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RTSM Administration Guide

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Part 1: Introduction

Chapter 1: Run-time Service Model (RTSM)

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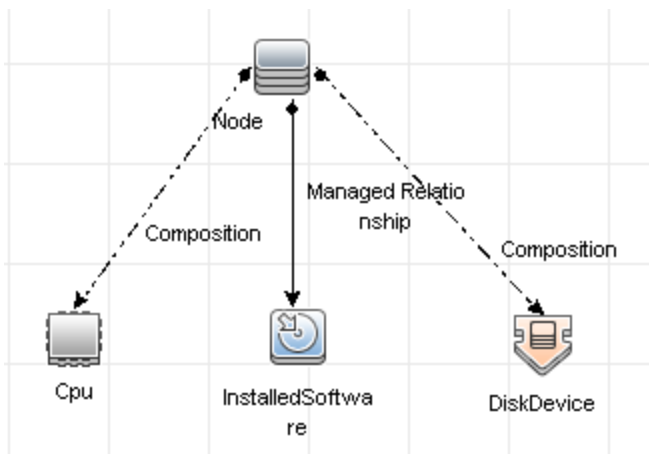
RTSM Overview

The RTSM is the central repository for the configuration information that is gathered from the OMi data collectors, the Data Flow Management (DFM) process, and the various third-party applications and tools.

The RTSM contains all the configuration items (CIs) and relationships created in HP Operations Manager i, whether created automatically from incoming data collector data or the DFM process, or created manually using IT Universe Manager. The CIs and relationships together represent a model of all the components of the IT Universe in which your business functions. The RTSM stores and handles the infrastructure data collected and updated by the various processes. (For more information about the DFM process, see the *HP Universal CMDB Discovery and Integration Content Guide*.)

The IT Universe model can be very large, containing millions of CIs. To facilitate their management, you work with the CIs in a view that provides a subset of the overall components in the IT Universe world.

You use factory views or views defined in the Modeling Studio to display and manage the CIs and relationships in the RTSM. The views enable you to focus on specific IT areas and are available via the CI Selector in different HP Operations Manager i applications, such as Service Health. An example of a view is shown in the following figure:



The RTSM also contains the TQL query definitions that are used to query and retrieve data from the RTSM for presentation in the view, and the configuration item type (CIT) model, a repository for the CI types used to define the CIs and relationships. For information on TQL queries, see [Topology Query Language](#) in the *Modeling Guide*.

In addition, the RTSM contains the object repositories for the various additional data added to CIs in Service Health and Service Level Management, such as KPIs, shortcut menus, and tooltips. For more information on these repositories, see "Repositories Overview" in the OMi Administration Guide.

Configuration Items (CI)

A configuration item (CI) is a component of the RTSM that represents a physical or logical entity in the system, for example, hardware, software, services, business processes, and customers. The CIs are part of the IT Universe model in the RTSM, where they are organized into a hierarchical format based on the interdependencies in your organization's IT environment. The interdependencies in HP Operations Manager i are called relationships.

Each CI belongs to a configuration item type (CIT). The CIT defines a category of CIs used in HP Operations Manager i. The CITs provide templates for creating the CIs and associated properties in each category. You view and manage the CIs in the RTSM using views. Each view shines a spotlight on part of the IT Universe model.

For further details on working with CIs in HP Operations Manager i, see ["Working with CIs"](#) in the *Modeling Guide*.

Query Nodes and Relationships

Query nodes are the components from which TQL queries are built in Enrichment Manager, Impact Analysis Manager, and the Modeling Studio. For details, see ["Creating TQL Queries in the RTSM Managers"](#) in the *Modeling Guide*.

Note: When working in views, query nodes are called **view nodes** in the HP Universal CMDB user interface RTSM Administration User Interface.

Relationships are connections defined between CIs. Relationships are defined one at a time for each pair of query nodes in a TQL query. For details on working with relationships, see "[Working with Relationships](#)" in the *Modeling Guide*.

Log Severity Levels

Each log is set so that the information it records corresponds to a certain severity threshold. Because the various logs are used to keep track of different information, each is pre-set to an appropriate default level. For details on changing the log level, see "[Changing Log Levels](#)".

Typical log levels are listed below from narrowest to widest scope:

- **Fatal.** The log records only events that prevent the system from functioning.
- **Error.** In addition to Fatal events, the log records events that adversely affect the immediate functioning of the RTSM. When a malfunction occurs, you can check if Error messages were logged and inspect their content to trace the source of the failure.
- **Warning.** The log's scope includes, in addition to Fatal and Error-level events, problems for which the RTSM is currently able to compensate and incidents that should be noted to prevent possible future malfunctions.
- **Info.** The log records all activity. Most of the information is normally routine and of little use and the log file quickly fills up.
- **Debug.** This level is used by HP Software Support when troubleshooting problems.

Note: The names of the different log levels may vary slightly on different servers and for different procedures. For example, **Info** may be referred to as **Always logged** or **Flow**.

Changing Log Levels

If requested by HP Software Support, you may have to change the severity threshold level in a log, for example, to a debug level. For details on changing the log level, see "[Log Configuration Dialog Box](#)" on [page 29](#).

Configure RTSM Log Levels

This task describes how to specify the log level for RTSM log files.

1. On the Data Processing Server (DPS), launch the Web browser and enter the following address:
http://localhost:21212/jmx-console

You may have to log in with a user name and password.

2. Click **UCMDB:service=Server Services** to open the JMX MBEAN View page.

3. Locate the **loggersLevels** method.
4. Click **Invoke**.
5. From the list next to each log file name for which you want to set the level, select the required log level (OFF, FATAL, ERROR, WARN, INFO, DEBUG, TRACE, or ALL).
6. Click **Update loggers**.

Log Files

RTSM log files enable you to perform basic troubleshooting of RTSM runtime problems. Additionally, by tracking the RTSM behavior in the log files, you can examine the effects of changes made in the system. The RTSM is composed of subsystems and each subsystem records to several log files.

Log files are located in:

- **Windows:** **OMi_HOME/log/db**

This section includes the following topics:

- ["General Log Files" below](#)
- ["Class Model Log Files" on page 13](#)
- ["TQL Log Files" on page 14](#)
- ["Data-In Log Files" on page 15](#)
- ["History Log Files" on page 16](#)
- ["Enrichment Log Files" on page 18](#)
- ["Dal Log Files" on page 19](#)
- ["Authorization Log Files" on page 19](#)
- ["RTSM Administration UI Log Files" on page 20](#)
- ["Data Flow Management Log Files" on page 21](#)

General Log Files

Quota Log Parameters

The log name is **cmdb.quota.log**.

Log File	Description
Purpose	Quota names, quota values, and current quota levels.
Information Level	Quota names and values set in the server and customer levels during a customer load.
Error Level	RTSM operations that fail because they exceed quota limits.
Debug Level	A count collector runs every n minutes and gathers current counts for all quotas. Collected counts are logged.
Basic Troubleshooting	If operations fail because of quota limits, check the count growth and quota values.

RTSM Operation Statistics Log

The log name is **cmdb.operation.statistics.log**.

Log File	Description
Purpose	Statistics for all operations performed in the past 15 minutes including worst operation instances.
Information Level	Statistics per operation including operation class name, caller application, and customer ID. Default of 10 worst operation instances.
Error Level	Disables the statistics feature.
Debug Level	Not available.
Basic Troubleshooting	Check when there is a performance slowdown.

Configuration Log

The log name is **configuration.log**.

Log File	Description
Purpose	Contains basic environment details, including: <ul style="list-style-type: none">• Server version and CUP version• Database vendor and version• Content pack version• High Availability configuration• Data Flow Probe version• Changes to settings (each setting is audited in the log)
Information Level	Information is written to the log when the system starts up or when a setting is changed.
Error Level	Not available.
Debug Level	Not available.
Basic Troubleshooting	Used by Customer Support to help reproduce customer problems.

Class Model Log Files

CI Type Model Log

The log name is **cmdb.classmodel.log**.

Log File	Description
Purpose	CI Type Model errors and debug messages.
Information Level	When a CI Type Model is loaded, incorrect definitions are logged as informational messages. An example of an incorrect definition is <code>duplicate attributes</code> .
Error Level	Not available.

Log File	Description
Debug Level	<p>Every CI Type update includes the following:</p> <ul style="list-style-type: none"> • Original CIT in XML format • New CIT in XML format • Differences between the CITs <p>If the CI Type Model update is rejected, the reason is logged.</p>
Basic Troubleshooting	<p>Compares the differences that the server finds between the original CIT and the new CIT. This is useful to understand the following scenarios:</p> <ul style="list-style-type: none"> • A CIT in a package failed • An action in the CIT browser applet failed • An action in the CIT browser applet succeeded when it should have failed

TQL Log Files

RTSM Notification Log

The log name is **cmdb.notification.log**.

Log File	Description
Purpose	<p>Notification messages from the time of the component's creation in the RTSM until the client's listener receives a message.</p> <p>Most components receive configuration changes from the RTSM in push mode, by the notification mechanism, rather than in pull mode.</p>
Information Level	<ul style="list-style-type: none"> • Startup and shutdown of publishers • Register and unregister remote and internal listeners
Error Level	<ul style="list-style-type: none"> • Errors when messages are published • Errors when messages are received

Log File	Description
Debug Level	<ul style="list-style-type: none"> • Unique message ID • Number of changes that a message includes as well as more details according to the type of the message (for example, the TQL result version) • JMS header properties
Basic Troubleshooting	If an application does not receive a notification, check the following: <ul style="list-style-type: none"> • a listener is registered with the appropriate notification filter • a message is published with data that matches this filter • a message is received by the listener (use the unique message ID to verify)

Data-In Log Files

RTSM Model Audit Short Log

The log name is **cmdb.model.audit.short.log**.

Log File	Description
Purpose	Information about a CI Type operation: type of operation, data received as input, and what happened to the data in each CIT. Also contains information about the caller application, execution times, and persistency time.
Information Level	Operation details.
Error Level	Not available.
Debug Level	Not available.
Basic Troubleshooting	If there are no changes when there should be, check the following: <ul style="list-style-type: none"> • Whether the operation exists. • Whether the input is correct. • What happened to the data. There may have been a false update. This is especially useful when running DFM to trace the input.

History Log Files

History Log

The log name is **history.log**.

Log File	Description
Purpose	Records general history events
Information Level	<ul style="list-style-type: none">• Auto completion events• Auto complete table lock/unlock messages• Tenants bitmask column size handling• Delete customer fuse notice
Debug Level	<ul style="list-style-type: none">• Auto completion details• History Root table handling messages

History Audit Update Log

The log name is **history.update.audit.log**.

Log File	Description
Purpose	Tracks events saved in the History tables
Information Level	<ul style="list-style-type: none">• Details all events stored in the history tables• Event statistics
Debug Level	Database statistics

History Partition Log

The log name is **history.partition.log**.

Log File	Description
Purpose	<ul style="list-style-type: none">• Records history partition data.• Records the Baseline process events.

Log File	Description
Information Level	<ul style="list-style-type: none"> • Add/Remove partition history tables • Baseline events • Baseline statistics
Error Level	<ul style="list-style-type: none"> • Table partition failures • Baseline process failures

Query History Log

The log name is **history.queries.log**.

Log File	Description
Purpose	Records all the queries performed on the history tables.
Information Level	<ul style="list-style-type: none"> • Query condition • Query results summary
Error Level	Fuse exceeded
Debug Level	<ul style="list-style-type: none"> • Query condition details • Query result details

History Class Model Changes Log

The log name is **history.classmodel.changes.log**.

Log File	Description
Purpose	Tracks all the class model changes that affect the history tables.
Information Level	Class aligning messages
Error Level	Errors that occurred during class aligning

History Purging Log

The log name is **history.purge.log**.

Log File	Description
Purpose	Records the History purging process events
Information Level	Purging process information
Error Level	Errors that occurred during the purging process
Debug Level	Details about purged data

Enrichment Log Files

RTSM Enrichment Log

The log name is **cmdb.enrichment.log**.

Log File	Description
Purpose	<ul style="list-style-type: none">• Enrichment definitions: adding, updating, removing, and calculating.• Calculation results such as how many CIs were added, how many relationships were removed, and so forth.• Supplies the reason for a calculation failure. Failure in a model update, however, is not included since it is an asynchronous execution.
Information Level	<ul style="list-style-type: none">• Add, update, and remove enrichment definitions.• Add, update, and remove CIs or relationships to or from a model.
Error Level	Calculation failure.
Debug Level	Traces the enrichment calculation process.
Basic Troubleshooting	<ul style="list-style-type: none">• If no calculation was carried out, check the definition of add enrichment.• If there are no results, check the finish calculate entry.

