HP Operations Manager i

for the Windows® operating system

Software Version: 8.10

Using HP Operations Manager i

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PART II: CONFIGURING HP OPERATIONS MANAGER I

Welcome to This Guide

This guide describes how to use HP Operations Manager i (HP OMi) to do the following:

➤ Monitor the events that occur in your organization's IT environment.

➤ Correlate the events and events across multiple domains.

➤ Compile and display a detailed overview of the health of your systems.

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How This Guide Is Organized

This part of the guide contains the following chapters:

Part I   Working with HP Operations Manager i

Explains how to use HP OMi to monitor and manage the events that occur in your IT environment and resolve the underlying problems.

Part II   Configuring HP Operations Manager i

Describes the concepts and tasks required to configure and maintain HP OMi. The information provided helps you configure HP OMi for users to monitor and manage the IT environment efficiently.

Who Should Read This Guide

This guide is intended for the following users of HP BSM console:

➤ HP OMi software administrators.

➤ Domain (subject matter) experts, for example, DB, and Exchange.

➤ HP OMi operators and domain operators.

Users of this guide should be knowledgeable about navigating and using enterprise applications. Users should also be familiar with the concepts underlying enterprise monitoring and management.

Getting More Information

For a complete list of all online documentation included with HP Business Availability Center, additional online resources, information on acquiring documentation updates, and typographical conventions used in this guide, see the *HP Business Availability Center Deployment Guide* PDF.

Part 1

Working with HP Operations Manager i

1

Introduction and Overview

The information in this section helps HP OMi operators to monitor the events that occur in your organization's IT environment, correlate events, and, as a result, compile and display a detailed overview of the health of your CIs.

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How This Section Is Organized

This part of the guide contains the following chapters:

Chapter 1   Introduction and Overview

This chapter introduces you to the topics covered in Part 1 of this guide, which describes the basic use of HP OMi.

Chapter 2   Event Management

This chapter introduces the concepts of events and discusses general topics that relate to working with events and the underlying problems.

Chapter 3   Health Perspective

This chapter introduces the Health Perspective which you can use to present and view the information that is available about the health of objects you are monitoring.

Chapter 4   **Performance Graphs**

This chapter describes the main concepts of performance graphing, which enables you to generate and view performance graphs and graphs for the objects and events that you are monitoring.

Chapter 5   **User Tools**

This chapter describes how to use tools configured in HP OMi to help manage solving the problems identified by events.

Chapter 6   **Filtering Events**

This chapter describes the main concepts of event filters and how you can use filters in HP OMi both to reduce the amount and refine the quality of information on display and, as a result, locate and fix problems more quickly and easily.

Chapter 7   **Views for HP OMi**

This chapter describes the main concepts of views and how you can use views in HP OMi to reduce and refine the configuration items you see in the CI Tree View. HP OMi filters the contents of the Event Browser according to the currently selected configuration item.

Who Should Read This Section

This guide is intended for the following users:

➤ HP OMi users

➤ HP OMi subject matter experts (for example, DB, and Exchange)

Users of this section should be familiar with:

➤ Navigating and using enterprise applications

➤ Enterprise monitoring and management concepts

For more information about how to configure HP OMi to manage events, see .

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Event Management

This chapter introduces the concepts of events and describes how you use HP Operations Manager i (HP OMi) to visualize the problems in your IT environment, and work with events to solve the underlying problems.

This chapter includes:

Concepts

Tasks

♣ HP OMi Orientation

Managing events with HP Operations Manager i (HP OMi) helps you to do the following:

➤ Restore services

➤ Minimize service disruptions

HP OMi Application

You can find the HP OMi Application pages using the following menu option:

Applications > **Operations Management**

The HP OMi Application area includes the following tabs:

➤ **Event Perspective**

Display, monitor, and manage the events that occur in your IT environment. For details, see "Event Perspective" on page 28.

➤ **Health Perspective**

Display alternative perspectives of the events you are monitoring. For details, see "Health Perspective" on page 38.

➤ **Filter Manager**

Display, configure, and manage filters that help you concentrate on those events that are of interest. For details, see "Filters" on page 41.

The HP OMi Application area includes the following features:

➤ **Performance**

Configure, generate, and view graphs and tables that can help you understand and manage the performance of the systems in the environment you are managing with HP OMi. For details, see "Performance Graphs" on page 40.

➤ **Tools**

Display and use available tools that help you to remotely manage the events occurring in your IT environment. For details, see "User Tools" on page 44.

HP OMi Administration

You can find the HP OMi Administration pages from:

Admin > **Operations Management**

The HP OMi Administration area is organized as follows:

➤ **Design Operations Content**

Contains the Tools manager, the Performance Graphs manager, the Indicators manager, the View Mappings manager, and the Correlation Rules manager:

➤ **Tools**

Display and configure the tools that your users need to help manage the events occurring in your IT environment. For details, see "Tools Management" on page 373.

➤ **Performance Graphs**

Display and configure the mapping of CI types to available graph families. For details, see "Performance Graphs Manager" on page 400.

➤ **Indicators**

Create, modify, and manage event type indicators, event indicator values, and key performance indicators. Define and deploy the rules that determine how HP OMi uses the data from these indicators to display and monitor the status and health of your IT environment. For details, see "Event Type Indicator Administration" on page 233.

➤ **View Mappings**

Map an existing view to one or more configuration item types, and manage the views. Display the list of mapped views in the Selected View list in the Top View pane of the Health Perspective tab. For details, see "View Mappings Manager" on page 354.

➤ **Correlation Rules**

Define and deploy the rules and policies that enable you to correlate the events that occur in the different domains in your IT environment. For details, see "Topology-Based Event Correlation" on page 314.

➤ **Tune Operations Management**

Contains the Event Assignments manager:

➤ **Event Assignments**

Display and configure mappings to automatically assign incoming events to existing user groups. For details, see "Assign User Groups to Incoming Events" on page 420.

➤ **Manage Content**

Contains the Contents Pack manager:

➤ **Content Packs**

Manage the packages that HP OMi uses to encapsulate snapshots of configuration data about the health of the networks you are monitoring. For details, see "Content Packs Manager" on page 430.

🍀 Event Perspective

This section describes the features and functionality of the Event Perspective tab. The information you find here covers the following main panes:

➤ **CI Tree View**

Displays the contents of the configuration item database and enables you to configure filters that determine how you view the contents of the database.

➤ **Event Browser**

Displays a detailed summary of all the events that occur in the operating environment you are monitoring.

➤ **Event Details**

Contains more detailed information about the selected event.

The size of all Operations Management Application panes can be manually modified. You can also use the Maximize, Expand and Collapse buttons to alter the display formats to predefined settings. The Restore button revert the associated pane to the default size.

Note: The HP OMi GUI runs in a Windows Internet Explorer browser but is controlled by dedicated menus, fixed and context-sensitive. The behavior of the HP OMi product is independent of the Windows Internet Explorer browser controls. Do not use these controls to navigate HP OMi.

CI Tree View

The CI Tree View displays the CIs and relationships from the UCMDB. It enables you to select views that filter the contents of the UCMDB before presenting it in the tree format in the Browse Views tab for clearer navigation.

When you select a configuration item in the CI Tree, a filter is automatically applied to the Event Browser so that only those events that are related to the selected configuration item are displayed.

You can also use the Search CIs tab to locate single configuration items or groups of items (for example, by CI name or CI type). The results of the search are displayed in a column showing the name and type of the matched configuration items.

Note: The behavior of the Event Browser depends on the type of the CI selected: CI Group type, Host type, or Other types.

Event Browser

The Event Browser displays a summary of all the events that have occurred in the operating environment you are monitoring. The details include:

➤ Date and time when the event occurred.

➤ Host system where the event occurred.

➤ Application that caused the event.

➤ The user responsible for solving the problem that caused the event, if assigned.

You can also use the Event Browser to display information about the status of a selected event. The event states are Open, In Progress, Resolved or Closed. The information displayed by default is a small selection of the total information available about an event.

The Event Browser supports the use of multiple tabs that you can configure to display alternative information. For example, use multiple tabs to create a filtered view of the same events displayed in the original tab or display all events according to the event severity or event owner. Each tab title also displays an icon representing the severity of the most severe event contained in its view.

Note: The Event Browser tab name accepts only ASCII characters.

Tip: Tool tips provide a brief explanation of the functionality available from the associated icon.

The Browser Options icon enables you to configure the contents of each Event Browser tab independently. By default, the tabs are named Browser. However, you can change the name of the tab by selecting the tab name and entering a new name. All changes you make to the Event Browser layout are automatically saved to your user account. The next time you logon, the Event Browser displays the latest events in accordance with the way you configured the Event Browser. For example, when you relogon, the last selected CI Tree View and Event Browser tab are selected and reopened.

You can also globally configure the number of event rows to be displayed for all Event Browser tabs. This value is set in the Browser Options pane. If many events occur, the Event Browser displays the list of events in pages and indicates both the total number of pages available and the page currently on display. You can browse through the pages by selecting the back (<) or forward (>) buttons located in the upper-right corner of the event list. Alternatively, type the number of the page you want to view in the Go to Page box and select the Go button.

Selecting an event in the Event Browser displays the event's properties in the details pane. The details pane contains tabs that enable you to view and modify some aspects of the selected event (for example, event properties, annotations, custom attributes, and priority).

Note: It is not possible to edit an event with the state Closed, except for adding annotations. To edit a closed event, you must first reopen it.

General Event Details

The General tab in the Event Details pane displays the most commonly required information associated with a selected event. General event information includes the following details:

➤ Details of the severity status assigned to the selected event.

➤ Priority assigned to an event.

➤ Location in the network where the original problem occurred.

➤ User who is responsible for solving the problem.

Although you can view all the values displayed in the Event Details General tab, you can change only the following:

➤ Severity: Indication of the level of the problem assigned to the selected event. Usually, this is the same as the severity status of the original event received from HP Operations Manager.

➤ Life Cycle State: Point in the event life cycle that the selected event has reached (Open, In Progress, Resolved or Closed).

➤ Priority: Importance assigned to the selected event (for example, 0, 1, or 2).

➤ Message text in the Title field.

The details displayed in the General tab reflect the information contained in the original event reporting the occurrence of an event in the monitored environment. A blank field indicates that no information is available. If you know that a particular type of required information is not automatically available, you can use custom attributes to provide this information.

Actions

HP Operations Manager actions can be started manually from any events with related-action information. The actions are used to help solve the problem that caused the event or inform about the existence of a problem, for example, by means of a notification.

The Event Browser displays an icon in the A column to indicate that an automatic action is available for the selected event. An icon in the U column indicates that a user action is available for the selected event. For more information about the icons used in the Event Browser, see "Event Browser Overview" on page 57.

Annotations

An annotation is a free-text attachment to the description of an event used to provide information that may be useful to solve the cause of this event. You can use the Annotations tab in the Event Details pane to add, view, and manage the annotations associated with an event.

The Event Browser displays icons in the annotations column N to indicate that annotations exist for a selected event. For more information about the icons used in the Event Browser, see "Event Browser Overview" on page 57.

Assignment of Events to Users

The Event Browser shows you to which user and group an event is assigned for investigation. The assigned user is responsible for resolving the underlying problems that caused the event to occur. If the event is not yet assigned, you can use the Event Browser features to assign the event to a known user or user group.

You can also configure rules to automatically assign incoming events to available user groups. Automatic assigning of events to user groups responsible for solving these events significantly improves the efficiency of event management. Each event is assigned to an appropriate user group as soon as it is received. All operators in a user group are allowed to work on those events assigned to that user group. For detailed information, see "Event Assignment" on page 419

Note: To display the contents of the Event Browser according to the user assigned to the event, select the User or Group column header.

For more information about event assignment, see "Event Categories" on page 34.

Note: To define users and user groups, choose the following menu option:

Admin > **Platform** > **Users and Permissions** > **User Management**.

Closed Event History

You can view the history of closed events related to a selected current event or a selected CI over a specified time period. This information can help you to derive a fuller understanding of an on-going problem. From the History Browser, you can change the life cycle state of any displayed events, for example, to Reopen.

The History Browser shows only a snapshot of closed events available at the time of opening the History Browser. Events that are closed after the opening of the History Browser are not added to the current History Browser window. The timestamp when the snapshot was taken is displayed in the History Browser window.

You can create filters to help you identify specific events. These filters are only available for use with the History Browser.

Only one History Browser can be opened at a time by each user.

The maximum number of events that can be displayed in the History Browser can be configured in the Settings Manager. For details, see "History Browser Settings" on page 667.

Note: Filters defined in the Event Browser are not visible in the History Browser.

For details about using the History Browser, see "Viewing the Closed Event History of a CI" on page 53.

Custom Attributes

Custom attributes are additional information included in the original event forwarded by a monitoring application such as HP Operations Manager. For example, you can define custom attributes to attach the location of the problem element or contact details for the team assigned to troubleshoot the problem.

You can use the Custom Attributes tab in the Event Details pane to view and manage the custom attributes available for an event.

Event Categories

Event categories are logical groups of events with some similarities (for example, belonging to the same problem area). Event categories help simplify the process of deciding to which user or user group an event type should be assigned for investigation.

The Event Browser displays the category to which a selected event belongs (for example, Storage, Database (DB), System, or WebApp (Web Application)).

Note: To display the contents of the Event Browser according to event category, select the Category column header.

You can restrict user access to events on the basis of event categories. For example, some users can be restricted to view and work on events belonging to the category Database only. Other users are given access to events that belong to the category System only.

For more information about event assignment, see .

Filters

The Event Browser enables you to display events according to filters that you define. For example, you can filter the events displayed according to severity, assigned user, event category, or life cycle state. You can also display the filtered events in different tabs within the Event Browser.

Tip: When you select a configuration item in the CI Tree, HP OMi automatically applies a filter to the Event Browser so that only those events are displayed that are related to the selected configuration item.

Life Cycle Management

The Event Browser enables you to display and track the position of an event in a defined life cycle. A life cycle is a complete series of predefined states that summarizes the event's life. The life cycle states are as follows:

➤ **Open**: Event is identified for investigation of the problems that caused the event. It is either not assigned to a user or assigned but not yet being worked on.

➤ **In Progress**: Assigned user has started working on the investigation of the event's underlying problems. The name of the assigned user appears in the User column.

➤ **Resolved**: Investigation into the selected event's underlying problem has been found and fixed.

➤ **Closed**: Event is removed from the list of active events displayed in the Event Browser.

Note: Life cycle states are linked to authorizations granted to users. For example, the user to whom an event is assigned can change the assigned event's state from Open to In Progress and Resolved but not to Closed. Only users with higher authority can assign events to other users or change the event life cycle state from Resolved to Closed.

Although the life cycle states occur in a consecutive manner, you can set an event's life cycle state at any time. For example, you can assign an event to an alternative user, or reopen an investigation by changing the event state from Closed to In Progress.

Note: You can change the life cycle state of an event by selecting the event and selecting the appropriate button (for example, the Open ⬚ or Work On 🔧 button). For more information about event life cycle buttons and the actions they perform, see "Event Browser Overview" on page 57.

Related Events

To avoid the problem of duplication and overload when managing information from multiple sources, you can set up topology-based rules that correlate events by distinguishing between symptom and cause events and presenting a clearer picture of the state of the operational environment that you are monitoring.

Topology-based event correlation reduces the number of events displayed in the Event Browser. The less events to browse, the easier it is for a user to investigate and solve the event's underlying problem, especially when the correlation process groups related events together in the Event Browser.

Topology-based event correlation uses a combination of specified symptoms and a probable causes to determine the cause of an event, which it then flags in the Event Browser. An icon in the C column of the Event Browser indicates that the selected event is the result of a correlation process. For details about correlated events, see "Related Events Tab" on page 77. For more information about event correlation in general, see "Event Correlation" on page 43.

Severities Assigned to Events

Each event can be assigned a severity that shows how important the underlying problem is. The values are: critical, major, minor, warning, normal, and unknown. The Event Browser indicates an event's severity with an icon.

Note: The Items bar at the bottom of the Event Browser indicates the number of active events by severity. An active event is one that is open and being worked on.

For further information about severities, see "Indicator Severity" on page 236.

Synchronization of HPOM and HP OMi Events

Event synchronization enables bidirectional communication between HP OMi and HP Operations Manager. Updates and modifications to events can be exchanged. For example, changes of ownership or modifications to the severity status of an event are synchronized between management servers. Acknowledging an event in HP Operations Manager closes all symptom events in HP OMi. Unacknowledging an event in HP Operations Manager reopens all symptoms in HP OMi.

Note: HPOM events are not updated when using the opr-close-events tool and the opr-archive-events tool to close, delete, and archive events. The events in HPOM remain unaffected.

The opposite is also true when using the omwmsgutil (HPOM for Windows) tool and opcack and opchistdown (HPOM for UNIX) tools to close, delete, and archive events. The events in HP OMi remain unaffected.

All these tool operates directly on their respective databases and the changes do not go through the workflow process, resulting in the loss of synchronization between HP OMi and HPOM.

If you use these tools to close, delete, and archive events from one system (for example, HP OMi), you must make the equivalent changes with the appropriate tools on the other system (for example, HPOM).

⚙ Health Perspective

This section describes how to display more information about events by changing the way you view them. It includes the following sections:

Health Perspective Basics

The health perspective page enables you to collate information from multiple sources and present the information in an integrated display. This display enables you to simultaneously see events from different perspectives and helps you to better understand complex relationships and dependencies.

For example, you can view the following:

➤ List of active events

➤ Topological view of the CI related to the selected event

➤ Health indicators assigned to the objects

➤ Information about unresolved and unassigned events

➤ Details of the last event indicating health problems of the selected event

Top View

The top view of an event shows KPIs of the CI related to the selected event and related CIs with their KPIs.

The top view of an event shows the location of a configuration item in the operational environment and its relationships to other configuration items. The topological view helps the user to understand the importance of object relationships, the way in which severity status is calculated, and the way in which severity status propagates.

The Top View pane displays additional information in tool tips. The information includes:

➤ KPIs that are attached to the selected configuration item.

➤ Name of the configuration item to which the KPIs are attached.

➤ Business rule used in the calculation of the KPI's severity status.

The list is divided into KPI types (Availability KPI, Performance KPI, Unassigned Events, and Unresolved Events).

For more information about KPIs see,"HI-Based KPI Calculations" on page 97. For more information about top views, see "Top Views" on page 93.

Health Indicator View

The health indicator view of an event shows a list of the health indicators used to calculate the health of the configuration item to which the selected event belongs. The information displayed includes the name and value of the health indicator, its current status, the last time it was updated, and whether the trend is up, down, or stable.

The Health Indicator View pane displays a list of all the health indicators assigned to the KPIs that are attached to the selected configuration item. The list is divided according to KPI type, which are Operations Availability KPI and Operations Performance KPI.

Note: The Other Health Indicators item indicates the health indicators that are associated with the selected configuration item but not assigned to any of the KPIs used during the calculation of the severity status.

For more information about health indicators see, "Health Indicators" on page 95.

🍀 Performance Graphs

You can generate graphs and tables to illustrate graphically how the monitored objects in the environment are performing. The graphs you generate show an overview of important performance metrics (for example, CPU and swap space utilization over time, memory page use, and availability).

Tip: For context-sensitive access to performance graphs for an individual event, right-click the event for which you want to display graphs.

You can choose from a variety of graph types and configure the details that you want to include in the graph, the time period to be used, and the display format (for example, graph, chart, or table). You can also display the same data in different forms using multiple tabs.

For details about the performance graphs, see "Graphing Concepts" on page 121. For more information about how to refine the way in which the data is presented in graphs, see "Types of Graphs" on page 121.

🔬 Filters

You can display in the Event Browser a subset of the available events using filters that you define. For example, you can filter the events displayed according to severity, the assigned user, the event category, or the life cycle state. You can also display the filtered events in different tabs within the Event Browser.

Note: Filters are visible and available only to the user who created them.

Filters limit the set of events displayed in the Event Browser pane. When you logon to HP OMi, no filters are applied and No Filter is displayed in the Event Browser Filter applied list. By default, the contents of the Event Browser pane are filtered according to the selected configuration item or CI tree view.

Tip: When you select a configuration item in the CI Tree, HP OMi automatically applies a filter to the Event Browser so that only those events that are related to the selected configuration item are displayed.

For more information about filters in general, see "Event Filters" on page 190. For more information about filters in event mapping rules, see "Mapping Events to Indicators" on page 242.

🟦 Event Sources

Events that are displayed in the Event Browser are first collated by the designated HP Operations Manager instance and forwarded to HP OMi. These events can originate from any source that can integrate into HP Operations Manager.

Examples of event sources are:

➤ HP Operations Manager for UNIX

➤ HP Operations Manager for Windows

➤ HP Network Node Manager

➤ HP Performance Manager

➤ HP SiteScope

➤ HP Systems Insight Manager

➤ Storage Essentials (for example, SAN and NAS)

➤ Third-party events (for example, MS MOM)

🎲 Event Correlation

Topology-Based Event Correlation (TBEC) in HP OMi is used to automatically identify and display the real cause of problems. Events that are only symptoms of the cause event can be filtered out using the Top Level Items filter, resulting in a clearer overview of the actual problems that need to be solved. Event correlation relies on defining relationships between correlation rules, ETIs and ETI-values associated to events, and CIs and relations between these CIs.

Note: To use the event correlation functionality of HP OMi, the Event Management Foundation and Correlation licenses are required. For detailed information on licensing, see the *HP Operations Manager i Installation and Deployment Guide.*

The topology-based event correlation process works as follows:

➤ Ensures that a relationship exists between the events being correlated.

➤ Monitors the CIs and ETI values assigned to events being correlated.

➤ Determines relationship between two events by checking if there is a relationship in the topology database between the CIs to which the events are related.

If a symptom event occurs within a defined time frame, the correlation rule displays the cause event in the Event Browser.

The correlation result is displayed in the Event Browser with an icon in the **C** column to indicate that it is the result of a correlation process.

🔲 — Event is the *cause* of another event

🔲 — Event is the *cause* of one event and a *symptom* of another event

🔲 — Event is a *symptom* of another event

Note: HP OMi restricts access to administration tools. You might not be authorized to open the Correlation Rules manager. For more information about user authorization, see "HP OMi User Authentication" on page 628.

You can use the Related Events tab in the details pane to view the events that HP OMi correlated to produce the event selected in the Event Browser. The information presented enables you to examine the history of correlated events and more easily understand the event's background and root cause.

Events related as a result of correlation with the selected Event are displayed in the Related Events tab. The selected event can also be a symptom event and you can also see its cause in the Related Events tab.

For more information about the icons used in the Event Browser, see "Event Browser Overview" on page 57. For details about correlated events, see "Related Events Tab" on page 77. For more information about setting up correlation rules, see "Topology-Based Event Correlation" on page 314.

User Tools

You can specify tools in HP OMi, for example, to ping a system. These tools are run from events on the associated CI. Tools are designed to help users solve common problems quickly and efficiently.

All available tools are displayed in the Select Tool window launched in the context of a configuration item. The selection of tools a particular user sees in context menus depends on the tools that are available for the configuration item affected by a particular event.

For information about running configured tools, see "Run Tools Graphical User Interface" on page 184.

♣ Event Closing and Archiving Database Tools

You can use the following two database maintenance command-line tools to close and archive events:

➤ **opr-close-events**

➤ **opr-archive-events**

Both command-line tools are available only on Data Processing servers and are protected from unauthorized execution. The operations you can perform with these tools are also available via JMX.

Note: HPOM events are not updated when using the opr-close-events tool and the opr-archive-events tool to close, delete, and archive events. The events in HPOM remain unaffected.

The opposite is also true when using the omwmsgutil (HPOM for Windows) tool and opcack and opchistdown (HPOM for UNIX) tools to close, delete, and archive events. The events in HP OMi remain unaffected.

All these tool operates directly on their respective databases and the changes do not go through the workflow process, resulting in the loss of synchronization between HP OMi and HPOM.

If you use these tools to close, delete, and archive events from one system (for example, HP OMi), you must make the equivalent changes with the appropriate tools on the other system (for example, HPOM).

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opr-close-events Command-Line Interface

It is possible that a certain problem in the IT environment results in the generation of a very large number of similar events (event storm) which are received by HP OMi, forwarded by, for example, HP Operations Manager. Browsing through and filtering the a large number of events can be time-consuming and may lead to time-out errors.

Time-outs may be experienced as a result of delays in processing a large number of events in the web application, for example, when you select all events in the browser and attempt to close them. The user interface server may take a long time to start up or may experience a memory bottleneck.

You can use the **opr-close-events** command-line interface tool to close a large number of events, including related events, as experienced during an event storm, even when the HP OMi user interface is not responding.

For a description of the **opr-close-events** command options, see .

opr-archive-events Command-Line Interface

The database maintenance command-line tool **opr-archive-events** enables you to archive closed events. The specified closed events are exported to an XML-format file. These events are deleted from the database on archiving.

Note: Importing closed events is not supported.

For a description of the **opr-archive-events** command options, see .

Operations Manager Actions

This section introduces the concept of running actions configured in HP Operations Manager from HP OMi.

Events from HP Operations Manager received by HP OMi may contain event-related actions. If event-related actions exist, the following icons are displayed in the Event Browser in the A column and the U column:

⚙ — Automatic action is available

👤 — User action is available

Operator-initiated actions and automatic actions are also displayed in the Actions tab of the Event Details pane.

Further icons indicate the status of the actions, including, starting, running, succeeded, and failed. For a complete overview of the icons and actions available, see "Event Browser Overview" on page 57.

You can execute these actions from either the Actions tab or the context-sensitive menu of the event. The result of the action execution creates an annotation that is added to the event, if configured in the policy. It is also possible to stop an event-related action before it execution completes.

Event-related actions for assigned and unassigned events require authorization to run. If you are not authorized to execute event actions, you still see the configured commands but you are not allowed to execute them.

Note: Actions that contain the **$OPC_GUI_CLIENT** and **$OPC_GUI_CLIENT_WEB** variables are not supported and are filtered out.

For information about running actions, see "Running an HPOM Action" on page 52.

🔧 Configuring the Event Browser

This task describes how to configure the Event Browser to display only the details that you are interested in. For example, you can add and remove columns, customize additional tabs, and configure filters to change and improve the way in which data displays.

All changes you make to the Event Browser layout are automatically saved to your user account. The next time you log on, the Event Browser displays the latest events in accordance with the way you configured the Event Browser. For example, the last selected CI Tree View and Event Browser tab are selected and reopened.

To configure the Event Browser:

1 Open the Events Perspective tab or the Health Perspective tab to display the list of known events:

➤ **Applications** > **Operations Management** > **Event Perspective**

➤ **Applications** > **Operations Management** > **Health Perspective**

2 In the Event Browser, select the **Browser Options** 🔍 icon.

3 From the **General** tab, select the number of event rows per Event Browser tab to be displayed. This is a global setting applied to all Event Browsers.

4 From the **Columns** tab, select the columns to display in the Event Browser and select **Add** to include them in the Display these fields box.

5 Select from the **Display these fields** box any columns that you do not want to display and select **Remove**.

6 Select column names and rearrange their display positions by use of the **Up** and **Down** buttons.

7 Select **OK**.

Note: You can add custom attributes by defining them under the corresponding infrastructure settings:

Admin > **Platform** > **Setup and Maintenance** > **Infrastructure Settings**

⚓ Exporting the Contents of the Event Browser

This task describes how to export the contents of the Event Browser to an external file.

To export the contents of the Event Browser:

1 Open the Events Perspective tab or the Health Perspective tab to display the list of known events:

➤ **Applications** > **Operations Management** > **Event Perspective**

➤ **Applications** > **Operations Management** > **Health Perspective**

2 In the Event Browser, select the **Browser Options** 🔍 icon.

3 From the **Export** tab, select the format of the export file:

➤ Microsoft Excel (.xls)

➤ Comma separated values (.csv)

4 Select **Export**.

5 From the File Download dialog box, select **Save**.

6 From the **Save As** dialog box, specify a file name and a location directory.

7 Select **Save**.

Note: If you export the contents of the Event Browser with non-ascii characters using the comma separated values (.csv) format and open it directly in Microsoft Excel, the characters may be unreadable.

As the file is UTF-8 encoded, it can be read by Microsoft Excel by using one of the following methods:

➤ Import the file into Excel with UTF-8 character set:
Data > **Import External Data** > **Import Data**
Text Files, 65001 encoding (UTF-8)

➤ Open the csv-format file with Notepad and save it with UTF-8 encoding.

Adding Annotations to an Event

This task describes how to add an annotation to an event. Annotations help the user understand the background to an event and, as a result, speed up the resolution of the event's underlying problem.

To add an annotation to an event:

1 Open the Events Perspective tab to display the list of known events:

Applications > **Operations Management** > **Event Perspective**

2 In the Event Browser, select an event.

3 From the Event Details pane, select the **Annotations** tab.

4 Select **Add**.

5 Enter the information text.

6 Select **OK**.

Adding Custom Attributes to an Event

This task describes how to add custom attributes to an event. Custom attributes provide extra information that can help the user understand the background to an event and, as a result, speed up the resolution of the event's underlying problem.

Note: To add or modify custom attributes, you must be logged on as a user with permissions to modify the event.

To add a custom attribute to an event:

1 Open the Events Perspective tab to display the list of known events:

Applications > **Operations Management** > **Event Perspective**

2 In the Event Browser, select an event.

3 From the Event Details pane, select the **Custom Attributes** tab.

4 Select **Add**.

5 Enter the custom attribute name and value.

6 Select **Save**.

Assigning an Event to a User or User Group

This task describes how to assign an event from the Event Browser to a user or user group.

To assign an event to a user or user group:

1 Open the Events Perspective tab to display the list of known events:

Applications > **Operations Management** > **Event Perspective**

2 From the Event Browser pane, select the event that you want to assign to a user.

3 Open the assignment window in one of the following ways:

> ➤ In the Event Details pane, select the **General** tab and select **Assign**.

> ➤ In the Event Browser pane, select the **Assign To** icon.

> ➤ Right-click the event and select **Operations** > **Assign To** from the context-sensitive menu.

4 In the Assigned Group box, use the menu to select the user group to which you want to assign the selected event (for example, **Database Experts** or **Application Server Operators**).

5 In the Assigned User box, use the menu to select the user to whom you want to assign the selected event.

The users displayed in the menu are filtered according to the user group selected in the previous step.

6 Select **Save**.

⚓ Running an HPOM Action

In this task, learn how to run HP Operations Manager actions for an event containing event-related actions. If event-related actions exist, icons are displayed in the Event Browser in the A column and the U column to indicate that automatic and user actions are available for the associated event.

To run an action from an event with related actions:

1 Open the Events Perspective tab to display the list of known events:

Applications > **Operations Management** > **Event Perspective**

2 Select an event that includes event-related actions.

Actions are identified by the following icons displayed in the Event Browser in the **A** column and the **U** column:

⚙ — Automatic action is available

👤 — User action is available

Further icons indicate the status of the actions, including, starting, running, succeeded, and failed. For a complete overview of the icons and actions available, see "Run Tools Graphical User Interface" on page 184.

3 Select the **Actions** tab.

The action specification, target host, and the status of the available actions are displayed. A maximum of one automatic action and one user action is available for an event.

4 For the action that you want to run, select **Start**.

Alternatively, from the context-sensitive menu for the event, select the appropriate action:

Right-click > **Actions** > **Start ...**

The action starts, the status changes to Running and the associated action icon in the Event Browser changes to reflect this status.

After the action execution has completed successfully, the status changes to Succeeded. If the action did not execute successfully, the status is changed to Failed.

5 Select the **Annotations** tab for a summary of the executed action.

🦖 Viewing the Closed Event History of a CI

In this task, you display a History Browser window containing all closed events related to the related CI of a current event over a selected time period.

The History Browser shows only a snapshot of closed events available at the time of opening the History Browser. Events that are closed after the opening of the History Browser are not added to the current History Browser window. The timestamp when the snapshot was taken is displayed in the History Browser window.

Note: Only one History Browser can be opened at a time by each user. Filters defined in the Event Browser are not visible in the History Browser.

The maximum number of events that can be displayed in the History Browser can be configured in the Settings Manager. For details, see "History Browser Settings" on page 667.

To show closed events history related to a current event:

1 Open the Event Perspective tab or the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Event Perspective** or **Health Perspective**

2 Select the event for which you want to see the event history and in the Event Browser pane, select the **Show History Browser** 🗺️ icon or right-click the event and select from the context-sensitive menu:

Show > **History Browser (Related CI)**

3 In the **History Browser Configuration** window, specify the time period for which you want to display history.

Select a predefined period, and the number of available related closed events is displayed in the Number of events ... field.

If you select **Select a custom range**, specify a custom time range, and select **Apply.** The number of available related closed events is displayed in the Number of events ... field.

4 Select **OK** to display the History Browser window containing the available events.

Actions can be executed on he selected event using the available buttons and context menus. For details, see "History Browser Configuration Dialog" on page 81.

Event Perspective Graphical User Interface

This section aims to help you become familiar with the Event Perspective and understand how you can use it to better manage the events that occur in your IT environment. The Event Perspective page displays event-related information in separate panes, the contents of which are described in greater detail in the following topics:

➤ "CI Tree View" on page 56

➤ "Event Browser Overview" on page 57

➤ "General Tab" on page 67

➤ "Additional Info Tab" on page 70

➤ "Source Info Tab" on page 72

➤ "Actions Tab" on page 74

➤ "Annotations Tab" on page 75

➤ "Custom Attributes Tab" on page 76

➤ "Related Events Tab" on page 77

Event Browser Context-Sensitive Menus

HP OMi provides many context-sensitive menu, for example, the CI Tree View and the Event Browser. Context-sensitive menus provide quick and direct access to information about selected elements and actions that you can perform on them.

You open a context-sensitive menu by right-clicking an element in the GUI. The information available and the actions that are possible from a context-sensitive menu depend on the element and the context in which it exists.

Note: Some options and tools displayed in context-sensitive menus require you to be logged on as a user with the authorization to start the selected tool.

For more information about the actions that are available in context-sensitive menus and tool tips displayed in the Event Browser page, see the Event Browser graphical user interface descriptions.

🔍 CI Tree View

The CI Tree View displays configuration items from the UCMDB. The displayed selection can be filtered by applying a view. Views configure the CI Tree View to display only the configuration items specified in the view.

The contents of the Event Browser pane are filtered according to the selected view or configuration item type. The active filter is indicated in the Filter applied list.

Using the View Manager (**Admin** > **Universal CMDB** > **Modeling** > **View Manager**), you can configure new views or modify existing views to change, increase, or decrease the information displayed.

For more detailed information about the contents of the CI Tree View and how to use it to help you work with configuration items, see "CI Tree View Pane" on page 214.

🔍 Event Browser Overview

The Event Browser pane in the Event Perspective tab displays an overview of the events that exist in the IT environment you are monitoring. Events are generated by messages forwarded from HP OMi and report important events that occur in the managed environment. Events relate to problems and are managed by an administrator or assigned to users for resolution.

Tip: The contents of the Event Browser pane are filtered according to the selected view or configuration item. The active filter is indicated in the Filter applied list.

Filters refine both the type and the amount of information displayed in the Event Browser. You can configure new filters or modify existing filters to change, increase, or decrease the information displayed.

Each tab title also displays an icon representing the severity of the most severe event contained in its view.

Event History Browser

You can view closed events history related to a selected current event or a selected CI over a specified time period. From the History Browser, you can change the life cycle state of any displayed events. For details, see "Closed Event History" on page 33. All Event Browser actions relevant to closed events can be accessed from the History Browser.

Note: Events closed after the opening of the History Browser are not added to the current History Browser window. The timestamp when the snapshot was taken is displayed in the History Browser window. Only one History Browser can be opened at a time by each user.

The maximum number of events that can be displayed in the History Browser can be configured in the Settings Manager. For details, see "History Browser Settings" on page 667.

Event Browser Icons

The following table lists the icons that enable you to perform actions in the Event Browser pane. For a short explanation of the action performed by an icon in the Event Browser, position the cursor over the icon.

GUI Element	Description
	Sets the life cycle status for the selected events to Open. The events can now be assigned to users for investigation and resolution.
	Sets the life cycle status for the selected events to In Progress, indicating that the underlying problems of the events are under investigation.
	Sets the life cycle status for the selected events to Resolved.
	Sets the life cycle status for the selected events to Closed.
	Opens the Event Assignment dialog box, enabling you to assign the selected events to a specific user or user group.
	Sets options for the applied filter or selects a different filter to apply, for example: ➤ **New**: Opens the Filter Manager ➤ **Edit**: Loads the settings for the existing filter into the Filter Manager for modification For more information about the event filters, see "Event Filters" on page 190.
	Opens the Browser Options dialog box for the current Event Browser tab. You can modify and set display options (for example, to hide or display columns, or change the order in which the data appears).

GUI Element	Description
	Synchronizes the event data displayed in the user interface with the latest information available in the database.
	Enables and disables automatic update of the user interface with new event data. For information on setting the update interval, see "User Interface Settings" on page 673.
	Displays the History Browser Configuration window used to specify the time period for the closed events to be displayed in the History Browser. Select **OK** and the History Browser window containing all closed events related to the related CI of a current event over a selected time period opens.

Event Browser Labels

The following table lists the elements that are included in the Event Browser pane. For a short explanation of the action performed by an icon in the Event Browser, position the cursor over the icon.

GUI Element (A-Z)	Description
<Tab Name>	User assignable name of the selected Event Browser tab. The name can be changed by double-clicking the existing name and typing an alternative name.
	Note: The Event Browser tab name accepts only ASCII characters.
A	Indicates if an automatic action is attached to the event and describes its status using the following icons:
	⚙ — Not run automatic action available for event
	— Automatic action is running
	— Automatic action executed successfully
	— Automatic action failed to execute successfully
C	Indicates if the event has any related events that are hidden as a result of a correlation rule. The following icons indicate the event's position in a chain of events:
	— Event is a *cause* in a correlation rule
	— Event is a *cause* in one correlation rule and a *symptom* in another
	— Event is a *symptom* in a correlation rule
	For details about correlated events, see "Related Events Tab" on page 77.
D	Indicates how many duplicate events exist (for example, 0 or 3).
M	Indicates whether the event is owned by a user in HP Operations Manager (Y). If the event is owned by an HPOM user, the user name is displayed with the prefix OM:, for example, OM:Database Operator in the Assigned User field (Event Browser and General tab).

GUI Element (A-Z)	Description
N	Indicates if the event contains any annotations. Annotations are comments or observations relating to the associated (or a similar) event. The following icons indicate the presence of annotations: ⊞ — Event has annotations For more information about annotations, see "Annotations Tab" on page 75
U	Indicates if a user action is attached to the event and describes its status using the following icons: 👤 — Not run user action available for event 👤 — User action is running 👤 — User action executed successfully 👤 — User action failed to execute successfully
Application	Application that caused the event to occur.
Category	Name of the logical group to which the event belongs (for example, Database, Security, or Network). An event category is similar in concept to a message group in HP Operations Manager.
CI Hint	Service name in HP Operations Manager event.
Company	Default custom attribute settings that can be modified or removed.
Customer	Default custom attribute settings that can be modified or removed.
Date Created	Date and time when the event was created.
Date State Changed	Date and time when the last life cycle state change took place.
Date Received	Date and time when the event was received.
Description	Optional information about the original event in addition to the event's original title and the text captured from the event source.

GUI Element (A-Z)	Description
Event Type Indicator	Display name of the event type indicator (ETI) used to calculate the status reported by the selected event and the current value, (for example, Web application state: Slow). WebAppState is the name of the event type indicator. The corresponding label is Web application state, which is shown in the General tab. The level of the current ETI value is Slow. If event type indicators are assigned (see the Source Info tab) but are not being resolved (event type indicator field in General tab is empty), the configuration must be corrected.
Filter applied	Indicates the name of the active event filter. Filters refine both the type and the amount of information displayed in the Event Browser pane. By default, the contents of the Event Browser pane are filtered according to the selected configuration item or CI tree view.
Generating Host	Information about the network node that generated the original event.
Go to page	Opens the specified page of events if you enter a valid page number and select **Go**.
Group	Name of the group to which the selected event belongs. (As opposed to the user to whom the event is assigned.)
Host	Host system where the event occurred.
ID	ID of the event. Same as the ID of the message in HPOM if it is forwarded to HP OMi.

GUI Element (A-Z)	Description
Items	Indicates the number of events by severity and assignment to individual users or user groups. The valid severities are critical, major, minor, warning, normal, and unknown.
	A total is also displayed along with the number of selected events in brackets (for example, 40 (3)). The following icons indicate the event assignment status:
	— Event assigned to currently logged-on user
	— Event assigned to a user group
	— Events assigned to other users
	— Event assignment not known
	Depending on the settings selected in the active filter, some items are displayed with a value of 0 because they have been excluded by the filter.
Manager	Default custom attribute settings that can be modified or removed.
Object	Device such as a computer, printer, or modem.
Origin	Management server that initially forwarded the original HP Operations Manager event along the chain of servers configured in a flexible management environment.
Priority	Priority assigned to the selected event (for example, 0, 1, or 2).
Region	Default custom attribute settings that can be modified or removed.
Related CI	Name of the impaired configuration item (CI) where the event occurred.
Sender	Last server in the HP Operations Manager flexible management chain that forwarded the event to HP OMi.

GUI Element (A-Z)	Description
Sev	Severity assigned to the selected event. Usually, this is the same as the severity status of the original event received from HP Operations Manager. The following icons indicate event severity status: ⊗ — Critical ▼ — Major ⚠ — Minor △ — Warning ✓ — Normal ? — Unknown
State	Point in the event life cycle that the selected event has reached: ▢ — Open 🔧 — In Progress ✓ — Resolved ✗ — Closed To change an event's life cycle status, select the event, and select one of the status buttons above the event list or use the context-sensitive menu options. User authorizations control the permissions to change life cycle states. **Tip**: For a short explanation of the action performed by a button, position the cursor over the button.
Subcategory	Name of the logical subgroup (category) to which the event belongs (for example, Oracle (database), Accounts (security), or Routers (network)).
Title	Brief summary of the event.
Type	String used to organize different types of event within an event category or subcategory (for example, users or applications, accounts, and security).
User	Name of the user to whom the event is assigned.

Context-Sensitive Menus

The context-sensitive menu available in the Event Browser includes the following elements:

GUI Element (A-Z)	Description
Actions... Start	Starts an available action for the associated event.
Actions... Stop	Stops a running action for the associated event.
Configure > Event Type Indicators	Opens the Indicators manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > Performance Graphs	Opens a new window and displays the graph Design Wizard. This wizard enables you to design a graph and specify its attributes and save it as a template for later use.
Configure > Tools	Opens the Tools manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > View Mappings	Opens the View Mappings manager. You need the appropriate authorization to access Administration features.
Go to Dashboard	Opens the Dashboard page. You might have to select and set a view to display configuration items in the Dashboard.
Launch Tool	Starts a dialog box to select and launch tools configured for the selected event.
Operations	Changes the life cycle state of the selected event (for example, Open, Work On, Resolve, Close, Close and Reset Health Indicator, and Assign To).
	Tip: You can also perform these operations with icons. For more information, see "Event Browser Icons" on page 58.
Show > Event Details	Shows additional information about the selected event in a separate popup window. The information displayed is the same as that shown in the details pane.

GUI Element (A-Z)	Description
Show > **Filtered Browser (Related Host)**	Displays only events that concern the configuration item to which the selected event is related.
Show > **Filtered Browser (Related CI)**	Displays events that concern the selected configuration item only.
Show > **History Browser (Related CI)**	Displays the History Browser Configuration window used to specify the time period for the closed events to be displayed in the History Browser. Select **OK** and the History Browser window containing all closed events related to the related CI of a current event over a selected time period opens.
Show > **Performance Graphs (Neighborhood)**	Opens a new window and displays the performance graphs that are available for the selected node or event.
Show > **Performance Graphs (CI)**	Opens a new window and displays the performance graphs that are available for the selected CI.
Show > **Related Events**	Opens a separate window and displays the Related Events tab that indicates the relationship of the selected event to other events. The information displayed is the same as that available in the event details pane.

🔍 General Tab

The General tab in the Event Details pane displays detailed information about the selected event including its origin, the time at which it was created, and who is responsible for resolving the problem to which it relates. Select the Edit button to modify the Severity, Life Cycle State, Priority and Title. Select the Assign button to assign the selected event to a user or a user group.

Note: If a field is empty, no information exists for the selected item.

The following table lists the elements that are included in the General tab of the Event Browser.

GUI Element (A-Z)	Description
Assign	Activates the Assigned Group and Assign User fields. Change the values of these fields as required and save the changes by clicking **Save**.
Assigned Group	Name of the group to which the selected event's assigned user belongs.
Assigned User	Name of the network user who is responsible for solving the event's underlying problem. For example, if the event is owned by an HP OMi user, the user name is displayed. If the event is owned by an HPOM user, the user name is displayed with the prefix OM:, for example, OM:Database Operator.
Cancel	Discards the changed values.
Category	Name of the logical group to which the event belongs, (for example, Database, Security, or Network). The event category is similar in concept to the HP Operations Manager message group.
Date Created	Date and time when the selected event was created.

GUI Element (A-Z)	Description
Date Life Cycle Changed	Date and time when the last life cycle state change took place.
Date Received	Date and time when the selected event was received.
Duplicates	Number of duplicate events associated with the selected event.
Edit	Activates the Severity, Life Cycle State, and Priority fields. Change the values of these fields as required and save the changes by clicking **Save**.
Event Type Indicator	Display name of the event type indicator (ETI) used to calculate the status reported by the selected event and the current value, (for example, Web application state:Slow).
	WebAppState is the name of the event type indicator. The corresponding label is Web application state, which is shown in the General tab. The level of the current ETI value is Slow.
	If event type indicators are assigned (see the Source Info tab) but are not being resolved (event type indicator field in General tab is empty), the configuration must be corrected.
Host	Host system where the event occurred.
ID	ID of the event associated with the selected event. The event reports an event that occurred in the operational environment.
Life Cycle State	Point in the event life cycle that the selected event has reached (for example, Open, In Progress, or Resolved).
	The following list shows correlation between incoming HP OMi events and related events:
	➤ Message = acknowledged; Life cycle state = Resolved
	➤ Message = owned; Life cycle state = In Progress
	➤ Message = neither acknowledged nor owned; Life cycle state = Open

GUI Element (A-Z)	Description
Priority	The priority assigned to the selected event (for example, 0, 1, or 2).
Related CI	Name of the impaired configuration item (CI) where the event occurred.
Save	Saves the changed values.
Severity	Severity status assigned to the event displayed. You can change this severity in the General tab in the Event Details. The number of events with a given severity is displayed across the bottom of the Event Browser pane. **Tip**: For a short explanation of the icons used to indicate event severity, position the cursor over the icon in the Event Browser.
Subcategory	Name of the logical subgroup (category) to which the event belongs (for example, Oracle (database), Accounts (security), or Routers (network)).
Title	Brief description of the nature of the selected event.
Type	String used to organize different types of events within an event category or subcategory (for example, users or applications, accounts, and security).

🔍 Additional Info Tab

The Additional Info tab in the Event Details pane displays more detailed information about the attributes of the selected event.

The following table lists the elements that are included in the Additional Info tab.

GUI Element (A-Z)	Description
Application	Application that caused the event to occur.
	Unlike the Related CI attribute in HP OMi, which is a direct relationship to a CI in the UCMDB, the application attribute is a simple string-type attributes from HP Operations Manager.
	Examples of Application attributes are Oracle, and OS.
Closes Events with Key	String used to automatically acknowledge duplicate events.
Description	Optional information about the original event in addition to the event's original title and the text captured from the event source.
Key	Key associated with the original HP Operations Manager event. It is an identifier used to identify the message policy. Used for duplicates and for Close Events with Key.

GUI Element (A-Z)	Description
Object	Device such as a computer, printer, or modem.
	Unlike the Related CI attribute in HP OMi, which is a direct relationship to a CI in the UCMDB, the object attribute is a simple string-type attribute from HP Operations Manager.
	Examples of Object attributes include orainst, C:, /dev/ spool.
Original Event	Original event as captured from HP Operations Manager agents before being formatted into an HP Operations Manager message.
	Contains information about the original input before being normalized by HP Operations Manager agent policies into a message. Typically, the information available includes node name, message group, application, object, severity, and message text.

🔍 Source Info Tab

The Source Info tab of the Event Details pane displays an overview of the information available about the source of the selected event.

The following table lists the elements that are included in the Source Info tab.

GUI Element (A-Z)	Description
CI Resolution Hint	Service name in HP Operations Manager. Used to find the related CI in the UCMDB.
ETI Resolution Hint	Original string provided in a custom message attribute from HP Operations Manager. Can be used to associate the event with an ETI.
	You must set an attribute in the event which can be mapped to this indicator. To do this, set a custom message attribute called EventTypeIndicator in the HPOM policy. Specify a namespace for the CMA that matches the Name of the indicator, for example, CPULoad. Specify an instance that matches an indicator value, for example, High. When an event with an EventTypeIndicator CMA value of CPULoad:High is received, and ETI and values exist, the event attribute Event Type Indicator is set.
Generating Host	Host system where the monitoring agent or probe is running that generated the selected event:
	➤ DNS name of the generating host
	➤ Node ID of the generating host
Host Resolution Hint	Hostname in HP Operations Manager used to find host in UCMDB:
	➤ DNS name of the generating host
	➤ Node ID of the generating host
Match Information	Displays details of the policy that the event matched:
	➤ Policy name
	➤ Policy type
	➤ Condition ID

GUI Element (A-Z)	Description
Origin	Management server that forwarded the original HP Operations Manager event along the chain of servers configured in a flexible management environment: ➤ DNS name of the forwarding management server ➤ Node ID of the forwarding management server
Original ID	Unique ID assigned to the original HP Operations Manager message by the message policy that generated the message.
Sender	Last server in the HP Operations Manager flexible management chain that forwarded the event to HP OMi: ➤ DNS name of the last HP Operations Manager management server ➤ Node ID of the last HP Operations Manager management server

🔍 Actions Tab

Events from HP Operations Manager received by HP OMi may contain event-related actions. The Actions tab in the Event Details pane displays these actions available for an event. There are two types of possible actions: user actions and automatic action.

Select the Start button to run an action. The Stop button stops a running action from completing.

The following table lists the elements that are included in the Annotations tab.

GUI Element (A-Z)	Description
Action	Action specification summary.
Host	Target system where the action can be run.
State	Describes the status of the available action. The following states are used: ⚙ 👤 — Available ⚙ 👤 — Running ⚙ 👤 — Succeeded ⚙ 👤 — Failed

✎ Annotations Tab

The Annotations tab in the Event Details pane displays a list of the annotations attached to the selected event. Annotations are comments and observations relating to the event that help the event owner understand what the underlying problems are and how to fix them. Select the Add button to add an annotation to the selected event.

