SAS® Data Remediation 2.4: User's Guide

2.4

SAS® Documentation

October 13, 2022

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SAS® Data Remediation 2.4: User's Guide

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Contents

What's New

What's New in SAS Data Remediation 2.4

Overview

The main enhancements and changes for SAS Data Remediation 2.4 include the following:

- Updated user interface
- Deep linking to issues in SAS Data Remediation
- Documentation enhancements

Updated User Interface

The user interface has been rewritten in HTML5. Previously, many SAS applications and SAS solutions used the Adobe Flash Player to provide interactive user interfaces. Adobe announced that it intends to end support for Flash technology and will cease to update and distribute the Flash Player at the end of 2020. Browser vendors will disable Flash by default in 2019. For more information about Adobe Flash end-of-life, see SAS Software and Its Use of the Adobe Flash Player.

SAS Data Remediation 2.4 is no longer accessed from the SAS Data Management Console. Instead, sign in to SAS Data Remediation directly. For more information, see "Sign In to SAS Data Remediation" on page 5.

The following table lists the main differences between the old user interface (SAS Data Remediation 2.3 and earlier) and the new user interface (SAS Data Remediation 2.4).

Main Changes to User Interface

In Previous Releases	In Current Release	Notes
The **SAS Data Remediation** tab.	The Issues window.	For more information, see "Working with Issues" on page 38.
The **SAS Data Remediation Administration** tab.	The Applications window.	For more information, see "Working with SAS Data Remediation Administration" on page 15.
In the SAS Data Management Console, the **Data Remediation Summary** portlet displayed a read-only summary of data.	In the Issues windows, the advanced filtering functionality displays a summary of data.	For more information, see "Advanced Filter" on page 39.
In the SAS Data Management Console, the **Data Remediation** portlet displayed an overview of issues and a sampling of data, and enabled you to open individual issues.	The Issues window displays a list of all issues.	For more information, see "Working with Issues" on page 38.
The **Actions** menu.	The **Actions** toolbar.	The **Actions** toolbar appears in opened issues and in the right pane. For more information, see "Actions Toolbar" on page 10.

In Previous Releases	In Current Release	Notes
Advanced Search Options on the **SAS Data Remediation** tab.	**Advanced Filter** pane in the Issues window.	For more information, see "Advanced Filter" on page 39.

Deep Linking to Issues in SAS Data Remediation

Deep linking refers to constructing a URL (link) that, when initiated, can take a user directly to an issue in SAS Data Remediation rather than requiring the user to search for it. The URL syntax has changed in this release. For more information, see "Deep Linking to Issues in Data Remediation" on page 53.

Documentation Enhancements

The following enhancements have been made to this guide:

- Added details about the **<Application>: Actions** tab. For more information, see "Managing Issues" on page 41.

Accessibility

Accessibility Features of SAS Data Remediation

Overview

SAS Data Remediation has been partially tested with a focus on keyboard navigation. It was tested against the accessibility standards for electronic information technology that were adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973. It was also partially tested against Web Content Accessibility Guidelines (WCAG) 2.0 levels A and AA, part of the Web Accessibility Initiative (WAI) of the Worldwide Web Consortium (W3C). For detailed information about the accessibility of this product, send email to accessibility@sas.com or call SAS Technical Support.

Documentation Format

Please contact accessibility@sas.com if you need this document in an alternative digital format.

Keyboard Shortcuts

The keyboard shortcuts listed in the following table are available for SAS Data Remediation:

Keyboard Shortcuts for SAS Data Remediation

Action	Shortcut
Invert the application colors	Ctrl+`
Open the pop-up menu	Shift+F10
Select	Spacebar
Open Landmarks	Ctrl+F6
Display keyboard shortcuts	Ctrl+F9
Zoom in (10%)	Ctrl+numeric keypad Plus sign
Zoom out (10%)	Ctrl+numeric keypad Minus sign
Reset the zoom (100%)	Ctrl+numeric keypad 0
Print	Ctrl+P

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SAS Data Remediation

About SAS Data Remediation

Overview

For many data-intensive IT projects, anomalies or inconsistencies in the data prevent systems involved from operating optimally and providing clean and timely data to each other and end users. Data remediation provides a means to identify, review, and correct the problem data before it reaches the downstream systems.

SAS Data Remediation makes it easy to capture and review problems found in enterprise data. SAS Data Remediation has a web-based interface for data administrators and a representational state transfer (REST) web service API for system integration. Both of these interfaces interact with a remediation database that contains information about the problem. The information includes where the problem data is located, which system generated the data, who should see the data, and how the data might be corrected.

Note: Only authenticated users can access remediation functionality.

Configuration

Configuration of your SAS Data Remediation environment is handled by the standard SAS deployment process. If you are upgrading from a previous version of SAS Data Remediation, your remediation database is automatically updated when the SAS Data Remediation application is started on the server for the first time after installation of the newer version. All issues and their state persist in the application.

How Issues Are Organized

Overview

IT systems or data-centric applications can interact with SAS Data Remediation through a REST web service API. This API enables the originating system, which contains data flagged by data quality business rules, to send information about the state and location of the data errors to SAS Data Remediation. SAS Data Remediation organizes the data and gives specific sets of users access to remediation issues, items, and packages. Issues, items, and packages are associated with an application and subject area in remediation. If a package is created for an application or subject area not already known to the data remediation service, then it is registered automatically with the service.

Issues

Issues are descriptions of the problems in the data and include information such as due dates, importance indicators, owners, and statuses. Only a reference to the data is brought into SAS Data Remediation.

The following are properties of issues:

- Issues are linked to Issue Types that can have Tasks (workflow templates) associated with them. Tasks define a correction process. If an issue is associated with a workflow, it can be started by the data remediation service when the package is created. Issue details are automatically propagated into the workflow only at this time.

- When creating an issue, Assignee defaults to Unassigned if no assignee is designated.
- Depending on the status of the issue, the following fields and properties can be modified:

Issue Status	Details
Open (with no assignee)	Any authorized user can modify the issue's writable fields: Importance, Status, Assignee, Due Date, and Note. **Note:** If you change the status to In Progress, you become the assignee.
In Workflow	Any participant in the workflow can modify the issue's writable fields: Importance and Note.
In Progress	Only the assignee can modify the issue's properties. **Note:** The assignee can reassign the issue to another user, which resets the issue to a default status of Open. Because the status is Open, anyone can modify the issue.
Closed or Rejected	The issue's properties cannot be modified.

Items

Items are rows of data in a system. For example, a customer record is an item. SAS Data Remediation keeps tracks of the issues associated with an item. In SAS Data Remediation, items are the elements against which business rules have been run to look for erroneous data. Items do not capture the complete external record, but generally point to the record through a key value. One or more issues can be associated with an item.

Packages

Packages are collections of items with issues. A single package is generated by a single business process so that all issues that come from the same process can be viewed collectively. One or more items can be associated with a package. After a package is created, you cannot add items or issues to it.

Note: Only packages can be deleted. Items or issues cannot be deleted.

SAS Management Console

SAS Data Remediation uses the SAS Management Console to define users and roles. For more information, see *SAS Management Console: Guide to Users and Permissions*.

Erroneous data or non-compliant processes can be sent to SAS Data Remediation in several ways. These methods include, but are not limited to, the following program:

SAS Data Integration Studio
: Users can write data integration processes that can use the REST API to send problem records to SAS Data Remediation for review and correction.

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SAS Data Remediation Interface

Sign In to SAS Data Remediation

You can access SAS Data Remediation from the following URL: http://*hostname*/SASDataRemediation.

If your site is not using the default port for SAS Data Remediation, you must specify the port in the URL. For example, if the port is 7980, you can access SAS Data Remediation from the following URL: http://*hostname*:7980/SASDataRemediation.

Note: If you sign in to SAS Data Remediation in one browser tab, and then sign in to SAS Data Remediation or a different SAS web application in another browser tab, the same credentials are used automatically for subsequent authentication attempts.

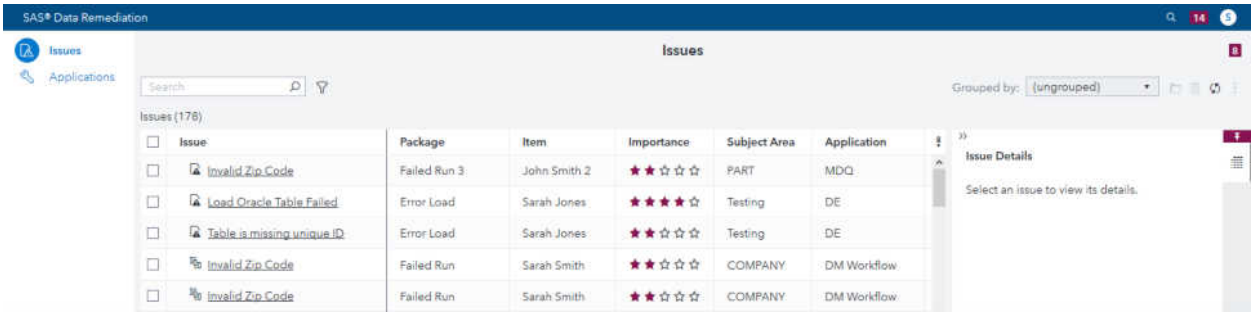
To sign out from SAS Data Remediation, click the icon that represents your user name in the upper right of the SAS Data Remediation window. Then click **Sign out** in the drop-down menu.

Note: When you click **Sign out**, you are signed out from all browser tabs opened by SAS Data Remediation.

View the SAS Data Remediation Application

The SAS Data Remediation application enables you to view issues in a central location.

Note: The following image is an example. Your specific content might be different.



The application bar contains the following options in the upper right corner of the user interface:

- The **Search** option enables you to search for a specific issue by name, date, assigned, and more.
- The **Notifications** option enables you to view email notifications related to issues.
- The icon that represents your user name enables you to access options including **Help Center**, **Settings**, **About**, and **Sign out**.

Specifying Your Settings

Specifying Global Settings

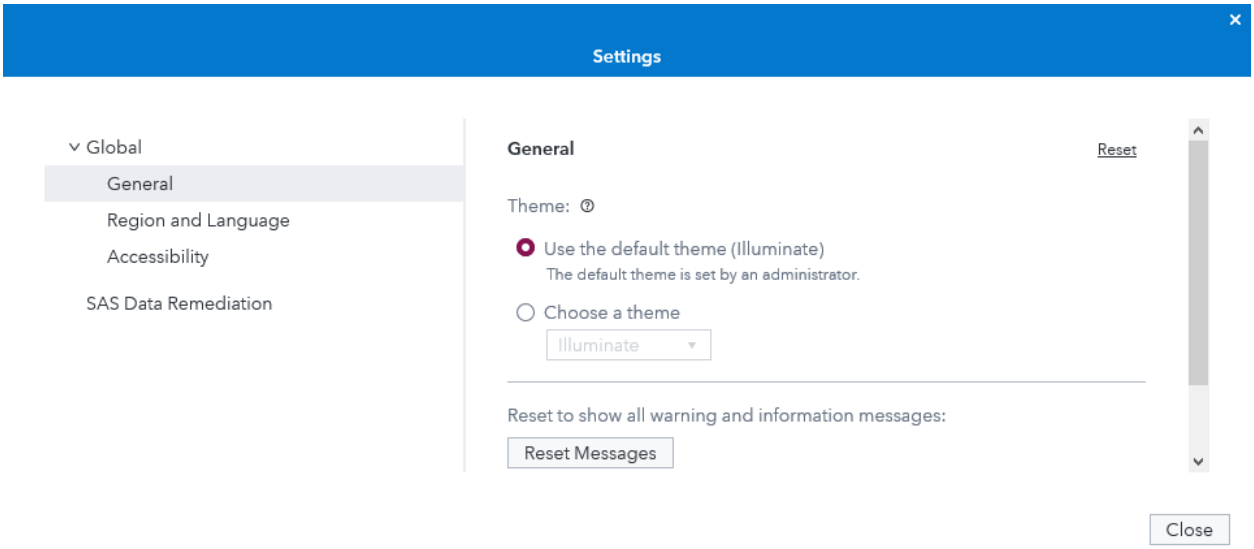
You can specify global settings to apply to all SAS®9 web applications. These preferences are set by each user.

To specify global settings:

1 Click the icon that represents your user name in the upper right of the SAS Data Remediation window.

2 Click **Settings** in the drop-down list to open the Settings window.

Figure 2.1 *Global Settings*



3 By default, **Global** ▶ **General** is selected in the left pane.

4 Change settings in the following sections in the left pane as required:

- The General section enables you to change the color scheme for all your SAS®9 web applications, and to reset all warning and information messages.
- The Region and Language section enables you to specify your language and geographic region.

  Note: If you change the **User locale**, then you must sign out and sign back in to SAS Data Remediation for the change to take effect.
- The Accessibility section enables you to change the following settings:
  - Select the **Enable sounds** check box to hear audio indicators for events that occur in the user interface.
  - Select the **Enable visual effects** check box to show visual effects that indicate state changes.
  - Select the **Adjust the display duration for pop-up notifications** check box to use the slider to change how long pop-up notifications are displayed.
  - Select the **Invert application colors** check box to invert all of the colors in your SAS web applications.
  - Select the **Display tooltips when using the keyboard to navigate** check box to display tooltips and to control where the tooltips appear.
  - Select the **Customize the focus indicator settings** check box to change the color, thickness, and opacity of the focus indicator in your SAS web applications.