Dal Log Files

RTSM Dal Log

The log name is **cmdb.dal.log**.

Log File	Description
Purpose	Information about activity that occurred in the data access layer, the layer that works with the RTSM.
Information Level	Not available.
Error Level	<ul style="list-style-type: none">• Connection pool errors• Database errors• Command execution errors
Debug Level	<ul style="list-style-type: none">• All DAL commands executed• All SQL commands executed
Basic Troubleshooting	<p>If you suspect that RTSM actions are taking too long, check the time spent on queries and updates in the DAL logs and operation logs.</p> <p>Exception details and ID are entered into the log. The exception ID appears in the exception itself.</p>

Authorization Log Files

RTSM Authorization Management Log

The log name is **security.authorization.management.log**.

Log File	Description
Purpose	Audit all modifications related to the authorization model.

Log File	Description
Information Level	<ul style="list-style-type: none"> • Creation and deletion of users, user groups, tenants, roles, and resource groups. • Addition and removal of users from user groups, changes to user passwords, and changes in users' default tenants. • Addition and removal of permissions from roles and changes in read-only status of roles. • Addition and removal of resources from resource groups. • Changes in user role assignments. • Changes in resource tenant associations.
Error Level	Failure to create or modify authorization resources, such as trying to create a user with an existing name.
Debug Level	Web services login requests.
Basic Troubleshooting	May be used to track why a user no longer has a specific permission.

RTSM Authorization Permissions Log

The log name is **security.authorization.permissions.log**.

Log File	Description
Purpose	Debug authorization permissions queries.
Debug Level	Print all existing permissions for the user currently logged in, whenever they are queried in the server.
Basic Troubleshooting	<p>To check a specific permission issue, turn on the debug level, perform the action in the UI, turn the debug level off, and check the log for the existing permissions of the user.</p> <p>It is not recommended to keep this log at debug level, because it generates a large amount of printed output.</p>

RTSM Administration UI Log Files

Client-side Applet Logs

The following client side applet logs are also available:

- **applet-operations.log.** Tracks the operations that are executed from the RTSM Administration UI to the Gateway Server.
- **applet-general.log.** General log for the UI.
- **applet-cacheStatistics.log.** Tracks statistics of the UI cache.
- **applet-missing_resources.log.** Missing resources log.
- **applet-applet-tasks.log.** Logs task executions.
- **applet-timeMeasure.log.** Log for measuring performance.
- **applet-memoryTracker.log.** Tracks the memory usage of the UI.
- **applet-errors.log.** Logs the errors that occurred in the UI

Data Flow Management Log Files

Data Flow Management log files store information about data flow activity (discovery and integrations), as well as related errors, that occur on the Server side.

mam.AutoDiscovery.log

Contains information about tasks running on the server. The server provides services to the user interface, such as: activating jobs, processing results from the Probe, or creating tasks for the Probe. In a distributed environment, the file resides on the Data Processing server.

Level	Description
Error	All DFM process errors on the server side.
Information	Information about requests being processed.
Debug	Logs mainly for debugging purposes.

Basic Troubleshooting. Check this log when you have invalid user interface responses or errors you need to explore. This log provides information to enable you to analyze the problems.

discoveryServlet.log

This log receives messages from:

- **The Collectors Utilities Servlet.** The user interface connects to the server through this servlet.
- **The Collectors Servlet.** The Probe requests new tasks from the server through this servlet.

- **The Collectors Results Servlet.** The Probe sends new results through this servlet.
- **The Collectors Download Servlet.** The Probe downloads new server data through this servlet.

In a distributed environment, the file resides on the Gateway server.

Level	Description
Error	All errors in the servlet.
Information	Information about user requests and Probe task requests.
Debug	<ul style="list-style-type: none"> • User requests • Probe requests to read DFM tasks. • Probe access of the servlet.

Basic Troubleshooting

- User Interface – Server communication problems.
- Probe – Server communication problems.

Some processing problems may be written to this log instead of to **mamAutoDiscovery.log**.

mam.AutoDiscovery.Results.Stat.log

Contains the statistics of the results received from the Probe.

Autodiscovery Dal Log

The log name is **mam.autodiscovery.dal.log**.

Log File	Description
Purpose	Holds information on queries and other actions taken on the server's database tables as part of the discovery process.
Information Level	A summary of actions taken and their results on the database (such as retrieving information, deleting records, etc.).
Error Level	All critical errors that occurred during the attempt to access the database.
Debug Level	Detailed information on query parameters and/or the results that are retrieved from them
Basic Troubleshooting	If there are any database errors or failures (such as connection failed, technical error in the query, etc.), the error log is included in this log file also.

Download a Zip File of Log Files and Thread Dumps

You can produce a zip file that includes all logs and thread dumps. You create the file either through a JMX operation on the client machine, or by running a batch file on the RTSM.

Thread dumps are created periodically: Once a minute, a thread dump snapshot is taken and is saved to a new file in the **C:\hp\UCMDB\UCMDBServer\runtime\log\threadDumps** folder. Thread dump files from the last hour are kept. This folder also holds the ad hoc Server snapshots that are generated during the **logGrabber** execution.

To generate the zip file from the client machine:

1. Launch the Web browser and enter the server address, as follows: **http://localhost:21212/jmx-console**.

You may have to log in with a user name and password.

2. Under UCMDB, click **UCMDB:service=Server services** to open the JMX MBEAN View page.
3. Locate the **executeLogGrabber** operation.
4. Click **Invoke**.

A Server snapshot file with the name **LogGrabber_serverSnapshot_<current date and time>.txt** is created in the following location: **OMI_HOME/log/odb/ThreadDumps**. This is a thread dump that includes the threads of the Server framework only.

5. In the File Download dialog box, you can open the **logGrabber_<current time>.zip** file, or download it to the client machine.



RTSM User Interface

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Annotation Tool



This tool enables you to annotate a snapshot of the screen you are viewing, to highlight important areas. It is available across all components of the system.








To access	Click the Run Screen Capture Tool  button in the Status bar or select Tools > Screen Capture... from the main menu.
Important information	<ul style="list-style-type: none">• The annotation options are located on the left side of the annotation window.• When saving the annotation:<ul style="list-style-type: none">▪ The snapshot is saved in .png format.▪ You cannot select the New Folder  button when saving in the My Documents directory or any of its subdirectories.



Annotation Options

The following elements enable you to annotate your snapshot.

User interface elements are described below:

UI Element (A–Z)	Description
	Pan Tool. Click to navigate the snapshot.
	Select Tool. Click and drag to select a specific area of the snapshot.


UI Element (A–Z)	Description
	<p>Shape Tool. Click and drag to add a shape to the snapshot. Clicking the shape tool button enables the following shape buttons:</p> <ul style="list-style-type: none">•  Rectangle. Click and drag to mark an area of the snapshot with a rectangle.•  Filled Rectangle. Click and drag to mark an area of the snapshot with a filled rectangle.•  Oval. Click and drag to mark an area of the snapshot with an oval.•  Filled Oval. Click and drag to mark an area of the snapshot with a filled oval.•  Rounded Rectangle. Click and drag to mark an area of the snapshot with a round rectangle.•  Filled Rounded Rectangle. Click and drag to mark an area of the snapshot with a filled round rectangle. <p>Customization. After clicking this button, you can customize your line appearance through the following parts of the interface:</p> <ul style="list-style-type: none">• Line Type. Choose the type of line you want to add. Options include:<ul style="list-style-type: none">■ Solid Line■ Jagged Line• Line Width. Select the width of the line, in pixels, in the annotation.

UI Element (A–Z)	Description
	<p>Line Tool. Click and drag to enable the line tool, which marks the selected area of the snapshot with a line.</p> <p>Customization. After clicking this button, you can customize your line appearance through the following parts of the interface:</p> <ul style="list-style-type: none"> • Line Style. Choose the style of line you want to add. Options include: <ul style="list-style-type: none"> ▪ Regular line ▪ Line with endpoints ▪ Line with arrows • Line Type. Choose the type of line you want to add. Options include: <ul style="list-style-type: none"> ▪ Solid Line ▪ Jagged Line • Line Width. Select the width of the line, in pixels, in the annotation.
	<p>Text Tool. Click and drag to open a box where you can add text to the snapshot.</p> <p>Example: Add the syntax: <code>This is the problematic item</code> above a line marking an area of the snapshot.</p>
<p>Border and Fill Colors</p>	<p>Select the relevant square to choose the color of the border and fill of your annotations. The available squares are:</p> <ul style="list-style-type: none"> • Upper Square. Click to choose the color of lines, as generated by the line tool and displayed in unfilled shapes. • Lower Square. Click to choose the color to fill shapes. <p>Clicking either of the squares generates a dialog box with the following tabs where you choose the color:</p> <ul style="list-style-type: none"> • Swatches • HSB • RGB





UI Element (A–Z)	Description
Opacity	Slide the opacity bar to choose the darkness level of the selected shape line, text line, or shape color in the annotation. <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • A higher opacity percentage means that the selection appears darker. A lower opacity percentage means that the selection appears lighter. • This field is enabled when either the shape tool, line tool, or text tool button is selected. </div>

Menu Bar

The following elements enable you to perform selected actions on your snapshot.

Important information	The menu bar contains elements which enable you to: <ul style="list-style-type: none"> • Change the appearance of the snapshot. • Customize the appearance of text annotated onto your snapshot. These elements are enabled only when the Text Tool  button is selected.
------------------------------	---


User interface elements are described below (unlabeled elements are shown in angle brackets>):

UI Element (A–Z)	Description
	<p>Save. Saves the snapshot on your local machine.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • The snapshot is saved in .png format. • You cannot select the New Folder  button when saving in the My Documents directory or any of its subdirectories. </div>
	<p>Select All. Selects all of the annotations added to your snapshot.</p>
	<p>Clear Selected. Clears all annotations.</p>

UI Element (A–Z)	Description
	Undo. Rolls back the most recent action performed on the snapshot.
	Redo. Cancels the roll back of the most recent action performed on the snapshot.
	Zoom In. Brings the snapshot view closer.
	Zoom Out. Sets the snapshot view further away.
	Restore original size. Restores the snapshot to its original size.
	Print. Prints the snapshot.
	<p>Bold. Bolds the text.</p> <p>Note: This field is enabled only when selecting the Text Tool  button .</p>
	<p>Italic. Italicizes the text.</p> <p>Note: This field is enabled only when selecting the Text Tool  button.</p>
	<p>Underline. Underlines the text.</p> <p>Note: This field is enabled only when selecting the Text Tool  button .</p>
	<p>Anti-aliasing. Adjusts the pixel reading of text or annotation lines so that they appear smoother.</p> <p>Note: This field is only enabled when selecting the Text Tool  button.</p>
	<p>Select the font for the text in the report.</p> <p>Note: This field is only enabled when selecting the Text Tool  button .</p>
	<p>Select the size of the font in the report.</p> <p>Note: This field is only enabled when selecting the Text Tool  button .</p>

Log Configuration Dialog Box

This dialog box enables you to view RTSM logs and change the log level.

To access	In the Status bar, click Log Level Configuration  or select Tools > Log Configuration... from the Modeling main menu.
See also	"Log Severity Levels" on page 10

User interface elements are described below:


UI Element	Description
Appender	The name of the appender.
File	Click the link to open the log file in an editor.
Apply	Click to apply the selected log level to the log.
Loggers pane	An expandable list of RTSM logs. Select the required log from the list: the details of the log appear in the lower pane.
Logger's appender	A string defining the log category. For internal use only.
Log level	Select a log level from the drop-down list.







Status Bar

This feature provides information on the RTSM application and enables you to configure certain aspects of your interface.

To access	Appears at the bottom of the screen on all pages in the RTSM.
------------------	---

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element	Description
Module	Indicates the manager currently selected. Click this item to display a page with descriptions for all of the managers.
 User	Indicates the name of the current user and the login time. Click to edit the user profile.
<License status>	Indicates the current status of the licenses. Click to display a window showing the license summary, available licenses, and selected license.