The following table lists the elements that are included in the Annotations tab of the Event details pane.

GUI Element (A-Z)	Description
Date Created	Date and time when the selected annotation was added to the event.
Delete	Removes the specified annotation from the selected event.
Expand	Toggles between the summary of the annotation and the complete available information.
Modify	Changes the details of the selected annotation.
Text	Content text of the annotation.
User	Name of the user who added the selected annotation to the event.

✎ Custom Attributes Tab

The Custom Attribute tab in the Event Details pane displays a list of the attributes that either an administrator or the responsible user have manually configured and added to the selected event. Select the Add button to configure a custom attribute and add it to the selected event.

Note: To add or modify custom attributes, you must be logged on as a user with permissions to modify the event.

The following table lists the elements that are included in the Custom Attributes of the Event Details tab.

GUI Element (A-Z)	Description
Delete	Deletes the selected attribute.
Modify	Opens the Modify Custom Attribute dialog box.
Name	Name of the selected custom attribute defined for the selected event.
Value	Value assigned to the selected custom attribute.

🔍 Related Events Tab

The Related Events tab in the Event Details pane displays an overview of all the events that are related to the event selected in the Event Browser. The way the events are displayed indicates if the event is considered as a symptom or a cause in the correlation process. The event displayed in bold type in the Related Events tab is the event that is selected in the Event Browser pane.

Note: A plus sign (+) icon in the event text column indicates the presence of correlated events, which the related events tab does not by default display. Use the plus sign (+) or minus sign (-) icons to display or hide correlated events.

The following table lists the elements that are included in the Related Events tab of the Event Details pane.

GUI Element (A-Z)	Description
Date Received	Date and time when the original message associated with the related event was received from HP OMi.
Related CI	Name of the impaired configuration item (CI) where the event occurred.
Rule	Link to the correlation rule used to create the relationship.
Severity	Severity assigned to the related event. Usually, this is the same as the severity status of the original event received from HP Operations Manager. **Tip**: For a short explanation of the icons used to indicate event severity, position the cursor over the icon.
State	Point in the event life cycle that the related event has reached (for example, Open, In Progress, or Resolved).

GUI Element (A-Z)	Description
Title	Text of the message sent from HP OMi. Select the plus sign (+) or minus sign (-) icons to expand or collapse any correlated messages. Bold text indicates the message that is selected in the Event Browser.
Unrelate	Removes the relationship that a correlation rule established between events using the ⚌ icon. Useful if you think that HP OMi correlated the selected event by mistake. The Unrelate action has no effect on the correlation rule that initially established the event relation. If you want to avoid relating the events in future, modify the associated correlation rule.
User	Name of the user who is responsible for solving the related event's underlying problem.

🔍 Define Event Filters Page

You can configure filters that refine the information you display about an event. Once configured, you can display the results of the filter in the same or a separate tab.

The Define Event Filters page displays the GUI elements listed in the following table.

GUI Element	Description
Basic	Sets the filter to display events according to: ➤ Severity: event severity status (minor, critical). ➤ Assignment: identity of the assigned user. ➤ Life Cycle State: Open, In Progress, Resolved, or Closed. ➤ Other attributes, such as Related CI, Host, Type and Category.
Dates	Sets the filter to display events according to: ➤ Date when the event was created. ➤ Date when information about the event was received. ➤ Date the life cycle state changed (for example, from Open to Resolved).
Custom Attributes	**Add CA Filter**: Opens a dialog box that enables you to define additional filters based on custom attributes.

GUI Element	Description

Resolution	Sets the filter to display events according to:
	
	➤ **CI Resolution**: Used to select one or both of the following event characteristics:
	   ➤ Events with a related CI
	   ➤ Events without a related CI
	➤ **CI Resolution Hint**: Service name in HP Operations Manager. Used to find the related CI in the UCMDB.
	➤ **ETI Resolution Hint**: Name and value of the ETI used to calculate the status reported by the selected event.
	➤ **Host Resolution:** HostInfo.DnsName of the event is used to find a matching CI of type host or one of its subtypes.
	➤ **Host Resolution Hint**: Hostname in HP Operations Manager. Used to find host in the UCMDB.

Advanced	Sets the filter to display events according to: ➤ **Annotations**: selects events with or without annotations ➤ **Applications:** selects events with the specified application ➤ **CI Type**: selects events according to a selected CI type ➤ **Duplicates**: selects events with or without duplicates ➤ **Key**: Selects events that contain a reference to the named key. ➤ **Object**: Selects events that are related to a named object, as specified in the original HP Operations Manager message. ➤ **Original Event**: Original event as captured from HP Operations Manager agents before being formatted into an HPOM message. Contains information about the original input before being normalized by HPOM agent policies into an HPOM message. Typically, the information available includes: node name, message group, application, object, severity, and message text.

✎ History Browser Configuration Dialog

The History Browser Configuration dialog box contains the time periods that you can apply to view the history of closed events.

The History Browser uses a subset of the controls available in the Event Browser. For details, see "Event Browser Overview" on page 57. For information on how to use the History Browser, see "Viewing the Closed Event History of a CI" on page 53.

The History Browser Configuration dialog box displays the GUI elements listed in the following table.

GUI Element	Description
Apply	Applies the custom date range.
Cancel	Closes the History Browser Configuration dialog box without opening the History Browser.
<Date Range>	Sets the filter to display events within the selected predefined time period. The available choices are: ➤ Last hour ➤ Last 24 hours ➤ Last 3 days ➤ Last 7 days ➤ Last 14 days
OK	Opens the History Browser using the date range specified in the History Browser Configuration dialog box.
Select a custom range	Enables the custom date range fields.

🔍 opr-archive-events Command-Line Interface

This section describes the options and parameters available in the **opr-archive-events** command-line interface.

Note: HPOM events are not updated when using the opr-close-events tool and the opr-archive-events tool to close, delete, and archive events. The events in HPOM remain unaffected.

The opposite is also true when using the omwmsgutil (HPOM for Windows) tool and opcack and opchistdown (HPOM for UNIX) tools to close, delete, and archive events. The events in HP OMi remain unaffected.

All these tool operates directly on their respective databases and the changes do not go through the workflow process, resulting in the loss of synchronization between HP OMi and HPOM.

If you use these tools to close, delete, and archive events from one system (for example, HP OMi), you must make the equivalent changes with the appropriate tools on the other system (for example, HPOM).

The opr-archive-events command-line interface is located in:

%TOPAZ_HOME%\bin (default: C:\HPBAC\bin)

The opr-archive-events command accepts the following options:

opr-archive-events
    -o *<output path and file name>* **-u** *<date>* **[-a][-force]**
    -u *<date>* **-d [-force]**
    -h

Note: You can combine the options that are given between square brackets. Otherwise, use the rest of the options separately.

For more information about the options recognized by the **opr-archive-events** command, see the following list:

-a,--archiveOnly *<archive file>*

Only archives events without deleting them from the database.

-d,--deleteOnly

Deletes only the events from the database without archiving.

-force

Archive events without asking user for confirmation.

-h,--help

Displays a summary of the command options and exits.

-o,--output *<archive_file>*

Path and name of XML file used to store archived events.

-u,--until *<date>*

Archives the events that where received before the specified date. The date must be specified in one of the following formats:

yyyy.mm.dd-hh:mm:ss
yyyy.mm.dd-hh:mm
yyyy.mm.dd-hh
yyyy.mm.dd

🔍 opr-close-events Command-Line Interface

This section describes the options and parameters available in the **opr-close-events** command-line interface.

Note: HPOM events are not updated when using the opr-close-events tool and the opr-archive-events tool to close, delete, and archive events. The events in HPOM remain unaffected.

The opposite is also true when using the omwmsgutil (HPOM for Windows) tool and opcack and opchistdown (HPOM for UNIX) tools to close, delete, and archive events. The events in HP OMi remain unaffected.

All these tool operates directly on their respective databases and the changes do not go through the workflow process, resulting in the loss of synchronization between HP OMi and HPOM.

If you use these tools to close, delete, and archive events from one system (for example, HP OMi), you must make the equivalent changes with the appropriate tools on the other system (for example, HPOM).

The opr-close-events command-line interface is located in:

%TOPAZ_HOME%\bin (default: C:\HPBAC\bin)

The opr-close-events command accepts the following options:

opr-close-events
    [-u *<date>*] [-f *<date>*] [-s *<severity>*][-force] [-r]
    -all [-force] [-r]
    -h

Note: You can combine the options that are given between square brackets. Otherwise, use the rest of the options separately.

For more information about the options recognized by the **opr-archive-events** command, see the following list:

-all

Closes all events.

-f,--from *<date>*

Closes events (including related events) received after the specified date. This option can be combined with severity and until date. The date must be specified in one of the following formats:

yyyy.mm.dd-hh:mm:ss
yyyy.mm.dd-hh:mm
yyyy.mm.dd-hh
yyyy.mm.dd

-force

Closes events without asking user for confirmation.

-h,--help

Displays a summary of the command options and exits.

-r,--resetHIs

Resets health indicators after closing of events.

-s,--severity *<severity>*

Closes events of the specified severity. This option can be combined with from date and until date. The severity can be one of the following: NORMAL, WARNING, MINOR, MAJOR, CRITICAL.

-u,--until *<date>*

Closes events received before the specified date. This option can be combined with severity and from date. The date must be specified in one of the following formats:

yyyy.mm.dd-hh:mm:ss
yyyy.mm.dd-hh:mm
yyyy.mm.dd-hh
yyyy.mm.dd

🔍 Troubleshooting and Limitations

This section provides help in troubleshooting problems relating to event management.

HPOM for Windows User Names are Truncated When Messages are Forwarded

By default HPOM for Windows has the OM for UNIX compatibility mode enabled (true) in the Server-based Flexible Managemet configuration. This leads to the truncating of the user names.

➤ Change the **OM for UNIX compatibility mode** setting to false in the Server-based Flexible Management namespace in the Generic Server Configuration tab.

Correlations Might be Skipped in High Load Situations

If a high number of events with ETIs is forwarded to HP OMi over a long period of time (30 minutes or longer), the correlation engine only considers up to the specified number of most recent events. If this limit is exceeded, the oldest events are removed from the queue and no longer considered for correlation.

This limit is set using the Max Waiting Queue Size attribute and is located in:

Infrastructure Settings Manager > **Operations Management** > **Topology-Based Event Correlation Settings**

The default value is 5000. The valid range is 100 to 20000.

➤ If you are experiencing this problem, lower the incoming event rate or increase the Max Waiting Queue size limit. If the limit is increased, you should also monitor the memory consumption and, if necessary, increase the memory setting (parameter -Xmx) for the opr-backend process.

Data Collection Tool opr-checker.bat

If you are having problems with your HP OMi installation and need to contact HP Software Support, use the **opr-checker.bat** tool to generate a summary of your installation.

1 Run the **opr-checker.bat** tool from the following location and specify a target location for the output file:

%TOPAZ_HOME%\opr\support\opr-checker.bat -a -xml > %TEMP%\opr-checker.xml

2 Send the resulting XML file to HP Software Support for analysis.

3

Health Perspective

This chapter introduces the Health Perspective in HP OMi. Using the Health Perspective, you can present and view the information that is available about the health of the objects you are monitoring. You can find out about health indicators and key performance indicators and how they work together to provide information for top views. You can also find out about specifying views used in the Top View, and using event type indicators and key performance indicators.

Note: To be able to use the health-related functionality of HP OMi, the Event Management Foundation and Health licenses are required. For detailed information on licensing, see the *HP Operations Manager i Installation and Deployment Guide*.

This chapter includes:

Concepts

Tasks

Reference

🪩 Health Status

The Health Perspective tab is used to display the health of related CIs in the context of events. The event selected in the Event Browser drives what is displayed in the Top View and HI View.

In the Health Perspective tab, the following panes help you understand the health status of an object, how it is calculated, and how it affects the health of related objects:

➤ **CI Tree View**

Displays a list of all the objects in your monitored environment. For more information, see "CI Tree View" on page 28.

➤ **Event Browser**

Displays a list of the active events in your environment. For more information, see "Event Browser" on page 29.

➤ **Top View**

Displays a hierarchical overview of the relationships between the different objects that make up the monitored environment and indicates the current health of the displayed objects. For more information, see "Top Views" on page 93.

➤ **Health Indicator View**

Displays a list of the health indicators that are used to calculate the availability and performance of the selected configuration item. For more information, see "Health Indicators" on page 95.

Health indicators and key performance indicators are used to determine the health of an object. HP OMi calculates how severe the problems directly associated with the selected object are and combines this information with any additional information available about dependent objects. The combined data is passed to calculation rules that evaluate and set the key performance indicators that indicate the overall health of an object.

The color of an object displayed in the top view can be used to indicate its health, and the most critical status of any contributing objects. For example, green can be set to represent normal and red to represent critical. The color used depends on the view settings (**Admin > Dashboard**). Whatever you specify in the view settings contributes to the color of the CI.

Tip: The Health Perspective panes display data related to the configuration item associated with the selected event. The top view is designed to help investigate problems that require root cause analysis.

For more information about health indicators and key performance indicators, see "Health Indicators" on page 95 and "HI-Based KPI Calculations" on page 97.

🎲 Top Views

The Top View browser in the Health Perspective tab displays a topological view of the configuration items affected by the event selected in the Event Browser pane. The view shows the relationships between the configuration items that represent the monitored objects and indicates their current health status. The top view is designed to help investigate problems that require root cause analysis.

Tip: You can refine the contents of the Top View pane by applying an alternative view. If no event is selected in the Event Browser pane, the Top View pane remains empty.

You can use the View Mappings manager to map views to individual configuration item types. A list of mapped views appears in the Selected Views list in the Top View pane. The contents of the Selected Views list are determined by the configuration item type associated with the event selected in the Event Browser. For more information about view mapping, see "View Mapping" on page 211.

Health indicators and key performance indicators are used to determine the health of an object. The combined data is passed to calculation rules that evaluate and set the overall health of an object. The color of an object displayed in the top view indicates its health. For example, green indicates a normal status and red means critical.

The Health Indicator View pane shows you the health indicators used to calculate and set the current severity status of the highlighted configuration item.

For more information about health indicators and key performance indicators, see "Health Indicators" on page 95 and "HI-Based KPI Calculations" on page 97.

Event Type Indicators

Event type indicators (ETIs) are attributes of HP OMi events used to categorize events according to the type of occurrence in the managed IT environment. An HP OMi event is created as a result of receiving a message from a manager, such as HP Operations Manager, or Network Node Manager. In HPOM, you can configure events to include the custom attribute EventTypeIndicator, which is used to set event type attributes. If the custom attribute is not configured, event type attributes can be set by the applicable mapping rules. If adequate information is not available, no ETI is set.

Any occurrence on the monitored system of a given type causing an HP OMi event must be assigned the same ETI. After defining appropriate correlation rules, events are correlated based on the ETIs. The correlation rules relate types of events that can occur on the CI.

Event type indicators are characterized by the following:

➤ Categorize type of event to abstract multiple event sources.

➤ At least one value is required. This value is used to describe the event occurrence in the environment, for example, an ETI could read: System restart:*Occurred*. Usually, you do not need to set any values for such ETIs. As a convenience, one value is created that is called Occurred.

➤ Events contain an ETI attribute. ETIs do not exist as instances in their own right.

➤ ETIs without a corresponding HI are not shown within HI View.

➤ No manual reset necessary. An ETI is just an event attribute.

A configuration item inherits ETI assignments, including health indicators, from its parent configuration item type. For example, ETIs assigned to the configuration item type Database also apply to the configuration item type Oracle and are applied to any Oracle Database configuration items.

🎲 Health Indicators

Health indicators determine and display the health of specified aspects of a monitored CI. A health indicator (HI) is an event-specific monitor that uses one value to represent the normal state of the CI, for example, System:*Running*. One or more additional values are used to represent any abnormal states, such as System:*Stopped*. In this way, health indicators are used to show if a hardware resource is available and responding.

Health indicators can also display the state of a software application. For example, the possible states of a database server could be specified as: Available, Starting or Stopping. Health indicators can also be used to show the usage of a software application, for example, whether the load is Normal, High, or Max. Exceeded.

Only events that provide CI state information can set a health indicator (HI). Health indicators are assigned to a specific configuration item type through the associated ETI.

Tip: HP OMi sets indicators automatically using event attributes or mapping rules.

Mapping rules can be used to match attributes of incoming events to defined health indicator values, such as Low or High, for a given configuration type. For example, you can define a health indicator to monitor events related to the CPU load on Unix systems (CI type: **Host > Computer > Unix**). When an event about Low or High CPU load is received, the appropriate health indicator value is modified. The modification of the health indicator value causes a change in the severity status of any object to which the health indicator is assigned.

Health indicators provide the data that a key performance indicator (KPI) needs to calculate the availability and performance of monitored resources. The KPIs use calculation rules to collate the values from multiple health indicators and set a severity level, such as: Critical, Major, Minor, or Normal. For example, a KPI for a database can include multiple health indicators concerning the run state (Up, Down), the cache-hit ratio (0, 50, 100%), the length of query queues (Empty, Full), and response times (#ms) to determine overall health.

For more information about key performance indicators, see "HI-Based KPI Calculations" on page 97.

🔷 HI-Based KPI Calculations

Key performance indicators (KPI) apply calculation rules (see "KPI Calculation Rules" on page 99) to the data provided by health indicators to determine the availability and performance of the objects to which the health indicators are assigned. The value that results from the calculation is used to set a severity level, for example, normal, warning, minor, major, or critical.

KPIs are displayed in the topological views (such as the Health Perspective tab or the Dashboard) as a series of small box icons, each of which has a distinct color that reflects the assigned severity. In the Top View, KPIs appear under the monitored object to which they belong.

The color of each KPI reflects the KPI's current severity status. The severity status is determined by a business rule (see "HI-Based KPI Business Rules" on page 100), which specifies how and when severity status propagates up a relationship chain. One resource with a critical problem does not mean that all dependent resources are, by definition, also critical. KPIs can use data from multiple sources to determine the overall impact up and down dependency chains and determine the severity status accordingly.

Note: The type of source determines the importance of the information provided. For example, live data from a monitor running directly on a node is considered more important than data resulting from business rules, which base calculations on KPI relationships and dependencies. This means that KPI states propagated by a business rule may be overridden by live data directly from the CI.

Key performance indicators exist for HP OMi in two high-level areas covering health-based and event-based data. The following KPIs use health-based data:

➤ **Operations Performance KPI**

Performance-related data from health indicators might include values for the hit ratio in the database cache, server connection speeds, queue lengths, or database query processing times. This example describes health indicators that are specific to the database configuration item type. Other configuration item types have different health indicators.

➤ **Operations Availability KPI**

Availability-related data might include server run states (up, down, starting, stopping) or process activity (refusing, accepting connections, not responding).

There are two additional KPI types that use event-based data for Unassigned or Unresolved events and are attached by default to every configuration item. Unassigned KPIs concern events with an underlying problem that has not yet been allocated to any user for investigation. Unresolved KPIs concern events with underlying problems that have not yet been fixed.

Note: Unassigned, event-based KPIs are, by definition, also unresolved.

If an unassigned or unresolved KPI references data from more than one event, the color of the KPI reflects the severity status set by a business rule. The business rule associated by default with unassigned and unresolved KPIs is the Operations Event Life Cycle Group Rule, which sets the status of the KPI to the highest severity of any events associated with the related configuration item. For example, if a KPI for an unassigned event refers to one critical and four normal events, the KPI appears red to reflect the critical event.

Note: There is no propagation from child CIs.

⚙ KPI Calculation Rules

KPI calculation rules determine how the severity status of the health indicators assigned to a key performance indicator can be combined with their relative importance to set the severity of the key performance indicator. KPI calculation rules enable you to specify how HP OMi calculates the severity of a key performance indicator if a combination of data is available from multiple sources.

For example, you can specify a rule that sets the severity of the KPI to the worst severity status of any assigned health indicator, or to the average severity status of all assigned health indicators.

Note: For KPI calculation purposes, an HP OMi monitor does not have any child KPIs.

In HP OMi, defining and enabling KPI calculation rules is an administrator task. For more information about setting KPI calculation rules, see "HI-Based KPI Calculation Rules Administration" on page 240. For more information about defining KPI calculation rules, see "Specifying HI-based KPI Calculation Rules" on page 272.

🔸 HI-Based KPI Business Rules

KPI business rules determine how to use health data to calculate and set the severity status of a KPI. Business rules also determine if, how, and when to propagate the status of one or more related child objects in order to set or change the status of dependent parent objects.

HP OMi uses the following types of KPI business rules:

➤ **Monitor Rules**

Monitor rules use live data from monitor configuration items running on the monitored configuration item objects, often referred to as *leaf* CIs.

➤ **Group Rules**

Group rules aggregate the current status of any child KPIs and use the value to set the status of the parent KPI. This status determines the status of the configuration item to which it is linked. A group rule considers the state of its immediate children only.

Tip: The tool tip in the Top view pane indicates the business rule that HP OMi uses in the KPI calculation process.

The following business rules are available only with HP OMi:

Rule Name	Type	Description
Operations Event Life Cycle Group Rule	Group	Uses the default event groups principle to calculate severity status.
Operations Event Life Cycle Rule	Monitor	Uses sample data from available events to calculate the severity status.

Rule Name	Type	Description
Operations KPI Group Rule	Group	Uses data from its own monitors, if available, and if not it uses the "worst child" principle to calculate severity status. Of all the dependent objects in the group, the worst child is the one object with the highest severity status, for example, Critical.
Operations KPI Rule	Monitor	Uses sample data from local monitors to calculate the severity status.

For more information about key performance indicators, see "HI-Based KPI Calculations" on page 97. For more information about changing the business rule used to calculate a KPI, see "KPI Business Rules Administration" on page 241.

🖋 **Viewing Health Indicators**

In this task, you learn how to list and view health indicators (HI). In general terms, health indicators define one or more states (up, down) and associate each state with a specific severity level (normal, critical). These states and severity levels determine the health of a particular instance of a configuration item, for example, an Oracle Database.

To view a health indicator:

1 Open the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Health Perspective**

2 In the Event Browser pane, select the event for which you want to display health indicators. Alternatively, select a configuration item in the CI Tree.

In the Health Indicator View pane, HP OMi displays a list of all the health indicators assigned to the KPI's that are attached to the selected configuration item. The list is divided according to KPI type:

➤ Operations Availability KPI

➤ Operations Performance KPI

➤ Other

Note: Other Health Indicators lists any health indicators that are associated with the selected configuration item but not assigned to any of the KPIs used during the calculation of the KPI severity status.

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3 To display additional information about an individual health indicator, hover the cursor over the appropriate health indicator.

Note: Health indicators can also be viewed from the Dashboard using the context-sensitive menu:

Show > **Health Indicators**

⚡ Resetting Health Indicators

In this task, you learn how to reset a health indicator. Resetting a health indicator is a way of returning an object's severity status to a defined default value such as Normal.

Note: Resetting a health indicator is not usually necessary and should be performed in exceptional circumstances only, for example, when HP OMi does not reset it automatically.

To reset a health indicator:

1 Open the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Health Perspective**

2 In the Event Browser pane, select the event for which the KPI uses the health indicator you want to reset.

3 In the Health Indicator View pane, right-click the health indicator that you want to reset.

4 In the context-sensitive menu that displays, select **Reset Health Indicator**.

Viewing HI-based Key Performance Indicator Details

In this task, you learn how to list and view the details of a key performance indicators (KPI). Key performance indicators use the data provided by one or more health indicators to set a severity level (normal, warning, or critical) for the monitored object.

To view details of key performance indicators:

1 Open the Health Perspective tab from Operations Management:

   Applications > **Operations Management** > **Health Perspective**

2 In the Event Browser pane, select the event for which you want to view KPI details.

3 In the Top View pane, hover the cursor over the configuration item for which you want to display KPIs details.

4 Hover the cursor over a KPI to see details for only this KPI.

🦖 Viewing KPI Calculation Rule Settings

In this task, you learn how to list and view calculation rules for key performance indicators (KPI). Key performance indicators use the data provided by one or more health indicators to a specific severity level (normal, warning, or critical) to a monitored object.

To view the applied KPI calculation rule:

1 Open the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Health Perspective**

2 In the Event Browser pane, select the event for which you want to view KPI details.

3 In the Top View pane, hover the cursor over the configuration item for which you want to display calculation rules.

⚒ Viewing KPI Business Rule Settings

In this task, you learn how to find out which business rule HP OMi applies to set the severity of a key performance indicator. Key performance indicators use the data provided by one or more health indicators to set a specific severity level for a monitored object. A KPI business rule specifies how the status of dependent KPIs is combined and the result used in the calculation of a parent KPI's severity.

To view the applied KPI business rule:

1 Open the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Health Perspective**

2 In the Event Browser pane, select the related CI associated with the KPI for which you want to view the business rule. The event is displayed in the Top View pane.

3 In the Top View pane, hover the cursor over the object for which you want to view the KPI business rule.

4 In the tool tip information that opens, check the value of the entry Calculation Rule for each KPI to see which business rule was used to set the severity status, for example, Calculation Rule or Operations KPI Group Rule.

Health Perspective Graphical User Interface

This section describes the information displayed in the Health Perspective tab. The information in this sections aims to help you understand how you can use health perspectives to better understand the overall health of your IT environment. In this section, you can find information about the following topics:

➤ "CI Tree View" on page 107

➤ "Event Browser" on page 108

➤ "Top View" on page 109

➤ "Health Indicator View" on page 114

CI Tree View

The CI Tree View displays a selection of the configuration items (CIs) stored in the database in a hierarchical list. The selection displayed is determined by the current view. CIs exist for each type of event or object and for each instance of an event or object. Displaying the CIs in a tree enables you to browse and locate them more easily.

For details about the information displayed in the CI Tree View pane, including any context-sensitive menus and tool tips, see "CI Tree View" on page 56.

🔍 Event Browser

The Event Browser pane displays an overview of the events that exist in the IT environment you are monitoring. Events are generated by messages forwarded from HP Operations Manager and report important events that occur in the managed environment. Events relate to problems and are managed by an administrator or assigned to users for resolution.

Note: To complement and expand the information displayed in the Event Browser pane, HP OMi provides additional information about object relationships and severity status in the Top View and Health Indicator View panes, respectively.

For details about the information displayed in the Event Browser pane, including context-sensitive menus and tool tips, see "Event Browser Overview" on page 57.

🔍 Top View

The Top View pane in the Health Perspective tab displays a topological view of the configuration items affected by the event selected in the Event Browser pane. The view shows the relationships between the configuration items that represent the monitored objects and indicates their current health status. You can also use the top view to see what impact the health of individual objects has on the health of other objects. The information displayed in the top view includes the following details:

GUI Element (A-Z)	Description
Configuration Item Name	Name of the selected configuration item, for example, DB_Server.example.com.
Last Updated	Date when the Top View information was last refreshed.
Selected View	List of the views mapped to the configuration item type (and any parents) referenced by the event selected in the Event Browser and, if configured, filtered by event category.
	Select the view you want to apply to the contents of the Top View pane. A view enables you to refine the type and amount of configuration items displayed. The selected view can also affect the severity status of configuration items, since views can exclude or include additional (related) items which have an impact on the displayed topology.
	Users with the appropriate authorization can map views to configuration item types. For more information about mapping views, see "View Mapping" on page 211.

When you hover the cursor over any configuration item displayed in the Top View pane *except* the root configuration item in the tree or any item that is colored grey, HP OMi displays details of the factors that contribute to the status of a configuration item, as described in the following table.

Note: If you have set up other monitors, for example, from BPM or Sitescope, you also see other KPIs listed.

GUI Element (A-Z)	Description
CI Name	Name of the selected configuration item, for example, DB_Server.example.com.
Calculation Rule	Calculation rules to determine the availability and performance of the selected configuration item.
Held status since	Date and time since when the current status was applied to the selected configuration item.
Operations Performance KPI **Operations Availability KPI**	Performance and availability KPIs details associated with the selected object. The information includes the name of the emitting configuration item (CI), the current severity status, the business rule (monitor or group) used to calculate the KPI's status, and the length of time that the KPI has been in the reported state. The background color indicates the highest severity of the KPIs associated with the selected object.
Status	Severity assigned to the selected CI.
Unassigned Events **Unresolved Events**	KPI associated with events that have either not been assigned to any user or remain unresolved. The information includes, in addition to the details shown for performance and availability KPIs, the number of duplicate or related (and unassigned) events associated with the selected object. The background color indicates the highest severity of the KPIs associated with the selected object.
Value	Number of open events with the current severity associated with the selected CI.

The context-sensitive menu available in the Top View pane includes the following options:

GUI Element (A-Z)	Description
Acknowledgment > Acknowledgment Details	Opens the Acknowledgment Details window relevant to the CI, in Dashboard.
Acknowledgment > Set/Unset Acknowledgment	Opens the Set/Unset Acknowledgment window relevant to the CI, in Dashboard.
Configure > Event Type Indicators	Opens the Indicators manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > Performance Graphs	Opens a new window and displays the graph Design Wizard. This wizard enables you to design a graph and specify its attributes and save it as a template for later use.
Configure > Tools	Opens the Tools manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > View Mappings	Opens the View Mappings manager. You need the appropriate authorization to access Administration features.
Filters	Opens the Filters tab in Dashboard or is used as a parent menu for other filter context menu items, for example, Filter Subtree Monitors. ➤ Show Complete Subtree ➤ Show Subtree Monitors ➤ Filter Subtree ➤ Filter Subtree Monitors
Find Visible and Hidden Child CIs	Displays a list of child CIs associated with the selected CI, with a summary of the states of applicable KPIs, assigned and unassigned events, and whether the children are visible or hidden.

GUI Element (A-Z)	Description
Go to Health Perspective	Opens the Health Perspective tab.
Go to Report	Opens the selected report in a new window. The report includes: ➤ Trend ➤ Event Log Report ➤ KPIs Over Time Report ➤ Change Report ➤ Configuration Item Status Alerts
Launch Tool	Starts a dialog box to select and launch tools configured for the selected CI.
Show Business Impact	Shows the business CIs that are impacted by the selected CI.
Show > History Browser	Opens the History Browser for the related CI.
Show > Health Indicators	Opens a separate window and displays the health indicators that are associated to the selected CI. The information displayed is the same as that available in the Health Indicator View pane in the Health Perspective tab.
Show > Performance Graphs (Neighborhood)	Opens a new window and displays the performance graphs that are available for the selected node or event.
Show > Performance Graphs (CI)	Opens a new window and displays the performance graphs that are available for the selected CI.
Show > Related Events	Opens a separate window and displays the events that are related to the selected CI. The information displayed is the same as that available in the event details pane.

GUI Element (A-Z)	Description
Top View > Show Path to Root	Displays the Top View for the selected CI. The top view is a hierarchical overview of the relationships between the selected CI and other objects in the monitored environment and indicates the current health of the displayed objects. For more information, see "Top Views" on page 93.
Top View > Show Problematic Subtree	Available for all CIs. Opens a popup with the same capabilities as the Top View tab. The popup displays all of the child CIs with Critical, Major, or Minor status and enables you to find the problematic child CI that causes the selected parent CI to have a status other than OK. It is enabled only for CIs that have at least one KPI with a status other than OK. For further details, see the online help for the Dashboard.

🔍 Health Indicator View

The Health Indicator View lists the health indicators for the configuration item associated with the event you select in the Event Browser. The list of health indicators is divided according to the key performance indicator (KPI) to which it belongs, for example, availability or performance.

Health indicators map a defined state to a corresponding severity. For example, health indicators for a database can associate the state database *running* with the severity Normal, database *stopped* with the severity Major, and a *failed* attempt to extend the table space with the severity Critical.

Note: One KPI rule can include multiple heath indicators. For example, a KPI for the database configuration item type can include a combination of health indicators monitoring the run state (up, down), the cache hit ratio (0, 50, 100%), the length of query queues (empty, full), and response times (#ms) to determine overall health.

The Health Indicator View page displays the GUI elements listed in the following table. In the table, unlabeled GUI elements are shown in angle brackets (<>).

GUI Element (A-Z)	Description
CI Type	Name of the configuration item type to which the configuration item displayed in the Selected CI field belongs.
Health Indicator	Display name of the health indicator used to set the severity of the selected event.
Last Update	Time stamp indicating the last time the current status was updated.
Operations *<type>* **KPI**	Display name of the key performance indicator to which the displayed health indicator is assigned, for example, Operations Availability KPI.

GUI Element (A-Z)	Description
Other Health Indicators	Lists any health indicators that are associated with the selected CI but are not assigned to any KPI.
Selected CI	Name of the configuration item to which the displayed health indicator is assigned.
Trend	Arrows pointing up, down, or up and down to indicate the overall trend of the selected KPI since the last update: ⬆ — Positive ⬍ — Neutral ⬇ — Negative
Value	Current value set for the health indicator specified in the Name field, for example, Success or Failed. The value is also associated with a severity. An icon reflecting the severity assigned to the selected health indicator value is displayed, for example: ❌ — Critical 🔺 — Warning ✅ — Normal

The context-sensitive menu in the Health Indicator View pane includes the following elements options:

GUI Element (A-Z)	Description
Configure > **Event Type Indicators**	Opens the Indicators manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > **View Mappings**	Opens the View Mappings manager. You need the appropriate authorization to access Administration features.
Show Contributing Active Events	Opens a new window using a filter that shows only events that contributed to the health status of the selected health indicator.
Reset Health Indicator	Resets the severity of the selected health indicator value to a defined default. The change is displayed immediately. **Important:** Only use the reset function when the severity of an object does not return automatically to the default value, for example, if a normal event is lost (due to correlation) in an event storm.

When you hover the cursor over a health indicator name in the Health Indicator View pane, details of the event that most recently updated the health indicator value are displayed. For example, the event's last known status, the user (and user group) to which the event is assigned, and the event's life cycle state.

🔍 Troubleshooting and Limitations

This section provides help in troubleshooting problems relating to health indicators, including listing, viewing, and enabling.

Event Browser is Empty

➤ No events are available

➤ Incorrect filter is applied

➤ No connection is available to the HPOM management server

Top View is Empty

➤ No event is selected in the Event Browser

➤ No view is selected in the CI Tree View pane

➤ Java applet did not start or is not running correctly

Top View Shows Status as Info for All CIs

If the Online Engine (mercury_online_engine process) is restarted, unsaved KPI values are lost and the status for all CIs in the Top View is reset to Info. This is the standard behavior if you do not enable saving KPI data over time for those CIs (see Dashboard Administration).

Health Indicators Display Incorrectly

Health indicators are used to assign a severity to a state, for example, Critical severity to the state Unavailable. The state and the assignment are indicated in the Health Indicators pane. However, calculation rules for a KPI might use several health indicators to set a new severity level for the object in the top view.

➤ No event is selected in the Event Browser

➤ The configuration item highlighted in the Top View pane does not have any assigned health indicators

➤ You selected an event in the Event Browser pane and a different configuration item in the Top View pane

4

Performance Graphs

This chapter describes the main concepts of Graphing and performance graphs. The information provided describes how to design, draw, and analyze performance graphs, and how you can use graphs to identify and fix problems more quickly and easily.

This chapter includes:

Concepts

Tasks

Reference

Graphing Concepts

Graphing allows you to draw graphs, and design custom graphs for configuration item types that you are monitoring. You can also compare multiple instances of a resource or an application on one or more configuration items (CIs). Using preformatted graphs and reports, you can:

➤ Evaluate application and system performance

➤ Analyze usage trends

➤ Correlate usage

➤ Compare application and system performance

Types of Graphs

While designing or editing a graph, you can select the type of graph. The following list contains the available output types:

➤ **Line**

Displays each metric as a line. Line Styles and Markers are only valid for this graph type.

➤ **Area**

Displays each metric as a line with data below the line filled in the same color. Multiple metrics must have the same units. Also known as a filled line graph.

➤ **Bar**

Displays vertical bars for each metric.

➤ **Mixed**

Displays metric can be individually set as a line or area.

➤ **Horiz Bar**

Displays horizontal bars for each metric.

➤ **Pie**

Displays each metric as a portion of a circular pie chart.

➤ **Gauge**

Displays a single automotive-type dial gauge for each metric.

➤ **Table**

Displays the data in a table with columns for each metric, and rows for each record.

➤ **Horiz Table**

Displays a table with columns for each record and rows for each metric.

➤ **Baseline**

Displays the average values for a single metric for a typical week. All available data from the data source is used to generate this baseline. To calculate the baseline for a typical week, you must have more than seven days of data for the selected system. If there is a large volume of historical data, it may take a few moments to calculate.

A baseline graph is useful in identifying patterns in system and application activities.

When you specify a baseline graph, 8 graphs are drawn. The first graph in the series is a Typical Week graph that displays the average values of a metric, organized by days of the week, and by hours of the day. In addition, there are seven graphs, one for each day of the week. Each of these display the expected daily high and low values for the metric versus the actual metric value. In the daily graphs, the blue line indicates the range of the values that is Expected at any particular hour of that day. The expected values are determined by examining all past data for the system and calculating statistics for every hour of every day of the week. The blue lines typically display the range where 80% of the data points are expected to fall. The red line displays the actual data for each hour of the day.

➤ **XML**

Returns the data in XML format.

➤ **Excel**

Returns the data as an Excel spreadsheet. The client system must have Microsoft Excel installed to view this graph type.

➤ **TSV**

Returns the data as Tab Separated Values (the values are separated by tabs). This format is similar to CSV except that it separates each item with the tab character instead of a comma. This format is generally easier to understand because the tabs align the values in columns.

Note: If you are selecting a Microsoft Excel or a TSV graph, you must configure the browser settings to display Microsoft Excel and TSV files.

➤ **CSV**

Returns the data as Comma Separated Values (the values are separated by commas). This is a common way of representing data, which can readily be imported into other applications.

🎲 Overview of Graph Templates

For drawing graphs for the most common scenarios, HP OMi provides a set of standard templates.

A graph template contains information such as:

➤ Source of the data (agent or data collector)

➤ Metric or a set of metrics

➤ Type of graph

➤ Graph attributes

You can also design your own graph templates or customize an existing template by using the Design Wizard. You cannot save changes made to standard templates, but you can save them as user-defined templates using an alternative different name.

Graphing is organized using a graph family tree, which consists of:

➤ **Family**

Refers to the group that organizes graphs

➤ **Category**

Refers to the various sub-groups of graphs which are logically grouped within the family

➤ **Name**

Uniquely identifies a graph definition

Default Graphs

A default graph in a graph family contains the most important metrics to measure the performance of any resource or application. You can map graph families or categories to a CI. When you launch a graph for a CI or an event that has a graph family or category associated with it, the default graph from the graph family or category is drawn. A graph family can have one or more default graphs. If a graph family does not have a default graph, the first graph in the family or category is selected.

You can also configure a graph as a default graph when designing or editing a graph using the Graph Design Wizard. For instructions on designing a graph, see "Designing Graphs" on page 130.

🍥 Merge Graphs Overview

You can map a graph family or category with a CI type. For more information about mapping and management of graphing, see "Performance Graphs" on page 399.

The Performance Graphs manager allows software administrators and subject matter experts map configuration item types to available graph families so that Instance-based graphs can be launched at runtime from a configuration item. For instructions to map CI type to graph family, see "Mapping CI Type to Graph Family" on page 404.

When you select a CI for which you want to draw a graph, all the default graphs from the graph families or categories associated with the corresponding CI type are selected. The attributes from all the default graphs in the families and categories associated with the chosen CI are merged. If a graph family does not have a default graph, the first graph in the family or category is selected. One or more graphs are drawn in a new browser window.

You can design a graph for a CI. When you design a graph for a CI, the graph is also mapped to the CI type of the selected CI. Hence the graph is automatically associated with all the CIs belonging to the CI type.

Example

If you design the graph mail_tracker for the CI Ex_sysA, which belongs to the CI type Exchange_server, all CIs belonging to the CI type Exchange_server are automatically associated with the graph mail_tracker.

The graphs drawn can appear in one or more tabs. This depends on the graph attributes which are a part of the template. For more information, see "Graph Attributes - List and Description" on page 170 and keywords (as they appear in the graph template).

Example

The standard graph family Systems Infrastructure contains the default graph Global History. If you select a CI associated with the graph family Systems Infrastructure, the graph Global History is drawn.

Example

The CI A is associated with the graphs G1 and G2.

The following are graph attributes for graph G1:

➤ Graph type=line

➤ Number of metrics=9

➤ Date Range=default, 7 days ending now

The following are graph attributes for graph G2:

➤ G2=line

➤ Number of metrics=12

➤ Date Range=All

Graphing merges the two graphs and creates the resulting graph as follows based on the attributes:

➤ Number of graphs=1

➤ Metrics per graph=12

➤ Date Range=All

Note: The metrics per graph in the resulting graphs also depends on the value configured in the parameter Metrics Per Graph. For more information, see "Graphing Settings" on page 661.

♆ Manage Graphs - Work Flow

Along with standard graph templates, you can also design custom graphs. Using the Design Wizard, you can create your own graph templates to display the required data. You can also edit the existing graph definition of a standard template and save it as a user-defined template. You can also map graph families or categories to configuration item types. For more information, see "Performance Graphs Manager" on page 400.

Only users with the appropriate access permissions can use Operations Management Administration tools. For more information about user management, see "HP OMi User Authentication" on page 628.

🔖 Drawing Graphs

You can draw graphs from a set of predefined templates or your own graph templates. You can launch a graph from the Operations Management context-sensitive menu available in the following views:

➤ "Top View" on page 109

➤ "CI Tree View Pane" on page 214

➤ "Event Browser Overview" on page 57

For further information on the HP OMi console, see "Event Perspective Graphical User Interface" on page 55 and "Health Perspective Graphical User Interface" on page 107. For information about views and view mappings, see "Views for HP OMi" on page 209.

To draw a graph:

1 You can launch a graph using one of the following ways:

➤ From the Event Browser pane, right-click on the event for which you want to draw a graph, and from the menu options, select **Show** > **Performance Graphs**.

➤ If you want to draw a graph from the CI Tree View, right-click on the CI for which you want to draw a graph, and from the menu options, select **Show** > **Performance Graphs**.

Note: If you are drawing a graph for a CI with multiple instances, make sure the value of the parameter Maximum Instances is configured accordingly. While drawing a graph, only as many instances as the value specified for this parameter are displayed. If the number of instances is more than the value of this parameter, the extra instances are excluded from the graph. For more information, see "Graphing Settings" on page 661.

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2 The default graph in each family is drawn in a new browser window. If a graph family does not have a default graph, the first graph in the family is selected. There are a number of options which you can use to perform a more detailed analysis on the drawn graph. For more information, see "Drawn Graph Page" on page 134. To understand how the various graphs are merged, see "Merge Graphs Overview" on page 125.

The number of graphs drawn depends on various attributes which are a part of the graph template such as the value of Metrics per graph, the graph type configured in the graph templates and number of CIs. See "Graph Attributes - List and Description" on page 170 and keywords (as they appear in the graph template).

To modify your selection of CI or graph:

You can also modify the CI or graph. To modify the CI and graph, do the following:

1 After you draw a graph, click the ▍ icon. The Selection pane opens. A list of CIs and graphs are available in the selection pane.

2 Select a configuration item for which you want to draw a graph from the CI tree on the left pane. You can also select multiple CIs to draw a graph. You must select at least one CI. If you do not select any CI, Graphing prompts you to select at least one CI.

Note: You need to select at least one Host CI if you have selected a system performance graph.

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3 Select a graph from the graph tree.

4 Select **Draw**. The new graph or graphs appears in the right pane in one or more tabs. Graphs are redrawn every time you make a new selection and reselect **Draw**. The existing tabs are closed when you select **Draw** after modifying the CI or Graph selection.

5 If you want to cancel all the previous selections, select **Clear**.

🕊 Designing Graphs

You can design graphs and save them as templates using the Graph Design Wizard. You can launch the Graph Design Wizard from one of the following views from the HP OMi console:

➤ "Top View" on page 109

➤ "CI Tree View Pane" on page 214

➤ "Event Browser Overview" on page 57

For further information on the HP OMi console, see "Event Perspective Graphical User Interface" on page 55 and "Health Perspective Graphical User Interface" on page 107.

To design a graph:

1 You can design a graph from one of the following ways:

➤ From the Event Browser pane, right-click on the event for which you want to draw a graph. From the menu options, click **Configure** > **Performance Graphs**.

➤ If you want to design a graph from the CI Tree View, right-click on the CI for which you want to draw a graph. From the menu options, click **Configure** > **Performance Graphs**.

2 The Graph Design Wizard takes you through a series of steps required to design a graph. For detailed information about the individual panes, see the appropriate reference pages, such as "Graph Design Wizard - Graph Attributes Page" on page 145.

❧ Editing a Graph

Graphing allows you to edit a graph which you have created. However, you cannot edit the out of the box graphs. You can launch the Graph Design Wizard to edit a graph from one of the following views from the HP OMi console:

To edit a graph:

1 Open the Performance Graphs manager:

   Admin > **Operations Management** > **Performance Graphs**.

2 From the **Available Graph Families** pane, select the graph that you want to edit.

3 Click the graph edit 🖉 icon. The **Graph Design Wizard - Graph Selection Page** appears. Select the Graph which you want to edit and click **Next**. **Graph Design Wizard - Graph Attributes Page** appears.

4 The Graph Design Wizard takes you through a series of steps required to edit a graph. For detailed information about the individual panes, see the appropriate reference pages, such as "Graph Design Wizard - Graph Attributes Page" on page 145.

Note: You can also edit a drawn graph, for more information, see "Drawn Graph Page - Graphs Menu" on page 134.

⚓ Deleting a Graph

You can delete any graph that you have created. However, you cannot delete a standard graph. You can launch the Graph Design Wizard to edit a graph from one of the following views from the HP OMi console:

To delete a graph:

1 Open the Performance Graphs manager:

Admin > **Operations Management** > **Performance Graphs**.

2 From the **Available Graph Families** pane, select the graph that you want to delete.

3 Click the graph ✖ icon. The **Graph Design Wizard - Graph Selection Page** opens. Select the Graph which you want to delete and click **Next**. **Graph Design Wizard - Graph Attributes Page** appears.

🦢 Printing and Saving Drawn Graphs

You can print or save drawn graphs:

To print a graph:

1 From a performance graph window, select **Graphs** > **Print**.

The selected graph appears in a new window, which also includes a description of graph data.

Note: The graph description in print view appears only if the header and trailer information is defined in the graph template.

In addition, the Print dialog box appears with the default options pre-selected.

2 Modify the print options as required and select **Print**.

You can also save the graph as a HTML page from the Print view.

To save a graph as an HTML page:

1 From a performance graph window, select **Graphs** > **Print**.

The selected graph appears in a new window, followed by the Print dialog box.

2 Select **Cancel** to close the Print dialog box.

3 Select **File** > **Save As**.

The **Save Webpage** dialog box opens and prompts you to specify a file name. You can save the graph as a web page in location accessible from your system.

🔍 Drawn Graph Page

The following additional options are available to perform a more detailed analysis after you draw a graph. For instructions to draw a graph, see "Drawing Graphs" on page 128.

The information in this section aims to help you understand how to interpret the contents of graphs, and use the available features and functionality to change the contents of graphs. The information in this section covers the following topics:

➤ "Drawn Graph Page - Graphs Menu" on page 134

➤ "Drawn Graph Page - Help Menu" on page 136

➤ "Drawn Graph Page - Button Options" on page 136

➤ "Drawn Graph Page - CI and Graphs Selection Pane" on page 137

➤ "Drawn Graph Page - Zoom-In and Zoom-Out Options" on page 138

Drawn Graph Page - Graphs Menu

The Graph menu in the Drawn Graph page includes the following elements:

GUI Element (A-Z)	Description
Close All Graphs	This option allows you to close all the graphs that are currently drawn. A message asking you to confirm if you want to close all graphs appears. Click **OK** to close all graphs or **Cancel** to exit without closing all the graphs.
Drill Down	Use this option to view the data in a more granular form. You can also use this option to draw a different graph (image or table). For more information, see "Graph Drill-Down Dialog Box" on page 139.

GUI Element (A-Z)	Description
Edit	This option appears on the graph menu only if you have the admin privileges.
	This option allows you to edit the drawn graph. To edit a graph, click **Graph** > **Edit**. The "Graph Design Wizard - Metric Selection Page" on page 152 appears. The Graph Design Wizard takes you through the series of steps to edit a graph.
	Note: If your drawn graph appears in more than one tab, the **Edit** options allows you to edit the graph appearing only in one tab. For more information on how a graph is merged, see "Merge Graphs Overview" on page 125.
	You can also edit a graph from the CI menu options. For more information, see "Editing a Graph" on page 131.
Export	You can also export the graph to formats such as TSV, CSV, XLS, and XML. For more information, see "Graph Export Dialog Box" on page 142.
Mouse Hover - Turn On/Off	Use this option to turn on or turn off the mouse hover option. If you turn on this option, when you hover the mouse over the points on the graph a popup displaying the actual value of the data point and time stamp appears. If the graph type is "line", the popup also displays the line color of the selected data point and metric name.
	Note: The setting from the GUI is effective only in the current session and is reset to the default option in the next session. Contact your software administrator to configure the default setting for this option.
Print	To print a graph, click **Graphs** > **Print**. The graph appears with information in the print view. For more information, see "Printing and Saving Drawn Graphs" on page 133.
Reload Graphlist	This option allows you to reload the graph list tree to reflect the latest changes if any.

Drawn Graph Page - Help Menu

The **Help** menu in the **Drawn Graph** page includes the following elements:

GUI Element (A-Z)	Description
Dynamic Help	Displays the help content for the GUI which you are viewing.

Drawn Graph Page - Button Options

The **Drawn Graph** page includes the following elements:

GUI Element (A-Z)	Description
	Click this icon to select a different CI or a graph. The **Drawn Graph Page - CI and Graphs Selection Pane** displays a list of CIs and graphs. The CIs and graph families or categories associated with the drawn graph are selected by default. **Note:** The CI tree displays only those CIs that are associated with the graphs launched in the first instance.
Automatically Refresh	Select this check box to view the most recent changes from the data sources. The graph is redrawn every five minutes with the latest data available from data source. The refresh rate is configurable. Contact your software administrator to configure the time interval for refreshing data. For more information, see "Graphing Settings" on page 661. **Note:** The Automatically Refresh option is not available for pie, baseline, forecast, and gauge graphs.
Hiding or Showing Metrics	This option allows you to hide or show metrics that appear on the drawn graph. For instructions, see "Hide or Show Metrics Dialog Box" on page 141.

GUI Element (A-Z)	Description
Prepend/Append	Graphing provides **Append** and **Prepend** buttons to append or prepend data for adjoining time intervals based on the value specified for points every while drawing a graph. For more information, see "Specifying Points Every Value" on page 148.
Prev/Next	Graphing provides **Prev** and **Next** buttons to navigate to adjacent time intervals based on the value specified for "points every" while drawing a graph. For more information, see "Specifying Points Every Value" on page 148.

