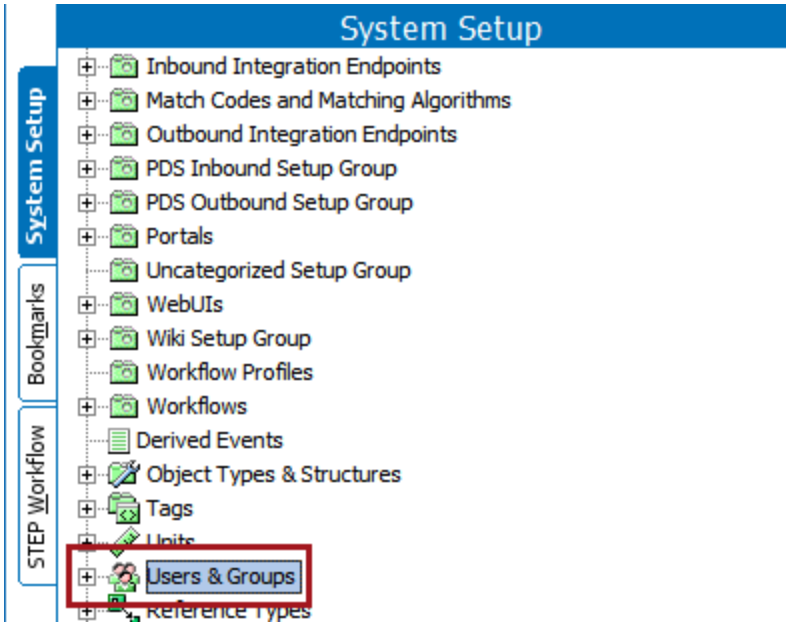
To create data policies, the following system object types must be created, and a Users & Groups setting must be specified. For instructions on how to create new object types, see the **Creating an Object Type** topic in the **System Setup / Super User Guide** documentation.

Note: These types may already exist in the system, but parents may need to be added.

Selecting a Data Policies Default Context

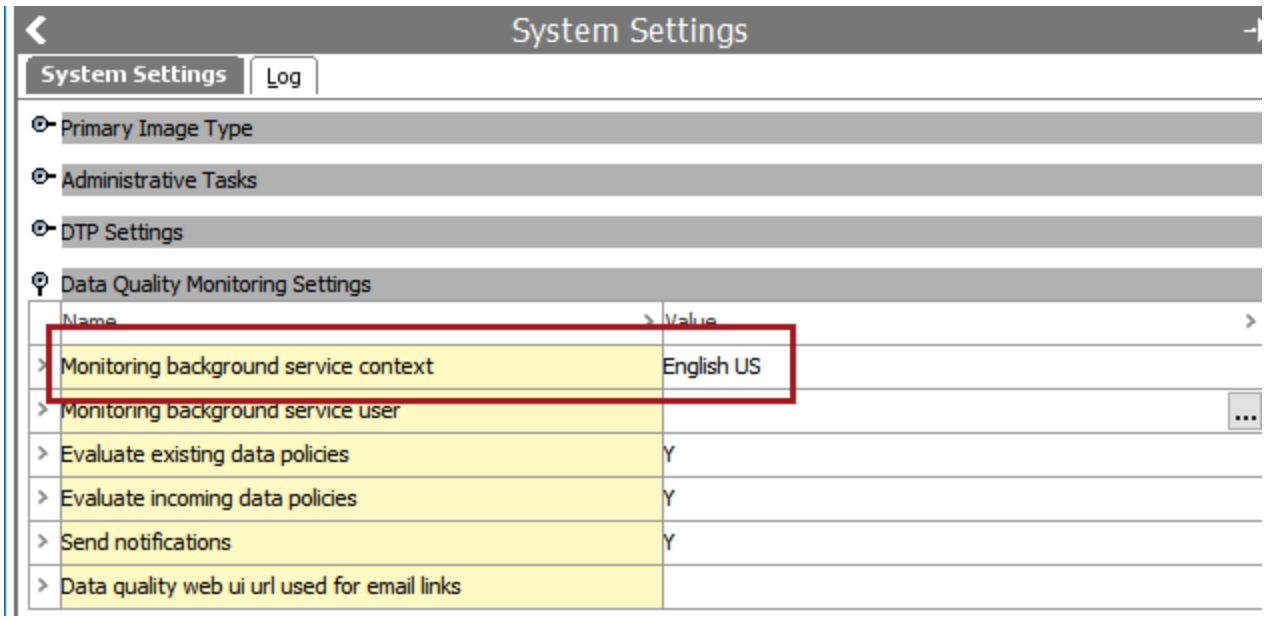
To properly monitor data policies, a default context must be selected. To set this default:

1. In the workbench, navigate to the System Setup tab.
2. Select the Users & Groups node.



3. From the Users & Groups node, navigate to the Data Quality Monitoring Settings section. Under this section, select a context under the 'Monitoring background service context' as shown below.

Important: This section only displays if the cmdm-monitoring component has been activated. Contact Stibo Systems with assistance, if needed.



System Setup Object Type

- Metrics root, containing the following types:
  - Business Function Type
  - Completeness Metric
  - Entity data quality metric
- Policy Type root, with the following types:
  - Entity Dataset Definition
  - Existing Entity Data Quality Policy
  - Incoming Entity Data Quality Policy

After adding these types, dataset definitions, metrics, and policies may be created.

Creating Data Policies

A data policy is comprised of the following three elements:

- a Metric, such as a completeness metric or a function metric, that defines how to score each record.
- a Dataset Definition that defines which data to monitor.
- thresholds that defines when users must be notified.

To create meaningful policies, the following configurations are required:

1. Metrics must be created through the Workbench. For information on these metrics, see the **Completeness Metrics** topic, the **Value Metrics** topic, or the **Business Function Metrics** topic in the **System Setup** documentation.
2. Dataset definitions must be created through the Workbench. For more information, see the **Creating a Dataset Definition** topic of this guide.

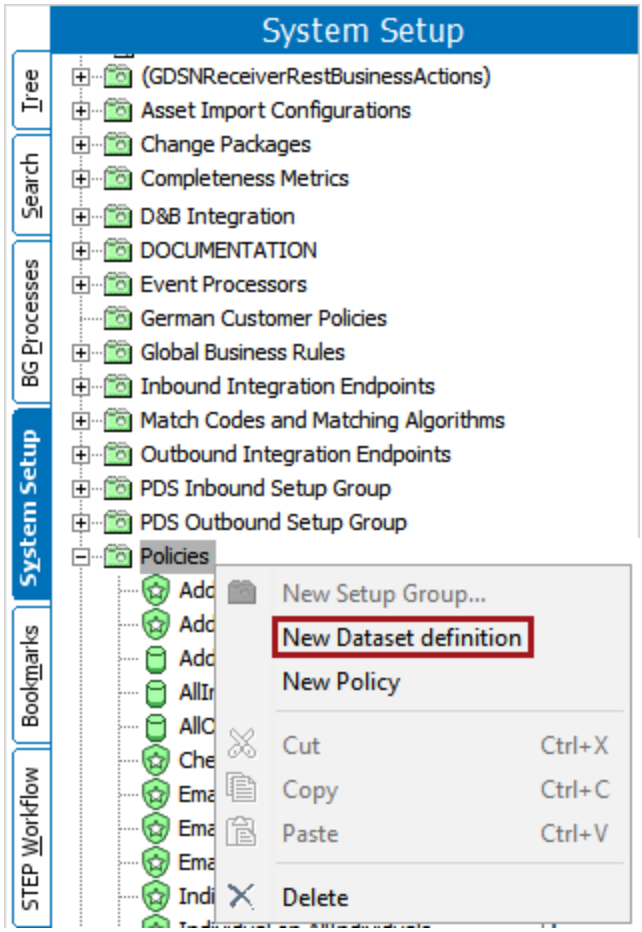
3. A Web UI must be configured to manage the policies. For more information, see the **Web UI Configurations for Policies** topic of this guide.

Note: This documentation will focus on the workbench elements of the data policies configuration. For information on setting up the Web UI screens for data policies, see the **Web UI Configurations for Policies** topic in this documentation.

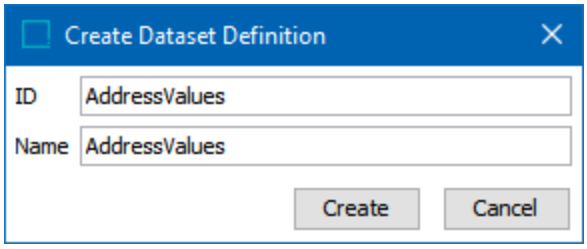
Creating a Dataset Definition

The dataset definition specifies the STEP data to which a policy may apply. Follow the steps below to create an entity dataset definition.

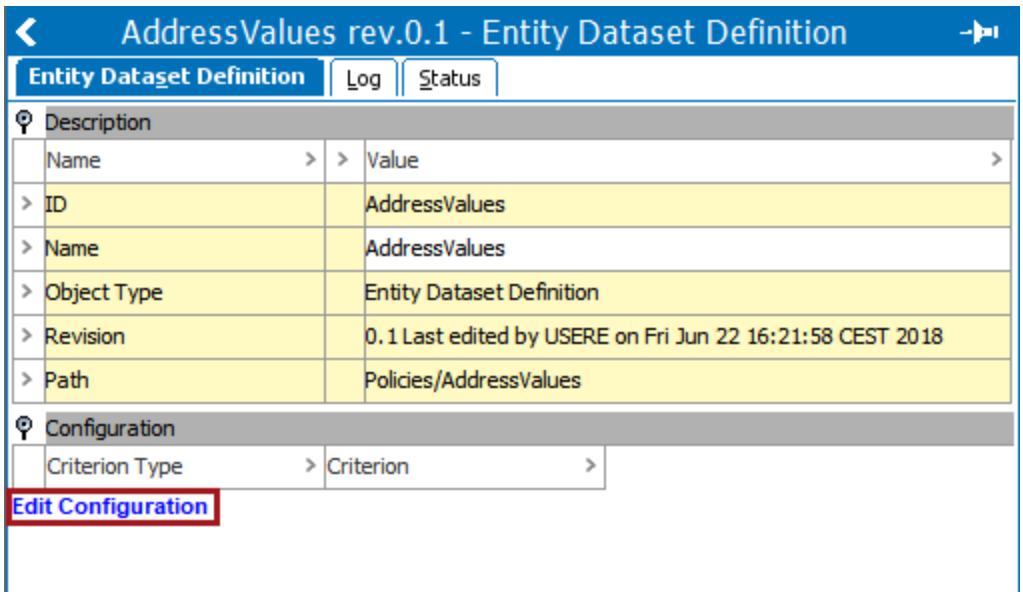
1. Navigate to System Setup > Policies. Right-click on the Policies folder and select 'New Dataset definition.'



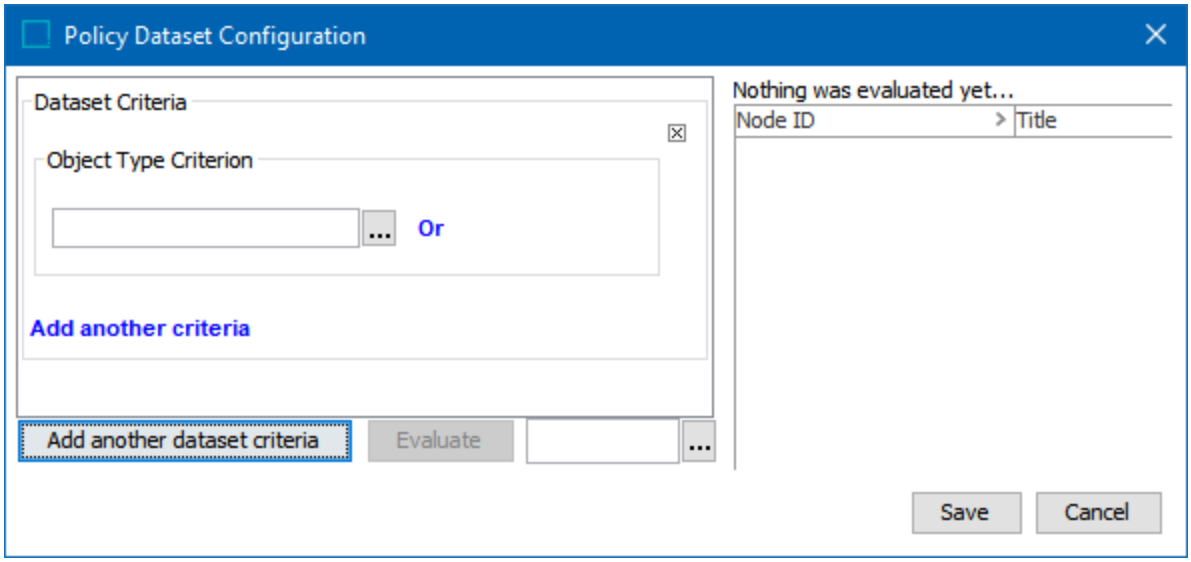
2. A 'Create Dataset Definition' dialog will display. Enter an ID and Name for the dataset definition, and click the Create button to display the Dataset Definition.



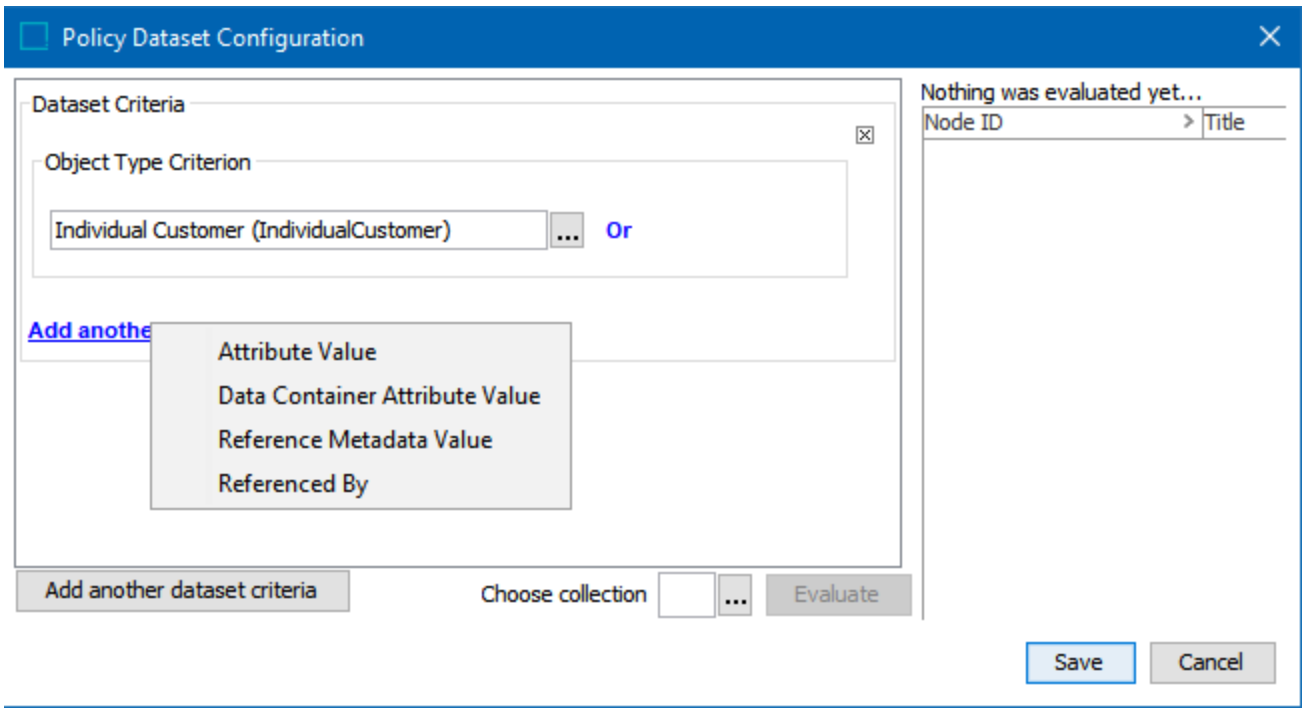
3. Click 'Edit Configuration' to add parameters to the dataset definition and open the Policy Dataset Configuration dialog.



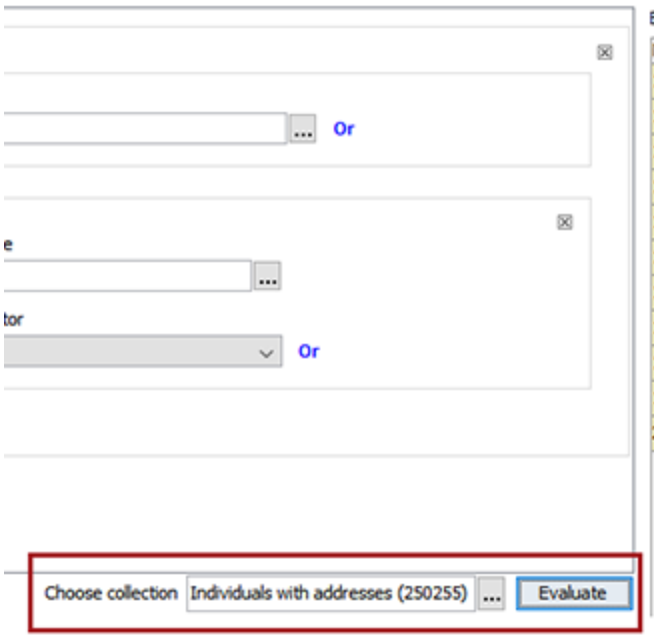
4. Click the 'Add another dataset criteria' button to display the Dataset Criteria group.