UI Element	Description
<Server status>	<p>Indicates the current status of the server. Click to display a balloon with the server availability, time zone and time.</p> <p>Note: If the hidden setting hide.backend.server.name is set to true, the Server status displays Server is available, rather than displaying the name of the server. This setting is set to false by default, and can only be accessed via the JMX console. Go to Settings Services and invoke the setGlobalSettingValue method.</p>
	Configure User Preferences. Opens the User Preferences dialog box, which enables you to reset system preferences.
	Log Level Configuration. Opens the Log Configuration dialog box, which enables you to set the log level for a selected log.
	Run Screen Capture Tool. Runs the Annotation tool which enables you to take a screen capture of the application. The tool also enables you to annotate the screen capture, and save or print it. For details, see " Annotation Tool " on page 24.
	Force refresh the user's authentication. Refreshes the authentication of the user logged in.
<Total heap size>	Indicates the amount of memory that the application is using.
	Run the Garbage Collector. Enables you to manually clean the memory (it runs automatically on a periodic basis).
	Help on Status Bar. Opens the HP Operations Manager i Online Help for the Status Bar.

Part 2: Administration

Chapter 2: Package Manager

This chapter includes:

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Package Administration Overview

A package contains resources that are grouped together by defined criteria. For a list of the default resource types, see "[Resource Types](#)" on page 42.

Package Manager fulfills several functions:

- Enables the discovery of specific IT infrastructure assets. For example, HP Operations Manager i deploys the SQL_Server package to discover Microsoft SQL servers.
- Enables you to define the CI Type model through the CI types that are included in the packages. For example, some of the CI types included in the Host_Resources_Basic package are File System, CPU, Process, and Print Queue.
- Enables you to move groups of resources from one system to another, for example, from a test to a production environment.

There are two types of packages:

- **Factory package.** Contains resources that are deployed with the installation and are used to initialize HP Operations Manager i.

By default, factory packages are located in: **<HP Operations Manager i root directory>\odb\conf\factory_packages** on the Data Processing server machine.

Note: Some of the factory packages that are deployed with the installation are not visible in the list of packages that appear in Package Manager. To display the hidden packages, right-click anywhere on the Package Manager page and select **Show Hidden Packages**.

- **Custom package.** A package that is user created. You may want to create a custom package if the factory packages do not contain the resources needed for the tool you are developing, or if you want to export resources from system to system. For details, see "[Create Custom Package/Edit Package Wizard](#)" on page 45.

Caution: If you create custom packages for the resources or tools you develop, do not place them in the **<HP Operations Manager i root directory>\odb\conf\factory_packages** folder on the Data Processing server machine. This folder is only for factory packages.

Export and deployment of packages from system to system is performed through the Package Manager interface.

You can:

- Export some or all of a package's resources to your local directory. For details, see "[Export a Package](#)" on page 36.
- Deploy some or all of a package's resources to the RTSM from your local directory. For details, see "[Deploy a Package](#)" on page 36.

Package Locations

There are three pre-defined folders with out-of-the-box, automatically deployed packages under **<HP OMi root directory>\odb\content**:

- basic_packages
Internal packages
- adapters
Adapter packages
- CPx.zip
Content Pack packages

There is an additional folder with packages relevant for OMi located at **<HP OMi root directory>\odb\conf\factory_packages**.

Package Manager User Interface

Each package in the Package Manager User Interface includes the following:

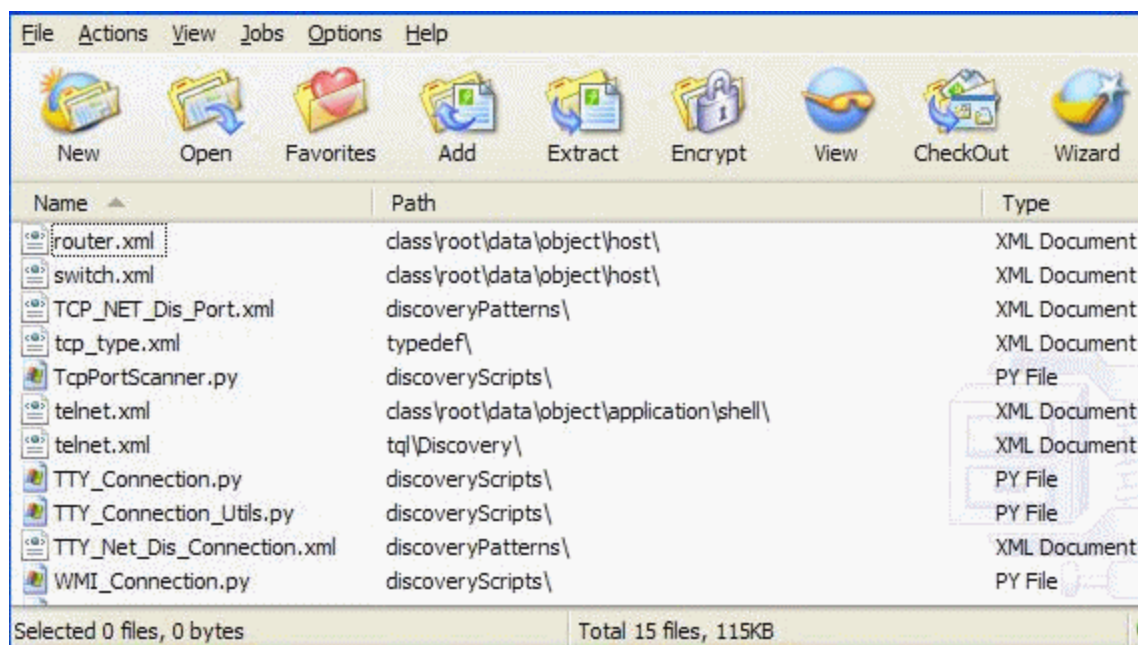
- An **Icon** identifying the package as factory, hidden or user
- A **Package Name** representing the name of the .zip file (optional)
- The **Category** as allocated in the descriptor.xml file (optional)
- A **Readme** file that corresponds to the package (optional)
- A **Description** that corresponds to the description located in the descriptor.xml file

Package Zip File Contents and Format

A package's resources are stored in the RTSM. To export a package from system to system, you use the Package Manager interface (for details, see "[Package Manager Page](#)" on page 51). Package Manager creates a zip file containing the resources to enable the export of the resources.

When you export resources from the Package Manager to your local directory, the resource definitions are stored in various formats, for example, XML format.

In the sample **Network.zip** below, the **router.xml** file contains a Router CIT definition and the **Switch.xml** file contains a Switch CIT definition.



Packages for Integration Adapters

You deploy Integration adapters by creating a package and placing them in the appropriate folder. For details, see [Add an Adapter for a New External Data Source](#) in the *RTSM Developer Reference Guide*.

Create a Custom Package

When you create a new package, you give the package a unique name and description, and then select the resources you want included in the package. For details, see "[Create Custom Package/Edit Package Wizard](#)" on page 45.

Example of Resources Selected to Be Included in a Package:

The summary page in the Create Custom Package wizard displays the resources selected to be included in the package, as shown in the illustration below.

The package contains resources from the following resource groups:

- Relationships
- Valid Links
- Configuration Item Types (CITs)

Selection Summary



View the resources to be included in the package.

Relationships:
applicationLink



Valid Links:
Service Desk Link: Siebel Application -> IT Incident

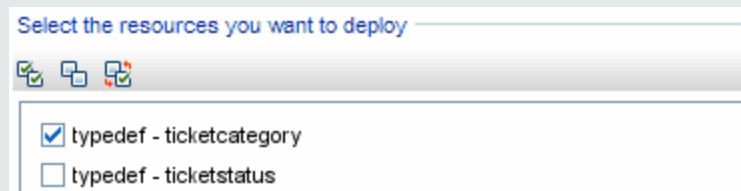
Configuration Item Types:
Business Service View

Deploy a Package

1. Click the  button to open the Deploy Packages to Server dialog box.
2. Click the  button to open the Deploy Packages to Server (from local disk) dialog box.
3. Select a package zip file and click **Open**. The package appears in the upper pane of the dialog box and its resources appear in the lower pane.
4. Select the resources from the package that you want to deploy. All the resources are selected by default.
5. Optionally, select another package zip file and select the relevant resources to deploy.
6. When you have selected all the resources you want to deploy from each selected package, click **Deploy**.
7. A status report appears indicating whether the deployment was successful for each resource selected.

Example of Deploying Only Specific Resources in a Package:

You want to deploy only some of the resources contained in the package called **ticket2.zip**. Click the  button. In the Deploy Packages to Server dialog box, click the  button, browse to the package's location and select the resources from the package you want to deploy. See the following illustration:




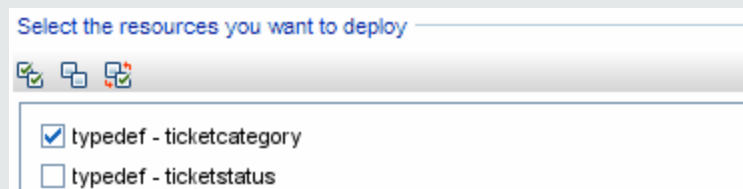
Note: Every time a package related to a change in the class model is deployed or undeployed, a zip file is generated in the **runtime\log\package_reports\customer_1\classModel** folder. The zip file contains the class model file before the change, the class model file after the change, and the package deployment report.

Export a Package

You can export some or all of a package's resources to your local directory. For details, see "[Package Manager Page](#)" on page 51.

Example of Exporting Only Specific Resources in a Package:

You want to export only some of the resources contained in a package called **ticket2.zip** to your local directory. Click the  button. In the Export Package dialog box, select the **Export Resources** option and select the resources you want to export. See the following illustration:



Use the JMX Console to Perform Package Manager Tasks

This section describes the Package Manager tasks you can perform using the JMX console.

Note:

- It is recommended that you use the Package Manager to perform these tasks instead of the JMX console.
- View Package Deployment History cannot be performed by the Package Manager.

This section includes the following tasks:

- ["Deploy a Package" below](#)
- ["View Package Deployment History" on the next page](#)
- ["Undeploy a Package" on the next page](#)
- ["Display Currently Deployed Packages" on page 39](#)
- ["Export Packages" on page 39](#)
- ["Package Name Rules" on page 40](#)

Deploy a Package

Follow these steps to deploy a package using the JMX console.

1. Launch your Web browser and enter the following address: **http://localhost:21212/jmx-console**.
2. Under **UCMDB**, click **UCMDB:service=Packaging Services** to open the JMX MBEAN View page.

3. Locate **deployPackages**.
4. In the **Value** box for the parameter **customerID**, enter 1.
5. In the **Value** box for the parameter **dir**, enter the name of the folder that contains the package's zip file. Ensure that you include the full path to the folder.

Note: To deploy the package from the **basic_packages** directory, leave this box empty.

6. In the **Value** box for the parameter **packagesNames**, enter the name of the packages. For details, see ["Package Name Rules" on page 40](#).
7. Select **True** to override job configurations changed in Universal Discovery. For details, see ["Discovery Modules/Jobs Tab"](#) in the *Data Flow Management Guide*.
8. Click **Invoke** to deploy the package.

View Package Deployment History

Each time you deploy packages, a report is created displaying the deployment status of those packages. Use the JMX console to view the deployment status report.

1. Launch the Web browser and navigate to: **http://localhost:21212/jmx-console**.
2. Under **UCMDB**, click **UCMDB:service=Packaging Services** to open the JMX MBEAN View page.
3. Locate **displayResourcesDeploymentHistory**.
4. In the **Value** box for the parameter **customerId**, enter the <customer id>.
5. In the **Value** box for the parameter **reportNum**, enter the number of the report you want to view.
6. Click **Invoke** to view the deployment status report of the packages.

Undeploy a Package

Follow these steps to undeploy a package using the JMX console.

1. Launch the Web browser and navigate to: **http://localhost:21212/jmx-console**.
2. Under **UCMDB**, click **UCMDB:service=Packaging Services** to open the JMX MBEAN View page.
3. Locate **undeployPackages**.
4. In the **Value** box for the parameter **customerId**, enter the <customer id>.

5. In the **Value** box for the parameter **packagesNames**, enter the name of the package you want to remove. For details, see ["Package Name Rules" on the next page](#).
6. Click **Invoke** to undeploy the package.

Display Currently Deployed Packages

Follow these steps to display currently deployed packages using the JMX console.

1. Launch the Web browser and navigate to: **http://localhost:21212/jmx-console**.
2. Under **UCMDB**, click **UCMDB:service=Packaging Services** to open the JMX MBEAN View page.
3. Locate **displayDeployedPackages**.
4. In the **Value** box for the parameter **customerId**, enter the <customer id>.
5. In the **Value** box for the parameter **packagesNames**, specify the names of the packages you want to display. For details, see ["Package Name Rules" on the next page](#).
6. Click **Invoke** to display the packages that are currently deployed.