Drawn Graph Page - CI and Graphs Selection Pane

The Selection pane displays a list of CIs and graphs, graph families and categories associated with the drawn graph. The default graphs in the graph families or categories and the CIs used are selected by default.

The following elements are included:

GUI Element (A-Z)	Description
Clear	Click Clear to reset all the options which you selected.
Draw	Click **Draw** after you select CIs and graphs. The graph in the browser window is redrawn with the new options which you selected.
Select CIs pane	Select a CI for which you want to draw a graph from the CI tree. The CI tree displays only those CIs that are associated with the graph(s) launched in the first instance.
Select Graph(s) pane	Select a graph from the graph tree. The graph tree displays only those graphs that are mapped to the CI type launched in the first instance.

Drawn Graph Page - Zoom-In and Zoom-Out Options

After you draw a graph, you can zoom-in to view a smaller set of data points and zoom-out to reset and view the original graph. Zooming-in or zooming-out allows you to adjust the summarization levels.

➤ To zoom-in on data, click and drag the mouse to a rectangular area on the graph from left to right. The selected area is highlighted in blue.

➤ To zoom-out, click and drag a rectangular area on the graph from right to left. When you zoom-out a graph, the graph is reset to its previous state.

You can zoom-in on data up to multiple levels. Every zoom-out reverts to the graph's previous state.

Example: If you are drawing a graph for 10 days, ending on 21st July, 2008 with points every as "auto" Graphing summarizes data and sets the points every value to fit the data in the graph window. If Graphing summarizes data at points every hour for 10 days, when you zoom in, you can view data at points every 15 minutes for a duration for 3 days.

Note: This option is available only for image graphs. However, this option is not available for pie, gauge, baseline, table and forecast graphs.

🔍 Graph Drill-Down Dialog Box

This section describes in detail the information displayed in the performance graph Drill-down dialog box. The Drill-down dialog box allows you to view the data in a more granular form. You can also use this option to draw different graph (image or table).

The **Drill-down** dialog box includes the following elements:

GUI Element (A-Z)	Description
Draw	Generates the newly defined table, graph, or process table and displays it on a separate page.
Draw a different graph	Displays the Select a Graph pane which you use to select the type of graph you want to use to format the resulting data. **Note**: This option is *not* available if you select **Process Table** as the drill-to output format.
Drill to:	Chooses how you want to display the information you drill down to, for example: ➤ **Table**: Display the requested data in lists in a tabular form. ➤ **Graph**: Display the requested data in the form of a graph. ➤ **Process Table**: Display the requested data in the form of a process table. This option is available only for host CIs.
End Date	Change the date and time when the displayed report period ends by dragging the slider.
Start Date	Change the date and time when the displayed report period starts by dragging the slider.

🔍 Graph Print Dialog Box

This section describes in detail the information displayed in the performance graph Print view window. Print view allows you to view more detailed description of the graphs. The graph appears in a new window. In addition, the Print dialog box of the browser appears with the default options pre-selected. This window displays the graph with a complete description of graph data. To access this page, from the menu options on the drawn graph page, click **Graphs** > **Print**.

The following elements are included:

GUI Element (A-Z)	Description
File > Save As	The **Save Webpage** dialog box prompts you to specify a file name. You can save the graph locally as a web page in any desired location on your system.
Print	Click **Print** to print the graph with the graph information.

✎ Hide or Show Metrics Dialog Box

On the Drawn Graph page, click **Hide/Show Metrics** after the graph is drawn. A Hide or Show Metrics popup window appears. The popup displays the list of all metrics available in the graph with a check box against each metric. The metrics used in the graph are pre-selected by default. The following elements are included (unlabeled GUI elements are shown in angle brackets):

GUI Element (A-Z)	Description
<Check-boxes against every metric>	To modify the metrics on the graph, select only those metrics which you want to appear on the graph and clear those metrics which you do not want in the graph.
Apply	The graph is now redrawn with only those metrics which you selected. However, the Hide or Show Metrics popup window remains open until you click **OK**. You can make modify your selection to hide or show metrics.
Cancel	Click Cancel to close the Hide or Show Metrics popup without making any changes.
OK	Click **OK** to make the changes and close the Hide or Show Metrics popup after you make your selection. The graph is redrawn with the metrics which you selected.
Select All/Clear All	Select the **Select All/Check All** check box if you want to select all the metrics. If you want to clear the selection, clear this check box.

🔍 Graph Export Dialog Box

After you draw a graph, click **Graphs** > **Export**. The Export from a Graph window opens. You can export the graph to the following formats: TSV, CSV, XLS, and XML. The following elements are included:

GUI Element (A-Z)	Description
Cancel	Click **Cancel** to close the dialog box and return to the drawn graph page.
OK	Click **OK** to export the data in the selected format.
Type	Select the format from to which you want to export from the drop-down.

✎ Graph Design Wizard - Overview

Graphing allows you to design custom graphs using the Design Wizard feature. You can create your own graph templates to display the required data. You can also edit the existing graph definition of an out-of-the-box template and save it as a user-defined template.

The design wizard consists of the following steps:

1 **Graph Design Wizard - Graph Selection Page**

2 **Graph Design Wizard - Graph Attributes Page**

3 **Graph Design Wizard - Metric Selection Page**

4 **Graph Design Wizard - Special Attributes Page**

5 **Graph Design Wizard - Other Attributes Page**

6 **Graph Design Wizard - Save Graphs Page**

7 **Graph Design Wizard - Finish Page**

🔍 Graph Design Wizard - Graph Selection Page

The Graph Selection page displays all graphs associated with the CI which you selected. Select the graph which you want to edit and click next. However, if you select only one family or category from the "Performance Graph Manager Graphical User Interface" on page 407, then only graphs belonging to that family or category are displayed.

Note: This step of design wizard appears only while editing a graph.

🔍 Graph Design Wizard - Graph Attributes Page

From the Graph Attributes page, you can specify graph attributes while designing a graph and save it as a template for later use.

The following elements are included:

GUI Element (A-Z)	Description
Automatically Refresh	When you select the **Automatically Refresh** check box, the graph is redrawn every five minutes with the latest data available from the data source. The refresh rate is configurable. Contact your software administrator to configure the time interval for refreshing data.
Cancel	Click **Cancel** to exit the design wizard.

GUI Element (A-Z)	Description
Date Range	The default date range is: 7 days ending 'Now' and Points Every value is auto summarization. You can also modify default settings for date and time.
	Use Defaults - Clear Use Defaults check box to modify the default values.
	Duration - Specify the time duration for which you want to design the graph. Enter the number and specify the unit of time. You can specify time duration in minutes, hours, days, and weeks. If you select "all", all the data gathered by the data source and logged in the agent log files is included in the graph.
	Points Every - Use the **Points Every** (POINTSEVERY) setting to control how much data is to be summarized in each point on the graph and hence determine the granularity (number of data points) of data on the graph. For more information, see **Specifying Points Every Value**.
	Ending - Specify the end date for the graph. Select from one of the following options:
	➤ **Now** - the current date and time on the server.
	➤ **Last** - the date and time when data was last collected by the data source.
	➤ **Date/Time** - When you select this option, the calendar icon is enabled. Click the calendar icon to select the date. Select the time from the Time drop-down list.
Default Graph	When you select the **Default Graph** check box, the graph which you design will be the default graph in the family or category to which it belongs.
	Note: A graph family or category can have one or more default graph(s). Graphing merges and draws all the graphs. For more information on the way Graphing merges the various attributes, see **Merge Graphs Overview**.
Description	Enter a general description of what the graph represents.

GUI Element (A-Z)	Description
Force Points Every	Select this option to force control on the granularity (number of points) on the graph. This value overrides any Points Every value specified while drawing a graph.
Graph Type	Select the type of graph you want to design from the drop-down list. Click here for a list of **Types of Graphs** with descriptions.
Limit Number of Points	Enter the number of records (table graph) or data points (for image graph) which you want to view on the graph at a time. The default value is 100. If the graph contains more data points, the **Prev** and **Next** buttons are enabled, so that you can navigate to view all the data points.
	The number of points also depends on the graph type which you have selected:
	➤ For a table graph, the default value for number of rows can be configured by the software administrator. However, the value specified while designing a graph template overrides the default value and the value is saved in the graph template.
	➤ If you are designing a pie graph or a gauge graph, by default, the Limit Number of Points is set to one. You cannot change this value.
	The recommended value for maximum number of points is 1000 for a graph. If you select a value greater than this, the graph or table will take a very long time to appear.
Next	Click **Next** to go to the next page.
Preview	Click **Preview** to preview the graph.

GUI Element (A-Z)	Description
Save/Save As	Click **Save** or **Save As** to save your graph, **The Graph Design Wizard - Save Graphs page** appears.
Sum From Raw	Select this option if you want to specify that Graphing should gather unsummarized data from the data sources and then summarize the retrieved data. Select this option when you do not want the data to be summarized by data source. Using this feature can cause large volumes of data to be transferred from the data source and can slow down the resulting graph or table. When you select this option, you can specify the summarization level for individual metrics.

Specifying Points Every Value

Use the Points Every (POINTSEVERY) option to control how much data is to be summarized in each point on the graph. You can use the Points Every option to determine the granularity (number of data points) on the graph. The default value is Auto. You can select from the following options:

➤ **Auto**

➤ **5 minutes**

➤ **15 minutes**

➤ **30 minutes**

➤ **hour**

➤ **3 hours**

➤ **6 hours**

➤ **12 hours**

➤ **Day**

➤ **Unsummarized**

Auto

Selecting this option automatically selects the value to display the data points within the configured limit. If you select Auto, Graphing automatically summarizes the data based on the date range that you have specified to a level that would make the graph easy to read. If the combination of Date Range and Points Every settings results in too many points, the Points Every value is automatically adjusted to display all of the requested data in one page. In addition, Graphing also provides **Append** and **Prepend** buttons to increase the data points which you can view on a single page.

➤ Click **Append** >> to view data for the next set of data points, in addition to the data you are currently viewing.

➤ Click **Prepend** << to view data for the previous set of data points, in addition to the data you are currently viewing.

If you click **Append** or **Prepend**, Graphing adds additional data to the graph which you are currently viewing. The number of points displayed is same as the data points which appear in the initial graph. The duration is doubled. For example, if you were currently viewing data for the previous one month, and you click **Prepend**, you can view data for the previous two months.

All the data points are displayed in the same page. The points every setting is reset by Graphing to make the data readable. When all the data available is displayed, the Append and Prepend buttons are disabled.

Example for Append/Prepend:

When the combination of the date range and Points Every settings is one week of data from 1/1/2009 to 8/1/2009 with points every one hour, if you Click Append/Prepend additional one week of data is displayed in the same page. You can see two weeks of data with points every three hours.

Example for Auto:

For example, if you have specified the Duration as 12 hours, the graph displays this data for 12 hours and the summarization is automatically set by Graphing to accommodate this data within one page.

Note: In case of Image Graphs, based on the value set for **limit number of points**, summarization interval is decided by Graphing when 'points every' is selected as auto. The behavior of the **Next/Prev** button is different if 'points every' is selected as "auto", unlike the behavior when 'points every' is specified as any other value other than 'auto' from the drop down. When auto is selected, you can view data for the duration which you have specified, in the same graph, with summarization interval specified by the Graphing. The **Next/Prev** options displays the graph from the next and previous duration with the same points every (summarization) value.

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5 minutes

Displays one data point for every five minutes of the specified duration.

15 minutes

Displays one data point for every fifteen minutes of the specified duration.

30 minutes

Displays one data point for every thirty minutes of the specified duration.

hour

Displays one data point for every one hour of the specified duration.

3 hours

Selecting this option displays one data point for every three hours of the specified duration.

6 hours

Displays one data point for every six hours of the specified duration.

12 hours

Displays one data point for every twelve hours of the specified duration.

Day

Displays one data point for every day of the specified duration.

Unsummarized

Data is not summarized. The raw data collected by the data source for the specified duration is displayed. Any value set in Graphing does not affect the summarization.

Note: If the points every value is anything other than Auto, and if the data in the chosen time range cannot be fit into a single graph or table, the graph or table appears in more than one page and **Prev** and **Next** buttons are enabled. Click **Prev** to move to the previous page and Next to go to the next page to view all the data. The **Append/Prepend** options are disabled when you set **Points Every** is set to anything other than **auto**.

Graph Design Wizard - Metric Selection Page

The Metric Selection page enables you to design a graph and save it as a template for later use.

The following elements are included:

GUI Element (A-Z)	Description
Add Metrics	Opens the Metric Selection window. For details, see "Metric Selection Window" on page 153.
Cancel	Click **Cancel** to exit the design wizard.
Move Down	From the list of metrics, select the metric which you want to move down by clicking on the row corresponding to the metric. Click **Move Down** to move the metric to the bottom of the list from its current position.
Move Up	From the list of metrics, select the metric which you want to move up by clicking on the row corresponding to the metric. Click **Move Up** to move the metric to the top of the list from its current position in the list.
Next	Click **Next** to go to the next page.
Prev	Click **Prev** to go to the previous page.
Preview	Click **Preview** to preview the graph.
Properties	From the list of metrics, select the metric for which you want to specify the properties and click **Properties** to open the **Metric Properties Window**.
Remove	From the list of metrics, select the metric which you want to remove by clicking on the row corresponding to the metric. Click **Remove** to remove a metric from the list.
Remove all	Click **Remove All** to remove all the metrics from the list.
Save/Save As	Click **Save** or **Save As** to save your graph, The Graph Design Wizard - Save Graphs page appears.

Metric Selection Window

The following elements are included (unlabeled GUI elements are shown in angle brackets):

GUI Element (A-Z)	Description
Add	Select one or more metrics for which you want to draw graph and click **Add**.
Close	Click **Close** after you complete the selection. The list of metrics which you selected now appears in a tabular form on the metric selection page of the design wizard.
Metric classes tree	The metric classes tree displays a list of classes and metrics belonging to each class that are available on the data source. Expand the metric class name. The list of metrics appears.

Metric Properties Window

You can configure the way a particular metric appears in the graph. To change the properties of a metric, perform the following tasks. From the list of metrics, select the metric for which you want to configure the properties by clicking on the row corresponding to the metric.

Note: You cannot specify a color for the metric.

The following elements are included:

GUI Element (A-Z)	Description
Cancel	Click **Cancel** to exit without saving the changes you made. The Graph Design Wizard - Metric Selection page appears.
Filter	You can specify a condition to filter metrics: ➤ **Metric name** - Select the metric for which you want to apply the filter ➤ A comparison symbol - Select a comparison symbol. See list of **Comparison Symbols**. ➤ A value to compare - Enter a value to compare ➤ **Add** - Click **Add** to apply the metric filter ➤ **AND/OR** - Use the logical operators AND or OR, to specify multiple filters. ➤ **Update** - To modify the condition you specified, select the filter condition, modify the conditions and click Update. ➤ **Remove** - To remove a filter condition, select the filter condition and click Remove. ➤ **Remove All** - Click Remove All to delete all the filters.

GUI Element (A-Z)	Description
Label	Enter a label for the metric. The label identifies this metric on the graph or table. The label can be modified for one metric at a time. The label can be a literal string, or it can contain references to special substitution variables.
	➤ **@@[LABEL]** - The metric label specified by the data source. For example, (CPU %). If a label is not specified by the data source then the metric name is used.
	➤ **@@[METRIC]** - The metric name. For example: (GBL_CPU_TOTAL_UTIL)
	➤ **@@[CLASS]** - The metric class. For example: (GLOBAL)
	➤ **@@[SYSTEM]** - The node name supplying the metric. For example: (mysys.net.com)
	➤ **@@[DATASOURCE]** - The data source for this metric. For example: (PA, EPC)
	➤ **@@metric** - The value of the metric from the same data source and class. For example: @@BYDSK_DEVNAME will label the metric with the value of the BYDSK_DEVNAME metric. If the BYDSK_DEVNAME metric value were "0", Disk @@BYDSK_DEVNAME would produce a label of Disk 0.
	Example: @@[SYSTEM]:@@[CLASS]:@@[METRIC] might produce a label like "mysys.net.com:GLOBAL:GBL_CPU_TOTAL_UTIL"
	Note: Graphs that contain only one metric will automatically display the system name for the metric label, when multiple nodes are selected. If you do not specify a label, the Graphing uses the default metric label specification; that is, any label supplied by the data source for the metric, or the metric name.

GUI Element (A-Z)	Description
Line Graph Specific Properties	The following options appear only if you have selected the graph type as "line": **Line Style** ➤ **Style** - Select the line style for the lines in the graph from the drop-down list. ➤ **Marker** - Select a marker from the drop-down list. **Note:** If you specify a marker, you can differentiate if the data points displays missing data or actual data. If data is missing for a particular interval, the Graphing connects both the previous and the next data point with a straight line and the marker for that point does not appear. ➤ **Width** - Specify the width for the lines.
OK	Click **OK** to save all the changes and exit from this window. The Graph Design Wizard - Metric Selection page appears.

GUI Element (A-Z)	Description
Summarization	If you have selected the **Sum from Raw** check box on the Graph Attributes page, the Summarization drop down box appears. The default value is Average. Summarization of data is done when multiple records from a data source are combined to view the required amount of time per data point. Click here to view the various types of summarization options. ➤ Auto - When you design graph with auto summarized data, the Graphing summarizes data based on the summation type provided by the data sources, if the Sum from Raw check box on the Graph Attributes screen is not selected. If the summarization type is not provided by the agents or if the Sum from Raw check box on the Graph Attributes screen is selected and if you specify the summarization type as 'auto', Graphing uses the 'average' value to summarize data. Currently, data sources such as Performance Agent and EPC provide summarization types for the respective metrics. ➤ Average - If the summarization type is not provided by the data sources and if the Sum from Raw check box is selected, by default Graphing uses the option 'average'. Average refers to the mean value obtained by dividing the sum of values by the number of samples. ➤ Sum - On selecting this option, Graphing adds metric values to arrive at a sum. ➤ Minimum - On selecting this, Graphing uses the lowest numeric value. ➤ Maximum - On selecting this, Graphing uses the highest numeric value. ➤ Last - On selecting this, Graphing uses the last value read from the data source. ➤ Count - On selecting this, Graphing uses the number of records from the data source that are combined into each point.

GUI Element (A-Z)	Description
Type	Displays the type of graph which you selected while specifying graph attributes. If you have selected mixed graph, you can specify the graph type for the metric which you selected. The options available are Line or Area.
YAxis	Specify whether you want the Y-Axis of the graph to appear on the left hand side or right hand side from the drop-down list. Note: This option is available only for graph types Line, Area and Mixed. For all other graph types, the option Right does not appear in the drop-down list.

Comparison Symbols

The following elements are included (unlabeled GUI elements are shown in angle brackets):

Symbol	Description
=	Equal to
<	Less than
>	Greater than
~	Like (textual comparison with leading or trailing ".*" expressions)
!=	Not Equal
!~	Not Like (textual comparison with leading or trailing ".*" expressions)
<=	Less than or Equal to
>=	Greater than or Equal to

Note: While specifying strings or expressions for filters, use regular expressions. (Example: .*C.* instead of ***C***).

The like comparisons such as "~" and "!~" are textual comparisons that allow wild cards. When you select these symbols, specify a valid regular expression value; for example, specify APP_NAME~.*xyz.* to select data where the application name contains the text "xyz".

Graph Design Wizard - Special Attributes Page

The special attributes page enables you to specify the special attributes while designing a graph. Click the options below based on the graph type you selected:

Note: This option is not available for XML, CSV, Baseline and TSV graph types. If you are editing a graph, all the attributes saved in the graph template and appear preselected.

Special Attributes for Image Graphs

If you have selected the graph type as Line, Area or Bar graph, the following elements are included (unlabeled GUI elements are shown in angle brackets):

GUI Element (A-Z)	Description
Background color	Click **Color**, to select a background color for the graph you are designing. The Color Palette appears.
Cancel	Click **Cancel** to exit the design wizard.
Effects	**Stacked**: If you are designing an area or bar graph, select the Stacked option to stack one metric on top of the other metrics in the graph. The "Stacked" effect makes it easier to view the overlapping data. Note: The Effects option is available only for the bar and area graphs.

GUI Element (A-Z)	Description
Left Y Axis	➤ **Label** - Specify a label for Y-Axis appearing on the left side. ➤ **Minimum** - Specify minimum value for points on the left side Y-Axis. If left blank, the initial scale of the axis will automatically be adjusted to accommodate the values in the graph. ➤ **Maximum** - Specify maximum value for points on the left side Y-Axis. If left blank, the initial scale of the axis will automatically be adjusted to accommodate the values in the graph.
Legend Font Color	Click **Color** to specify the font color for legends. The Color Palette appears.
Metric Display order	Specify the order in which you want the metrics to be displayed. The default value is 'User defined'. You can select from the following options: ➤ **User defined** (See **Metric Selection Window**) - Select this option if you want the metrics to appear in the order of the sequence on the Metric Selection screen. ➤ **Average Value** - Select this option if you want the metrics to appear in the ascending order of the average value. When you select this option and draw a graph, the higher values appear at the top. You can use this feature in conjunction with the value specified in the Metrics per Graph field. ➤ **Reverse Average Value** - The metrics appear in the descending order of the average value. When you select this option and draw a graph, the lowest values appear at the top.

GUI Element (A-Z)	Description
Metrics per graph	Specify the number of metrics you want to see in a graph. The default value is 8. ➤ **Single graph** - Select Single Graph check box, to limit the number of graphs to one graph when number of metrics or instances exceed the value specified for "Metrics per Graph". ➤ **Multiple graphs** - Select Multiple Graphs check box, to display multiple graphs when number of metrics or instances exceed the value specified for "Metrics per Graph". The number of metrics or instances in each graph is less than or equal to the value specified for "Metrics per Graph".
Next	Click **Next** to go to the next page.
Prev	Click **Prev** to go to the previous page.
Preview	Click **Preview** to preview the graph.
Right Y Axis	**Label** - Specify a label for Y-Axis appearing on the right side. This allows you to specify a label for the right side of the graph to identify the right hand Y-Axis. This field does not appear unless at least one metric has the "Right Y-Axis" selected from The Metric Properties Window. **Minimum** - Specify minimum value for points on the right side Y-Axis. If left blank, the initial scale of the axis is automatically be adjusted to accommodate the values in the graph. **Maximum** - Specify maximum value for points on the right side Y-Axis. If left blank, the initial scale of the axis is automatically adjusted to accommodate the values in the graph.
Save/Save As	Click **Save** or **Save As** to save your graph, The Graph Design Wizard - Save Graphs page appears.

Special Attributes for Tables

You can highlight a cell in a table based on its content so that the records can be accessed easily. You can also set conditions to filter the contents from a table based on the metric value. The following elements are included:

GUI Element (A-Z)	Description
Add	Click **Add** to include the table highlight condition which you specified in the list.
AND/OR	Select either AND or OR to apply multiple conditions: ➤ **AND** - filters the rows that satisfy the first condition you set and the row that satisfies the following condition as well. ➤ **OR** - filters the rows that satisfy either the preceding or the following condition.
Cancel	Click **Cancel** to exit the design wizard.
Color	Select a highlight condition from the list and click **Color**, to add a color to the cell. **The Color Palette** appears. Select a color, for example, blue from the color palette and click **OK**.
Next	Click **Next** to go to the next page.
Prev	Click **Prev** to go to the previous page.
Preview	Click **Preview** to preview the graph.
Remove	Select a table highlight condition which you want to remove and click **Remove**. The table highlight condition is deleted and will no longer appear when you preview or draw the graph.
Remove	Select a filter condition which you want to remove and click **Remove**. The filter condition is deleted and will no longer appear when you preview or draw the graph.
Remove All	Click **Remove All** to delete all the filter conditions which you have specified.
Save/Save As	Click **Save** or **Save As** to save your graph, The Graph Design Wizard - Save Graphs page appears.

GUI Element (A-Z)	Description
Table Filters	Select the metric for which you want to set a filtering condition. Select a **Comparison Symbols**. Enter value to compare against the metric; for example, 50.
	Note: The metrics added in the **The Graph Design Wizard - Metric Selection page** are listed for filtering. If you want to add or remove a metric, click **Previous** to go back to the Metric Selection screen and add or remove a metric.
Table Highlights	Select the metric for which you want to highlight from the drop-down list. Select a **Comparison Symbols** and enter value to compare against the metric.
	Note: The metrics added in the **The Graph Design Wizard - Metric Selection page** are listed for filtering. If you want to add or remove a metric, click **Previous** to go back to the Metric Selection screen and add or remove a metric.
Update	Select the filter condition that you want to edit. Update the filter condition as required. Click **Update**. The changes are effective next time you preview or draw the graph.

Example for Table Highlight:
If you select the metric GBL_CPU_TOTAL_UTIL and > (greater than) as the comparison symbol, and 4 as a value to compare against the metric and color as red from the color palette, when you preview or draw the graph, you can see the cells with records satisfying the condition you set; that is GBL_CPU_TOTAL_UTIL>4 highlighted in red.

Comparison Symbols

Listed below are the comparison symbols which you can use while specifying a condition to highlight or filter a table:

Comparison Symbols	Description
=	Equal to
>	Greater than
<	Less than
>=	Greater than or Equal to
<=	Less than or Equal to
!=	Not Equal to
!~	Not like

Note: When specifying interest reason for table filters and table highlights, do not use the wildcard expressions such as *C*. Use a regular expression, for example, .*C*.

🔍 Graph Design Wizard - Other Attributes Page

The following elements are included (unlabeled GUI elements are shown in angle brackets):

GUI Element (A-Z)	Description
Cancel	Click **Cancel** to exit the design wizard.
Graph Header	Specify a description for the graph. The description appears at the top of the page. The description appears only in the print view.
Graph Trailer	Specify a description for the graph. This description appears at the bottom of the page. The description appears only in the print view.
Next	Click **Next** to go to the next page.
Pixels	➤ **Width:** The width of the graph image file in pixels. ➤ **Height:** The height of the graph image file in pixels.
Prev	Click **Prev** to go to the previous page.
Preview	Click **Preview** to preview the graph.
Save/Save As	Click **Save** or **Save As** to save your graph. The Graph Design Wizard - Save Graphs page appears.

✎ Graph Design Wizard - Save Graphs Page

The following elements are included:

GUI Element (A-Z)	Description
Category	Enter the name of the graph category. (This is optional, graphs can be grouped directly under a family).
Family	Enter the name of the graph family.
Name	Enter a name for the graph.
OK	Click **OK** and modify the graph name.
Save	To save the graph.
Save As	To save the graph with a different name.

Tip: The name can be a combination of alphabets, numbers and the special characters: #, - , _ and space. In case you use special characters other than these, a error message stating that the "The name can only contain a combination of alphabets, numbers and the special characters: #, - , _ and space" appears.

If the family name and category already exists, the Graphing automatically populates the Family, Category and Name fields text boxes with the names when you type the first few alphabet.

✏️Graph Design Wizard - Finish Page

The following elements are included (unlabeled GUI elements are shown in angle brackets):

GUI Element (A-Z)	Description
Design Another Graph	Click **Design Another Graph** if you want to design another graph. **Graph Design Wizard - Graph Attributes Page** appears. For instructions, see "Designing Graphs" on page 130. **Note**: This option appears in the design wizard if you are designing a new graph.
Text Message	After you save the graph, the design wizard displays the following message: *You have successfully designed a graph with the Design Wizard!*

🔍 Color Palette

To select a color from the color palette, perform the following tasks. The following elements are included:

GUI Element (A-Z)	Description
Cancel	To cancel the changes and go back to design wizard.
Left Pane	The left pane displays the available hues or shades of a particular color. Do one of the following: ➤ Click a required hue to select the same. ➤ Enter the values for Red, Green, and, Blue to select a particular color.
OK	To apply the changes and go back to design wizard.
Selected Color Box	The selected color is displayed on the Selected Color box.
Vertical bar	From the color palette, click the vertical bar to select the color you want.

Graph Attributes - List and Description

The following table lists all graph attributes, keywords (as they appear in the graph template) and their descriptions. The table also details the way Graphing handles conflicting parameters defined in the different default graph templates.

Note: A software administrator can configure parameters specific to Graphing. For more information, see "Graphing Settings" on page 661:

The following elements are included (unlabeled GUI elements are shown in angle brackets):

GUI Element (A-Z)	Description
Auto-Refresh	The interval at which the Graphing can refresh the drawn graphs automatically so that the graph is updated with the latest data. Graphing enables this option if any of the selected graph templates has the option enabled.
Date range	Range of date and time to include in the graph. If you do not specify any values for **DATERANGE:** the default date value (that is, duration of 7 Days, ending Now) is used. If you specify "all" for date range, all the data collected in the data source will be used in graphing.
	Graphing chooses the value of date range as "ALL" if any of the selected graph templates contain the value "All". However, if none of the default graphs templates contain the value *ALL,* the Graphing chooses the maximum value from all the graph templates.

GUI Element (A-Z)	Description
Graph type	For a list of graph types supported by the Graphing, see "Supported Graph Types" on page 6. The Graphing merges similar graph types. However, if the graph type is specified as table or Gauge in any of the graph templates then a separate graph is drawn for each of these graph types. **Example** If there are 3 graphs associated with the CI, and if 2 of the graphs have the graph type as line and one has graph type table, then the line graphs are merged and a separate table graph is drawn.
Grid	Graphing enables this option if any of the selected graph templates has the option enabled.
Left-axis and right-axis max	The maximum value on the right (optional) Y-Axis. The maximum value on the left (default) Y-Axis. For the Gauge graph type, the parameter will be the maximum value on the gauge scale. Graphing takes the maximum from all the values in the default graph template.
Left-axis and right-axis min	The minimum value on the left (default) Y-Axis. For the Gauge graph type, this parameter is the minimum value on the gauge scale. The minimum value on the right (optional) Y-Axis. Graphing takes the minimum from all the values in the default graph template.
Left-axis title and right-axis title	Specifies the label for the left Y-Axis. Specifies the label for the right Y-Axis. Graphing combines all available values from the selected graph templates.

GUI Element (A-Z)	Description
LineStyle	This specification is valid only when the GRAPHTYPE is line. You can select from the following values: ➤ Solid - Solid line only used when GRAPHTYPE is line. ➤ Dashed - A dashed line used when GRAPHTYPE is line. ➤ Dotted - A dotted line used when GRAPHTYPE is line. ➤ Dash-dotted - A dash-dotted line used when GRAPHTYPE is line. ➤ Dash-dot-dotted - A dash-dot-dotted line used when GRAPHTYPE is line. Graphing takes the value from the last metric.
LineWidth	The number of pixels wide to draw the line for this metric. This specification is valid only when the GRAPHTYPE is line and the LINESTYLE is solid. The default value is 2. Graphing takes the value from the last metric.
Marker	Markers are applicable only if GRAPHTYPE is Line. ➤ **None** - No markers are drawn on the line. ➤ **Auto** - Automatically selects line markers for graphs. ➤ **Square** - Draws an open square at every valid point. ➤ **Circle** - Draws a circle at every valid point. ➤ **Triangle** - Draws a triangle at every valid point. ➤ **Dot** - Draws a sphere at every valid point. ➤ **Cube** - Draws a cube at every valid point. ➤ **Diamond** - Draws a diamond at every valid point. ➤ **Star** - Draws a star at every valid point. ➤ **Cross** - Draws a cross marker at every valid point. ➤ **Vertical** - Draws a vertical marker at every valid point. ➤ **Horizontal** - Draws a horizontal marker at every valid point. Graphing takes the value from the last metric.

GUI Element (A-Z)	Description
Metrics filter	A data filter that is applied to the data. Data records that do not meet the filter specifications will not be used in the final calculation. Graphing combines all available values based on classes from the selected graph templates.
Metrics per graph	The maximum number of metrics on a single graph. The default is 8. Graphing chooses the maximum value specified from all the selected graph templates. **Example** If there are 2 graphs associated with the chosen CI, out of which one has metrics per graph as 8 and other has 12, the Graphing chooses the value as 12. **Note:** The metrics per graph in the resulting graph(s) also depends on the value configured by a software administrator for the parameter **Metrics Per Graph**. For more information, see "Graphing Settings" on page 661.
Number of points	The number of data points to be displayed on a graph. This value is used to summarize the data for each data point and to fit the graph in a single window, when POINTSEVERY value is set to auto. For other POINTSEVERY values, Graphing determines the number of (data points and time intervals) for each graph and provides options to view the next or previous set of data points or intervals. For line, area, and table graphs, the default value is 100. You need not specify a number for Pie and Gauge graph types. It is recommended that you do not to set the value to more than 1000 as this might impact the performance of the application. Graphing chooses the maximum value available from all the selected graph templates.

GUI Element (A-Z)	Description
Points every	Determines the granularity (number of data points) on the graph. This value is used in conjunction with the NUMBEROFPOINTS value to determine the level of summarization to use. Graphing chooses the value **Auto** if any of the selected graph templates contain the value for points every as **Auto**. However, if none of the graph templates has the value **Auto**, the Graphing chooses the minimum value from all graph templates. For more information, see **Specifying Points Every Value**.

GUI Element (A-Z)	Description
Sum from Raw	If this parameter is available in the graph template, the unsummarized data from the Performance Agent data source is fetched from the system and then summarized by Graphing. You must enable this only when you do not want the summarization of the data from the data source. Using this feature can cause large volumes of data to be transferred from the system and can slow down the performance. This parameter can be specified only while fetching data from Performance Agent data source. Graphing enables this option if any of the selected graph templates has the "Sumfromraw" option enabled.
Sumtype	Summarization of data is required when multiple records from a data source have to be combined to view the desired amount of time per data point. This option is applicable only when "SUMFROMRAW" is enabled in the graph template. Graphing summarizes data based on the way value you have specified. The available options are: ➤ **Auto** - When this parameter is specified, Graphing uses the summation type provided by the data source (Performance Agent and EPC). If the data sources do not provide the summation type, Graphing uses the "Average" sum type to summarize data. ➤ **Average** - Combines the numeric values by adding and then dividing by the number of values (mean). Non-numeric data will use the last value. ➤ **Sum** - Combines numeric values by adding values. ➤ **Minimum** - Combines numeric values by taking the smallest value. ➤ **Maximum** - Combines numeric values by taking the largest value. ➤ **Last** - Combines numeric or non-numeric values by taking the last value received. ➤ **Count** - Counts the number of records from the data source that were combined into each data point. Graphing takes the value from the last metric in the default graph templates.

🔍 Troubleshooting and Limitations

Unable to Draw a System Performance Graph

After launching a graph for a CI or a list of CIs, the following message appears:

You cannot draw a system performance graph without selecting a host CI. When you try to draw a system performance graph make sure you select at least one host CI.

Unable to Edit or Delete a Graph

You need to be software administrator to edit or delete a graph. For information regarding the user roles, see **HP OMi Users**.

Graph Saved from Design Wizard but Not Mapped to any CI Type

When you edit a graph from the design wizard or when you design a graph from the admin UI, you need to map the graph to a CI type. For instructions, see **Mapping CI Type to Graph Family**.

Unable to View Graph in Certain Formats (XLS/TSV)

You must check if option to download files in the Microsoft Excel and TSV format is enabled in the browser security settings. To check the browser settings, perform the following tasks:

1 On the **Tools** menu of Internet Explorer, click **Internet Options**. The **Internet Options** pop up appears.

2 Click the **Security** tab. Check if the security level in your browser settings is set to high. Make sure the Internet icon is selected and click Custom Level. The **Security Settings** pop up appears.

3 Scroll down to the Downloads section and select the **Enable** option under **File Download**.

4 Click **OK** and close the Internet Options pop up.

5 Open **Control Panel** and double-click **Folder Options**.

6 Click the File Types tab to display the registered file types.

7 For XLS, Select **XLS** from the from the Registered file types list. For TSV, select the TSV file format from the list and click the Advanced button. The **Edit File Type** pop up appears.

8 Clear the **Confirm Open After Download** check box.

9 Click **OK**.

Unable to Draw a Graph from a CI

This can happen when CI is not mapped to a graph family or category. When you edit a graph from the design wizard or when you design a graph from the admin UI, you need to map the graph to a CI type. For instructions, see "Mapping CI Type to Graph Family" on page 404.

Some instances of the CI Not Appearing in the Drawn Graph

If you are drawing a graph for a CI with multiple instances, make sure the value of the parameter "Maximum Instances" is configured accordingly. While drawing a graph, graphing displays only as many instances as the value specified for this parameter. If the number of instances is more than the value of this parameter, graphing will not display those in the drawn graph. For more information, see "Graphing Settings" on page 661.

5

User Tools

This chapter describes the concepts of User Tools and how to use them.

This chapter includes:

Concepts

Tasks

Reference

🍀 User Tools Basics

You can specify tools in HP OMi, for example, to ping a system. These tools are run from events on the associated CI. Tools are designed to help users solve common problems quickly and efficiently.

All available tools are displayed in the Select Tool window launched in the context of a configuration item. The selection of tools a particular user sees in context menus depends on the tools that are available for the configuration item affected by a particular event.

For more information about using the Tools manager to configure custom tools, see "Tool Creation" on page 374.

Note: Access to Administration features may be restricted. You must have corresponding permissions to launch the Tools manager.

🏆 Viewing Available Tools

In this task, you learn how to display the custom tools that are available in the context-sensitive menus available for a particular configuration item type.

To view a list of available tools:

1 Open the HP OMi application:

Application > **Operations Management**

2 Select either the **Event Perspective** tab or the **Health Perspective** tab.

3 In the CI Tree View pane, select a view containing the configuration item type for which you want to display the tools.

Tip: Use the search feature if you are not sure of the name or location of the configuration item.

Alternatively, in the Event Browser, select an event that is related to the configuration item type for which you want to display tools.

4 To open the Select Tool dialog box, right-click either a configuration item in the CI Tree View pane or an event in the Event Browser and select **Launch Tool**.

5 The Select Tool dialog box opens a list of the tools configured for the configuration item type associated with the event.

🔧 Launching a Tool

In this task, you learn how to launch a tool that is configured for a particular configuration item type. Tools are displayed in the context-sensitive menus.

To launch a custom tool:

1 Open the HP OMi application:

Application > **Operations Management**

2 Select either the **Event Perspective** tab or the **Health Perspective** tab.

3 In the CI Tree View pane, select a view containing the configuration item type with the tool you want to start.

Tip: Use the search feature if you are not sure of the name or location of the configuration item.

Alternatively, in the Event Browser, select an event that concerns the configuration item of the type that includes the tool you want to run.

4 To open the Select Tool dialog box, right-click either a configuration item in the CI Tree View pane or an event in the Event Browser and select **Launch Tool**.

The Select Tool dialog box opens a list of the tools configured for the selected configuration item type or event. When an event is selected, the Select Tool dialog box shows all tools for the Related CI and the Host CI.

5 If the tool requires any additional information to resolve parameters, type the required information in the pages presented by the Run Tool wizard.

6 Select the tool you want to launch and select **Next** to see a summary of the selected tool. A brief description of the selected tool is displayed.

7 To run the selected tool, select **Run Tool**.

The Execution Result window opens and displays the output of the tool execution.

Use the **Word wrap for output** option to make sure that all output text is displayed within the output pane.

Use the **Refresh** button to update the displayed output or select a refresh interval to regularly update the displayed output while the tool is executing.

8 After the tool has been run, select **Close**.

Run Tools Graphical User Interface

The Run Tool dialog box enables you to view the tool you want to run before running it. You can also browse any other tools that are displayed in the same tools context menu.

The Run Tools page displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Back	Opens the previous page in the Run Tool Wizard, if available. The Back button is inactive (grey) if no previous page is exists.
Cancel	Closes the Run Tool Wizard without running a tool.
Close	Closes the Run Tool Wizard after a tool has been run.
Help	Displays help about the active window, pane, or dialog box.
Next	Opens the next page in the Run Tool Wizard, if available. The Next button is inactive (grey) if no other page exists.
Refresh	Updates the displayed output of the active tool.
Refresh every ...	Automatically updates the displayed output of the active tool using the refresh interval selected from the list.
Run Tool	Starts the tool that is currently selected in the Run Tool Wizard. If the tool requires additional information to resolve parameters, a wizard enables you to supply the required information before the tool starts.
Word wrap for output	Wraps tool output text so that it is displayed within the width of the output pane.

🔍 Troubleshooting and Limitations

This section provides help for those people who are troubleshooting problems concerning the launch and use of HP OMi tools. For more information about troubleshooting tool configuration and availability, see "Tools Management" on page 373.

No Tools Display

➤ No tools are available for the selected type of configuration item or the configuration item associated with the selected event.

➤ The selected event does not contain Related CI or Host information.

Tool Does Not Run

➤ The tool is incorrectly configured.

Tool are not launched in the context of an event. They can be run on configuration items only. However, all tools contain event parameters.

➤ The tool depends on external resources such as network or internet connectivity that are not currently available.

6

Filtering Events

This chapter describes how to define and use filters to display only the events that you must manage. You can use filters to target the type of information to display, resulting in a clearer overview of the problems that you must solve.

This chapter includes:

Concepts

🍀 Filtering Methods

Without the application of any filtering, all active events would be displayed in the Event Browser. Before long, it would become very difficult to maintain a clear overview of the events that require attention.

HP OMi filters the contents of the Event Browser according to a combination of the following selections:

➤ **Views**

Views are used to group configuration items into logical sets. Selecting a view filters out all CIs from the CI tree that are not contained within that view. As a result, the Event Browser only displays events that are related to the CIs specified in the selected view.

➤ **Configuration Items**

Selecting a CI from the CI tree results in only displaying events in the Event Browser that are related to the selected CI. When used in conjunction with a selected view, the list of CIs in the CI tree is first reduced to those CIs appropriate for the user of that view. This makes is easier to locate a specific CI.

➤ **Event Filters**

Applying an event filter enables you to limit the type of events displayed in the Event Browser by defining rules that filter events according to event criteria such as severity, life cycle state, assignment (ownership), category, dates, custom attributes, resolution information and application name.

By applying a combination of the three available filtering methods, operators can display precisely the most important events that they are responsible for solving. It is possible to display a CI tree list tailored to the responsibilities of an operator by selecting an appropriate view. Operators can then select a CI from the CI tree and be shown all related events. Alternatively, operators can define filters to, for example, show only events labelled as Critical and Serious. Combining the selection of a CI and applying the same filter would display all events labelled as Critical and Serious for the select CI.

Filter Selection

The Filter applied field displays the currently active filter. If no filter is applied, No Filter is displayed in the Filter applied field. If you filter using a view, a CI, or a CI group, the Filter applied field describes the combination of filtering methods used according to the following format:

➤ **View**

[View: *<View_Name>*] - *<Filter Name>*

For example: [View: Infrastructure_Common] - Assigned To Me

➤ **Configuration Item**

[CI: *<Configuration_Item_Name>*] - *<Filter Name>*

For example: [CI: MyDBserver.example.com] - Databases

➤ **Configuration Item Group**

If you select a configuration item group, the filter also displays the events associated with all the configuration items included in the group.

[CI: *<Group_Configuration_Item_Name>*] - *<Filter Name>*

For example: [CI: Employee Self Service] - Critical Only

🎲 Event Filters

Event filters enable you to limit the type of events displayed in the Event Browser by defining rules that filter events according to criteria such as severity, origin, type, and ownership. You can also display the filtered events in separate tabs within one Event Browser. The filters you define are available from the Filter applied list of the Event Browser. The active filter remains on display in the Filter applied field.

Note: You can use Browser Options to determine the type of information to display in the Event Browser. For more information about Browser Options, see "Event Browser Icons" on page 58.

You define and edit filters using the Filter Configuration dialog of the Filter Manager. For the Event Browser, filtering information is grouped under the General, Dates, Resolution, Custom Attributes, and Advanced tabs. When investigating closed events using the History Browser, you must first specify the time period of interest. The Filter Configuration dialog for creating History Browser filters omits the Dates Tab. A filter is the logical combination of all information specified in the various tabs.

In the Filter Configuration dialog, all filter criteria within a frame are connected with the logical OR. The frames and tabs are connected with logical AND. For example, if the severities Critical and Major are selected within the same pane, events exhibiting either severity are displayed. If the assignment Not assigned is also selected from another pane, only events not assigned to a user and exhibiting one of the selected severities are displayed. If a date range is also specified, these events are further filtered to those having occurred within the specified time period.

The Filter Manager enables you to preview the effect of a filter before saving it. The preview displays the results of the configured filter in a new window.

Filters Types

Available filters are selected from the Filter applied list of the Event Browser: There are two types of filters:

➤ **Predefined Filters**

The following predefined filters are available:

➤ **No Filter**

Shows all known events.

➤ **Top Level Items**

Shows all events that are either a cause in an event correlation rule or not configured in an event correlation rule.

➤ **Assigned To Me**

Shows all events assigned to the current user.

Predefined filters are available to all users and all browsers.

➤ **User-Configured Filters**

User-configured filters are specified by individual users for use locally in their own Event Browser. A user-configured filter is available only to the user under which it was configured.

Filter Application

You can create filters for use in the Event Browser or the History Browser. These filters are dedicated to the browser for which they are configured. The selected view, CI, or CI group is also applied to all tabs of the Event Browser. You can apply a different filter for each Event Browser tab.

➤ **Event Browser**

Define filters to reduce and refine the number and type of events that appear in the Event Browser.

➤ **History Browser**

Define filters to reduce and refine the number and type of events that appear in the History Browser. When specifying a filter for the History Browser, the Filter Configuration dialog is tailored to selecting closed events in the History Browser.

⚑ Filtering Events by Views

In this task, you learn how to filter the events displayed in the Event Browser according to UCMDB view. Only events related to configuration item included in the selected view appear in the Event Browser.

To filter events by UCMDB views:

1 Start the HP OMi Event Browser:

   Applications > **Operations Management** > **Event Perspective**

2 In the Browse Views pane, use the **View** list to select a view to apply.

   The Filter applied field displays the following information:

   [View: *<View_Name>*] - *<Filter Name>*

   For example: [View: Infrastructure_Common] - Assigned To Me

   The list of events displayed in all tabs of the Event Browser is limited to events associated with configuration items included in the selected view.

   Tip: To remove filtering by views, select the empty option in the Views list.

⚓ Filtering Events by Configuration Items

In this task, you learn how to filter the events displayed in the Event Browser by configuration item. Only events related to the selected configuration item appear in the Event Browser.

To filter events by configuration item:

1 Start the HP OMi Event Browser:

Applications > **Operations Management** > **Event Perspective**

2 In the CI Tree pane, use the **View** list to select a view to apply.

3 Select a configuration item from the CI Tree pane to use as an event filter.

The Filter applied field displays the following information:

[CI: *<Configuration_Item_Name>*] - *<Filter Name>*

For example: [CI: MyDBserver.example.com] - Databases

The events displayed in the Event Browser are limited to events associated with the selected configuration item. The CI Tree filter is applied to all Event Browser tabs and combined with the filters that are currently applied to them, for example, Assigned To Me.

Note: If you select a configuration item group, the filter also displays the events associated with all the configuration items included in the group.

The filter is cleared when clicking on an empty part of the CI Tree View and no node is selected.

⚓ Viewing Event Filters

In this task, you learn how to display a list of all the filters configured using the Filter Manager.

To view a list of configured event filters:

1 Start the Filter Manager:

Applications > **Operations Management** > **Filter Manager**

2 The Filter Manager opens a list of available event filters.

Note: The contents of the list of event filters displayed in the Filter Manager are user specific. The list contains only event filters that the active user has configured.

⚓ Defining Event Filters

In this task, you learn how to set up a filter using the Filter Manager. You can use filters in different areas, for example, to refine the events displayed in the Event Browser.

To define an event filter:

1 Open the Filter Configuration dialog box using one of the following options:

➤ *For event filters only:* Start the Filter Manager:

Applications > **Operations Management** > **Filter Manager**

The Filter Manager opens a list of available event filters.

➤ In the Event Browser or the History Browser, select the **Filter Options** 📄 icon.

2 Select **New** to open the Create New Filter dialog box.

3 Enter a name for the new filter and select **OK**.

Note: The following characters are not supported in filter names: &, <, and >.

The new filter name is selected from the list of displayed filters, and the Filter Configuration dialog box opens. The name of the filter that you are currently creating or modifying is displayed as follows: Loaded Filter: *<filter name>*.

4 Use the displayed tabs to configure the new filter (Basic, Dates, Custom Attributes, Resolution, Advanced).

In the Filter Configuration dialog, all filter criteria within a frame are connected with the logical OR. The frames themselves and the other filter criteria are connected with logical AND. For example, if the severities Critical and Major are selected within the same pane, events exhibiting either severity are displayed. If the assignment Not assigned is also selected from another pane, only events not assigned to a user and exhibiting one of the selected severities are displayed.

5 *Optional:* Select **Preview**. This opens a new Event Browser window, displaying the results of applying the newly defined filter. If the filter does not display the results you require, redefine the filter.

Note: Not available in the History Browser for closed events.

6 Select **OK** to save the changes.

For details of the Filter Configuration dialog, see "Filter Configuration Dialog" on page 199.

🖘 Applying Event Filters

In this task, you learn how to apply an existing filter. The filter determines which type of events are displayed in the Event Browser.

To apply a filter:

1 Start the Event Browser:

Applications > **Operations Management** > **Event Perspective**

2 In the Event Browser pane, use the **Filter applied** list to select the filter you want to apply.

Note: Enabling a filter updates the contents of the browser immediately.

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3 If the selected filter does not display the results you require, redefine the selected filter or select an alternative filter.

Note: Deleting the filter selected in the Event Browser from the Filter Manager does not change the filter applied to the active browser. However, if an alternative filter is selected, the deleted filter is no longer available.

Filter Manager Graphical User Interface

The Filter Manager displays a list of the filters that are configured by the active user.

The Filter Manager displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Copy	Takes the selected filter and creates a copy.
Delete	Removes the selected filter from the list of displayed event filters and the database.
Edit	Opens the Filter Configuration dialog box and loads the details of the currently selected event filter.
New	Opens the New Filter dialog box, which enables users to type the name of the new event filter, and then opens the Filter Configuration dialog for the newly created filter. The following characters are not supported in filter names: &, <, and >.
Rename	Renames the selected filter with the new name that you specify. The following characters are not supported in filter names: &, <, and >.

🔍 Filter Configuration Dialog

The Filter Configuration dialog box displays the attributes that you can use either individually or in combination to filter events before displaying them. For more information about the information displayed in the Filter Configuration tabs, see the following sections.

Common Buttons and Icons

The Filter Configuration window includes the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Cancel	Discards all additions and changes and closes the Filter Configuration window.
OK	Commits changes to an existing (named) event filter.
Preview	Displays the events that meet the requirements of the filter being created or modified in a new window. **Note:** Not available in the History Browser for closed events.