5. Click the ellipsis button (...) for the Object Type Criterion field. From the objectTypeSelectorField dialog, select the desired object type.
6. If another criterion should be evaluated, click the 'Add another criteria' link, select an option from the dropdown, and configure it. Select the desired criterion and configure it. For descriptions of all these criteria, see the **Explanations of Criteria** topic of this documentation.



7. Once all criteria have been configured, click Save to close the Policy Dataset Configuration dialog.
8. The Dataset Configuration allows for bulk evaluation of the dataset definition against any collection of nodes. To evaluate your dataset, click the ellipsis button (...) to choose a collection next to the Evaluate button in the bottom of the dialog.
9. Once a collection is selected, press 'Evaluate.' The first 100 nodes of that collection will be evaluated against the dataset, and results presented in the right hand side of the dataset editor.



Evaluation result on Individuals with addresses

Node ID	Title	Object Type	Included in Dataset
178767	(178767)	Individual Customer	yes
178768	(178768)	Individual Customer	yes
178769	(178769)	Individual Customer	yes
182230	(182230)	Individual Customer	yes
182231	(182231)	Individual Customer	yes
182232	(182232)	Individual Customer	yes
183152	(183152)	Individual Customer	no
183161	(183161)	Individual Customer	no
184217	(184217)	Individual Customer	yes
184220	(184220)	Individual Customer	yes
250243	Test01	Individual Customer	yes

10. Click 'Save' to save the dataset definition.

Policies can now be applied to the newly created Dataset Definition. To add this dataset definition to a policy as described in the **Creating a Data Policy** topic in this documentation.

Explanations of Dataset Criteria

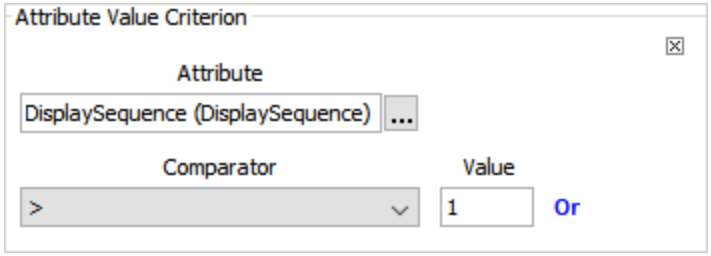
This section details the dataset configuration criteria. In the following sections, the 'Or' or 'And' buttons will add another criteria of the same object type criterion.

Object Type Criterion

The object type criterion defines the type of object(s) to which the policy applies.

Attribute Value Criterion

The attribute value criterion will allow the policy to assess attributes and their values. Then, using the comparator selector, users can select how to assess the value that is entered. The options for evaluating the value with the comparator are in the table below the example image.



Comparator Symbol	Definition	Example of Use
>	Greater than	'DisplaySequence' > 1; this is true if the associated object has a display sequence of any value higher than 1.
>=	Greater than OR equal to	'DisplaySequence' >= 1; this is true if the associated object has a display sequence of 1 or greater.
<	Less Than	'DisplaySequence' < 1; this is true if the associated object has a display sequence of any value lower than 1.
<=	Less than OR equal to	'DisplaySequence' <= 1; this is true if the associated object has a display sequence of 1 or lower.
=	Equal to	'City' = Annapolis; this is true whenever an object has 'Annapolis' in the City field.

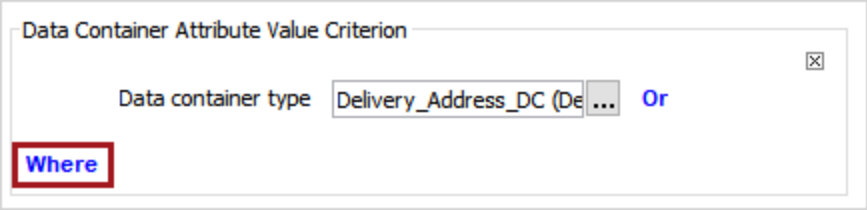
Comparator Symbol	Definition	Example of Use
!=	Not equal to	'City' != Annapolis; this is true whenever an object has any value BUT 'Annapolis' in the City field.
has value	-	'City' has value; this is true when there is any value in the City field.
has no value	-	'City' has no value; this is true when there is no value in the City field.
starts with	-	'City' starts with 'A'; this is true whenever a City field has a value starting with 'A'

Select a comparator and then supply the value that should be used for evaluation.

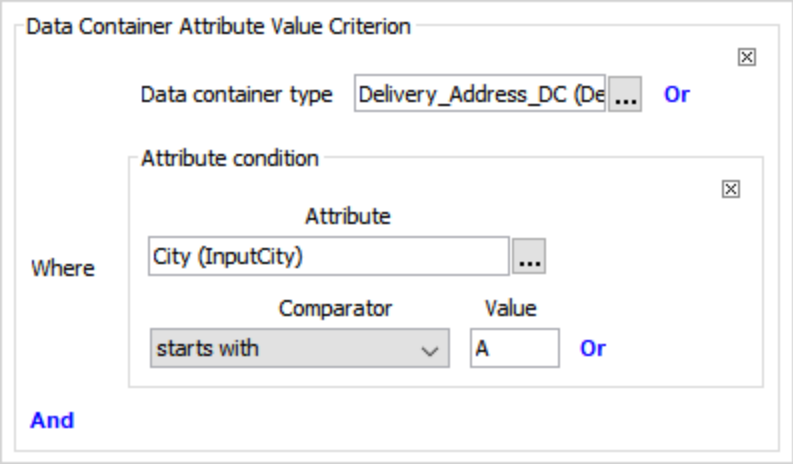
Note: The 'has no value' and 'has value' do not show a 'Value' field.

Data Container Attribute Value Criterion

This criterion will isolate a data container on entity records and then evaluate an attribute under that data container. First, the data container type is specified. If only the data container type is specified, then any entity with at least one instance of this data container type will be returned.

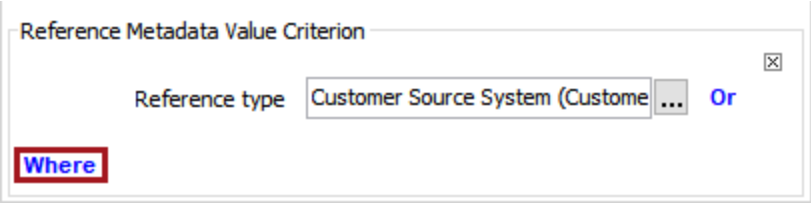


However, if the 'Where' addition is specified, then any entity with the data container type that has the specified criterion will be returned. Set the attribute, comparator, and value for evaluation. In the following example, any customer with a least one delivery address where the city starts with 'A.'

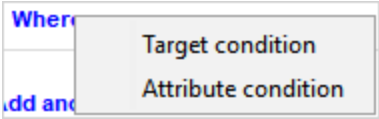


Reference Metadata Value Criterion

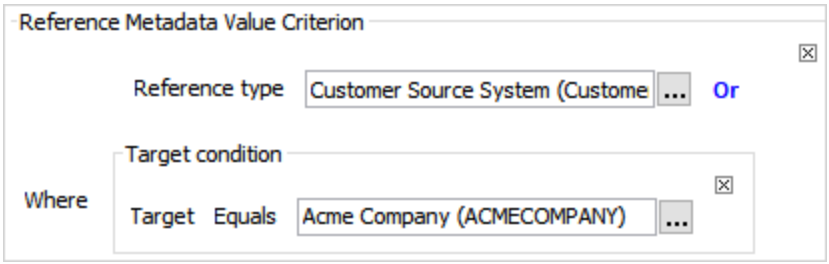
The reference metadata value criterion allows for specifying a reference type. Select a reference type, and then, select the 'Where' link to specify conditions for evaluation.



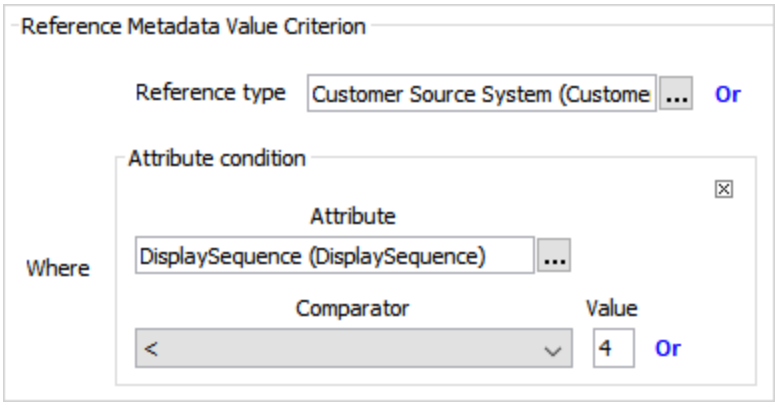
Choose whether this is for a target condition or an attribute condition.



- With the 'Target condition' selection, specify an object that, if it is the target, will satisfy this condition. This option works by limiting data that originates in the referenced target, in this case the ACME Company source system. In other words, using this example, users will only want to see data with a reference to a source system where the source system is ACME.

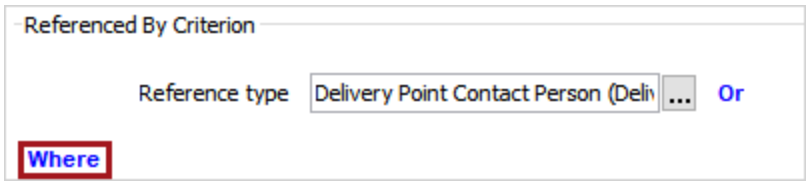


- With the Attribute condition, select 'Where' to set the attribute, comparator, and value for evaluation.

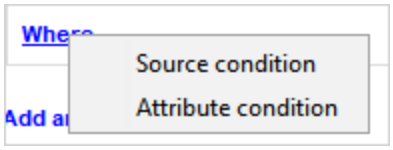


Referenced By Criterion

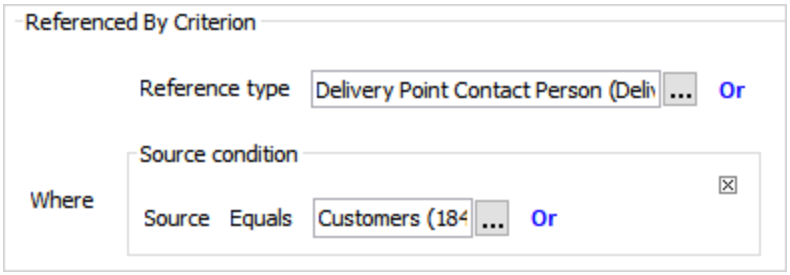
The referenced by criterion compares the source object of a reference. Select a reference type, and then, select the 'Where' link to specify conditions for comparing.



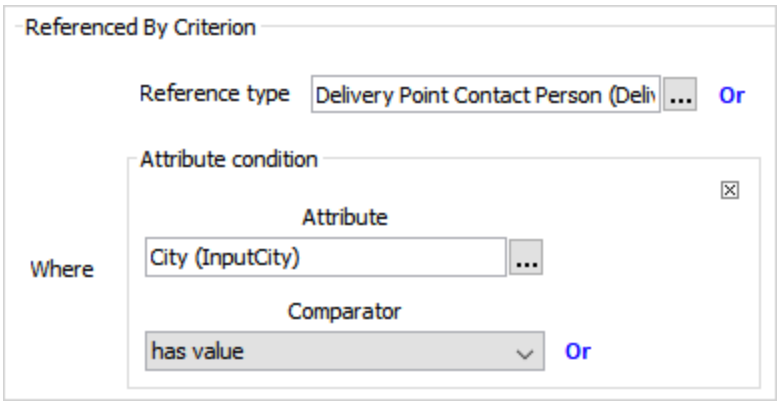
Choose whether this is for a source condition or an attribute condition.



- With the 'Source condition' selection, specify an object that, if it is the source object that is referencing the current node, will satisfy this condition.



- With the Attribute condition, select 'Where' to set the attribute, comparator, and value for evaluation.



Creating a Data Policy

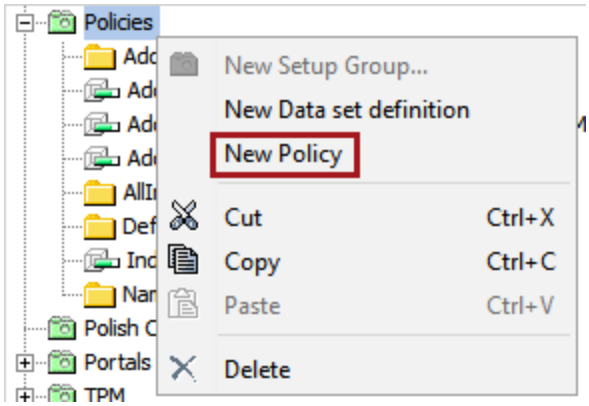
Within a data policy, metrics are used to measure data quality and express this evaluation numerically. There are three types of metrics:

- Completeness Metrics - Metrics that are based on groups of attributes. For information on creating and editing a completeness metric, see the **Completeness Metrics** topic in the **System Setup** documentation
- Value Metrics - Metrics used to take an attribute value and transform these results into a score. For more information, see **Value Metrics** topic of the **System Setup** documentation
- Function Metrics - Metrics based on the result of a an executed JavaScript function. For information on setting up a function metric, see the **Business Function Metrics** topic of the **System Setup** documentation

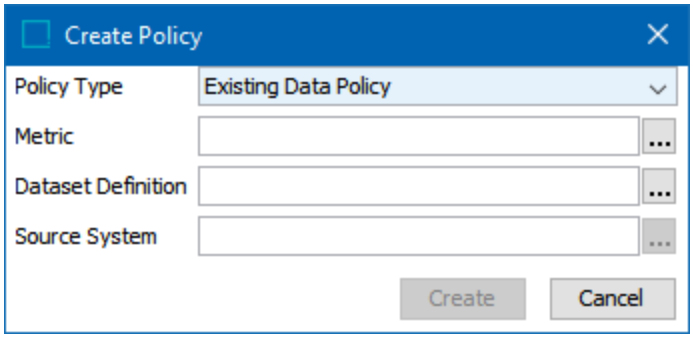
Note: This topic will provide sample metrics. These samples should only be considered as guidance for explanation and not a codified recommended practice.

With at least one metric configured and one dataset definition configured, policies can be created to ensure that system data stays within the thresholds.

1. On System Setup, right-click the Policies node. Select 'New Policy' from this menu.

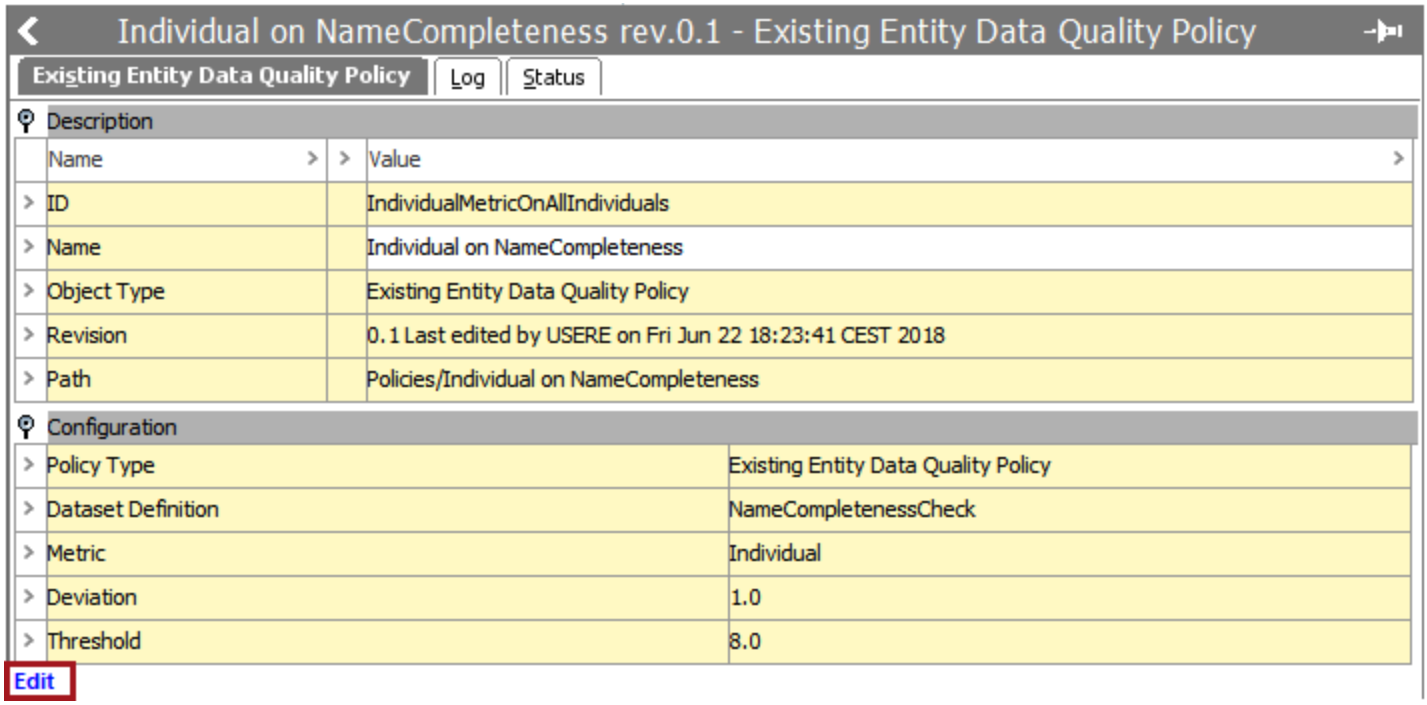


2. On the 'Create Policy' dialog supply information for the following parameters:

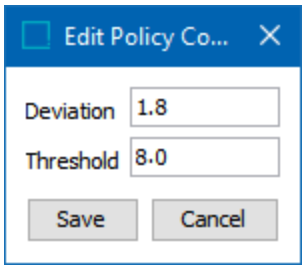


- For **Policy Type**, select whether this policy refers to:
  - Existing Data Policy evaluates data that exists in STEP each night.
  - Incoming Data Policy evaluates only the incoming data from an Inbound Integration Endpoint of the Merge Golden Record type, allowing early warnings if the source system starts sending bad data.
- Select the metric that was set up earlier in this topic.
- Select the Dataset Definition that was defined in the **Creating a Dataset Definition** topic of this documentation.
- If using the 'Incoming Data Policy' policy type, then a source system must be specified to limit the policy's focus.