Export Packages

Follow these steps to export resources from the RTSM to the server on which HP Operations Manager i is installed using the JMX console.

1. Launch the Web browser and navigate to: **http://localhost:21212/jmx-console**.
2. Under **UCMDB**, click **UCMDB:service=Packaging Services** to open the JMX MBEAN View page.
3. Locate **exportPackages**.
4. In the **Value** box for the parameter **customerId**, enter the <customer id>.
5. In the **Value** box for the parameter **packageName**, enter the name of the package you want to export. For details, see ["Package Name Rules" on the next page](#).
6. In the **Value** box for the parameter **outputDir**, enter the name of the folder on the HP Operations Manager i server to which you want to export the package's zip file. Ensure that you include the full path to the folder.
7. In the **Value** box for the parameter **userOnly**, select one of the following:
 - **True**. Export only the custom packages.

- **False.** Export both custom and factory packages.
8. Click **Invoke** to export the package.

Package Name Rules

The rules for entering a package name are as follows:

- Wildcard characters (*) are not supported.
- The package name is case sensitive.
- The package name must have a **.zip** extension.
- When deploying more than one package, separate the package names by commas.

Package Resources

This section contains a list of the resources a package can contain. For a list of the available resource types and their descriptions, see ["Resource Types" on page 42](#).

- **acl.** The definition of a role such as Administrator or Guest. For details, see "User Management" in OMi Administration Guide.
- **adapter.** Contains a description and the capabilities of the deployed federated adapter.
- **adapterCode.** Contains compiled classes (normally a jar), based-on *.jar files, and configuration files needed for federated adapters. Place these files in the **adapterCode\<adapter ID>** folder in the zip package. For details, see ["Add an Adapter for a New External Data Source"](#) in the *RTSM Developer Reference Guide*.
- **calculatedlinks.** Contains the calculated super class for each of the calculated links defined.
- **calculatedlinkstriplets.** Contains the calculated relationships and their triplets as defined in the CI Type Manager.
- **categories.** Contains the State definitions used by Impact Analysis. For details on States, see ["State Manager" on page 59](#). For details on Impact Analysis, see ["Impact Analysis Manager"](#) in the *Modeling Guide*.
- **class.** CI type descriptions, such as host, file, switch, and so on. For details, see ["CI Type Manager"](#) in the *Modeling Guide*.
- **cmdbview.** Contains the hierarchy rules defined for the base TQL query of each view. For details, see ["Modeling Studio"](#) in the *Modeling Guide*.
- **correlation.** Impact rule definitions. For details, see ["Impact Analysis Manager"](#) in the *Modeling*

Guide.

- **datamodel.** Used to import CI instances into the system. If the CI does not exist in the RTSM, an instance of the CI is created. If a CI already exists in the RTSM, the values of the CI from the package resource overwrites the values of the CI in the RTSM.
- **datamodelcreateonly.** Used to import CI instances into the system. If the CI does not exist in the RTSM, an instance of the CI is created. If a CI already exists in the RTSM, the values of the CI from the package resource does not overwrite the values of the CI in the RTSM.
- **datamodelgenerateids.** Used to import CI instances into the system for CITs that require the ID to be calculated dynamically upon deployment (such as CITs with no key attributes).
- **dataStore.** Contains the integration point definition.
- **discoveryConfigFiles.** Configuration files include properties and parameters that are needed to discover components on the system. For details, see "[Adapter Configuration](#)" in the *Data Flow Management Guide*.
- **discoveryJobs.** A Data Flow Management (DFM) job includes configuration data, scheduling information, and TQL assignments needed to activate discovery of components. For details, see "[Introduction to Universal Discovery](#)" in the *Data Flow Management Guide*.
- **discoveryModules.** A DFM module includes all the jobs needed to discover a specific component in the system. For details, see "[Introduction to Universal Discovery](#)" in the *Data Flow Management Guide*.
- **discoveryPatterns.** DFM adapters define which code to run and in which order, declare the input and output CI Types and parameters to be configurable on the DFM jobs related to them. The adapter can be used as an integration adapter or a Discovery adapter. For details, see "[Adapter Configuration](#)" in the *Data Flow Management Guide*.
- **discoveryResources.** External resources include all external resources that are needed in DFM, for example, a Visual Basic file, an additional jars file, and so on. For details, see "[Adapter Configuration](#)" in the *Data Flow Management Guide*.
- **discoveryScripts.** DFM Jython scripts populates the RTSM with data, either by performing Discovery on a network component or during integration with an external data repository. For details, see "[Adapter Configuration](#)" in the *Data Flow Management Guide*.
- **discoveryWizard.** Used to define the Discovery Activity dialog box contents. For details, see the section on discovery activities in the *HP Universal CMDB Discovery and Integration Content Guide*.
- **enrichment.** Enrichment rule definitions. For details, see "[Enrichment Manager](#)" in the *Modeling Guide*.
- **identification.** Contains the identification definition of a specific CI type.

- **integrationUsers.** Used to define a user of type integration.
- **modelnotification.** Contains filter definitions for RTSM model notifications. The data model notification system gives notification of changes that occurred in the RTSM. For example, items in the RTSM that have been removed, updated, or added.
- **report.** Report rule definitions, as described in "[Topology Reports Overview](#)" in the *Modeling Guide*.
- **schedulerJob.** Tasks that have been defined to run in the Scheduler. For details, see "[Scheduler](#)" on page 62.
- **singleqlref.** Contains TQL template and perspective instances. For details, see "[Modeling Studio](#)" in the *Modeling Guide*.
- **tql.** TQL query definitions. For details, see "[Topology Query Language \(TQL\) Overview](#)" in the *Modeling Guide*.
- **typedef.** Predefined Enumeration definitions that relate to attributes of type Enumeration, such as severity levels, admin states, and so on. For details, see "[System Type Manager](#)" in the *Modeling Guide*.
- **users.** The definition of a user and the user's role. For details, see "User Management" in OMi Administration Guide.
- **validlinks.** All predefined, valid connections (relationships) between CITs.

Resource Types

This section contains a list of the available resource types and their descriptions. For a list of the resources a package can contain, see "[Package Resources](#)" on page 40.

Model

- **Configuration Item Types.** The CITs defined in the CI Type Manager. For details, see "[CI Types Overview](#)" in the *Modeling Guide*.
- **Identifications.** The configuration files containing the identification rules for CIs. For details, see "[Identification Service](#)" in the *Data Flow Management Guide*.
- **Relationships.** The relationships defined in the CI Type Manager. For details, see "[CI Type Relationships](#)" in the *Modeling Guide*.
- **Calculated Relationships.** Contains the calculated relationships and their triplets as defined in the CI Type Manager.
- **Valid Links.** All possible predefined valid connections (relationships) between the CITs that are

defined in the CIT folder.

- **Service Models.** The pattern-based models defined in the Modeling Studio that were not defined over an existing model. For details, see "[Pattern-based Models](#)" in the *Modeling Guide*.

Query

- **Queries.** The TQL queries defined in the TQL Editor in the Modeling Studio. For details, see "[Topology Query Language](#)" in the *Modeling Guide*.
- **Views.** The views defined in the View Editor in the Modeling Studio. For details, see "[View Formats](#)" in the *Modeling Guide*.
- **Enrichments.** The Enrichment rules defined in the Enrichment Manager. For details, see "[Enrichment Manager](#)" in the *Modeling Guide*.
- **Impact Rules.** The Impact Analysis rules. For details, see "[Impact Analysis Manager](#)" in the *Modeling Guide*.

Settings

- **Type Definitions.** Predefined Enumeration definitions that relate to attributes of enumeration type, such as severity levels, admin states, and so on. For details, see "[System Type Manager](#)" in the *Modeling Guide*.
- **Job Scheduler.** Tasks that have been defined to run in the Scheduler. For details, see "[Scheduler](#)" on page 62.
- **State Categories.** The states defined in the State Manager. For details, see "[State Manager](#)" on page 59.

Discovery

- **Adapters.** DFM adapters define which scripts need to be run and in which order, declare the input and output CI Types and the parameters to be configurable on the Discovery jobs related to them. For details, see "[Adapter Configuration](#)" in the *Data Flow Management Guide*.
- **Discovery Documents.** A Discovery document is a customized document describing the usage and functionality of a specific package. For details, see "[How to Attach Discovery Documentation to a Discovery Package](#)" in the *Data Flow Management Guide*.
- **Discovery Modules.** A Discovery module includes all the jobs needed to discover a specific component on the system. For details, see "[Discovery Modules/Jobs - Discovery Modules Pane](#)" in the *Data Flow Management Guide*.
- **Discovery Jobs.** A Discovery job includes configuration data, scheduling information, and TQL

assignments needed to activate discovery of components. For details, see ["Introduction to Universal Discovery"](#) in the *Data Flow Management Guide*.

- **Discovery Configuration Files.** Configuration files include properties and parameters that are needed to discover components on the system. For details, see ["How to Define Discovery Rules"](#) in the *Data Flow Management Guide*.
- **Discovery Jython Script.** Discovery Jython Scripts are Jython scripts used by the discovery process to discover and map the various network entities.
- **Discovery External Resource.** Includes resources not used by the Data Flow Probe directly, but rather indirectly by the DFM scripts. It can contain binary executable files or DLLs, XML configuration files, or any other essential resource needed for the discovery to function properly. For details, see ["Adapter Configuration"](#) in the *Data Flow Management Guide*.
- **Discovery Wizard Resource.** Used to define the Discovery Activity dialog box contents. For details, see the section on discovery activities in the *HP Universal CMDB Discovery and Integration Content Guide*.
- **Software Application Library.** Contains software application and version descriptions that are used to identify files that are discovered during the inventory discovery process. For details, see the Software Application Index section in the *HP Universal CMDB Discovery and Integration Content Guide*.
- **Inventory Scanner Configuration.** Configuration settings that control how inventory is collected, which information is gathered, and the level of detail to be included. For details, see the section on the Scanner Generator in the *HP Universal CMDB Discovery and Integration Content Guide*.
- **Scanner Package for Scanner Generator.** The base file used by the Scanner Generator to build a manually-deployed executable scanner file. For details, see the section on the Scanner Generator in the *HP Universal CMDB Discovery and Integration Content Guide*.

Package Manager User Interface

This section includes (in alphabetical order):

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Export Package Dialog Box	49
Filter Dialog Box	49
Find Dialog Box	50
Package Manager Page	51
Undeploy Package Resource Wizard	56

Choose Resources to Export Dialog Box

This dialog box enables you to export an entire package or specific resources to your local directory.



To access	Select the Export resources button in the Export Package dialog box.
------------------	---

User interface elements are described below (unlabeled elements are shown in angle brackets>):

UI Element (A-Z)	Description
<List of resources >	Displays the list of resources contained in the package. Select the resources you want to export to your local directory.

Create Custom Package/Edit Package Wizard

This wizard enables you to create a package using existing resources or edit an existing package.

To access	Click the Create Custom Package  button on the Package Manager page to create a new package or Select a package and click the Edit package  button to edit an existing package.
Important information	When editing an existing package, this feature is not a wizard, but a dialog box. The dialog box contains two tabs: the Package Properties tab and the Resource Selection tab.
Relevant tasks	"Create a Custom Package" on page 35
Wizard map	The "Create Custom Package/Edit Package Wizard" contains: "Package Properties Page" > "Resource Selection Page" > "Selection Summary Page"
See also	<ul style="list-style-type: none"> • "Package Administration Overview" on page 32 • "Package Resources" on page 40 • "Resource Types" on page 42

Package Properties Page

This wizard page enables you to define the properties of the package.

Wizard map	The " Create Custom Package/Edit Package Wizard " contains: "Package Properties Page" > " Resource Selection Page " > " Selection Summary Page "
-------------------	---

User interface elements are described below:

UI Element (A-Z)	Description
Factory package	Indicates a default package that is deployed with the installation. Note: This check box is always disabled.
Hidden package	Indicates a package that is deployed with the installation but is not visible in the list of packages that appear in the Package Manager page. Note: <ul style="list-style-type: none"> This check box is always disabled. To display the hidden packages, right-click anywhere in the Package Manager page and select Show Hidden Packages.
Package Build Number	The build number of the package.
Package Category	A free text box for any notes you want to associate with the package.
Package Description	A description of the package.
Package Name	The name of the package.