Strings Filter Matching Criteria

The filter matching criteria lists display the GUI elements listed in the following table.

GUI Element (A-Z)	Description
contains	Displays any event that contains a reference to the specified string in the selected attribute. For example, searching for any string that contains database returns: ➤ database ➤ database status ➤ Oracle Database status
does not contain	Displays any event that does not contain a reference to the specified string in the selected attribute. Searching for a string that does not contain database returns all strings except those containing database, for example: ➤ Blue moon ➤ Almost everything else
equals	Displays any event that has an attribute or attribute value that is identical to the specified string. For example, searching for events of a category type that equals database returns events of the following category: ➤ database
is not equal	Displays any event that has an attribute that is not identical to the specified string. For example, searching for events of a category that does not equal database returns events with categories that are not identical to database, returns event attributes such as: ➤ Storage ➤ DB ➤ Network
is empty	Displays any event that contains no value for the specified attribute.

GUI Element (A-Z)	Description
is not empty	Displays any event that contains any value for the specified attribute.
is one of	Enables specification of multiple strings separated by the pipe (|) character. The filter matches if the attribute equals one of the specified strings.
	For example, searching for events that is one of Oracle|WebSphere|WebLogic returns events have an attribute or attribute value identical to any of the following:
	➤ Oracle
	➤ WebSphere
	➤ WebLogic

Priority Value Filter Matching Criteria

The Priority Value filter matching criteria lists display the GUI elements listed in the following table.

GUI Element	Description
=	Displays any event that has a priority value that is identical to the specified value.
<=	Displays any event that has a priority value that is lower than or identical to the specified value. For example, selecting the value 3, displays all events with priority values 0, 1, 2, and 3.
>=	Displays any event that has a priority value that is higher than or identical to the specified value. For example, selecting the value 3, displays all events with priority values 3, 4, 5, ...
!=	Displays any event that has a priority value not equal to the specified value.

General Tab

The General tab in the Filter Configuration dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Assignment	User or user group to whom the events you want to find are assigned. Multiple assignments can be selected. For example, you can select Assigned To Me and Not Assigned.
Category	Category of event that you want to use as a filter option, for example: DB, Storage, System, or WebApp.
Correlation	Select the desired option to search for all events or only top level events: **All events:** includes events correlated as symptoms of other events **Only top level events:** includes all events that do not have a cause assigned
Description	Description of an event as displayed in the contents of the original event's description field.
Life Cycle State	Stage in the problem life cycle that the events you are looking for have reached, for example: Open, In Progress, or Resolved. Multiple life cycle states can be selected.
Priority	Searches for events that match the specified priority, or groups of priorities, which you can select from the list.
Subcategory	Name of the event subcategory to which the events you are looking for belong.
Severity	Selects an event severity to use as a filter option. Multiple severities can be selected.
Title	Title of the events you are looking for.
Type	Type of event you want to display with the filter.

Dates Tab

The Dates tab in the Filter Configuration dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Date created	Specifies the dates and times between which the events you are searching for occurred.
Date received	Specifies the dates and times between which HP OMi first received notification of the events you are searching for.
Date Life Cycle Changed	Date and time when the last life cycle state change took place.

Resolution Tab

The Resolution tab in the Filter Configuration dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
CI Resolution	Used to select one or both of the following event characteristics: ➤ Events with a related CI ➤ Events without a related CI
CI Resolution Hint	Value used to find the related CI in the UCMDB. Derived from HPOM Custom Message Attributes or resolved by HP OMi.

GUI Element (A-Z)	Description
ETI Resolution Hint	Name and value of the ETI used to indicate the status reported by the selected event.
	You must set an attribute in the event which can be mapped to this indicator. To do this, set a custom message attribute called EventTypeIndicator in the HPOM policy. Specify a namespace for the CMA that matches the Name of the indicator, for example, CPULoad. Specify an instance that matches an indicator value, for example, High. When an event with an EventTypeIndicator CMA value of CPULoad:High is received, and ETI and values exist, the event attribute Event Type Indicator is set.
Host Resolution	Used to select one or both of the following event characteristics:
	➤ Events with a related host
	➤ Events without a related host
Host Resolution Hint	Host information in HP Operations Manager used to find host in UCMDB:
	➤ DNS name of the generating host
	➤ IP address of the generating host

Custom Attributes Tab

The Custom Attributes tab in the Filter Configuration dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Add CA Filter	Opens a new Custom Attributes row that enables you to define a filter based on custom attributes.
	You define a custom attribute filter by specifying the name of the custom attribute in the field on the left, selecting a filter matching criteria from the list, and specifying the value of the custom attribute in the field on the right.
	You can specify multiple custom attributes using the **Add CA Filter** button. Custom Attributes are related with the logical AND. To achieve a match, all specified custom attribute rules must be met.
	You can delete a custom attribute filter using the **Remove CA Filter** button.

Advanced Tab

The Advanced tab in the Filter Configuration dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Annotations	Used to select one or both of the following event characteristics: ➤ **Events with annotations** ➤ **Events without annotations**
Application	Selects events linked to the named application.

GUI Element (A-Z)	Description
CI Type	Selects the option to search for events that match a specified CI type name or are a child of the specified CI type. ➤ **equals:** match a specified CI type ➤ **is derived from:** a child of the specified CI type
Duplicates	Used to select one or both of the following event characteristics: ➤ Events with duplicates ➤ Events without duplicates
Key	Selects events that contain a reference to the named key
Object	Selects events that are related to a named object, as specified in the original HP Operations Manager message.
Original Event	Original event as captured from HP Operations Manager agents before being formatted into an HPOM message. Contains information about the original input before being normalized by HPOM agent policies into an HPOM message. Typically, the information available includes: node name, message group, application, object, severity, and message text.

🔍 Troubleshooting and Limitations

This section provides help for those people who are troubleshooting problems relating to HP OMi event filters, including creating, modifying, and enabling filters.

Filters Not Available in Event Filter List

➤ Filter is not a default filter

➤ Filter does not belong to currently active user

➤ Filters are only available for the area for which they are created. For example, an Event Browser filter is not available in the History Browser.

Events Not Visible

➤ Make sure that the correct filter is currently enabled

➤ Make sure that the currently enabled filter is correctly configured

➤ Make sure that the currently applied CI Tree filter does not filter out events you actually want to see

7

Views for HP OMi

This chapter describes the main concepts of views. Views for HP OMi help you to limit the configuration items displayed in the CI Tree View. HP OMi filters the contents of the Event Browser according to the currently selected configuration item.

The IT universe model in the configuration management database can be very large, holding thousands of configuration items (CIs). A view enables you to build a subset of the overall IT universe model, containing only those CIs relating to a specific area of interest. You can define your own views to display only the information that is relevant to your organization's business needs.

To configure and modify views, use the View Manager:

Admin > **Universal CMDB** > **Modeling** > **View Manager**

This chapter includes:

Concepts

Views

Only a small proportion of the many configuration items (CIs) in the IT universe model of the UCMDB are of interest at any one time. Creating a view enables you to build a subset of the IT universe model that displays only those CIs that relate to a specific area of interest.

Note: Views enable you to refine both the type and the amount of information displayed in the CI tree.

HP OMi provides a number of default views that group configuration items into sets that help the users to perform their tasks more efficiently. You can modify existing (or configure new) views to change, increase, or decrease the amount and type of information displayed. You can exchange the view mappings that you configure between instances of HP OMi using the Import and Export features of the Content Packs manager.

Tip: You can use views to refine the contents of the CI Tree. Selecting a configuration item from the CI Tree restricts the contents of the Event Browser to events related to that configuration item only.

To learn how to display a complete list of the HP OMi-specific views that are available, see . For more information about the CI Tree, see .

🍀 View Mapping

A view displays a subset of the overall IT universe model, for example, only those CIs that relate to a specific area of interest. Selecting a view enables you to refine both the type and the amount of information displayed, for example, in the CI Tree or the Top View pane.

HP OMi enables users with the appropriate access permissions to map views to configuration item types. The mapped views appear in the Selected Views list displayed in the Top View pane of the Health Perspective tab. For more information about the contents of the Top View pane and the Selected Views list, see "Top View" on page 109.

You can exchange the view mappings that you configure between instances of HP OMi using the Import and Export features of the Content Packs manager. For more information about importing and exporting view mapping configurations, see "Content Packs Manager" on page 430. Only users with the appropriate access permissions can use the Administration features.

To learn how to display a complete list of the HP OMi-specific views that are available, see "Selecting a Known View" on page 212. For more information about the CI Tree, see "CI Tree View Pane" on page 214.

🔧 Selecting a Known View

You can use views to configure the CI Tree View to display any combination of the available configuration items. The following steps explain how to select a view from the drop-down list of views available.

Tip: For information on button actions, see "CI Tree View Pane" on page 214.

To display a list of views:

1 Open the Event Perspective tab or the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Event Perspective** or **Health Perspective**

2 In the CI Tree View pane, select the **Browse Views** tab.

3 Use the **View** list to display the available views and select the required view.

Entering a character in the View field highlights the first matching view name.

🔧 Selecting Views with the Select Views Pane

You can use views to configure the CI Tree View to display any combination of the available configuration items. The following steps explain how to use the Select Views dialog box to locate views related to a particular management area, for example, System Hardware Monitoring.

Tip: For information on button actions, see "CI Tree View Pane" on page 214.

To select a view from the Select Views pane:

1 Open the Event Perspective tab or the Health Perspective tab from Operations Management:

Applications > **Operations Management** > **Event Perspective** or **Health Perspective**

2 In the CI Tree View pane, select the **Browse Views** tab.

3 Select Browse (...) button to open the Select View dialog box.

You can use the 🔲 and 🔲 buttons to fully expand or collapse the views list.

4 Select the area that you are interested in, for example, Storage, and expand its content.

All views defined for the selected area are displayed.

5 Select the view that you want to use and select **OK**.

The CI Tree is updated to show only the CIs that are included in the active view.

Note: If new views have been defined, select the 🔄 button to refresh the contents of the view list.

🔍 CI Tree View Pane

The CI Tree View displays in a clearly structured form an overview of the configuration items (CIs) stored in the UCMDB. Configuration items exist for each type of event or object and for each instance of an event or object. Displaying the CIs in a tree enables you to browse and locate them more easily.

You can use views to configure the CI Tree View to display any combination of the available configuration items. You can also highlight configuration items that match a specific pattern or search through the database to locate individual or groups of configuration items.

The events displayed in the Event Browser pane are filtered according to the configuration items that belong to the view selected in the CI Tree View.

Tip: For a short explanation of the action performed by any of the icons in the CI Tree View pane, position the cursor over the icon.

The CI Tree View contains tabs that enable you to browse and search through views of the UCMDB. The following sections describe the Browse Views and Search CIs tabs in the CI Tree View pane.

CI Tree View Context-Sensitive Menu

The context-sensitive menu available in the CI Tree View pane includes the following options.

GUI Element (A-Z)	Description
Acknowledgment > Acknowledgment Details	Opens the Acknowledgment Details window relevant to the CI, in Dashboard.
Acknowledgment > Set/Unset Acknowledgment	Opens the Set/Unset Acknowledgment window relevant to the CI, in Dashboard.
Configure > Event Type Indicators	Opens the Indicators manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > Performance Graphs	Opens a new window and displays the graph Design Wizard. This wizard enables you to design a graph and specify its attributes and save it as a template for later use.
Configure > Tools	Opens the Tools manager. You need the appropriate authorization to access the Indicators manager and other Administration features.
Configure > View Mappings	Opens the View Mappings manager. You need the appropriate authorization to access Administration features.
Filters	Opens the Filters tab in the Dashboard or is used as a parent menu for other filter context menu items, for example: ➤ Show Complete Subtree ➤ Show Subtree Monitors ➤ Filter Subtree ➤ Filter Subtree Monitors
Find Visible and Hidden Child CIs	Displays a list of child CIs associated with the selected CI, with a summary of the states of applicable KPIs, assigned and unassigned events, and whether the children are visible or hidden.

GUI Element (A-Z)	Description
Go to Health Perspective	Opens the Health Perspective tab.
Go to Report	Opens the selected report in a new window. The report includes: ➤ Trend ➤ Event Log Report ➤ KPIs Over Time Report ➤ Change Report ➤ Configuration Item Status Alerts
Launch Tool	Starts a tool for the selected CI.
Properties	Shows the object properties stored in the UCMDB.
Top View > Show Path to Root	Displays the Top View for the selected CI. The top view is a hierarchical overview of the relationships between the selected CI and other objects in the monitored environment and indicates the current health of the displayed objects. For more information, see "Top Views" on page 93.
Top View > Show Problematic Subtree	Available for all CIs. Opens a popup with the same capabilities as the Top View tab. The popup displays the child CIs with Critical, Major, or Minor status and enables you to find the problematic child CI that causes the selected parent CI to have a status other than OK. It is enabled only for CIs that have at least one KPI with a status other than OK. For further details, see the online help for the Dashboard.
Show > Health Indicators	Opens a separate window and displays the health indicators that are associated to the selected CI. The information displayed is the same as that available in the Health Indicator View pane in the Health Perspective tab.
Show > History Browser	Opens the History Browser for the related CI.
Show > Performance Graphs (Neighborhood)	Opens a new window and displays the performance graphs that are available for the selected node or event.

GUI Element (A-Z)	Description
Show > **Performance Graphs (CI)**	Opens a new window and displays the performance graphs that are available for the selected CI.
Show > **Related Events**	Opens a separate window and displays the events that are related to the selected CI. The information displayed is the same as that available in the event details pane.

Browse Views Tab

The Browse Views tab in the CI Tree View pane includes the following elements.

GUI Element (A-Z)	Description
⟳	Synchronizes the list of configuration item types displayed in the CI Tree with the latest information available in the database.
▪▪▪	Opens the Select View dialog box. A list of views organized by area is displayed.
Find	Enter a word (or part of a word) you want to find and use the Up and Down buttons to highlight the next or previous occurrence of the word.
View	Refines and restricts the configuration items displayed by selecting from a list (or selection dialog box) the type of configuration items you want to view, for example, KPIs or business services.

Select View Dialog

The Browse Views tab in the CI Tree View pane includes the following elements.

GUI Element (A-Z)	Description
	Fully expands the view tree.
	Collapses the view tree.
	Synchronizes the list of views with the latest information available in the database.
Find	Enter a word (or part of a word) you want to find and use the Up and Down buttons to highlight the next or previous occurrence of the word.

Search CIs Tab

The Search CIs tab in the Browse Views tab includes the following elements:

GUI Element (A-Z)	Description
	Starts the search for the selected configuration item type and defined string.
	Opens a list of configuration item types that you can browse through to select the item (or items) that you want to search for.
CI Type	Specifies the type configuration item to search for. Select the Browse (...) button to browse a list of configuration item types. The results are displayed in the Search Results pane. If you want to search for multiple configuration item types, separate each type with a semicolon (;), for example: Network Node;VAX;System

GUI Element (A-Z)	Description
CI Name	Type of configuration item associated with the configuration item displayed in the Name column.
Find	Enter the string you want to find and use the available buttons to highlight the next or previous occurrence of the string.

Select CI Type Dialog

The select CI type dialog in the Search CIs tab includes the following elements:

GUI Element (A-Z)	Description
	Deselects all CI types.
	Selects all CI types.
	Inverts the selection by selecting all CI types that are currently not selected and deselecting all CI types that are not selected.
	Fully expands the CI types tree.
	Collapses the CI Types tree.
	Toggles between Class name and Display label.

Configuring HP Operations Manager i

8

Introduction and Overview

The information in this section describes how to configure HP OMi.

This chapter describes:	On page:
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Who Should Read This Section	226

How This Section Is Organized

This part of the guide contains the following chapters:

Chapter 8   Introduction and Overview

The information in this chapter introduces you to the topics covered in Part 2 of this guide, which describes more advanced use of HP OMi including software configuration and administration.

Licences

To be able to use the various functionality of HP OMi, the appropriate combination of three licences are required. If no licenses are installed, Operations Management remains unavailable and appears dimmed.

The HP OMi licenses:

➤ **Event Management Foundation license only**

   ➤ BSM platform components including UCMDB, Dashboard, and Platform.

   ➤ Event Browser

   ➤ Performance Graphs

➤ **Event Management Foundation and Health licenses**

➤ Health Perspective

➤ Indicators manager

➤ Availability and Performance KPIs are generated

➤ **Event Management Foundation and Correlation License**

➤ Correlation Rules manager

➤ **All licenses installed**

➤ All HP OMi functionality is available

For detailed information on licensing, see the *HP Operations Manager i Installation and Deployment Guide.*

Chapter 9   Indicators

This chapter introduces the Indicators manager. You learn how to configure event type indicators, health indicators and key performance indicators to provide information for top views, which HP OMi operators can use to pinpoint problems in the monitored IT environment.

Chapter 10   Correlation Rules Manager

This chapter introduces the Correlation Rules manager, used for configuring topology-based event correlation. You learn how to configure correlation rules and apply them to health indicators to help you better understand, monitor, and manage the problems that have an impact on the objects in your IT environment.

Chapter 11   View Mappings

This chapter describes the View Mappings manager used to map existing top views to one or more configuration item types and manage the mapped views. The information provided aims to help you understand how to use the View Mappings manager to configure and manage HP OMi views, and exchange them between management servers.

Chapter 12   Tools

This chapter provides information that helps you understand how to configure and manage the User Tools.

Chapter 13   Performance Graphs

This chapter describes the Performance Graphs Manager used to configure the mapping of CI types to available graph families.

Chapter 14   Event Assignment

This chapter describes how to automatically assign incoming events to available user groups. Automatic assigning of events to user groups responsible for solving these event significantly improves the efficiency of event management. Each events is assigned to an appropriate user group as soon as it is received. All operators in a user group are allowed to work on those events assigned to that user group.

Chapter 15   Content Packs

This chapter describes the Content Packs manager and the concepts of content management. It describes how to use the Content Packs manager to manage the configuration items used to represent the objects in your IT environment. You learn how to create snapshot packages that include views, user roles, event type indicators, health indicators, key performance indicators, mapping rules, KPI calculation and business rules, and tools that you have defined.

Chapter 16   User Management

This chapter introduces the concept of users, user roles, and user views and provides information that helps you understand how to create and manage users and groups.

Chapter 17   Infrastructure Settings

This chapter provides an details of the settings required for HP OMi including information that helps you understand how to set and configure HP OMi within the BSM platform.

Who Should Read This Section

This guide is intended for the following users of HP OMi:

➤ HP OMi software administrators

➤ HP OMi subject matter experts (for example, DB and Exchange)

Users of this section should know about both HP OMi and Business Service Management. Users should also have a good understanding of the various technical areas they are responsible for (for example, databases, or Microsoft Exchange) and know about enterprise monitoring and management concepts.

The following table indicates the intended audience for the chapters in this part of the document:

Section Title	Subject Expert	Software Administrator
Indicators	✅	
Correlation Rules Manager	✅	
View Mappings		✅
Tools	✅	
Performance Graphs		✅
Event Assignment		✅
Content Packs	✅	
User Management		✅
Infrastructure Settings		✅

9

Indicators

This chapter introduces the features of the Indicators manager, used to help you manage event type indicators and health indicators.

Indicators are used to represent the various types of event that can occur in the monitored environment, for example, System restart, Host state, Memory usage, or Print-queue length. Indicators can simply report that an event has occurred, for example, System restart:*Occurred*. They can also be used to represent the likely states for the defined events, for example, host state:*down*, memory usage:*high*, or print-queue length:*full*. Changes of state often indicate the existence of a problem.

Appropriate indicators must be created for each configuration item type, and the UCMDB model definition for configuration item types includes information about the specific indicator assignments. Assigning event type indicators to a specific configuration item type ensures that the all instances of that configuration item type can be similarly monitored.

HP OMi uses two types of indicators:

➤ **Event Type Indicators (ETI)**

Event type indicators indicate that a problem has occurred. They use the severity attribute from the event. This severity can be used to set an ETI value using the based on severity option (see "Indicator Severity" on page 236). One indicator value is required. It is generated by default, and is called: Occurred.

An ETI could read: System restart: *Occurred*.

ETIs are necessary for topology-based event correlation.

➤ **Health Indicators (HI)**

Health indicators are used to indicate the detailed health of CIs by setting a severity status. When a health indicator is defined, an associated event type indicator is automatically created. Health indicators are independent of the event life cycle. You can close events, but the health of the associated CI is still available.

For example, you can use the attributes of a critical event reporting a lack of storage space on a logical volume to set an health indicator value Down with the severity Critical assigned to the configuration item type Logical Disk.

Health indicators when assigned to KPIs are intended for use in the calculation of the severity status of health-based KPIs. However, health indicators provide more fine grained information using the Health Indicator View.

When health indicators are configured to work in conjunction with KPIs, they show the impact of a problem on the CI's neighborhood in a clear and easy to understand way, by propagating the impact of a problem with a low-level CI to higher-level CIs using the Top View.

Note: To be able to use the health-related functionality of HP OMi, the Event Management Foundation and Health licenses are required. For detailed information on licensing, see the *HP Operations Manager i Installation and Deployment Guide*.

This chapter includes:

Concepts

Tasks

Reference

🍂 Indicators Manager Basics

The Indicators manager is used to configure how HP OMi uses event type indicators, health indicators and key performance indicators to monitor and manage events and the health of objects in the operational environment. From the Indicators manager, you can perform the following administration tasks:

➤ Create, modify, or delete event type indicators and their values.

➤ Define mapping rules that, using event filters, identify event attributes that are used to set or modify indicator values.

➤ Assign health indicators to key performance indicators and apply KPI calculation rules to calculate the severity of a key performance indicator.

➤ Apply business rules that define how KPIs use health status in the calculation of the KPI's severity.

➤ Add custom icons for indicator values.

Note: You can use user roles to restrict access to the Indicators manager. For more information about user authorization, see "HP OMi User Authentication" on page 628.

An event being sent from a manager such as HP Operations Manager to HP OMi signifies an occurrence in the managed environment. This event includes information about the source of the problem and could set an attribute, including indicator information. When this event is received by HP OMi, indicators are set based on this attribute. If the event attribute is not, or cannot be set, mapping rules can be used.

HP OMi uses health indicators to determine and show the health of different aspects of a monitored object. A health indicator (HI) is an event-specific monitor that uses one or more values to represent the individual states of a monitored object, such as Running or Stopped. Health indicators are used to show if a hardware resource is available and responding or, if the performance of a software application changes according to whether the load is normal, high, or exceeding specification.

HP OMi creates a health indicator in conjunction with an event type indicator. When creating a health indicator, the associated event type indicator is automatically created.

Health indicators monitor and show specific aspects of the health of the configuration item type to which they are assigned. A configuration item inherits health indicator assignments from its parent configuration item type. For example, health indicators assigned to the configuration item type Database also apply to the configuration item type Oracle or DB2 and are applied to any Oracle and DB2 database configuration items.

Health indicators provide the data that key performance indicators (KPI) need to calculate the health-based severity status for the availability and performance of monitored resources. You assign health indicators to KPI calculation rules, to collate health-related data, determine a configuration item's availability and performance, and indicate its overall health, for example, with a severity status and color.

For more information about event type indicators, health indicators, and key performance indicators, see "Event Type Indicator Administration" on page 233 and "HI-Based KPI Administration" on page 238.

🦋 Event Type Indicator Administration

Event type indicators (ETIs) are attributes of HP OMi events used to categorize events according to the type of occurrence in the managed IT environment. An HP OMi event is created as a result of receiving a message from a manager, such as HP Operations Manager, or Network Node Manager. In HPOM, you can configure events to include the custom attribute EventTypeIndicator, which is used to set event type attributes. If the custom attribute is not configured, event type attributes can be set by the applicable mapping rules. If adequate information is not available, no ETI is set.

Any occurrence on the monitored system of a given type causing an HP OMi event must be assigned the same ETI. After defining appropriate correlation rules, events are correlated based on the ETIs. The correlation rules relate types of events that can occur on the CI.

Event type indicators are characterized by the following:

➤ Categorize type of event to abstract multiple event sources.

➤ At least one value is required. This value is used to describe the event occurrence in the environment, for example, an ETI could read: System restart: *Occurred*. Usually, you do not need to set any values for such ETIs. As a convenience, one value is created that is called Occurred.

➤ Events contain an ETI attribute. ETIs do not exist as instances in their own right.

➤ ETIs without a corresponding HI are not shown within HI View.

➤ No manual reset necessary. An ETI is just an event attribute.

A configuration item inherits ETI assignments, including health indicators, from its parent configuration item type. For example, ETIs assigned to the configuration item type Database also apply to the configuration item type Oracle and are applied to any Oracle Database configuration items.

⚙ Health Indicator Administration

Health indicators determine and display the health of specified aspects of a monitored CI. A health indicator (HI) is an event-specific monitor that uses one value to represent the normal state of the CI, for example, System:*Running*. One or more additional values are used to represent any abnormal states, such as System:*Stopped*. In this way, health indicators are used to show if a hardware resource is available and responding.

Health indicators can also display the state of a software application. For example, the possible states of a database server could be specified as: Available, Starting or Stopping. Health indicators can also be used to show the usage of a software application, for example, whether the load is Normal, High, or Max. Exceeded.

Only events that provide CI state information can set a health indicator (HI). Health indicators are assigned to a specific configuration item type through the associated ETI.

Tip: HP OMi sets indicators automatically using event attributes or mapping rules.

Mapping rules can be used to match attributes of incoming events to defined health indicator values, such as Low or High, for a given configuration type. For example, you can define a health indicator to monitor events related to the CPU load on Unix systems (CI type **Host** > **Computer** > **Unix**). When an event about Low or High CPU load is received, the appropriate health indicator value is modified. The modification of the health indicator value causes a change in the severity status of any object to which the health indicator is assigned.

Health indicators provide the data that a key performance indicator (KPI) needs to calculate the availability and performance of monitored resources. The KPIs use calculation rules to collate the values from multiple health indicators and set a severity level, such as: Critical, Major, Minor, or Normal. For example, a KPI for a database can include multiple health indicators concerning the run state (Up, Down), the cache-hit ratio (0, 50, 100%), the length of query queues (Empty, Full), and response times (#ms) to determine overall health.

For more information about key performance indicators, see "HI-Based KPI Administration" on page 238.

Deleting Health Indicators

Health indicators are associated with an event type indicator. When deleting a Health indicator, you can chose to retain the associated event type indicator by selecting **Keep associated ETI** from the Delete Health Indicator dialog box.

However, it is not recommended to delete a health indicator after it has been in use as it may be difficult to ensure that all relationships to it are also removed. Before removing a health indicator, make sure it meets the following criteria:

➤ Not assigned to a KPI

➤ Not used in an event

➤ Not used in correlation

🔩 **Indicator Severity**

There are two types of severity in HP OMi:

➤ **Event Severity**

Event severity is an attribute of an event. You can map events to ETI values based on the severity of the events.

In general, when an event with an EventTypeIndicator CMA value of Namespace:*<severity>* is received, it can be used to set HP OMi custom attribute ETI Resolution Hint Indicator Name:*<value>* where the namespace name is the same as the indicator name and the event severity is used to set the indicator value.

For example, to set values for the ETI Quota, you must specify:

➤ HPOM Custom message attribute called EventTypeIndicator in the HPOM policy with the following characteristics:

➤ Namespace for the CMA, such as Quota. This is used to map to the ETI of the same name, for example Quota.

➤ Instances for the CMA, such as Normal, Major, Critical. These are used to map to appropriate indicator values of the associated ETI.

➤ In the Quota ETI, specify the indicator value to be used when a matching event with a certain severity is received. This is the ETI Resolution Hint attribute in HP OMi. For example, when an event with the severity Normal is received, the value Quota:OK is used; when an event with the severity Major is received, the value Quota:Minimally Exceeded is used, when an event with the severity Critical is received, the value Quota:Greatly Exceeded is used.

➤ **Health Severity**

Health severity of an object is calculated by HP OMi, assigned to the object affected by the event, and displayed in the Top View of the Health Perspective.

To determine and display the health severity of a monitored object, HP OMi uses a range of health indicators, which are assigned to key performance indicators for availability and performance. Health indicators contribute to the calculation of health-based severity status in key performance indicators.

When an event is received, predefined rules are used to calculate the severity status of the KPIs assigned to the configuration item associated with the event. The rules consider the severity status of the various health indicators assigned to the KPI and set the health severity, which is displayed in the Health Perspective's Top View pane. The Top View displays the health of the selected CI and how it affects the health of its related CIs.

Each health indicator must have two or more values, one of which is the default value used to reset the indicator to the normal state. Each indicator value is aligned with a severity status. For example, a health indicator for the database state could have two values: Unavailable (sets health severity of critical) and Available (sets health severity of normal). When an event is received reporting that a database is not available, the database CI severity is set to Critical and displayed as Unavailable. To set health indicators values automatically, see "Creating and Modifying Indicator Values" on page 262, and refer to the HP Operations Manager documentation dealing with specifying custom message attributes in policies.

If more than one health indicator is available, HP OMi uses calculation rules to determine the health severity of the KPI for a monitored object. There are two calculation rules:

➤ **Most Critical** (default)

The Most Critical calculation rule sets the health severity of a KPI to the severity of the most critical health indicator assigned to the KPI.

➤ **Average**

The Average calculation rule sets the health severity of the KPI to the average severity of all the health indicators assigned to the KPI.

KPI business rules determine how HP OMi uses health data to calculate and set the severity status of a KPI. Business rules also determine if, how, and when to propagate the status of one or more related child objects in order to set or change the status of dependent parent objects.

⚙ HI-Based KPI Administration

Key performance indicators (KPI) use calculation rules to determine the availability and performance of the configuration item to which they are attached. The rules use the data provided by any assigned health indicators. The value that results from the calculation is used to set a severity status for the KPI, for example: Normal, Minor, Major, or Critical.

KPIs are displayed in topological views, such as the Health Perspective page or the Dashboard Top View tabs, as a series of small box icons attached to a configuration item. The KPIs appear under the monitored object to which they belong. Each KPI has a distinct color that reflects the current severity.

Note: A KPI calculation rule determines how HP OMi uses the data from health indicators assigned to a KPI to set the KPI's severity status.

A KPI business rule determines how the resulting status is propagated up the dependency chain.

You can choose between a number of different KPI calculation rules to determine how HP OMi calculates the severity status of a KPI: Most critical or Average. For more information about KPI calculation rules, see "HI-Based KPI Calculation Rules Administration" on page 240.

The business rule that HP OMi uses to propagate severity status is determined by the type of KPI assigned to the monitored configuration item. However, you can change the default business rule at any time. For more information about business rules and how they are used to determine status-propagation behavior for the affected configuration items, see "KPI Business Rules Administration" on page 241.

For HP OMi, key performance indicators monitor two high-level areas:

➤ **Operations Performance KPI**

Performance-related data from health indicators might include values for the hit ratio in the database cache, server-connection speeds, queue lengths, or database query processing times.

➤ **Operations Availability KPI**

Availability-related data might include server run states (up, down, starting, stopping) or process activity (refusing, accepting connections, not responding).

There are two additional types of KPI that HP OMi assigns to configuration items by default. These KPI types are for events that are either *unassigned* or *unresolved*. Unassigned events concern problems that have not yet been allocated to (or addressed by) a user. Unresolved events concern problems that are not yet solved.

Note: You cannot assign health indicators to the unassigned-events and unresolved-events KPIs.

If a KPI either for an unassigned event, or for a resolved event that references data from more than one related event, the status (and color) of the KPI reflects the severity of the most critical event. For example, if a KPI for an unassigned event refers to one critical and four normal events, the KPI appears red to reflect the critical event.

Tip: The key performance indicators that HP OMi uses are stored along with other KPIs in the Dashboard KPI repository.

If you want to modify the default settings for a KPI, use the features of the KPI repository.

For more information about working with KPIs, see the BAC documentation about KPI repositories.

🍂 HI-Based KPI Calculation Rules Administration

In HP OMi, KPI calculation rules determine how the severity status of the health indicators assigned to a key performance indicator can be combined with their relative importance to set the severity of the key performance indicator. KPI calculation rules enable you to specify how to calculate the severity of the key performance indicator if a combination of data is available from multiple health indicators.

The calculation rules that HP OMi uses to calculate the severity status of key performance indicators are:

➤ **Most Critical**

Sets the status of the KPI according to the highest severity status associated with any assigned health indicator. You might use this rule if all assigned health indicators have the same importance and it is essential to know if any one of them is in a critical state

➤ **Average**

Sets the status of the KPI to the average severity status of all assigned health indicators. You might use this rule for cluster nodes, where one node down does not affect the overall availability of an application.

Note: The rules HP OMi provides for calculating the severity status of availability and performance KPIs are not the same as the rules of the same or similar name provided by Business Availability Center.

For more information about key performance indicators, see "HI-Based KPI Administration" on page 238. For more information about defining KPI calculation rules, see "Specifying HI-based KPI Calculation Rules" on page 272.

🌐 KPI Business Rules Administration

Business rules determine how a KPI uses health-related data from monitors and child KPIs to calculate and set and update its own severity status. There are two basic types of business rules for KPIs:

➤ **Monitor Rules**

Monitor rules use live data from monitor configuration items running on monitored configuration item objects, often referred to as *leaf* CIs.

➤ **Group Rules**

Group rules aggregate the current status of any child KPIs and use the value to set the status of the parent KPI, which, in turn, determines the status of the configuration item to which it is linked. A group rule considers the state of its immediate children only.

The business rule that HP OMi uses to propagate severity status is determined by the type of configuration item to which the KPI is assigned. It is not recommended (and should not be necessary) to change the business rule assigned to a key performance indicator. Before you consider changing the standard business rule assigned to an HP OMi KPI, make sure you understand the background to and the relationships between business rules, KPI status calculation, and status propagation.

Tip: The Business Availability Center Dashboard repository contains a list of all available business rules. The rules available depend on the applications and integrations installed, the scope of the current view, and the permissions granted to the type of user logged on.

You can configure a business rule to present the result of the calculation as a severity status or a value. For more information about business rules and the business rules repository, see the Business Availability Center documentation. For more information about key performance indicators, see "HI-Based KPI Administration" on page 238.

🜚 Mapping Events to Indicators

An event can contain the EventTypeIndicator custom message attribute from HPOM specifying a severity. If this is available, the HP OMi custom attribute ETI Resolution Hint is set and this is used to set indicator values automatically.

For events that do not include this custom attribute, you can define mapping rules to set indicator values.

Indicator mapping rules are intended to help in the following situations:

➤ Monitoring events that are not integrated in either HP OMi or forwarded from HP Operations Manager.

➤ Integrating events from a custom application or a Smart Plug-in that is not HP OMi-ready.

The mapping of event attributes to indicator values occurs either during the installation and setup of an HP OMi content pack or as a result of an indicator mapping rule.

You can define indicator mapping rules for one of the following cases:

➤ for a specific event

➤ for events that match an HP Operations Manager message policy

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Tip: One event can set only one indicator value. However, you can configure multiple message policies to report on different aspects of the same event and use the event generated by each policy to set dedicated indicators.

Mapping rules exist in the context of a specific type of configuration item, for example, Computer, Host, or Router. The mapping rules defined for a specific configuration item type can use only the indicators assigned to the specified configuration item type.

Filters for Mapping Rules

You can define mapping rules that search filtered events for strings and values which are then used to set an indicator value. If the mapped indicator sets a health indicator, the corresponding values for the health indicator are also set. For more detailed information about defining event type indicator mapping rules, see "Creating and Editing Mapping Filters" on page 266.

Using the Manage Event Filters dialog, you can define filters that target the events to be considered in a mapping rule. The filter can use any of the available event attributes. For example, you can define a mapping rule that considers only those events that have a critical or major severity status and are assigned to a particular user or user group.

Tip: You can test new filters while defining or editing a mapping rule.

A mapping rule filter is designed for use with its associate mapping rule. They are not interchangeable with event filters, because applying the same filter twice can have undesirable side effects. You can only modify a mapping rule filter using the Manage Event Filters dialog, and within the context of the mapping rule for which it was defined. This helps prevent unexpected changes in the behavior of a mapping rule.

If the EventTypeIndicator custom message attribute is not available from HPOM, but the event matches a mapping rule filter, the severity is set by one of two methods:

➤ **Specific Indicator Value**

Events matching the mapping rule filter are assigned the severity associated with the indicator value specified in the mapping rule.

For example, you are monitoring databases and HP OMi receives an event that matches the mapping rule filter of the Database Status indicator. The event sets the indicator value that has been specified in the mapping rule, for example, Down.

➤ **Based On Severity**

Events matching the mapping rule filter are assigned the severity associated with the indicator value that matches the severity of the event.

For example, you are monitoring the CPU load and HP OMi receives an event that matches the mapping rule filter of the CPU Load indicator and has a severity of major. The event automatically sets the indicator value that has been specified to corresponds to this severity, for example, Overloaded.

Mapping Rule or CMA

If an event generated by an HP Operations Manager Smart Plug-in uses custom attributes to set an indicator value automatically, you can configure HP OMi to override this automatic setting and set the indicator value in accordance with a mapping rule. For further information, see "Event Type Indicator Settings" on page 660.

Order of Mapping Rules

Mapping rules for event indicators follow a specified order. If one mapping rule matches, the mapping process stops and ignores all subsequent rules further down the specified order. The mapping rules configured for a CI type and inherited from higher-level CI types are listed in the Mapping Rules by CI Type dialog box. The mapping rules configured for each CI type are grouped under their respective CI type names. You can change the order of the mapping rules within the CI type grouping.

To see which indicator values are specified in the mapping rule for a specific configuration item type, expand the name of the configuration item type in the CI Type column.

Inheritance of Mapping Rules

A CI type inherits mapping rules from CI types higher in the hierarchy. A mapping rule defined for the Host configuration item type is inherited by all configuration items types lower in the hierarchy, such as Unix, and Windows.

You can control which configuration items inherit defined mapping rules by choosing the level in the configuration item hierarchy at which to define them. The higher in the CI type hierarchy the mapping rule is specified, the greater the number of CI types that inherit it.

The Mapping Rules by CI Type dialog box shows the inheritance of indicator mapping rules in the reverse order of the CI types in the CI Types tree.

⚒ **Arranging Event Mapping by Mapping Rules**

In this task, you go through the process of mapping events to event type indicator values using mapping rules. Mapping rules use event filters to identify event attributes that are used to set or modify an indicator value. After you complete this task, events automatically set the event type indicator to the specified value.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

This task includes the following steps:

➤ "Prerequisites" on page 246
➤ "Choose the configuration items to monitor" on page 246
➤ "Create the event type indicators" on page 247
➤ "Create suitable event filters" on page 247
➤ "Set up the mapping conditions" on page 247

1 **Prerequisites**

Knowledge of the following areas:

➤ Type of events you want to manage.
➤ Event attributes, what they are for, and what they do.
➤ Various statuses that are likely to occur.
➤ Event type indicators, what they are for, and how they work.
➤ Relationship between health indicators (HI) and HI-based KPIs (key performance indicators).
➤ Relationship between KPIs and configuration item types.

2 **Choose the configuration items to monitor**

For more information, see "Content Packs Manager" on page 430.

3 Create the event type indicators

For more information, see "Creating and Modifying Event Type Indicators" on page 253 and "Creating and Modifying Health Indicators" on page 256.

4 Create suitable event filters

For more information, see "Creating and Editing Mapping Filters" on page 266.

5 Set up the mapping conditions

For more information, see "Creating and Editing Mapping Rules" on page 264.

⚒ Arranging Event Mapping by Setting Event Attributes

In this task, you go through the process of setting the ETI attribute in the event. An event can contain the HPOM EventTypeIndicator custom message attribute can be used to set the indicator value of an event. If this is available, the HP OMi custom attribute ETI Resolution Hint is set. After you complete this task, events automatically set the named event type indicator to the specified event type indicator value.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

This task includes the following steps:

➤ "Prerequisites" on page 248

➤ "Choose the configuration items to monitor" on page 248

➤ "Create the event type indicators" on page 249

➤ "Set the EventTypeIndicator custom message attribute for the Event" on page 249

1 Prerequisites

Knowledge of the following areas:

➤ Type of events you want to manage.

➤ Event attributes, what they are for, and what they do.

➤ Various statuses that are likely to occur.

➤ Event type indicators, what they are for, and how they work.

➤ Relationship between health indicators (HI) and HI-based KPIs (key performance indicators).

➤ Relationship between KPIs and configuration item types.

2 Choose the configuration items to monitor

For more information, see "Content Packs Manager" on page 430.

3 Create the event type indicators

For more information, see "Creating and Modifying Event Type Indicators" on page 253 and "Creating and Modifying Health Indicators" on page 256.

4 Set the EventTypeIndicator custom message attribute for the Event

Event attributes contained within the event are used to set the associated indicator value. You must set an attribute in the event which can be mapped to this indicator. To do this, set a custom message attribute called EventTypeIndicator in the HPOM policy. Specify a namespace for the CMA that matches the Name of the indicator, for example, CPULoad. Specify an instance that matches an indicator value, for example, High. When an event with an EventTypeIndicator CMA value of CPULoad:High is received, the indictor value that contains this ETI Resolution Hint is applied.

Use the Policy Manager HP Operations Manager to specify custom message attributes. For more information about policies and custom message attributes, refer to the HP Operations Manager documentation.

⚗ Searching and Filtering CI Types

In this task, you learn how to search for specific CI types and view CI types that match specified filter criteria. There are two filters:

➤ Show only CI types with assigned indicators

➤ View (Show CI types contained within a specified view)

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

Searching for a CI Type

You can use the Search field to locate the first instance of the CI type name or part of a name that you specify.

To search for a specified CI type:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the Search field, enter a string.

Note: The search string must be at least three characters long. Searching is started as soon as the third character is entered and the first match is highlighted. This prerequisite avoids searches being started too often and resources being blocked. Names with less than three characters cannot be found.

The first CI type in the CI Types tree to match the specified string is highlighted. If that CI is not initially visible, the CI tree is expanded to display the CI type.

3 Select the 🔍 button to find the next occurrence of the CI type for which you are searching.

Finding CI Types with Assigned Indicators

You can use the filter to display all CI types that have indicators assigned to them.

To filter the CI tree to show only CI types with assigned indicators:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the Filter pane, select **Show only CI types with assigned indicators**.

The CI Types pane displays only those CI types that have indicators assigned.

Note: You can use the Show only CI types with assigned indicators filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned indicators.

Filtering the CI Types Tree with a View

You can use the filter to display all CI types that are contained within a certain view.

To filter the CI Types tree with a view:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the Search pane, select **View**.

The View field becomes active.

3 Select the Browse Views (...) button to open the Views selection dialog box.

4 Select the view that you want to use, and select **OK**.

The CI Types tree is updated to display only the CI types that match the view selected.

If no item matches the filter, the No CI type found message is displayed.

Note: You can use the Show only CI types with assigned indicators filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned indicators.

⚒ Creating and Modifying Event Type Indicators

In this task, you learn how to set up event type indicators (ETIs). Indicators are attributes of HP OMi events, which classify the events according to the type of the occurrence. Event type indicators are used to indicate attributes describing events. Usually, you do not need to set any values for such ETIs. As a convenience, one value is created that is called Occurred.

An ETI would read: Problem *<name>*: *Occurred*.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To create an event type indicator:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the CI Types pane, locate and select the configuration item type for which you want to create a new event type indicator, for example:

IT Universe > **System** > **Host** > **Computer** > **Unix**

3 Select the ✴ button in the Indicators tab to open the Create New Indicator wizard.

4 In the Create New Indicator wizard, enter a display name and name for the new event type indicator.

Note: An event type indicator must have a name and a display name. You cannot save an event type indicator without specifying these names.

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5 Select **Event Type Indicator** as the Type of the indicator.

6 *Optional:* enter a brief description of the Indicator.

7 Select **Next** to open the Values screen where you can define one or more values for the new event type indicator.

One value is automatically created and is called Occurred.

8 *Optional:* Redefine the automatically-created value and add additional values as required.

Use the following buttons to add, modify, and delete indicator values:

✳ — New Item

✏ — Edit Item

✖ — Delete Item

ETI values are set by completing the Display Name, Name, Event Severity, and Icon fields. For detail, see "Create New and Edit Indicator Value Dialog" on page 298.

Note: If there is only one value defined, it is always used. If there are multiple values defined, and the event does not contain information required to select one of the available values, no value can be selected and it remains undefined.

For convenience, one value is automatically created for you.

To change the values, see "Creating and Modifying Indicator Values" on page 262.

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9 Select **Next** to open the Mapping screen where you can define mapping rules for the event type indicator.

You can set the indicator for an event either by using the custom message attribute EventTypeIndicator defined in the original HPOM message policy or by setting up mapping rules.

If the EventTypeIndicator custom message attribute is available, it is used to set the HP OMi custom attribute ETI Resolution Hint. The name and value of these attributes are the same. The ETI Resolution Hint in HP OMi is then used to set the indicator with the same name. The value contained within the HP OMi custom attribute ETI Resolution Hint is used to select the indicator value and the severity applied is that which is mapped to the value.

By default, mapping rules apply only to events that do not contain the custom attribute ETI Resolution Hint. They are ordered on CI type level.

Use the following buttons to add and modify mapping rules as required:

✳ — New Item

✏ — Edit Item

✖ — Delete Item

▦ — Find Matching Events

▽ — Manage Event Filters (create and edit filters)

Mapping rules are set by completing the Display Name, Name, defining filters and how to map indicator values. For detail, see "Create New and Edit Mapping Rule Dialog" on page 300.

10 Select **Finish** to save the new event type indicator.

⚒ **Creating and Modifying Health Indicators**

In this task, you learn how to set up health indicators (HIs). HIs are used to indicate the detailed health of CIs by setting a severity status. When an HI is defined, an associated event type indicator is automatically created. HIs are based on ETIs and can use all features of an ETI, such as mapping. Health indicators are independent of the event life cycle. You can close events, but the health of the associated CI is still available.

Health indicators define one or more states (up, down) and associate each state with a specific severity level (normal, critical). The combination of state and severity level determines how HP OMi calculates and displays the health of a particular type of configuration item, for example, an Oracle Database.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To create a health indicator:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the CI Types pane, locate and select the configuration item type for which you want to create a new health indicator, for example:

IT Universe > **System** > **Host** > **Computer** > **Unix**

3 Select the ✳ button in the Indicators tab to open the Create New Indicator wizard.

4 In the Create New Indicator wizard, enter a display name and name for the new health indicator.

Note: A health indicator must have a name and a display name. You cannot save a health indicator without specifying these names.

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5 Select **Health Indicator with associated Event Type Indicator** as the Type of the indicator.

6 *Optional:* enter a brief description of the Indicator.

7 Select **Next** to open the Values screen where you must define two or more values for the new health indicator.

One value is automatically created and is called Normal.

8 *Optional:* Redefine the automatically-created value and add additional values as required.

Use the following buttons to add, modify, and delete indicator values:

✴ — New Item

✎ — Edit Item

✖ — Delete Item (selected mapping rule)

Indicator values are set by completing the Display Name, Name, Health Severity, Default Value, and Icon fields. For detail, see "Create New and Edit Indicator Value Dialog" on page 298.

Note: A health indicator must have a default value. Normal is the typical default value and is used when resetting the health indicator either manually or automatically. For example, after a specific period of time, resolving the event, or the acknowledgement of the original event in HP Operations Manager.

To change the values, see "Creating and Modifying Indicator Values" on page 262.

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9 Select **Next** to open the Mapping screen where you can define mapping rules for the health indicator.

You can set the indicator for an event either by using the custom message attribute EventTypeIndicator defined in the original HPOM message policy or by setting up mapping rules.

By default, mapping rules apply only to events that do not contain the custom message attribute EventTypeIndicator. They are ordered on CI type level.

If the EventTypeIndicator custom message attribute is available, it is used to set the HP OMi custom attribute ETI Resolution Hint. The name and value of these attributes are the same. The ETI Resolution Hint in HP OMi is then used to set the indicator with the same name. The value contained within the HP OMi custom attribute ETI Resolution Hint is used to select the indicator value and the severity applied is that which is mapped to the value.

Use the following buttons to add and modify mapping rules as required:

✳ — New Item

✏ — Edit Item

✖ — Delete Item (selected mapping rule)

▣ — Find Matching Events

▼ — Manage Event Filters (create and edit filters)

Mapping rules are set by completing the Display Name, Name, defining filters and how to map indicator values. For detail, see .

10 Select **Finish** to save the new health indicator.

⚓ Creating Health Indicators from Event Type Indicators

In this task, you learn how to add a health indicator (HI) to an event type indicator (ETI). Indicators are attributes of HP OMi events, which classify the events according to the type of the occurrence. Health indicators define one or more states (up, down) and associate each state with a specific severity level (normal, critical). The combination of state and severity level determines how HP OMi calculates and displays the health of a particular type of configuration item, for example, an Oracle Database.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To create a health indicator from an event type indicator:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the CI Types pane, locate and select the configuration item type for which you want to convert an event type indicator to a health indicator, for example:

IT Universe > **System** > **Host** > **Computer** > **Unix**

3 Select the ETI for which you want to create an HI.

4 Select the 🌸 button in the Indicators tab to open the Create HI Based on ETI dialog box.

5 *Optional:* In the Create HI Based on ETI dialog box, change the display name and name for the health indicator if required.

Enter a brief description of the Indicator.

The Type value of the indicator is preselected as Health Indicator with associated Event Type Indicator.

> **Note:** A health indicator must have a name and a display name. You cannot save a health indicator without specifying these names.

6 Select **Next** to open the Values screen where you must define two or more values for the new health indicator.

7 *Optional:* Redefine the automatically-created value and add additional values as required.

Use the following buttons to add, modify, and delete indicator values:

✱ — New Item

🖉 — Edit Item

✖ — Delete Item (selected mapping rule)

ETI values are set by completing the Display Name, Name, Event Severity, and Icon fields. For detail, see "Create New and Edit Indicator Value Dialog" on page 298.

> **Note:** A health indicator must have a default value. Normal is the typical default value and is used when resetting the health indicator either manually or automatically. For example, after a specific period of time, resolving the event, or the acknowledgement of the original event in HP Operations Manager.
>
> To change the values, see "Creating and Modifying Indicator Values" on page 262.

8 Select **Next** to open the Mapping screen where you can define mapping rules for the health indicator.

You can set the indicator for an event either by using the custom message attribute EventTypeIndicator defined in the original HPOM message policy or by setting up mapping rules.

By default, mapping rules apply only to events that do not contain the custom message attribute EventTypeIndicator. They are ordered on CI type level.

If the EventTypeIndicator custom message attribute is available, it is used to set the HP OMi custom attribute ETI Resolution Hint. The name and value of these attributes are the same. The ETI Resolution Hint in HP OMi is then used to set the indicator with the same name. The value contained within the HP OMi custom attribute ETI Resolution Hint is used to select the indicator value and the severity applied is that which is mapped to the value.