3. Click the 'Create' button to confirm the configuration.
4. A policy will be created. Note that the deviation is set to 1.0 and the threshold is set to a default of 8.0. Click 'Edit' to change these values.

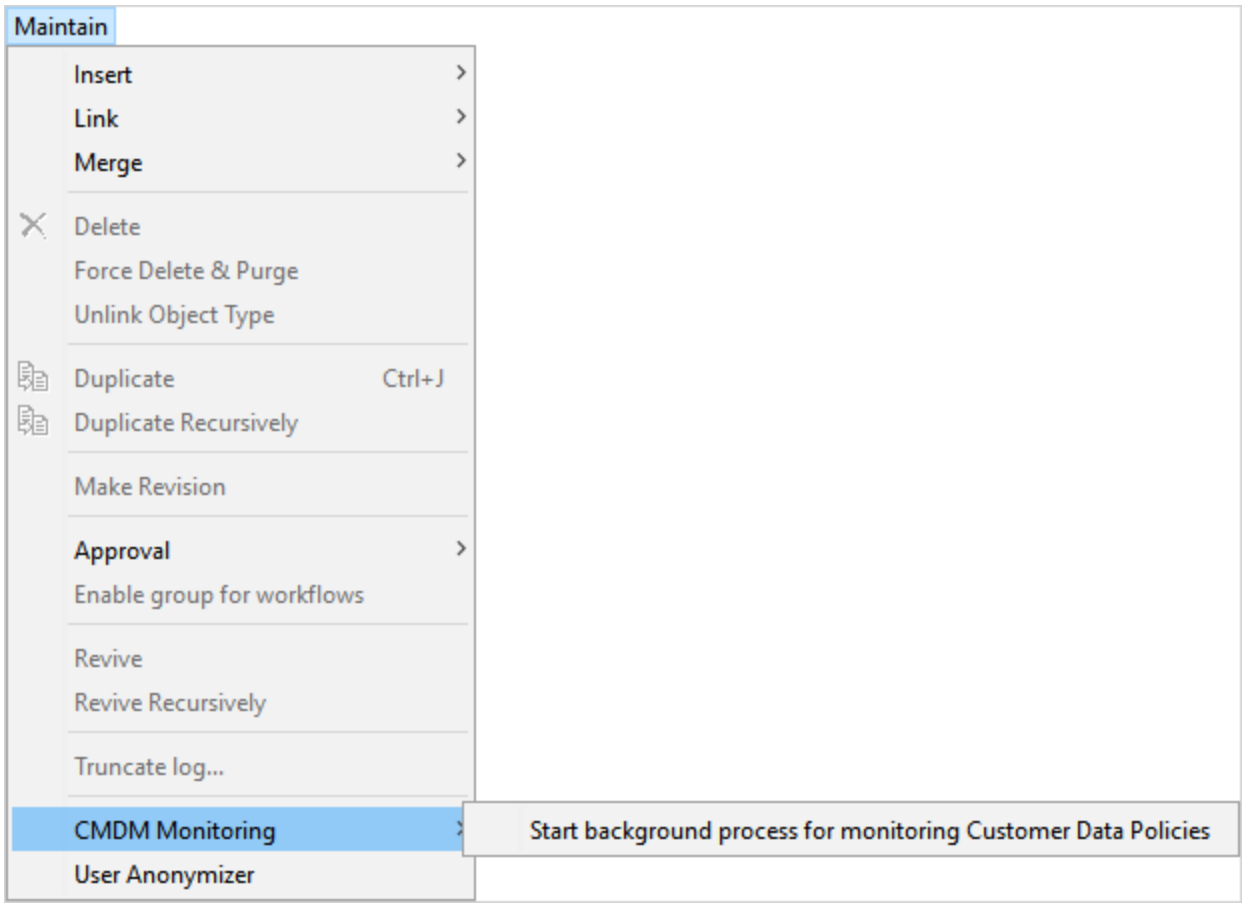


5. Enter the desired value with a decimal point format. Click 'Save' to change these values.



Manually Starting a Customer MDM Monitoring Process

To test a Customer MDM Monitoring Policy or to start a process as needed, the Maintain menu contains an option for starting the background process to monitor.



Once this option is selected, a background process will start. Once completed, it will show any notifications about this policy.

```
1  Logged on to server doc-trunk as User E
2  Using context English US and workspace Main
3  Policy evaluation started (reports every 10 minutes) (Thu Aug 09 16:24:06 EDT 2018)
4  Reading objects with the next Object Types: Customers (Customers) (Thu Aug 09 16
5  Evaluated policy "Address Validation on All Customers". Score: 6.1. Number of proces
6  Baseline and score updated on policy Address Validation on All Customers (Validate
7  Policy Address Validation on All Customers (ValidateIfCity) scores history cleanup: 0 
8  Policy evaluation finished (Thu Aug 09 16:24:08 EDT 2018)
9  User notification started
10 1 policies found to notify about
11 0 notifications prepared to send
12 Sent 0 of 0 notifications. (Thu Aug 09 16:24:08 EDT 2018)
```

Web UI Configurations for Policies

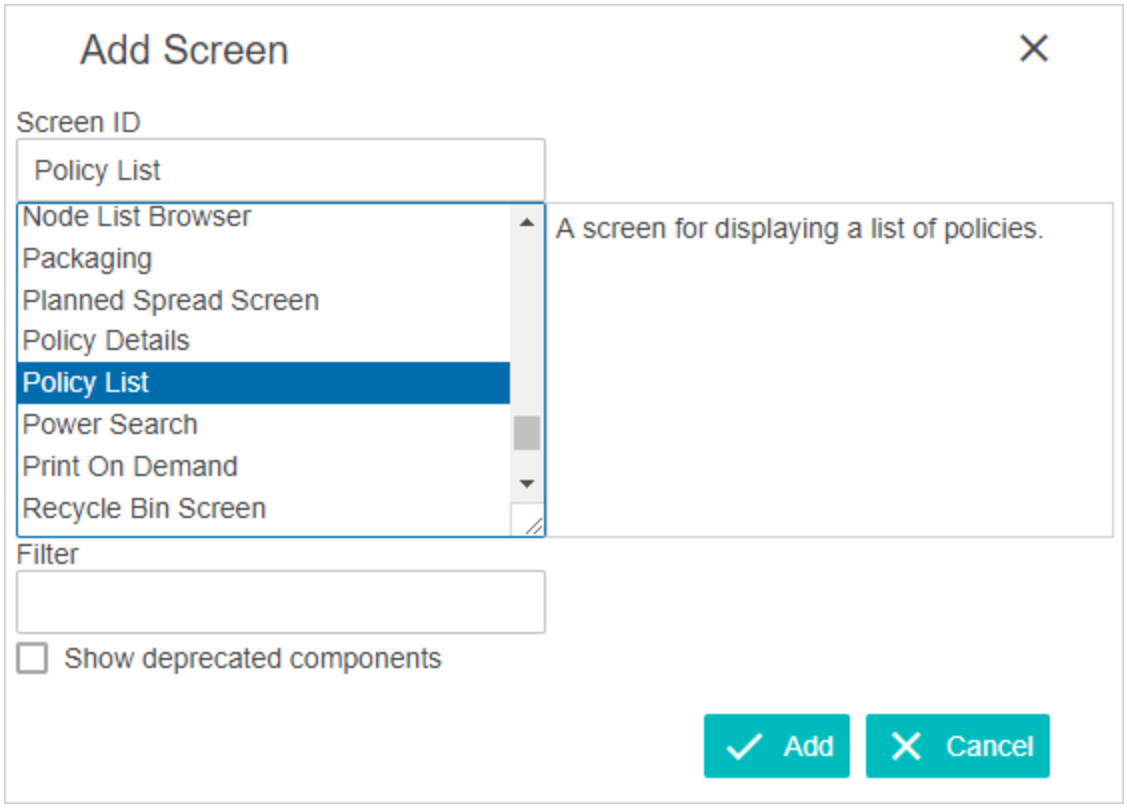
Data Quality Monitoring Policies are leveraged in the Web UI where they can be viewed and actioned on by a data steward.

To use the data policies within the Web UI, there are some minor pre-configurations required. First, see the **Data Policies** topic of the **Data Governance** documentation for all the configuration of data policies. From the Web UI, two screens will need to be created and a navigation component will need to be added. Finally, before using this topic for configuring the data policy Web UI, users should be familiar with the process of building out the Web UI using the Web UI Designer. For more information on configuring the Web UI, see the **Designer Mode Basics** topic in the **Web UI Getting Started** documentation.

Configuring the Web UI

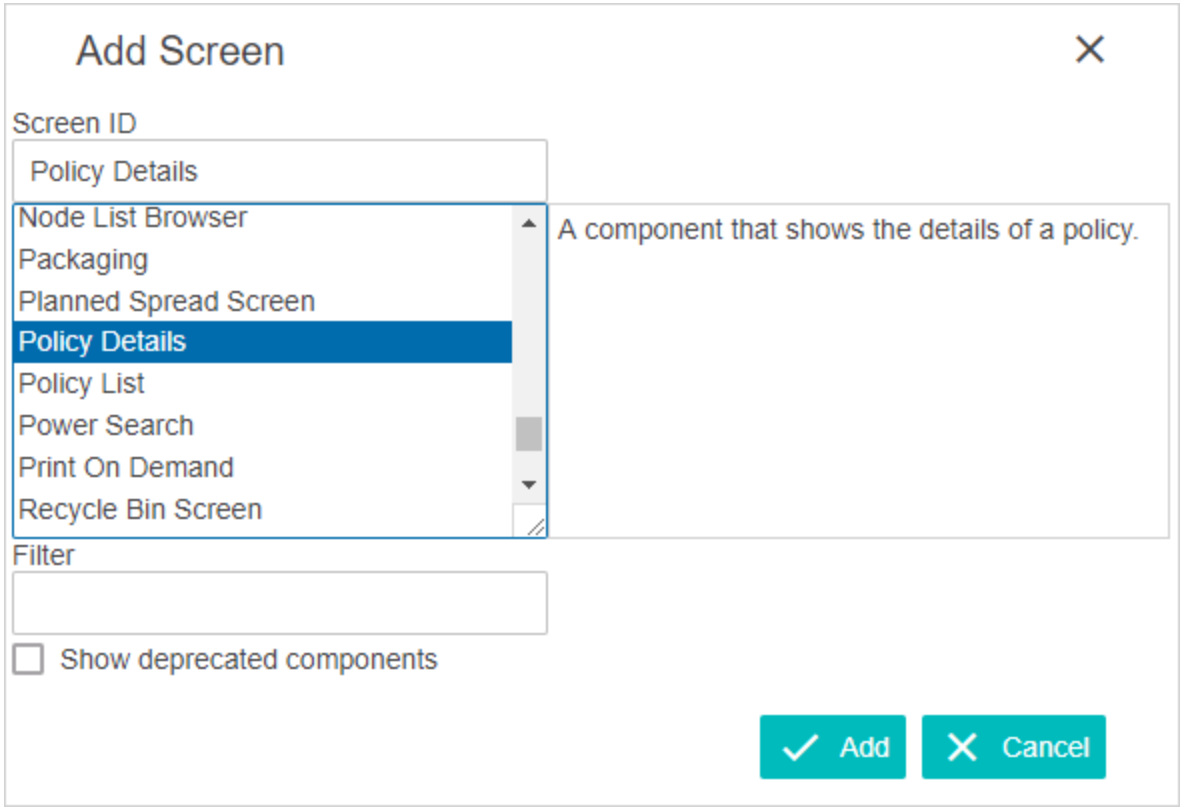
From the Web UI designer, create the following two screens:

- Policy List



  The Policy List will be the main screen where all the policies in the system are displayed.

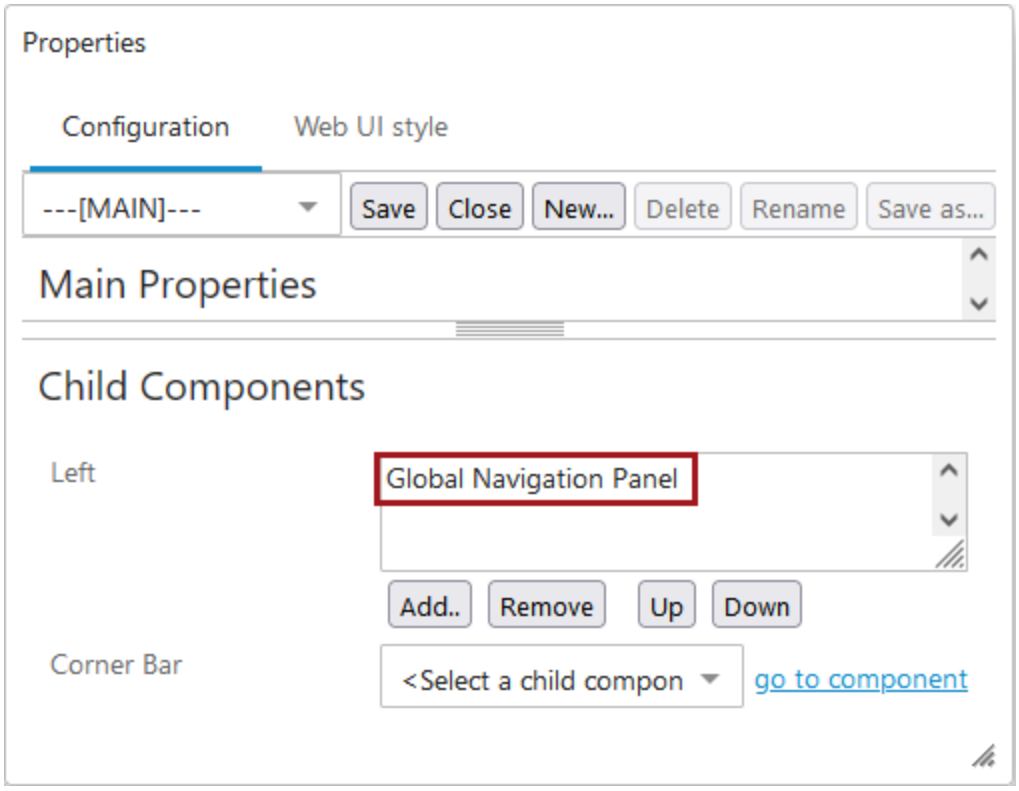
- Policy Details



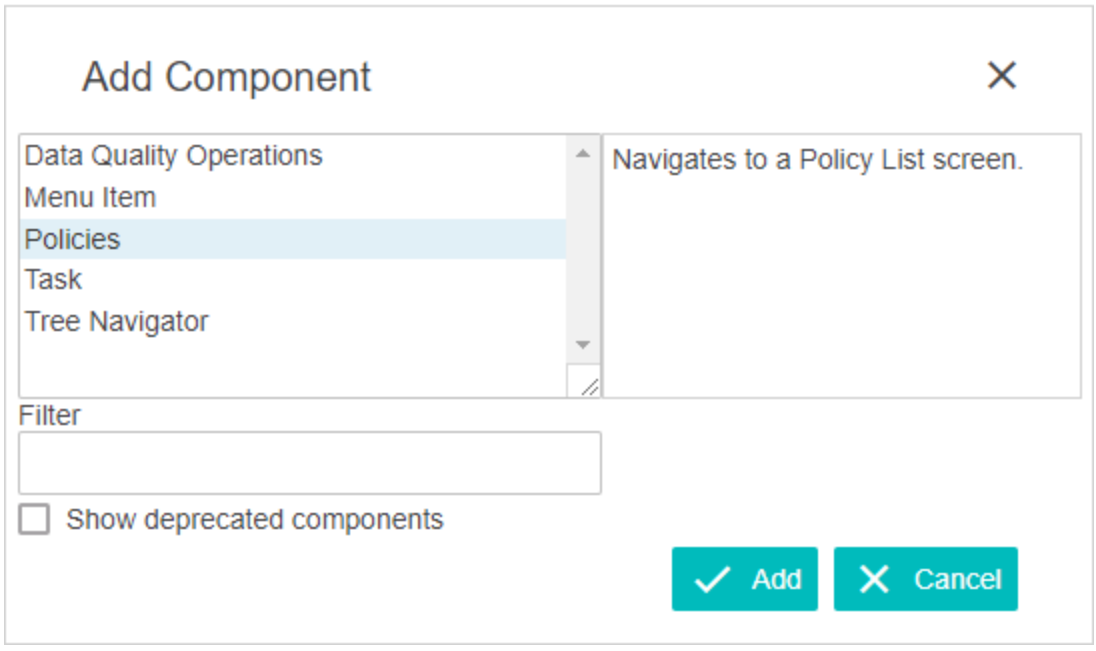
The Policy Details screen will show all the information on each policy after selecting from the policy list.