5 Your settings take effect immediately. Click **Close** to exit the Settings window.

To restore default settings within a specific section of the global settings:

1 Click **Reset**.

  The Reset to Default Values window appears.

2 Click **Reset** to confirm that you want to reset the settings in that section.

Specifying SAS Data Remediation Settings

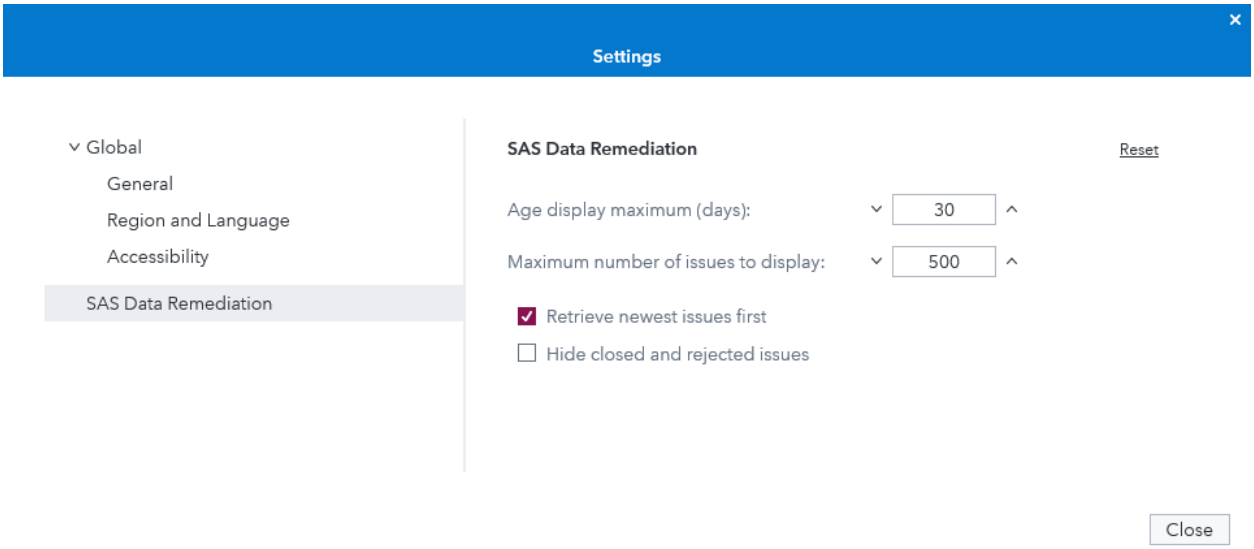
To specify SAS Data Remediation settings:

1 Click the icon that represents your user name in the upper right of the SAS Data Remediation window.

2 Click **Settings** in the drop-down list to open the Settings window.

3 Click **SAS Data Remediation** in the left pane.

Figure 2.2 *SAS Data Remediation Settings*



4 Select a value in the **Age display maximum (days)** field to set the maximum number of days displayed in the **Age** column of the issues list on the **SAS Data Remediation** tab. The default is 30 days.

5 Select a value in the **Maximum number of issues to display** field to set the number of issues returned to the application from the data remediation database. The default is 500 issues.

6 Select the **Retrieve newest issues first** check box to set whether newest or oldest issues are to be retrieved first from the server before any other queue filter or sort order is applied.

7 Select the **Hide closed and rejected issues** check box to hide from view any issues with a status of closed or rejected.

8 Click **Close** to apply your changes.

To restore default settings:

1 Click **Reset**.

The Reset to Default Values window appears.

2 Click **Reset** to confirm that you want to reset the settings.

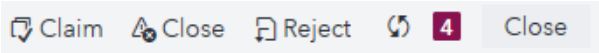
Overview of the SAS Data Remediation Interface

Actions Toolbar

The SAS Data Remediation interface has several common features. The **Actions** toolbar is displayed at the top of any issues that you have opened and at the top of the right pane. The **Actions** toolbar enables you to perform various actions on the selected items in the table, or the currently open issue. The buttons displayed depend on what actions are available for the selected issues.

In the right pane, the **Actions** toolbar uses icons for many functions. Holding the cursor over the icon on the toolbar displays the function of the icon. Clicking the icon performs the function.

When you open an issue, the **Actions** toolbar in the Issues window also displays the number of currently open issues. For example, the following image shows the **Actions** toolbar when four issues are open (including the issue that is being viewed):



Click the number to open a drop-down list containing a list of all open issues. Select an issue in the drop-down list to switch to it.

Note: The number of open issues is not displayed in the **Actions** toolbar in the right pane.

Tables

SAS Data Remediation presents a list of all issues in tabular form. This table shows a subset of the information associated with the issues.

Figure 2.3 *Sample Table*

Issues (4)

Issue	Package	Item	Subject Area
INVALID DATA	Daily Sales Error Package	Sales Div 2	Financial - Total New Sales
INVALID DATA	Daily Sales Error Package	Sales Div 2	Financial - Total New Sales
INVALID DATA	Daily Sales Error Package	Sales Div 2	Financial - Total New Sales
MISSING SALES DATA	Daily Sales Error Package	Sales Div 2	Financial - Total New Sales

To open an issue, you can do any of the following:

- Select an issue and click on the toolbar.
- Right-click a table row and select **Open** from the pop-up menu.
- Double-click a table row.
- Click the link in the Issue column in a table row.

To sort a table column in either ascending or descending order, click the column heading. Sorted columns display up or down arrows to indicate the sort direction.

To hide or display columns, or change the order of displayed columns, click on the right side of the column headings. The Manage Columns window appears, which enables you to perform the following actions:

- To display or hide columns, select the column name in the **Hidden columns** list or the **Displayed columns** list. Then click one of the following icons between the two lists:

Icon	Description
	Adds the selected column to the **Displayed columns** list. Alternatively, double-click a column name in the **Hidden columns** list to move it to the **Displayed columns** list.
	Adds all columns to the **Displayed columns** list.
	Removes the selected column from the **Displayed columns** list. Alternatively, double-click a column name in the **Displayed columns** list to move it to the **Hidden columns** list.
	Removes all columns from the **Displayed columns** list.
	Reverses the previous action. You cannot undo more than one action.

- To change the order of displayed columns, select a column in the **Displayed columns** list and click one of the following icons to change its position:

Icon	Description
	Moves the selected column to the top of the list.
	Moves the selected column up.
	Moves the selected column down.
	Moves the selected column to the bottom of the list.

Panes

You can click icons to expand and collapse elements of the interface:

- Click an icon in the right menu to display the appropriate right pane:

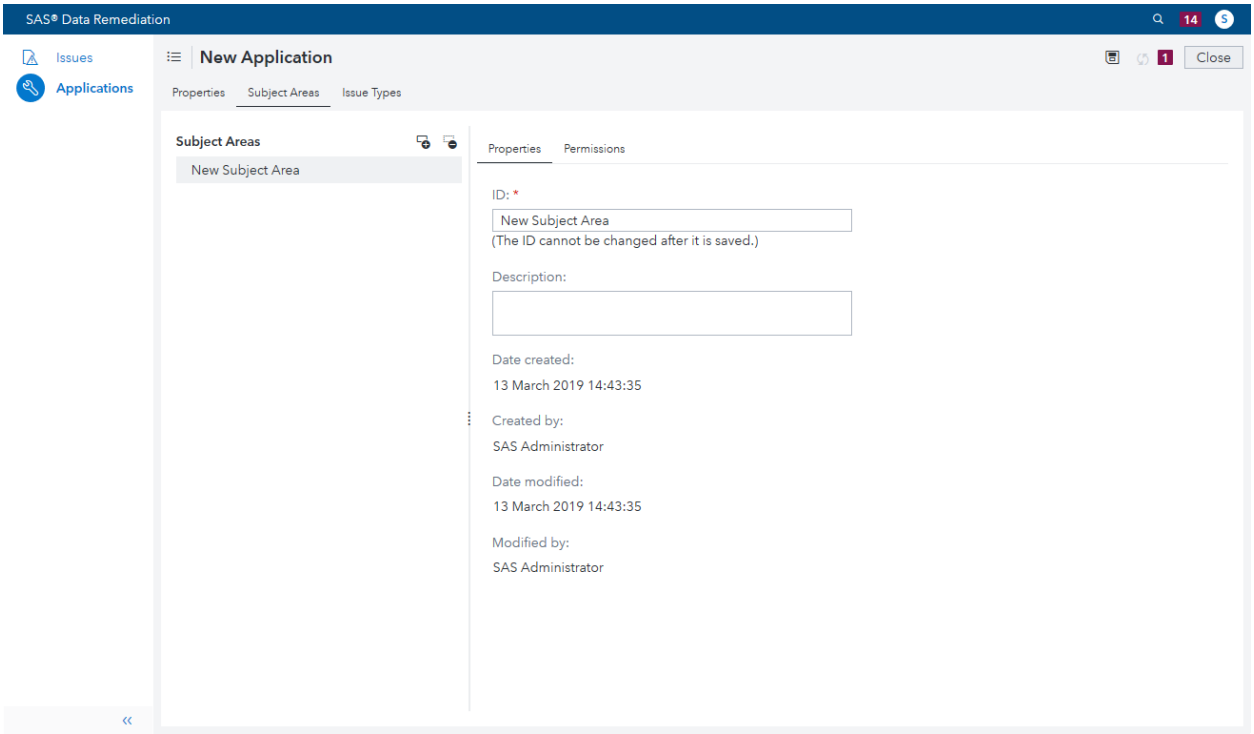
Icon	Description
	Displays or hides the Issue Details pane.
	Displays or hides the Issue Data pane.
	Displays or hides the Task Data pane.

- Click to pin the current pane in place. Click to unpin the pane.
- Click » to collapse the right pane.

Fields

Required fields on the interface are marked with an asterisk (*). Read-only fields appear without a border.

Figure 2.4 *Fields*



For date fields, click  to display a calendar. From the calendar, click a valid date to load it into the field. Click the navigation buttons to change the month and year. Click anywhere outside the calendar to hide it.

3

Understanding SAS Data Remediation Administration

Working with SAS Data Remediation Administration

Overview

The Applications window provides a work area where the administrator configures settings, sets access controls, and plans permissions within SAS Data Remediation views. The administrator sets up each application that interacts with SAS Data Remediation and includes the name of the application, subject areas, and issue types.

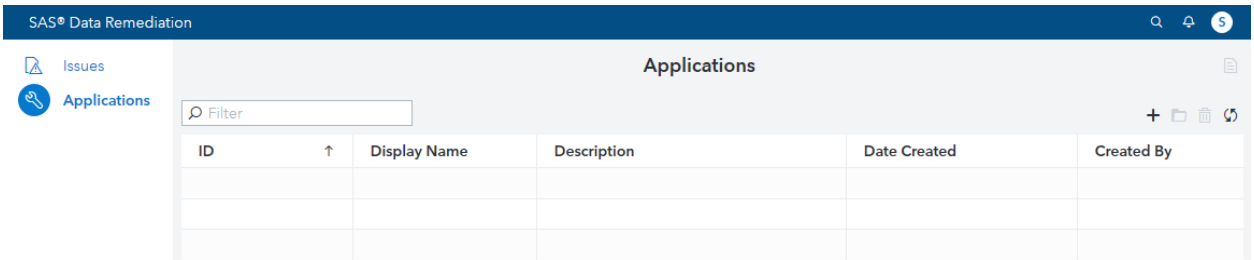
Note: The Applications window is available only to users with administrator privileges, that is, the Data Remediation: Issue Administration role. For more information, see "SAS Data Remediation Roles" on page 34.

Applications Window

Overview

To open the Applications window, click the **Applications** option in the left pane. From here, you can add new client applications for data remediation or view and edit existing applications.

Figure 3.1 Applications Window



The toolbar at the top of the window contains the following icons:

Icon	Description
+	Adds a new client application used to interact with SAS Data Remediation.
	Opens the remediation record for the client application that is selected in the table.
	Removes the client application that is selected in the table.
	Refreshes the list of client applications.

Adding and Editing Client Applications

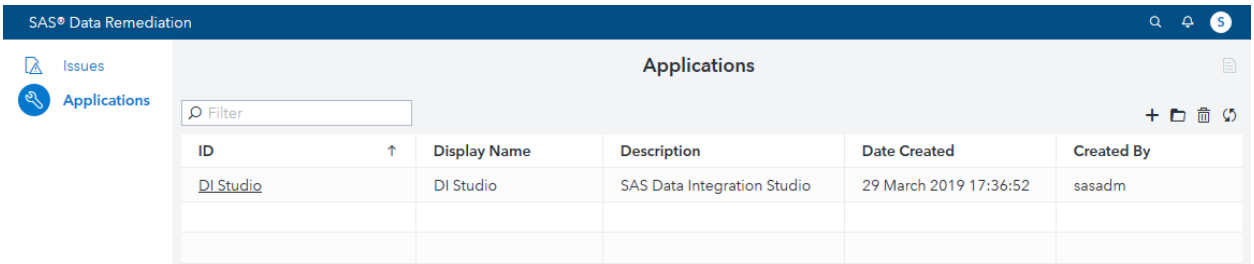
When the Applications window first opens, no applications are associated with the software. You can configure any client applications that you want to use within SAS Data Remediation. Alternatively, the first time an issue is created for an application that does not already exist in SAS Data Remediation, the application is automatically added

to the application list. Applications that are added automatically use default settings. For example, no user interface is configured.