Resource Selection Page

This wizard page enables you to add the required resources to the package. Select the required resources from the various resource types.

Important information	You can make multiple selections from each resource type.
Wizard map	The " Create Custom Package/Edit Package Wizard " contains: "Package Properties Page" > " Resource Selection Page " > " Selection Summary Page "

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
✓	Appears in the left pane. Indicates that a resource has been added to the package.
-	Appears in the left pane. Indicates that no resource has been added to the package.
<Resource types in the left pane>	<p>Contains the resource types from which you can choose the required resources to add to the package.</p> <p>For details of a list of the available resource types and their descriptions, see "Resource Types" on page 42.</p> <p>Note: A green dot appears on the resource type icon in the right pane, when one or more of its resources are selected to be included in the package.</p>

UI Element (A-Z)	Description
<Resources in the right pane>	<p>Select the resources you want to add to the package. You can select multiple resources.</p> <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;"> <p>Note:</p> <ul style="list-style-type: none"> A green check appears to the right of a Configuration Item Types, Relationships, or Calculated Relationships when one or more of its children in the resource tree are included in the package. A folder's check box has a <input type="checkbox"/> when only some of its resources are included in the package. (This does not apply to Configuration Item Types, Relationships, or Calculated Relationships.) A folder's check box is selected when all its resources are included in the package. (This does not apply to Configuration Item Types, Relationships, or Calculated Relationships.) </div> <p>Important information:</p> <p>To add a calculated relationship to the package, select either the required calculated relationship together with one or more of its triplets, or the required triplets without selecting the calculated relationship itself.</p> <ul style="list-style-type: none"> If you select only specified triplets and not the calculated relationship, the triplets are added only if you already have an existing calculated relationship in the system. If you select a calculated relationship together with one or more of its triplets, the property definitions of the calculated relationship are included in the package. If you already have a calculated relationship in the system, the property definitions of the existing calculated relationship are updated with the properties of the calculated relationship you are adding to the package. <p>For details on calculated relationships and triplets, see "Using Calculated Relationships" in the <i>Modeling Guide</i>.</p>

Selection Summary Page

This wizard page enables you to view the resources to be included in the package.


Wizard map	The " Create Custom Package/Edit Package Wizard " contains: "Package Properties Page" > "Resource Selection Page" > "Selection Summary Page"
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User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<Selected resources>	Displays the resources that were selected to be part of the package.

Export Package Dialog Box

This dialog box enables you to export the selected package's resources to your local directory.

To access	Click the Export Package to Local Directory  button on the Package Manager page.
Important information	You can choose to export some or all the resources in the package.
Relevant tasks	"Export a Package" on page 36
See also	"Package Administration Overview" on page 32


User interface elements are described below:

UI Element (A-Z)	Description
Export resources	Export only some of the package's resources to your local directory. Opens the Choose Resources to Export dialog box.
Export to directory	Select the directory to which you want to export the resources.
Export whole package	Export all the resources in the package to your local directory.
File name	The name of the package. Note: The package name cannot be edited.

Filter Dialog Box

This dialog box enables you to display only specific packages on the Package Manager page.

To access	Click the Filter  button on the Package Manager page.
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Important information	<p>A description of the filter condition you defined appears above the table columns on the Package Manager page. For example, the following illustration shows that a filter condition was created to display a package called Network.</p> 
See also	<p>"Package Administration Overview" on page 32</p>

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<Click a column header>	<p>For details, see "Sort Column Content Dialog Box" on page 1 in the <i>Modeling Guide</i>.</p>
<Right-click a column header>	<p>For details, see "Sort Column Content Dialog Box" on page 1 in the <i>Modeling Guide</i>.</p>
Condition	<p>Click inside the box and select the required operator. For details, see "Attribute Operator Definitions" on page 1 in the <i>Modeling Guide</i>.</p>
Display Name	<p>Filter the task list according to one of the following:</p> <ul style="list-style-type: none"> • Package name • Category • Readme • Version • Build Number • Description <p>For details, see "Package Manager Page" on the next page.</p>
Value	<p>Click inside the box to open the Edit box. Enter the required value.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • You must choose a value in the Condition column (other than Is null or Not null) to be able to specify a value for the filter. • When using the Like or Like ignore case operators, include the wildcard (%) in the search value. </div>

Find Dialog Box

This dialog box enables you to find a package that contains a specified resource.

To access	Click the Find  button on the Package Manager page.
See also	"Resource Types" on page 42

User interface elements are described below:





UI Element (A-Z)	Description
Case sensitive	Distinguish between uppercase and lowercase characters. When you select Case sensitive , search results find only those instances in which the capitalization matches the text you typed in the Resource name box.
Resource name	Enter a word or phrase contained in the resource for which you are looking.
Search Results	The search results. Displays the names of up to 30 resources containing the text entered in the Resource name box.
Topic	The subsystem containing the resource you want the package to contain. For details, see "Resource Types" on page 42 .


Package Manager Page












This page enables you to create a package out of existing resources or edit an existing package to suit your IT management needs.





To access	Select Administration > RTSM Administration > Administration > Package Manager .
Relevant tasks	<ul style="list-style-type: none"> • "Deploy a Package" on page 36 • "Export a Package" on page 36 • "Create a Custom Package" on page 35 • "How to Install a Discovery and Integration Content Pack" on page 1
See also	<ul style="list-style-type: none"> • "Package Administration Overview" on page 32 • "Package Resources" on page 40 • "Resource Types" on page 42

User interface elements are described below:

UI Element (A-Z)	Description
	Create custom package. Enables you to create a package out of existing resources. Opens the Create Custom Package Wizard. For details, see " Create a Custom Package " on page 35.
	Edit package. Enables you to edit an existing package. Opens the Edit Package Wizard.
	Delete. Deletes a package from the Package Manager while the resources from the package remain in the system. The package that is deleted is removed from the list of packages on the Package Manager page.
	View package resources. Enables you to view the resources included in the selected package. Opens the View package resources dialog box.

UI Element (A-Z)	Description
	<p>Export package table. Enables you to generate a report displaying a list of the packages that are deployed in the system. Choose the export format for the table data. The available options are:</p> <ul style="list-style-type: none">• CSV. The table data is formatted as a comma-separated values (CSV) text file that can be displayed in a spreadsheet. <p>Note: For the CSV formatted table data to display correctly, the comma (,) must be defined as the list separator. In Windows, to verify or modify the list separator value, open Regional Options from the Control Panel, and on the Numbers tab ensure that the comma is defined as the List Separator value. In Linux, you can specify the list separator in the application that opens the CSV file.</p> <ul style="list-style-type: none">• PDF. The table data is exported in PDF format. <p>Note: When exporting to PDF, select a reasonable number of columns to display to ensure that the report is legible.</p> <ul style="list-style-type: none">• XLS. The table data is formatted as an Excel (.xls) file that can be displayed in a spreadsheet.• XML. The table data is formatted as an XML file that can be opened in a text or XML editor. <p>Tip: To extract HTML code from the report:</p> <ul style="list-style-type: none">■ Save the file as HTML■ Open the file in an HTML editor■ Copy the relevant table into the target file

UI Element (A-Z)	Description
	<p>Deploy packages to server. Deploys a package's resources to the RTSM from your local directory. In the upper pane, click the  button to open the Deploy Packages to Server dialog box. Browse to the required package. The resources from that package appear in the lower pane of the dialog box. Select the resources that you want to deploy.</p> <p>Note: When deployment is finished and it is not successful, a Deploy Package dialog box is displayed indicating which resources within the package are not successfully deployed.</p>
	<p>Undeploy resources. Deletes the resources from the system and removes them from the selected package. Opens the Undeploy Package Resource Wizard.</p>
	<p>Export package. Exports some or all of the package's resources to your local directory. Opens the Export Package dialog box.</p>
	<p>Find. Enables you to search for a package that contains a specified resource. Opens the Find dialog box.</p>
	<p>Refresh. Refreshes the contents of the table.</p>
	<p>Install Content Pack. Enables you to install the latest Discovery and Integration Content Pack from the local file system. This button is enabled from Content Pack 7.00 onwards..</p> <p>Note: This feature is only relevant when the latest content pack is available in the local file system of the Data Processing Server (DPS).</p>
	<p>Upload Content Pack. Enables you to upload and install a Discovery and Integration Content Pack. In the Upload and Install Content Pack dialog box, select the required content pack from your local file system to upload and install on the server.</p> <p>Note: Editing the Content Pack file using 7-Zip may result in the file being saved with an incorrect version.</p>
	<p>View UCMDB Class Model. Opens the UCMDB Class Model Reference, which contains information on all packages, CI types and relationships in the class model.</p>
	<p>Filter. Opens the Filter dialog box. You use the Filter dialog box to show only the packages you want displayed on the Package Manager page.</p>
	<p>Clear. Clears the filter definitions you created in the Filter dialog box. This is enabled only if filter definitions were created.</p>

UI Element (A-Z)	Description
	Customize Columns. Opens the Select Columns dialog box where you can change the display order of the columns, hide a column, or display a hidden column. For details on the Select Columns dialog box, see Select Columns Dialog Box in the <i>Modeling Guide</i> .
	Represents a factory package.
	Represents a hidden package.
	Represents a custom package.
Build Number	The build number of the package.
Category	The free text you want to associate with the package, as displayed in the Package Properties page of the Create Custom Package Wizard.
Description	The description of the package, as displayed in the Package Properties page of the Create Custom Package Wizard.
Package Name	The name of the package.
Readme	Click to read a description of the package, as well as other relevant information.
Version	The version of the package.


Shortcut Menu

Menu Item	Description
Delete	Deletes a package from the Package Manager while the resources from the package remain in the system. The package that is deleted is removed from the list of packages on the Package Manager page.
Edit	Edit the selected package. Opens the Edit Package Wizard.
Export Package	Exports some or all of the package's resources to your local directory. Opens the Export Package dialog box.
Show hidden packages	Toggle between displaying and hiding hidden packages.

Menu Item	Description
Undeploy	Deletes the resources from the system and removes them from the selected package. Opens the Undeploy Package Resource Wizard.
View package resources	View the resources included in the selected package. Opens the View package resources dialog box.

Undeploy Package Resource Wizard

This wizard deletes the resources from the system and removes them from the selected package.

To access	Click the Undeploy resources  button on the Package Manager page.
Important information	When you undeploy a package, the resources are removed from the system, and from the other packages that contain that resource. You can restore the resources only when a package containing those resources is deployed.
Wizard map	The " Undeploy Package Resource Wizard " contains: "Remove Resources Page" > "Selection Summary Page"
See also	<ul style="list-style-type: none"> • "Package Administration Overview" on page 32 • "Use the JMX Console to Perform Package Manager Tasks" on page 37

Remove Resources Page

This wizard page enables you to select the resources you want to delete.

Important information	If you delete all the resources from the package, the package is automatically deleted and removed from the list of packages on the Package Manager page.
Wizard map	The " Undeploy Package Resource Wizard " contains: "Remove Resources Page" > "Selection Summary Page"

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
< List of resources contained in the selected package >	Displays the resources contained in the selected package. Select the resources you want to delete from the system.

Selection Summary Page

This wizard page enables you to view the resources you selected to be deleted.

Important information	When undeployment is finished and it is not successful, an Undeploy Package dialog box is displayed indicating which resources within the package are not successfully undeployed.
Wizard map	The " Undeploy Package Resource Wizard " contains: "Remove Resources Page" > " Selection Summary Page "

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<List of deleted resources>	Displays the resources that were selected to be deleted from the package.

Troubleshooting and Limitations

This section describes some of the troubleshooting issues that might arise when deploying and undeploying packages.

This section includes the following topics:

- "[Datamodel Resources Cannot Be Undeployed](#)" below
- "[Additional Information on Package Deployment Failure](#)" below
- "[Package Creation and Deployment in a Non-English Locale](#)" below

Datamodel Resources Cannot Be Undeployed

For a list of the package resources, see "[Package Resources](#)" on page 40.

Additional Information on Package Deployment Failure

If package deployment fails, you can check the Package Manager log files for additional information on why the deployment failure occurred.

Log files are located in the <HP Operations Manager i root directory>\odb\conf folder.

Package Creation and Deployment in a Non-English Locale

This section describes the limitations when working in a non-English locale.

- You cannot deploy a package if the server locale is different than the client locale and the package name contains non-English characters.
- You cannot create a package that contains resources (for example, views and TQL queries) having non-English characters in their names, if the server locale is different from the client locale.