Use the following buttons to add and modify mapping rules as required:

✳ — New Item

✐ — Edit Item

✖ — Delete Item (selected mapping rule)

▦ — Find Matching Events

▼ — Manage Event Filters (create and edit filters)

Mapping rules are set by completing the Display Name, Name, defining filters and how to map indicator values. For detail, see "Create New and Edit Mapping Rule Dialog" on page 300.

9 Select **Finish** to save the new health indicator.

🔧 Creating and Modifying Indicator Values

In this task, you learn how to create and edit indicator values for a selected indicator. There are two types of indicators:

➤ **Event Type Indicator**

Used to indicate that a problem has occurred. One value is required and is generated by default. It is called: Occurred.

An ETI could read: System restart: Occurred.

➤ **Health Indicator with associated Event Type Indicator**

Used to indicate the state of CIs by setting set a severity status. When a health indicator is defined, an associated event type indicator is automatically created.

For example, you can use the attributes of a critical event reporting a lack of storage space on a logical volume to set an event type indicator value Down with the severity Critical assigned to the configuration item type Logical Disk.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To define an indicator value:

1 Open the Indicators manager from Operations Management Administration:

Admin > Operations Management > Design Operations Content > Indicators

2 To create or edit indicator values, in the Create New Indicator wizard or the Edit Indicator dialog box, navigate to Values and use the ✳ button to open the Create New Indicator Value dialog box, or use the 🖉 button to open the Edit Indicator Value dialog box for an existing indicator.

The Create New Indicator Value or Edit Indicator Value dialog box opens.

Tip: To edit an existing indicator, double-click the indicator in the Indicators pane. To edit an indicator value, double-click the indicator value in the Details pane, or in the Values tab.

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3 Add or change the display name and name for the indicator value as appropriate.

4 *Health Indicators only:* Select **Default**, if you want this health indicator value to be used to represent the normal state of the health indicator.

The default value is used when resetting the health indicator either manually or automatically. For example, after a specific period of time, resolving the event, or the acknowledgement of the original event in HP Operations Manager.

5 Select the Event Severity to which you want to map this indicator value and an icon to represent this severity in the Event Browser. A default icon is associated with each severity and can be retained.

6 Select **OK** to save the indicator value.

⚜ Creating and Editing Mapping Rules

In this task, you learn how to set up a mapping rule that searches filtered events for attribute values that are then used to set an indicator value. If the mapped indicator sets a health indicator, the corresponding values for the health indicator are also set.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275. For more information about the window you use to set up and test filters, see "Filter Configuration Dialog" on page 199.

To define a mapping rule:

1 Open the Indicators manager from Operations Management Administration:

   Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 To create or edit mapping rules, in the Create New Indicator wizard or the Edit Indicator dialog box, navigate to Mapping and use the ✴ button to open the Create New Mapping Rule, or use the 🖉 button to open the Edit Mapping Rule dialog box for an existing mapping rule.

   The Create New Mapping Rule or Edit Mapping Rule dialog box opens.

3 Enter a Display Name, Name, and a short description for the new mapping rule.

4 Select **Active** to include the current mapping rule in the matching process.

   Clearing Active, disables a mapping rule. This can be useful if you want to exclude a mapping rule from a list of rules for testing purposes.

5 Select an event filter for the mapping rule from the **Events Filter** list. The filter determines which events to consider in the mapping operation.

   If no appropriate filter is already configured, select the Browse (...) button, which opens the Select an Event Filter dialog box. Create a new filter or edit an existing one. For information about filters, see "Defining Event Filters" on page 195.

6 Select a Map to Indicator Value mode.

An event attribute value must be mapped to an indicator value, using one of the following methods:

➤ Based on Severity (information from the event)

➤ Specific Indicator Value (can be selected in the mapping rule)

For more information about Map to Indicator Value modes, see "Indicator Severity" on page 236.

Note: If no obvious indicator value is available for Based on Severity mapping, HP OMi uses the nearest available value. For example, if a Critical event is mapped to an event type indicator that only has values of Major and Normal severities, HP OMi maps critical events to the event type indicator value with severity Major.

If you define multiple values with the same severity, mapping is undefined.

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7 Select **OK** to save the changes you have made.

The new mapping rule is added to the end of the list of mapping rules displayed in the Create New Indicator wizard or Edit Indicator dialog box.

⚒ Creating and Editing Mapping Filters

In this task, you learn how to create and edit event filters for use with mapping rules. Event filters for mapping rules are used to identify events that should be mapped by a mapping rule.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To define an event filter for mapping rules:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the Create New Indicator wizard or the Edit Indicator dialog box, navigate to Mapping and use the **Manage Event Filters** ⚲ button.

The Manage Event Filters dialog box opens.

3 Select the ✱ button to open the Create New Event Filter dialog box.

4 Specify the display name and select **OK**.

The Filter Configuration window opens. The name of the filter that you are currently creating or modifying is displayed as follows: Loaded Filter: *<filter name>*.

Note: To edit an existing event filter, select the event filter and use the ✏ button.

To rename and modify an existing event filter, select the event filter and use the ⚲ button.

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5 Use the displayed tabs to configure the new filter (General, Custom Attributes, and Advanced).

In the Filter Configuration dialog, all filter criteria within a frame are connected with the logical OR. The frames themselves and the other filter criteria are connected with logical AND. For example, if the severities Critical and Major are selected within the same pane, events exhibiting either severity are displayed. If the Category equals Database is also selected from another pane, only events belonging to the category Database and exhibiting one of the selected severities are displayed.

6 *Optional:* Select **Preview**. This opens a new Event Browser window, displaying the results of applying the newly defined filter. If the filter does not display the results you require, redefine the filter.

7 Select **OK** to save the changes you have made.

The new event filter is added alphabetically to the list of event filters in the Manage Event Filters dialog box.

☝ Ordering Mapping Rules

In this task, you learn how to change the order of mapping rules. Mapping rules use event filters to identify event attributes that are used to set or modify an indicator value. If the mapped indicator sets a health indicator, the corresponding values for the health indicator are also set.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275. For more information about the window you use to set up and test filters, see "Filter Configuration Dialog" on page 199.

To change the order of execution of a mapping rule:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 Select the CI type for which you want to change the order of the mapping rules, for example:

IT Universe > **System** > **Host** > **Computer** > **Windows**

3 Open the Mapping Rules by CI Type dialog box with the ⌗ button.

4 Select the mapping rule for which you want to change the order.

5 Using the **Move Up** ⬆ and **Move Down** ⬇ buttons, rearrange the order of the selected mapping rule and repeat for any other mapping rules that you want to move.

Note: Reordering rules has an impact on all CI type levels. For example, if you are changing the order of rules from the CI type Windows, and reorder rules for Computer, this change is made on both the Windows and Computer level.

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6 Select **OK** to save the changes you have made.

🦴 Adding Custom Icons for Indicator Values

In this task, you learn how to add custom icons to the list of icons available for association with indicator values. The custom icons appear together with the default icons in the Icons list of the Create New Indicator wizard and Edit Indicator dialog box. You can use custom icons to replace the standard severity icons such as: Critical (⊗), Minor (⚠), and Normal (✓).

Note: The size of the graphic that you specify is not checked. It must be 16 x 16 pixels.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To add custom icons for indicator values:

Copy the custom icon graphics files to the following location on the system hosting the HP OMi gateway server:

%TOPAZ_HOME%/opr/resources/images/icons/custom

Note: If your deployment includes multiple instances of the gateway server, make sure the custom icons are available on each system hosting a gateway server.

The custom icon should appear in the list alongside the standard icons and be available for association with indicator values. Use the **Icons** list to select the custom icon that you want to associate with the indicator value that you are creating or modifying. For information about creating and modifying indicators values, see "Creating and Modifying Indicator Values" on page 262.

ℙ Assigning Health Indicators to a KPI

In this task, you learn how to assign a health indicator to a key performance indicator. Health indicators monitor a state (for example, up, down, stopped, or started) and use changes in state to determine health changes of an object. Key performance indicators use data from one of more health indicators (or child KPIs) to set the status of the configuration object to which it is attached.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To assign a health indicator to a KPI:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the CI Types pane, locate and select a configuration item type, for example:

IT Universe > **System** > **Host** > **Computer** > **Unix**

3 Open the KPI Calculation tab.

4 To add the health indicator to the list of health indicators assigned to the currently selected KPI, select the health indicator you want to assign and click one of the following in the Key Performance Indicators pane:

➤

Assign a health indicator to an availability KPI.

➤

Assign a health indicator to a performance KPI.

The selected health indicator is assigned to the chosen KPI type: Availability or Performance. The health indicator appears in the list of health indicators currently assigned to the selected KPI.

Tip: The Indicators manager displays the list of health indicators already assigned to the selected KPI in the Availability or Performance pane.

5 To unassign a health indicator from an Availability or a Performance KPI respectively, select the health indicator you want to unassign and select the **Remove from ...** (✖) button from the appropriate KPI Calculation pane.

Tip: You can also use the context-sensitive menu to assign the health indicator to the selected KPI. For more information about buttons and icons in the Indicators manager, see "Indicators Graphical User Interface" on page 275.

☝ Specifying HI-based KPI Calculation Rules

In this task, you learn how to specify which calculation rule to use when determining the severity status of an HI-based key performance indicator (KPI). Key performance indicators use the data provided by two or more health indicators to set a specific severity level (Normal, Warning, or Critical) for a monitored object. A KPI can also use the status of one or more child KPIs to calculate its status. KPI calculation rules are not the same as KPI business calculation rules.

Tip: For information on button actions, see "Indicators Graphical User Interface" on page 275.

To specify a KPI calculation rule:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

2 In the CI Types pane, locate and select the configuration item type for which you want to specify (or change) a calculation rule. For example:

IT Universe > **System** > **Host** > **Computer** > **Unix**

In the KPI Calculations tab, assigned health indicators are displayed in the Assigned Health Indicator column of the Availability KPI Calculation or Performance KPI Calculation pane.

3 Select the KPI calculation rule you want the KPI to use to determine its severity status: **Most Critical** or **Average**.

For more information about the meaning of the KPI calculation rules, see "HI-Based KPI Calculation Rules Administration" on page 240.

🪝 Specifying KPI Business Rules

In this task, you learn how to select or change the business rule that is assigned to a key performance indicator. Business rules define if and how a KPI uses the health status that is derived from assigned health indicators or propagated from any related child KPIs in the calculation of its own severity. KPIs use the data provided by two or more health indicators to set a specific severity level (Normal, Warning, or Critical) for a monitored object.

Note: You should not need to change the business rule assigned to a key performance indicator. Make sure you understand the background to business rules, KPI status calculation, and status propagation before you consider changing the standard business rule assigned to an HP OMi KPI.

These instructions apply whether you are creating a new KPI for HP OMi or editing an existing KPI.

To specify a KPI business rule:

1 Start the Dashboard:

Admin > Dashboard

2 Use the **View** list to refine the configuration items you want to browse.

3 Select the configuration item for which you want to set or change the KPI business rule assignment.

4 In the **KPIs** tab, select the KPI for which you want to change the business rule assignment and select the **Edit** button. The Edit KPI dialog box opens.

5 In the Edit KPI dialog box, use the **Business Rule** list to choose the business rule you want the selected KPI to use to calculate the severity status.

Tip: For more information about the business rules that HP OMi KPIs use, see "HI-Based KPI Business Rules" on page 100.

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6 Save the settings and exit.

🔍 Indicators Graphical User Interface

This section describes the information displayed in the Indicators manager. The information in this section describes the buttons, icons, labels, and menu options that you use to create, configure, and manage the indicators that monitor the status and overall health of the your IT environment. In this section, you can find information about the following topics:

➤ **CI Types**

Displays an overview of the configuration item types that are available and representing the objects in your IT environment. For more information, see "CI Types Pane" on page 276.

➤ **Indicators**

Displays a list of the indicators assigned (either directly or by inheritance) to the configuration item type selected in the CI Types pane. These indicators are available for all configuration items of this type. Further information is displayed in the Details pane. For more information, see "Indicators Pane" on page 279.

➤ **KPI Calculations**

Displays details of the Key Performance Indicators (KPIs) that are associated with the configuration item selected in the CI Types pane. For more information, see "KPI Calculation Tab" on page 285.

🔍 CI Types Pane

The CI Types pane in the Indicators manager displays an overview of the configuration item types that represent the objects in your IT environment. The list includes all default items, any items you have modified, and any items you have added, for example, with additional content packs. You use the Indicators manager to perform the following tasks:

➤ View the indicators that are assigned to a selected configuration item type

➤ Configure new indicators and assign them to individual configuration items types

You can use the Expand (🔳) and Collapse (🔳) buttons to expand or collapse the CI tree. The **Expand** (🔳) button expands all CI types (but not content folders) which are under the selected CI type. The **Collapse** (🔳) button collapses all open nodes except for the selected node.

Tip: If you want to modify or manage configuration item types, use the CI Types Manager:

Admin > **Universal CMDB** > **Modeling** > **CI Type Manager**

The information displayed in the CI Types pane of the Indicators manager includes the following details.

GUI Element (A-Z)	Description
🔄	Refreshes the contents of the configuration item tree. Use if new content becomes available while you are working or you have uploaded new contents (for example, from another user or the command-line interface).
🔳	**Expand Selection:** Expands the list to display items belonging to the selected group.
🔳	**Collapse Others:** Collapses all open branches except for the selected branch.

GUI Element (A-Z)	Description
(search icon)	Finds the next occurrence of the CI Type for which you are searching. For more information about searching, see "Searching and Filtering CI Types" on page 250.
(collapse icon)	Collapses the Filter pane.
(expand icon)	Expands the Filter pane for use.
...	Opens the Views dialog box from which you can select a view with which to filter CI types.
(help icon)	Displays help about the active window, pane, or dialog box.
CI Types	Hierarchical list representing the configuration item types that you want to monitor in your IT environment. To display the indicators, KPIs, and calculations associated with a configuration item, browse to and select the item of interest. The various tabs display the details.
	If the CI Types list is filtered, (filtered) is displayed next to the CI Types title.
	The font weight is used to show the assignment of indicators to CI types:
	➤ Normal font weight: Either indirect assignment from parent or no assignment but a child has assigned indicators.
	➤ Gray font weight: No indicator assigned for this CI type and its children.
	➤ Bold font weight: Indicators assigned directly to this CI Type.

GUI Element (A-Z)	Description
Filter	Used to search for specific CI types and view CI types that match specified filter criteria. There are two filters: ➤ Show only CI types with assigned indicators ➤ View (shows CI types contained within a specified view) **Note:** If you apply a view to the filter CI Types tree which removes all CI types with assignments, the IT Universe entry remains in normal text, indicating that assignments exist. Remove the view, or select a more appropriate view to display the CI types with assignments that you require. For more information about searching and filtering, see "Searching and Filtering CI Types" on page 250.

CI Types Pane Context-Sensitive Menu

The context-sensitive menu in the CI Types pane includes the following elements.

GUI Element (A-Z)	Description
Collapse Others	Collapses all open branches except for the selected branch.
Expand Selection	Expands the list to display items belonging to the selected group.

🔍 Indicators Pane

The Indicators pane in the Indicators manager displays a list of the indicators assigned (either directly or by inheritance) to the configuration item type selected in the CI Types pane. These indicators are available for all configuration items of this type. The list includes all indicators from standard content packs and any indicators that you have added. Further information is displayed in the Details pane.

You use the indicators pane to add new or modify and delete existing indicators.

There are two types of indicators:

➤ **Event Type Indicators**

Used to indicate attributes describing events

➤ **Health Indicators**

Used to indicate the state of CIs. When a health indicator is defined, an associated event type indicator is automatically created. Health indicators can be assigned to KPIs for key performance indicator calculation. For information about assigning health indicators to key performance indicators (KPI), see "KPI Calculation Tab" on page 285.

Tip: The name of an indicator may include information in brackets, for example, CPU Load (Computer). The information in brackets is the name of the parent configuration item type to which the indicator is assigned. The selected configuration item type has inherited the indicator assignment.

The Indicators pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Indicators	Expandable list of the indicators assigned to the selected configuration item type.
	Items with assignments are bolded. Inherited assignments are identified with a label in the Indicators pane. An inherited indicator assignment is labeled with the name of the CI type in brackets from which the assignment is inherited, for example, (Host).
	Represents an event type indicator.
	Represents a health indicator.
	Represents a folder containing event type indicators.
	Represents a folder containing health indicators.
	Refreshes the contents of the indicators tree. Use if new content becomes available while you are working or you have uploaded new contents (for example, from another user or the command-line interface).
	Opens the Create New Indicator wizard, which enables you to define a new indicator and add it to the list already assigned to the selected configuration item type. For more information, see "Indicator Editor" on page 292.
	Opens the Edit Indicator dialog box, which you can use to modify the selected indicator.

GUI Element (A-Z)	Description
✖	Removes the selected indicator from the list of indicators currently assigned to the configuration item type selected in the CI Type pane.
	Health indicators are associated with an event type indicator. When deleting a Health indicator, you can chose to retain the associated event type indicator by selecting **Keep associated ETI** from the Delete Health Indicator dialog box.
	For further information, see "Deleting Health Indicators" on page 235.
	Opens the Create HI Based on ETI dialog box.
	Toggles between a list containing all indicators and lists grouped by health indicators and event type indicators.
	Opens the Mappings Rules by CI Type dialog box, showing all mapping rules of the selected CI type including those which are inherited. You can reorder mapping rules to match their priority. You can create, edit, preview and delete existing indicator mapping rules from this dialog box.
	For more information, see "Mapping Rules by CI Type Dialog" on page 289.
?	Displays help about the active window, pane, or dialog box.

Indicator Details Pane

The Indicator Details pane displays the properties of the indicator selected in the Indicators tab. The details include general information, values of the indicator, and mapping rules assigned to the indicator.

The Indicators Details pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
General The General pane displays the Display Name, Name, Type, and the Description fields, which summarize the role of the indicator.	
Description	Brief description of the indicator.
Display Name	External name for the indicator. The external name is the name exposed to users.
Name	Internal name of the indicator. This is the name used in the event received from HPOM to match the indicator in HP OMi. Automatically generated from the Display Name value. The first character must be a letter (A-Z, a-z) or an underscore (_). All other characters can be a letter (A-Z, a-z), a number (0-9), or an underscore (_). Can be manually overwritten.
Type	Displays the type of the selected indicator. There are two types of indicators: ➤ **Event Type Indicators** Used to indicate attributes describing events ➤ **Health Indicators with associated ETI** Used to indicate the state of CIs. When a health indicator is defined, an associated event type indicator is automatically created.

GUI Element (A-Z)	Description
Values	
The Values table displays the defined indicator values for the selected indicator.	
Display Name	External name for the indicator value exposed to users.
Icon	Icon used to indicate the state of the CI.
Severity	Severity to set if the status of the monitored event matches the value set in the Value field, for example: Low, Medium, or High.
Mapping Rules	
The Mapping Rules table displays all mapping rules that are configured and used for the selected indicator.	
Active	Indicates if the mapping rule is active or not. Only active rules are applied during the mapping process.
Display Name	Display name of the indicator mapping rule available.
Event Filter	Name of the event filter that is active in the mapping rule. Filters determine which events the mapping rule should consider.
Map to Indicator Value	Name of the value for the selected indicator.

Indicators Pane Context-Sensitive Menu

The context-sensitive menu in the Indicators pane includes the following elements:

GUI Element (A-Z)	Description
Create HI Based on ETI	Opens the Create HI Based on ETI dialog box.
Delete Item	Removes the selected indicator from the list of indicators currently assigned to the configuration item type selected in the CI Type pane.
Edit Item	Opens the Edit Indicator dialog box, which you can use to modify the selected indicator.
Mapping Rules by CI Type	Opens the Mappings Rules by CI Type dialog box, showing all mapping rules of the selected CI type including those which are inherited. You can reorder mapping rules to match their priority. You can create, edit, preview and delete existing indicator mapping rules from this dialog box.
New Item	Opens the Create New Indicator wizard, which enables you to define a new indicator and add it to the list already assigned to the selected configuration item type. For more information, see "Indicator Editor" on page 292.
Toggle Grouping by Type	Toggles between a list containing all indicators and a list divided into health indicators and indicators.

🔍 KPI Calculation Tab

KPI Calculation tab of the Indicators manager displays details of the key performance indicators that are associated with the configuration item selected in the CI Types pane. The details displayed include a list of the assigned health indicators. HP OMi displays the health indicators already assigned to the selected KPI in separate panes according to the categories Availability and Performance.

The KPI Calculation tab displays the GUI elements listed in the following table.

GUI Element	Description
✖	Removes the selected health indicator from the list of health indicators already assigned to the active Availability or Performance key performance indicator.
\<CI Type Name\> - Availability KPI Calculation **\<CI Type Name\> - Performance KPI Calculation**	Details about the performance and availability KPIs associated with the selected health indicator. The information includes: ➤ **Assigned Health Indicator**: List of the health indicators assigned to the currently active KPI. ➤ **Description of Assigned Health Indicator**: Brief description of the Assigned Health Indicator. No Availability KPI Calculation or No Performance KPI Calculation is displayed in the header when these are not configured. The font weight is used to show the assignment of indicators to KPI calculations: ➤ Normal font weight: Direct assignment of indicator to KPI calculation. ➤ Gray font weight: Indicators assigned to this KPI calculation are inherited. An inherited indicator assignment is labeled with the name of the CI type in brackets from which the assignment is inherited, for example, Ping Availability (Computer).

GUI Element	Description
KPI Calculation Rule	Selects the rule to use when calculating the selected KPI's severity, for example: ➤ **Most Critical**: Sets the severity level of the selected KPI to the highest severity status currently available for any health indicators assigned to the KPI. ➤ **Average**: Calculates the average severity status of all health indicators assigned to the selected KPI and sets the status of the KPI to the resulting average value.
?	Displays help about the active window, pane, or dialog box.

The Health Indicators pane displays the GUI elements listed in the following table.

GUI Element	Description
⟳	Refreshes the contents of the Health Indicators list. Use if new indicators become available while you are working.
✳	Opens the Create New Indicator wizard, which enables you to define a new health indicator and add it to the list already assigned to the selected configuration item type. For more information, see "Indicator Editor" on page 292. **Note:** From the KPI Calculation tab, you can only create HIs.
✎	Opens the Edit Indicator dialog box, which you can use to modify and save values, settings and mapping rules.
✖	Deletes the selected health indicator. Health indicators are associated with an event type indicator. When deleting a Health indicator, you can chose to retain the associated event type indicator by selecting **Keep associated ETI** from the Delete Health Indicator dialog box. For further information, see "Deleting Health Indicators" on page 235.

GUI Element	Description
	Add to Availability KPI Assignment: Adds the selected health indicator to the list of health indicators currently assigned to the Availability Key Performance Indicators displayed in the Availability pane of the KPI Calculation tab.
	Add to Performance KPI Assignment: Adds the selected health indicator to the list of health indicators currently assigned to the Availability Key Performance Indicators displayed in the Performance pane of the KPI Calculation tab.

Health Indicators Context-Sensitive Menu

The context-sensitive menu in the Indicators tab includes the following elements.

GUI Element (A-Z)	Description
Add to Availability KPI Assignment	Adds the selected health indicator to the list of health indicators already assigned to the active Availability key performance indicator.
Add to Performance KPI Assignment	Adds the selected health indicator to the list of health indicators already assigned to the active Performance key performance indicator.
Delete Item	Deletes the selected health indicator. Health indicators are associated with an event type indicator. When deleting a Health indicator, you can chose to retain the associated event type indicator by selecting **Keep associated ETI** from the Delete Health Indicator dialog box. For further information, see "Deleting Health Indicators" on page 235.
Edit Item	Opens the selected health indicator in the Edit Indicator dialog box. You can add, change, or remove details and save the changes.
New Item	Opens the Create New Indicator wizard. You can define a new Health Indicator and save the changes.
Remove From Availability KPI Assignment	Removes the selected health indicator from the list of health indicators already assigned to the active Availability key performance indicator.
Remove From Performance KPI Assignment	Removes the selected health indicator from the list of health indicators already assigned to the active Performance key performance indicator.

🔍 Mapping Rules by CI Type Dialog

The Mapping Rules by CI Type dialog box displays a list of the rules that HP OMi uses to map the attributes of events to indicator values in HP OMi. HP OMi uses mapping rules to automatically set Mapping Rules pane, from which you can change the order of execution the mapping rules. You can also edit and delete existing mapping rules, and configure and test filters for them. For more information, see "Creating and Editing Mapping Rules" on page 264.

The Mapping Rules pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
✏️	Opens the Edit Mapping Rule dialog box, which you can use to modify and save mapping rules.
✖️	Removes the selected mapping rule.
🔍	**Find Matching Events:** Find events that match the selected filter.
🔽	**Manage Event Filters:** Opens the Manage Event Filters dialog for adding, editing, and managing filters.
🧮	**Recalculate Order:** Recalculates the order of mapping rules. Used to reorder the list of mapping rules after deletion of mapping rules from the list.
⬆️	Moves the selected mapping rule up to a higher priority position.
⬇️	Moves the selected mapping rule down to a lower priority position.
Active	Indicates if the mapping rule is active or not. Only active rules are applied during the mapping process.

GUI Element (A-Z)	Description
CI Type	Name of the configuration item type for which the mapping rules were originally created and which passed on the mapping rules to the selected configuration item type. Use the ▼ and ▶ icons to display and hide the inherited mapping rules.
Display Name	Display name of the mapping rule available.
Event Filter	Name of the event filter that is active in the mapping rule. Filters determine which events the mapping rule should consider.
Help	Displays help about the active window, pane, or dialog box.
Indicator	Name of the selected indicator.
Map to Indicator Value	Indicator value set using one of the following methods: ➤ **Based on severity**: Indicator value used is governed by the severity information from the event. ➤ **Specific Indicator value**: Specifies an indicator value independent of any severity information from the event.
Order	Where more than one mapping rule is available for a configuration item type, the number in the Order column indicates the order in which the rules are applied during the mapping process. Using the Mapping Rule Editor, you can change the position of rules in the list. **Note:** If a rule matches, no further rules are applied.

Mapping Rules by CI Type Context-Sensitive Menu

The context-sensitive menu in the Mapping Rules by CI Type tab includes the following elements:

GUI Element (A-Z)	Description
Delete Item	Removes the selected mapping rule.
Edit Item	Opens the Edit Mapping Rule dialog box, which you can use to modify and save mapping rules.
Find Matching Events	Find events that match the selected filter.
Manage Event Filters	Opens the Manage Event Filters dialog for adding, editing, and managing filters.
Move Down	Moves the selected mapping rule down to a lower priority position.
Move Up	Moves the selected mapping rule up to a higher priority position.
Recalculate Order	Recalculates the order of mapping rules. Used to reorder the list of mapping rules after deletion of mapping rules from the list.

Indicator Editor

The Create New Indicator wizard and Edit Indicator dialog box are used to create and manage indicators.

There are two types of indicators:

➤ **Event Type Indicator**

Used to indicate attributes describing events

➤ **Health Indicator with associated Event Type Indicator**

Used to indicate the state of CIs. When a health indicator is defined, an associated event type indicator is automatically created. Health indicators can be assigned to KPIs for key performance indicator calculation. For information about assigning health indicators to key performance indicators (KPI), see "KPI Calculation Tab" on page 285.

Health indicators are used to determine and show the state of different aspects of a monitored object. Health indicators are used to associate known problems with a severity status.

To access the Create New Indicator wizard, from the Indicators tab use the ✳ button.

To access the Edit Indicator dialog box, from the Indicators tab either double-click an existing indicator, or use the 🖋 button.

The Indicators tab is located as follows:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

The Create New Indicator wizard and Edit Indicator dialog box display the GUI elements listed in the following tables.

General

GUI Element (A-Z)	Description
Description	Brief description of the new or modified indicator.
Display Name	External name of the indicator. This is the name that is visible to users.
ID (Edit Indicator dialog only)	No action required. The indicator ID is assigned automatically when the indicator is first saved.
Name	Internal name of the indicator mapping rule. This is the name used in the event received from HPOM to match the indicator in HP OMi.
	Automatically generated from the Display Name value. The first character must be a letter (A-Z, a-z) or an underscore (_). All other characters can be a letter (A-Z, a-z), a number (0-9), or an underscore (_). Can be manually overwritten.
Type	Used to select the type of indicator to be created. There are two types of indicators:
	➤ **Event Type Indicators**
	Used to indicate attributes describing events
	➤ **Health Indicators**
	Used to indicate the state of CIs. When a health indicator is defined, an associated event type indicator is automatically created.

Values

GUI Element (A-Z)	Description
✳	Opens the Create New Indicator Value dialog box, which enables you to define a new indicator value and add it to the list already assigned to the selected indicator. For more information, see "Indicator Editor" on page 292.
✐	Opens the Edit Indicator Value dialog box, which you can use to modify and save indicator values and settings.
✖	Removes the selected indicator value from the list of indicator values currently assigned to the indicator.
	Removes the selected health indicator from the list of indicators currently assigned to the configuration item (or type) selected in the CI Type pane.
	Health indicators are associated with an event type indicator. When deleting a Health indicator, you can chose to retain the associated event type indicator by selecting **Keep associated ETI** from the Delete Health Indicator dialog box.
	For further information, see "Deleting Health Indicators" on page 235.
	Before removing an indicator, make sure that it is not used in the following:
	➤ Mapping rules
	➤ Event
	➤ Correlation
Display Name	External name for the indicator value exposed to users.
Icon	Icon used to indicate the state of the CI.
Severity	Event severity used to set the indicator value.
	For further details, see "Indicator Severity" on page 236

GUI Element (A-Z)	Description
<Values>	Indicator values are set by completing the following fields: ➤ Display Name ➤ Name ➤ Event or Health Severity ➤ Icon For detail, see the respective entries in this table. **Event Type Indicators:** ETIs typically report that an event has occurred, for example, System restart:*Occurred*. A minimum of one value is necessary. For information on setting ETIs, see "Creating and Modifying Event Type Indicators" on page 253. **Health Indicators:** Health indicators are used to report the status of a CI. A range of HI values are required to display the possible statuses. For example, you may want to map all available severity information from incoming events to be able to display the following range of event severity status: ⬤ — Normal [Default] ▲ — Warning ⚠ — Minor ▼ — Major ✖ — Critical ❓ — Unknown For health indicators, the default value is labeled. For information on setting HIs, see "Creating and Modifying Health Indicators" on page 256. Health indicators are used in conjunction with KPIs to report on the health of CIs. For more information on KPIs, see "HI-Based KPI Administration" on page 238. For information about indicator severity, see "Indicator Severity" on page 236.

Mapping

GUI Element (A-Z)	Description
✳	Opens the Create New Mapping Rule dialog box, which enables you to define a new mapping rule and add it to the mapping rules list already assigned to the selected indicator.
	You can set the event type indicator in events either using custom attribute EventTypeIndicator defined in the original HPOM message policy or setting up mapping rules. By default, mapping rules apply only to events that do not contain the attribute ETI Resolution Hint. They are ordered on CI type level.
	For more information, see "Indicator Editor" on page 292.
✏	Opens the Edit Mapping Rule dialog box, which you can use to modify and save indicator mapping rules.
✖	Removes the selected mapping rule.
🔍	**Find Matching Events:** find events that match the selected filter.
▽	Opens the Manage Event Filters dialog for adding, editing, and deleting filters.
Active	Indicates if the mapping rule is active or not. Only active rules are applied during the mapping process.
Display Name	Display name of the indicator mapping rule available.
Filter	Name of the event filter that is active in the mapping rule. Filters determine which events the mapping rule should consider.

GUI Element (A-Z)	Description
Help	Displays help about the active window, pane, or dialog box.
Map to Indicator Value	Indicator value set using one of the following methods: ➤ **Based on severity**: Indicator value used is governed by the severity information from the event. ➤ **Specific Indicator value**: Specifies an indicator value independent of any severity information from the event.

🔍 Create New and Edit Indicator Value Dialog

Use the Create New Indicator Value dialog box to add a new value or the Edit Indicator Value dialog box to modify an existing value.

Values for indicators report the occurrence of an event, for example, that a batch job failed or that a service is unavailable. Values for health indicators determine the status of an indicator by mapping a defined state (such as Up, Down, 95%) to a value or, optionally, a severity status (such as Normal, Critical).

To access the Create New Indicator Value dialog box, from the Create New Indicator wizard or the Edit Indicator dialog box, use the ✱ button.

To access the Edit Indicator Value dialog box, from the Create New Indicator wizard or the Edit Indicator dialog box, either double-click an existing indicator value, or use the 🖊 button.

The Indicators tab is located as follows:

Admin > **Operations Management** > **Design Operations Content** > **Indicators**

The Create New Indicator Value or the Edit Indicator Value dialog boxes are available from the Indicator controls and display the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Display Name	External name for the indicator value. The external name (label) is the name that you want to expose to users.
Default (HI only)	Default health value setting for the selected health indicator. The default value is used when resetting the health indicator either manually or automatically. For example, after a specific period of time, resolving the event, or the acknowledgement of the original event in HP Operations Manager.

GUI Element (A-Z)	Description
ETI Resolution Hint	Event attributes contained within the event used to set the associated indicator value. You must set an attribute in the event which can be mapped to this indicator. To do this, set a custom message attribute called EventTypeIndicator in the HPOM policy. Specify a namespace for the CMA that matches the Name of the indicator, for example, CPULoad. Specify an instance that matches an indicator value, for example, High. When an event with an EventTypeIndicator CMA value of CPULoad:High is received, and ETI and values exist, the event attribute Event Type Indicator is set.
Event Severity (ETI only)	Severity used for automatic mapping of severities with the Based on severity option.
Health Severity (HI only)	Severity to set if the status of the monitored event matches the value set in the Value field, for example: Normal, Minor, or Critical.
ID (Edit Indicator dialog only)	No action required. The indicator value ID is assigned automatically when the indicator value is first saved.
Name	Internal name of the indicator value. This is the name used in the event received from HPOM to match the indicator in HP OMi. Automatically generated from the Display Name value. The first character must be a letter (A-Z, a-z) or an underscore (_). All other characters can be a letter (A-Z, a-z), a number (0-9), or an underscore (_). Can be manually overwritten.
Icon	Select an icon from the list if you want to replace the severity icon with a custom icon. For more information about how to use custom icons with indicator values, see "Adding Custom Icons for Indicator Values" on page 269.

Create New and Edit Mapping Rule Dialog

The Create New Mapping Rule and Edit Mapping Rule dialog boxes are used to create and edit mapping rules. Mapping rules use event filters to identify event attributes that are used to set or modify an indicator value.

To create mapping rules, in the Create New Indicator wizard or the Edit Indicator dialog box, select the Mapping pane and use the ✳ button to open the Create New Mapping Rule dialog box.

To edit mapping rules, in the Create New Indicator wizard or the Edit Indicator dialog box, select the Mapping pane and use the 🖊 button to open the Edit Mapping Rule dialog box.

Create New Indicator wizard or the Edit Indicator dialog box are accessed from the Indicators tab:

Admin > **Operations Management** > **Design Operations Content** > **Indicators** > **Indicators Tab**

The Create New Mapping Rule dialog box and the Edit Mapping Rules dialog box display the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Active	Indicates if the mapping rule is active or not. Only active rules are applied during the mapping process.
Description	Brief summary of the rule's action.
Display Name	External name for the mapping rule. The external name (label) is the name that is visible to users.
Event Filter	Name of the event filter that is active in the mapping rule. Filters determine which events the mapping rule should consider.
	Use the list to select the filter to apply in the rule. The filter determines which events to consider in the mapping operation.
	For information about creating filters, see "Creating and Editing Mapping Filters" on page 266.

GUI Element (A-Z)	Description
Help	Displays help about the active window, pane, or dialog box.
ID (Edit Mapping Rule dialog only)	No action required. The mapping rule ID is assigned automatically when the rule is first saved.
Map to Indicator Value	Select the indicator value you want to set with the event attribute.
	You can select one of the following:
	➤ **Based on severity**: Indicator value used is governed by the severity information from the event.
	➤ **Specific Indicator value**: Specifies an indicator value independent of any severity information from the event.
Name	Internal name of the indicator mapping rule. This is the name used in the event received from HPOM to match the indicator in HP OMi.
	Automatically generated from the Display Name value. The first character must be a letter (A-Z, a-z) or an underscore (_). All other characters can be a letter (A-Z, a-z), a number (0-9), or an underscore (_). Can be manually overwritten.

🔍 Manage Event Filters Dialog

The Manage Event Filters dialog box displays a list of the event filters used by mapping rules. From this dialog box, you can select an event filter to apply, create, edit, rename, test and delete event filters. For more information, see "Creating and Editing Mapping Filters" on page 266.

The Manage Event Filters dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
	Refreshes the contents of the Manage Event Filters list. Use if new filters becomes available while you are working.
	Opens the Create New Event Filter dialog box, which enables you to define a new event filter for mapping rules. The following characters are not supported in filter names: &, <, and >. For more information, see "Creating and Editing Mapping Filters" on page 266.
	Rename Item: Opens the Rename Event Filter dialog box and enables you to change the name of the selected filter. The following characters are not supported in filter names: &, <, and >.
	Opens the Filter Configuration Window, which you can use to modify and save an event filter.
	Removes the selected event filter.
	Find Matching Events: find events that match the selected filter.

GUI Element (A-Z)	Description
Close	Closes the Manage Event Filters dialog box.
Help	Displays help about the active window, pane, or dialog box.

Manage Event Filters Context-Sensitive Menu

The context-sensitive menu in the Manage Event Filters dialog box includes the following elements:

GUI Element (A-Z)	Description
Delete Item	Removes the selected event filter.
Edit Item	Opens the Filter Configuration Window, which you can use to modify and save an event filter. For more information, see "Creating and Editing Mapping Filters" on page 266.
Find Matching Events	**Find Matching Events:** find events that match the selected filter.
New Item	Opens the Create New Event Filter dialog box, which enables you to define a new event filter for mapping rules. The following characters are not supported in filter names: &, <, and >. For more information, see "Creating and Editing Mapping Filters" on page 266.
Rename Item	Opens the Create New Event Filter dialog box, which enables you to define a new event filter for mapping rules. The following characters are not supported in filter names: &, <, and >.

🔍 Filter Configuration Dialog

The Filter Configuration dialog box displays the attributes that you can use either individually or in combination to filter events for mapping rules. For more information about the information displayed in the Filter Configuration tabs, see the following sections.

Common Buttons and Icons

The Filter Configuration dialog box includes the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Cancel	Discards all additions and changes and closes the Filter Configuration window.
OK	Commits changes to an existing (named) event filter
Preview	Displays the events that meet the requirements of the filter being created or modified in a new window. **Note:** Not available in the History Browser for closed events.

Strings Filter Matching Criteria

The filter matching criteria lists display the GUI elements listed in the following table.

GUI Element (A-Z)	Description
contains	Displays any event that contains a reference to the specified string in the selected attribute. For example, searching for any string that contains database returns: ➤ database ➤ database status ➤ Oracle Database status
does not contain	Displays any event that does not contain a reference to the specified string in the selected attribute. Searching for a string that does not contain database returns all strings except those containing database, for example: ➤ Blue moon ➤ Almost everything else
equals	Displays any event that has an attribute or attribute value that is identical to the specified string. For example, searching for events of a category type that equals database returns events of the following category: ➤ database
is not equal	Displays any event that has an attribute that is not identical to the specified string. For example, searching for events of a category that does not equal database returns events with categories that are not identical to database, returns event attributes such as: ➤ Storage ➤ DB ➤ Network
is empty	Displays any event that contains no value for the specified attribute.

GUI Element (A-Z)	Description
is not empty	Displays any event that contains any value for the specified attribute.
is one of	Enables specification of multiple strings separated by the pipe (|) character. The filter matches if the attribute equals one of the specified strings. For example, searching for events that is one of Oracle|WebSphere|WebLogic returns events have an attribute or attribute value identical to any of the following: ➤ Oracle ➤ WebSphere ➤ WebLogic

General Tab

The General tab displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Category	Category of event that you want to use as a filter option, for example: DB, Storage, System, or WebApp.
Description	Description of an event as displayed in the contents of the original event's description field.
Subcategory	Name of the event subcategory to which the events you are looking for belong.
Severity	Selects an event severity to use as a filter option. Multiple severities can be selected.
Title	Title of the events you are looking for.
Type	Type of event you want to display with the filter.

Custom Attributes Tab

The Custom Attributes tab displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Add CA Filter	Opens a new Custom Attributes row that enables you to define a filter based on custom attributes.
	You define a custom attribute filter by specifying the name of the custom attribute in the field on the left, selecting a filter matching criteria from the list, and specifying the value of the custom attribute in the field on the right.
	You can specify multiple custom attributes using the **Add CA Filter** button. Custom Attributes are related with the logical AND. To achieve a match, all specified custom attribute rules must be met.
	You can delete a custom attribute filter using the **Remove CA Filter** button.

Advanced Tab

The Advanced tab displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Application	Selects events linked to the named application.
Key	Selects events that contain a reference to the named key
Object	Selects events that are related to a named object, as specified in the original HP Operations Manager message.
Original Event	Original event as captured from HP Operations Manager agents before being formatted into an HPOM message.
	Contains information about the original input before being normalized by HPOM agent policies into an HPOM message. Typically, the information available includes: node name, message group, application, object, severity, and message text.

🔍 Troubleshooting and Limitations

This section provides help in troubleshooting problems relating to the management of indicators, including creating, modifying, assigning, and mapping to KPI rules.

HI Assignment List is Empty

➤ The wrong pane (Availability or Performance) is active in the KPI Calculations tab.

➤ Incorrect filter is applied.

➤ No connection to HP OMi management server.

Health Indicators Incorrectly Assigned

Health indicators associate a state, such as Up or Down, with a corresponding severity, such as Normal or Warning. The complete health indicator is assigned to one or more key performance indicators. The Indicators manager displays the states and assignments of a health indicator in the Availability and Performance tabs of the KPI Calculations tab.

When you are troubleshooting problems with health indicator definitions and assignments, have a look at the following list of suggestions:

➤ No health indicator selected in the health indicators tab.

➤ No health indicators exist for the selected CI type.

➤ HI Reset Does Not Work.

➤ No or an incorrect default value exists for the selected health indicator.

➤ The current state of the health indicator is the same as the defined default value.

HI Value is Incorrect

➤ The health indicator reset ("Resetting Health Indicators" on page 103) feature was activated but no default value exists for the selected health indicator. Without a default value, the health indicator cannot be reset.

10

Correlation Rules Manager

This chapter introduces the concept of topology-based event correlation. The information in this chapter explains how to configure correlation rules and apply them to the indicators that are assigned to the configuration item types you are monitoring with HP OMi. You can use topology-based event correlation to help you better understand, monitor, and manage the problems that might have an impact on the objects in your IT environment.

Note: To be able to use the event correlation functionality of HP OMi, the Event Management Foundation and Correlation licenses are required. For detailed information on licensing, see the *HP Operations Manager i Installation and Deployment Guide*.

This chapter includes:

Concepts

Tasks

Reference

Correlation Rules Manager Basics

The Correlation Rules manager enables you to define and deploy rules that use indicators to correlate the events occurring in the different domains throughout the managed IT environment. You can use the Correlation Rules manager to perform the following tasks:

➤ Define, deploy, and manage correlation rules

➤ Visualize the topology of correlation rules

➤ View cause and symptoms events

➤ Manage indicators and their values

➤ Browse the hierarchy of cross-domain correlation rules

Note: You can use user roles to restrict access to the Correlation Rules manager. For more information about user authorization, see "HP OMi User Authentication" on page 628.

To access the Correlation Rules manager, select the following menu option:

Admin > **Operations Management** > **Design Operations Content** > **Correlation Rules**

❀ Topology-Based Event Correlation

You can define and deploy rules that use indicators to correlate or link related events occurring in the different domains of the managed IT environment. Correlating events that are either generated by or related to the same object greatly reduces the number of events displayed in the Event Browser. The reduced number of events in the Event Browser helps operators to locate the cause of the problems more quickly and efficiently.

The correlation process determines the cause of an event. An overview of all events affected by the correlation process is available separately in the Related Events tab of the Details pane. The overview enables you to drill down the correlation history and browse through all correlated events.

The event correlation process uses the topology-based views stored in the UCMDB to specify which configuration item types can be considered for inclusion in a correlation rule. The topology-based views improve the correlation process by adding path-related constraints to the correlation rule. Topology-based event correlation requires that a relationship exist between the configuration items specified in the correlation rule.

Note: The view used to define the configuration item types in a correlation rule must also demonstrate that a relationship exists between the configuration item types specified in the rule.

A time limit exists for the processing of the correlation rules you define with the Correlation Rules manager. All the events specified in the correlation rule must occur within a defined period of time. By default, the time limit is set to 5 minutes. If individual symptom or cause events occur outside of the defined time limit, they appear in the Event Browser as normal, uncorrelated events. For more information about the time setting, see .

Correlation Rules

Use the Correlation Rules manager to view, define, and apply correlation rules. Correlation rules associate selected configuration item types with defined indicator values to trigger a correlation process. The correlation process results in the highlighting of one or more configuration items as causes.

Correlation rules require a combination of symptoms and causes. Both symptoms and causes are defined by selecting configuration item types. Each configuration item type (such as a DB2 database) that you specify as a potential symptom requires one or more indicators (for example, Run State, or Availability) to be defined for it. Each indicator must have a value (for example, up, down, or offline). Configuration item types you choose as causes also require an indicator and a value.

For example, the information in the following table defines a simple correlation rule for a database instance. HP OMi displays cause events in the Event Browser and the symptom events in the Related Events tab of the Message Details pane.

Rule Type	CI Type	Event Type Indicator	Event Type Indicator Value
Symptom	DB2	Network Availability	Offline
Symptom	DB2	Buffer Hit Ratio	Low
Symptom	Process	Run state	Down
Cause	**DB Table Space**	**Buffer Performance**	**Slow**

🔗 Cross-Domain Event Correlation

The Correlation Rules manager enables you to set up rules that correlate indicators for configuration item types in multiple and different domains, for example, database, storage, and web application. Cross-domain correlation connects a chain of rules that are defined in different domains. The correlation process can use the *symptom* of one rule as the *cause* of the next rule in the chain, or vice versa.

The link between correlation rules in different domains is the *same* indicator value assigned to the *same* configuration item type. In one rule, you can define an indicator value as a symptom for a specific configuration item type. In another rule for a different domain, you can define the *same* indicator value as a cause for the *same* configuration item type. If all the events occur in the different domains as expected and trigger the various rules, the correlation process displays in the Event Browser only the cause event from the last rule in the event correlation chain.

Note: Cross-domain correlation rules must share at least one identical combination of configuration item type and indicator value.

For example, if all the necessary correlation rules are defined for and deployed in the database, storage, and web application domains, and the necessary indicator states are being monitored for a shared configuration item, the Correlation Rules manager can determine that a problem with physical disk utilization in the storage domain is the cause of the problem concerning the availability of the web server.

The Correlation Rules pane in the Correlation Rules manager incorporates a list of correlation rules containing symptoms or values that also feature in rules defined for a different domain. In cross-domain rules, indicator values configured as a symptom in one rule are also defined as a cause in a rule defined in another domain. You can choose whether to view rules that determine the symptom or the cause of an event and expand the item to see if the rule is part of a chain.

🔅 Event Correlation Rule Topology

It is easier to understand the context in which a correlation rule exists and how the rule works if you can see the topology of the configuration item types that are included in the rule. HP OMi uses the Rule Topology pane in the Correlation Rules manager to graphically represent the correlation rule you are designing or modifying. The configuration item types that you include in the correlation rule are highlighted in the topology of the view to which they belong.

Labels indicate the type of objects in the correlation rule and the relationship between the various objects. For example, correlation rules can include relationships such as Contains, Depends on, or Member.

Note: You cannot change or modify the type of relationship displayed in the Rule Topology pane. The relationship is defined in the UCMDB view. Use the UCMDB View Manager to set up new views and new relationships.

You use the Rule Topology pane to specify which parts of the view topology to consider for the correlation rule you are configuring. In the Rule Topology pane, you select the configuration item types and specify the relationship between them. The Correlation Rules manager checks that the rule you define indicates both the configuration item types to consider in the event correlation process and their relationship. If the rule does not indicate the relationship between configuration item types, the Correlation Rules manager does not allow you to save it.

The rule topology shows the relationships between all the configuration item types in the chosen view. If only one topological path exists between the configuration item types in your correlation rule, HP OMi automatically highlights the path for you. If more than one path exists, you must manually highlight the path between the configuration item types specified as symptoms and cause in the correlation rule.

If you have configured multiple correlation rules in a chain, where a cause in one rule is a symptom in another, HP OMi displays useful information about the indicator values used in the correlation rule and enables you to navigate between the rules following the correlation chain.

For more information about the contents of the Rule Topology pane, see "Rule Topology Pane" on page 338. For more information about configuring rule topology, see "Defining the Rule Topology" on page 326.

🍥 Correlation Rule Symptoms and Causes

In HP OMi, a correlation rule defines events as either causes or symptoms. If one or more of the events specified as symptoms occurs within a defined period of time, the triggered rule highlights the cause event in the Event Browser and creates a subgroup containing the symptom events.

Tip: The Event Browser uses icons to distinguish between events that are configured as the cause in a correlation rule and events that are configured as symptoms. For more information about icons in the Event Browser, see "Event Browser Icons" on page 58.

Every rule that HP OMi uses to correlate events must have at least one symptoms and at least one cause. Multiple cause indicators can be specified as long as they are specified for the same CI type. In the context of HP OMi correlation rules, symptoms and causes are defined as follows:

➤ **Symptom**

Symptoms in a correlation rule are events that occur as a result of another event. Symptom events are mapped to individual indicator values used to monitor the objects in your IT environment, for example, Database:Unavailable or Application response:Slow.

You can map a symptom event to more than one indicator value, for example, Database:Down or unavailable. In this way, the event can contribute to more than one rule.

➤ **Cause**

Causes in a correlation rule are the events that are reporting problems and are the underlying reasons that other symptom events occur. In a correlation rule, cause events are mapped to an indicator value used to monitor the objects in your IT environment, for example: Network:Unreachable.

Note: If multiple rules correlate the same symptoms at the same time but specify a different event as the cause, the event specified as the cause in the first rule triggered takes precedence and subsequent rules are ignored.

You can configure a chain of rules that correlate events across multiple domains. In cross-domain event correlation, an event can be configured as a symptom in one rule and as a cause in another rule. Similarly, an event configured as a cause in one correlation rule can be configured as a symptom in another rule. Rules that correlate events occurring in different domains require at least one common configuration item type and one indicator value. The common configuration item type and indicator value is the link between the rules defined for the different domains.