To add an application to SAS Data Remediation, click +.

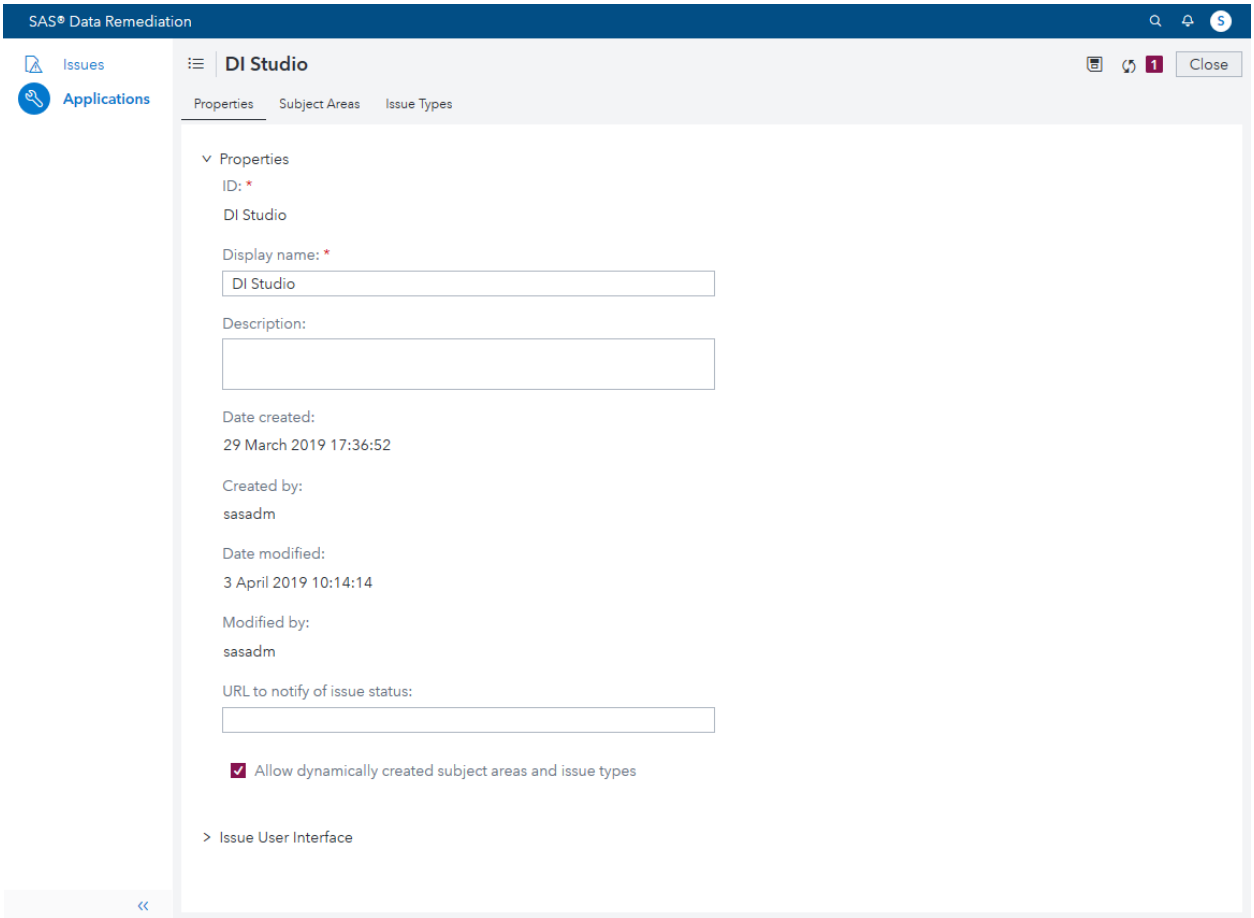
To edit an existing application, either select the application in the application list and click 🗀, or click the link in the ID column.

Figure 3.2 *Applications Window*



After you add or open an application, a new window opens with three tabs: **Properties**, **Subject Areas**, and **Issue Types**.

Figure 3.3 Application Tabs



The toolbar at the top of the window contains the following icons:

Icon	Description
	Saves changes to the application information.
	Refreshes the information about the client application.
4	Indicates the number of applications that you have opened in the Applications window. To view another opened application, click on this indicator and select the opened application from the drop-down list.

Icon	Description
Close	Closes the remediation record for the application. If you have unsaved changes, you are prompted to save them.

The **Properties** tab is displayed by default. The following sections describe the use of these tabs for adding or editing applications.

Properties Tab

The **Properties** tab displays the following fields:

ID [required]
a unique identifier. When this field is saved, you cannot make changes to the ID.

Display Name [required]
the name that is displayed for the client application.

Description
the description of the application.

Date created
the date on which the application was added to SAS Data Remediation.

Created by
the user name of the person who added the application to SAS Data Remediation.

Date modified
the date on which the application information was last changed.

Modified by
the user name of the person who last changed the application information.

URL to notify of issue status
the URL invoked when issue status changes have been made. This does not apply to issues that are in a transitional status in the workflow. To produce similar behavior from a workflow instance, the same user-supplied URL would have to be called from a workflow web service policy when the workflow status changes.

Allow dynamically created subject areas and issue types
enables applications to create subject areas and issue types through REST API web service calls. When this is disabled, subject areas and issues types must be defined first in this application before new issues can be created from external applications that refer to them.

In addition, the **Properties** tab contains the following fields in the **Issue User Interface** section, which is collapsed by default:

No user interface configured
selecting this option prevents users from taking corrective action on the data that originally contained the issue. Only issue tracking properties such as Importance or Assignee are enabled. To edit the data, you must use an external application such as the original application that the data was created in.

If this option is selected, any issues associated with this application contain only the **Issue Details** tab and **Issue Data** tab, but not the **<Application>: Actions** tab.

Use default remediation UI and retrieve/send remediation item attributes and actions using HTTP
selecting this option enables you to specify a server that supports external REST web services. This option enables an additional tab, **<Application>: Actions**, in any issues associated with this application. The **<Application>: Actions** tab enables users to take corrective action on the data from within SAS Data Remediation using a simple edit form. For more information, see “Managing Issues” on page 41.

This functionality is available only if an external set of REST web services is available to read and write data. When you choose to access an issue configured to use this option, the REST call is used to GET the external data, which is presented for editing. When you invoke the Save operation, the PUT web service is called to send the data back to the external application.

URL to retrieve item attributes (GET)
the URL invoked when SAS Data Remediation opens an issue to retrieve data from an external process. Design the custom REST web service so that the HTTP call that uses the GET function retrieves one data row.

URL to send item attributes (PUT)

the URL invoked when SAS Data Remediation accepts the correction and sends the data back to an external process. Design the custom REST web service so that the HTTP call that uses the PUT function takes data elements from one row in data remediation and sends it to the external process.

Use default remediation UI and retrieve/send remediation item attributes and actions using Data Management Server

selecting this option enables you to specify a Data Management Server. This option enables an additional tab, **<Application>: Actions**, in any issues associated with this application. The **<Application>: Actions** tab enables users to take corrective action on the data from within SAS Data Remediation. For more information about the **<Application>: Actions** tab, see "Managing Issues" on page 41.

Server address

the URL for SAS Data Remediation to access the Data Management Server used to retrieve and send remediation processes.

Real-time service to retrieve item attributes

the data service job in Data Management Server invoked when SAS Data Remediation opens an issue to retrieve data from an external process.

Real-time service to send item attributes

the data service job in Data Management Server invoked when SAS Data Remediation accepts the correction and sends data to remediation.

If you configure the user interface to retrieve and send remediation item attributes and actions using either HTTP or Data Management Server, an additional tab, **<Application>: Actions**, is displayed in any issues relating to that application. This tab contains the data retrieved from the external application. For more information, see "Managing Issues" on page 41.

Note: If you encounter problems with the host name in your URL, please contact technical support.

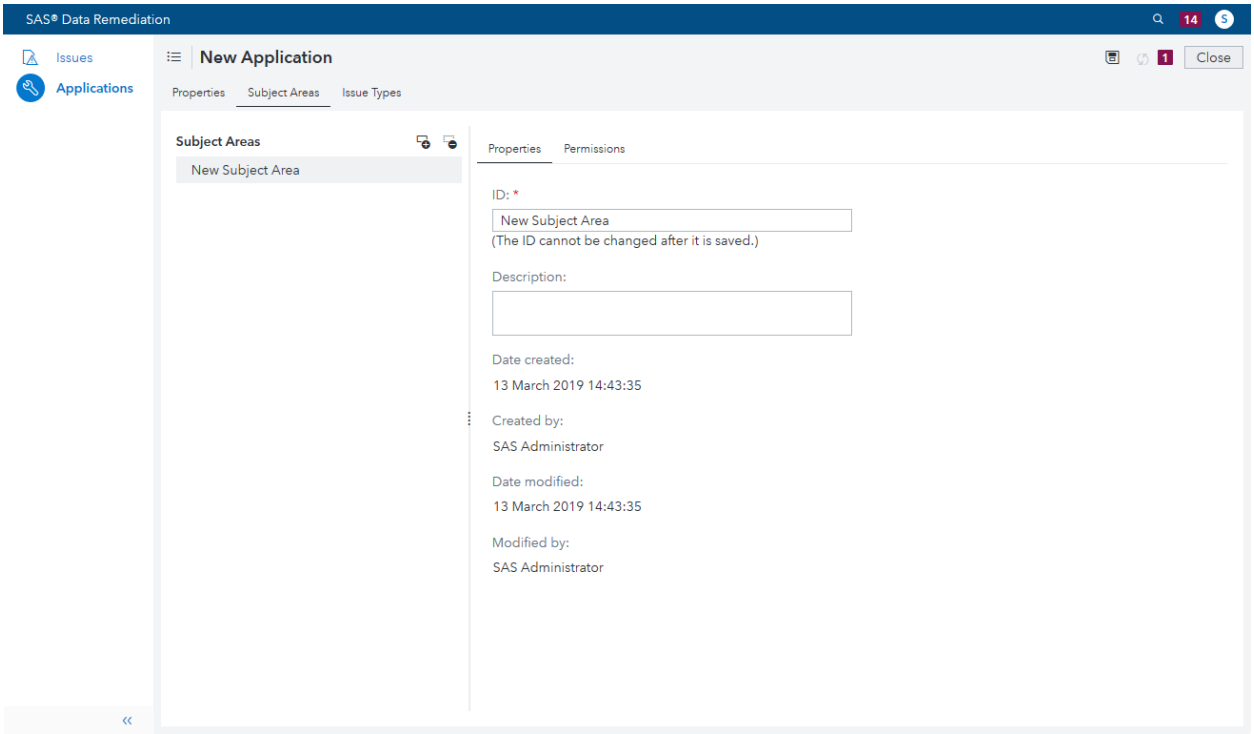
Subject Areas Tab

Overview

The **Subject Areas** tab displays a list of subject areas that have been defined on this tab or defined through a web service call made by another application. A subject area is a way to categorize remediation issues. You can specify that only certain users are given access to a subject area. From this tab, you can also add subject areas to and delete them from the application.

The **Subject Areas** tab is divided into three sections: a list of subject areas in the left pane, a **Properties** tab, and a **Permissions** tab. The **Properties** tab is displayed by default.

Figure 3.4 *Subject Areas Tab*



The toolbar at the top of the left pane contains the following icons:

Icon	Description
	Creates a new subject area in the subject areas list.
	Removes a selected subject area from the subject areas list. If you remove a subject area that is associated with open issues, the subject area is added to the subject areas list again. As a result, remove a subject area only when it is not associated with any open issues. **Tip:** The selected subject areas are removed only when you click to save the application information. If you accidentally remove a subject area, close the remediation record by clicking **Close** in the **Actions** toolbar and select **Don't Save** when prompted.

Properties Tab

The **Properties** tab displays the following fields for the subject area selected in the subject areas list:

ID [required]
: the subject area ID. When you save this ID, you cannot change the field.

Description
: the description of the subject area.

Date created
: the date on which the subject area was created.

Created by
: the user name of the person who created the subject area.

Date modified
: the date on which the subject area was last changed.

