Contents

About This Book ................................................................. v

Chapter 1 • Introduction ....................................................... 1
  Product Overview .............................................................. 1
  What’s New in SAS Infrastructure for Risk Management 3.3 .... 1

Chapter 2 • Getting Started With SAS Infrastructure for Risk Management ................ 3
  Common SAS Infrastructure for Risk Management Tasks ....... 3
  Create an Instance ............................................................. 4
  Run an Instance .............................................................. 5
  View the List of Instances ................................................... 5
  Manage Instances ............................................................ 6
  Enable or Disable Debug Logging for an Instance ............... 7
  Share and Publish Instances .............................................. 7
  View the Results of an Instance ......................................... 7
  Filter Instances .............................................................. 7
  Manage Filters .............................................................. 8
  Manage Views ............................................................... 8
  View a Node’s Input or Output Files .................................... 9
  Edit a Node’s Input File .................................................... 9
  Search for Objects Used by an Instance ............................ 10

Appendix 1 • Elements of SAS Infrastructure for Risk Management .................... 11

Recommended Reading ....................................................... 15
About This Book

Audience

SAS Infrastructure for Risk Management is designed for the following users:

• the power user or administrator who is responsible for processing and modeling data marts and developing base analysis configurations and reports
• the analyst who is responsible for configuring analyses and developing reports
• the business user who needs to generate and access regulatory reports
• the executive who is charged with oversight of regulatory compliance

The scope of this guide is primarily limited to tasks that analysts and business users are likely to perform through the graphical user interface. In addition, this documentation describes some of the initial deployment and implementation tasks that power users or system administrators can perform via the graphical user interface.

For detailed information about other administrative tasks, such as product installation, customization, configuration, assignment of roles and permissions to users, and data management, see SAS Infrastructure for Risk Management: Administrator's Guide.
Product Overview

SAS Infrastructure for Risk Management is a job execution engine with a web-based user interface that is deployed with one or more SAS solutions. SAS Infrastructure for Risk Management solutions are delivered as industry-specific content release products. Calculations are performed using transparent job flows that facilitate auditing of your risk practices. The entire platform is designed to be customizable and flexible, so that you can rapidly adapt to changing regulations.

The architecture of SAS Infrastructure for Risk Management provides a simplified and easy way to run the fastest analytics.

What’s New in SAS Infrastructure for Risk Management 3.3

This section documents features and enhancements that are introduced in SAS Infrastructure for Risk Management 3.3.

User Interface Enhancements and New Features

- To facilitate navigating large job flow instances, you can quickly zoom into an area of an instance. To zoom into an area of an instance, press Shift and click and drag the box over the area into which you want to zoom. To toggle between the views, press Shift + Z.
- The following new columns are available for the instance lists view:
  - Published By — The user ID of the last user who published the instance.
  - Published On — The date on which the instance was last published.
  - Publish Comment — Comments entered when the instance was last published.
• **Instance ID**—The system-generated ID for the instance. The instance ID is helpful for administrative troubleshooting purposes.

• **Description**—A description of the instance entered by the user who created the instance.

To display the output of an instance, select the instance in the instance list view and click [ ]. To open a results report in the list of output, double-click the name of the output that you want to view.

You can create consecutive new instances without having to repopulate all the fields in the New Instance window. To create multiple new instances, after creating the first instance, select **Create other** and click **Create**. The instance is created and the New Instance window remains open so that you can create an additional instance. Change fields as necessary for each instance. Once you have completed creating multiple instances, click **Cancel**.

• When viewing an instance, you can now display a hierarchical view in which you can filter and search for an object within that instance.

• To display information about a node, place the cursor on the node. This information includes the name and purpose of the flow, the federated area with which it is associated, and the path to that federated area. In addition, you can place the cursor on input data for a node in order to view the landing area from which the input is coming. Because federated areas can use nodes within a flow that are located in different federated areas, this information is helpful for troubleshooting.

• The name of your SAS Infrastructure for Risk Management solution can now be displayed in the banner of the web application. This is an optional feature that your system administrator can configure when installing SAS Infrastructure for Risk Management.