Chapter 3: State Manager

This chapter includes:

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State Manager Overview

A state is based on a severity list called an Enumeration definition.

States are necessary for retrieving Impact Analysis results in IT Universe Manager. For details, see "[IT Universe Manager](#)" in the *Modeling Guide*.


To retrieve Impact Analysis results, you must create an Impact Analysis rule in Impact Analysis Manager, which is based on the Operation state. For details, see "[Impact Analysis Manager](#)" in the *Modeling Guide*.

State Manager contains two default states – Change and Operation. Each one is based on its own severity list.

You can use only the Operation state to retrieve Impact Analysis results in IT Universe Manager.

Note: It is not recommended to define states without first consulting HP Software Support.

Define a State

1. Click the **Add state**  button and enter a unique name and description for the state.
2. Click inside the **Type Definition** column to select the required Enumeration definition. The Type Definition list displays the Enumeration definitions that are defined in System Type Manager. For details, see "[System Type Manager Dialog Box](#)" in the *Modeling Guide*.
3. (Optional) You can create a new Enumeration definition by clicking the **New Enumeration** button. For details, see "[State Manager Page](#)" on the next page.

Note: Only the Enumeration definitions whose list of key values begins with zero (0) appear in

the State Manager.

Alternatively, you can create an Enumeration definition in System Type Manager. The Enumeration definition you create in System Type Manager appears in State Manager.

State Manager User Interface

This section includes:




State Manager Page 60


State Manager Page

This page enables you to create a state based on a severity list (Enumeration definition).

To access	Select Administration > RTSM Administration > Administration > State Manager .
Important information	<ul style="list-style-type: none"> The change and operation states are default states that cannot be edited. It is recommended to consult with HP Software Support before defining a state.
Relevant tasks	"Define a State" on the previous page
See also	<ul style="list-style-type: none"> "State Manager Overview" on the previous page Create an Enumeration Definition – Workflow in the Modeling Guide.

User interface elements are described below:

UI Element (A-Z)	Description
	Add state. Enables you to add a state.
	Delete state. Deletes the selected state.
	Saves the changes you have made.

UI Element (A-Z)	Description
	<p>Creates an Enumeration definition. Opens the Create Enumeration Definition dialog box.</p> <p>For details, see "Create/Update List/Enumeration Definition Dialog Box" in the in the Modeling Guide.</p> <p>The Enumeration definition you have created appears in the System Type Manager dialog box, where you can edit it if required (for details, see "System Type Manager Dialog Box" in the Modeling Guide.</p>
Description	(Optional) Click in the box and enter a description of the state.
Name	Click in the box and enter a unique name for the state.
Type Definition	<p>Click in the box to display a list of the Enumeration definitions.</p> <div style="background-color: #f0f0f0; padding: 5px; margin-top: 10px;"> <p>Note: The Type Definition list only displays the Enumeration definitions whose list of key values begins with zero (0) (and not List definitions) that are defined in the System Type Manager.</p> </div>

Chapter 4: Scheduler

This chapter includes:

Define Tasks That Are Activated on a Periodic Basis	62
Scheduler User Interface	63

Define Tasks That Are Activated on a Periodic Basis

This task describes how to run jobs on a periodic basis.

This section includes the following tasks:

- ["Create a Job Definition" below](#)
- ["Choose an Action" below](#)
- ["Schedule a Task" below](#)

1. Create a Job Definition

Define a job definition. Add actions to the job you created and define how often they run. The Job Definition dialog box displays the tasks that are defined. For details, see ["Job Definition Dialog Box" on page 65](#).

Example of a Job Definition

The illustration below shows that an Enrichment rule is set to run every week on Sunday at 7:30 AM.

Active	Name	Job Definition	Schedule	Last Run Time	Next Run Time
<input checked="" type="checkbox"/>	CUSTOM_ENRICHMENT_JOB	Run an Enrichment rule	Weekly ([Sunday][07:30])		Sun Apr 25 2010 07:30 ...

2. Choose an Action

Select the actions that you want the Scheduler to run. For details, see ["Action Definition Dialog Box" on page 64](#).

3. Schedule a Task

Set the schedule for activating a task in the Scheduler pane. For details, see ["Job Definition Dialog Box" on page 65](#).

Note: When updating a schedule for a task, all jobs run, by default, immediately upon saving the change. If you do not want jobs to run immediately upon updating the schedule, but rather when they are due to run, do the following:

In the **Administration module > Infrastructure Settings Manager > Integration Settings**, set the value for **Enable Scheduled Jobs Auto Run** to **false** (ID: enable.scheduled.jobs.auto.run).

Example of a Scheduled Task

The illustration below shows that the Scheduler is set to run an Enrichment rule called **SAP_Old_Transports** every day at 1:00 AM and 6:00 AM.

Name	
Run an Enrichment rule	SAP_Old_Transports

Scheduler	
<input type="radio"/> Once <input type="radio"/> Interval <input checked="" type="radio"/> Daily <input type="radio"/> Weekly <input type="radio"/> Monthly <input type="radio"/> Cron	
Time zone:	<input type="text" value="US/Central"/> <input type="button" value="Reset server time zone"/>
Invocation hour	<input type="text" value="01:00, 06:00"/> <input type="button" value=" >>"/>

Scheduler User Interface


This section includes (in alphabetical order):

Action Definition Dialog Box	64
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Filter Dialog Box	65
Job Definition Dialog Box	65
Job Scheduler Page	69
Select Days Dialog Box	70
Select Hours Dialog Box	71

Action Definition Dialog Box

This dialog box enables you to select a required action in a list of actions that can be run by the Scheduler.

To access	Click the Add  button in the Actions pane in the Job Definition dialog box.
Important information	<p>After selecting the required action, click Next to display a list of actions. The list of action details depends on which action you choose.</p> <p>For example, if you select Run an Enrichment Rule, a list of the existing Enrichment Rules appears. Select the required Enrichment rules. You can select up to 15 items.</p>
Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<Click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .
<Right-click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .
Actions	For a list of actions that can be run by the Scheduler, see "Scheduler Actions" below.

Scheduler Actions


This section contains a list of actions that can be run by the Scheduler.

- **Rerun Discovery on View.** Runs discovery on the CIs in a selected view. This enables you to configure a general discovery for the entire infrastructure on a less frequent basis, such as once a week, while updating the CIs in important views more frequently, for example, on a daily basis.
- **Run an Enrichment Rule.** Activates the selected Enrichment rule according to its set schedule.

Click **Next** to display a list of the available Enrichment rules and select the required ones. For details, see [Enrichment Manager](#) in the *Modeling Guide*.

Filter Dialog Box

This dialog box enables you to filter the tasks displayed on the Job Scheduler page.


To access	Click the Filter  button on the Job Scheduler page.
Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .
<right-click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .
Condition	Click inside the box and select the required operator. For details, see Attribute Operator Definitions in the <i>Modeling Guide</i> .
Display Name	Filters the task list according to one of the following: <ul style="list-style-type: none"> • Active • Job Definition • Last Run Time • Name • Next Run Time • Schedule For details, see the Job Scheduler page.
Value	Click inside the box and either enter or select the required value.

Job Definition Dialog Box

This dialog box enables you to add actions to the job you created and define how often they run.

To access	Click the Add  button on the Job Scheduler page.
Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62

User interface elements are described below:






UI Element (A-Z)	Description
Job Definition	(Optional) A description for this job.
Name	The name of the job.

Actions Pane

This area enables you to add the required actions to the task you created.

Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62
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User interface elements are described below:

UI Element (A-Z)	Description
	Add. Adds an action to the task. Opens the Action Definition dialog box.
	Edit. Enables you to edit an existing action.
	Delete. Deletes an action.
	Up. Moves a selected row up.
	Down. Moves a selected row down.
Action Definition	Displays the action details you selected in the Action Definition dialog box for the action added.
Name	Displays the name of the action that was added to the job.




Scheduler Pane


This area enables you to set the schedule for activating a task.

Important information	<p>When updating a schedule for a task, all jobs run, by default, immediately upon saving the change. If you do not want jobs to run immediately upon updating the schedule, but rather when they are due to run, do the following:</p> <p>In the Administration module > Infrastructure Settings Manager > Integration Settings, set the value for Enable Scheduled Jobs Auto Run to false (ID: enable.scheduled.jobs.auto.run).</p>
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Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62
See also	"Cron Expressions" in the <i>Modeling Guide</i>

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
	Automatically set the time zone to the correct one for the server.
	(Appears when you choose Cron) Click to validate the Cron expression you entered.
< Schedule options >	<p>Select the required option for scheduling the task. The available options are:</p> <ul style="list-style-type: none"> • Once. Activates the task only once. • Interval. Activates the action at a set time interval. • Daily. Runs a task on a daily basis. • Weekly. Runs a task on a weekly basis. • Monthly. Runs a task on a monthly basis. • Cron. Use a Cron expression to schedule a job. For a description of the fields used in Cron expressions and examples of how to use them, see Cron Expressions in the <i>Modeling Guide</i>.
Cron Expression	Enter a Cron expression in the proper format. For a description of the fields used in Cron expressions and examples of how to use them, see Cron Expressions in the <i>Modeling Guide</i> .
Days of month	<p>(Appears when you choose Monthly) Click the  button to the right of the Days of month box to choose the day of the month on which you want to run the action.</p> <p>Opens the Select Days dialog box.</p>
Days of the week (Sunday - Saturday)	(Appears when you choose Weekly). Select the day or days on which you want the action to run.

UI Element (A-Z)	Description
End by	<p>(Does not appear when you select Once) Choose the date and time when you want the action to stop running by selecting the End by check box and then clicking the down-arrow to the right of the box.</p> <p>Note: This step is optional. If you do not want to specify an ending date, leave the End by check box unselected.</p>
Invocation Hour	<p>Choose the time to activate the action. Click the  button to the right of the Invocation Hour box to open the Select Hours dialog box. For details, see the Select Hours dialog box.</p> <p>Note: You can enter the time manually in the Invocation hour box once you have chosen a time using the Select Hours dialog box. You can assign more than one time. Each time is separated by a comma.</p> <p>The manually entered action times are not restricted to the hour and half hour only; they can be assigned any hour and minute combination. Use the 24:00 format.</p> <p>For example:</p> <p>11:15 AM is 11:15</p> <p>11:15 PM is 23:15</p> <p>Note: This box is only available when you want to schedule a task to run on a daily, weekly, or monthly basis.</p>
Invocation Time	<p>(Appears when you choose Once) Choose the date and time you want the action to begin running by clicking the down-arrow to the right of the box.</p>
Months of the year (January - December)	<p>(Appears when you choose Monthly). Select the month or months in which you want the action to run.</p>
Repeat every	<p>(Appears only when you select Interval) Type a value for the interval between successive runs and then choose the required unit of time measurement (Minutes, Hours, or Days).</p>
Start at	<p>(Does not appear when you select Once) Choose the date and time when you want the action to begin running by selecting the Start at check box and then clicking the down-arrow to the right of the box.</p> <p>Note: This step is optional. If you do not want to specify a beginning time, leave the Start at check box unselected.</p>








UI Element (A-Z)	Description
Time Zone	Set the required time zone.

Job Scheduler Page

This page enables you to define tasks that are activated on a periodic basis. For example, you can define a task that generates a Topology report on a daily basis at 3:00 PM. Or, you can define a schedule for taking snapshots of a specific view on a daily basis.

To access	Select Administration > RTSM Administration> Administration > Scheduler .
Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62


User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
	Add. Enables you to create and schedule a job. Opens the Job Definition dialog box.
	Edit. Enables you to edit a task. Opens the Job Definition dialog box.
	Delete. Deletes the selected job. Note: The user cannot delete a job scheduler linked to a pattern-based model.
	Filter. Opens the Filter dialog box which enables you to filter the scheduled jobs displayed on the Job Scheduler page.
	Clear. Clears the filter definitions created in the Filter dialog box.
	Customize Columns. Enables you to change the display order of the columns, hide a column, or display a hidden column. Opens the Select Columns dialog box. For details, see Select Columns Dialog Box in the <i>Modeling Guide</i> .
	Refresh. Refreshes the display of the jobs in the Job Scheduler page.
<Click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .

UI Element (A-Z)	Description
<Right-click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .
Active	Select the check box to activate the scheduled job.
Job Definition	A description of the scheduled job as defined in the Job Definition field in the Job Definition dialog box.
Last Run Time	The last time the job was run.
Name	The name of the scheduled job.
Next Run Time	The next time the job is scheduled to run.
Schedule	How often the job is scheduled to run. For details, see the " Scheduler Pane " on page 66 .