After the screens are created, from the ---[MAIN]--- screen of the Web UI configurations, under the 'Left' child components section, double click the Global Navigation Panel option.

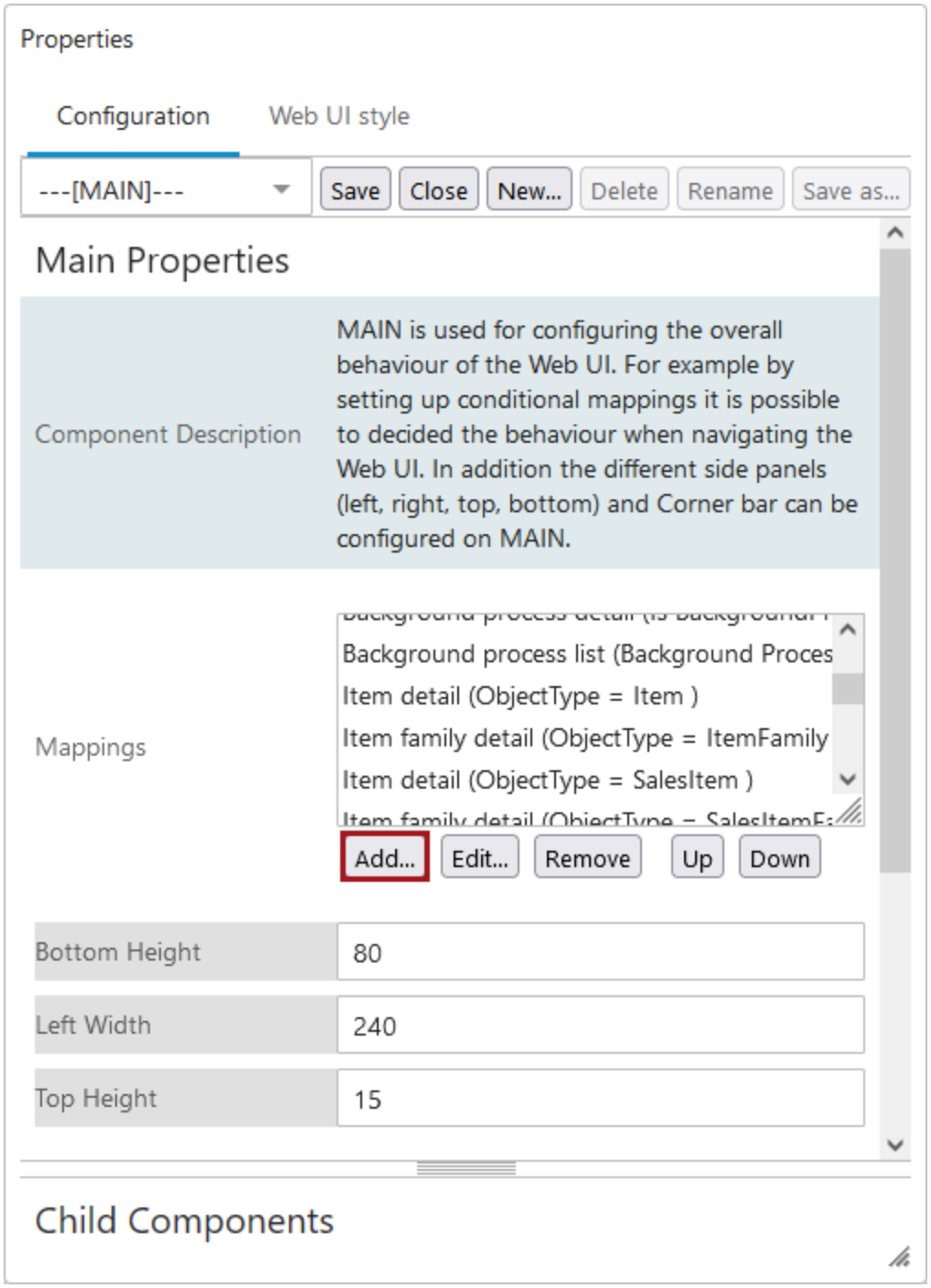
Note: Policies only works with the Global Navigation Panel component.



From the Menu Items section, add a Policies component.

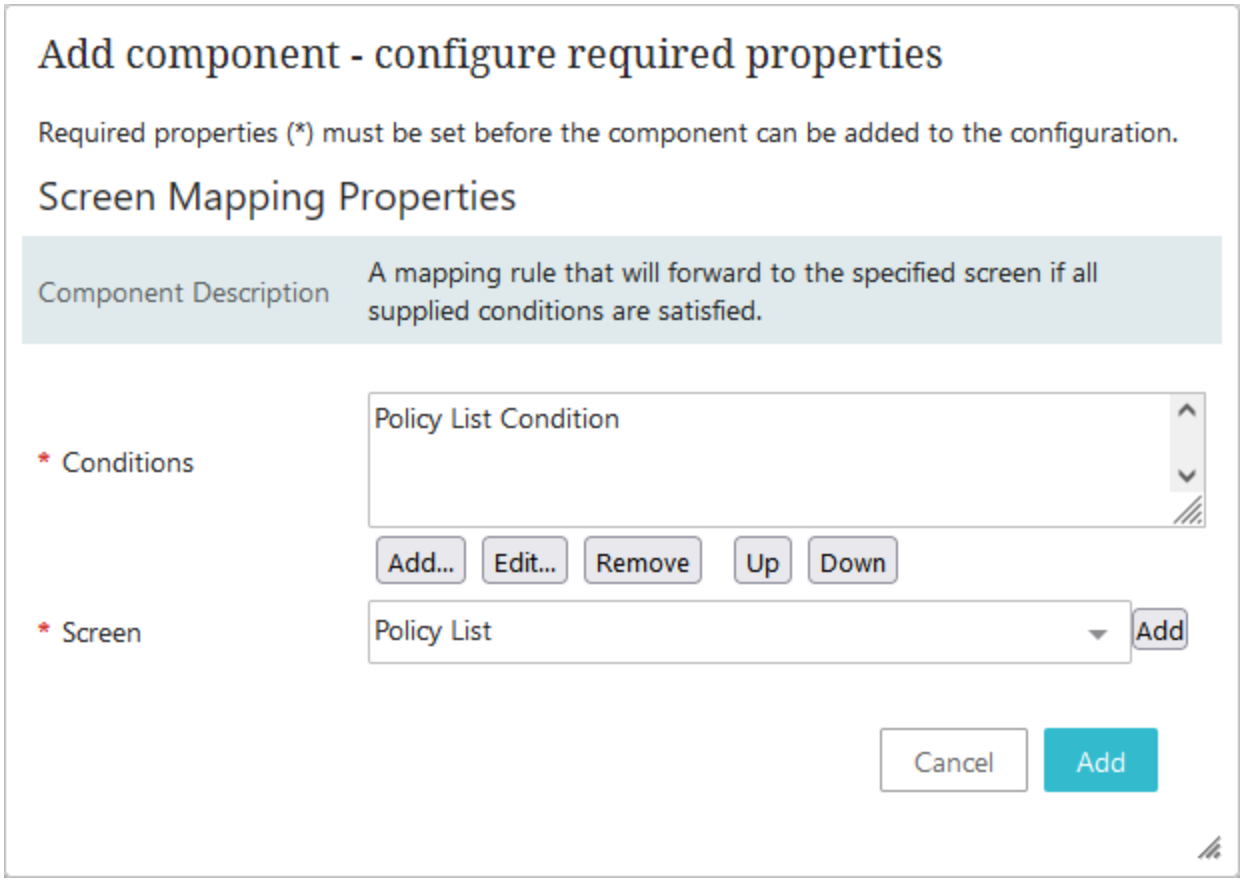


After the Policies component has been added to the Global Navigation Panel, return to the ---[MAIN]--- configuration. From the Mappings section, select the 'Add...' option to configure screen mappings.

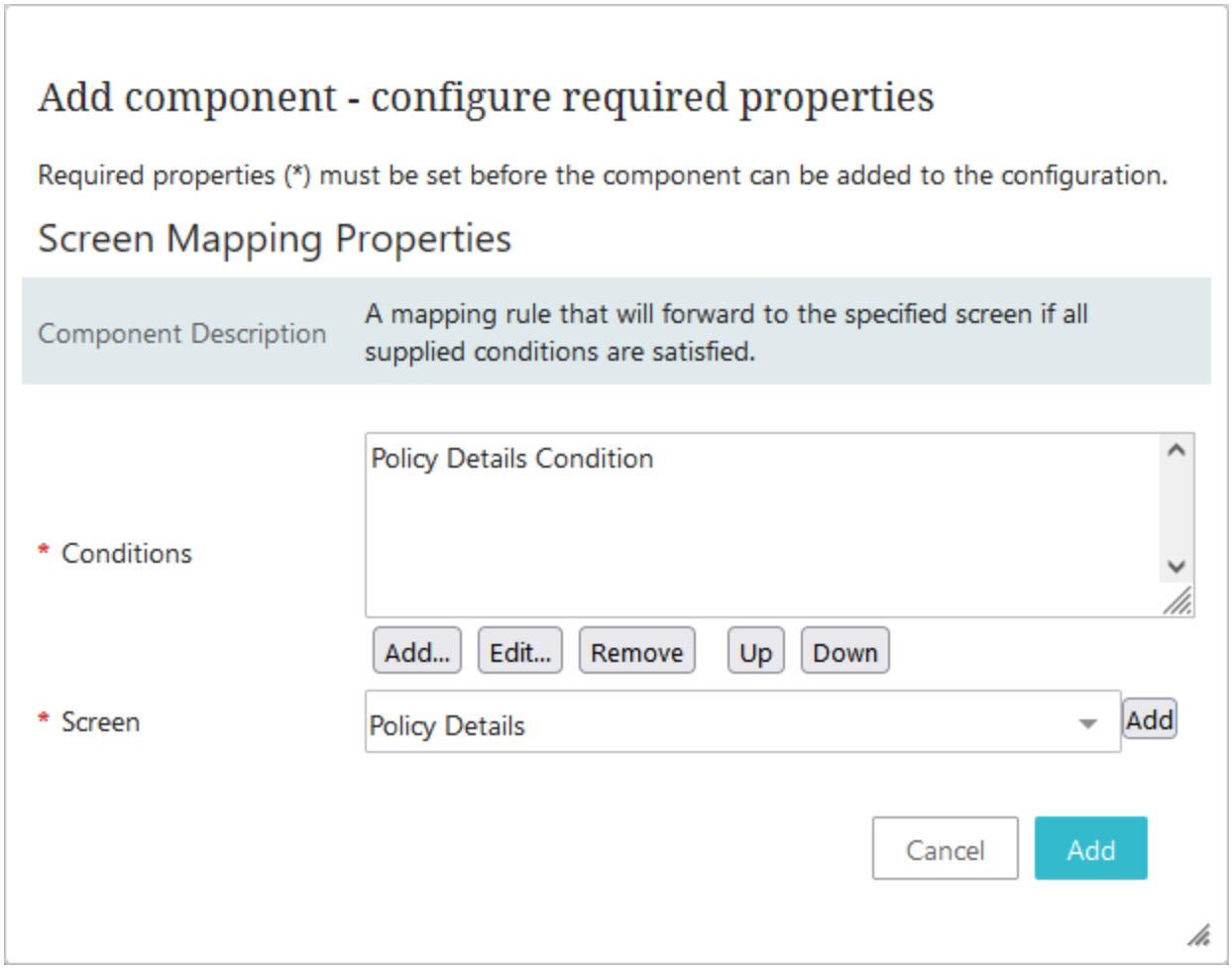


On the 'Add component' dialog, add the following two mapping conditions:

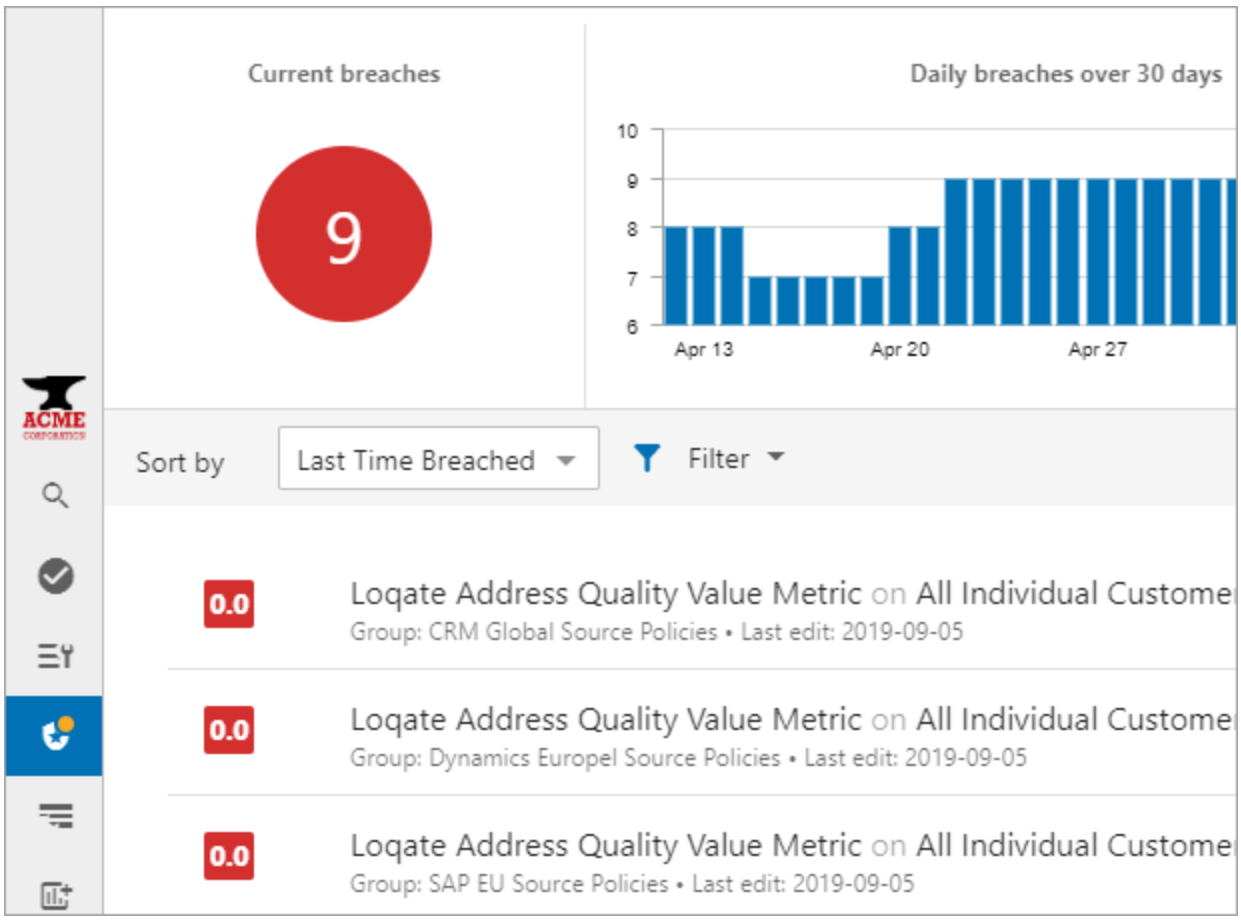
- Policy List:



- Policy Details:

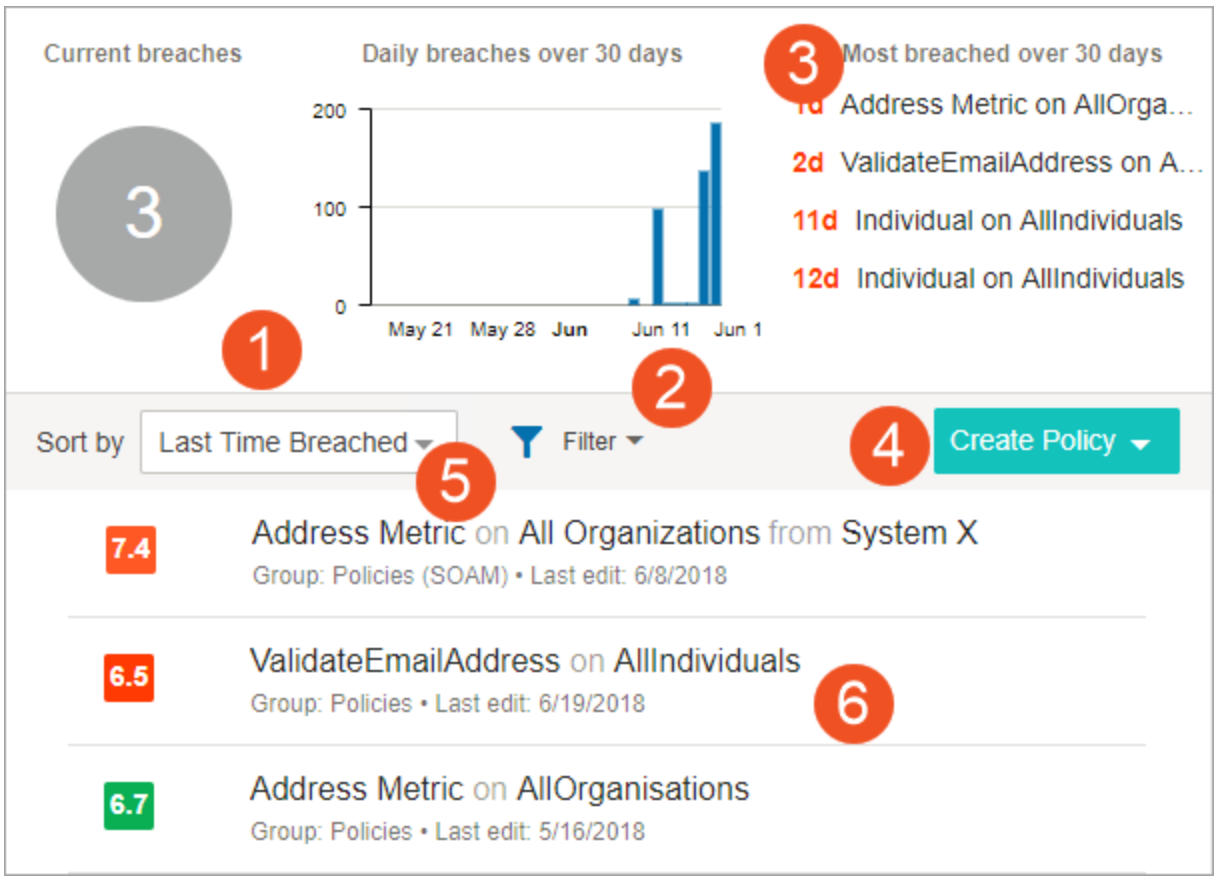


Select 'Add' then save the changes in the Web UI Designer. The Policies tab and each of the policies will now be functional.