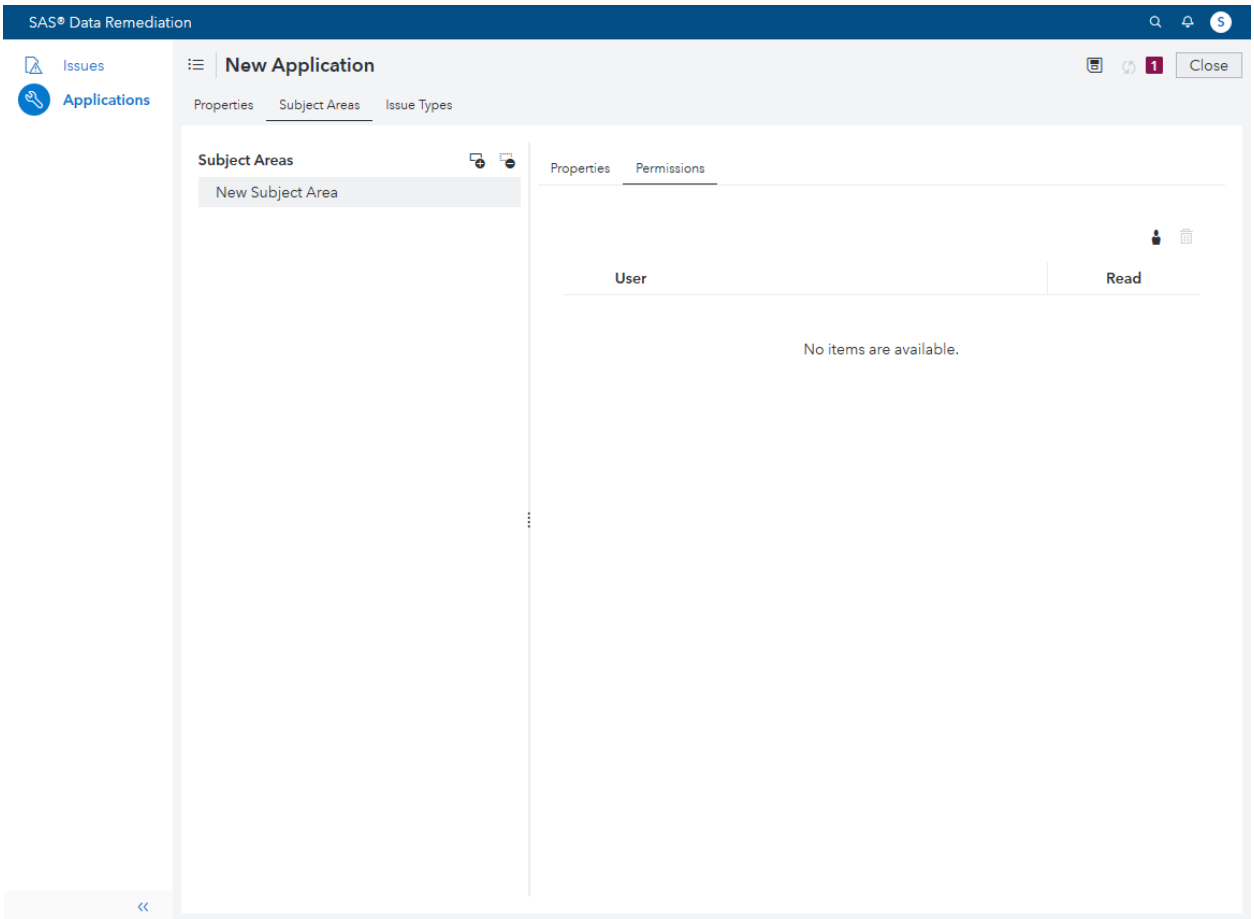
Modified by
: the user name of the person who last changed the subject area.

Permissions Tab

On the **Permissions** tab, you can control which SAS Data Remediation users can access issues associated with the subject area, and whether they have only Read-Only access to them.

The list of available users here is the set of users added through SAS Management Console who have been assigned roles that use capabilities defined for SAS Data Remediation. Users defined in SAS Management Console who are not assigned a role using SAS Data Remediation capabilities do not appear in the list of users. For more information about roles, see "SAS Data Remediation Roles" on page 34. For information about SAS Management Console, see *SAS Management Console: Guide to Users and Permissions*.

Figure 3.5 *Subject Areas Permissions Tab*



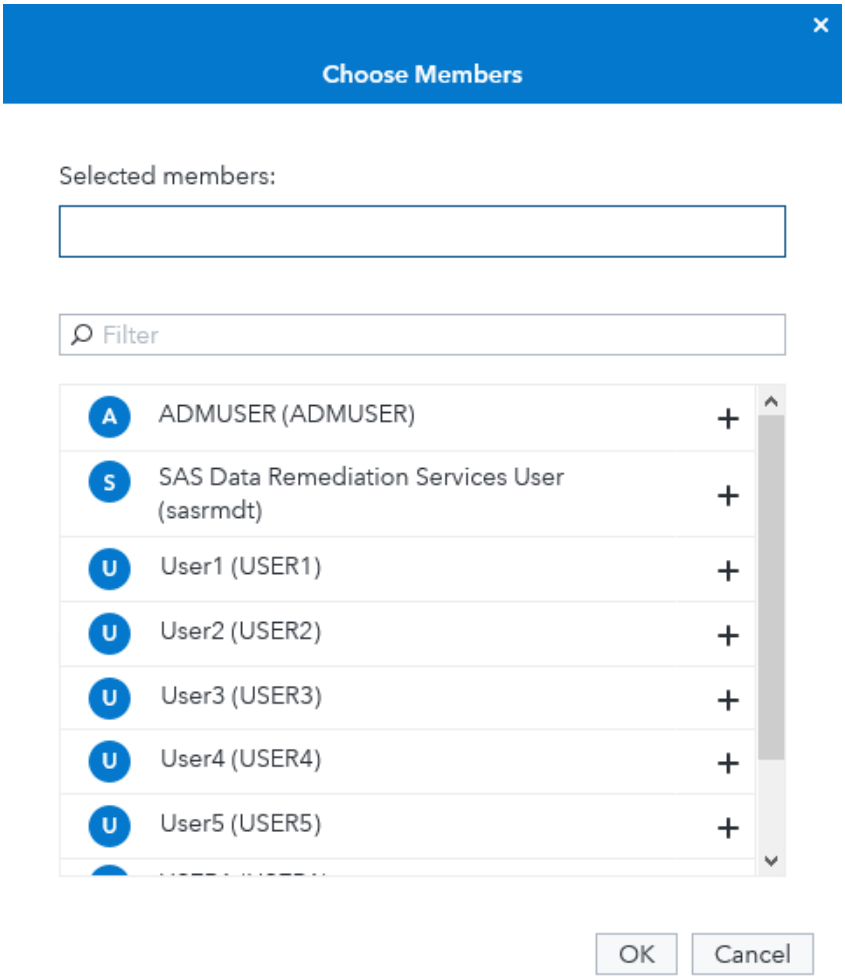
The toolbar at the top of the tab contains the following icons:

Icon	Description
	Enables you to select users who have permissions on the selected subject area.
	Deletes the selected user from the list of users who have permissions on the selected subject area. You can select multiple users for deletion.

To select users:

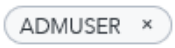
1 Click . The following window appears:

Figure 3.6 *Choose Members Window*



2 (Optional) Enter characters into the search field. The list of users is filtered by the search criteria as you enter characters. Click ⊗ to clear the search field and restore the full list of users.

3 Click on each user that you want to add to the list of selected members. A user token for each user is added to the **Selected members** field. For example:



To remove a user from the **Selected members** field, click × in the appropriate user token.

4 Click **OK**.

The Choose Members window closes and the selected users are listed in the **Permissions** tab.

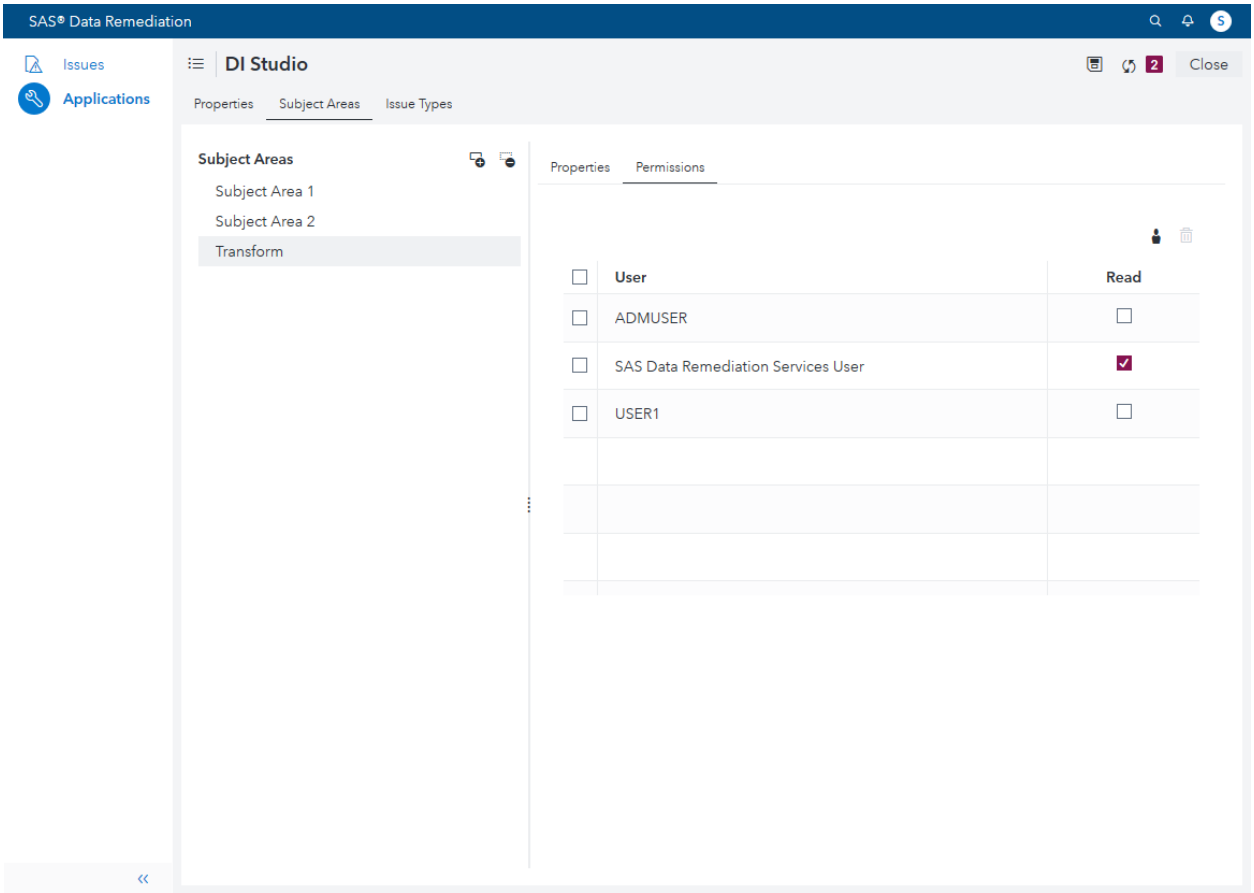
Note: You can remove multiple users directly from the **Permissions** tab. Enable the check box to the left of each user that you want to remove and then click 🗑. To select all users that are listed in the **Permissions** tab, enable the check box in the header row.

If no permissions are set (that is, if no users are listed in the **Permissions** tab), all users of SAS Data Remediation can see all data issues for a given subject area.

Important: If you choose to add users for a particular subject area, you are disallowing access for all non-selected users.

You can choose to assign Read-Only access to some users. To enable this, select the **Read** check box next to the user name after it has been added to the permissions table.

Figure 3.7 Subject Areas Permissions Tab



Issue Types Tab

Overview

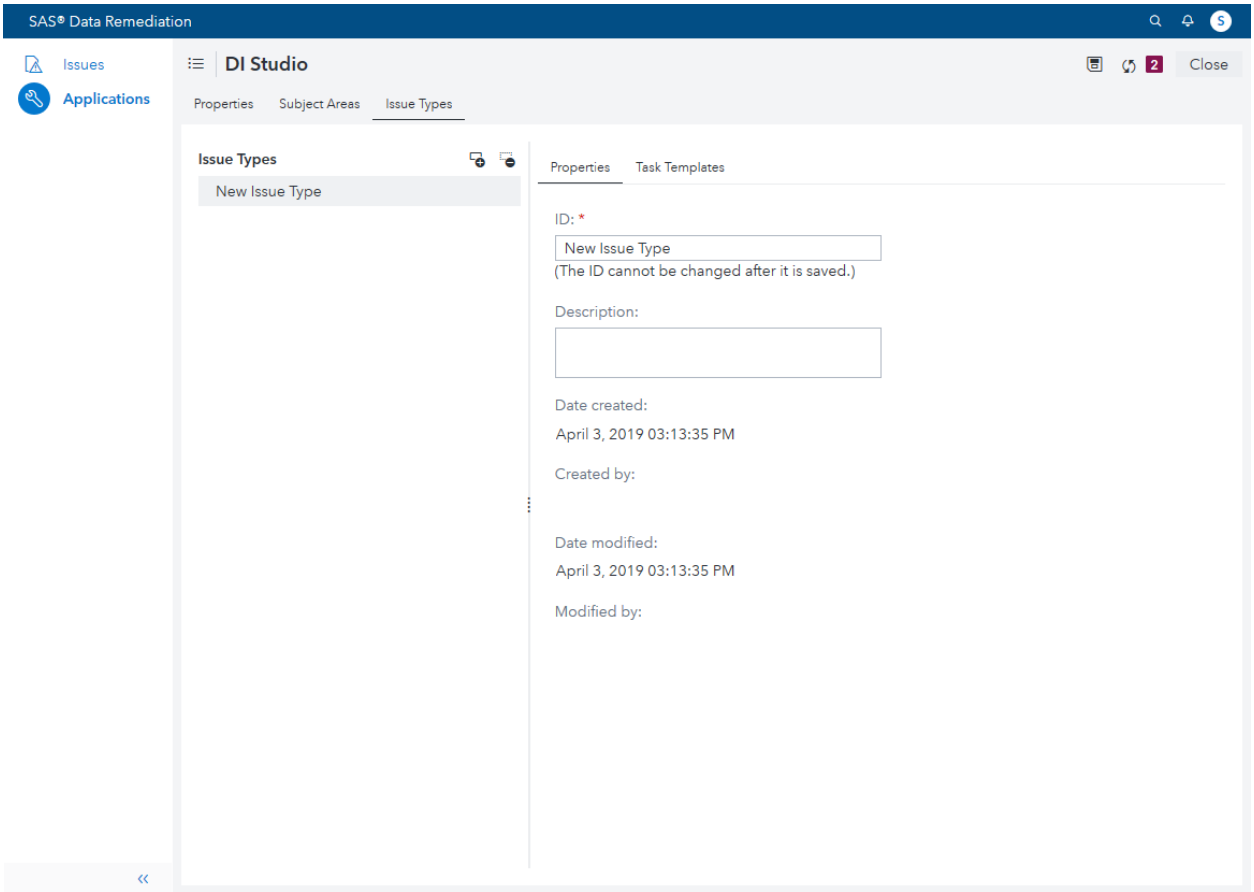
The **Issue Types** tab displays a list of issue types identified by the application that you are currently viewing. Issue types are a way to categorize issues, making it easy to sort and filter a set of issues before working with them.