Select Days Dialog Box

This dialog box enables you to choose the day on which to activate the action.


To access	Click Monthly in the Job Definition dialog box, and then click the  button to the right of the Days of month box.
Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<List of days from 1-31>	Choose the required days by selecting the required check boxes. You can select multiple days. The selected days appear in the Days of month box. For details, see Scheduler pane in the Job Definition dialog box.

Select Hours Dialog Box

This dialog box enables you to choose the time at which to activate the action.

To access	In the Job Definition dialog box, click Daily, Weekly, or Monthly , and then click the  button to the right of the Invocation hour box.
Relevant tasks	"Define Tasks That Are Activated on a Periodic Basis" on page 62

User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
<List of times by the hour and half hour>	Choose all the required times by selecting the required check box. You can select multiple times. The selected hours appear in the Invocation hour box. For details, see "Scheduler Pane" on page 66 .

Chapter 5: CI Lifecycle and the Aging Mechanism

This chapter includes:

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The Aging Mechanism Overview

After your system has been running for some time, previously discovered CIs may no longer exist. Such CIs should be removed from the RTSM to keep it up to date.

Data Flow Management (DFM) runs periodically and, by default, updates the last access time for all CIs and relationships that it discovers. This process is known as "touching," and prevents CIs and relationships that represent active components in the system from becoming deletion candidates. If DFM does not discover a CI that exists in the RTSM, the last access time is not updated, so after some predefined time (by default, 20 days) the CI becomes a deletion candidate. The aging period is set per CI type as a static attribute in the CI Type Manager (**Deletion Candidate Period**).

Deletion candidates are reviewed and managed in the CI Lifecycle module.

If the CI remains untouched for a longer period of time (by default, 40 days), the aging mechanism deletes the CI from the system. In other words, aging deletes CIs and relationships that are no longer relevant, that is, have not been accessed for a specified period of time (by default, 40 days).

The deletion of large quantities of CIs and relationships creates a significant load for the RTSM and database servers and can impact the overall RTSM performance. To reduce this performance impact, the aging mechanism divides the objects to be deleted into chunks. A delay between chunks lowers the database load and enables other tasks to continue working. For faster work, you can shorten the delay, but the default delay value is the recommended delay. For details, see "[Aging Parameters](#)" on page 81.

Note:

- Touch parameters are defined in the **DataFlowProbe.properties** file. For details, see the Probe Manager Configurations section in [DataFlowProbe.properties File](#) in the *Data Flow Management Guide*.

- The aging mechanism is enabled by default.
- Aging operations are run only on CIs and relationships that have **Enable Aging** set to **true**. By default, CIs and relationships added by out-of-the-box DFM adapters are created with **Enable Aging** set to **true**. (For details, see **Enable Aging** in the [Configuration Item Properties Dialog Box](#) in the *Modeling Guide*.) This behavior can be changed in the **Enable aging** check box in DFM in the Adapter Configuration tab (in the Results Management pane). For details, see [Results Management Pane](#) in the *Data Flow Management Guide* and "[Enable Aging](#)" on page 76.

CI Lifecycle – Overview

The CI Lifecycle application enables you to view a list of CIs and relationships that are candidates for deletion by the aging mechanism, and to initiate the aging procedure. You can also select specific CIs or relationships and postpone their deletion or mark them as deletion-proof.

For each CIT, you can set the time period before a specific CI becomes a candidate for deletion or before it is actually deleted. For details, see Actual Deletion Period, Deletion Candidate Period, and Enable Aging in the [Configuration Item Properties Dialog Box](#) in the *Modeling Guide*.

Enable and Run the Aging Mechanism

This task describes how to enable aging and run the aging mechanism.

This task includes the following steps:

- "[Enable Aging](#)" below
- "[First Aging Run](#)" on the next page

1. Enable Aging

Access the Aging Status tab on the CI Lifecycle page (**Administration > RTSM Administration > Administration > CI Lifecycle**). Select the **Enable Aging** check box. For details, see "[Aging Status Tab](#)" on page 75.

Note: When aging is turned on or off (that is, enabled or disabled), you must restart the server for the changed setting to take effect.

To turn on aging for an existing CI, access the CI in IT Universe Manager, right-click it and select **Properties**. Set the **Enable Aging** property to **True** and click **OK**.

To set aging to be enabled by default for all new CIs of a specific type, access the CI type in the Attributes tab of CI Type Manager, select the **Enable Aging** attribute and click **Edit**. In the Edit Attribute dialog box, select **True** for the **Default Value** and click **OK**.

2. First Aging Run

After your system has been running for some time, there are probably many CIs that need to be deleted. If the number of CIs to be deleted is greater than 10,000, a confirmation message is displayed. Perform the following method of deletion to keep the RTSM up to date.

- CI Lifecycle divides the number of CIs and/or relationships that must be deleted into chunks (to avoid overloading the database), deletes them, and adds the information to the History. Chunk size is determined by the value in the **Aging Chunk Size** field in the Infrastructure Settings Manager.

Generate CI Lifecycle Data and Filter the Results

This task describes how to generate a list of CIs that are candidates for deletion, and to filter the results.

This task includes the following steps:

- ["Generate CI Lifecycle Data" below](#)
- ["Filter the CI Lifecycle Results" below](#)


1. Generate CI Lifecycle Data


To generate CI Lifecycle results for CIs or relationships, select either the **CIs** tab or the **Relationship** tab. Select the time period in which to search, using the drop-down calendars in the **From** and **To** fields, and click **Generate**. For details, see ["CI Lifecycle Page" on page 79](#).

CI Lifecycle displays a list of CIs that are candidates for deletion.

Tip: If no results are generated, try extending the time period further into the future.

2. Filter the CI Lifecycle Results

To filter the CI Lifecycle data, click the **Filter**  button to open the Filter dialog box. For each column by which you want to filter, select a condition from the drop-down list and fill in the value column, either by entering a value, selecting from a drop-down list, or using the calendar. Click **OK** to apply your filter.

To clear the filter and restore the original results, click the **Clear**  button. For details, see ["Filter Dialog Box" on page 80](#).


CI Lifecycle User Interface

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Aging Run Statistics Dialog Box

This dialog box enables you to view statistics for the five previous runs of the aging mechanism.

To access	Click the Statistics  button on the CI Lifecycle page.
Relevant tasks	"Enable and Run the Aging Mechanism" on page 73

User interface elements are described below:

UI Element (A-Z)	Description
Aging Runs	<p>Run at. The start and finish time of the run.</p> <p>Deleted. The number of CIs that have been deleted.</p> <p>Failed. The number of CIs that have not been deleted.</p>
Errors	<p>ID. The IDs of the failed CIs, that is, of the CIs that could not be deleted.</p> <p>Error message. A message describing the cause of failure.</p>

Aging Status Tab

This dialog box enables you to enable the aging mechanism and to run the mechanism for the first time.

To access	Select Administration > RTSM Administration > Administration > CI Lifecycle.
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Important information	<p>This tab displays information about the number of CIs that are candidates for deletion, and functions as follows, if you select the Enable Aging check box:</p> <ul style="list-style-type: none"> • If the number of CIs for deletion is larger than 10,000, you can choose to use the aging mechanism to delete the CIs in chunks, or to use the database aging tool. For details on which procedure to use, see "First Aging Run" on page 74. • If the number of CIs for deletion is smaller than 10,000, the estimated time for deletion is displayed and the CIs are immediately deleted. A progress bar shows the stage of the deletion.
Relevant tasks	"Enable and Run the Aging Mechanism" on page 73
See also	"The Aging Mechanism Overview" on page 72

User interface elements are described below:

UI Element (A-Z)	Description
Enable Aging	<ul style="list-style-type: none"> • To enable aging, select the check box. <p>The frequency and size of the chunks that are marked as candidates for deletion are determined in Infrastructure Settings. For details, see "Aging Parameters" on page 81.</p> <ul style="list-style-type: none"> • To disable aging, clear the check box.
Run results	<p>Total CIs to delete. The number of CIs or relationships that are delete candidates and that are being deleted by the aging mechanism.</p> <p>Deleted. The number of CIs or relationships that have been deleted.</p> <p>Failed. CIs or relationships that could not be deleted. If any failures exist, click the Failed link to view their details.</p>











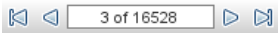

CI Lifecycle and Relationship Tabs


This area enables you to display a list of CIs and relationships that are candidates for deletion, and to manage the list (for example, to delete or prevent or postpone deletion of specific CIs, to view statistics, and to filter the list).

To access	Select Administration > RTSM Administration > Administration > CI Lifecycle .
Relevant tasks	"Generate CI Lifecycle Data and Filter the Results" on page 74

See also	<ul style="list-style-type: none"> • "CI Lifecycle – Overview" on page 73 • "The Aging Mechanism Overview" on page 72 • Working with CIs in the <i>Modeling Guide</i>
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User interface elements are described below (unlabeled elements are shown in angle brackets>):

UI Element (A-Z)	Description
	Postpone Deletion. Enables you to delay the deletion of a CI by one aging period. It disappears from the list of candidates for deletion. (If the CI is not touched again for a full aging period, it again becomes a candidate for deletion.)
	Mark as Deletion Proof. Enables you to prevent a CI or relationship from being deleted. It disappears from the list of candidates for deletion.
	Delete. Deletes the selected CI or relationship.
	Statistics. Enables you to view statistics (such as the start and finish time of each run and the number of deleted CIs), for the previous five runs of the aging mechanism. For details, see "Aging Status Tab" on page 75 .
	Select/Clear All. Selects or clears all data on the current page.
	Refresh. Refreshes the displayed data.
	Filter. Opens the Filter dialog box, which enables you to customize the filter. For details, see "Filter Dialog Box" on page 80 .
	Clear. Clears the filter and display the full results.
	Customize Columns. Opens the Select Columns dialog box, which enables you to change the display order of the columns, hide a column, or display a hidden column. For details, see Select Columns Dialog Box in the <i>Modeling Guide</i> .
	Click the arrow to define the number of rows that should appear on each display page.
	Click to navigate through the results page by page or to jump to the first or last page.
	Generates data for a selected period. Tip: If no results are generated, try extending the time period further into the future (the To field).

UI Element (A-Z)	Description
	<p>Export Data to File. Enables you to select the format for previewing and exporting the table data. The available options are:</p> <ul style="list-style-type: none"> • CSV. The table data is formatted as a comma-separated values (CSV) text file that can be displayed in a spreadsheet. <p>Note: For the CSV formatted table data to display correctly, the comma (,) must be defined as the list separator. In Windows, to verify or modify the list separator value, open Regional Options from the Control Panel, and on the Numbers tab ensure that the comma is defined as the List Separator value.</p> <ul style="list-style-type: none"> • PDF. The table data is exported in PDF format. <p>Note: When exporting to PDF, select a reasonable number of columns to display to ensure that the report is legible.</p> <ul style="list-style-type: none"> • XLS. The table data is formatted as an .xls (Excel) file that can be displayed in a spreadsheet. • XML. The table data is formatted as an XML file that can be opened in a text or XML editor.
<Right-click a CI>	For details on the menu options, see "IT Universe Manager Shortcut Menu" in the <i>Modeling Guide</i> .
<Right-click a column header>	For details, see Sort Column Content Dialog Box in the <i>Modeling Guide</i> .

UI Element (A-Z)	Description
CIs/Relationships tabs	Select to see a list of CIs or relationships that are candidates for deletion: Select. Select the check box to select a CI or relationship before performing an operation on it (such as Delete or Postpone Deletion). End1. The query node at one end of the relationship (relevant only for relationships). Display Label. The name of the CI or relationship as it appears in the Topology Map. End2. The query node at the second end of the relationship (relevant only for relationships). CI Type. The type of the CI or relationship. Last Access Time. The last time that the CI or relationship was accessed, whether it was updated or discovered by the DFM process. Updated by. The administrator or process that updated the CI or relationship. Actual Delete Time. The date and time when the CI or relationship is deleted.
From	Click the arrow and use the calendar to select the beginning date and time for the CI Lifecycle results.
Relationships tab	Select to see lifecycle results for relationships.
Rows per Page	Select the number of rows per page from the drop-down list.
To	Click the arrow and use the calendar to select the end date and time for the CI Lifecycle results.