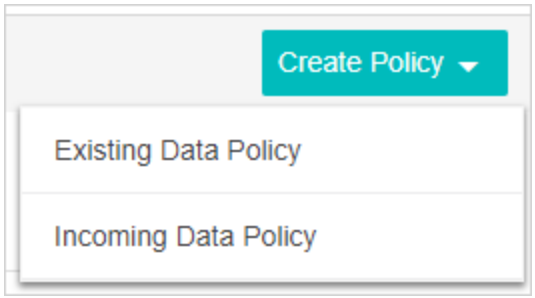


Elements of the Data Policies Web UI

Select the Policies option from the navigational panel to see a list of all available policies.

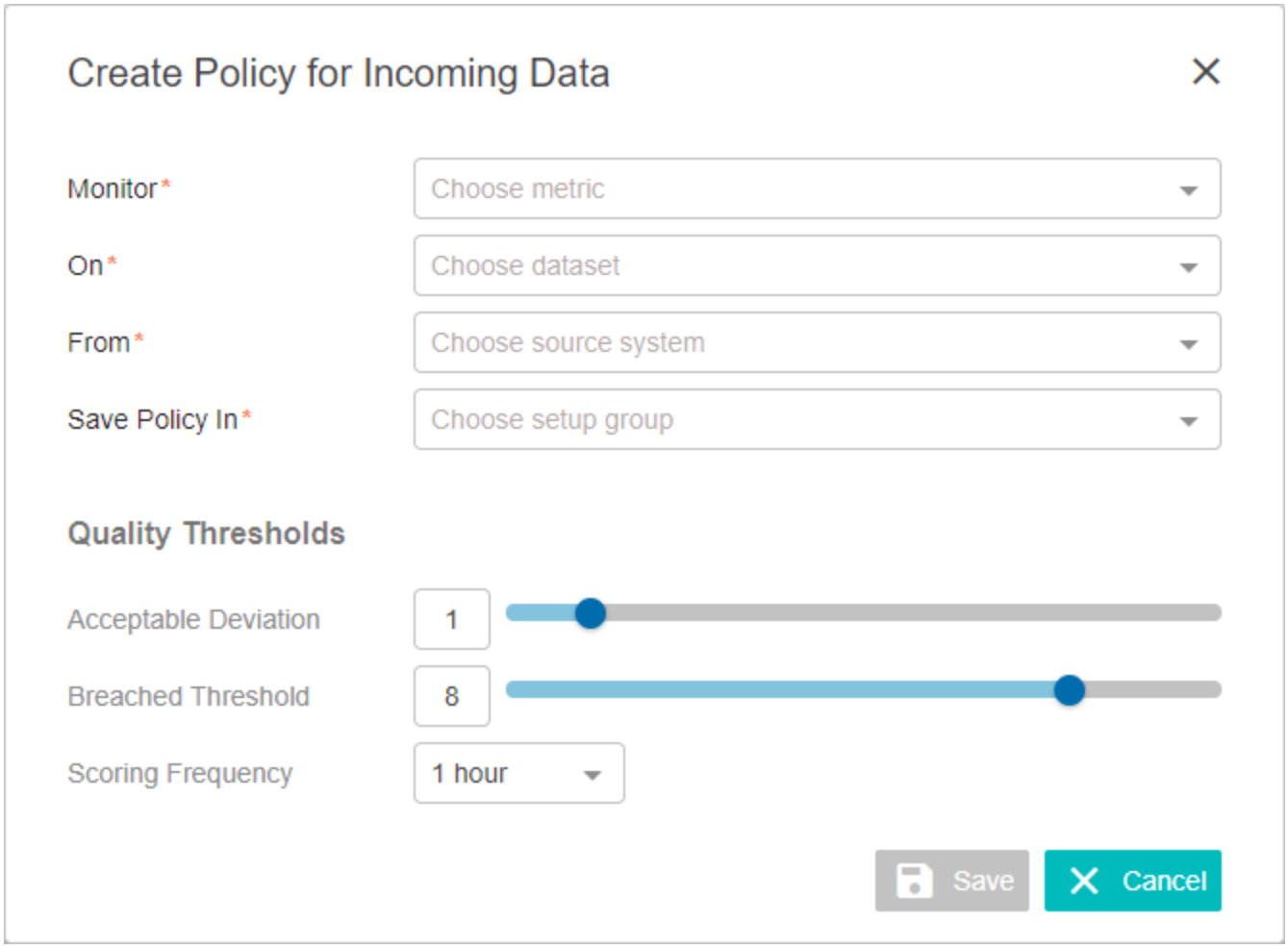


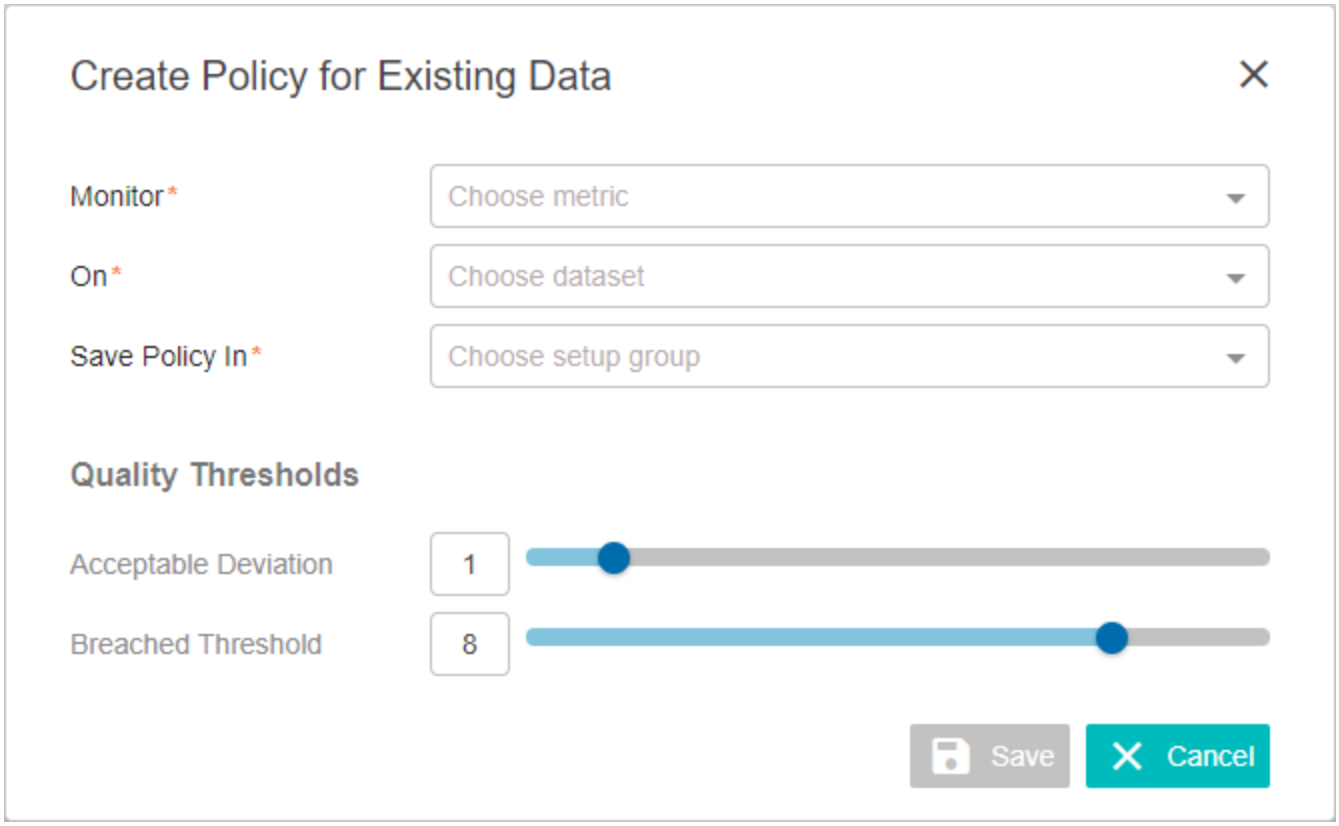
1. **Current Breaches** - This component shows the number of policies that the user has subscribed to and are active that are currently breaching the data policy threshold.
2. **Daily Breaches over 30 Days** - This component shows a breakdown of breaches per day over the last month.
3. **Most Breached in the last 30 days** - This section shows which policy has had the most policy breaches in the last 30 days.
4. **Create policy** - Click this option to create a new policy. Policies based on 'Incoming Data' is a policy for data that needs to be imported first, or a policy based on 'Existing Data' is data already on the system.



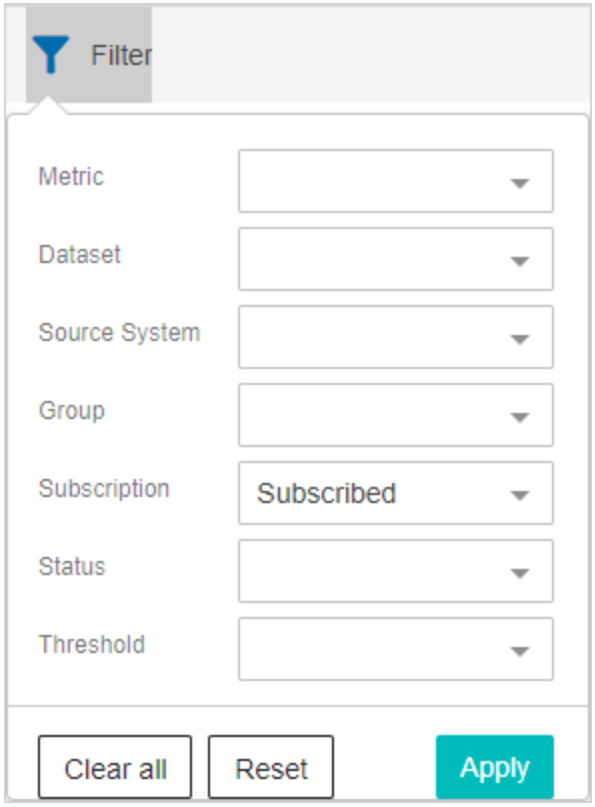
With either option, specify the data metric and data set definition and where to save the policy as well as the acceptable deviation and the breached threshold. Only with Incoming Data Policies will a source system need to be specified and the frequency at which the policy is evaluated.

This frequency determines the resolution of the score graph in the policy details screen, and the response time from bad data starts to come from a source system until the policy will be marked as breached and the user notified. A lower frequency will result in each evaluation being based on fewer incoming data. This lower frequency will cause the variation in scores may be larger.





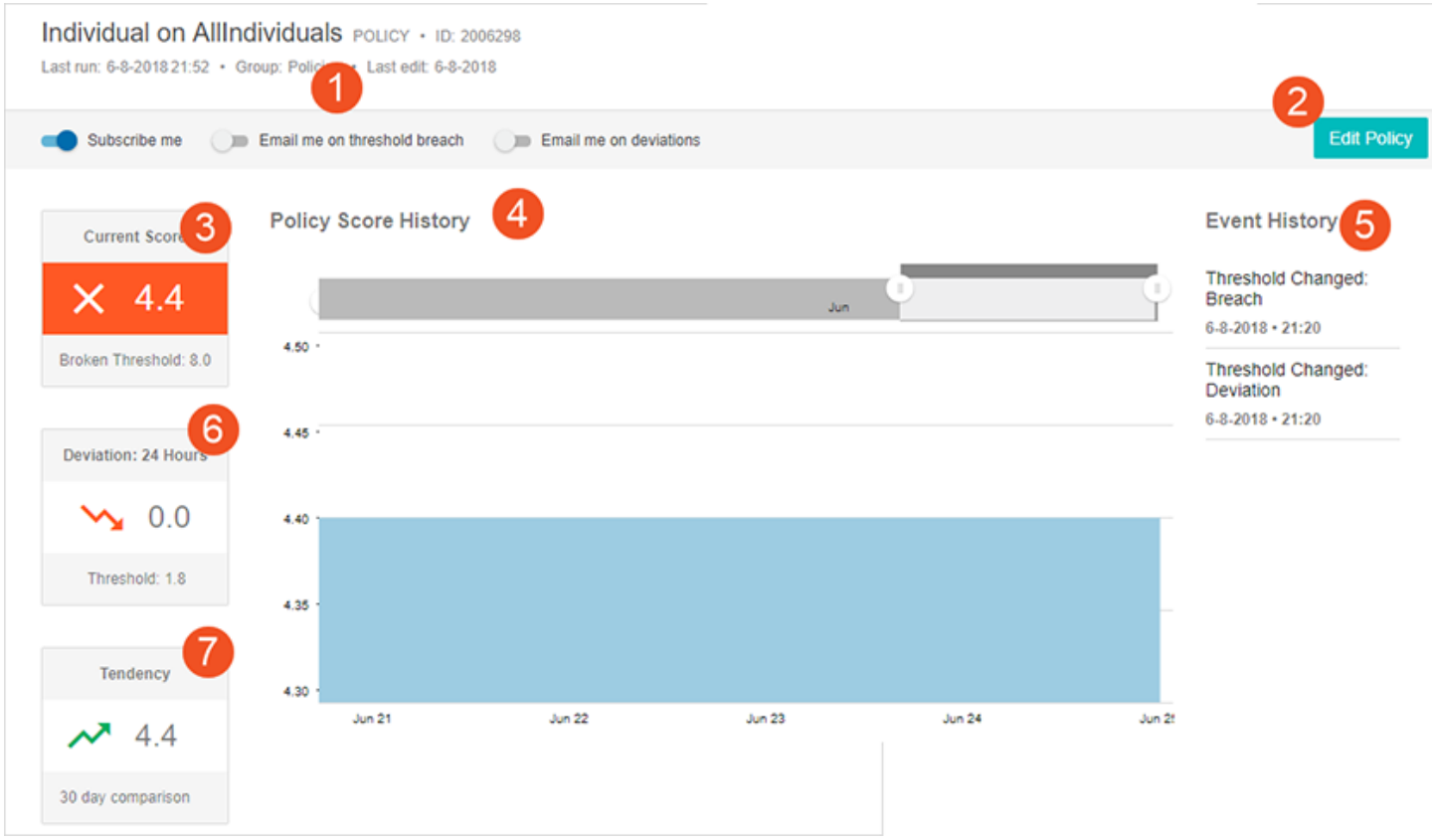
5. **Filter** - The filter allows users to remove undesired policies based on set criteria.



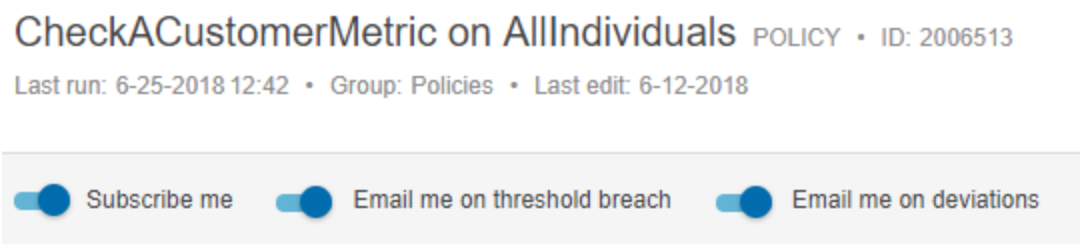
6. **Data Policy List** - This contains a list of all the data policies in your system. Selecting any will open the policy for modification.