Issue types can be associated with Task Templates. These templates are user-defined workflows that can be used to route issues to the right user or through the right process.

From the **Issue Types** tab, you can add new issue types to the application, edit existing issue types, or delete issue types. The **Issue Types** tab is divided into three sections: a

list of issue types in the left pane, a **Properties** tab, and a **Task Templates** tab. The **Properties** tab is displayed by default.

Figure 3.8 Issue Types Tab



The toolbar at the top of the left pane contains the following icons:

Icon	Description
	Creates a new issue type in the issue types list.
	Deletes the selected issue type from the issue types list. Issue types cannot be deleted unless all issues that refer to that issue type have been deleted from the system by using the Delete Package functionality. The Delete action is enabled only for issue types that meet this criterion.

Properties Tab

The **Properties** tab displays the following fields for the issue type selected in the issue types list:

ID [required]
: the issue type ID. When you save this ID, you cannot change the field.

Description
: the description of issue type

Date created
: the date on which the issue type was created.

Created by
: the user name of the person who created the issue type.

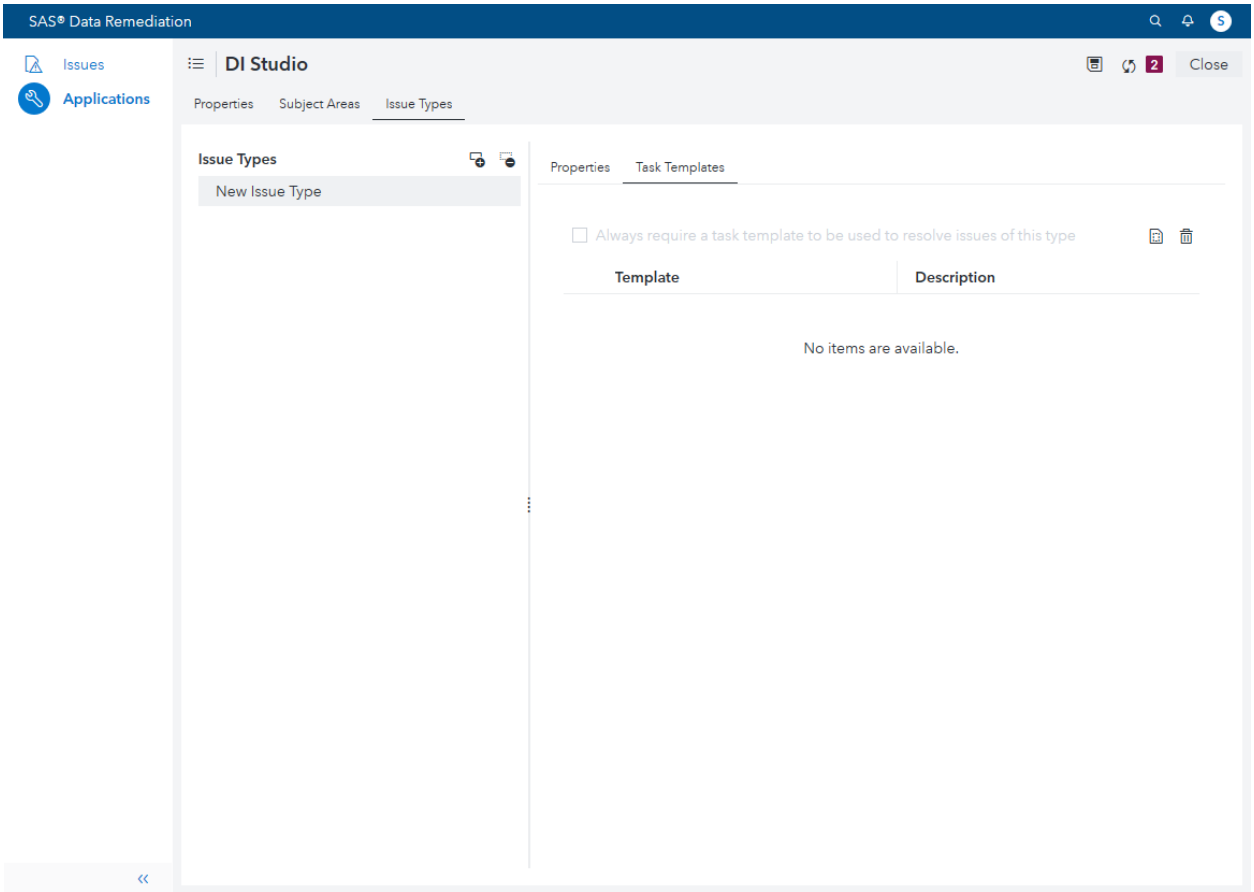
Date modified
: the date on which the issue type was last changed.

Modified by
: the user name of the person who last changed the issue type.

Task Templates Tab

On the **Task Templates** tab, you can view the workflow templates that have been uploaded through SAS Workflow Studio to the SAS Workflow server and activated. You can associate one or more task templates (workflow definitions) with the selected issue type. For more information about SAS Workflow Studio, see *SAS Workflow Studio 1.3: User's Guide*.

Figure 3.9 Issue Types Task Templates Tab



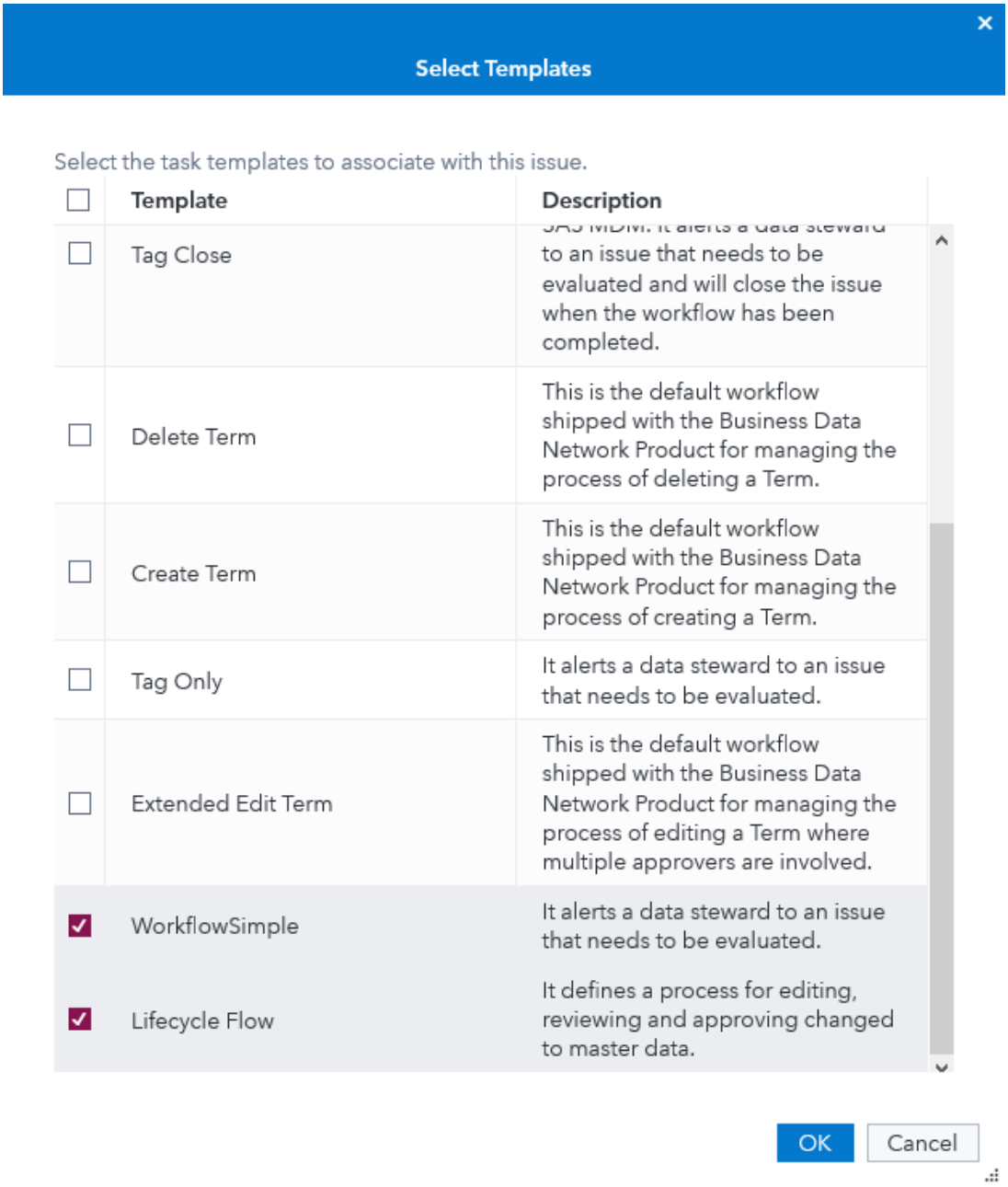
The toolbar at the top of the left pane contains the following icons:

Icon	Description
	Enables you to select task templates (workflow templates) to associate with the issue type selected in the issue types list.
	Deletes the selected task templates associated with the issue. You can select multiple task templates for deletion.

To select templates:

1 Click . The following window appears:

Figure 3.10 Select Templates Window



2 Select the tasks that you want to associate with this issue type by enabling the check box to the left of each template. To select all templates, enable the check box in the header row.

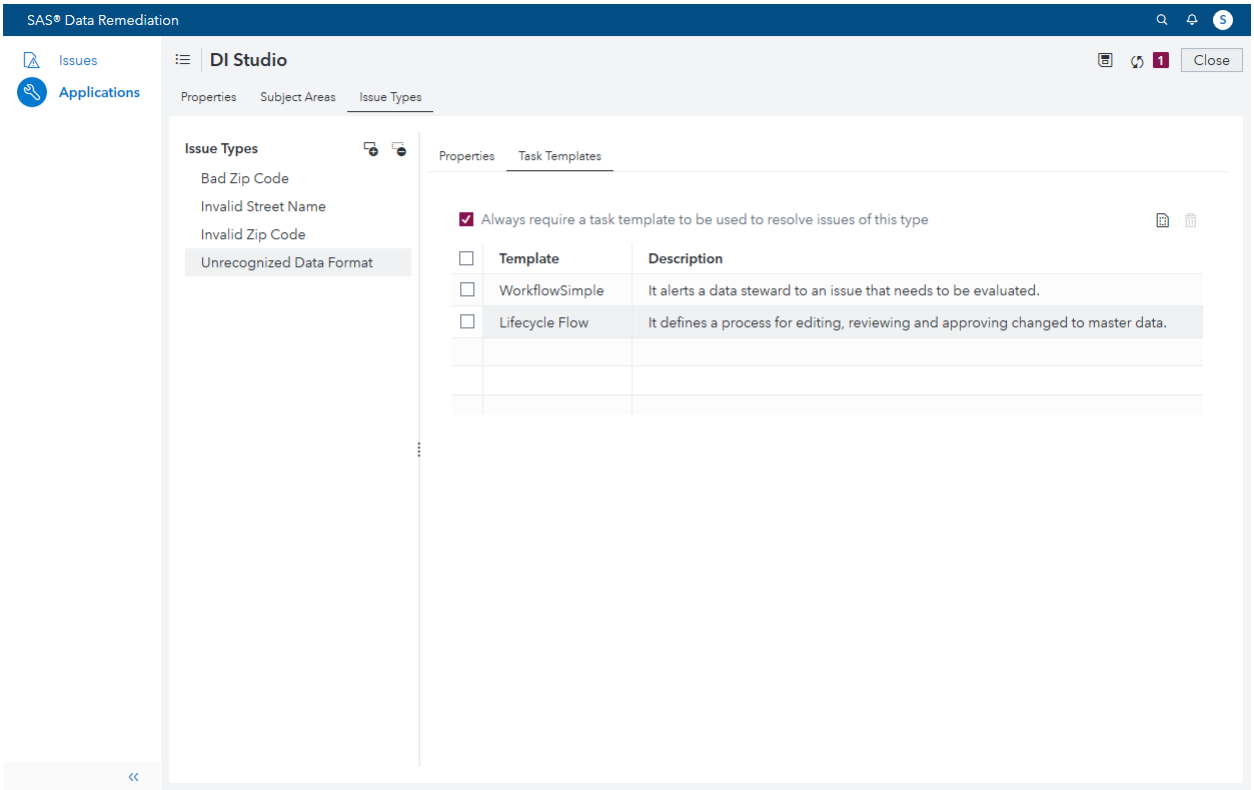
3 Click **OK**.

The Select Templates window closes and the selected templates are listed in the **Task Templates** tab.