• Output files can now be generated as PDF files. Those output files are displayed with a PDF icon next to them.

**Performance Enhancements and New Features**

• The arrows in a process diagram are no longer meaningful, because with SAS Infrastructure for Risk Management 3.3, a node begins executing as soon as all of its input data is available. Because of this, you will see multiple nodes executing at the same time. In prior releases of SAS Infrastructure for Risk Management, the nodes were processed in order, from start to finish, which increased the amount of time it took to execute a job flow instance.

• Only those categories that are supported by a configuration set are displayed when you create a job flow instance. This keeps users from running flows that are not supported by a configuration set.

• Nodes can have some input and output SAS data sets and files that are partitioned. Partitioned nodes enable large amounts of data to be partitioned into smaller units of data and calculated across multiple cores. The node recombines the results of the partitioned data.
Chapter 2
Getting Started With SAS Infrastructure for Risk Management

Common SAS Infrastructure for Risk Management Tasks

SAS Infrastructure for Risk Management solutions provide predefined regulatory-based job flows that you can use to perform calculations. You work with these job flows by creating and managing job flow instances through the user interface.

Common tasks that you perform when working with these job flows include the following:

- Create an instance of the job flow definition that you want to run for a specific entity, base date, or configuration set.
- Run an instance.
- View the list of instances.
- Manage instances.
- Enable or disable debug logging for an instance.
- Share and publish instances.
- View the results of an instance.
- Filter instances.
- Manage filters.
- Manage views.
- View a node’s input or output files.
- Edit a node’s input file.
- Search for objects used by an instance.

An instance consists of underlying flows. To view the underlying flows that are a part of an instance, click the instance in the instance list view. Each flow consists of one or more nodes. A node is a pre-constructed analytical or reporting-oriented element of processing that has defined input and output.
Create an Instance

1. Click \( \rightarrow \). The New Instance window is displayed.
2. In the Instance field, enter a unique name for the job flow instance.
3. (Optional) To enable debug logging, select Debug logging. Debug logging enables you to view information about the execution of the nodes of an instance.
4. Select a Base date. The calculation is performed for the date that you select.
   Note: Selecting a base date for which there is no input available generates an error message and the instance cannot be created.
5. Select an Entity. The entity is the subset of your corporation that you want to include in the calculation.
6. Specify whether to treat the entity as a Solo entity or a Group entity.
   Note: The Solo or Group configuration does not apply to all SAS Infrastructure for Risk Management solutions.
7. Select a Configuration set. Your administrator provides you with one or more configuration sets. Configuration sets contain parameters and settings for your calculation.
8. Select the Category. The flows are assigned to categories in order to simplify the management of flows.
10. (Optional) Enter a description of the instance in the Description field.
11. Click Create.
12. (Optional) To create multiple new instances in a row without having to repopulate all of the fields in the New Instance window, select Create another, and click Create. When you are creating your last new instance, deselect Create another, and click Create.
Run an Instance

After you create an instance, it is automatically executed. To run an existing instance:

1. Select the instance on the instance list view.
2. Click \(\text{Run}\) in the toolbar and select Run.
3. To cancel the execution of the instance, click \(\text{Cancel execution}\) in the toolbar and select Cancel execution.

Note: Nodes that are in the process of being executed complete before the job is marked cancel.

Note: If a node is not running, it is because data object pooling has detected that the task has been previously executed and its input and output have not changed. Therefore, the task does not need to be executed again.

View the List of Instances

- The order of the columns in the instance list view can be rearranged by dragging and dropping the column name. In addition, you can click \(\text{\text{Column Name}}\) in the header of the list of instances table to rearrange columns and to choose columns that you want to display or hide.
- The Status column reports the status of each instance. Possible values are the following:
  - \(\checkmark\) — The instance executed successfully.
  - \(\times\) — The instance executed with errors. To view the errors, open the instance and select Errors on the right side of the window.
  - \(\star\) — The instance is currently running.
  - \(\square\) — The instance was canceled while it was executing.
  - \(\bigcirc\) — The inputs to the instance have changed since the instance was last executed.