CI Lifecycle Page

This page enables you to enable and run the aging mechanism. It also enables you to display a list of CIs and relationships that are candidates for deletion and to manage the list (for example, to delete, prevent, or postpone deletion of specific CIs, to view statistics, and to filter the list).

To access	Select Administration > RTSM Administration > Administration > CI Lifecycle .
------------------	---

<p>Important information</p>	<p>The CI Lifecycle page includes the following tabs:</p> <ul style="list-style-type: none"> • Aging Status. Use this tab to enable the aging mechanism and to run aging. For details, see "Aging Status Tab" on page 75. • CIs. Use this tab to display a list of CIs that are candidates for deletion. For details, see "CI Lifecycle and Relationship Tabs" on page 76. • Relationships. Displays the same information as the CIs tab, with the addition of the End1 and End2 columns. <p>The tab that is displayed by default depends on whether aging is enabled or disabled:</p> <ul style="list-style-type: none"> • If aging is enabled, the CIs tab is displayed. • If aging is disabled, the Aging Status tab is displayed.
<p>Relevant tasks</p>	<ul style="list-style-type: none"> • "Enable and Run the Aging Mechanism" on page 73 • "Generate CI Lifecycle Data and Filter the Results" on page 74
<p>See also</p>	<ul style="list-style-type: none"> • "CI Lifecycle – Overview" on page 73 • "The Aging Mechanism Overview" on page 72 • Working with CIs in the <i>Modeling Guide</i>


Filter Dialog Box

This dialog box enables you to filter the list of CIs that are candidates for deletion.

<p>To access</p>	<p>Click Filter on the CI Lifecycle page.</p>
<p>Relevant Tasks</p>	<p>"Generate CI Lifecycle Data and Filter the Results" on page 74</p>
<p>See also</p>	<p>"CI Lifecycle – Overview" on page 73</p>

User interface elements are described below:

<p>UI Element (A-Z)</p>	<p>Description</p>
<p>Condition</p>	<p>Click in the Condition column and select an option.</p>
<p>Display Name</p>	<p>The columns displayed for the CIs or relationships on the CI Lifecycle page.</p>

UI Element (A-Z)	Description
Value	<p>Click in the Value column to set a value for the selected condition. Depending on the condition selected, you can select a value from a drop-down list, select a date and time from the calendar, or click the ellipsis  button to open an editing dialog box where you can enter a value.</p> <p>When the conditions Like or Like ignore case are selected in the Condition column, you can use a wildcard (%) before and after the string for which you are searching.</p> <p>Note: You must select a condition before entering a value.</p>

Aging Parameters

Aging parameters are defined in Infrastructure Settings (**Administration > Platform > Setup and Maintenance > Infrastructure Settings > Aging Settings**):

- **Aging Chunk Size.** The number of CIs or relationships that are sent to the aging mechanism at one time. The default is 5,000.
- **Aging Scheduler Hour of the First Run.** Defines at what time aging first runs after server startup (for example, 2=2:00 AM).
- **Aging Scheduler Interval.** Defines the interval between aging runs. The interval value is in hours.
- **Delay Between Chunks in Milliseconds.** The period between one chunk being deleted by the aging mechanism and the next chunk being sent to the aging mechanism to be deleted. The default is 30 seconds, that is, 30,000 milliseconds.

Chapter 6: RTSM Permissions Editor

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RTSM Permissions Editor Overview

Roles enable you to assign permissions to users according to their responsibilities in the organization. You can assign multiple roles to users and groups, which grants them the combined permissions of all the assigned roles.

There are several ways to define the permissions of a role:

- You can select specific actions for specific resources, such as view, update, and delete permission for one TQL query and view only permission for another one.
- You can select specific actions for the resources in a previously defined resource group, such as view and update permission for all TQL queries in the resource group and view and delete permission for all the custom reports in the resource group. Resource groups are defined in the Resource Groups module.
- You can select general actions such as Create Views.

It is possible to define permissions using combinations of the above options.

How to Define Permissions for the Role

The following task describes how to define permissions for a role:

1. Define Permissions for the Role Using the Resources Tab
 - a. Select a resource type in the Resource Types pane (for example, Views).
 - b. Select a resource (for example, a specific view from the view tree in the Available View pane) and click the right arrow button. The Set Permissions dialog box opens. (For UI Modules and CIT Menu Items, the Set Permissions dialog is not relevant.)

- c. In the Set Permissions dialog box, select the required permissions for the resource you selected. You can choose **Select All** to assign all the available permissions. Click **Apply**.
- d. Your selected resource appears in the right pane with the check boxes for the assigned permissions selected.
- e. Repeat this procedure for other resources of this type and for other resource types, as required.

For details, see ["Resources Tab" on page 85](#).

2. Define Permissions for the Role Using the Resource Groups Tab

Select the **Resource Groups** tab in the right pane and follow these steps:

- a. Select a resource group in the Resource Groups pane.
- b. Select actions from the tree in the Available Actions pane (for example, Update permission under Views) and click the right arrow button.

Note: You can make multiple selections by holding the **CTRL** key.

- c. The actions you selected appear in the Selected Actions pane. Each selection defines permission for that action for every resource of that type in the resource group (for example, Update permission for every view in the resource group).

3. Define Permissions for the Role Using the General Actions Tab

Select the **General Actions** tab in the right pane and follow these steps:

- a. Select actions in the Available Actions pane.

Note: You can make multiple selections by holding the **CTRL** key.

- b. Click the right arrow button to move them to the Selected Actions pane.
- c. The general actions selected are permitted for the role (they are not linked to a specific resource or resource type).

For details, see ["General Actions Tab" on page 86](#).

4. Save the Role

Click the **Save**  button in the Roles pane to save your changes.

RTSM Permissions Editor

This editor enables you to edit role permissions for RTSM resources.

To access	<p>Open the Users, Groups, and Roles page in Administration:</p> <p>Administration > Users > Users, Groups, and Roles</p> <p>In the Manage Roles pane, select an existing role that you want to configure or create a new role.</p> <p>In the Permissions section, click Open RTSM Permissions Editor.</p>
Important information	<p>For each role, you can assign permissions for actions on resources using the following tabs:</p> <ul style="list-style-type: none">• Resources. Select specific actions for specific resources.• Browser CI Access Control. Select permissions to view and edit CIs or CI types in the UCMDB Browser.• Resource Groups. Select specific actions for the resources in specific resource groups.• General Actions. Select specific general actions (such as Run Discovery and Integrations or Create Views). <p>You can select actions for permissions from each tab. The role is assigned permissions based on the combined results of selections in all of the tabs.</p> <p>The Role Details tab displays the name and description of the selected role.</p> <p>The Permissions Overview tab displays the selected role's permissions.</p>
Relevant tasks	<p>"How to Define Permissions for the Role" on page 82</p>
See also	<ul style="list-style-type: none">• "RTSM Permissions Editor Overview" on page 82• "Permissions Summary" on page 86

Right Pane

The Right Pane contains the Resources tab, the Resource Groups tab, the General Actions tab, and the Role Details tab.

Resources Tab

Important information	Select a Resource type and use the arrow buttons to move resources from the Available <resources> pane to the Selected <resources> pane to assign permissions for those resources to the current role. When moving resources, you must select the permissions for the selected resources, using the Set Permissions dialog box.
------------------------------	---

User interface elements are described below:

UI Element (A-Z)	Description
Available <Resource>	Displays the available resources for the selected resource type in tree format.
Resource Types	Select a resource type from the list.
Selected <Resource> with Permissions	<p>Displays the selected resources and their respective permissions for the current resource type. The available permissions differ for different resource types, as follows:</p> <ul style="list-style-type: none"> • Queries have view, update, delete, and snapshot permissions. • Views have view, update, delete, snapshot, and archive permissions. • Impact Analysis and Custom Reports have view, update, and delete permissions. • UI Modules have access permission. • For CIT Menu Items, you select a CIT from the tree and then select specific actions from the Available Actions pane and move them to the Selected Actions pane. You can also right-click a CIT and select the actions from the pop-up dialog box. If no permissions are assigned for any CIT, all the menu items are permitted by default (in accordance with the permissions granted in the General Actions tab).

Resource Groups Tab

Important information	Select a resource group and use the arrow buttons to move actions from the Available Actions pane to the Selected Actions pane to assign permissions for those actions for the resources in the selected resource group to the current role.
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User interface elements are described below:

UI Element (A-Z)	Description
Available Actions	Displays the available actions per resource.
Selected Actions	Displays the permitted actions selected for the resources in the selected resource group for the current role. <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: The selected actions are permitted for the resources relevant to that action. If you select the Create action under Queries, the role receives permission to create folders and queries in all of the query folders in the resource group.</p> </div>

General Actions Tab

Important information	Use the arrow buttons to move actions from the Available Actions pane to the Selected Actions pane to assign them to the current role.
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User interface elements are described below:

UI Element (A-Z)	Description
Available Actions	Displays the available general actions.
Selected Actions	Displays the general actions selected for permissions for the current role.

Permissions Summary

The following section describes the hierarchy of required permissions for working in RTSM. It begins with the most fundamental permission and continues through the different levels of permission needed for various actions. At each level of permission, the permissions of all the previous levels are also required.

- The next level of permission needed to use RTSM functionality is the permission for the individual UI modules, located in the Resource Types pane of the Resources tab. If a user lacks permission for a specific module, that module is not visible to him.

Note: For some modules, you can assign permission for specific subsections of the module. For example, under Modeling Studio, you can select Views, Queries, and Models each individually for permission in the role.

- The next level of permission depends on the specific functionality required. These are assigned by

the general actions described in the table below and by the permissions granted for individual resources in the Resources tab.

Note:

- For queries, views, impact rules, and custom reports, **View** permission is the base permission. For all other permissions (update, delete, snapshot, and archive), you must also assign view permission for the selected resource.
- If a role includes view permission for a view or an impact rule, it also automatically includes view permission for the base query of the view or impact rule. If the role includes update permission for a view or impact rule, it does not automatically include update permission for the base query.
- **View** permission for a view includes permission to view a saved snapshot of the view or an archived report of the view.
- Instance-based models are treated as ordinary CIs in terms of permissions. **Data Update** permission enables him to create, modify, and delete them.
- You are automatically granted **View** permission for the queries on which the pattern-based models are based. **Data Update** permission enables you to create, modify, and delete the models, but you need **update** permission for the query to modify it. To create a model based on a new query, you must have **Create Queries** permission for the folder where the query will reside. To create a model based on an existing query, you must have **view** permission for that query.
- If a user has **Create Views** permission on a specific folder, he can create views in the folder based on existing TQL queries for which he has view permission as well as views based on new queries.

Resources Tab Permissions

The following table specifies the actions permitted for the selected resources by the Set Permissions options in the Resources tab:

Permission	Actions Permitted
Create	Create resources in the selected folders.
View	View the selected queries, views, impact rules, custom reports, or UCMDB Browser widgets.
Update	Modify the selected queries, views, impact rules, or custom reports.
Delete	Delete the selected queries, views, impact rules, or custom reports.

Permission	Actions Permitted
Create Snapshot	Create and view snapshots of the selected queries or views. <div style="background-color: #f0f0f0; padding: 5px;"> Note: Snapshots for views can be created from the UI. Snapshots for queries can be created using the API. </div>
Archive	Archive the topology reports of the selected views.

Create permission is only relevant for folders. If you create a new resource, you can only save it in a folder for which you have **Create** permission.

The other permissions can be applied to individual resources or to folders. When they are applied to a folder, they automatically apply to all the resources contained in the selected folder. For example, **View** permission for a folder enables you to view all the resources contained in that folder.

General Actions Permissions

The following table specifies the actions permitted by the different general actions permissions.

Permission	Actions Permitted
Allow Search	Search for CIs in the Search tab of the CI Selector.
Get Related CIs	Access the Related CIs functionality.
Run Impact Analysis	Run Impact Analysis in the IT Universe Manager.
Run Query by Definition	Preview a view in the Modeling Studio.
Access to SDK	Run the Java API.
Access to UI	Access the UCMDB UI.
Access to UCMDB Browser	Access the UCMDB Browser UI.
Run Legacy API	Run the client APIs.
Settings Management	Update the infrastructure settings using the API.
Data Update	Create, update, and delete CIs and relationships.
View History	View CI History.
Run Discovery and Integrations	Run Discovery in the Universal Discovery module and integrations in the Integration Studio.
Class Model Modifier	Add, delete, and update CI types in the CI Type Manager.
Deploy Packages	Deploy packages in Package Manager.

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