You can require a user to address a remediation issue through a defined workflow. To enable this, select the **Always require a task template to be used to resolve issues of this type** check box. If this option is selected, when an external system creates a new remediation issue, it must provide the name of one of the approved workflow templates for the selected issue type. If a workflow template is not provided or is incorrectly specified, the issue is not created. When the workflow has started, the workflow design provides additional menu actions.

If this setting is applied to an issue type after issues of that issue type have already been created in the system, those existing issues are not affected by the change. If this setting is disabled after issues have already been created and workflows have been started for them, the existing issues continue to use workflows while any new issues do not require them.

Figure 3.11 Issue Types Task Templates Tab



SAS Data Remediation Roles

SAS Data Remediation creates three new roles in SAS Management Console. These roles are tied to distinct capabilities in the data remediation application. Depending on assigned role of the user, the experience in SAS Data Remediation changes. Certain features are available to those assigned one role, but the same features are not available to users in another role.

Here are the roles for SAS Data Remediation:

Table 3.1 SAS Data Remediation Roles

Role	Default Groups	Capability
Data Remediation: Issue Administration	Data Management Administrators	■ View Application: The user can view packages, items, and issues. ■ Manage Issues: The user can edit packages and issues. ■ Issue Administration: The user can configure SAS Data Remediation applications, subject areas, and issue types.
Data Remediation: Issue Management	Data Management Stewards	■ View Application: The user can view packages, items, and issues. ■ Manage Issues: The user can edit packages and issues.
Data Remediation: Issue View	Data Management Business Users	■ View Application: The user can view packages, items, and issues.

Logs

Logs for SAS Data Remediation can be found on the application server that hosts it. They are typically found in a location similar to the following:

SAS Data Remediation

```
..\Config\Lev1\Web\Logs\SASServer13_1\SASDataRemediation.log
```

Other logs that might be useful for troubleshooting might not be on the same system as SAS Data Remediation. Examples are as follows:

SAS Workflow

```
..\Config\Lev1\Web\Logs
\SASServer1_1\SASWorkflowServicesx.x.log
```

SAS Metadata Server

..\Config\Lev1\SASMeta\MetadataServer\Logs

4

Understanding SAS Data Remediation

Working with SAS Data Remediation

Overview

The Issues window enables you to take action necessary to resolve data issues. An issue is a problem caused by a conflict with user-defined business rules that has been found in data or a process. An item is a record that is associated with an issue. A package is a collection of items and issues. The package can originate from any system your enterprise uses to store and process data.

Your system administrator defines applications in SAS Data Remediation that send data remediation issues to the data remediation environment. Applications can be used to correct data issues. Subject areas categorize the data in such a way that groups of users are given access only to the necessary domain.

Working with Issues

SAS Data Remediation is designed to manage a practical number of issues assigned to it by an application. A practical number of issues means that they can be reasonably managed by the data stewards assigned to the task. For example, it would be unreasonable for SAS Data Remediation to track 50,000 issues a week because, without a large number of data stewards, it would not be possible to review and correct all of these issues. In order for the web application to remain responsive to user control, it can display only a limited number of issues at a given time.

SAS Data Remediation has a setting that enables you to control the maximum number of issues that are retrieved at any given time in the SAS Data Remediation application views. For more information about this setting, see "Specifying SAS Data Remediation Settings" on page 9.

It is possible to set the maximum number of issues to be viewed to a value that is less than the total number of issues in an item or package. In this case, use a combination of sorting and filtering in the appropriate view to see all of the data in the remediation database that might be relevant. For example, a default view for items might show only the first 500 items. If too many issues are in the queue to be displayed, ⚠ is displayed in the toolbar at the top left of the Issues window.

You can use a filter to limit that list to only the items with issues that you own and that have been open for longer than one week. After refreshing the view, you see updated data with your filter applied. The maximum number limit is applied after the filter is applied. Users can work through the entire set of remediation issues, while ensuring that the web application continues to work optimally, by applying selective filters to data and refreshing the view periodically to retrieve the latest issues.

Table 4.1 *Database Limitations*

Field	Maximum Length
name for remediation task	50
name for remediation item	50

Field	Maximum Length
name for remediation issue	50
user defined field label	50
user defined field value	1000
task desc	1000
issue note	4000

Issues Window

Quick Search

The Issues window displays a table containing a complete list of issues. You can use either a quick search or an advanced filter to narrow this list to the issues that you want to view.

To perform a quick search:

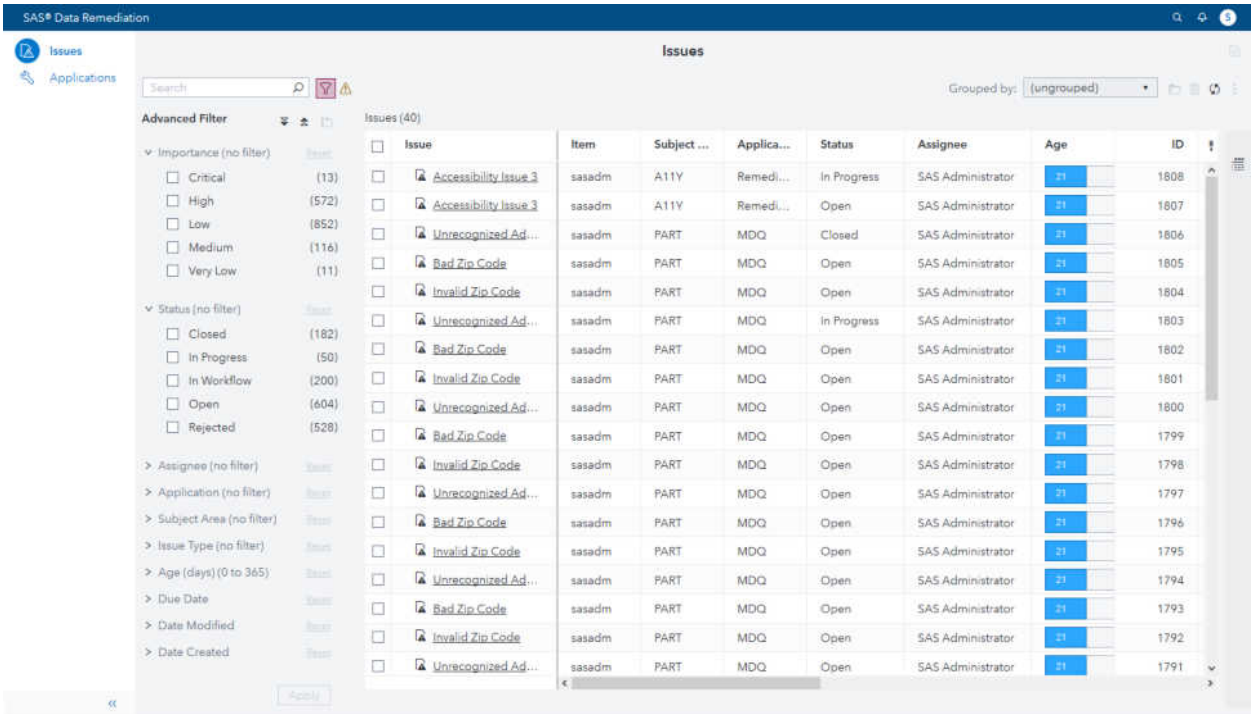
1. Enter the search term into the search field in the toolbar at the top left of the window.
2. Do one of the following:
   - Click to start the search.
   - Click to clear the search text. The complete issues list is displayed again.

Advanced Filter

To perform advanced filtering:

1. Click to display Advanced Filter options:

Figure 4.1 *Advanced Filter Options*

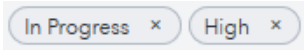


2 You can perform any of the following actions:

- Click to expand all the filter categories.
- Click to collapse all the filter categories.
- Click to restore the filter options to their default settings.
- Click **Reset** next to a filter category to reset all options within that category.
- Click again to close Advanced Filter options.

3 After specifying the filter criteria, click **Apply** to apply the filter.

In the table, the list of issues is updated to match the selected filters. A filter token is displayed above the list of issues for each selected filter. For example:



Note:

- To remove an individual filter, click × in the appropriate filter token above the list of issues. The list of issues is updated automatically.
- To remove all advanced filters and view the complete issues list again, click ↺. All filters are removed and the list of issues is updated automatically.

Managing Issues

The toolbar contains a drop-down list that enables you to group the entries in the table in a number of ways. For example, you might choose to group the entries by **Issue Type**, **Item**, or **Package**, among others. The default is **ungrouped**, which displays the complete list of issues.

Note: To group issues by exactly the same item or package, use the group by options for **Item ID** and **Package ID**. If you choose to group by **Item** or **Package**, issues might appear in the grouping that share the same label for the item or package, but might actually refer to different underlying data.

The toolbar contains the following icons:

Icon	Description
🗀	Opens the issue selected in the issues table. Selecting multiple issues and then clicking 🗀 displays the first opened issue. To view the other opened issues, click on the **Opened items** indicator on the toolbar (for example, 4) and select the opened issue from the drop-down list. The actions available in the opened issue are dependent on the application in which the issue is found.
🗑	Deletes the selected package when the table is grouped by **Package ID**. Deleting a package is the only way to delete items and their associated issues.
↻	Refreshes information in the issues table.

If you have chosen to group items such that folders are displayed in the table entries, the navigation overflow menu ⋮ is enabled, which contains the following additional options:

Expand Selected
expands the folder selected in the table.

Expand All
expands all the folders in the table.

Collapse Selected
collapses the folder selected in the table.

Collapse All
collapses all the folders in the table.

Note: You can also access these additional options, if available, by right-clicking on the issues table.

The right pane selector contains icons that enable you to display two, and possibly three, panes to the right of the table. These panes contain most of the information available in the tabs in an opened issue. However, some additional functionality might be available if you open the issue rather than viewing it in the right pane.

The right pane selector contains the following icons:

Icon	Description
	Displays or hides the Issue Details pane. This pane contains details of selected rows in the issues table, and includes all the data that is displayed on the **Issue Details** tab in an opened issue. Changes made in the Issue Details pane are saved immediately. The Issue Details pane does not have a save button. **Note:** If you have chosen to group items such that folders are displayed in the table entries, you can select a group rather than an issue. In this case, the Issue Details pane contains summary information about the issues within the selected groups.
	Displays or hides the Issue Data pane. This pane contains data about the selected issue, and includes all the data that is displayed on the **Issue Data** tab in an opened issue.

Icon	Description
	Displays or hides the Task Data pane. This pane contains data about the task, and includes all the data that is displayed on the **Task Data** tab (if available) in an opened issue. **Note:** The Task Data pane is available only if a task has already been created for the selected issue and the user is a participant in the task.

To open an issue, click on the link for the item in the Issue column. The selected issue is opened.

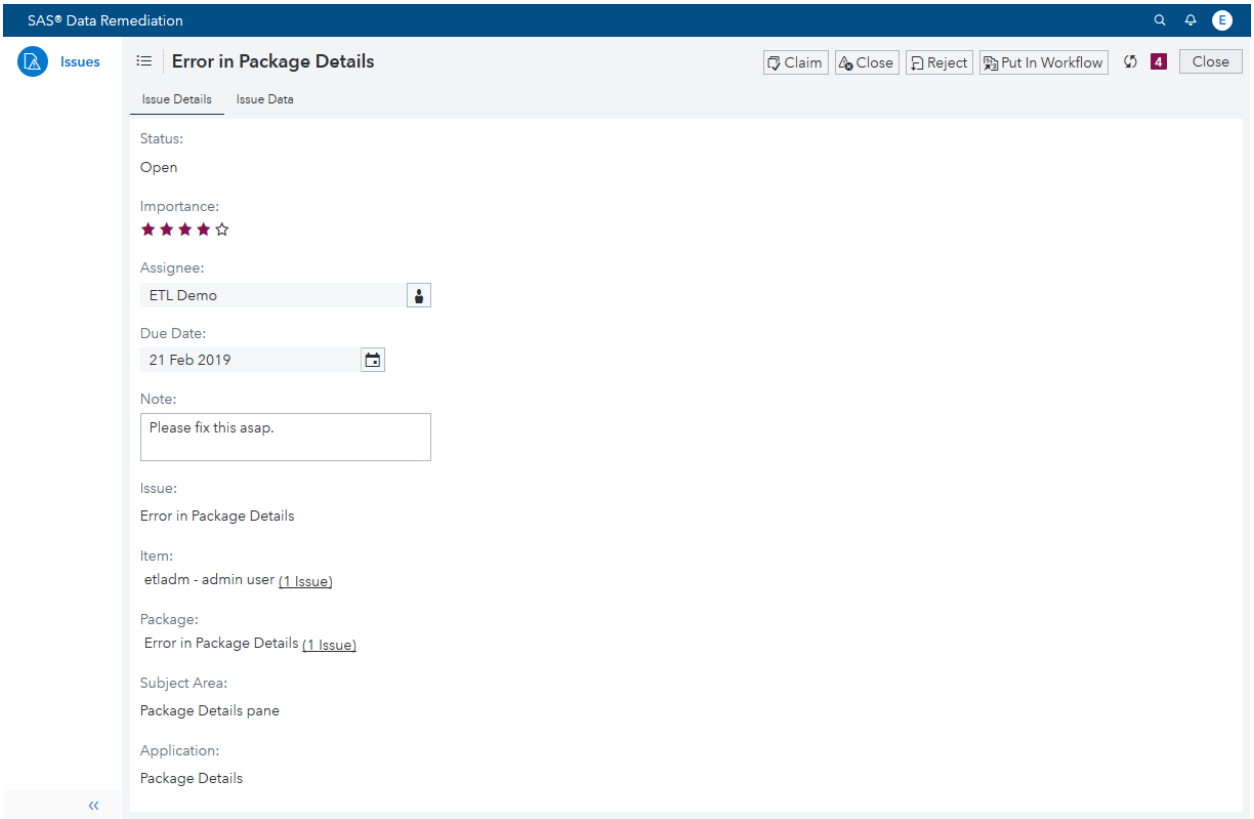
To return to the issues list (that is, to view all items), click at the top left of the issue.