Elements of a Policy Details Screen

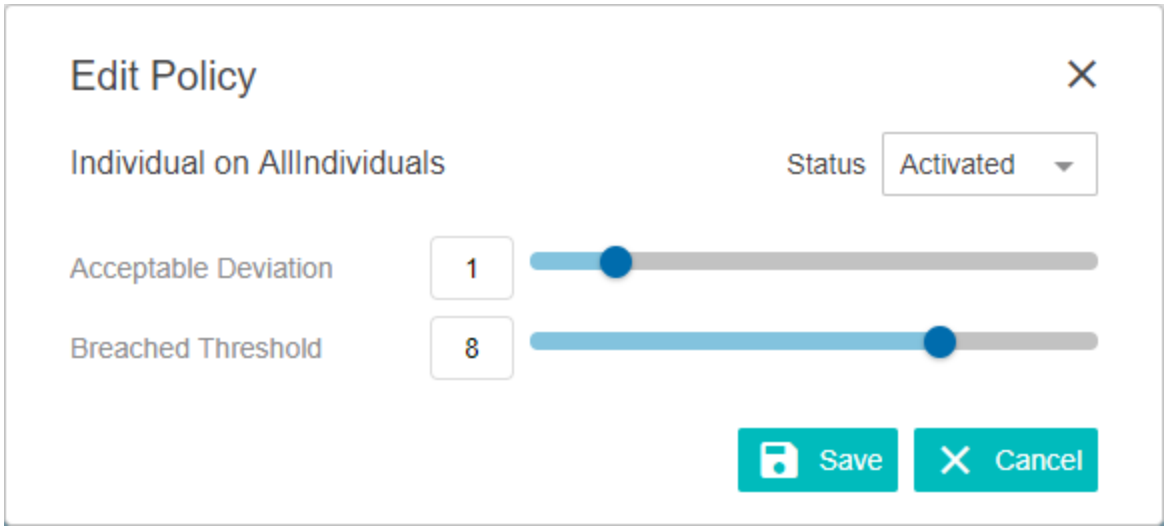
When a data policy is selected from the Data Policy List, the policy can be viewed and modified via the Policy Details screen.



1. **Policy Details Card** - This section includes all the information about the policy including name, ID, and creation date. Below the data policy details card, users may subscribe to the policy and/or receive email notifications when the policy has a threshold breach or deviation.



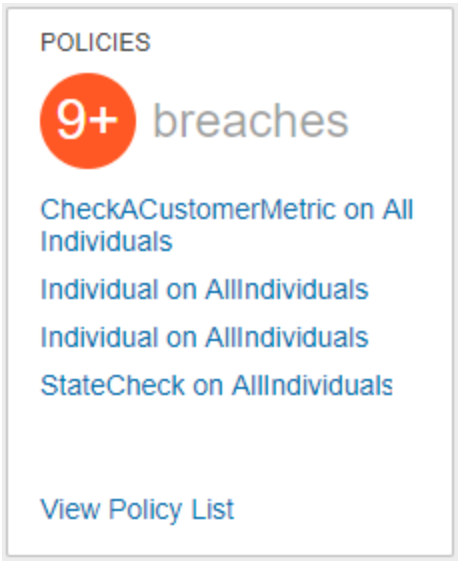
2. **Edit Policy Button** - This button opens the edit policy dialog which allows for changes to the threshold and deviation.



3. **Current Score** - This score is the last evaluation result of the policy.
4. **Policy History** - This section shows historic evaluation results of the policy. This allows users to see fluctuations in the policy's score.
5. **Event History** - This section shows all actions performed on this policy.
6. **Deviation: 24 Hours** - This section shows the deviation, if any, of the last 24 hours.
7. **Tendency** - This section is the comparison of the last seven days with an equivalent seven-day period from the previous month.

Web UI Homepage Widget

A policy widget is available for use on the Web UI home screen. This widget is used to see the various breached policies currently active in the system.



For more information, see the **Policy Widget** topic of the **Web UI** documentation.

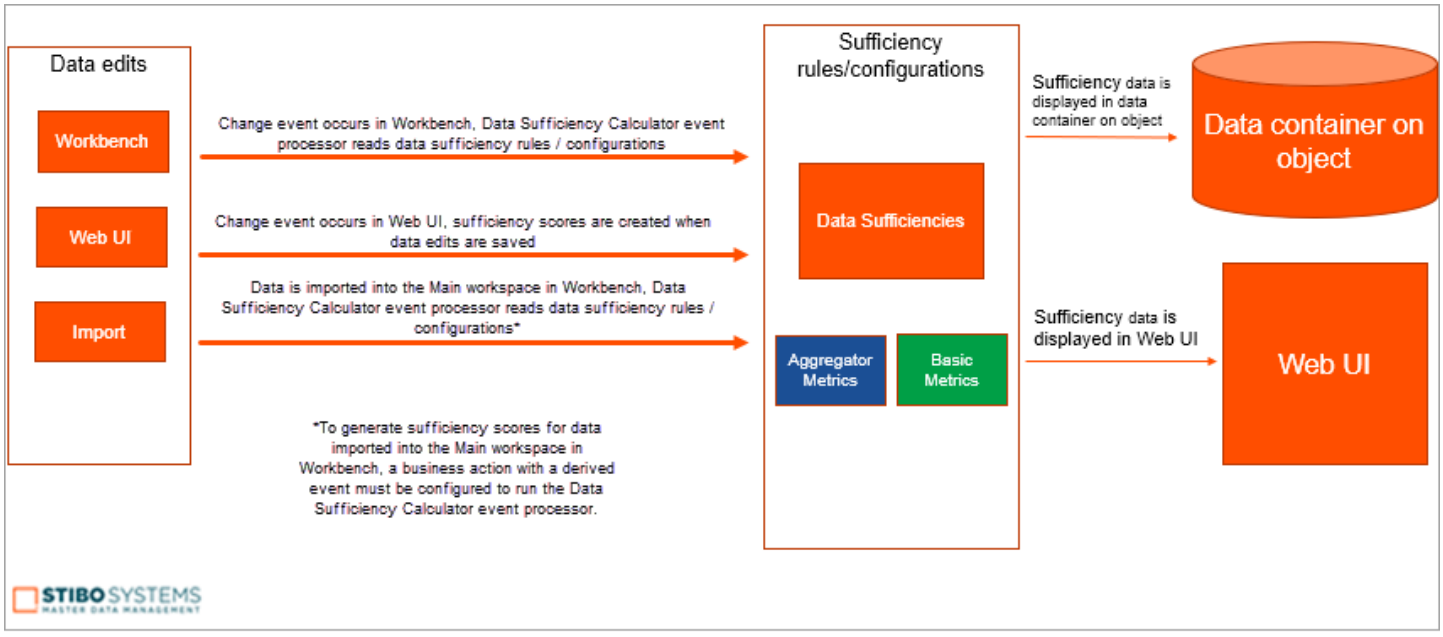
Sufficiency Scores for Product Data Quality and Completeness

Product data quality and completeness, in the form of sufficiency scores, can be obtained by configuring metrics, business rules, and specific parameters within a Sufficiency Configuration Type. These sufficiency scores, at a minimum, can:

- define data profiles that determine the quality of data
- control an item's movement through a workflow by determining certain requirements for passage
- search for items based on certain sufficiency metrics
- measure data sufficiency against a predefined syndication channel on an external system

Note: The terms 'Sufficiency Configuration Type' and 'Sufficiency' are used interchangeably throughout the documentation that addresses sufficiency scores and data quality and completeness, and both terms refer to the same functionality.

To achieve an overall better understanding of how sufficiency scores are obtained, it would be beneficial to look at an example as to how the order of actions occur to obtain a sufficiency score from a Sufficiency Configuration Type:



1. A change event occurs as a result of edited data, e.g., an attribute value on a product is changed.
2. If change event occurs in Workbench or data is imported, the Data Sufficiency Calculator event processor is run and reads the data and calculates scores / messages based on the settings (i.e., metrics, business conditions, etc.) that are configured within the Sufficiency Configuration Type. If change event occurs in Web UI, the sufficiency scores /messages are created when data edits are saved.

3. The sufficiency data for the product is stored within a data container in the workbench and can be viewed in the Sufficiency panel in the Web UI.

Note: While sufficiency scores can be viewed within data containers in the workbench, data sufficiency messages within the workbench are not human-readable, and should only be considered as an indicator that messages have been processed. These values are human-readable within the Web UI.

Prerequisites

Because there are several different features that work together to deliver sufficiency scores, separate topics have been created to make the process as clear and concise as possible. To navigate through the process of creating sufficiency scores based on product data quality (and more precisely, obtaining sufficiency scores via a Sufficiency Configuration Type), it is recommended that users follow the order of steps listed below when creating a sufficiency for the first time:

1. **Create the metrics that will be used within the sufficiency.**

   Metrics are an essential element of sufficiency scores, and having a firm grasp in understanding how metrics work, both separately and combined with other metrics, is crucial to the success of obtaining accurate and usable sufficiency scores.

   For more information, see the **Metrics** topic.

2. **Create and configure the Sufficiency Configuration Type.**

   The Sufficiency Configuration Type is where metrics, business actions, business conditions, selected contexts, etc., come together to create sufficiency scores for object data.

   For more information, see the **Sufficiency Configuration Type** topic.

3. **Configure the Data Sufficiency Calculator processing plugin.**

   The Data Sufficiency Calculator processing plugin works in tandem with the Sufficiency Configuration Type to calculate sufficiency scores for a given product and returns those scores to data containers in the workbench and to the Sufficiency Panel within the Web UI.

   For more information, see the **Data Sufficiency Calculator Processing Plugin Parameters and Triggers** topic.

   Note: Depending on how data is generated / edited, the Data Sufficiency Calculator processing plugin may not be necessary when creating sufficiency scores. See the diagram at the beginning of this topic for further details.

Although it is not part of initial setup, it is recommended that users are familiar with the Sufficiency Panel, which is located in Web UI and where sufficiency scores for a given product are displayed.

For more information, see the following topics:

- **Metrics:** Metrics are an essential element of sufficiency scores, and having a firm grasp in understanding how metrics work, both separately and combined with other metrics, is crucial to the success of obtaining accurate and usable sufficiency scores.

  For more information, see the **Metrics** topic.

- **Sufficiency Configuration Type:** The Sufficiency Configuration Type is where metrics, business actions, business conditions, selected contexts, etc., come together to create sufficiency scores for object data.

  For more information, see the **Sufficiency Configuration Type** topic.

- **Data Sufficiency Calculator processing plugin:** The Data Sufficiency Calculator processing plugin works in tandem with the Sufficiency Configuration Type to calculate sufficiency scores for a given product and returns those scores to data containers in the workbench and to the Sufficiency Panel within the Web UI.

  For more information, see the **Data Sufficiency Calculator Processing Plugin Parameters and Triggers** topic.

- **Sufficiency Panel:** Within the Web UI, the Sufficiency panel displays sufficiency scores that represent data quality through the use of numbers, colors, and messages.

  For more information, see the **Sufficiency Panel** topic.

Sufficiency Configuration Type

Product data quality and completeness can be measured by combining metrics, along with other evaluation tools, to create sufficiency scores. These scores can be obtained by configuring a Sufficiency Configuration Type to a user's specific needs. These scores can be displayed within a data container in the workbench and on the Sufficiency panel in the Web UI.

The Sufficiency Configuration Type enables system administrators to set up the rules and conditions for how the system should evaluate the quality and completeness of data on a given product, and display that information as a sufficiency score.

Before reading this topic, users are recommended to be familiar with the **Sufficiency Scores for Product Data Quality and Completeness** topic, which can be found.

Note: To access the Sufficiency Configuration Type, the 'data-sufficiency' add-on component must be activated on your system. See your Stibo Systems representative for more information.

The Sufficiency Configuration Type is composed of several different elements; while this topic will briefly cover how these elements are used in conjunction with the Sufficiency Configuration Type, they will not be explained in depth. Therefore, it is recommended that for those readers that need additional information, the topics that address these elements are read separately. For information pertaining to:

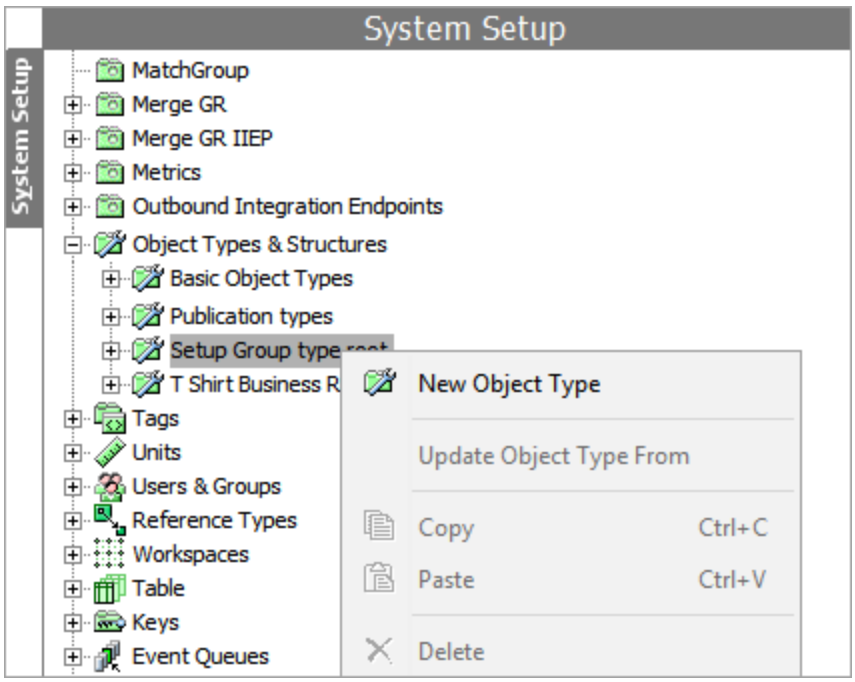
- Data Containers, see the **Data Containers** topic in the **System Setup** documentation.
- Business Functions, see the **Business Functions** topic in the **Business Rules** documentation.
- Business Conditions, see the **Business Conditions** topic in the **Business Rules** documentation.
- Business Actions, see the **Business Actions** topic in the **Business Rules** documentation.
- Metrics, see the **Metrics** topic in the **System Setup** documentation.
- JavaScript Functions, see the **JavaScript Function Operation** topic in the **Business Rules** documentation.

Note: To maximize performance and reduce processing times when running a sufficiency to determine data quality and completeness, it is recommended that the number of business rules using JavaScript are limited as much as possible, as the number of rules within the sufficiency can impact performance. While business rules that include JavaScript functions can be used as part of the sufficiency when determining data quality and completeness, it is recommended that whenever possible, preconfigured metric plug-ins should be used instead. Doing so will improve performance and reduce processing times.

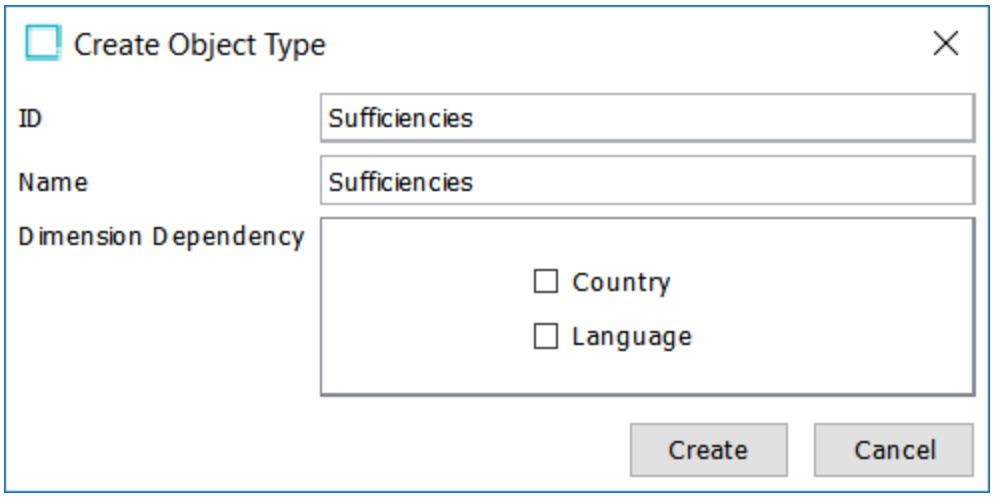
Creating a Sufficiency Configuration Type

A Sufficiency Configuration Type must be created prior to configuration.

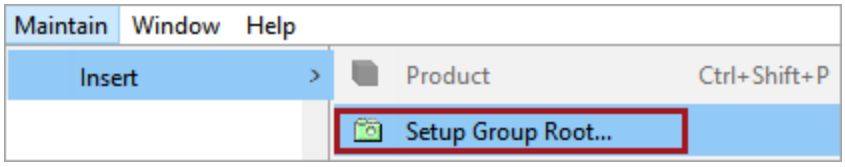
1. In the System Setup, right-click 'Setup Group Type Root' and select 'New Object Type.'