The contents of the various panes are linked both conceptually and graphically. If you select a configuration item type in the Rule Topology pane, HP OMi displays indicators assigned to the selected configuration item type and defined as a symptom or a cause in the correlation rule in the Indicators pane.

⚒ Configuring Topology-based Event Correlation Rules

This task describes how to configure a topology-based event correlation rule. A correlation rule uses multiple indicator values to determine which events are symptoms of a problem and which events are the causes.

This task includes the following steps:

➤ "Prerequisites" on page 321

➤ "Create the Event Correlation Rule" on page 321

➤ "Select a Topology View" on page 322

➤ "Define the Rule Topology" on page 322

➤ "Specify Event Correlation Rule Symptoms" on page 322

➤ "Specify Correlation Rule Cause" on page 322

1 Prerequisites

To create correlation rules and policies, you need the following:

➤ Access to Operations Management Administration

➤ Good understanding of the principles of event correlation

➤ Detailed knowledge of the objects and events that you want to create rules to correlate

➤ Working knowledge of configuration item types, indicators, and indicator values

➤ Understanding of how events relate to each other in terms of cause and effect. For example, the availability of an email server depends on reliable hardware, responsive software, and a functioning network.

2 Create the Event Correlation Rule

In this step, you create a new correlation rule to help you solve problems more quickly by distinguishing between events that are the symptoms of a problem and events that are the cause. For more information, see "Creating Event Correlation Rules" on page 323.

3 Select a Topology View

In this step, you select a view that specifies the configuration item types you want to use in a correlation rule. Topology views reduce and refine the number of configuration item types that you can use in the correlation rule to a more manageable level. For more information, see "Selecting Topology Views" on page 325.

4 Define the Rule Topology

In this step, you define the topology of the correlation rule. Topology is the relationships and dependencies between the various configuration item types in the correlation rule. For more information, see "Defining the Rule Topology" on page 326.

5 Specify Event Correlation Rule Symptoms

In this step, you specify one or more events as symptoms in a correlation rule. You define the symptoms of a correlation rule by specifying one or more indicator values used to monitor particular events in your IT environment, for example: Database:Unavailable or Service:Slow. For more information, see "Specifying Correlation Rule Symptoms" on page 328.

6 Specify Correlation Rule Cause

In this step, you specify the event that you want to define as the cause in a correlation rule. You define the cause of a correlation rule by specifying an indicator value used to monitor a particular event in your IT environment, for example, Network:Unreachable. For more information, see "Specifying Correlation Rule Causes" on page 329.

⚓ Creating Event Correlation Rules

In this task, you learn how to create a correlation rule. Correlation rules enable you to understand more quickly how to solve problems by distinguishing between events that are the symptoms of a problem and events that are causes.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To create a correlation rule:

1 Open the Correlation Rules manager:

   Admin > **Operations Management** > **Design Operations Content** > **Correlation Rules**

2 In the Correlation Rules pane, select the ✳ button. The Create New Correlation Rule dialog box opens.

3 Type a name, display name, and description for the new correlation rule.

4 Select a topology view to determine which configuration item types are available for inclusion in the new correlation rule. For more information about selecting topology views in correlation rules, see "Selecting Topology Views" on page 325.

5 Select **Active** to enable the rule during runtime. By default it is disabled.

   Inactive rules are identified with diagonal black line through their icons in the Correlation Rules pane.

6 *Optional:* Specify a configuration time window. Select the check box and set the time period for the correlation rule you are creating. The range is from 0 to 9999 seconds. By default it is not enabled and the global value is used. 0 seconds also mean it is not enabled and the global setting is used.

   Correlation Time Window sets the period of time in seconds that correlation rules wait for all required events to occur before reporting the cause event and emptying the correlation rule cache.

Cause and symptom events must arrive within that time frame in the correlation engine to be considered for correlation. A time window starts when a first cause or symptom event arrives that cannot be correlated with any other event.

Default value is 960 seconds (16 minutes). You can change this global value. For details, see "Topology-Based Event Correlation Settings" on page 670.

7 Select **OK** to start creating the correlation rule.

8 In the Finish Creating Correlation Rule pane, specify a valid the Rule Topology with cause and symptoms. For more information about selecting topology views in correlation rules, see "Defining the Rule Topology" on page 326.

9 Select the 💾 button to save the completed the correlation rule.

⚓ Selecting Topology Views

In this task, you learn how to use a topology view to specify which configuration item types you want to use in a correlation rule. Topology views reduce and refine the number configuration item types that you can use in the correlation rule to a more manageable level.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To select a topology view for a correlation rule:

1 Open the Correlation Rules manager:

   Admin > **Operations Management** > **Design Operations Content** > **Correlation Rules**

2 In the Rule Topology pane, use the **View** list to choose a topology view. The view you choose specifies the configuration item types that you want to use in the new correlation rule as well as the topological relationships between the configuration item types.

Note: When you create a new rule, the View list displays all known views. After you select a view, the View list displays only those views that refer to any of the configuration item types present in the currently selected view.

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3 If the rule you want to use is not present in the View list, use the View Manager to configure the view.

   For more information about topology views in correlation rules, see "Event Correlation Rule Topology" on page 317 and "Rule Topology Pane" on page 338.

🔧 Defining the Rule Topology

In this task, you use the Rule Topology pane to specify the configuration item types that you want to include in a correlation rule and what relationships and dependencies exist between the various configuration item types. A relationship must exist between the configuration item types in a rule. The Correlation Rules manager does not allow you to save an invalid rule.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To define the topology of a correlation rule:

1 Open the Correlation Rules manager:

   Admin > **Operations Management** > **Design Operations Content** > **Correlation Rules**

2 In the Rule Topology pane, use the **View** list to choose a topology view. The view you choose must contain the configuration item types that you want to use in the new correlation rule.

3 Specify the topology of the correlation rule by highlighting the path between the configuration item types that you want to associate in the correlation rule. The rule topology shows the relationships between all the configuration item types in the chosen view. If there is more than one path between the configuration item types specified as symptoms and cause in the correlation rule, the shortest path is taken. If you want to use an alternative one, you must make the selection manually.

   When creating or modifying rules, it may not always be obvious when a rule is correctly specified. To guide you through correlation rule creation, short explanations are provided at the top of the pane.

Information presented in red indicates that there is an error or omission in the correlation rule. Follow the guidance to correct the error. If it proves difficult to create an error-free rule, use the Rebind button to create a new binding between the cause and the symptoms. The rebind automatically removes all bindings and adds the shortest path between the cause and the symptoms.

Information presented in blue indicates that the rule is correctly specified and serves as a reminder to save the modified rule.

Tip: You highlight a path by clicking the links and objects in the chosen path. Active links are colored blue, inactive links are colored grey.

For more information about rule-topology views in correlation rules, see "Event Correlation Rule Topology" on page 317 and "Rule Topology Pane" on page 338.

🔧 Specifying Correlation Rule Symptoms

In this task, you learn how to specify one or more events as symptoms in a correlation rule. You define the symptoms of a correlation rule by specifying one or more indicator values used to monitor particular events in your IT environment, for example, Database:*Unavailable* or Service:*Slow*.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To specify symptoms for a correlation rule:

1 Open the Correlation Rules manager:

Admin > **Operations Management** > **Design Operations Content** > **Correlation Rules**

2 Create a new (or open an existing) correlation rule. For more information about creating correlation rules, see "Creating Event Correlation Rules" on page 323.

3 In the Rule Topology pane, select the configuration item type, the indicator value of which you want to use as a symptom in the currently selected correlation rule.

4 In the Indicators pane, expand the indicator containing the indicator value you want to specify as a symptom in the currently selected correlation rule.

5 Right-click the indicator value you want to use as a symptom in the correlation rule, and select **Add as a Symptom** from the context menu.

The selected indicator value should appear in the list of symptoms and causes in the Symptoms and Causes pane.

🏷 Specifying Correlation Rule Causes

In this task, you learn how to specify the event that you want to define as the *cause* in a correlation rule. You define the cause of a correlation rule by specifying an indicator value used to monitor a particular event in your IT environment, for example: Network:*Unreachable*.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To specify causes in a correlation rule:

1 Open the Correlation Rules manager:

   Admin > **Operations Management** > **Design Operations Content** > **Correlation Rules**

2 Create a new (or open an existing) correlation rule. For more information about creating correlation rules, see "Creating Event Correlation Rules" on page 323.

3 In the Rule Topology pane, select the configuration item type, the indicator value of which you want to define as the cause in the currently selected correlation rule.

4 Right-click the indicator value you want to use as a cause in the correlation rule, and select **Set as Cause** from the context menu.

   The selected indicator value should appear in the list of symptoms and causes in the Symptoms and Causes pane.

🛠 Setting the Correlation Time Limit

In this task, you learn how to set the period of time that correlation rules wait for all required events to occur before reporting the cause event and emptying the correlation rule cache.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To set the time limit for correlation rules:

1 Open the Infrastructure Settings manager:

Admin > **Platform** > **Setup and Maintenance** > **Infrastructure Settings**

2 In the **Applications** list, set the context to **Operations Management**.

3 In the Topology-Based Event Correlation Settings section, select the 🖉 button for the entry: Correlation Time Window.

4 In the Edit Setting dialog box, enter the time limit (in seconds) you want to set in the Value box. The default is 240 seconds.

5 Select **Save** to apply the new time setting immediately.

⚓ Setting the Correlation Auto-Extend Time

In this task, you learn how to set event correlation to automatically extend the correlation time window whenever an additional symptom is correlated to the same cause. Each time that an event is correlated with a problem, the time period set in the correlation time window is restarted to help enable the correlation of a greater proportion of symptoms associated with the original event.

Tip: For information on button actions, see "Correlation Rules Manager Graphical User Interface" on page 332.

To set Auto-Extend for correlation rules:

1 Open the Infrastructure Settings manager:

Admin > **Platform** > **Setup and Maintenance** > **Infrastructure Settings**

2 In the **Applications** list, set the context to **Operations Management**.

3 In the Topology-Based Event Correlation Settings section, select the ✎ button for the entry: Auto-Extend Time Window Mode.

4 In the Edit Setting dialog box, set the Value to **true**.

5 Select **Save** to apply the new time setting immediately.

🔍 Correlation Rules Manager Graphical User Interface

This section describes in detail the information displayed in the Correlation Rules manager. The information in this section describes the buttons, icons, labels, and menu options that you use to create the correlation rules that help users manage the events that occur in your IT environment. In this section, you can find information about the following topics:

➤ **Correlation Rules Pane**

Displays a list of all available correlation rules. The list includes both the rules from the standard content packs and any rules that you have defined and saved. For more information, see "Correlation Rules Pane" on page 333.

Each correlation rule can also incorporate lists of rules that are related to the cause and symptom of the selected rule.

➤ **Rule Topology Pane**

Displays a graphical version of the selected correlation rule, including the CI types and all relationships defined in the rule. For more information, see "Rule Topology Pane" on page 338.

➤ **Indicators pane**

Displays the indicators for the currently selected configuration item type in the rule. For more information, see "Correlation Rule Indicators Pane" on page 341.

➤ **Symptoms and Causes Pane**

Displays a list of the indicators that the currently selected correlation rule references either as a symptom or as a cause. For more information, see "Correlation Rule Symptoms and Causes Pane" on page 344.

Information about the options available in the GUI and the context-sensitive menus for each of the individual panes in the Correlation Rules manager are available in the following topics:

Correlation Rules Pane

The Correlation Rules pane in the Correlation Rules manager displays a list of all available correlation rules. The list includes both the default rules and any rules that you have defined and saved.

In addition, the Correlation Rules pane includes information about correlation rules, the symptoms and causes of which overlap to form parent-child relationships. Parent-child relationships contain symptoms or causes that feature in a chain of rules defined for multiple domains.

The Correlation Rules pane displays the GUI elements listed in the following table.

GUI Element	Description
	Refreshes the contents of the Correlation Rules list. Use if new rules becomes available while you are working.
	Opens the Create New Correlation Rule dialog box, which you use to define the details of a new (or modify an existing) correlation rule. For more information, see "Creating Event Correlation Rules" on page 323.
	Opens the basic properties of the selected correlation rule in the Edit Properties for Correlation Rule dialog box. For more information, see "Edit Properties for Correlation Rule Dialog" on page 348.
	Completes the new correlation rule creation or saves the modifications you have made to an existing correlation rule. **Note:** A correlation rule must be made active before it can be used.
	Discards all modifications made while creating or editing the rule topology of the currently selected correlation rule. When editing, the saved version of the selected correlation rule is reloaded from the database.
	Deletes the selected correlation rule from the database.

GUI Element	Description
	Toggle Display of Cross Rule Relations: Toggles between a flat list of correlation rules and a tree that shows how each rule is linked to other rules.
	Toggle Sorting by Cause CI Type: Toggles between a correlation rule list sorted alphabetically and a list sorted by the cause CI type name.
	Expand Selection: Expands the list to display items belonging to the selected group.
	Collapse Others: Collapses all open branches except for the selected branch.
	Find Matching CIs: Show all CIs that match the topology specified in the rule and allows to send test events to test the correlation rule.
	Displays help about the active window, pane, or dialog box.

The context-sensitive menus in the Correlation Rules pane of the Correlation Rules manager include the following options:

GUI Element (A-Z)	Description
Cancel Edit or Create	Discards all modifications made while creating or editing the rule topology of the currently selected correlation rule. When editing, the saved version of the selected correlation rule is reloaded from the database.
Collapse Others	Collapses all open branches except for the selected branch.
Delete Item	Deletes the selected correlation rule from the database.
Edit Properties	Opens the basic properties of the selected correlation rule in the Edit Properties for Correlation Rule dialog box. For more information, see "Edit Properties for Correlation Rule Dialog" on page 348.
Expand Selection	Expands the list to display items belonging to the selected group.

GUI Element (A-Z)	Description
Find Matching CIs	Show all CIs that match the topology specified in the rule and allows to send test events to test the correlation rule.
New Item	Opens the Create New Correlation Rule dialog box, which you use to define the details of a new (or modify an existing) correlation rule. For more information, see "Creating Event Correlation Rules" on page 323.
Save Item	Completes the new correlation rule creation or saves the modifications you have made to an existing correlation rule. Saving a correlation rule enables it immediately.
Toggle Display of Cross Rule Relations	Toggles between a flat list of correlation rules and a tree that shows how each rule is linked to other rules.
Toggle Sorting by Cause CI Type	Toggles between a correlation rule list sorted alphabetically and a list sorted by the cause CI type name.

View Correlation Rule Pane

The View Correlation Rule pane in the Correlation Rules manager is also used during the creation of new Correlation Rules when it is labelled Finish Creating Correlation Rule.

The View Correlation Rule pane in the Correlation Rules manager contains the following subpanes:

The View Correlation Rules pane displays the GUI elements listed in the following table.

GUI Element	Description
	Toggle Display of Node Details: Opens the Details window for the selected Rule Topology. The Details window displays: ➤ **Symptoms and Causes** Symptoms or causes mapped to the selected CI type. ➤ **Cross Rule Navigation** Shows rules where the selected symptom is a cause or the selected cause is a symptom.
	Binds one or more symptoms to the cause by taking the shortest path. All other bindings are removed.
	Displays help about the active window, pane, or dialog box.

When creating or modifying rules, it may not always be obvious when a rule is correctly specified. To guide you through correlation rule creation, short explanations are provided at the top of the pane.

Information presented in red indicates that there is an error or omission in the correlation rule. Follow the guidance to correct the error. If it proves difficult to create an error-free rule, delete bindings and use the Rebind button to create a new binding between the cause and the symptom. The rebind automatically uses the shortest path between the cause and the symptom.

Information presented in blue indicates that the rule is correctly specified and serves as a reminder to save the modified rule.

🔍 Rule Topology Pane

The Rule Topology pane in the Correlation Rules manager displays a graphical representation of the selected correlation rule, including all the configuration item types configured in the rule as well as any relationships between the included configuration item types and other correlation rules that use the same indicator values. The Correlation Rules manager uses color to indicate the role of a configuration item type in a correlation rule, for example, to show if a configuration item is configured as a symptom (blue) or a cause (orange).

Tip: Configuration item types are only displayed in the Rule Topology pane if you select a rule or apply a view from the View list.

The Rule Topology pane displays the GUI elements listed in the following table. In the table, unlabeled GUI elements are shown in angle brackets (<>).

GUI Element (A-Z)	Description
<Dark Blue background>	Symptom CI type.
<Light Blue background>	Not cause or symptom CI type, but CI type is part of rule topology.
<Orange background>	Cause CI type.
<Pink frame>	Selected CI type.
<no background color>	CI type is not part of the rule.

GUI Element (A-Z)	Description
	Indicates that the configuration item type has an indicator value that is configured as a symptom in the currently selected correlation rule.
	Tip: To see which indicator values are configured in the correlation rule. Select Toggle Display of Node Details button which opens the Details window for the selected Rule Topology.
	Indicates that the configuration item type has an indicator value that is configured as a cause in the currently selected correlation rule.
	Indicates that the configuration item type has an indicator value that is configured not only as a *cause* in the currently selected correlation rule, but also as a symptom in another rule. The name of the other correlation rule is displayed as a hyperlink above the configuration item symbol.
	Indicates that the configuration item type has an indicator value that is configured not only as a symptom in the currently selected correlation rule, but also as a cause in another rule. The name of the other correlation rule is displayed as a hyperlink below the configuration item symbol.
	Adds the highlighted link (constraint) to the correlation rule. Adding a link enables the path between the linked objects in the context of the correlation rule, which is a requirement for topology-based event correlation. It does not change the UCMDB view model in any way.
	Removes the highlighted link (constraint) from the correlation rule you are editing. The link between the two objects is no longer recognized in the context of the correlation rule, and any rule that relies on this link no longer works. Removing a link from a correlation rule does not change the UCMDB view model in any way.
	Displays help about the active window, pane, or dialog box.

GUI Element (A-Z)	Description
Layout	Selects alternative ways of viewing the Rule Topology diagram. There are three options to chose from: Hierarchical, Circular, and Concentric Radial.
Levels	Selects the depth of topology levels displayed in the Rule Topology diagram.
View	Displays the UCMDB views you can use to define which configuration item types are available for inclusion in the currently selected correlation rule. All views are available in the list before you select a view. After you select a view, the views displayed in the list are restricted to those which contain any of the configuration item types in the selected correlation rule. If the Rules Topology pane is empty, see "Rules Topology Pane is Empty" on page 351.
Zoom	Controls the size of the displayed Rule Topology diagram.

🔍 Correlation Rule Indicators Pane

The Indicators pane in the Correlation Rules manager displays a list of the indicators assigned to the configuration item type selected in the Rule Topology pane. You can select values from any of the listed indicators for use in the correlation rule you are designing. You can also add new indicators to (or modify existing indicators in) the displayed list and use any of the new or modified values.

Note: Any indicators you add or modify for a configuration item type in the Correlation Rules manager are also available outside of the context of the Correlation Rules manager.

The Correlation Rule Indicators pane displays the GUI elements listed in the following table.

GUI Element	Description
⟳	Refreshes the contents of the Indicators list. Use if new indicators becomes available while you are working.
✳	Opens the Create New Indicator wizard, which enables you to define a new indicator and add it to the list already assigned to the currently selected configuration item type. For more information, see "Indicator Editor" on page 292.
✎	Opens the Edit Indicator dialog box, which enables you to modify an existing indicator and use the modified values in the current correlation rule. For more information, see "Indicator Editor" on page 292.
✖	Deletes the selected indicator from the database. If any correlation rule contains a reference to the deleted indicator, HP OMi displays an error message and does not carry out the deletion request.
🗂	Toggles between a list containing all indicators and a list divided into health indicators and event type indicators.

GUI Element	Description
	Adds the selected indicator value as a symptom for the configuration item type selected in the Rule Topology pane.
	Sets the selected indicator value as a cause for the configuration item type selected in the Rule Topology pane.
	Displays help about the active window, pane, or dialog box.

The context-sensitive menu in the Indicators pane of the Correlation Rules manager includes the following options:

GUI Element (A-Z)	Description
Add as a Cause	Adds the selected indicator value to the correlation rule you are editing and configures the indicator value as a cause. A *cause* in a correlation rule is an event that is the main reason for a problem and *causes* other events to occur.
Add as a Symptom	Adds the selected indicator value to the correlation rule you are editing and configures the indicator value as a symptom. A *symptom* in a correlation rule is an event that occurs as a result of another event.
Delete Item	Deletes the selected indicator from the database. If any correlation rule contains a reference to the deleted indicator, HP OMi displays an error message and does not carry out the deletion request.
Edit Item	Opens the Edit Indicator dialog box, which enables you to modify an existing indicator and use the modified values in the current correlation rule. For more information, see "Indicator Editor" on page 292.

GUI Element (A-Z)	Description
New Item	Opens the Create New Indicator wizard, which enables you to define a new indicator and add it to the list already assigned to the currently selected configuration item type. For more information, see "Indicator Editor" on page 292.
Toggle Grouping by Type	Toggles between a list containing all indicators and a list divided into health indicators and event type indicators.

🔍 Correlation Rule Symptoms and Causes Pane

The Symptoms and Causes pane in the Correlation Rules manager displays a list of the indicators and values configured for the configuration types of the correlation rule. These configuration types are displayed in the Rules Topology pane and indicates if the value is a cause or a symptom in the selected rule. Selecting a symptom or the cause in Rule Topology pane highlights the indicator value in the Indicators pane.

You can also add new event indicator values to the displayed list.

Tip: To add an indicator value to a correlation rule as a symptom or a cause, either right-click the value and use the options displayed in the popup menu.

The Correlation Rule Symptoms and Causes pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
✖	Deletes the selected indicator from the list of indicators included in the correlation rule as either a symptom or a cause.
❓	Displays help about the active window, pane, or dialog box.
CI Type	Name of the configuration item type to which the listed indicator is assigned.
Indicator	Name of the indicator referenced in the currently selected correlation rule.
Indicator Value	Name of the indicator value referenced in the currently selected correlation rule.
Type	Indicates if the indicator is defined as a symptom or a cause in the currently selected correlation rule.

The context-sensitive menu in the Symptoms and Causes pane of the Correlation Rules manager includes the following options:

GUI Element (A-Z)	Description
Delete Item	Removes the selected indicator from the list of indicators assigned to the currently selected correlation rule.

🔍 Create New Correlation Rule Dialog

You use the New Correlation Rule dialog box to define the properties of a new correlation rule, for example, name, description, and description. Select the ✳ button to open the New Correlation Rule dialog box.

The Create New Correlation Rule dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Active	Used to enable or disable the rule during runtime. By default it is disabled.
Base on CMDB View	Selects the UCMDB view that you want to use as the basis for the correlation rule topology. Selecting a view displays in the Rule Topology pane only those configuration item types that are included in the view.
Cancel	Cancels any changes that you have made but not yet saved.
Display Name	Display name of the selected correlation rule used in the graphical user interface.
Description	Brief description of the correlation rule.
Help	Displays help about the active window, pane, or dialog box.
Name	Internal name of the selected correlation rule. Automatically generated from the Display Name value. The first character must be a letter (A-Z, a-z) or an underscore (_). All other characters can be a letter (A-Z, a-z), a number (0-9), or an underscore (_). Can be manually overwritten.

GUI Element (A-Z)	Description
OK	Saves the main definition of the new correlation rule. Define the rule topology to complete the correlation rule.
Time Window	Specifies a specific time period for the selected correlation rule. By default it is not enabled and the global value is used. 0 seconds also mean it is not enabled and the global setting is used. The range is from 0 to 9999 seconds.

🔍 Edit Properties for Correlation Rule Dialog

You use the Edit Properties for Correlation Rule dialog box to modify the properties of an existing correlation rule, for example, name and description. Select the 🖼 button to open the Edit Properties for Correlation Rule dialog box.

Note: The View Correlation Rule pane in the Correlation Rules manager is also used during the creation of new Correlation Rules when it is labelled Finish creating Correlation Rule.

The Edit Properties for Correlation Rule dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Active	Used to enable or disable the rule during runtime. By default it is disabled.
Cancel	Cancels any changes that you have made but not yet saved.
Description	Brief description of the correlation rule.
Display Name	Display name of the selected correlation rule used in the graphical user interface.
Help	Displays help about the active window, pane, or dialog box.
ID	Internal location of Correlation Rule (internal, read-only).
Name	Internal name of the selected correlation rule. Automatically generated from the Display Name value. The first character must be a letter (A-Z, a-z) or an underscore (_). All other characters can be a letter (A-Z, a-z), a number (0-9), or an underscore (_). Can be manually overwritten.

GUI Element (A-Z)	Description
OK	Saves the main definition of the new correlation rule. Define the rule topology to complete the correlation rule.
Time Window	Specifies a specific time period for the selected correlation rule. By default it is not enabled and the global value is used. 0 seconds also mean it is not enabled and the global setting is used. The range is from 0 to 9999 seconds.

Matching CIs for Correlation Rule Dialog

You use the Matching CIs for Correlation Rule dialog box to view all configuration items that match the selected correlation rule in the Correlation Rules pane.

To display the Matching CIs for Correlation Rule dialog box for a specific correlation rule, select the correlation rule and click the ⬛ button in the Correlation Rules pane of the Correlation Rules manager.

The Matching CIs for Correlation Rule dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Cause CI	Display name of the configuration item, the indicator values of which are configured as a cause in the selected correlation rule
CI Type	Name of the configuration item type to which the indicator referenced in the selected correlation rule is assigned
Close	Closes the Matching CIs for Correlation Rule dialog box.
Configuration Item	Name of the configuration item
Constraint Type	Role that the selected indicator value plays in the correlation rule (symptom or cause)
Help	Displays help about the active window, pane, or dialog box.
Indicator	Display name of the indicator, the value of which is referenced in the correlation rule
Indicator Value	Display name of the indicator value used in the correlation process
Send Test Event	Sends a sample event to HP OMi to test the correlation rule

🔍 Troubleshooting and Limitations

This section provides help for those people who are troubleshooting problems relating to event correlation, including creating, modifying, and enabling events.

Rules Topology Pane is Empty

➤ No rule is selected in the Correlation Rules pane

➤ No view is active in the Rules Topology pane

Indicators List is Empty

➤ No configuration item type is selected in the Rules Topology pane

➤ No indicator is defined for the selected CI type

Cannot Save Correlation Rule

➤ The rule is invalid or incomplete, for example:

 ➤ The rule does not have at least one *symptom* event

 ➤ The rule does not have a *cause* event

 ➤ The topology path is invalid

 ➤ The rule refers to a configuration item that is not resolvable

11

View Mappings

This chapter describes the View Mappings manager used to map and manage top views.

The information provided helps you to understand how to use the View Mappings manager to configure and manage the HP OMi top views.

This chapter includes:

Concepts

View Mappings Manager

The View Mappings manager is used to map existing top views to one or more configuration item types and manage the list of mapped views. The View Mappings manager enables users to perform the following management-related tasks:

➤ Map an existing UCMDB view to one or more configuration item types

➤ Manage the list of mapped UCMDB views

➤ Display the list of mapped top views in the Selected View list located in the Top View pane of the Health Perspective tab

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Note: Only users with the appropriate access permissions can use Operations Management Administration. For more information about user management, see "HP OMi User Authentication" on page 628.

Top View Management

Top views are the UCMDB views that HP OMi uses to display configuration items in the Top View pane of the Health Perspective tab. A view displays a defined subset of the UCMDB IT Universe model, for example, only configuration items that relate to a specific area of interest such as, Storage or Databases.

Top views are not the same as topology views. Top views have one parent and the same element can appear more than once if relationships require. Topology views are a flat representation of the database elements where elements appear only once.

Generally, views enable you to refine both the type and the amount of information displayed. For example, selecting a view in the Event Browser CI Tree refines the number and type of configuration item types loaded from the UCMDB and displayed in the list of available configuration item types.

Similarly, you can restrict the amount and type of information presented in the Top View pane by selecting a view from the Selected View list. The contents of the Select View list depend on the configuration items in the top view, which are themselves related to the event selected in the Event Browser, and the views mapped to them in View Mappings.

Users with the appropriate authorization can use the Content Packs manager to import and export the list of mapped views displayed in the Selected View list. The Import and Export features of the Content Packs manager provide a convenient way for software administrators to exchange lists of mapped views between instances of HP OMi. For more information about importing and exporting content, and particularly the list of mapped views that appears in the Top View pane, see "Exchanging a Content Pack" on page 586.

Note: Only users with the appropriate access permissions can use Operations Management Administration. For more information about user management, see "HP OMi User Authentication" on page 628.

⚙ Mapping Top Views

HP OMi enables users with the appropriate authorization to map views to configuration item types. The mapped views appear in the Selected Views list displayed in the Top View pane of the Health Perspective tab.

Views enable users to refine both the type and the amount of information displayed. For example, selecting a view in the Event Perspective CI Tree refines the number and type of configuration item types loaded from the UCMDB and displayed in the list of available configuration item types. Similarly, users can restrict the amount and type of information presented in the Top View pane by selecting a view from Selected View list. The views displayed in the Selected View list is determined by the view mappings defined in the View Mappings manager.

You can also use the View Mappings manager to filter the views that the user sees in the Selected View list according to event category, such as DB or Storage. In this way, you refine the available views to those that make most sense for a given usage model. For example, if you map the DB2 view to the configuration item type DB Tablespace, you can also specify in the mapping rule that only views containing configuration item types concerning events belonging to event categories DB or Storage (or both) are visible.

For more information about the contents of the Top View pane and, in particular, the contents of the Selected Views list, see "Top View" on page 109.

🏹 Searching and Filtering CI Types

In this task, you learn how to search for specific CI types and view CI types that match specified filter criteria. There are two filters:

➤ Show only CI types with assigned view mappings

➤ View (Show CI types contained within a specified view)

Tip: For information on button actions, see "View Mappings Manager Graphical User Interface" on page 362.

Searching for a CI Type

You can use the Search field to locate the first instance of the CI type name or part of a name that you specify.

To search for a specified CI type:

1 Open the View Mappings manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **View Mappings**

2 In the Search field, enter a string.

Note: The search string must be at least three characters long. Searching is started as soon as the third character is entered and the first match is highlighted. This prerequisite avoids searches being started too often and resources being blocked. Names with less than three characters cannot be found.

The first CI type in the CI Types tree to match the specified string is highlighted. If that CI is not initially visible, the CI tree is expanded to display the CI Type.

3 Select the 🔍 button to find the next occurrence of the CI Type for which you are searching.

Finding CI Types with Assigned View Mappings

You can use the filter to display all CI types that have content assigned to them.

To filter the CI tree to show only CI types with assigned view mappings:

1 Open the View Mappings manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **View Mappings**

2 In the Filter pane, select **Show only CI types with assigned view maps**.

The CI Types pane displays only those CI types that have view mappings assigned.

Note: You can use the Show only CI types with assigned view maps filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned view mappings.

Filtering the CI Types Tree with a View

You can use the filter to display all CI types that are contained within a certain view.

To filter the CI tree with a view:

1 Open the View Mappings manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **View Mappings**

2 In the Search pane, select **View**.

The View field becomes active.

3 Select the Browse Views (...) button to open the Views selection dialog box.

4 Select the view that you want to use, and select **OK** or double-click the view.

The CI Types tree is updated to display only the CI types that match the view selected.

You can use the Expand ( ) and Collapse ( ) buttons to fully expand or collapse the CI tree. If a filter is set, only those items selected by the filter are expanded.

If no item matches the filter, the No CI type found message is displayed.

Note: You can use the Show only CI types with assigned view maps and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned view mappings.

⚒ Mapping a View to a Configuration Item Type

This task shows you how to map a view to a configuration item type and add the newly created view mapping to the complete list of the HP OMi views that are currently mapped to configuration item types.

Tip: For information on button actions, see "View Mappings Manager Graphical User Interface" on page 362.

To map an HP OMi view to a CI type:

1 Open the View Mappings manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **View Mappings**

2 In the CI Tree pane, select the configuration item that you want to map to a view.

3 In the View Mappings manager, select the ✳ button to open the Create New View Mapping dialog box.

4 In the Create New View Mapping dialog box, select the Browse (...) button to open the Select a View dialog box, which display a list of the views that contain a reference to the selected configuration item (and its ancestors).

5 In the Select a View dialog box, choose the view that you want to map to the currently selected configuration item and select **OK**.

6 In the Create New View Mapping dialog box, make sure that the view you selected in the previous step is now displayed in the View field and select **OK** to add it to the list of view mapping definitions.

Tip: The view mapping tab displays view mapping definitions in **bold** font when they are inherited from a parent CI type.

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7 If you want to further restrict the views displayed according to event category, select the new view mapping definition and type all or part of the name of an event category into the Event Category Pattern box using standard regular expression, if desired. If you want to specify multiple event categories, use the pipe symbol (|), for example:

```
DB | Storage
```

8 Select **OK** to close the Create New View Mapping dialog box.

9 Open the Health Perspective tab:

Admin > **Operations Management** > **Design Operations Content** > **View Mappings**

10 In the Event Browser pane, select a database related event and, if you set an additional event category filter, one that belongs to one of the event categories specified in the filter.

11 In the Top View pane, make sure that the new view mapping definition is displayed in the Selected Views list.

🔍 View Mappings Manager Graphical User Interface

This section lists and describes the layout of the View Mappings manager.

➤ **CI Types**

Displays a list of all available configuration item types to which you can map a top view. For more information, see "CI Types Pane" on page 363.

➤ **View Mappings**

Displays a list of the mapped views. For more information, see "View Mappings Pane" on page 366.

CI Types Pane

The CI Types pane in the View Mappings Manager enables you to choose the configuration item types that you want to map to a view.

The CI Types pane displays the GUI elements listed in the following table.

Tip: If you want to modify or manage configuration item types, use the CI Types Manager:

Admin > **Universal CMDB** > **Modeling** > **CI Type Manager**

GUI Element (A-Z)	Description
	Refreshes the contents of the configuration item tree. Use if new content becomes available while you are working or you have uploaded new contents (for example, from another user or the command-line interface).
	Expand Selection: Expands the list to display items belonging to the selected group.
	Collapse Others: Collapses all open branches except for the selected branch.
	Finds the next occurrence of the CI Type for which you are searching. For more information about searching, see "Searching and Filtering CI Types" on page 357.
	Collapses the Filter pane.
	Expands the Filter pane for use.
...	Opens the Views dialog box from which you can select a view with which to filter CI types.
	Displays help about the active window, pane, or dialog box.

GUI Element (A-Z)	Description
CI Types	Hierarchical list representing the configuration item types that you want to monitor in your IT environment. To display the event type indicators, KPIs, and mapping rules associated with a configuration item, browse to and select the item of interest. The various tabs display the details.
	If the CI Types list is filtered, (filtered) is displayed next to the CI Types title.
	When CI types and their children have no objects assigned, their entries appear dimmed.
	When objects are directly assigned to a CI type, their entries appear bolded.
Filter	Used to search for specific CI types and view CI types that match specified filter criteria. There are two filters:
	➤ Show only CI types with assigned view maps
	➤ View (Shows CI types contained within a specified view)
	Note: If you apply a view to the filter CI Types tree which removes all CI types with assignments, the IT Universe entry remains in normal text, indicating that assignments exist. Remove the view, or select a more appropriate view to display the CI types with assignments that you require.
	For more information about searching and filtering, see "Searching and Filtering CI Types" on page 357.

CI Types Pane Context-Sensitive Menu

The context-sensitive menu in the CI Types pane includes the following elements.

GUI Element (A-Z)	Description
Collapse Others	Collapses all open branches except for the selected branch.
Expand Selection	Expands the list to display items belonging to the selected group.

🔍 View Mappings Pane

The View Mappings manager enables you to choose the view you want to map to the currently selected configuration item.

The View Mappings pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
🔄	Refreshes the list of view mappings.
✳	Opens the Create New View Mapping dialog box, to create a new view mapping definition. Enter a description and select a view.
✏	Displays the Edit View Mapping dialog box, which enables you to modify the currently selected View Mapping.
✖	Removes the selected view mapping definition from the list of view mappings displayed.
❓	Displays help about the active window, pane, or dialog box.
Event Category Pattern	You can restrict the views displayed in the Selected View list of the Top View pane in the Health Perspective tab based on the event category, for example, DB or Storage. Enter a regular expression that matches all or part of the event category name that you want to use to filter the displayed views.
Mapping Description	Short description of the mapping listed in the View column.
Precedence	The view with the highest precedence is shown in the Top View as default. The precedence of inherited view mappings is also taken into account. The valid Precedence range is 1 to 1000.
View	Name of the view mapped to the selected configuration item type.

🔍 Select View Dialog Box

The View Mapping Select View dialog box enables you to choose the view you want to map to the currently selected configuration item.

The View Mapping Select View dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Description	Short description of the view listed in the Views containing CI types column.
Help	Help instructions for the currently active window or dialog box.
Views containing CI types of <CI_Type>	List of the views in the UCMDB that contain the configuration item type currently selected in the CI Types pane, for example: IT Universe.

🔍 New and Edit View Mapping Dialogs

The Create New View Mapping dialog box enables you to map a view to the currently selected configuration item. From the and Edit View Mapping dialog box, you can edit existing view mappings.

The Create New View Mapping and Edit View Mapping dialog boxes display the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Cancel	To cancel the changes.
Event Category Pattern	Regular expression that matches all or part of the event category name that you want to use to filter the displayed views, for example: DBStorage, or Tablespace.
Help	Help instructions for the currently active window or dialog box.
ID	Unique identification number for internal purposes only.

GUI Element (A-Z)	Description
Mapping Description	A short explanation of the application of the mapping.
Precedence	The view with the highest precedence is shown in the Top View as default. The precedence of inherited view mappings is also taken into account. The valid Precedence range is 1 to 1000.
OK	To apply the changes.
View	Name of the view that you want to map to the CI type currently selected in the CI Types pane, for example: IT Universe.

🔍 Troubleshooting and Limitations

This section provides help on troubleshooting problems with the View Mappings manager.

No Content in the View Mappings Pane

➤ No configuration item type is selected. Select a configuration item type in the CI Types pane of the View Mappings manager.

Select a View Dialog Box Does not Contain Desired View

➤ The desired view does not contain a reference to the configuration item type to which you want to map a view. Either add the configuration item type to the view using UCMDB tools, or map a view to another configuration item type.

Incorrect Views Displayed in Top View Pane

➤ No, or incorrectly defined, event category is specified in the Event Category Pattern box. If necessary, modify the string (or regular expression) specified in the Event Category Pattern box when configuring the view mapping definition. Remember to explicitly save the modified definition.

12

Tools

This chapter describes how to configure tools in the administration component of HP OMi. It provides information that helps you understand how to configure and manage the HP OMi tools for its users.

This chapter includes:

Concepts

Tasks

Reference

🎲 Tools Management

You can add your own tools to the standard tools that HP OMi provides to enable users and administrators to perform the basic tasks they need to carry out their designated roles. The tools you configure with the Tools manager are assigned to a particular configuration item type, for example, Host, Router, or Database. You can launch tools available for an event from the context-sensitive menus. The context-sensitive Tools menu is available for configuration item types in the following locations:

➤ The CI Tree View pane in the Event Perspective or Health Perspective tabs

➤ The Top View pane in the Health Perspective tab

➤ The Dashboard: Top View and Console

The same context-sensitive menus with the same tools are also available for any event relating to a configuration item type for which tools are configured and active.

Tip: Users are more likely to access and use the tools from the Event Browser than in a CI Tree.

You can restrict access to Administration features by using the user authorization. User authorization enables you to prompt users to supply credentials, such as a name and password, to launch an Administration manager.

Tool categories are used to grant controlled access to tools. Each tool is assigned a category, and for users to be able to use the tools with a certain category, they must be granted execution permissions for this Tool Category.

If you want to grant a user access to a specific tool category, you grant execution permissions explicitly for that Operations Management tool category. If you want to grant access to all tool categories for a user, you grant execution permissions for all Operations Management tool categories (Tool Categories top-level entry). For more information about user authorizations, see "HP OMi User Authentication" on page 628.

🍥 Tool Creation

HP OMi enables you to create tools that you can configure to help individual users (or groups of users) to perform specific tasks on specific configuration item types. If there are lots of users with responsibilities in many different areas, which also require expertise in different versions of applications and operating systems, you can also create multiple instances of the same tool.

When you create a tool, you also assign it to a particular configuration item type. For example, you can configure a tool that checks the status of an Oracle Database instance and assign the tool to the configuration item type Oracle Database. Similarly, you can create a tool that checks for firmware updates and assign the new tool to the configuration item type Router.

You can also create a tool for configuration item type Host of Windows that enables users to search for information about issues concerning patches and problems with the operating system running on the host. Using known attributes for the configuration item type Host, such as ci.host_os and ci.host_osversion, the tool automatically recognizes the type and version of the operating system. The user needs to only add keywords to refine the search. The tool runs the command shown in the following example:

```
http://search.technet.microsoft.com/Default.aspx?Brand=technet&Query=${ci.host_os}
${ci.host_osversion} ${Additional Keywords}
```

If you are managing multiple versions of Oracle Databases, where the tool requires different parameters and options to check the status of the Oracle Database processes, you can create copies of the most appropriate tool and customize it for the various Oracle versions using the duplicate feature. Each tool is dedicated to a specific version of Oracle.

Note: HP OMi enables you to restrict access to tools by requiring user authentication. For more information about user authorizations, see "HP OMi User Authentication" on page 628.

🍀 Tool Inheritance

When you create tools, you associate them with a particular configuration item type, for example, Host or Router. When you run a tool, you run it from a configuration item, which is an instance of a configuration item type. A Configuration item represents a real object in your monitored environment, for example, a UNIX node, a VAX node, or a Cisco router.

If you configure a tool for a configuration item type, such as a Host, all configuration item types below Host in the hierarchy inherit the tool. As a result, a tool configured for the Host configuration item type is also be available for the configuration item types, Computer, Mainframe, VAX, and so on down the hierarchy.

The Tools manager indicates the configuration item type with which a tool is associated. The name of the configuration item type is displayed in parentheses alongside the tool in the Tools pane, for example: Ping (Host).

For more information about buttons, icons, and labels in the Tools manager, see "Tools Manager Graphical User Interface" on page 383.

⚓ Viewing Tools

In this task, you learn how to display a list of the tools currently available to the users configured in your environment.

To view a list of tools:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the CI Types pane, select the configuration item type for which you want to view tools.

The Tools pane displays a list of the tools configured for the selected configuration item type.

⚓ Searching and Filtering CI Types

In this task, you learn how to search for specific CI types and view CI types that match specified filter criteria. There are two filters:

➤ Show only CI types with assigned tools

➤ View (Show CI types contained within a specified view)

Tip: For information on button actions, see "Tools Manager Graphical User Interface" on page 383.

Searching for a CI Type

You can use the Search field to locate the first instance of the CI type name or part of a name that you specify.

To search for a specified CI type:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the Search field, enter a string.

Note: The search string must be at least three characters long. Searching is started as soon as the third character is entered and the first match is highlighted. This prerequisite avoids searches being started too often and resources being blocked. Names with less than three characters cannot be found.

The first CI type in the CI Types tree to match the specified string is highlighted. If that CI is not initially visible, the CI tree is expanded to display the CI Type.

3 Select the 🔍 button to find the next occurrence of the CI Type for which you are searching.

Finding CI Types with Assigned Tools

You can use the filter to display all CI types that have content assigned to them.

To filter the CI tree to show only CI types with assigned tools:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the Filter pane, select **Show only CI types with assigned tools**.

The CI Types pane displays only those CI types that have tools assigned.

Note: You can use the Show only CI types with assigned tools filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned tools.

Filtering the CI Types Tree with a View

You can use the filter to display all CI types that are contained within a certain view.

To filter the CI Types tree with a view:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the Search pane, select **View**.

The View field becomes active.

3 Select the Browse Views (...) button to open the Views selection dialog box.

4 Select the view that you want to use, and select **OK**.

The CI Types tree is updated to display only the CI types that match the view selected.

You can use the Expand (⬚) and Collapse (⬚) buttons to expand or collapse the CI tree. The **Expand** (⬚) button expands all CI types (but not content folders) which are under the selected CI type. The **Collapse** (⬚) button collapses all open nodes except for the selected node.

If no item matches the filter, the No CI type found message is displayed.

Note: You can use the Show only CI types with assigned tools filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned tools.

🔨 Creating Tools

In this task, you learn how to create a tool and make it available to the users configured in your environment.

To create a tool:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the CI Types pane, browse to and select the configuration item type for which you want to create a new tool.

3 Select the ✱ button to open the Create New Tool dialog box.

4 Enter a unique tool name, display name, and (optional) a description of the function of the tool.

5 Select a category for the tool. The Default category is the default selection. Tool categories are used to group tools that are to be accessible for a specific group of users. If a suitable category is not available, you can define a new category using the ✱ button in the Browse Tools Categories window. For details, see "Defining Tool Categories" on page 382.

6 Select **Next**.

7 Select the type of Tool to be created (Executable, Script, or URL), and select **Next**.

8 Complete the subsequent panes, for example:

Script: Script and target panes, and select **Finish**.

Executable: Command and target panes, and select **Finish**.

URL: URL pane, and select **Finish**.

For more information about the icons, labels, and options in the Create New Tool dialog box, see "Create New Tool and Edit Tool Dialogs" on page 390.

Note: For URLs, you can test your configuration before saving the settings.

---

9 Select **Finish** to save your new tool configuration.

🔨 Editing Tools

In this task, you learn how to modify an existing tool and make it available to the users configured in your environment.

Note: To simplify creating a tool that is similar to an existing tool, you can create duplicates of any existing tool using the 🗗 button.

To edit a tool:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the CI Types pane, browse to and select the configuration item type for which you want to modify an existing tool.

3 In the Tools pane, select the 🖉 button to open the Edit Tool dialog box.

The Edit Tool opens and displays the General Tool Information tab.

4 Modify the entries in any of the available tabs as required, for example:

Script: Script and target panes.

Executable: Command and target panes.

URL: URL pane.

for more information about the icons, labels, and options in the Create New Tool dialog box, see .

Note: For URLs, you can test your configuration before saving the settings.

---

5 Select **OK** to save your new tool configuration.

⚒ Defining Tool Categories

In this task, you learn how to define a new tool category and make it available for assigning to tools. This task can only be executed during the creation or modification of a tool. If you need a new tool category, select an existing tool and open the edit tool dialog box or use the ✳ button in the Browse Tools Categories window.

To define a new tool category:

1 Open the Tools manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Tools**

2 In the CI Types pane, browse to and select the configuration item type for which you want to create a new tool or edit an existing tool and the appropriate button: ✳ or ✐.

3 Select the **Other category** radio button.

4 Select the Browse (...) button. The Browse Tools Categories window opens.

5 Select the ✳ button in the Browse Tools Categories window. The Create New Category dialog box opens.

6 Enter a unique tool category name, display name, and a description of the requirement for the tool category.

7 Select **OK** to save your new tool category.

8 This category can now be assigned to the selected tool from the Browse Tool Categories window.

🔍 Tools Manager Graphical User Interface

This section describes the information displayed in the Tools manager user. The information in this section describes the buttons, icons, labels, and menu options that you use to create the tools that help users to manage the events that occur in the IT environment. In this section, you can find information about the following topics:

➤ **CI Types Pane**

Displays a list of all available CI Types to which you can assign a tool. For more information, see "CI Tree View" on page 56.

➤ **Tools Pane**

Displays a list of all available tools. The list includes both the default tools and any tools that you have defined and saved. For more information, see "Tools Pane" on page 387.

➤ **Tool Details Pane**

Displays an overview of the tool that is currently selected in the **Tools** pane. For more information, see "Tool Details Pane" on page 388.

➤ **Create New Tool**

A dialog box used to simplify the creation of tools. For more information, see "Creating Tools" on page 380.

➤ **Edit Tool**

A dialog box used to simplify the editing of tools. For more information, see "Editing Tools" on page 381.

CI Types Pane

The CI Types pane in the Tools manager displays an overview of the configuration item types that represent the objects in your IT environment. The list includes all default items, any items you have modified, and any items you have added, for example, with additional content packs.

Tip: If you want to modify or manage configuration item types, use the CI Types Manager:

Admin > Universal CMDB > Modeling > CI Type Manager

The information displayed in the CI Types pane of the Indicators manager includes the following details:

GUI Element (A-Z)	Description
C	Refreshes the contents of the configuration item tree. Use if new content becomes available while you are working or you have uploaded new contents (for example, from another user or the command-line interface).
	Expand Selection: Expands the list to display items belonging to the selected group.
	Collapse Others: Collapses all open branches except for the selected branch.
Q	Finds the next occurrence of the CI Type for which you are searching. For more information about searching, see "Searching and Filtering CI Types" on page 377.
☆	Collapses the Filter pane.
☆	Expands the Filter pane for use.
...	Opens the Views dialog box from which you can select a view with which to filter CI types.

GUI Element (A-Z)	Description
[?]	Displays help about the active window, pane, or dialog box.
CI Types	Hierarchical list representing the configuration item types that you want to monitor in your IT environment. To display the event type indicators, KPIs, and mapping rules associated with a configuration item, browse to and select the item of interest. The various tabs display the details.
	If the CI Types list is filtered, (filtered) is displayed next to the CI Types title.
	When CI types and their children have no objects assigned, their entries appear dimmed.
	When objects are directly assigned to a CI type, their entries appear bolded.
Filter	Used to search for specific CI types and view CI types that match specified filter criteria. There are two filters:
	➤ Show only CI types with assigned tools
	➤ View (Shows CI types contained within a specified view)
	Note: If you apply a view to the filter CI Types tree which removes all CI types with assignments, the IT Universe entry remains in normal text, indicating that assignments exist. Remove the view, or select a more appropriate view to display the CI types with assignments that you require.
	For more information about searching and filtering, see "Searching and Filtering CI Types" on page 377.

CI Types Pane Context-Sensitive Menu

The context-sensitive menu in the CI Types pane includes the following elements.

GUI Element (A-Z)	Description
Collapse Others	Collapses all open branches except for the selected branch.
Expand Selection	Expands the list to display items belonging to the selected group.

🔍 Tools Pane

The Tools pane displays in a list all the tools you have configured for your users.

The Tools pane displays the GUI elements listed in the following table.

GUI Element	Description
↻	Refreshes the contents of the tools list. Use if new content becomes available while you are working or you have uploaded new contents (for example, from another user or the command-line interface).
✳	Opens the Create New Tool dialog box, which enables you to define a new tool. For more information about the Create New Tool dialog box, see "Create New Tool and Edit Tool Dialogs" on page 390.
✏	Opens the Edit Tool dialog box, which enables you to modify the tool currently selected in the **Tools** pane. For more information about the Edit Tool dialog box, see "Create New Tool and Edit Tool Dialogs" on page 390.
✖	Deletes the selected tool from the database.
▣	Creates a duplicate of the selected tool. The name of a tool is for internal use only and must be unique.
❔	Displays help about the active window, pane, or dialog box.