Note: To view detailed status information, open the instance and select Status on the right side of the window.
- If any input values have changed, the Modified column displays \(\bigdiamond\).
- The State column indicates whether an instance has been shared or published.
  - \(\square\) — The instance has been shared with you, but you cannot run or modify it.
  - \(\mathcal{H}\) — The instance has been published for others to view, but not to modify or run.
  - \(\leftarrow\) — The instance is shared with others.
Note: Instances for which no icons are displayed are your private instances.

- The following three buttons are in the application banner:
  - To see notifications, click 

Note: Notifications are not supported in SAS SAS Infrastructure for Risk Management 3.3.

- To open the Help Center or to view information about the product and deployment, click 

- To access product-level settings or to sign out, click the user name in the banner. The Settings window includes accessibility, language, and theme settings.

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### Manage Instances

1. Select the instance on the instance list view, and click in the toolbar.

2. Select from the following options:
   - Share — Shares the instance with users of the same entity. This option is active only when you are the owner of the instance.
   - Unshare — Unshares the instance. This option is active only when you are the owner of the instance.
   - Publish — Publishes the instance for other users to see, but not to run or modify. Depending on the capabilities assigned to you by the administrator, this option might be active.
   - Open — Opens the instance.
   - Run — Executes the instance. This option is active only when you are the owner of the instance.
   - Cancel execution — Cancels the execution of the instance. This option is active only when you are the owner of the instance and the instance is running.
   - Delete — Deletes the instance. This option is active only when you are the owner of the instance.

3. To facilitate navigating large job flow instances, you can quickly zoom into an area of an instance. To zoom into an area of an instance, press Shift and click and drag the box over the area into which you want to zoom. To toggle between the views, press Shift + Z.

4. To display information about a node in an instance, place the cursor on the node. This information includes the name and purpose of the flow, the federated area with which it is associated, and the path to that federated area. In addition, you can place the cursor on input data for a node in order to view the landing area from which the input is coming.

Note: Because federated areas can use nodes within a flow that are located in different federated areas, this information is helpful for troubleshooting.
Enable or Disable Debug Logging for an Instance

1. Open the instance for which you want to enable or disable debug logging.
2. Click in the toolbar.
3. Select Enable | Disable debug and run.
4. To view any errors that occurred when the instance was executed, click Errors.

*Note:* Alternatively, you can enable debug logging when creating an instance. By default, debug logging is disabled.

Share and Publish Instances

1. Select one or more instances in the instance list view.
2. Click in the toolbar, and select Share to share one or more instances with other users of the same entity.
3. Click in the toolbar, and select Publish to allow other users to see, but not to run or modify an instance.

*Note:* The actions that a user can perform (for example, to publish an instance or to delete a published instance) are determined by capabilities that are assigned by an administrator. For more information about capabilities, see SAS Infrastructure for Risk Management: Administrator’s Guide.

View the Results of an Instance

1. On the instance list view, select the instance for which you want to view the results.
2. In the toolbar, click  
3. Click the result that you want to view.

*Note:* Alternatively, you can view results for an instance by opening the instance and selecting Results on the right side of the window.

Filter Instances

1. Click  
2. In the Filters pane, select values one or more attributes on which to filter the list of job flow instances.
Click \( \downarrow \) to expand the list of values for all of the attributes. Click \( \uparrow \) to collapse the list of values for all of the attributes.

To the right of each value listed for an attribute is a count of the number of instances that have that value.

- Click the **Up** or **Down** arrow to the right of an attribute to expand or collapse the list of values for that attribute.
- Use the **Up** and **Down** arrows on the right side of the pane to scroll through the lists (of attributes and values for each attribute).

3. Select the attributes on which you want to filter the list of instances.

As you select attributes, the list of job flow instances in the table on the right pane displays only those instances that match the filter. The attributes of the filter are listed as buttons in the toolbar at the top of the instance list view. These buttons are known as **facets**.