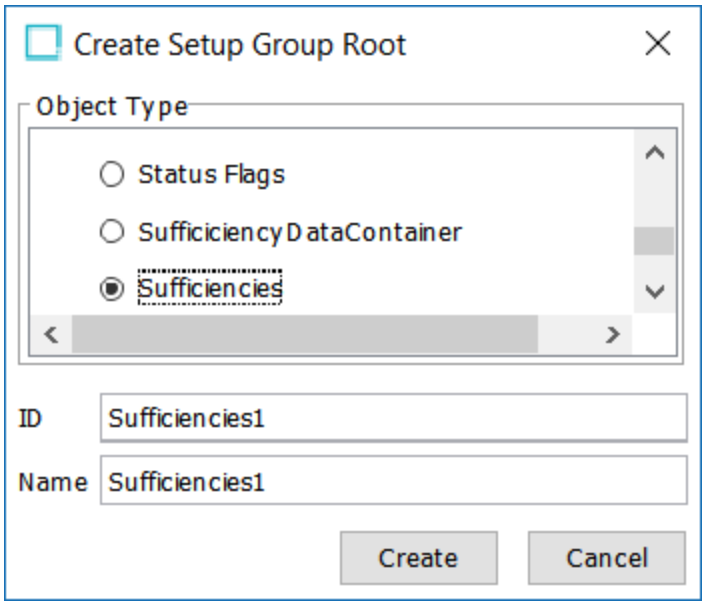
2. In the Create Object Type dialog box, enter a value for the ID and Name text field. In the example below, the user has created an object type with the ID and Name 'Sufficiencies.'



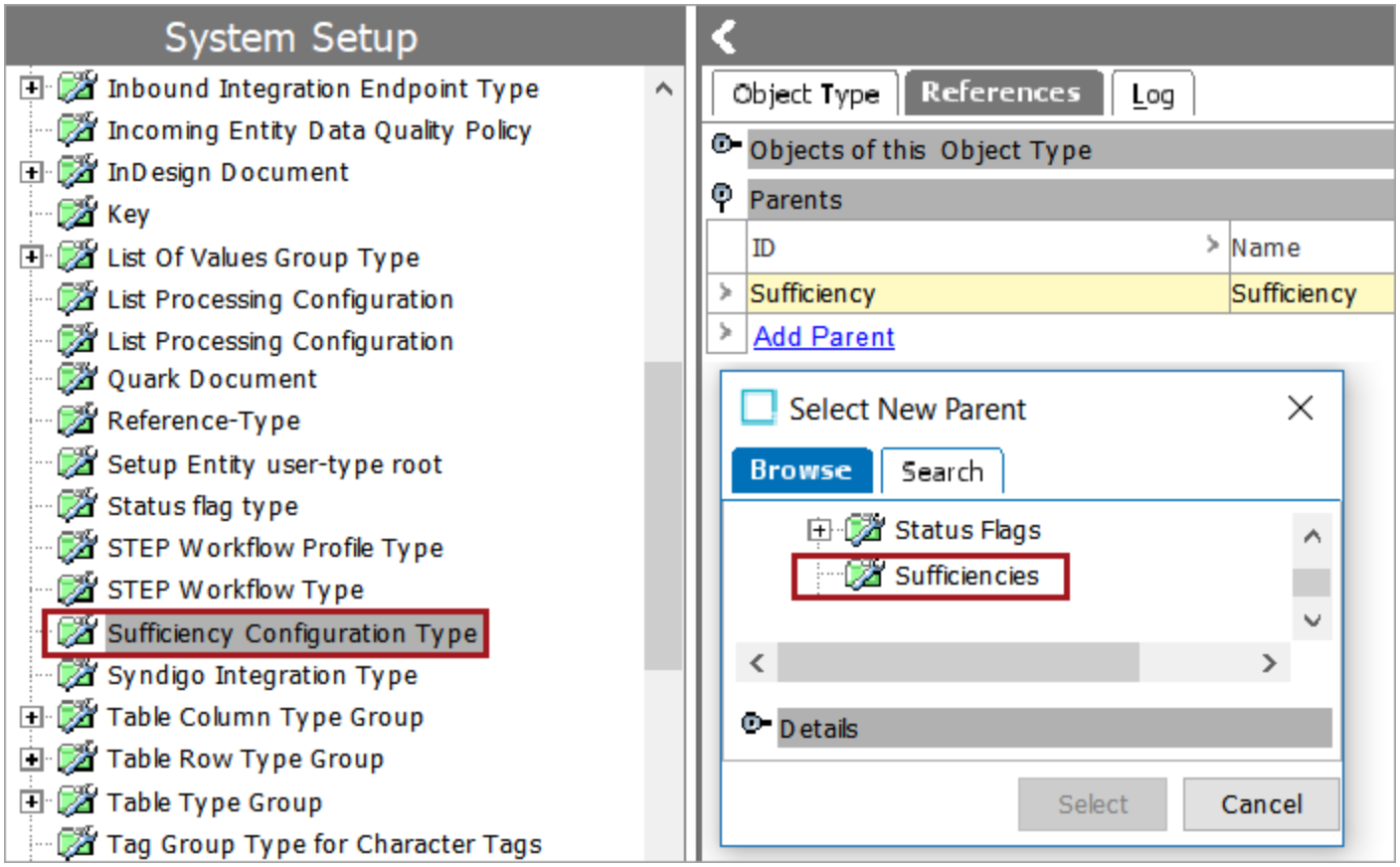
3. Click 'Create' to save the settings and close the dialog.
4. In the toolbar menu, click 'Maintain,' select 'Insert,' and click 'Setup Group Root....'



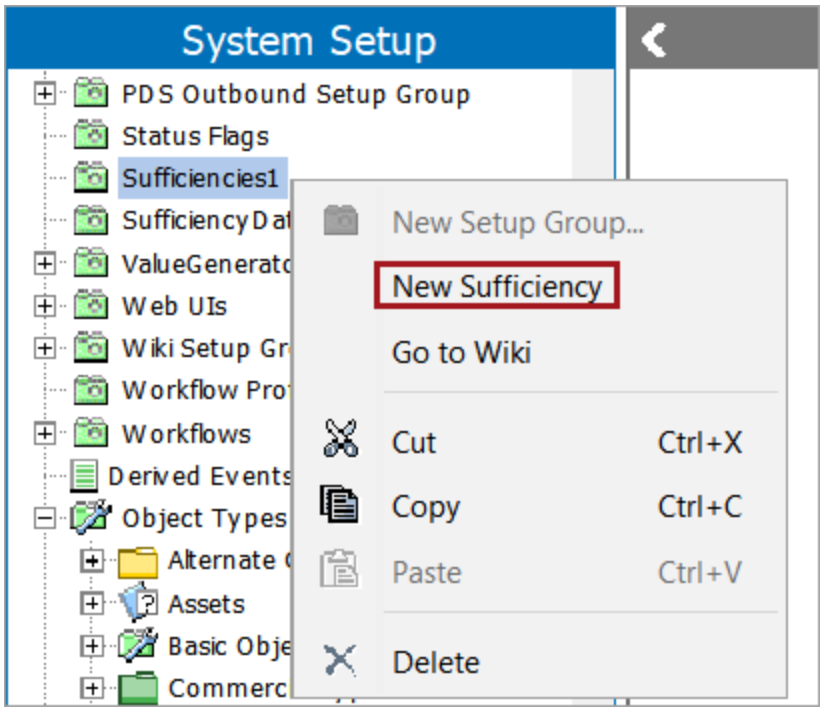
5. In the Create Setup Group Root dialog, select the object type created in the previous step (in this example, 'Sufficiencies') and enter a value for the ID and Name text field. In this example, the user created a setup group root with the ID and Name 'Sufficiencies1.'



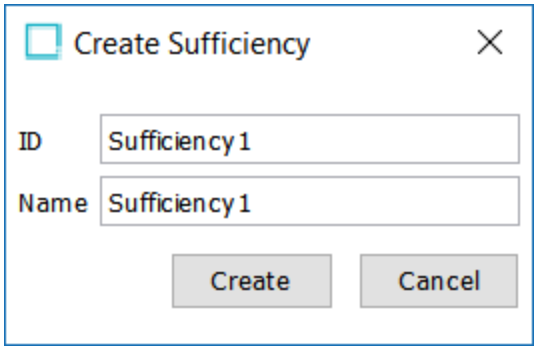
6. Click 'Create' to close the dialog.
7. Select 'Sufficiency Configuration Type' (located within the 'Basic Object Types' folder) in System Setup. In the References tab, select 'Add Parent,' and in the Select New Parent dialog, select 'Sufficiencies.'



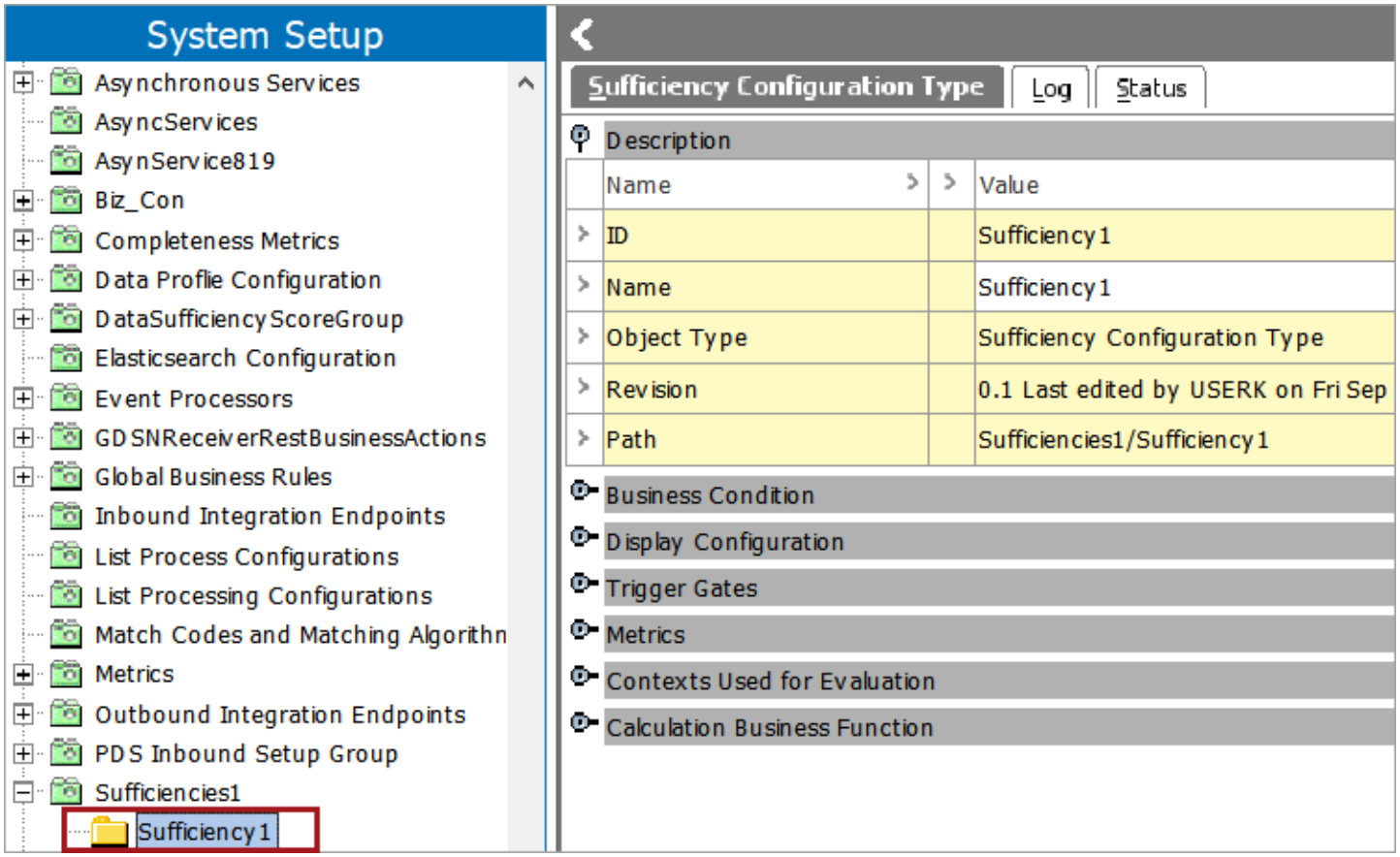
8. Click 'Select' to close the Select New Parent dialog.
9. Right - click the 'Sufficiencies1' Setup Group and select 'New Sufficiency.'



10. In the Create Sufficiency dialog box, enter a value for the ID and Name text field. In this example, the user has created a sufficiency with the ID and Name 'Sufficiency1'

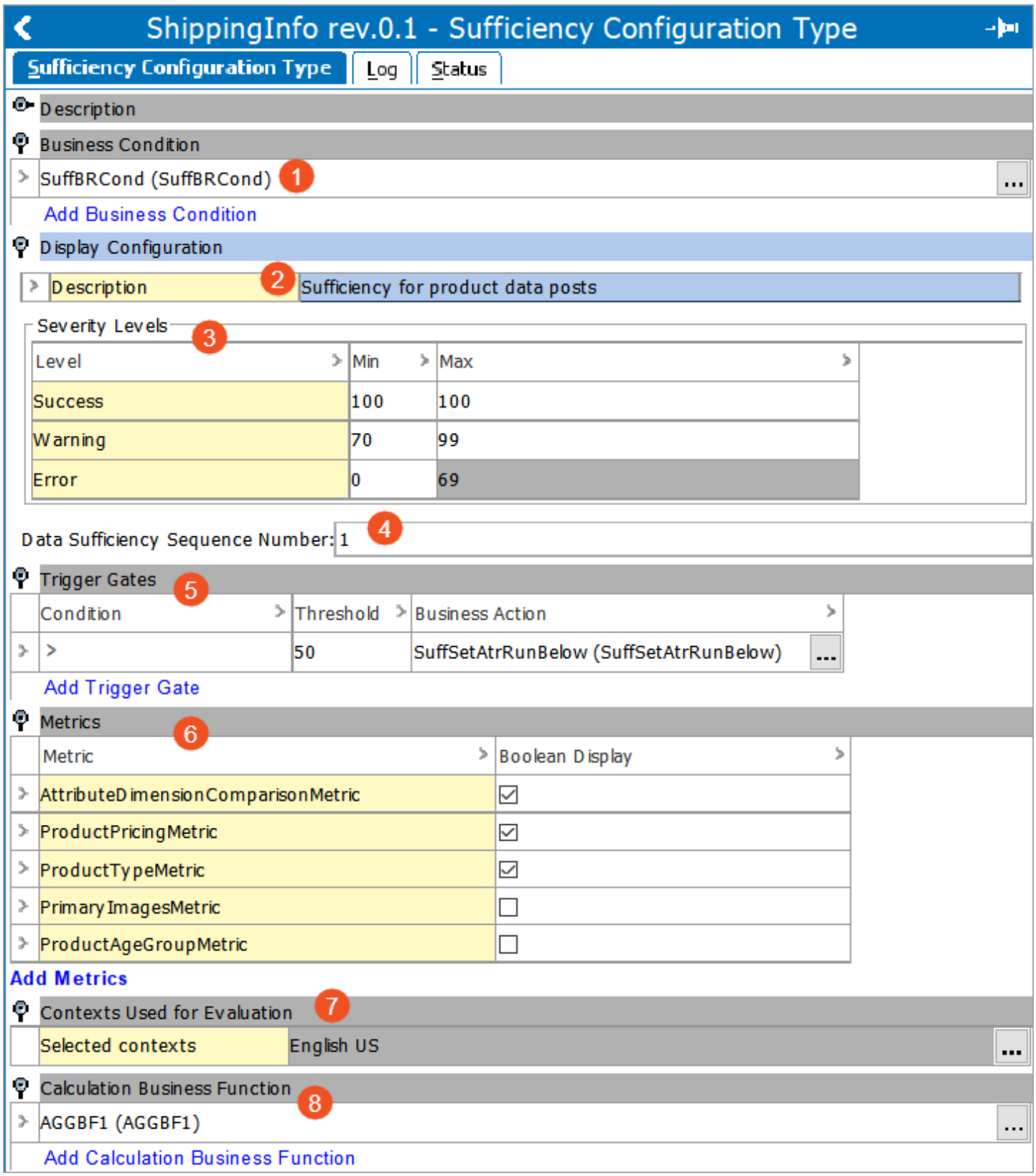


11. Click 'Create.' The dialog closes and the Sufficiency Configuration Type has been created and is ready to be configured.



Configuring A Sufficiency Configuration Type

The image directly below shows an example of a configured Sufficiency Configuration Type. The included numbers highlight the different parameters that can be configured, with the numbers corresponding with the descriptive text that immediately follows the image.


ShippingInfo rev.0.1 - Sufficiency Configuration Type
Sufficiency Configuration Type
Log
Status
Description
Business Condition
SuffBRCond (SuffBRCond)
1
Add Business Condition
Display Configuration
Description
2
Sufficiency for product data posts
Severity Levels
3
Level
Min
Max
Success
100
100
Warning
70
99
Error
0
69
Data Sufficiency Sequence Number:
1
4
Trigger Gates
5
Condition
Threshold
Business Action
>
50
SuffSetAtrRunBelow (SuffSetAtrRunBelow)
Add Trigger Gate
Metrics
6
Metric
Boolean Display
AttributeDimensionComparisonMetric
ProductPricingMetric
ProductTypeMetric
PrimaryImagesMetric
ProductAgeGroupMetric
Add Metrics
Contexts Used for Evaluation
7
Selected contexts
English US
Calculation Business Function
8
AGGBF1 (AGGBF1)
Add Calculation Business Function

1. **Business Condition** (optional): A configured business condition that determines whether the sufficiency should be calculated on specified objects. Note that only one business condition can be added in the Business Condition parameter.

   Note: If a business condition that specifies which objects should be included when calculating sufficiency scores is not included in the sufficiency, then sufficiency scores will be calculated for all object types that contain valid attributes specified in the metrics within the 'Metrics' parameter of the sufficiency.