🔍 Tool Details Pane

The Tool Details pane displays an overview of the tool that is currently selected in the list of tools in the Tools pane. There are three types of tools: Executables, Scripts, and URLs. The details displayed for each type of tool changes, depending on the type of tool selected.

The Tool Details pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
General	
Category	Used to grant controlled access to tools. Tools are assigned a category and users are given execute permissions to tool categories appropriate to their roles. For further details, see "Tools Management" on page 373.
Description	Brief description of the tool that is currently selected for viewing or modification. If the tool is one instance of the same tool, the description might include information about the operating system (or application) version it is intended for.
Display Name	External name for the tool. The external name is the name that you want to expose to users.
Name	Name you want to assign to the tool for internal use only. The name must be unique and is verified when saving.
Type	Type of tool configured, for example, URL.
Command Details	
Command	Command statement
Run as	Account under which the command must be run.
Run on	Target on which the tool (executable or script) can be run.

GUI Element (A-Z)	Description
Script Details	
Language	Language in which the script is written.
Run as	Account under which the script must be run.
Run on	Target on which the tool (executable or script) can be run.
Script	Text of the script to be run.
URL Details	
URL	URL to be run.

🔍 Create New Tool and Edit Tool Dialogs

The Create New Tool dialog enables you to create new tools. The Edit Tool dialog box enables you to modify the currently selected tool. Both dialog boxes are similar and divided into the following two, distinct sections:

➤ General

➤ Tool specific information such as Script, Command, URL, and Target.

The Create New Tool dialog also includes the following elements.

GUI Element (A-Z)	Description
Back	Steps back one pane within the tool creation wizard.
Cancel	Cancels the complete current new tool creation.
Finish	Completes the new tool creation and saves your configuration.
Help	Displays help about the active window, pane, or dialog box.
Next	Steps forward one pane within the tool creation wizard.

The Edit Tool dialog box also includes the following elements.

GUI Element (A-Z)	Description
Cancel	Cancels any changes that you have made but not yet saved.
Help	Displays help about the active window, pane, or dialog box.
OK	Saves any changes that you have made to the tool.

General

The General pane of the Edit Tool dialog box or the Create New Tool dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Category	Used to grant controlled access to tools. Tools are assigned a category and users are given execute permissions to tool categories appropriate to their roles. For further details, see "Tools Management" on page 373.
Default category	Tool category applied to all tools when an alternative category is not selected.
Description	Brief description of the tool you are modifying. The description typically includes information about the operating system (or application) version it is intended for.
Display Name	External name for the tool. The display name is the name you want to display to users. The display name can be changed for localization purposes.
Name	Short name for the tool for internal use only. The name must be unique. You cannot save a new tool if the name you choose is already in use.
Other category	Selected custom tool category.

Command

The Command pane of the Edit Tool dialog box or the Create New Tool dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Command	Command specification that is executed on tool launch.
Insert runtime parameters at cursor	If required, insert parameters into the command field. These parameters are replaced with values on tool launch. Possible parameters are: ➤ CI attributes ➤ Event attributes ➤ Infrastructure settings ➤ Monitoring host name (on the host that the monitoring HPOM Agent is running) ➤ Management server name ➤ Hosted on host name (the host on which the CI is hosted)

Script

The Script pane of the Edit Tool dialog box or the Create New Tool dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Language	Language in which the script is written.

GUI Element (A-Z)	Description
Script	Text of the script to be run.
Insert runtime parameters at cursor	If required, insert parameters into the command field. These parameters are replaced with values on tool launch. Possible parameters are: ➤ CI attributes ➤ Event attributes ➤ Infrastructure settings ➤ Monitoring host name (on the host that the monitoring HPOM Agent is running) ➤ Management server name ➤ Hosted on host name (the host on which the CI is hosted)

URL

The URL pane of the Edit Tool dialog box or the Create New Tool dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
URL	URL specification that is executed on tool launch.
Insert runtime parameters at cursor	If required, inserts parameters into the command field. These parameters are replaced with values on tool launch. Possible parameters are: ➤ CI attributes ➤ Event attributes ➤ Infrastructure settings ➤ Monitoring host name (on the host that the monitoring HPOM Agent is running) ➤ Management server name ➤ Hosted on host name (the host on which the CI is hosted)
Test	Tests the URL before saving. When parameters are inserted into the URL, you are prompted for values before the test launch.

Target

The Target pane of the Edit Tool dialog box or the Create New Tool dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Run as	Account under which the command or script must be run. The possible options are: ➤ Monitoring agent user: agent account credentials are used to execute the command or script. ➤ Operator specified user: on tool launch, the operator is prompted for user credentials.
Run on	Target on which the tool (executable or script) can be run. ➤ Possible targets are: ➤ Monitoring Host ➤ Management Server ➤ Other host The Other Host text field is free form with the possibility to insert parameters. These parameters are replaced with values on tool launch. Possible parameters are: ➤ CI attributes ➤ Event attributes ➤ Infrastructure settings
Test	Tests the URL before saving. When parameters are inserted into the URL, you are prompted for values before the test launch.

✎ **Available CI Attributes Dialog**

The Available Attributes of CI Type ... dialog box enables you to browse a list of attributes that are available for the configuration item type associated with the tool you are creating or modifying. You can add these attributes as part of your command, script, or URL.

The Available Attributes of CI Type ... dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
CI Type	Configuration item type associated with the tool you are creating or modifying, for example: IT Universe, Host, or Computer.
Description	Brief description of the attribute listed for the associated configuration item type.
Name	Name of the attribute listed for the available configuration item type, for example: (System) Language, or Codepage.
Type	Type of attribute available, for example: BOOLEAN, STRING, STRING_LIST, or LONG.

✎ Infrastructure Settings Dialog

The Infrastructure Settings dialog box enables you to browse a list of settings that are available in BSM and added them to the tool you are creating or modifying. You can add these settings as part of your command, script, or URL.

The Infrastructure settings dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Application / Foundation / All	Name of the context selected in the Infrastructure Settings Manager.
Name	External name for the infrastructure setting as specified in the Infrastructure Settings Manager.
Value	Actual value assigned to the infrastructure setting. Values include boolean (true or false), numeric values, system names, application names, and symbols.

🔍 Available Event Attributes Dialog

The Available Event Attributes ... dialog box enables you to browse a list of available event attributes that are available for the configuration item type associated with the tool you are creating or modifying. You can add these attributes, one at a time, as part of your command, script, or URL. You can also specify custom attributes by entering the name of the custom attribute in the Custom field.

The Available Event Attributes ... dialog box displays the GUI elements listed in the following table. In the table, unlabeled GUI elements are shown in angle brackets (<>).

GUI Element (A-Z)	Description
Key Value	Event attribute key used to identify the event attribute.
Display Name	Name of the event attribute listed for the available configuration item type, for example: Generating Host, HI Value, or Custom Attribute.

🔍 Troubleshooting and Limitations

This section provides help for those people who are troubleshooting problems with the tools you use for HP OMi administration, including creating, modifying, and enabling tools.

Tools Display Incorrectly

➤ Make sure a tool or a tool instance is configured for the selected event or configuration item

Tools Not Shown For Configuration Item Type

➤ Make sure a tool or a tool instance is configured for the selected configuration item type

13

Performance Graphs

This chapter describes the Performance Graphs manager used to map and manage performance graphs.

An instance identifier is required to launch instance-based graphs at runtime from a configuration item. To be able to display graphs for a CI type, available graph families must be mapped to the CI type.

The information provided helps you understand how to use the Performance Graphs manager to configure and manage HP OMi graphs.

This chapter includes:

Concepts

➤ Performance Graphs Manager on page 400

Tasks

➤ Searching and Filtering CI Types on page 401

➤ Mapping CI Type to Graph Family on page 404

➤ Launching the Performance Graph Designer on page 406

Reference

➤ Performance Graph Manager Graphical User Interface on page 407

➤ CI Types Pane on page 408

➤ Performance Graphs Pane on page 411

➤ Assign Performance Graphs Dialog on page 415

➤ Launch Performance Graph Designer Dialog on page 417

➤ Troubleshooting and Limitations on page 418

🟦 Performance Graphs Manager

The Performance Graphs manager helps software administrators and subject matter experts to map configuration item types to available graph families so that Instance-based graphs can be launched at runtime from a configuration item.

The Performance Graphs manager enables users to perform the following management-related tasks:

➤ Map graph families to configuration item types.

➤ Launch the Design dialog to create a new graph template or edit an existing graph template.

Note: Only users with the appropriate access permissions can use Operations Management Administration. For more information about user management, see "HP OMi User Authentication" on page 628.

⚓ Searching and Filtering CI Types

In this task, you learn how to search for specific CI types and view CI types that match specified filter criteria. There are two filters:

➤ Show only CI types with assigned performance graphs

➤ View (Show CI types contained within a specified view)

Tip: For information on button actions, see "Performance Graph Manager Graphical User Interface" on page 407.

Searching for a CI Type

You can use the Search field to locate the first instance of the CI type name or part of a name that you specify.

To search for a specified CI type:

1 Open the Performance Graphs manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Performance Graphs**

2 In the Search field, enter a string.

Note: The search string must be at least three characters long. Searching is started as soon as the third character is entered and the first match is highlighted. This prerequisite avoids searches being started too often and blocking resources. Names with less than three characters cannot be found.

The first CI type in the CI Types tree to match the specified string is highlighted. If that CI is not initially visible, the CI tree is expanded to display the CI Type.

3 Select the 🔍 button to find the next occurrence of the CI Type for which you are searching.

Finding CI Types with Assigned Performance Graphs

You can use the filter to display all CI types that have content assigned to them.

To filter the CI tree to show only CI types with assigned performance graphs:

1 Open the Performance Graphs manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Performance Graphs**

2 In the Filter pane, select **Show only CI types with assigned Performance Graphs**.

The CI Types pane displays only those CI types that have performance graphs assigned.

Note: You can use the Show only CI types with assigned performance graphs filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned performance graphs.

Filtering the CI Types Tree with a View

You can use the filter to display all CI types that are contained within a certain view.

To filter the CI Types tree with a view:

1 Open the Performance Graphs manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Performance Graphs**

2 In the Search pane, select **View**.

The View field becomes active.

3 Select the Browse Views (...) button to open the Views selection dialog box.

4 Select the view that you want to use, and select **OK**.

The CI Types tree is updated to display only the CI types that match the view selected.

You can use the Expand ( ) and Collapse ( ) buttons to expand or collapse the CI tree. The **Expand** ( ) button expands all CI types (but not content folders) which are under the selected CI type. The **Collapse** ( ) button collapses all open nodes except for the selected node.

If no item matches the filter, the No CI type found message is displayed.

Note: You can use the Show only CI types with assigned performance graphs filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned performance graphs.

⚓ Mapping CI Type to Graph Family

This task shows you how to map a configuration item type to a graph family.

Tip: For information on button actions, see "Performance Graph Manager Graphical User Interface" on page 407.

To map a CI type to a graph family:

1 Open the Performance Graphs manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Performance Graphs**

2 In the CI Types pane, select the configuration item that you want to map to a graph family.

3 In the Performance Graphs pane, select the ✳ button to open the Assign Performance Graphs dialog box.

4 In the Graph Instance ID Configuration pane, enter the value for Instance ID Definition. You can access the available attributes using the **Insert CI Attributes** button.

5 *Optional:* Enter the values for **Search Pattern** and **Replace Occurrences by**. These values are used to look for the specified pattern in the attribute value and replace it with the value of the replacement. The attribute is resolved using the new value.

For example, if you want to search for oracle and replace it with ORA, specify oracle as the pattern value and ORA as the replacement value.

6 In the Available Graph Families dialog box, select the graph families that you want to map to the currently selected configuration item type.

Either drag the graph families to the **Assigned Graph Families** pane or use the context sensitive menu item **Add to Assigned Graph Families** or use the (➡) icon.

Adding families to the Assigned Graph Families pane implicitly adds all graph categories and templates that belong to the selected family. These families are displayed in bold text and the implicitly added categories are displayed in italics. Individual categories added to the Assigned Graph Families pane are displayed in bold text and are arranged under the family to which they belong, displayed in italics.

7 Select **OK** to apply your mapping and close the Graph Instance ID Configuration dialog box.

᛭ Launching the Performance Graph Designer

This task shows you how to launch the New Graph Template Launch Designer in the context of a selected CI instance to help you to design a new graph template. Launch parameters are required to identify the CI instance.

For more information about creating a graph template, see "Designing Graphs" on page 130.

Tip: For information on button actions, see "Performance Graph Manager Graphical User Interface" on page 407.

To launch the Performance Graph Designer for a selected CI:

1 Open the Performance Graphs manager from Operations Management Administration:

Admin > **Operations Management** > **Design Operations Content** > **Performance Graphs**

2 In the CI Types pane, select the configuration item type from which you want to launch the Performance Graph Designer.

3 In the Available Graph Families pane, select the graph family or template that you want to launch.

4 Select the ✳ button in the Available Graph Families pane. The Launch Performance Graph Designer dialog box opens.

5 In the CI Instances pane of the Launch Performance Graph Designer dialog box, select the CI instance for which you want to create a graph, and select **Next**.

6 In the Launch Parameters pane, select the Instance ID or other identifier for to complete the identification of the component for which you want to create a graph, and select **Finish**.

The Performance Graph Designer wizard opens. For information about creating a graph template, see "Designing Graphs" on page 130.

🔍 Performance Graph Manager Graphical User Interface

This section lists and describes the layout of the Performance Graphs manager.

➤ **CI Types**

Displays a list of all available configuration item types to which you can map to available graph families. For more information, see "CI Types Pane" on page 408.

➤ **Performance Graphs**

Displays a summary of the performance graphs configuration for the selected configuration item type. For more information, see "Performance Graphs Pane" on page 411.

🔍 CI Types Pane

The CI Types pane enables you to choose the configuration item types that you want to map to available graph families.

The CI Types pane displays the GUI elements listed in the following table.

Tip: If you want to modify or manage configuration item types, use the CI Types Manager:

Admin > **Universal CMDB** > **Modeling** > **CI Type Manager.**

The information displayed in the CI Types pane of the Performance Graphs manager includes the following details:

GUI Element (A-Z)	Description
🔄	Refreshes the contents of the configuration item tree. Use if new content becomes available while you are working or you have uploaded new contents (for example, from another user or the command-line interface).
🔲	**Expand Selection:** Expands the list to display items belonging to the selected group.
🔲	**Collapse Others:** Collapses all open branches except for the selected branch.
🔍	Finds the next occurrence of the CI Type for which you are searching. For more information about searching, see "Searching and Filtering CI Types" on page 401.
⌃	Collapses the Filter pane.
⌄	Expands the Filter pane for use.
...	Opens the Views dialog box from which you can select a view with which to filter CI types.

GUI Element (A-Z)	Description
	Displays help about the active window, pane, or dialog box.
CI Types	Hierarchical list representing the configuration item types that you want to monitor in your IT environment. To display the event type indicators, KPIs, and mapping rules associated with a configuration item, browse to and select the item of interest. The various tabs display the details. If the CI Types list is filtered, (filtered) is displayed next to the CI Types title. When CI types and their children have no objects assigned, their entries appear dimmed. When objects are directly assigned to a CI type, their entries appear bolded.
Filter	Used to search for specific CI types and view CI types that match specified filter criteria. There are two filters: ➤ Show only CI types with assigned performance graphs ➤ View (Show CI types contained within a specified view) **Note:** If you apply a view to the filter CI Types tree which removes all CI types with assignments, the IT Universe entry remains in normal text, indicating that assignments exist. Remove the view, or select a more appropriate view to display the CI types with assignments that you require. For more information about searching and filtering, see "Searching and Filtering CI Types" on page 401.

CI Types Pane Context-Sensitive Menu

The context-sensitive menu in the CI Types pane includes the following elements.

GUI Element (A-Z)	Description
Collapse Others	Collapses all open branches except for the selected branch.
Expand Selection	Expands the list to display items belonging to the selected group.

☜ Performance Graphs Pane

The Performance Graphs manager enables you to choose the graph families you want to map to the currently selected configuration item.

The Performance Graphs pane displays the GUI elements listed in the following table.

GUI Element	Description
⟳	Reloads the performance graphs configuration for the selected CI Type.
✳	Opens the Assign Performance Graphs dialog box to create a new performance graphs configuration for the selected CI type. Enter the attributes that you want to resolve. You can directly enter an attribute statement or use the Browse (...) button to browse a list of available attributes.
✎	Opens the Assign Performance Graphs dialog box, which enables you to modify the mapping for the CI currently selected in the CI Types pane. For more information about the Assign Performance Graphs dialog box, see "Assign Performance Graphs Dialog" on page 415.
✗	Removes the performance graphs configuration from the selected CI type.
?	Displays help about the active window, pane, or dialog box.

Graph Instance ID Configuration

The Graph Instance ID Configuration pane displays the attributes and modifiers used to identify configuration items for which you want to display graphs.

The Graph Instance ID Configuration pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Instance ID Definition	String consisting of configuration item attributes and free form text. The configuration item attributes are specified as variables that refer to attributes of the CI Type. The value is resolved at runtime against a configuration item instance.
Search Pattern	Regular expression pattern that is matched within the string resolved from the Attribute. Any portion of the string that matches the pattern is replaced by the Replace Occurrences by string. For example, if you want to search for oracle and replace it with ORA, specify oracle as the pattern value and ORA as the replacement value.
Replace Occurrences by	String used as the replacement for pattern matches within the string resolved by Attribute.

Available Graph Families

The Available Graph Families pane displays the graphs, graph categories and templates assigned to the selected CI Type. For more information about creating and editing graph templates, see "Designing Graphs" on page 130 and "Editing a Graph" on page 131.

The Available Graph Families pane displays the GUI elements listed in the following table.

GUI Element	Description
	Reloads the available graph families for the selected CI Type.
	Launches the Launch Performance Graph Designer dialog box to help you to launch a new graph template.
	For more information about creating a graph template, see "Designing Graphs" on page 130.
	Launches the Launch Performance Graph Designer for editing the selected graph template launch details.
	For more information about editing a graph template, see "Editing a Graph" on page 131.
	Removes the selected custom graph template from the selected CI type.
	Expand Selection: Expands the list to display items belonging to the selected group.
	Collapse Others: Collapses all open branches except for the selected branch.

Assigned Graph Families

The Assigned Graph Families pane displays the graph and graph categories assigned to the selected CI Type.

The Assigned Graph Families pane displays the GUI elements listed in the following table. In the table, unlabeled GUI elements are shown in angle brackets (<>).

GUI Element (A-Z)	Description
Categories	Sub-groups of graphs that are logically grouped within the family.
Families	Top-level group that is used to organize graphs.
<bold>	Adding families to the Assigned Graph Families pane implicitly adds all graph categories that belong to the selected family. These families are displayed in bold text. Individual categories added to the Assigned Graph Families pane are displayed in bold text and are arranged under the family to which they belong, displayed in italics.
<italics>	Categories added implicitly to the Assigned Graph Families pane as a result of adding the families to which these categories belong are displayed n italics. Families are displayed in italics if they are added to show to which family an individually selected category belongs.

🔍 Assign Performance Graphs Dialog

The Assign Performance Graphs dialog box displays the graph and graph categories assigned to the selected CI Type.

The Assign Performance Graphs dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
(➡)	**Include**: Adds the graph family (and all associated categories) or category selected in the Available Graph Families pane to the list of Assigned Graph Families to be included in performance graphs configuration.
(⬅)	**Exclude**: Removes the graph family and all associated categories from the Assigned Graph Families pane, which excludes it from the performance graphs configuration.
(⬅)	**Exclude All**: Removes all items from the list of items selected for inclusion in the performance graphs configuration.
Assigned Graph Families	Lists the graph families and categories that you have selected to map to the currently selected configuration item type. Adding families to the Assigned Graph Families pane implicitly adds all graph categories that belong to the selected family. These families are displayed in bold text and the implicitly added categories are displayed in italics. Individual categories added to the Assigned Graph Families pane are displayed in bold text and are arranged under the family to which they belong, displayed in italics.
Available Graph Families	Lists the available graph families and categories that you can map to the currently selected configuration item type. Either drag the graph families and categories to the Assigned Graph Families pane or use the context sensitive menu item Add to Assigned Graph Families.

GUI Element (A-Z)	Description
Insert CI Attribute	Access the available CI attributes.
Instance ID Definition	String consisting of configuration item attributes and free form text. The configuration item attributes are specified as variables that refer to attributes of the CI Type. The value is resolved at runtime against a configuration item instance.
Search Pattern	*(Optional):* Regular expression pattern that is matched within the string resolved from the Attribute. Any portion of the string that matches the pattern is replaced by the Replace Occurrences by string. For example, if you want to search for oracle and replace it with ORA, specify oracle as the pattern value and ORA as the replacement value.
Replace Occurrences by	*(Optional):* String used as the replacement for pattern matches within the string resolved by Attribute.

❧ Launch Performance Graph Designer Dialog

The Launch Performance Graph Designer dialog box specifies the CI instance and the launch parameters for which you want to create a graph template.

The Launch Performance Graph Designer dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
CI Instances	CI for which the graph designer is to be launched.
CI Type	Name of the configuration item type to which the selected configuration item belongs.
Name	Name of the configuration item to which the CI Instance is related, for example, DB_Server.example.com.
Type	Type of the configuration item to which the CI Instance is related, for example, Related Host or Instance ID.

🔍 Troubleshooting and Limitations

This section provides help on troubleshooting problems with the Performance Graphs manager.

No Response from the PMI Server

➤ If an error message is displayed informing that the PMI server is not answering, reload the configured graph families.

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Event Assignment

This chapter describes how to automatically assign incoming events to available user groups. Automatic assigning of events to user groups responsible for solving these events significantly improves the efficiency of event management. Each event is assigned to an appropriate user group as soon as it is received. All operators in a user group are allowed to work on those events assigned to that user group.

The information provided aims to help you understand how to configure automatic event assignment of to user groups.

This chapter includes:

Concepts

Tasks

Reference

🍀 Assign User Groups to Incoming Events

You can configure HP OMi to automatically assign incoming events to available user groups. Automatic assigning of events to user groups responsible for solving these events significantly improves the efficiency of event management. Each event is assigned to an appropriate user group as soon as it is received. All operators in a user group are allowed to work on those events assigned to that user group.

User groups are mapped to incoming events in accordance with the Event User Group Mapping Rules. The user group of the first rule with a matching filter is applied to an event. The following rules are ignored.

These user groups are created and managed from User Management in Operations Management Administration:

Admin > **Platform**> **Users and Permissions** > **User Management**

For information on managing user permissions, see "User Management Basics" on page 625.

⚓ Mapping Events to User Groups

This task shows you how to map an incoming event to a user group.

Tip: For information on button actions, see "Event Assignments Graphical User Interface" on page 422.

To map an event to a user group

1 Open the Event Assignments pane from Operations Management Administration:

Admin > **Operations Management** > **Tune Operations Management** > **Event Assignments**

2 In the Event Assignments pane, select the ✳ button to open the Create New Event Assignment Rule dialog box or the 🖉 button to open the Edit Event Assignment Rule dialog box.

User groups are mapped to incoming events in accordance with the Event User Group Mapping Rules. The user group of the first rule with a matching filter is applied to an event. All following rules are ignored.

3 Select an existing filter from the **Filter** list or create a new event filter to identify the events that are to be assigned to the user group specified by this event user group mapping rule.

4 Select an existing user group from the **User Group** list to assign incoming events to.

Note: It can take up to one minute before newly created users are visible.

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5 *Optional:* Add a description for this event user group mapping rule.

6 Select **OK** to apply your mapping and close the Event User Group Mapping Rules dialog box.

Event Assignments Graphical User Interface

The Event Assignments pane enables you to view and arrange event user group mapping rules to automatically assign incoming events to existing user groups.

The Event Assignments pane displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
	Reloads the list of event user group mapping rules.
	Opens the Event User Group Mapping Rules dialog box to create a new event user group mapping rule. Enter the events filter and user group for the rule. You can select an existing filter or user group or use the Browse (...) button to create a new filter or edit an existing filter.
	Opens the Event User Group Mapping Rules dialog box to edit the selected event user group mapping rule. Enter the events filter and user group for the rule. You can select an existing filter or user group or use the Browse (...) button to create a new filter or edit an existing filter.
	Removes the selected event assignment from the list of event assignments.
	Opens the Manage Named Filters dialog for adding, editing, and managing filters.
	Moves the selected event assignment up to a higher priority position.
	Moves the selected event assignment down to a lower priority position.
	Displays help about the active window, pane, or dialog box.
Description	Description of the event user group mapping rule (optional).

GUI Element (A-Z)	Description
Filter	The filter applied in the rule. The filter determines which events to consider in the mapping operation.
Order	Where more than one event user group mapping rule, the number in the Order column indicates the order in which the rules are applied during the mapping process. Using the Event User Group Mapping Rules dialog box, you can change the position of rules in the list. **Note:** If a rule matches, no further rules are applied.
User Group	Name of the group to which the filtered events are assigned by the selected event user group mapping rule.

🔍 Create New and Edit Event Assignment Rule Dialogs

The Create New and Edit Event Assignment dialog boxes enables you to create and edit event user group mapping rules to automatically assign incoming events to existing user groups.

The Create New and Edit Event Assignment dialog boxes displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Cancel	Closes the dialog box without saving the rule.
Description	Description of the event user group mapping rule (optional).
Filter	Use the lists to select the filter to apply in the rule. The filter determines which events to consider in the mapping operation. You can select an existing filter or user group or use the Browse (...) button to create a new filter or edit an existing filter.
Help	Displays help about the active window, pane, or dialog box.
ID (Edit Event Assignment Rule dialog only)	No action required. The event assignment rule ID is assigned automatically when the rule is first saved.
OK	Commits changes to event assignment rule.
User Group	Name of the group to which the filtered events are assigned by the selected event user group mapping rule.

15

Content Packs

Content is information that HP OMi uses to describe the configuration items that you are monitoring. Content for a specific management area is typically contained in dedicated content packs. The Content Packs manager and the UCMDB Package Manager help you manage this data.

This chapter includes:

Concepts

Tasks

♣ Content Management

Content is the information that HP OMi uses to describe the objects or configuration items that you are monitoring. For example, the objects can be network hardware, operating systems, applications, services or users. Content can include the following types of information:

➤ Configuration item types

➤ Mapping rules for topology synchronization

➤ Discovery sources

➤ Correlation rules

➤ Rules for HI-based key performance indicators

➤ Event type indicators

➤ Health indicators

➤ Graph family definitions

➤ Tool definitions

Content is stored in packages whose format depends on the contents of the package, the package's intended use, and the tool you use to prepare it, for example, XML files or ZIP archives.

You use Content Packs to install or update items in the HP OMi database. You can also take content from one HP OMi database and upload it to other HP OMi databases, using the Import and Export features.

You use UCMDB Packages to install new or update existing content in the UCMDB.

These same packages can also be used to exchange data between instances of either the UCMDB or the HP OMi database. For more information about the different types of packages and their content, see "UCMDB Packages" on page 576 and "Content Packs" on page 577. For more information about content and content pack tools, see "Content Management Tools" on page 428.

♻ Content Management Tools

There are three types of packages and each must be managed using the dedicated tool:

➤ Content Packs manager for HP OMi content packs

➤ Universal CMDB Package Manager for UCMDB packages

➤ Standard Microsoft installation tools for installation packages

The following table illustrates the contents of the various types of packages and the tool required to prepare or make use of them.

Package Type	Package Contents	File Type	Tool Type
Install package	➤ UCMDB package ➤ Content packs ➤ Topology synchronization rules	MSI	Microsoft install tools
UCMDB package	➤ UCMDB model ➤ view patterns ➤ view instances ➤ TQL queries ➤ Enrichment rules...	XML (ZIP)	UCMDB package manager For details, see "UCMDB Package Manager" on page 429.
Content pack	➤ KPIs and assignments ➤ ETIs and ETI values ➤ Health Indicators ➤ Event mapping rules ➤ Correlation rules ➤ Tool definitions ➤ Graph family definitions	XML	HP OMi Content Packs manager For details, see "Content Packs Manager" on page 430.

Note: Some tools are only available to users who are logged on with the appropriate authorization. Other users might be required to supply a user name and password to start the package management tools.

🍀 UCMDB Package Manager

You use the UCMDB package manager to perform the following tasks:

➤ Unpack UCMDB packages and upload predefined content to the UCMDB

➤ Export content from the UCMDB, for example, where the content includes configuration item types.

➤ Import content into the UCMDB, for example, where the content includes configuration item types.

Note: Some features are only available to users who are logged on with the appropriate authorization. If you are logged on to HP OMi without administrative authorization, you might be required to supply a user name and password to start package management tools.

For more information about the UCMDB package manager, see the *HP Business Availability Center Model Management* guide.

🍀 Content Packs Manager

The Content Packs manager enables you to create a content pack that contains a snapshot of the rules and tools that you have defined with HP OMi and save the snapshot information in a file. The snapshot file you create includes all (or any selection of) the event type indicators, health indicators, key performance indicators, mapping rules, KPI calculation and business rules, tool definitions, view mappings, and graphing assignments that you have defined specifically for HP OMi.

You can use the Content Packs manager to perform the following tasks:

➤ Define the contents of a content pack and save the definition in the HP OMi database. For more information, see "Content Pack Definitions" on page 579.

➤ Export a content pack definition and the data it references to a file called a content pack. For more information about what data is included in a content pack, see "Content Packs" on page 577.

➤ Import a content pack definition and the data it references. For more information about what data is included in a content pack, see "Content Packs" on page 577.

➤ Exchange content packs between installed instances of HP OMi

Using content packs that you create, the Content Pack manager helps exchange configured data between instances of HP OMi.

Note: You can use user roles to restrict access to the Content Pack manager. For more information about user authorization, see "HP OMi User Authentication" on page 628.

For more information about content pack definitions, see "Content Pack Definitions" on page 579. For more information about content packs, see "Content Packs" on page 577.

The Content Packs manager has two interfaces:

➤ Content Packs graphical user interface (GUI)

➤ **ContentManager** command-line interface (CLI)

These interfaces are described in greater detail in the following sections.

Content Pack Manager GUI

Access to the Content Pack manager is in Operations Management Administration. You can start the Content Pack manager using the following menu option:

Admin > **Operations Management** > **Manage Content** > **Content Packs**

The Content Pack manager enables you to create, view, modify, and save the contents of the content pack definitions. You can import and export the definition together with the data it references. For more information about the contents of the content packs, see "Content Packs" on page 577.

ContentManager CLI

The features and functionality of the Content Pack manager are also accessible using the **ContentManager** command-line interface. You can access the ContentManager command-line interface directly, in a shell, or remotely, for example, in a script.

For more information about the ContentManager command, see "Content Pack Manager Command-Line Interface" on page 616. For more information about the contents of the content packs, see "Content Packs" on page 577.

Note: You cannot use the ContentManager command-line interface to create a content pack definition.

🔩 Installation Packages

HP OMi installation packages are for first-time installation. The installation setup copies files to the local file system on the management server system.

The following table gives an overview of the installation package contents:

Content Type	Description
UCMDB Package	Descriptions of CI types, their relationships and dependencies, TQLs, enrichment rules, and details of the underlying architectural model. This package gets uploaded to the UCMDB database during the HP OMi installation. For more information, see "UCMDB Packages" on page 576.
HP OMi Content Pack	KPI assignments, health indicators, event indicators, view mappings, tool definitions, correlation rules, graphing family definitions, and menu extensions. The content packs are stored on the Data Processing server in a two machine deployment. You need to manually import the content pack using the content manager. For more information, see "Content Packs" on page 577.
Topology Synchronization	Rules that define how HP OMi CI types are mapped to the network objects monitored by HP Operations Manager and how to manage changes to this information.
Graph Templates	If the installation packages have been installed after the HP OMi installation, you must manually upload the graph templates into the database tables. Execute the following script on the BSM host system (Processing Server system, if using a two machine deployment) to upload the graph templates into the database tables. **\<OvBinDir>/pmiuploadtemplates.bat** For 32 bit BSM host systems: **OvBinDir** is: **%TOPAZ_HOME%/bin** For 64 bit BSM host systems: **OvBinDir** is: **%TOPAZ_HOME%/bin/win64**

Installation packages are available for a variety of different application areas and are installed using patches after HP OMi setup. The installation packages include content packs that extend the functionality of HP OMi, for example: so that HP OMi can use events reported by Smart Plug-ins (SPIs) on the HP Operations Manager management server.

The content packs provide a collection of preconfigured rules, tools, HIs, ETIs, graphs, and views to help you monitor events reported to the HP Operations Manager management server by the SPIs. If a SPI is installed on an HP Operations Manager management server and this server is configured to forward messages to HP OMi, you can make use of the tools, rules, and definitions listed in the respective installation package.

Note: If you change any HI/ETI name, you must change the custom message attribute (CMA) value of the underlying policies to ensure proper functioning of the installation package.

The following table lists the available installation packages:

Installation Package Name	Application Monitored
HPOprOra	Oracle Database Server
HPOprMss	Microsoft SQL Server
HPOprWbs	WebSphere Application Server
HPOprWls	WebLogic Application Server
HPOprAds	Microsoft Active Directory Server
HPOprExc	Microsoft Exchange Server 2007
HPOprInf	Infrastructure which includes UNIX and Windows operating systems, Virtualization Systems, and Cluster Systems
HPOprSiS	HP SiteScope

Note: For more detailed information about the contents of an installation package, start the Content Packs manager or the UCMDB Package Manager and browse to the respective installation package.

The following packages are either installed by default or available separately:

➤ "Oracle Installation Package" on page 435

➤ "Microsoft SQL Server Installation Package" on page 449

➤ "WebSphere Application Server Installation Package" on page 460

➤ "WebLogic Application Server Installation Package" on page 475

➤ "Microsoft Active Directory Server Installation Package" on page 489

➤ "Microsoft Exchange Server 2007 Installation Package" on page 517

➤ "Infrastructure Installation Package" on page 550

➤ "SiteScope Installation Package" on page 572
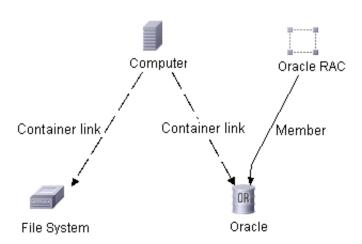
For more information about installing UCMDB packages and content packs, see "Importing UCMDB Packages" on page 598 and "Importing Content Packs" on page 594.

Oracle Installation Package

The Oracle installation package contains the following artifacts.

CI Types and UCMDB Views

The UCMDB package in the Oracle installation package includes the ORA_Deployment view, which refers to the Oracle, Oracle RAC, Computer, and File System CI types. The following image shows the relationship among the CI types.

Health Indicators

The content pack includes the following Health Indicators (HIs) to monitor the Oracle-related events:

CI Type	HI	Description	Value
Oracle	CPU Usage by SQL (Database)	Indicates SQL statements with high CPU time per execution	Normal, High
Oracle	Database Object Status	Indicates database object status	Valid, Invalid, Enabled, Disabled
Oracle	Database Server Status (Database)	Indicates database server availability	Up, Down
Oracle	Datafiles Status	Indicates oracle datafiles status	Online, Offline
Oracle	Default Bufferpool Busy Ratio	Indicates how busy an Oracle Bufferpool is	Low, High
Oracle	Default Bufferpool Hit Ratio	Indicates the ratio of buffered data requests of the Oracle Default Bufferpool	High, Normal, Low
Oracle	Dictionary Cache Miss Ratio	Indicates the effectiveness of the Oracle Dictionary Cache	Low, Normal, High
Oracle	Disk Read-Write Rate (Database)	Indicates SQL statement with high disk read/write per execution	Normal, High
Oracle	Dispatcher Busy Ratio by Network	Indicates the workload of the Oracle Dispatcher	Low, Normal, High
Oracle	Dispatcher Process Queue Response Time	Indicates the average time an item in the Oracle Dispatcher queue waits before being processed	Low, High

CI Type	HI	Description	Value
Oracle	Long Table Scan Percentage	Indicates the percentage of Long Table Scans performed	Low, Normal, High
Oracle	Oracle Background Dump Device Usage Level	Indicates Oracle background dump device space usage	Normal, High
Oracle	Oracle Core Dump Device Usage Level	Indicates Oracle core dump device space usage	Normal, High
Oracle	Oracle User Dump Device Usage Level	Indicates Oracle user dump device space usage	Normal, High
Oracle	Oracle Users Call Rate	Indicates rate of recursive calls to user calls and rate of recursive calls to cumulative opened cursors.	Normal, High
Oracle	Row Cache Hit Ratio	Indicates the ratio of which row data requests could be served from the cache	High, Low
Oracle	Replication Status (Database)	Indicates database server replication status	Up, Down, Failed
Oracle	Server Load (Database)	Indicates increased server load	Normal, High
Oracle	Shared Pool Performance	Indicates shared pool performance	Normal, Low
Oracle	SQL Query Performance (Database)	Indicates SQL statements with high elapsed time per execution	Normal, Low
Oracle	Tablespaces Availability	Indicates tablespaces online-offline status	Online, Offline
Oracle	Tablespace Usage Level	Indicates the current usage level of the Oracle Databases' tablespaces.	Normal, Moderate, High

Event Type Indicators

The content pack includes the following Event Type Indicators (ETIs) to monitor Oracle-related events.

CI Type	ETI	Description	Value
Oracle	Archive Status	Indicates the status of an Oracle Archive Log	Available, Error, ErrorWriting, Unavailable
Oracle	Checkpoint Rate	Indicates high checkpoint rate	Normal, High
Oracle	Control File Read-Write Status	Indicates oracle control file read/write error	Normal, ErrorReading ErrorWriting
Oracle	Latch Hit Ratio	Indicates possible latching problems	High, Normal, Low
Oracle	Memory Sort Rate	Indicates the ratio of which sorts have been performed solely on memory. A low memory sort ratio implies a high disk sort ratio	High, Normal, Low
Oracle	Oracle Database Process Status	Indicates Oracle database service/process status	Running, Failed
Oracle	Oracle Disk Read-Write Errors	Indicates oracle disk read write errors	Error, ErrorReading ErrorWriting
Oracle	Oracle Session Count	Indicates oracle session count to configured	Normal, Exceeded
Oracle	SQL Query Tuning (Database)	Indicates SQL statements with low query tuning	Normal, Low
Oracle	Tablespaces Free Space Fragmentation Index	Indicates the degree of fragmentation of an Oracle Tablespace's free space	Normal, Moderate, High

Correlation Rules

The content pack in the Oracle installation package includes the following rules to correlate Oracle-related events.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

Database::File System:Disk Usage Level >> Dump Device Usage Level

Description: File System Usage Level impacts Oracle Space Availability (Background, User and Core dump device free space)		
Cause		
CIT: File system	ETI: Disk Usage Level	Value: Near Capacity
Symptom 1		
CIT: Oracle	ETI: Oracle Background Dump Device Usage Level	Value: High
Symptom 2		
CIT: Oracle	ETI: Oracle Core Dump Device Usage Level	Value: High
Symptom 3		
CIT: Oracle	ETI: Oracle User Dump Device Usage Level	Value: High

Database::Computer:Memory Usage Level >> Oracle SQL Query Performance

Description: Memory Usage Impacts Oracle SQL Query Performance		
Cause		
CIT: Computer	ETI: Memory	Value: Near Capacity
Symptom		
CIT: Oracle	ETI: SQL Query Performance	Value: Low

Database::Computer:Memory Usage Level >> Dictionary Cache Miss Ratio

Description: Memory Usage Impacts Dictionary Cache Miss Ratio		
Cause		
CIT: Computer	ETI: Memory	Value: Near Capacity
Symptom		
CIT: Oracle	ETI: Dictionary Cache Miss Ratio	Value: High

Database::Oracle:CPU Usage by SQL >> CPU Load

Description: CPU usage by Oracle SQL query increases CPU Load on Computer		
Cause		
CIT: Oracle	ETI: CPU Usage by SQL	Value: High
Symptom		
CIT: Computer	ETI: CPU Load	Value: Bottlenecked/ Constrained/ Overloaded

Tool Definitions

Oracle Product Manual: Starts a web browser and connects to the Oracle product manuals web site.

Oracle Database Connection Check: Checks the connection of all Oracle database instances configured to the Smart Plug-in for Databases (Oracle).

Graph Templates

The content pack includes the SPI for Databases - Oracle graph family, which is mapped to the Oracle CI type.

The following table lists the graph templates present in the SPI for Databases - Oracle graph family and the mapped policies.

Graph Templates	Metric Name	Policy Description
Calls	DBSPI-0049	Rate of user calls
	DBSPI-0050	Ratio of recursive calls to user calls
	DBSPI-0075	Ratio of recursive calls to cumulative opened cursors
	DBSPI-0044	Commit rate
Checkpoints	DBSPI-0035	Rate of background checkpoints completed
	DBSPI-0083	Rate of DBWR checkpoints
Dump Devices	DBSPI-0062	Percentage of space used on background dump device
	DBSPI-0064	Percentage of space used on user dump device
	DBSPI-0065	Percentage of space used on core dump device
	DBSPI-0066	Size in MB of alert log
Initialization Limits	DBSPI-0028	Percentage of DML locks used to total configured
	DBSPI-0031	Number of users with percentage of open cursors to maximum configured
	DBSPI-0085	Percentage of current transactions to configured
	DBSPI-0087	Percentage of current processes to configured
	DBSPI-0089	Percentage of enqueues to configured

Graph Templates	Metric Name	Policy Description
Multi-threaded Server	DBSPI-0090	Percentage of busy (average) for all dispatchers
	DBSPI-0091	Number of clients currently connected to all dispatchers
	DBSPI-0092	Percentage of shared servers waiting for requests
	DBSPI-0093	Percentage of busy to max shared server processes
	DBSPI-0094	Current percentage of shared pool allocated to UGA
	DBSPI-0095	Maximum percentage of shared pool allocated to UGA
	DBSPI-0096	Percentage of highwater to max shared server processes
Parallel Query Option	DBSPI-0070	Percentage of parallel query servers busy
	DBSPI-0071	Percentage of parallel query servers busy highwatermark
	DBSPI-0074	Rate of parallel queries initiated
	DBSPI-0076	Percentage of full table scans via rowid range scans compared to total full table scans.
Redo	DBSPI-0032	Number of waits for redo log space
	DBSPI-0033	Percentage of redo allocation latch misses
	DBSPI-0034	Percentage of redo copy latch misses

Graph Templates	Metric Name	Policy Description
Sharedpool	DBSPI-0022	Total buffer cache hit percentage
	DBSPI-0023	Current buffer cache hit percentage
	DBSPI-0026	Percentage of cache get misses to gets in dictionary cache
	DBSPI-0027	Percentage of library cache misses to executions
	DBSPI-0039	Percentage of gethits to gets in dictionary cache
	DBSPI-0040	Percentage of pinhits to pins in dictionary cache
	DBSPI-0045	Percentage of free pool memory
	DBSPI-0059	Percentage of cursors in cache parameter
Sorts	DBSPI-0019	Disk sort rate
	DBSPI-0052	Rate of total sorts on disk and in memory
Sorts Memory/ Rows	DBSPI-0020	Percentage of memory sorts
	DBSPI-0051	Average number of rows per sort
Tablespace	DBSPI-0006	Number of tablespaces with low free space percentage
	DBSPI-0007	Number of tablespaces not ONLINE
	DBSPI-0008	Number of tblspaces with high ratio of block to physical reads
	DBSPI-0009	Number of tablespaces with high use of temp segments to total
	DBSPI-0011	Number of fragmented tablespaces
	DBSPI-0016	Number of segments that cannot extend
	DBSPI-0017	Number of segments approaching max extent
	DBSPI-0018	Number of segments adding extents rapidly

Graph Templates	Metric Name	Policy Description
Table Scan	DBSPI-0030	Rate at which full table scans (long tables) occur
	DBSPI-0041	Rate at which full table scans (Short tables occur)
Tables and Indexes	DBSPI-0042	Percentage of the tables and indexes which were never analyzed
	DBSPI-0046	Percentage of the rows fetched by index
	DBSPI-0047	Number of tables cached
	DBSPI-0048	Percentage of chained rows fetched
Waits	DBSPI-0021	Percentage of buffer busy waits to logical reads
	DBSPI-0024	Percentage of enqueue waits to enqueue requests
	DBSPI-0038	Number of latches with high contention ratio greater than threshold
	DBSPI-0043	Percentage of enqueue timeouts to enqueue requests
	DBSPI-0029	Number of sessions waiting for release of a lock

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

Note: For more information on the measurement threshold policies and events, refer to the HP Operations Smart Plug-in for Databases documents.

ETI/HI	Policy Name	Policy Description
Archive Status	ORA-00270	Error creating archive log
	ORA-00272	Error writing archive log
	ORA-00290	Operating system archiving error
	ORA-00255	Error archiving log
Background Dump Device Usage Level	DBSPI_0062	Percentage of space used on background dump device
Check Point Rate	DBSPI_0035	Rate of background checkpoints completed
	DBSPI_0083	Rate of DBWR checkpoints
Control File Read Write Status	ORA-00204	Error reading control file
	ORA-00206	Error writing control file
	ORA-00210	Cannot open control file
	ORA-00221	Error on write to control file
Core Dump Device Usage Level	DBSPI_0065	Percentage of space used on core dump device
CPU Usage by SQL	DBSPI_0107	Number of SQL statements with high CPU time per execution
Database Object Status	DBSPI_0077	SYS.DUAL status
	DBSPI_0078	Number of invalid objects

ETI/HI	Policy Name	Policy Description
Database Process Status	DBSPI_0002	Database process check
	ORA-00348	Single process redo failure
	ORA-00443	Background process did not start
	ORA-00444	Background process failed while starting
	ORA-00445	Background process did not start after n seconds
	ORA-00447	Fatal error in background process
	ORA-00470	LGWR process terminated with error
	ORA-00471	DBWR process terminated with error
	ORA-00472	PMON process terminated with error
	ORA-00473	ARCH process terminated with error
	ORA-00474	SMON process terminated with error
	ORA-00475	TRWR process terminated with error
	ORA-00476	RECO process terminated with error
	ORA-00477	SNPx process terminated with error
	ORA-00480	LCKx process terminated with error
	ORA-00483	During shutdown a process abnormally terminated
Database Server Status	DBSPI_0001	Database status check
Datafiles Status	DBSPI_0014	Number of datafiles not online
Default Buffer Pool Hit Ratio	DBSPI_0022	Total buffer cache hit percentage
Dictionary Cache Miss Ratio	DBSPI_0026	Percentage of cache get misses to gets in dictionary cache
Dispatcher Busy Ratio by Network	DBSPI_0090	Average percentage busy for all Dispatchers

ETI/HI	Policy Name	Policy Description
Disk Read/Write Rate	DBSPI_0101	Number of SQL statement with high disk reads per execution
Dump Device Usage Level	DBSPI_0064	Percentage of space used on user dump device
Latch Hit Ratio	DBSPI_0033	Percentage of redo allocation latch misses
	DBSPI_0034	Percentage of redo copy latch misses
	DBSPI_0038	Number of latches with high contention ratio greater than threshold
Long Table Scan Percentage	DBSPI_0103	SQL statements with long table scans
Memory Sort Rate	DBSPI_0019	Disk sort rate
	DBSPI_0020	Percentage of memory sorts
Oracle Disk Read Write Errors	ORA-01114	IO error writing block to file
	ORA-01115	IO error reading block from file
	ORA-01116	Error in opening datafile
	ORA-01242	Data file suffered media failure
	ORA-01243	System tablespace file suffered media failure
Oracle Session Count	ORA-00018	Maximum number of sessions exceeded
	ORA-00019	Maximum number of sessions licenses exceeded
	ORA-00020	Maximum number of processes exceeded
Oracle Users Call Rate	DBSPI_0050	Ratio of recursive calls to user calls
	DBSPI_0075	Ratio of recursive calls to cumulative opened cursors
Replication Status	DBSPI_0113	Number of broken DBMS jobs
	DBSPI_0114	Number of failed DBMA jobs
Server Load	DBSPI_0085	Percentage of current transactions to configured
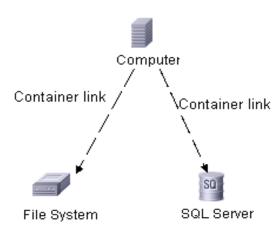
ETI/HI	Policy Name	Policy Description
Shared Pool Memory	DBSPI_0045	Percentage of shared pool memory
SQL Query Performance	DBSPI_0106	SQL statement with high elapsed time per execution
SQL Query Tuning	DBSPI_0030	Rate at which full table scans (long tables) occur
	DBSPI_0042	Percentage of never analyzed tables and indexes
	DBSPI_0046	Percentage of rows retrieved by index
	DBSPI_0048	Percentage of chained rows retrieved
	DBSPI_0070	Percentage of busy parallel query servers
	DBSPI_0071	Percentage of busy highwater to maximum parallel query servers
	DBSPI_0074	Rate of parallel queries initiated
	DBSPI_0076	Percentage of full table scans using rowid range scans compared to total full table scans.
Tablespaces Availability	DBSPI_0007	Number of tablespaces not ONLINE
	DBSPI_0067	Number of rollback segments not online
Tablespaces Free Space Fragmentation Index	DBSPI_0011	Number of fragmented tablespaces
Tablespace Usage Level	DBSPI_0006	Number of tablespaces with low free space percentage

Microsoft SQL Server Installation Package

The Microsoft SQL Server installation package contains the following artifacts.

CI Types and UCMDB Views

The UCMDB package in the Microsoft SQL SErver installation package includes the MSSQL_Deployment view, which refers to the SQL Server, File System, and Computer CI type. The following image shows the relationship among the CI types.