All issues contain at least two tabs: **Issue Details** and **Issue Data**. An issue might also contain one of the following additional tabs:

- **Task Data** tab. This tab is available only if a task has already been created for the issue, you are one of the assignees for the issue, and you are a participant in the task.
- **<Application>: Actions** tab (for example, **MDQ: Actions** or **DI Studio: Actions**). This tab is available only if the application has been configured to allow corrective action to be taken from within SAS Data Remediation, and the issue is not currently in workflow.

By default, when you open an issue, the **Issue Details** tab is selected. The **Issue Details** tab displays details about the opened issue:

Figure 4.2 Issue Details



Note: If a task has already been created for the issue, the options available in the **Actions** toolbar depend on the SAS Workflow Studio workflow template associated with the issue. For example, the **Actions** toolbar might contain **Send to Reviewer**, or **Approve** and **Reject**. For more information, see "Workflow Integration" on page 59.

In an opened issue, the **Actions** toolbar contains the following buttons. These actions can also be performed from the right pane in the Issues window, using the equivalent

icons shown in the table below. For more information about using panes, see "Panes" on page 12.

Button	Icon	Description
Claim		Claims the issue. This assigns the issue to you as Assignee and sets the issue to a status of In Progress. After you have claimed the issue, this button changes to **Release** (or in the right pane), which enables you to release the issue.
Release		Releases the issue. This sets the issue to a status of Open, so that others can claim the issue, but leaves the current Assignee unchanged.
Close		Closes the issue when it is resolved. An issue with a closed status cannot be changed. Information about the closed status can be entered in the **Note** field.
Reject		Rejects the issue when it is invalid. Information about the invalid issue can be entered in the **Note** field.
Put In Workflow		Creates a new workflow instance for the selected issue. This button is available only if you have associated one or more task templates with the issue type of the selected issue. **Note:** Clicking opens a window where you can associate a SAS Workflow Studio workflow template with the issue.

Note: When using the right pane, if an individual issue is selected in the issues list, the **Actions** toolbar is displayed at the top of the pane. If multiple issues are selected, the following limitations apply to the right pane:

- The **Actions** toolbar is not displayed.
- If different types of selected items are selected, `(mixed selection)` is displayed.
- If a read-only field does not contain the same value in all the selected items, `(mixed values)` is displayed in the field.
- Any actions that you perform using the **Actions** toolbar apply to all selected issues. For example, if you click , all selected issues are closed. If the action

cannot be performed on all of the selected issues (for example, if one of the issues is already closed), ⚠ is displayed in the **Actions** toolbar in the right pane.

- Any changes that you make to individual fields apply to all selected issues. For example, if you change the importance to critical (5 stars), this is applied to all selected issues.

On the **Issue Details** tab, you can view or edit specific information about the issue. Changes made on the **Issue Details** tab are saved immediately. The **Issue Details** tab does not have a save button.

The **Issue Details** tab displays the following fields:

Status

is the current status of the issue, such as Open, In Progress, Closed, or Rejected. If a task was created for the issue, then the workflow supplies the status, depending on the current step in the workflow.

- **Open** is the initial status of a data remediation issue. This status can also be selected if the assigned owner wants to reassign the issue to a new owner.
- **In Progress** indicates that ownership has been accepted and the issue is being actively addressed. Users other than the assigned owner cannot work on the issue.

  Note: When you select a status of **In Progress**, you automatically become the **Assignee** for the issue.
- **In Workflow** indicates that a data remediation issue is being actively addressed in the workflow. Users other than the participants in the workflow cannot work on the issue.

  Note: After the workflow is completed, the **Assignee** is automatically set to the initiator of the workflow and the status is changed to **Open**. If the initiator is the current user, the status of the issue is set to **In Progress**.
- **Closed** indicates that a data remediation issue is resolved. An issue cannot be changed from a **Closed** status. Enter resolution information in the **Note** field before closing the issue.

- **Rejected** indicates an invalid data remediation issue that requires no additional action. Enter rejection information in the **Note** field before closing the issue.

Importance

is the priority of the issue represented by star icons. The scale ranges from very low (1 star) through low, medium, and high, up to critical (5 stars).

Assignee

is the user name of the person assigned to the issue. Click to select from an available list of assignees. The list of users is derived from those who have been assigned at least one data remediation role in SAS Management Console.

Note: When you select a status of **In Progress**, you automatically become the **Assignee** for the issue. If you then assign the issue to another person, the status automatically changes to **Open**.

Due Date

is the date by which an issue should be resolved. Click to select a date from the calendar. This option is not connected to alerts. To set up alerts, you must create a task for the issue that includes defined notifications.

Note

is a field used to record notes about the issue.

Issue

is the label for the type of issue found in the data.

Item

is the record that triggered the remediation process. Clicking the link next to the **Item** name opens a window displaying details of the item in an **item** ▶ **issue** hierarchy table:

Figure 4.3 Item Details

Item Details - Sort

Name	Issues	Status	Importance	Assignee	Subject Area	Application	Date Created
Sort	2				Data Transform	DI Studio	
Invalid Street Name		Open	★★★★☆	SAS Administrator			29 March 2019 17:43:30
Invalid Zip Code		Open	★★★★☆	SAS Administrator			29 March 2019 17:43:30

Close

Package

is the package in which the issue is located. Clicking the link next to the **Package** name opens a window displaying details of the package. The area above the **package ▶ item ▶ issue** hierarchy table displays any package-level notes and is editable.

Figure 4.4 Package Details

Package Details - The DI Studio Package

Package related to issues from SAS Data Integration Studio.

Name	Issues	Status	Importance	Assignee	Subject Area	Application	Date Created
The DI Studio Package	4				Data Transform	DI Studio	
Sort							
Invalid Zip Code		Open	★★★★☆	SAS Administrator			29 March 2019 17:43:30
Invalid Street Name		Open	★★★★☆	SAS Administrator			29 March 2019 17:43:30
Mapping							
Bad Zip Code		Open	★★★★☆	SAS Administrator			29 March 2019 17:43:30
Unrecognized Data Format		Open	★★★★☆	SAS Administrator			29 March 2019 17:43:30

OK Cancel

Subject Area

is the subject area assigned to the issue.

Application

is the application where the issue is found.

Select the **Issue Data** tab to display data about the selected issue.

The **Issue Data** tab displays the following fields:

Link
displays an Open in Application hyperlink that opens a new browser tab in the specified URL location. The **Link** field is displayed only if a properly formatted URL was submitted with the remediation issue.

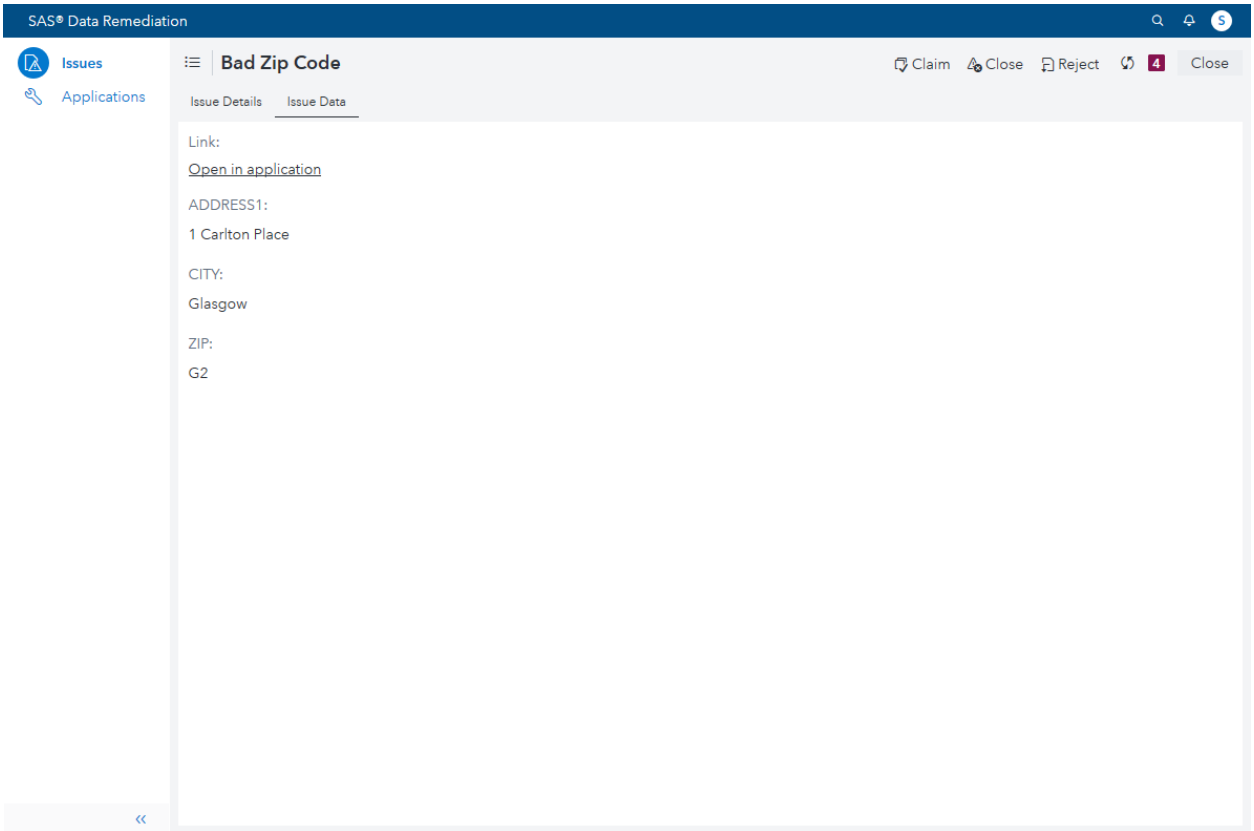
Field 1
is a user-defined field. It contains a data value from the external application that originally flagged the item as an issue. The label for this field can be changed programmatically.

Field 2
is a user-defined field. It contains a data value from the external application that originally flagged the item as an issue. The label for this field can be changed programmatically.

Field 3
is a user-defined field. It contains a data value from the external application that originally flagged the item as an issue. The label for this field can be changed programmatically.

For example, the link field and the three user-defined fields might appear as follows:

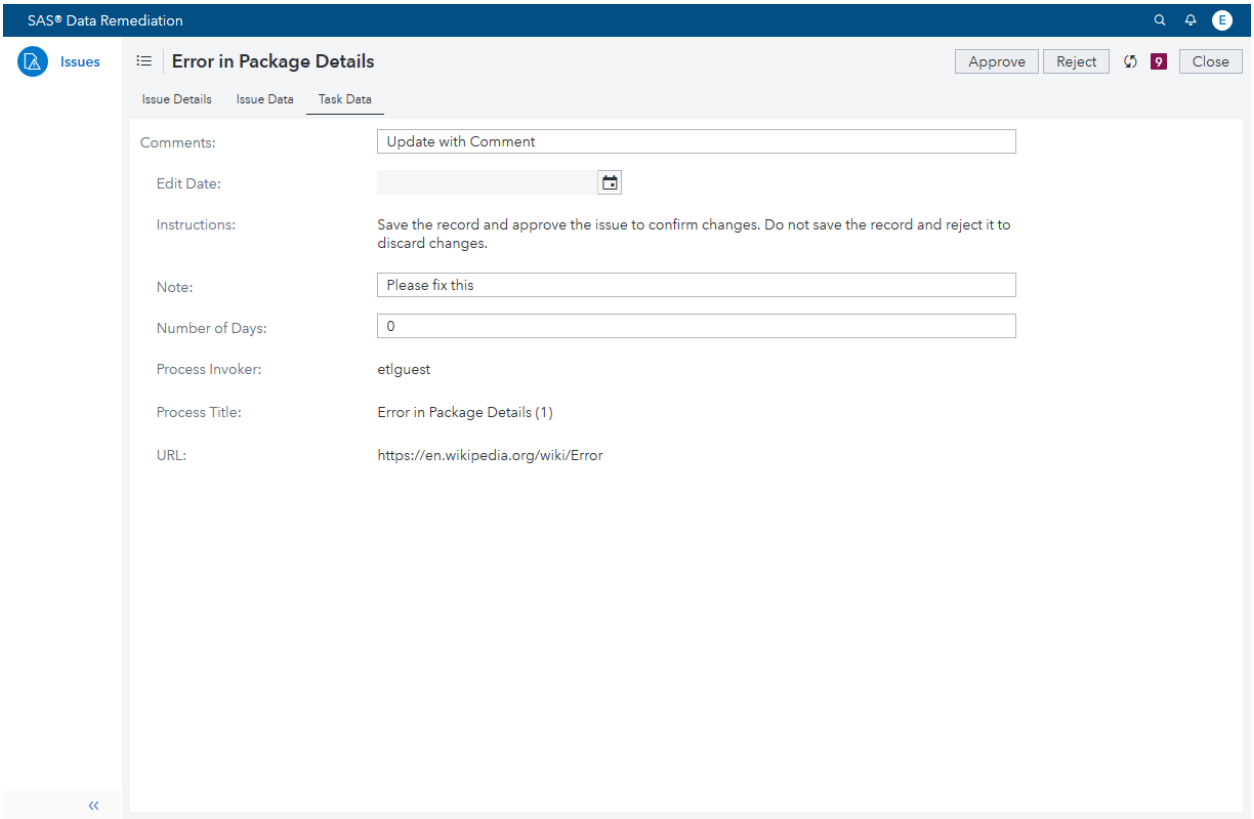
Figure 4.5 Issue Data



If a task has already been created for the issue, a third tab is available, **Task Data**. Select the **Task Data** tab to view data about the task.