4. Click \( \square \) to close the **Filters** pane.

### Manage Filters

- Click \( \square \) to remove that facet from the filter.
- Click \( \square \) to do the following:
  - change the filtered values of an attribute
  - add additional facets to the filter
  - remove specific facets from the filter
- To remove all of your selections from the filter, click **Reset all**.
- To return to the instance list view, click \( \square \).

### Manage Views

- To reorder columns in the instance list view, click the column heading and drag and drop.
- To prevent a column from being dragged and dropped, right-click the column heading and select **Freeze**. The column is moved to the far left side of the table, and you can scroll through the contents of the table without scrolling through that column. To release the column, right-click and select **Unfreeze**.
- To manage the columns that are displayed:
  1. Click \( \square \) to the right of the column labels, and select **Columns**.
  2. In the Columns window, move columns between the **Hidden columns** list and the **Displayed columns** list. Use the arrows on the right side of the window to reorder the columns as desired.
3. To save your choices, click OK.
   - To sort the table data by column, right-click the column heading.
     - Select Sort (ascending | descending).
     - To create a secondary sort column, right-click a different column and select Sort ➤ Add to sort (ascending | descending).
     - To remove sorting, right-click a sorted column and select Sort ➤ Remove sort. Selecting a new column on which to sort removes all previous sorting.
   - To save the current view:
     1. Click ☐ in the toolbar and select Save current view. The Save View window is displayed.
     2. Enter a unique name for the view and click Save.
   - To manage previously saved views, click .
     In the Views window:
     - To activate a view, select it. The active view is denoted by a small circle.
     - To delete this view, click .
     - To display a view that contains all available columns, click Full View. To display only the columns that you selected in the Columns window, click Compact View.
     - To close the Views window, click Close.
   
   Note: When you save a view or select a view from the list of saved views, that view becomes the default view until you save or select a different one.

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### View a Node’s Input or Output Files

1. Open the instance.
2. Right-click the icon that represents the file.
3. Select Download.

Note: You can place the cursor over input data for a node to view the landing area from where the input is coming. Because federated areas can use nodes within a flow that are located in different federated areas, this information is helpful for troubleshooting.

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### Edit a Node’s Input File

Input files that you can edit are highlighted in blue and are marked with a .

1. Open the instance.
2. Right-click the input file and select Download and make changes as necessary.
3. When complete, right-click the input file and select **Upload**. Click **Browse** to navigate to the edited version of the file.

4. Select the file and click **Upload** to complete the update. ✤ marks input that has been edited.

*Note:* When you modify a table, the change applies to each task that uses the table as input. For example, if you change a value in Table A for Task 1, and Table A is also used as input for Task 2, then the change is effective for both tasks. The last version of the uploaded table takes precedence over previous versions of the table.

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**Search for Objects Used by an Instance**

You can search for a specific object (flow, subflow, task, and input and output) that is used in a job flow instance.

1. Open the instance.

2. To display the hierarchy view, click ✭.

   The hierarchy view is a multi-pane view in which you can filter and search for objects within the instance. In the right pane, you can select values for attributes on which to filter nodes. The center pane is a table that contains all of the objects that match your filter selections.

3. In the **Search** field, enter the name of the object that you want to search for.

4. To search within folders, select **Search within folders**.

5. The center pane is a table that contains locations in which the specified object is used, by name and type, and when the object was last modified.
   - To expand or collapse the table, click the arrow to the right of its name. You can drill down to view the input and output files for a task.
   - To filter the nodes, select from the attributes in the Filter Nodes pane and click ✭.
   - The facets of your filter are displayed in the toolbar. To remove a facet from your filter, click ✭.
   - To return to the hierarchy view, click ✭.
   - To expand the list of nodes in the table, click ✭. To collapse the list of nodes, click ✭.
Appendix 1

Elements of SAS Infrastructure for Risk Management

Base Dates

The list of base dates is a list of dates for which data has been provided. Base dates are used as a basis for the calculations.

Categories

Categories are groups to which flows are assigned. SAS Infrastructure for Risk Management provides flows that are designed to produce quantitative reports for regulatory requirements. To simplify management of these flows, each flow is assigned to a category. The displayed categories depend on the details of your federated content.