2. **Description** (optional): An editable text box that can be used to add descriptive information regarding the purpose and use of the Sufficiency Configuration Type. The descriptive information displays in the Sufficiency panel in the Web UI to inform end users about the data sufficiency.
3. **Severity Levels**: The three severity level thresholds are determined by the user. The results, which determine whether a returned sufficiency score should be rendered as Success (green), Warning (yellow), or Error (red), are displayed in the Sufficiency panel in the Web UI. As an example, if using the range of numbers added to the Severity Levels table in the image above, a returned sufficiency score of 69 or below would yield a red-colored number representing the returned score, along with any error message. A sufficiency score between (and including) 70 and 99 would yield a yellow-colored number representing the returned score, and a returned score of 100 would return a green-colored number.

   Note: Be aware that messages are returned with sufficiency scores based on the settings / configuration of the metrics that are part of the sufficiency configuration type. Generally speaking, messages are most often only returned when (and best suited for) a sufficiency score that falls within the error range, as the messages reflect why an error score was returned and how to implement changes to improve the sufficiency score for a product once the Sufficiency Configuration Type is run again.

4. **Data Sufficiency Sequence Number** (optional): The Data Sufficiency Sequence Number determines in what sequence the sufficiencies will be displayed within the Sufficiency panel in the Web UI. If no values are provided, metrics will be displayed in alphanumeric order within the Sufficiency panel in the Web UI.
5. **Trigger Gates** (optional): Configured business actions that trigger an action, i.e., move products to a workflow, send notification, etc., when specified conditions (i.e., a specific threshold) are met, as determined by the results of a sufficiency score.

   Trigger gates must include:

   - A condition must be selected from 'Condition' dropdown menu
   - A threshold, in the form of a number, must be set
   - A business action must selected

   In the example above, the business action configured for the trigger gate would be executed if the sufficiency, when first run, returned a score below 50, and would not be executed again if the sufficiency score continued to be below 50 for succeeding calculations. If the sufficiency score were to rise above 50 and then again drop below 50, the business action would again be executed.

   Trigger gates are also executed within Web UI (if the threshold is met), when a change is made to a product and that change is saved.

6. **Select Metric**: Lists the metrics that are to be included in the Sufficiency Configuration Type, along with a 'Boolean Display' option for each metric. If the 'Boolean Display' check box is checked, the result will be displayed in the Sufficiency panel as a message (Success, Warning, or Error) based on the results. If the 'Boolean Display' box is not checked, the returned value will be displayed as a number.
7. **Contexts used for evaluation** (optional): Users can select which contexts they want to use for the sufficiency evaluation. In this example, the user has selected 'English US.' If no contexts are selected, all contexts within the system will be used.
8. **Calculator Business Function** (optional): By default, the Sufficiency Configuration Type returns an average score based on the selected metrics when the Data Sufficiency Calculator event processor is invoked; e.g., if a sufficiency included four metrics that were of equal value, each metric would be worth 25% of the overall returned sufficiency score. If you want the Sufficiency Configuration Type to return a score that is not the average score of the configured metrics, you can add a business function that modifies the weight (i.e., value) of metrics, so the returned score is not based on the average returned score of each metric, but instead dependent on how each metric is weighed against the others included in the sufficiency.

> **Note:** To use a business function with a Sufficiency Configuration Type, the input parameter type must be set to 'List<MetricResult>' and the return type must be an integer. Business functions without these configuration settings will not be available as a valid option within the 'Select Business Function' window. For more information on business functions, see the **Business Functions** topic in the **Business Rules** documentation.

Improving Sufficiency Performance

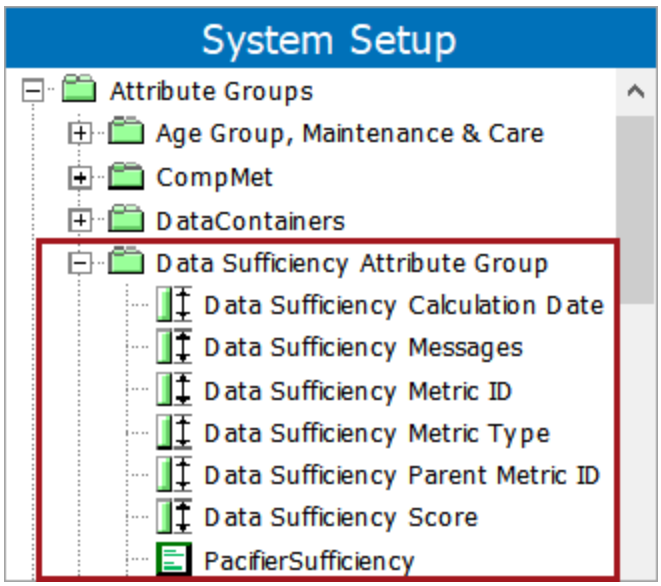
To improve the performance of a Sufficiency when checking for data quality and completeness, it is recommended to apply the following practices:

- Consolidate business rules, e.g., combine multiple attribute data quality checks into one metric / business rule.
- Use metric plugins instead of business rules if the desired outcome can be achieved.
- Implement a business condition that prevents the Sufficiency from running on non-relevant contexts.

Applying these measures will result in both an improved processing performance and a reduction of storage / in-memory usage.

Data Sufficiency Attribute Group

The Data Sufficiency Attribute Group, located in the System Setup tab in the workbench, contains attributes and data containers. The Data Sufficiency Attribute Group, default attributes, and data containers for any user-configured sufficiencies are automatically created when the Sufficiency Configuration is run and an event occurs, or when data is edited and saved within the Web UI. The data containers stores the values for these attributes, based on the results of the calculations from the sufficiencies. For example, the image below displays the default attributes within the Data Sufficiency Attribute Group, as well as the 'PaciferSufficiency' data container.



The 'PacifierSufficiency' data container holds the values for these attributes. The values are based on the results of the 'PacifierSufficiency' sufficiency.

Note: To calculate and view updated sufficiency scores, users must have the 'Create data container' and 'Modify metadata for product attribute (property value) (also translate)' privileges. For more information regarding privileges, see the **User Actions** topic in the **Action Sets** documentation.

The data container displays info regarding the six different metrics (Product Price Metric, ProductNameMetric, ProductAgeGroup, ProductDescription, Primary ImagesMetric, and ProductColorOptionsMetric) within the 'PacifierSufficiency,' as well as the sufficiency itself.

PacifierSufficiency

ID	Data Sufficiency Calculation Date	Data Sufficiency Messages	Data Sufficiency Metric ID	Data Sufficiency Metric Type	Data Sufficiency Parent Metric ID	Data Sufficiency Score
152928	1600179760544		PacifierSufficiency	Sufficiency		66
152929	1600179760544	H4sIAAAAAAAAAFXKuwrDMAweHWz/0w/kCJwio+F7K8e2eSQQnEnCfFWL2GOkv7HixCKAAAA=	ProductPriceMetric	Simple	PacifierSufficiency	50
152930	1600179760544	H4sIAAAAAAAAAFWMuwoCMWv50DHYRzG3R42QKh4n/O7O8MCBjwAAAA==	ProductNameMetric	Simple	PacifierSufficiency	50
152931	1600179760544		ProductAgeGroup	Simple	PacifierSufficiency	100
152932	1600179760544		ProductDescription	Simple	PacifierSufficiency	100
152933	1600179760544		PrimaryImagesMetric	Simple	PacifierSufficiency	100
152934	1600179760544	H4sIAAAAAAAAAFWOTQvCMPXqeWt0euyKqvFEiVqxeryDr9dzj3FqF4Usb5NaH2rLP2BH	ProductColorOptionsMetric	Simple	PacifierSufficiency	0

Add Data Container

The attributes within the Data Sufficiency Attribute Group include:

- **Data Sufficiency Calculation Date:** The date when the Data Sufficiency Calculator was run on the sufficiency.
- **Data Sufficiency Messages:** Returned messages based on a metric configuration. Generally, messages only accompany returned values of less than 100, but this can vary depending on the configuration of the metric.

Note: As displayed in the image above, values for the Data Sufficiency Messages attribute are not human - readable within data containers in the workbench, and should only be considered as an indicator that messages have been processed. These values are human readable within the Web UI.

- **Data Sufficiency Metric ID:** The ID of the sufficiency and metrics.
- **Data Sufficiency Metric Type:** Metric types can either be simple or aggregator type metrics.
- **Data Sufficiency Parent Metric Type:** The name of the sufficiency where the metrics (whose results are detailed in this data container) are located.
- **Data Sufficiency Score:** The returned score of each metric, as well as the overall score of the sufficiency.

For more information on data containers, see the **Data Containers** topic in the **Attributes** documentation.

Sufficiency Panel

The Sufficiency panel is located in the Web UI. This panel displays quality and sufficiency data for a given product. The data displayed is dependent on the sufficiency and metric settings configured in the workbench; a typical Sufficiency panel would display the name and overall score of a sufficiency, a description for the sufficiency, the names of metrics that are part of the sufficiency, and scores for each metric. There may also be messages for metrics, if the metric reports error messages. The scores / messages are color-coded green, yellow, or red, depending on the settings within the sufficiencies in the workbench.

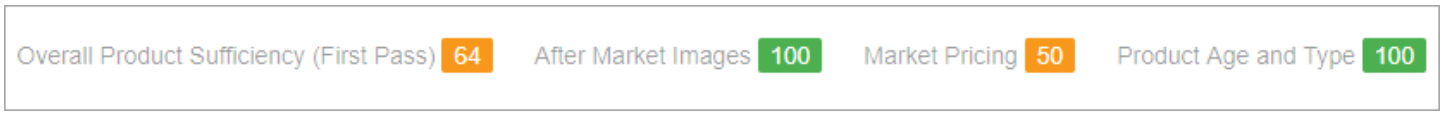
Note: To access the Sufficiency Panel, the 'data-sufficiency' add-on component must be activated on your system. See your Stibo Systems representative for more information. To view the Sufficiency Panel in the Web UI, users must have the 'View setup group' and the 'View Setup Entity' privileges. Users must also have the 'Maintain Data Container Type' privilege in order to approve and save changes to attribute values in the Web UI. For more information regarding privileges, see the **Action Sets** topic in the **System Setup** documentation.

For more information on sufficiencies, see the **Sufficiency Configuration Type** topic. For more information on metrics, see the **Metrics** documentation.

Important: Updating the Sufficiency Panel data based on unapproved edits made in the Product Editor Web UI screen requires a business rule and a derived event. This manual configuration is defined in the **Events Generated on Main Workspace** topic of the **System Setup / Super User** documentation

For information on related components for use by data stewards, see the **Data Enrichment Components** topic in the **Search Screen** section of the **Web User Interfaces / Web UI Setup and User Guide** documentation.

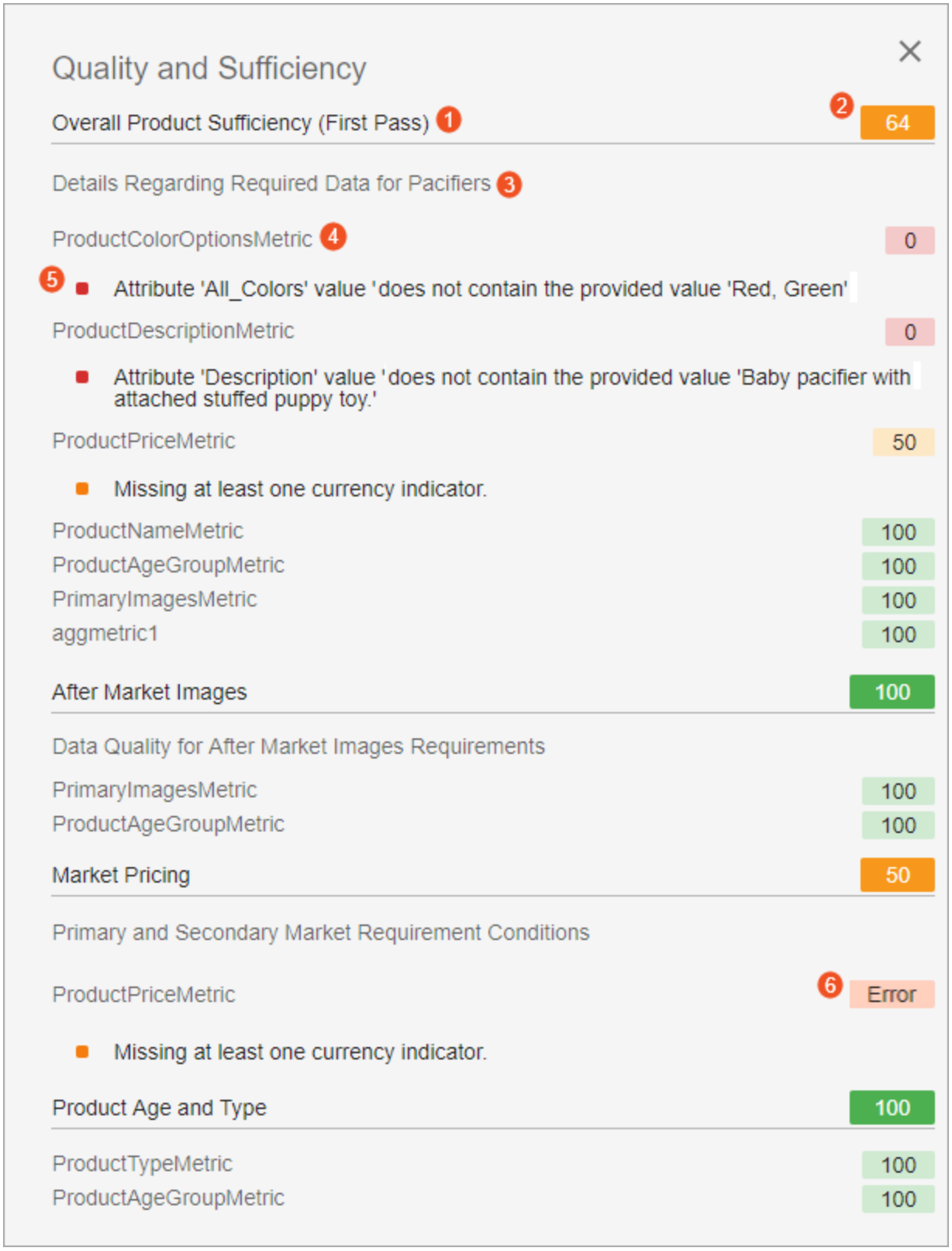
The Sufficiency panel is accessed by clicking on the Sufficiency Indicator shown below.



The Sufficiency Indicator displays the names of the included sufficiencies and their scores.

Note: The number of sufficiencies displayed in the Sufficiency Indicator is limited to the horizontal space of the monitor in which it is displayed on; however, this does not affect the number of sufficiencies displayed in the Sufficiency panel, i.e., there may be twelve sufficiencies visible in the Sufficiency Inspector, but the Sufficiency panel may contain more than twelve sufficiencies.

The following is an example of a Sufficiency panel with several sufficiencies; the numbers correspond to the descriptive text below the image, which describes in detail the elements that make up the Sufficiency panel.


Quality and Sufficiency
Overall Product Sufficiency (First Pass) 1
2 64
Details Regarding Required Data for Pacifiers 3
ProductColorOptionsMetric 4
0
5 Attribute 'All_Colors' value 'does not contain the provided value 'Red, Green'
ProductDescriptionMetric
0
Attribute 'Description' value 'does not contain the provided value 'Baby pacifier with attached stuffed puppy toy.'
ProductPriceMetric
50
Missing at least one currency indicator.
ProductNameMetric
100
ProductAgeGroupMetric
100
PrimaryImagesMetric
100
aggmetric1
100
After Market Images
100
Data Quality for After Market Images Requirements
PrimaryImagesMetric
100
ProductAgeGroupMetric
100
Market Pricing
50
Primary and Secondary Market Requirement Conditions
ProductPriceMetric
6 Error
Missing at least one currency indicator.
Product Age and Type
100
ProductTypeMetric
100
ProductAgeGroupMetric
100

1. 'Overall Product Sufficiency (First Pass)' is the name of one of the four sufficiencies run on the product. The other sufficiencies in the sufficiency panel include 'After Market Images,' 'Market Pricing,' and 'Product Age and Type.'
2. The overall returned value (in this example, '64') of the sufficiency 'Overall Product Sufficiency (First Pass).' If there is no business function added to the 'Business Function Calculation' parameter in the sufficiency that calls for a different result other than the average of the combined metrics within the sufficiency, the returned value displayed will be the combined average of the metrics within the sufficiency.
3. Descriptive text regarding the sufficiency 'Overall Product Sufficiency (First Pass).' This text is added into the Description text field within the 'Display Configuration' parameter in sufficiency. If the 'Description' text field is left blank, no informative text will be displayed.
4. 'ProductColorOptionsMetric' is one of the metrics included within the 'Overall Product Sufficiency (First Pass)' sufficiency. In this example, this metric has returned a score of '0.'
5. The error message that accompanied the '0' returned value for the 'ProductColorsOptionsMetric.' This message can be configured and is used to provide details as to why a specific value was returned. Error messages are located directly underneath the metrics that they specifically address.
6. Because the user configured the returned value for the 'ProductPriceMetric' in the 'Market Pricing' Sufficiency to be displayed as a Boolean and not a number, the value is returned as 'Error'.

Note: The colored backgrounds (green, yellow, red) of returned values, whether in the form of Booleans or numbers, are based on the severity levels set within the sufficiency.