Note: The **Task Data** tab is displayed only if you are one of the Assignees for the issue and you are a participant in the task.

Figure 4.6 Task Data



The following data object values are always provided by the workflow engine in the Task Data pane:

Process Invoker
is the user who sent the task to SAS Task Manager.

Process Title
is the name used in SAS Data Remediation for the selected task.

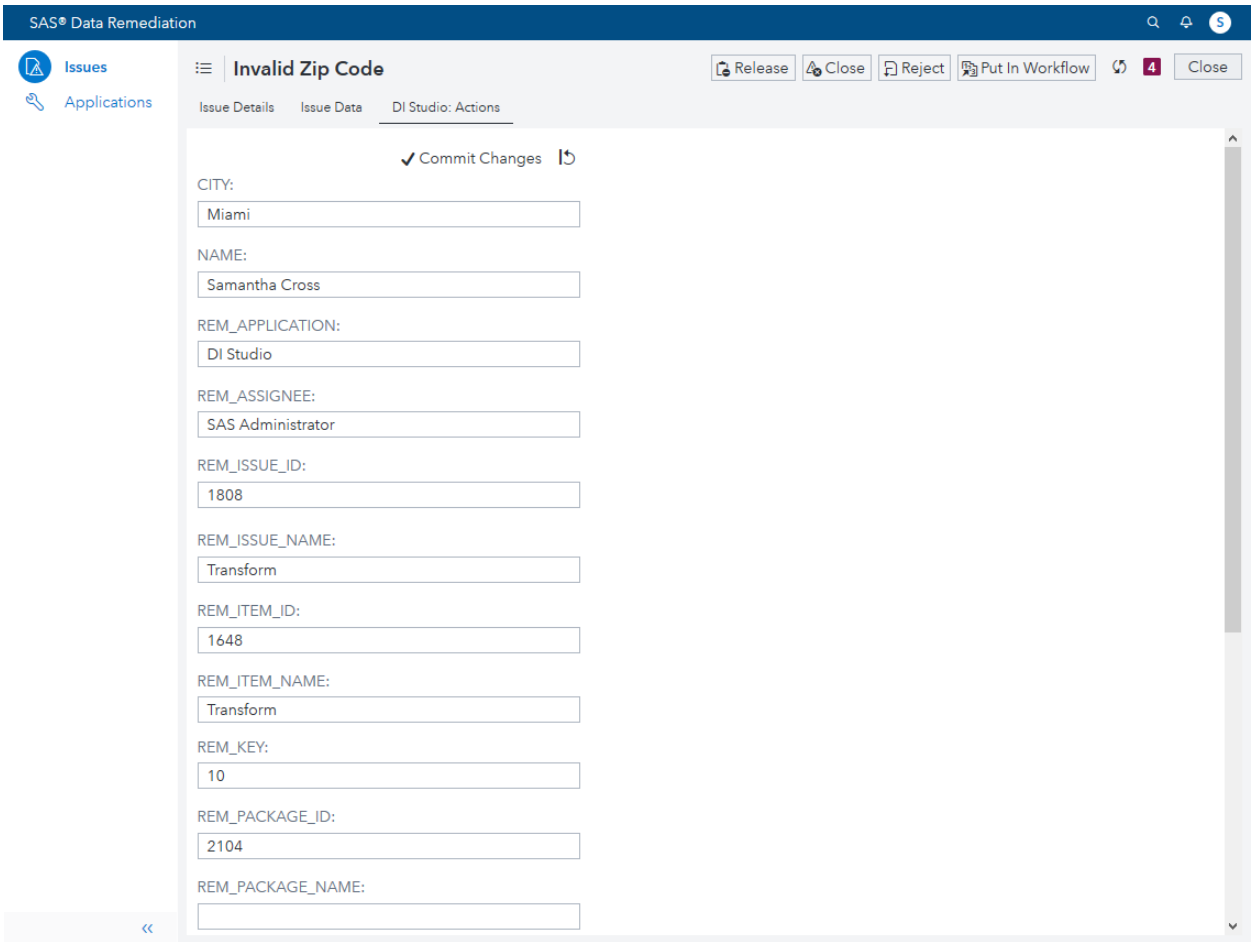
The display of other values in the Task Data pane is controlled by the design of your workflow template. These values are data objects defined in the workflow template itself. For details, see *SAS Task Manager: User's Guide*.

If the issue relates to an application that has been configured in SAS Data Remediation to allow corrective action to take place, an additional tab is available, **<Application>: Actions**. The appropriate application name is included in the tab name (for example,

MDQ: Actions or **DI Studio: Actions**). Select the **<Application>: Actions** tab to view and correct the issues with the data.

Note: The **<Application>: Actions** tab is displayed only if your administrator has configured the user interface for that application to retrieve and send remediation item attributes and actions. The **<Application>: Actions** tab is not displayed if the issue is currently in workflow. For more information, see "Adding and Editing Client Applications" on page 16.

Figure 4.7 *Application Actions Tab*



You can perform corrective actions in this tab only if the issue is assigned to you and has a status of In Progress. To perform corrective actions:

1 Edit the field values as required to correct the issue.

   Note: Click to reset the fields to their original (uncorrected) values.

2 Click **Commit Changes** to save your changes to the external application.

Deep Linking to Issues in Data Remediation

Deep linking refers to constructing a URL (link) that, when initiated, can take a user directly to an issue in SAS Data Remediation rather than requiring the user to search for it. For example, you can construct a URL link in an email and send to a data steward. When the data steward clicks the URL link, it opens the SAS Data Remediation application and opens the issue encoded in the URL.

From within the appropriate environment, create a URL using the following syntax:

```
http://<your_host>/SASDataRemediation/issue/<issue_ID>
```

For example, you might create the following:

```
http://localhost:8080/SASDataRemediation/issue/4312
```

5

Example

Tracking Issues

Overview

SAS Data Remediation is designed as a general purpose, issue-tracking system that can be used with both SAS and other applications. A common use case is to capture business rules violations from a data loading process for review by a nontechnical user. Here is one example of how this might be accomplished.

Define an Application

To define an application:

1 In SAS Data Remediation, click **Applications** in the left pane to open the Applications window.

2 On the toolbar, click +. A New Application window is displayed with three tabs.

3 On the **Properties** tab:

   a Give the application a unique **ID** and **Display name**, such as `POS System`.

   b Select **Issue User Interface** ▶ **No user interface configured**.

4 On the **Subject Areas** tab:

   a Click to create a new subject area.

   b On the **Subject Areas** ▶ **Properties** tab, enter the name `Sales Transaction` in the **ID** field. Do not apply any special access permissions to this subject area on the **Subject Areas** ▶ **Permissions** tab.

5 On the **Issue Types** tab:

   a Click to create a new issue type.

   b On the **Issue Types** ▶ **Properties** tab, enter the name `Missing Transaction Total` in the **ID** field.

   c (Optional) If you want to associate a Task template with this issue type, select your custom task template on the **Issue Types** ▶ **Task Templates** tab. For more information, see "Workflow Integration" on page 59 .

6 Save your settings by clicking on the **Actions** toolbar.

You are now ready to create new issues for this application in another tool such as SAS Data Integration Studio or SAS Data Management Studio. You can also use any external application that can create a well-formed REST web service input and make a REST web service POST call.

Identifying Issues in Data

To identify issues, perform the following steps in SAS Data Management Studio:

1 Create some sample data where at least one item is missing the transaction amount. This can be data in a text file, in a database table, or even generated in a SAS Data Management Studio job. Here are a few sample data rows with column headings:

Table 5.1 Sample Data

ID	Name	TransactionValue
1	Laptop	1213.01
2	Mouse	13.15
3	Monitor	128.20
4	Carrying Case	
5	Network Cable	5.55

2 Create a SAS Data Management Studio job that accesses your sample data. After you have created a new source of input data, use a data validation node to flag the row of data that contains no transaction value (that is, **TransactionValue** is null).

In this example, the row that contains no transaction value is flagged with a value of 1. Use a Branch node to create a branched path in your job where only records that contain a 1 in the **Flag** field will be present.

3 Create the input data for the SAS Data Remediation REST web service call. Use an expression node to create the input string. Field substitution is used to pass the values from the sample data row into the web service call.

```
string(1000) WS_IN
WS_IN =
'{
   "application":"POS System",
   "subjectArea":"Sales Transaction",
```

```
    "name":"Weekly Update",
    "description":"Transaction validation process.",
    "userDefinedFieldLabels": null,
    "topics":[
       {
          "name": "'&`Name`&'",
          "key": "'&`ID`&'",
          "userDefinedFields": null,
          "issues":[
             {
                "name":"Missing Transaction Total",
                "importance":"low",
                "note":"Please research this transaction.",
                "url":"http://www.example.com",
                "assignee":{"name":"Data Steward"},
                "status": "open"
             }
          ]
       }
    ]
}
'
```

Note: For more information about the SAS Data Remediation REST API (also known as the Issues API), see the SAS support site.

4 After adding this expression to create the input string in a JSON format, use an HTTP node to invoke the web service on the SAS mid-tier server. Use the following settings for this node:

Table 5.2 HTTP Node

Address	http://*[server]*:*[port]*/SASDataRemediation/rest/groups
Method	post
Input: Field	WS_IN
Output: Field	WS_OUT **Note:** Create this using the **New** button and set the size to `1000`.

5 From the **Security** option, enter a user name and password under **Security** ▶ **Enter credentials**. This must be a user-defined user name and password in SAS metadata using SAS Management Console and having at least one SAS Data Remediation role associated with it.

6 In the Advanced Properties for the node, set the WSCP_HTTP_CONTENT_TYPE options to application/json.

7 Select **OK**, and then run your job.

Viewing the Results

To view the results in SAS Data Remediation:

1 Click **Issues** in the left pane to open the Issues window.

2 Search the table for an issue named `Missing Transaction Total`. When you open this issue, all of the details that you set in the SAS Data Management Studio job for this issue are reflected in the **Issue Details** tab. You now can interact with this issue as needed to track it to completion by setting assignee, status, and due date information.

3 When the issue has been corrected, click **Close** in the **Actions** toolbar.

Workflow Integration

Creating Task Templates

If your business process requires that an issue be reviewed and corrected in a specific manner, you can choose to associate an issue type with a workflow template, also known as a task template. When you have enabled this relationship, wherever an issue is created, interactions with the issue can be governed by a task template.

Task templates can be created and uploaded to the workflow server through SAS Workflow Studio. Task templates with specially named data objects can be used in conjunction with SAS Data Remediation functionality. Information from the data remediation environment can be passed into the workflow instance for evaluation. For example, an issue with an importance level of Very High might trigger a different route or action in the logic of the workflow so that an email notification is sent about a high priority issue in the queue.

Task templates can use policies, which are actions to be taken when a workflow task is encountered. Policies can send notifications, start other workflows, make web service calls, or invoke SAS processes. Use policies to add another layer of application integration to your data review and correction processes.

After you have chosen the options for your task template, upload it to the workflow server and activate it. This template is now available for use within SAS Data Remediation.

Associating an Issue with a Task Template

To associate an issue with a task template:

1. In SAS Data Remediation, click **Applications** in the left pane to open the Applications window.
2. On the table, select and open the **POS System** application. A POS System window is displayed with three tabs.
3. On the **Issue Types** tab:
   a. Select the **Missing Transaction Tool** issue type in the left pane.
   b. On the **Issue Types** ▶ **Task Templates** tab, click to select a task template to associate with the **Missing Transaction Tool** issue type.
   c. Click **OK** to close the Select Templates window.
4. Save your settings by clicking on the **Actions** toolbar.

When you open a **Missing Transaction Total** issue, a **Put in Workflow** button appears. Clicking this button turns control of the issue over to the workflow definition. New options appear for every actionable item in your workflow. You cannot set other remediation issue options on the issue as long as it is controlled by a workflow.

Continue to address the issue through SAS Data Remediation, selecting the actions that are available to you as derived from the workflow definition. When you reach a termination step in the workflow, control is returned to SAS Data Remediation, where you close the issue and remove it from the remediation queue.

Recommended Reading

- *DataFlux Data Management Studio Installation and Configuration Guide*
- *DataFlux Data Management Studio User's Guide*
- *DataFlux Data Management Server Administrator's Guide*
- *DataFlux Data Management Server Users's Guide*
- *SAS Workflow Studio User's Guide*
- *SAS Intelligence Platform Middle-Tier Administration Guide*
- *SAS Management Console User's Guide*
- *SAS Task Manager User's Guide*
- *SAS Data Remediation: Issues REST API Reference Guide*

For a complete list of SAS publications, go to support.sas.com/en/books.html. If you have questions about which titles you need, please contact a SAS Representative:

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