Configuration Sets

Configuration sets are collections of data sets that are used when running instances. A data set contains settings and parameters.

Note: The creation and management of configuration sets is an administrative task.

Data Object Pooling

Data object pooling streamlines processing for the SAS Infrastructure for Risk Management solutions. If two flows contain the same nodes, the results of the first run are stored and reused when the other node is executed. This feature speeds up calculations because nodes that have not changed are not rerun. Therefore, if a node appears to be running instantly, it might be because the data object pooling feature has detected that the task does not need to be rerun.

Debug Logging

Debug logging enables you to view information about the execution of the tasks of an instance. You can enable debug logging when you create an instance or you can enable or disable logging for an existing instance. (See “Enable or Disable Debug Logging for an Instance” on page 7.)

Entities

Entities are logical groupings of your corporate structure. An entity can be the entire company, one or more subsidiaries, a geographical region, a specific business unit, and so on. The analyses that you perform are associated with an entity.
Note: Entity creation and management is an administrative task.

**Flows**

Flows are programs that connect one or more nodes into a logical sequence. Instances are flows with a specific set of inputs. Some of the flows contain nodes that are also flows. This facilitates reuse of common flows.

A generic sample federated area is installed with SAS Infrastructure for Risk Management. This federated area contains two sample flows that demonstrate the capabilities and functionality of SAS Infrastructure for Risk Management. For details about the sample flows, see the node level help.

**Job Flow Definitions**

SAS Infrastructure for Risk Management job flow definitions (flows) are provided in the SAS Infrastructure for Risk Management solution federated content package. Job flow definitions are graphical representations of computations. They are a sequence of steps to perform specific goals. For example, a job flow definition might produce a report to prove solvency of an entity at a given point in time. You can create many job flow instances from a job flow definition. You can also nest flows within other flows. Flows can have input and output values.

**Job Flow Instances**

Job flow instances are instances of job flow definitions that you can run in SAS Infrastructure for Risk Management. An instance is associated with an entity. It has a specified base date and takes specific input data from a configuration set. By default, all job flow instances are private until shared or published.

**Nodes**

Nodes are the basic building blocks of SAS Infrastructure for Risk Management. They are pre-constructed analytical or reporting-oriented elements of processing that have a defined input or output, or both.

When working with nodes, note the following:

- Nodes can contain *subflows*. These nodes are denoted by a +. To view the subflows, double-click the node.

- Nodes that do not contain subflows are not denoted by a +. You can view the associated log or help for these nodes. To view the log file or help for a node, right-click the node and select an option from the pop-up menu. The log file opens in a new browser window. The log file reports the name of the instance and the name of the associated node.

  Note: Log files are created only when the instance is run.

- Nodes can have input and output SAS data sets and files. Inputs are displayed above the node, connected with an arrow pointing to the node. Outputs are displayed below the node with arrows leading from the node. Nodes do not require both defined inputs or defined outputs. However, a node must have one or the other.

- Some nodes can have some input and output SAS data sets and files that are *partitioned*. Partition nodes enables large amounts of data to be partitioned into...
smaller units of data and calculated across multiple cores. The node recombines the results of the partitioned data.

- Files that you can edit appear in blue and are marked with a ✰ icon.

When you modify a table, the change applies to each task that uses the table as input. For example, if you change a value in Table A for Task 1, and Table A is also used as input for Task 2, then the change is effective for both tasks. The last version of the uploaded table takes precedence over previous versions of the table.

Note: Some input files are not editable. In general, an input file is not editable because it is an output from a subflow.

- To open sub-nodes, double-click the parent node.
- To explore the files that are associated with a node, double-click the parent node.

**Views**

The instance list view consists of the following elements:

- the columns that are visible
- the sequence of the columns
- the sorting of the columns
- frozen columns
- attributes for filtering
Recommended Reading

SAS Infrastructure for Risk Management is supported by the following documents:

• *SAS Infrastructure for Risk Management: Administrator’s Guide*—Provides information about administrative tasks such as product installation, customization, configuration, assignment of roles and permissions to users, and data management.

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

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