Health Indicators

The content pack includes the following Health Indicators (HIs) to monitor Microsoft SQL Server-related events:

CI Type	HI	Description	Value
SQL Server	Cache Performance	Indicates cache hit percentage	Normal, Low
SQL Server	CPU Usage by SQL (Database)	Indicates SQL statements with high CPU time per execution	Normal, High
SQL Server	Database Server Status (Database)	Indicates database server availability	Up, Down
SQL Server	Disk Read/Write Rate (Database)	Indicates SQL statement with high disk read/write per execution	Normal, High
SQL Server	Lock Memory Used Pct	Indicates percentage of used lock memory.	Normal, Full Capacity, High
SQL Server	Lock Wait Rate	Indicates number of lock requests per second that could not be satisfied immediately and required the caller to wait, for all object types combined: Extent, Key, Page, Table, RID, Database. Also indicates number of lock requests per second that resulted in a deadlock.	Normal, High
SQL Server	Locks in Use Percentage	Indicates percentage total locks currently held to the total number of locks configured for SQL Server.	Normal, High
SQL Server	Replication Status (Database)	Indicates database server replication status	Up, Down, Failed

CI Type	HI	Description	Value
SQL Server	Runnable Workers Ratio	Indicates the ratio between SQL Server workers currently running and workers potentially runnable. A ratio above 100.00 means more workers are currently running than runnable.	Normal, Full Capacity, High
SQL Server	Server Load (Database)	Indicates increased server load	Normal, High
SQL Server	SQL Query Performance (Database)	Indicates SQL statements with high elapsed time per execution	Normal, Low
SQL Server	SQL Server Database Space Usage Level	Indicates SQL Server database space usage level	Normal, Medium, High
SQL Server	SQL Server Databases Status	Indicates SQL Server database status	Normal, Suspect
SQL Server	Users Connected Percentage	Indicates percentage of the current user connections to the total number of user connections configured for SQL Server.	Normal, Medium, High
SQL Server	Virtual Device Space Usage Level	Indicates percentage of space used on a virtual device.	Normal, Medium, High

Event Type Indicators

The content pack includes the following Event Type Indicators (ETIs) to monitor Microsoft SQL Server-related events:

CI Type	ETI	Description	Value
SQL Server	Database Mirroring Status	Indicates mirroring state of the SQL Server	Normal, Suspended, Unrestored log, Unsent log
SQL Server	SQL Query Tuning	Indicates SQL statements with low query tuning	Normal, Low
SQL Server	SQL Server Disk Read/Write Errors	Indicates SQL Server disk read/write errors	Normal, High
SQL Server	SQL Server Service Status	Indicates SQL Server service or process not running	Normal, Blocked, Not running, Failed

Correlation Rules

The content pack includes the following rules to correlate Microsoft SQL Server-related events.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

Database::File System:Disk Usage Level >> SQL Server Database Space Usage Level

Description: Disk Usage Level impacts SQL Server Space Availability		
Cause		
CIT: File system	ETI: Disk Usage Level	Value: Near Capacity
Symptom 1		
CIT: SQL server	ETI: SQL Server Database Space	Value: High/Medium
Symptom 2		
CIT: SQL server	ETI: Virtual Device Space Usage Level	Value: High

Database::SQL Server:CPU Usage by SQL >> CPU Load

Description: CPU usage by MSSQL SQL query increases CPU load on Computer		
Cause		
CIT: SQL Server	ETI: CPU Usage by SQL	Value: High
Symptom		
CIT: Computer	ETI: CPU Load	Value: Bottlenecked/ Constrained/ Overloaded

Database::Computer:Memory Usage Level >> Cache Performance

Description: Memory Usage high on host impacts Cache Performance		
Cause		
CIT: Computer	ETI: Memory Usage Level	Value: Near Capacity
Symptom		
CIT: SQL Server	ETI: Cache Performance	Value: Low

Database::Computer:Memory Usage Level >> SQL Server SQL Query Performance

Description: Memory Usage Level on host impacts SQL Server Performance		
Cause		
CIT: Computer	ETI: Memory Usage Level	Value: Near Capacity
Symptom		
CIT: SQL Server	ETI: SQL Query Performance	Value: Low

Tool Definitions

Microsoft SQL Server Connection Check: Checks the connection of the all Microsoft SQL Servers configured to the Smart Plug-in for Microsoft SQL Server.

Microsoft SQL Server Documents: Starts a web browser and connects to the Microsoft SQL Server product manuals web site.

Graph Templates

The content pack includes the SPI for Databases - Microsoft SQL Server graph family, which is mapped to the SQL Server CI type.

The following table lists the graph templates present in the SPI for Databases - Microsoft SQL graph family and the mapped policies.

Graph Templates	Metric Name	Policy Description
Cache	DBSPI_3022	Buffer chain average length
Data Access	DBSPI_3051	Full Scans Rate
	DBSPI_3052	Index searches rate
	DBSPI_3053	Pages allocated rate
	DBSPI_3054	Extents allocated rate
	DBSPI_3055	Page splits rates
	DBSPI_3056	Table lock escalation rate
Errors	DBSPI_3023	Number of SQL Server read/write errors since the last probing
	DBSPI_3024	Number of packet errors while reading or writing packets
	DBSPI_3028	Number of databases marked as suspect
IO Utilization	DBSPI_3007	Number of read requests issued to OS that are not completed
	DBSPI_3008	Number of write requests issued to the OS not completed
Locks and its Memory Utilization	DBSPI_3013	Percentage of locks in use
	DBSPI_3075	Percentage of lock memory in use
Lock Requests	DBSPI_3070	Lock timeout rate
	DBSPI_3071	Deadlocks rate
	DBSPI_3072	Locks wait rate
	DBSPI_3073	Average lock wait time

Graph Templates	Metric Name	Policy Description
Least Recently Used	DBSPI_3001	Percentage of times a data page was found in the cache
Server Status	DBSPI_3017	Percentage of the command queue length used
	DBSPI_3025	Percentage of the CPU time used by SQL server
	DBSPI_3074	Batch requests rate
Transactions	DBSPI_3009	Server transaction rate
	DBSPI_3066	Number of the log expansions for the server
Server Status for processes and transactions	DBSPI_3014	Number of blocked processes
	DBSPI_3064	Number of active transactions for the entire server
Users	DBSPI_3011	Percentage of the current users connected
	DBSPI_3026	Percentage of the total connections that are active vs sleeping

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

Note: For more information on the measurement threshold policies and events, refer to the HP Operations Smart Plug-in for Databases documents.

ETI/HI	Policy Name	Policy Description
Cache Performance	DBSPI_3001	Percentage of times a data page was found in the cache.
CPU Usage by SQL	DBSPI_3025	CPU time percentage used by SQL Server
Database Mirroring Status	DBSPI_3084	Mirroring state of the Server instance
	DBSPI_3085	Unsent log on the principle
	DBSPI_3086	Unrestored log on the mirror
Database Space Usage Level	DBSPI_3216	Number of transaction log space used for each database
	DBSPI_3218	Percentage of database space used
	DBSPI_3278	Percentage of space used per filegroup and database
	DBSPI_3279	Space free (MB) per filegroup per database
Database Status	DBSPI_3028	Number of databases marked as suspect
Database Server Status	DBSPI_3030	Ability to connect to a database

ETI/HI	Policy Name	Policy Description
Disk Read/Write Errors	DBSPI_3023	Number of SQL Server read/write errors since the last probing.
	DBSPI_3024	Number of packet errors while reading or writing packets.
Disk Read/Write Rate	DBSPI_3007	Number of read requests issued to the operating system that have not been completed.
	DBSPI_3008	Number of write requests issued to the operating system that have not completed.
Locks in Use Percentage	DBSPI_3013	Percentage total locks currently held to the total number of locks configured for SQL Server
Lock Memory Used Percentage	DBSPI_3075	Percentage of lock memory in use
Lock Wait Rate	DBSPI_3070	Lock timeout rate
	DBSPI_3072	Locks wait rate
Replication Status	DBSPI_3081	Replication agents status
Server Load	DBSPI_3009	Server transactions rate
	DBSPI_3064	Number of active transactions for the entire server
SQL Server Service Status	DBSPI_3014	Number of blocked processes
	DBSPI_3057	Checks the status of SQL Server service
	DBSPI_3058	Checks the status of the SQL Agent service
SQL Query Performance	DBSPI_3035	Long running transaction

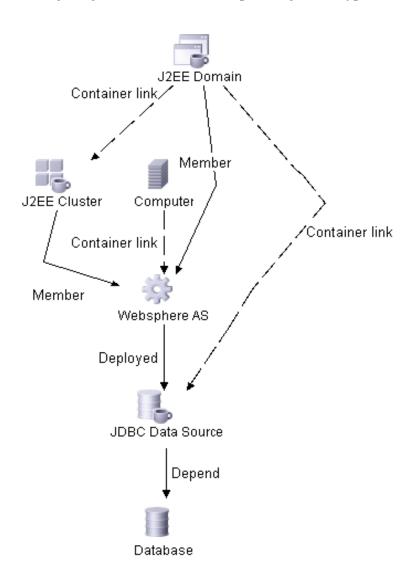| ETI/HI	Policy Name	Policy Description
SQL Query Tuning	DBSPI_3051	Full scans rate
	DBSPI_3052	Index searches rate
	DBSPI_3055	Page splits rate
Users Connected Percentage	DBSPI_3011	Percentage of current users connected
Virtual Device Space Used	DBSPI_3215	Percentage of space used on a specific virtual device

WebSphere Application Server Installation Package

Note: To display the impact of the database instance on WebSphere Application Server, you must specify the appropriate Application IP and database instance name in the JDBC URL. These properties are used to create the link between the WebSphere Application Server and database instance.

The WebSphere Application Server installation package contains the following artifacts.

CI Types and UCMDB Views

The UCMDB package in the WebSphere installation package contains the WBS_Deployment view, which refers to the J2EE Cluster, J2EE Domain, JDBC Data Source, WebSphere AS, Database, and Computer CI types. The following image shows the relationship among the CI types.

Health Indicators

The content pack includes the following Health Indicators (HIs) to monitor WebSphere-related events.

CI Type	HI	Description	Value
J2EE Cluster	Cluster Health	Cluster Health in terms of performance	Normal, Poor
	Cluster Status	Cluster Status in terms of availability	Started, Partial Stopped, Stopped
J2EE Domain	Domain Status	Domain Status in terms of availability	N.A.
JDBC Data Source	DataSource ConnectionPool Availability	DataSource ConnectionPool Availability.	Normal, Low
	DataSource ConnectionPool Performance	DataSource ConnectionPool Performance	Normal, Low
	DataSource ConnectionPool Utilization	DataSource Connection Pool Utilization	Normal, High

CI Type	HI	Description	Value
WebSphere AS	EJB Performance	Shows the EJB Performance such as EJB response time, timeout statistics	Normal, Low
	EJB Utilization	EJB Pool or Cache Utilization	Normal, High
	JVM Memory Utilization	JVM Memory used by the server java process	Normal, High
	JVM Performance	JVM performance statistics	Normal, Degraded
	Server Status	Shows the server status in terms of availability	Available, Unavailable
	Servlet Response Time	The time taken by a servlet to send a response after it has received a request.	Normal, Low
	Thread Pool Utilization	Number of threads utilized in the server to execute tasks	Normal, High
	Transaction Performance	Performance of the transactions. This includes number of rolled back transactions.	Normal, Low

Event Type Indicators

The installation package includes the following Event Type Indicators (ETIs) to monitor WebSphere-related events:

CI Type	ETI	Description	Value
WebSphere AS	HTTP Sessions	Number of open HTTP Sessions	Normal, High
	Servlet Requests	Number of requests made by a client to a servlet	Normal, High

Correlation Rules

The content pack in the WebSphere installation package contains the following correlation rules.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

J2EE::Database:CPU Usage By SQL >> Transaction Performance & EJB Performance & DataSource ConnectionPool Performance

Description: WebSphere DB CPU Usage By SQL impacts Transaction Performance EJB Performance J2EEDataSource Connection Pool Performance		
Cause		
CIT: Database	ETI: CPU Usage by SQL	Value: High
Symptom 1		
CIT: WebSphere AS	ETI: EJB Performance	Value: Low
Symptom 2		
CIT: WebSphere AS	ETI: Transaction Performance	Value: Low

J2EE::Database:Database Server Status >> DataSource ConnectionPool Availability

Description: WebSphere Database Server Status impacts J2EEDataSource Connection Pool Availability		
Cause		
CIT: Database	ETI: Database Server Status	Value: Down
Symptom 1		
CIT: JDBC Data Source	ETI: Data Source Connection Pool Availability	Value: Low

J2EE::Database:Server Load >> Transaction Performance & EJB Performance & DataSource ConnectionPool Performance

Description: WebSphere DB Server Load impacts Transaction Performance EJB Performance J2EEDataSource Connection Pool Performance		
Cause		
CIT: Database	ETI: Server Load	Value: High
Symptom 1		
CIT: JDBC Data Source	ETI: Data Source Connection Pool Availability	Value: Low
Symptom 2		
CIT: WebSphere AS	ETI: EJB Performance	Value: Low
Symptom 3		
CIT: WebSphere AS	ETI: Transaction Performance	Value: Low

J2EE::Database:SQL Query Performance >> Transaction Performance & EJB Performance & DataSource ConnectionPool Performance

Description: WebSphere SQL Query Performance impacts Transaction Performance EJB Performance J2EEDataSource Connection Pool Performance		
Cause		
CIT: Database	ETI: SQL Query Performance	Value: Low
Symptom 1		
CIT: JDBC Data Source	ETI: Data Source Connection Pool Availability	Value: Low
Symptom 2		
CIT: WebSphere AS	ETI: EJB Performance	Value: Low
Symptom 3		
CIT: WebSphere AS	ETI: Transaction Performance	Value: Low

J2EE::Computer:CPU Load >> JVM Memory Utilization & EJB Performance

Description: WebSphere CPU Load impacts JVM Memory Utilization EJB Performance		
Cause		
CIT: Computer	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: WebSphere AS	ETI: EJB Performance	Value: Low
Symptom 2		
CIT: WebSphere AS	ETI: JVM Memory	Value: High

J2EE::Computer:Memory Usage Level >> Server Status

Description: WebSphere Memory Usage Level impacts Server Status		
Cause		
CIT: Computer	ETI: Memory Usage Level	Value: Near Capacity
Symptom		
CIT: WebSphere AS	ETI: Server Status	Value: Unavailable

J2EE::J2EE Cluster:Cluster Status >> Domain Status

Description: Cluster Status impacts Domain Status		
Cause		
CIT: J2EE Cluster	ETI: Cluster Status	Value: Stopped
Symptom		
CIT: J2EE Domain	ETI: Domain Status	Value: Poor

J2EE::JDBC Data Source:DataSource ConnectionPool Availability >> EJB Performance

Description: WebSphere J2EE DataSource Connection Pool Availability impacts EJB Performance		
Cause		
CIT: JDBC Data Source	ETI: DataSource Connection Pool Availability	Value: Low
Symptom		
CIT: WebSphere AS	ETI: EJB Performance	Value: Low

J2EE::Websphere AS:EJB Performance >> Servlet Response Time

Description: WebSphere EJB Performance impacts Servlet Response Time		
Cause		
CIT: WebSphere AS	ETI: EJB Performance	Value: Low
Symptom		
CIT: WebSphere AS	ETI: Servlet Response Time	Value: High

J2EE::Websphere AS:EJB Utilization >> DataSource ConnectionPool Utilization

Description: WebSphere EJB Utilization impacts J2EE DataSource Connection Utilization		
Cause		
CIT: WebSphere AS	ETI: EJB Utilization	Value: High
Symptom		
CIT: JDBC Data Source	ETI: DataSource	Value: High

J2EE::Websphere AS:HTTP Sessions >> JVM Memory Utilization

Description: WebSphere HTTP Sessions impacts JVM Memory Utilization		
Cause		
CIT: WebSphere AS	ETI: HTTP Sessions	Value: High
Symptom		
CIT: WebSphere AS	ETI: JVM Memory	Value: High

J2EE::Websphere AS:JVM Memory Utilization >> Servlet Response Time

Description: WebSphere JVM Memory Utilization impacts Servlet Response Time		
Cause		
CIT: WebSphere AS	ETI: JVM Memory Utilization	Value: High
Symptom		
CIT: WebSphere AS	ETI: Servlet Response Time	Value: High

J2EE::Websphere AS:Server Status >> Cluster Status

Description: WebSphere Server Status impacts Cluster Status		
Cause		
CIT: WebSphere AS	ETI: Server Status	Value: Unavailable
Symptom		
CIT: J2EE Cluster	ETI: Cluster Status	Value: Partial Stop

J2EE::Websphere AS:Server Status >> Domain Status

Description: WebSphere Server Status impacts Domain Status		
Cause		
CIT: WebSphere AS	ETI: Server Status	Value: Unavailable
Symptom		
CIT: J2EE Domain	ETI: Domain Status	Value: Poor

J2EE::Websphere AS:Servlet Requests >> JVM Memory Utilization & HTTP Sessions & Thread Pool Utilization

Description: WebSphere Servlet Requests impacts JVM Memory Utilization HTTP Sessions Thread Pool Utilization		
Cause		
CIT: WebSphere AS	ETI: Servlet Requests	Value: High
Symptom 1		
CIT: WebSphere AS	ETI: HTTP Sessions	Value: High
Symptom 2		
CIT: WebSphere AS	ETI: JVM Memory	Value: High
Symptom 3		
CIT: WebSphere AS	ETI: Thread Pool Utilization	Value: High

Tool Definitions

J2EEStandards: Starts a web browser and connects to the J2EE Management Specifications site.

View Collection Status: Displays the collection status for the servers.

Graph Templates

The content pack contains the SPI for WebSphere graph family mapped to the WebSphere CI type.

The following table lists the graph templates present in the SPI for WebSphere graph family and the mapped policies.

Graph Templates	Metric Name	Policy Description
EJB	I020_ EJBPool Util	Percentage of active beans in the pool (used only for graphing)
	I022_ EJB Meth Calls Rt	Number of EJB method calls per minute (used only for graphing)
	I024_ EJB Ent DatLd StRt	Number of times an EJB was written to or loaded from the database per minute (used only for graphing)
	I025_ EJB Pool Miss Pct	Average percentage of time a call to retrieve an EJB from the pool failed (used only for graphing)
	I026_ EJB Conc Lives	Average percentage of bean objects in the pool (used only for graphing)
JDBC	I061_JDBC ConPool Wait	Average percentage of threads waiting for a connection from connection pools (used only for graphing)
	I062_ JDBCon Pool WtTim	Average time that a client waited for a connection in msec (used only for graphing)
	I065_ JDBCon Pool TimRt	Number of times a client timed out waiting for a connection from the pool per minute (used only for graphing)
	I066_ JDBConPool Thru	Number of connections allocated and returned by applications per second (used only for graphing)

Graph Templates	Metric Name	Policy Description
Servlet	WBSSPI_0040	Servlet session average lifetime
	WBSSPI_0041	Servlet session active sessions
	WBSSPI_0042	Servlet invalid session rate
ThreadPool	I013_Thrd Pool PctMax	Percentage of time the number of threads in pool reached configured maximum size
	I014_Thrd Pool CrtRt	Number of threads created per minute (used only for graphing)
Transaction	WBSSPI_0070	Transaction global duration
	WBSSPI_0071	Transaction local duration
	WBSSPI_0072	Transaction global commit duration
	WBSSPI_0073	Transaction local commit duration
	WBSSPI_0074	Transaction rollback rate
	WBSSPI_0075	Transaction timeout rate
	WBSSPI_0076	Transaction commit rate
	I077_Tran Thruput	Number of global and local transactions that were completed per second (used only for graphing)
	WBSSPI_0078	Transaction start rate

Graph Templates	Metric Name	Policy Description
WebApplication	I045_ WebAppServ ReqRt	Number of requests for a servlet per second (used only for graphing)
	I047_ WebAppServ ErrRt	Number of errors in a servlet per second (used only for graphing)
	WBSSPI_0048	Web application servlet load
	I049_ WebAppServ RelRt	Number of servlets reloaded for a web application per minute (used only for graphing)

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

Note: For more information on the measurement threshold policies and events, refer to the HP Operations Smart Plug-in for IBM WebSphere Application Server documentation.

ETI/HI	Policy Name	Policy Description
Cluster Status	WBSSPI_0006	Cluster Status
DataSource Connection Pool Availability	WBSSPI_0265	JDBC Connection Pool Timeout Rate
DataSource Connection Pool Performance	WBSSPI_0266	JDBC Connection Pool Throughput
DataSource Connection Pool Utilization	WBSSPI_0263	JDBC Connection Pool Utilization
EJB Performance	WBSSPI_0221	EJB Average Response Time
EJB Utilization	WBSSPI_0220	EJB Pool Utilization Percent
HTTPS Sessions	WBSSPI_0041	Servlet Session Active Sessions
JVM Memory Utilization	WBSSPI_0005	JVM memory utilization
Server Status	WBSSPI_0001	Server Status
Servlet Response Time	WBSSPI_0246	Web Application Servlet Response Time
Servlet Requests	WBSSPI_0245	Web Application Servlet Request Rate
Thread Pool Utilization	WBSSPI_0212	Thread Pool Utilization Percent
Transaction Performance	WBSSPI_0075	Transaction Timeout Rate
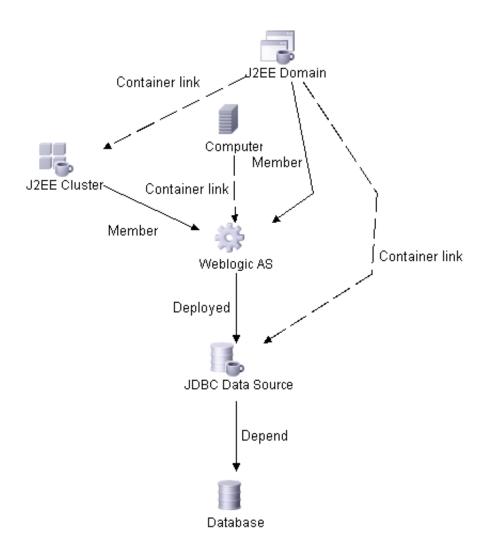
WebLogic Application Server Installation Package

Note: To display the impact of the database instance on WebLogic Application Server, you must specify the appropriate Application IP and database instance name in the JDBC URL. These properties are used to create the link between the WebLogic Application Server and database instance.

The WebLogic Application Server installation package contains the following artifacts.

CI Types and UCMDB Views

The UCMDB package in the WebLogic installation package contains the WLS_Deployment view, which refers to the J2EE Cluster, J2EE Domain, JDBC Data Source, WebLogic AS, Database, and Computer CI types. The following image shows the relationship among the CI types.

Health Indicators

The content pack includes the following Health Indicators (HIs) to monitor WebLogic-related events:

CI Type	HI	Description	Value
J2EE Cluster	Cluster Health	Cluster Health in terms of performance	Normal, Poor
	Cluster Status	Cluster Status in terms of availability	Started, Partial Stopped, Stopped
J2EE Domain	Domain Status	Domain Status in terms of availability	N.A.
JDBC Data Source	DataSource ConnectionPool Availability	DataSource ConnectionPool Availability.	Normal, Low
	DataSource ConnectionPool Failures	The number of failed attempts to refresh a connection in the connection pool.	Normal, Critical
	DataSource ConnectionPool Performance	DataSource ConnectionPool Performance	Normal, Low
	DataSource ConnectionPool Utilization	DataSource Connection Pool Utilization	Normal, High

CI Type	HI	Description	Value
WebLogic AS	EJB Timeout Rate	The number of times per unit time that an EJB has timed out.	Normal, High
	EJB Performance	Shows the EJB Performance such as EJB response time, timeout statistics	Normal, Low
	EJB Utilization	EJB Pool or Cache Utilization	Normal, High
	JMS Server Utilization	Indicates the utilization of the JMS Server Queue	Normal, High
	JVM Memory Utilization	JVM Memory used by the server java process	Normal, High
	JVM Performance	JVM performance statistics	Normal, Degraded
	Server Status	Shows the server status in terms of availability	Available, Unavailable
	Servlet Response Time	The time taken by a servlet to send a response after it has received a request.	Normal, High
	Thread Pool Utilization	Number of threads utilized in the server to execute tasks	Normal, High
	Transaction Capacity Utilization	The number of simultaneous in-progress transactions.	Normal, High
	Transaction Performance	Performance of the transactions. This includes the number of rolled back transactions.	Normal, Low

Event Type Indicators

The installation package includes the following Event Type Indicators (ETIs) to monitor WebLogic-related events:

CI Type	ETI	Description	Value
WebLogic AS	HTTP Sessions	Number of open HTTP Sessions	Normal, High
	Servlet Requests	Number of requests made by a client to a servlet	Normal, High
	Transaction Rollback Count	Number of rolled back transactions due to system, resource or other errors	Normal, High
	Transaction System Errors	Transaction errors caused due to system errors	Normal, High
	Transaction Timeout Errors	Transaction errors caused due to transaction timeout	Normal, High

Correlation Rules

The content pack includes the following rules to correlate WebLogic-related events.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

J2EE::Database:CPU Usage By SQL >> Transaction Performance & Transaction Timeout Errors & Transaction Rollback Count

Description: Weblogic DB CPU Usage By SQL impacts Transaction Performance Transaction Timeout Errors Transaction Rollback Count		
Cause		
CIT: Database	ETI: CPU Usage by SQL	Value: High
Symptom 1		
CIT: WebLogic AS	ETI: Transaction Performance	Value: Low
Symptom 2		
CIT: WebLogic AS	ETI: Transaction Rollback Count	Value: High
Symptom 3		
CIT: WebLogic AS	ETI: Transaction Timeout Errors	Value: High

J2EE::Database:Database Server Status >> DataSource ConnectionPool Availability

Description: WebLogic Database Server Status impacts J2EEDataSource Connection Pool Availability		
Cause		
CIT: Database	ETI: Database Server Status	Value: Down
Symptom 1		
CIT: JDBC Data Source	ETI: Data Source Connection Pool Availability	Value: Low

J2EE::Database:Server Load >> Transaction Performance & Transaction Timeout Errors & Transaction Rollback Count

Description: Weblogic DB Server Load impacts Transaction Performance Transaction Timeout Errors Transaction Rollback Count		
Cause		
CIT: Database	ETI: Server Load	Value: High
Symptom 1		
CIT: WebLogic AS	ETI: Transaction Performance	Value: Low
Symptom 2		
CIT: WebLogic AS	ETI: Transaction Rollback Count	Value: High
Symptom 3		
CIT: WebLogic AS	ETI: Transaction Timeout Errors	Value: High

J2EE::Database:SQL Query Performance >> Transaction Performance & Transaction Timeout Errors & Transaction Rollback Count

Description: Weblogic SQL Query Performance impacts Transaction Performance Transaction Timeout Errors Transaction Rollback Count		
Cause		
CIT: Database	ETI: SQL Query Performance	Value: Low
Symptom 1		
CIT: WebLogic AS	ETI: Transaction Performance	Value: Low
Symptom 2		
CIT: WebLogic AS	ETI: Transaction Rollback Count	Value: High
Symptom 3		
CIT: WebLogic AS	ETI: Transaction Timeout Errors	Value: High

J2EE::Computer:CPU Load >> JVM Memory Utilization & JMS Utilization & Transaction System Errors

Description: Weblogic CPU Load impacts JVM Memory Utilization JMS Utilization Transaction System Errors		
Cause		
CIT: Computer	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: WebLogic AS	ETI: JMS Server Utilization	Value: High
Symptom 2		
CIT: WebLogic AS	ETI: JVM Memory Utilization	Value: High
Symptom 3		
CIT: WebLogic AS	ETI: Transaction System Errors	Value: High

J2EE::Computer:Memory Usage Level >> Server Status & Transaction System Errors

Description: Weblogic Memory Usage Level impacts Server Status Transaction System Errors		
Cause		
CIT: Computer	ETI: Memory Usage Level	Value: Near Capacity
Symptom 1		
CIT: WebLogic AS	ETI: Server Status	Value: Unavailable
Symptom 2		
CIT: WebLogic AS	ETI: Transaction System Errors	Value: High

J2EE::J2EE Cluster:Cluster Health >> Domain Status

Description: Cluster Health impacts Domain Status		
Cause		
CIT: J2EE Cluster	ETI: Cluster Health	Value: Poor
Symptom		
CIT: J2EE Domain	ETI: Domain Status	Value: Poor

J2EE::JDBC Data Source:DataSource ConnectionPool Utilization >> Transaction Performance

Description: Weblogic J2EEDataSource Connection Pool Utilization impacts Transaction Performance		
Cause		
CIT: JDBC Data Source	ETI: DataSource Connection Pool Utilization	Value: High
Symptom		
CIT: WebLogic AS	ETI: Transaction Performance	Value: Low

J2EE::Weblogic AS:EJB Timeout Rate >> Servlet Response Time

Description: Weblogic EJB Timeout Rate impacts Servlet Response Time		
Cause		
CIT: WebLogic AS	ETI: EJB Timeout Rate	Value: High
Symptom		
CIT: WebLogic AS	ETI: Servlet Response Time	Value: High

J2EE::Weblogic AS:HTTP Sessions >> EJB Performance & EJB Utilization

Description: Weblogic HTTP Sessions impacts EJB Performance EJB Utilization		
Cause		
CIT: WebLogic AS	ETI: HTTP Sessions	Value: High
Symptom 1		
CIT: WebLogic AS	ETI: EJB PerformanceDataSource	Value: Low
Symptom 2		
CIT: WebLogic AS	ETI: EJB Utilization	Value: High

J2EE::Weblogic AS:JVM Memory Utilization >> Servlet Response Time

Description: WebLogic JVM Memory Utilization impacts Servlet Response Time		
Cause		
CIT: WebLogic AS	ETI: JVM Memory Utilization	Value: High
Symptom		
CIT: WebLogic AS	ETI: Servlet Response Time	Value: High

J2EE::WebLogic AS:Server Status >> Cluster Status

Description: WebLogic Server Status impacts Cluster Status		
Cause		
CIT: WebLogic AS	ETI: Server Status	Value: Unavailable
Symptom		
CIT: J2EE Cluster	ETI: Cluster Status	Value: Partial Stop

J2EE::WebLogic AS:Server Status >> Domain Status

Description: WebLogic Server Status impacts Domain Status		
Cause		
CIT: WebLogic AS	ETI: Server Status	Value: Unavailable
Symptom		
CIT: J2EE Domain	ETI: Domain Status	Value: Poor

J2EE::WebLogic AS:Servlet Requests >> JVM Memory Utilization & HTTP Sessions & Thread Pool Utilization

Description: WebLogic Servlet Requests impacts JVM Memory Utilization HTTP Sessions Thread Pool Utilization		
Cause		
CIT: WebLogic AS	ETI: Servlet Requests	Value: High
Symptom 1		
CIT: WebLogic AS	ETI: HTTP Sessions	Value: High
Symptom 2		
CIT: WebLogic AS	ETI: JVM Memory Utilization	Value: High
Symptom 3		
CIT: WebLogic AS	ETI: Thread Pool Utilization	Value: High

J2EE::Weblogic AS:Transaction Timeout Errors >> Transaction Rollbacks

Description: Weblogic Transaction Timeout Errors impact Transaction Rollbacks		
Cause		
CIT: WebLogic AS	ETI: Transaction Timeout Errors	Value: High
Symptom		
CIT: J2EE Domain	ETI: Transaction Rollback Count	Value: High

Tool Definitions

J2EEStandards: Starts a web browser and connects to the J2EE Management Specifications site.

View WebLogic Server Status: Displays the WebLogic Server status.

Graph Templates

The content pack includes the SPI for WebLogic Server graph family, which is mapped to the WebLogic AS CI type.

The following table lists the graph templates present in the SPI for WebLogic graph family and the mapped policies.

Graph Templates	Metric Name	Policy Description
Cluster	WLSSPI_0080	Cluster outgoing message failure rate
	WLSSPI_0081	Cluster incoming message failure rate
EJB	WLSSPI_0025	Aggregate EJB free pool wait count
	WLSSPI_0026	Aggregate EJB timeout rate
	WLSSPI_0035	Aggregate EJB transaction throughput rate
	WLSSPI_0036	Aggregate EJB transaction rollback rate
Serverstat	WLSSPI_0005	JVM Memory utilization
	B013_Socket Traffic Rt	Number of socket connections opened per second (used for graphing only)
	WLSSPI_0014	Active Sockets count
	WLSSPI_0061	Aggregate JDBC Connection Pool wait count
	WLSSPI_0085	Invalid login attempts count
	B091_ Time Ser Thru Rt	Number of triggers executed per second (used for graphing only)

Graph Templates	Metric Name	Policy Description
Transaction	WLSSPI_0070	Transaction average time
	WLSSPI_0071	Transactions rollback percentage
	WLSSPI_0072	Transaction resource error rollback percentage
	WLSSPI_0073	Transaction application error rollback percentage
	WLSSPI_0074	Transaction timeout error rollback percentage
	WLSSPI_0075	Transaction system error rollback percentage
	B076_Tran Thru Rate	Number of transactions processed per second (used for graphing and reporting only)
	WLSSPI_0077	Transaction heuristic count

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

ETI/HI	Policy Name	Policy Description
Cluster Health	WLSSPI_0082	Checks the cluster health
DataSource Connection Pool Availability	WLSSPI_0265	JDBC Connection Pool Average Connection Delay
DataSource Connection Pool Utilization	WLSSPI_0260	JDBC Connection Pool Utilization Percent
EJB Timeout Rate	WLSSPI_0026	EJB Timeout Rate
	WBSSPI_0226	
HTTP Sessions	WLSSPI_0245	Web Application Session Count
JMS Server Utilization	WLSSPI_0251	JMS Queue Utilization Percent by Message Count
JVM Memory Utilization	WLSSPI_0005	JVM Memory Utilization
Server Status	WBSSPI_0001	Server Status
Servlet Requests	WLSSPI_0242	Servlet Request Rate
Servlet Response Time	WLSSPI_0240	Servlet Average Execution Time
Transaction Performance	WLSSPI_0070	Transaction Average Time
Transaction Rollback Count	WLSSPI_0071	Transaction Rollback Percent
Transaction System Errors	WLSSPI_0075	Transaction System Error Rollback Percent
Transaction Timeout Errors	WLSSPI_0074	Transaction Timeout Error Rollback Percent
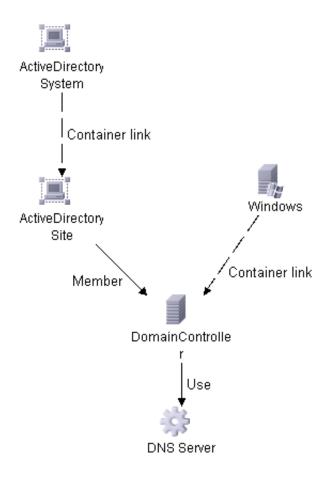
Microsoft Active Directory Server Installation Package

The Microsoft Active Directory Server installation package contains the following artifacts.

CI Types and UCMDB Views
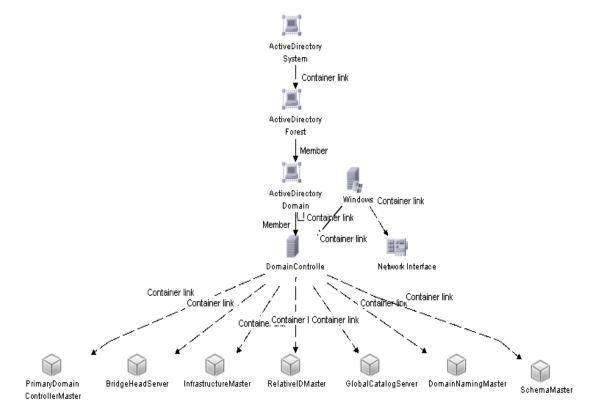
The UCMDB package in the Microsoft Active Directory Server installation package contains the following views:

➤ **AD_Physical_View**: This view refers to the Active Directory System, Active Directory Site, Domain Controller, DomainNamingMaster, and Computer (Windows) CI types.

➤ **AD_Logical_view**: This view refers to the Active Directory System, Active Directory Forest, Active Directory Domain, Domain Controller, SchemaMaster, DomainNamingMaster, PrimaryDomainControllerMaster, RelativeIDMaster, InfrastructureMaster, BridgeHeadServer, GlobalCatalogServer, and Computer CI types.

Health Indicators

The content pack includes the following health indicators (HIs) to monitor
Active Directory-related events:

CI Type	HI	Description	Value
Active Directory Role	Response Time	Indicates the ping response time of FSMO roles	Normal, High, Very High
Domain Controller	Access Permissions Errors	Indicates the number of Access Permission Errors on the Domain Controller	Normal, High, Very High
Domain Controller	CName Records Availability	Indicates the availability of CName Records on the DNS Server of the Domain Controller	Found, Not Found
Domain Controller	DC LDAP Bind Response Time	Indicates the response time to bind to LDAP on domain controller	Normal, High, Very High
Domain Controller	DC LDAP Query Response Time	Indicates the response time of a sample LDAP query on domain controller	Normal, High, Very High
Domain Controller	DFRS Service State	DFSR Service State	Up, Down
Domain Controller	DIT Disk Queue Length	Indicates the queue length of DIT disk	Normal, High, Very High
Domain Controller	DIT Disk Space Availability	Indicates the availability of free space on DIT disk	Normal, Low, Near Capacity
Domain Controller	DIT Log Files Disk Queue Length	Indicates the queue length of DIT Log Files disk	Normal, High, Very High
Domain Controller	DIT Log Files Disk Space Availability	Indicates the availability of free space on DIT Log Files Disk.	Normal, Low, Near Capacity

CI Type	HI	Description	Value
Domain Controller	DNS Query Response	Indicates the response time of a sample DNS Query on domain controller	Normal, Very high
Domain Controller	FRS Status	Indicates the status of File Replication Service	Up, Down
Domain Controller	Host Records Availability	Indicates the availability of Host Records on the DNS Server of the Domain Controller	Found, Not found
Domain Controller	Inbound Object Updates Remaining	Indicates the number of Inbound Object Updates remaining	Normal, High, Very High
Domain Controller	Intersite Replication Latency	Indicates the replication latency of the Domain Controller across AD Sites	Normal, High, Very High
Domain Controller	Intrasite Replication Latency	Indicates the Replication Latency of the Domain Controller within the AD Site	Normal, High, Very High
Domain Controller	ISM Service Status	Indicates the status of Intersite Messaging Service	Up, Down
Domain Controller	KDC Service Status	Indicates the status of Kerberos Distribution Centre Service	Up, Down
Domain Controller	Kerberos Authentication Rate	Indicates the rate of Kerberos Authentication on the Domain Controller	Normal, High, Very High
Domain Controller	Kerberos SrvRecords Availability	Indicates the availability of Kerberos Server Records on the DNS Server	Found, Not Found
Domain Controller	LDAP Active Threads	Indicates the number of LDAP threads which are active on the Domain Controller	Normal, High, Very High

CI Type	HI	Description	Value
Domain Controller	LDAP Client Sessions	Indicates the number LDAP Client Sessions on the Domain Controller	Normal, High, Very High
Domain Controller	LDAP SrvRecords Availability	Indicates the availability of LDAP Server Records on the DNS Server of	Found, Not Found
Domain Controller	Logon Errors	Indicates the number of Logon Errors on the Domain Controller	Normal, High, Very High
Domain Controller	LSASS Page Faults Rate	Indicates rate of Page Faults for LSASS	Normal, High, Very High
Domain Controller	LSASS Private Bytes	Indicates the Private Bytes used by Local Security Authority Subsystem Service on the Domain Controller	Normal, High, Very High
Domain Controller	LSASS Processor Time	Indicates the Processor Time used by Local Security Authority Subsystem Service on the Domain Controller	Normal, High, Very High
Domain Controller	LSASS Working Set	Indicates the Working Set of the Local Security Authority Subsystem Service	Normal, High, Very High
Domain Controller	Net Logon Service State	Indicates the status of Net Logon Service on the Domain Controller	Up, Down
Domain Controller	Non Transitive Membership Evaluations	Indicates the number of non transitive membership evaluations performed	Normal, High, Very High
Domain Controller	Notify Queue Size	Indicates the size of notify queue	Normal, High, Very High

CI Type	HI	Description	Value
Domain Controller	NTDS Service State	Indicates the status of NTDS Services on the Domain Controller	Up, Down
Domain Controller	NTFRS Page Faults Rate	Indicates rate of Page Faults for NTFRS process	Normal, High, Very High
Domain Controller	NTFRS Private Bytes	Indicates the Private Bytes used by the File Replication Service	Normal, High, Very High
Domain Controller	NTFRS Processor Time	Indicates the processor time utilized by the File Replication Service on the Domain Controller	Normal, High, Very High
Domain Controller	NTFRS Working Set	Indicates the Working Set of the File Replication Service on the Domain Controller	Normal, High, Very High
Domain Controller	NTLM Authentication Rate	Indicates the rate of NTLM Authentication on the Domain Controller	Normal, High, Very High
Domain Controller	Pending Replication Synchronizations	Indicates the number of pending replication synchronizations	Normal, High, Very High
Domain Controller	SamSs Service State	Indicates the state of Security Accounts Manager Service on the Domain Controller	Up, Down
Domain Controller	Security Descriptor Propagator Queue	Indicates the length of Security Descriptor Propagator Queue on the Domain Controller	Normal, High, Very High
Domain Controller	Sysvol Connectivity	Indicates the connectivity to Sysvol folder	Up, Down
Domain Controller	Sysvol Disk Space Availability	Indicates the availability of free space on Sysvol disk	Normal, Low, Near Capacity

CI Type	HI	Description	Value
Domain Controller	Transitive Membership Evaluations	Indicates the number of Transitive Membership Evaluations performed on the Domain Controller	Normal, High, Very High
Global Catalog	GC LDAP Bind Response Time	Indicates the response time to bind to LDAP on global catalog	Normal, High, Very High
	GC LDAP Query Response Time	Indicates the response time of a sample LDAP Query on Global Catalog	Normal, High, Very High
	GC Replication Latency	Indicates the replication latency on global catalog	Normal, Very High

Event Type Indicators

The content pack includes the following ETIs to monitor Active Directory-related events:

CI Type	HI	Description	Value
Domain Controller	Inbound Replication Object Rate	Indicates the rate of Inbound Replication Objects	Normal, High, Very High
	Synchronization Failure Rate	Indicates the rate of synchronization failures	Normal, High, Very High

Correlation Rules

The content pack includes the following rules to correlate Active Directory-related events.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

AD::DomainController:CNameRecordsAvailability >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: CName Records Availability on the DNS Server of the Domain Controller Impacts Inter and Intra Site Replication Latency		
Cause		
CIT: Domain Controller	ETI: CName Records Availability	Value: Not Found
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:DIT Disk Queue Length >> DomainController Performance

Description: DIT Disk Queue Length Impacts DC Performance		
Cause		
CIT: Domain Controller	ETI: DIT Disk Queue Length	Value: Very High
Symptom 1		
CIT: Domain Controller	ETI: DC LDAP Bind Response Time	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: DC LDAP Query Response Time	Value: Very High
Symptom 3		
CIT: Domain Controller	ETI: Inbound Object Updates Remaining	Value: Very High
Symptom 4		
CIT: Domain Controller	ETI: Pending Replication Synchronizations	Value: Very High

AD::DomainController:DIT Disk Queue Length >> GlobalCatalog Performance

Description: DIT Disk Queue Length Impacts GC Performance		
Cause		
CIT: Domain Controller	ETI: DIT Disk Queue Length	Value: Very High
Symptom 1		
CIT: Global Catalog Server	ETI: GC LDAP Bind Response Time	Value: Very High
Symptom 2		
CIT: Global Catalog Server	ETI: GC LDAP Query Response Time	Value: Very High

AD::DomainController:DIT Disk Space Availability >> DIT Disk Queue Length & Inbound Object Updates Remaining

Description: Available DIT Disk Space Impacts DIT Disk Queue Length and Inbound Object Updates Remaining		
Cause		
CIT: Domain Controller	ETI: DIT Disk Space Availability	Value: Near Capacity
Symptom 1		
CIT: Domain Controller	ETI: DIT Disk Queue Length	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Inbound Object Updates	Value: Very High

AD::DomainController:DIT Log Files Disk Space Availability >> DIT Log Files Disk Queue Length

Description: Available Disk Space for DIT Log Files Impact DIT Log Files Disk Queue Length		
Cause		
CIT: Domain Controller	ETI: DIT Log Files Disk Space	Value: Near Capacity
Symptom		
CIT: Domain Controller	ETI: DIT Log Files Disk Queue	Value: Very High

AD::DomainController:FRS Status >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: File Replication Service Status Impacts DC Replication Latency		
Cause		
CIT: Domain Controller	ETI: FRS Status	Value: Down
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High

Description: File Replication Service Status Impacts DC Replication Latency		
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:HostRecordsAvailability >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: Host Records Availability on the DNS Server of the Domain Controller Impacts Inter and Intra Site Replication Latency		
Cause		
CIT: Domain Controller	ETI: Host Records Availability	Value: Not Found
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:ISMServiceStatus >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: ISM Service Status Impacts Inter and Intra Site Replication Latency on the Domain Controller		
Cause		
CIT: Domain Controller	ETI: ISM Service Status	Value: Down
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:KDCServiceStatus >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: KDC Service Status Impacts Inter and Intra Site Replication Latency on the Domain Controller		
Cause		
CIT: Domain Controller	ETI: KDC Service Status	Value: Down
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:KerberosSrvRecordsAvailability >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: Kerberos Server Records Availability on the DNS Server of the Domain Controller Impacts Inter and Intra Site Replication Latency		
Cause		
CIT: Domain Controller	ETI: Kerberos Server Records Availability	Value: Not Found
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:LDAPSrvRecordsAvailability >> InterSiteReplicationLatency & IntraSiteReplicationLatency

Description: LDAP Server Records Availability on the DNS Server of the Domain Controller Impacts Inter and Intra Site Replication Latency		
Cause		
CIT: Domain Controller	ETI: LDAP Server Records Availability	Value: Not Found
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::DomainController:LSASS Page Faults Rate >> DomainController Performance

Description: LSASS Page Faults Rate Impacts DC Performance		
Cause		
CIT: Domain Controller	ETI: LSASS Page Faults Rate	Value: Very High
Symptom 1		
CIT: Domain Controller	ETI: DC LDAP Bind Response Time	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: DC LDAP Query Response Time	Value: Very High
Symptom 3		
CIT: Domain Controller	ETI: Inbound Object Updates Remaining	Value: Very High

Description: LSASS Page Faults Rate Impacts DC Performance		
Symptom 4		
CIT: Domain Controller	ETI: Pending Replication Synchronizations	Value: Very High

AD::DomainController:LSASS Page Faults Rate >> GlobalCatalog Performance

Description: LSASS Page Faults Rate Impacts GC Performance		
Cause		
CIT: Domain Controller	ETI: LSASS Page Faults Rate	Value: Very High
Symptom 1		
CIT: Global Catalog Server	ETI: GC LDAP Bind Response Time	Value: Very High
Symptom 2		
CIT: Global Catalog Server	ETI: GC LDAP Query Response Time	Value: Very High

AD::DomainController:Sysvol Connectivity >> Notify Queue Size

Description: Sysvol Connectivity Impacts Notify Queue Size		
Cause		
CIT: Domain Controller	ETI: Sysvol Connectivity	Value: Down
Symptom		
CIT: Domain Controller	ETI: Notify Queue Size	Value: Very High

AD::DomainController:Sysvol Disk Space Availability >> DC Replication Latency & Inbound Replication Object Rate

Description: Available Disk Space for Sysvol Impacts DC Replication Latency and Inbound Replication Object Rate		
Cause		
CIT: Domain Controller	ETI: Sysvol Disk Space Availability	Value: Near Capacity
Symptom 1		
CIT: Domain Controller	ETI: Inbound Replication Object Rate	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 3		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

AD::Network Interface:Network IO >> Domain Naming Master Connectivity

Description: Network IO Impacts Domain naming master connectivity		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Domain Naming Master	ETI: Response Time	Value: Very High

AD::Network Interface:Network IO >> DomainController Connectivity

Description: Network IO Impacts DC Connectivity		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High
Symptom 3		
CIT: Domain Controller	ETI: Notify Queue Size	Value: Very High

AD::Network Interface:Network IO >> Infrastructure Master Connectivity

Description: Network IO Impacts Infrastructure master Connectivity		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Infrastructure Master	ETI: Response Time	Value: Very High

AD::Network Interface:Network IO >> PDC Master Connectivity

Description: Network IO Impacts PDC master Connectivity		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Primary Domain Controller Master	ETI: Response Time	Value: Very High

AD::Network Interface:Network IO >> RID Master Connectivity

Description: Network IO Impacts RID master Connectivity		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Relative ID Master	ETI: Response Time	Value: Very High

AD::Network Interface:Network IO >> Schema Master Connectivity

Description: Network IO Impacts Schema master Connectivity		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Schema Master	ETI: Response Time	Value: Very High

AD::Windows:CPU Load >> DomainController Performance

Description: CPU Load Impacts DC Performance		
Cause		
CIT: Windows	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: Domain Controller	ETI: DC LDAP Bind Response Time	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: DC LDAP Query Response Time	Value: Very High
Symptom 3		
CIT: Domain Controller	ETI: Inbound Object Updates Remaining	Value: Very High
Symptom 4		
CIT: Domain Controller	ETI: Pending Replication Synchronizations	Value: Very High

AD::Windows:CPU Load >> GlobalCatalog Performance

Description: CPU Load Impacts GC Performance		
Cause		
CIT: Windows	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: Global Catalog Server	ETI: GC LDAP Bind Response Time	Value: Very High
Symptom 2		
CIT: Global Catalog Server	ETI: GC LDAP Query Response Time	Value: Very High

AD::Windows:Logical Disk Free Space >> DomainController Performance

Description: Available Logical Disk Free Space Impacts DC Performance		
Cause		
CIT: Windows	ETI: Logical Disk Free Space	Value: Near Capacity
Symptom 1		
CIT: Domain Controller	ETI: DIT Disk Queue Length	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: DIT Log Files Disk Queue Length	Value: Very High
Symptom 3		
CIT: Domain Controller	ETI: Inbound Object Updates Remaining	Value: Very High
Symptom 4		
CIT: Domain Controller	ETI: Pending Replication Synchronizations	Value: Very High

AD::Windows:RPC Service >> DomainController Replication

Description: RPC Service Status impacts DC Replication Latency and Notify Queue Size		
Cause		
CIT: Windows	ETI: RPC Service	Value: Near Capacity
Symptom 1		
CIT: Domain Controller	ETI: Inter Site Replication Latency	Value: Very High
Symptom 2		
CIT: Domain Controller	ETI: Intra Site Replication Latency	Value: Very High

Description: RPC Service Status impacts DC Replication Latency and Notify Queue Size		
Symptom 3		
CIT: Domain Controller	ETI: Notify Queue Size	Value: Very High

Tool Definitions

Start File Replication Service: Starts the File Replication service on the Domain Controller.

Graph Templates

The following table lists the graph templates present in the content pack and mapped policies.

Graph Templates	Policy Name	Policy Description
Active Directory Replication Latency	ADSPI- Rep_Monitor IntraSite Replication	Monitor IntraSite Replication in Active Directory
Active Directory Query Response Time	ADSPI- Response_ Logging	Logs active directory response times
Active Directory Bind Response Time		
Active Directory GC Availability		
Active Directory Replication Time by Global Catalog	ADSPI- Rep_GC_ Check_and_ Threshold	Calculates, stores and threshold Global Catalog Replication Latency in hours.

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

Note: For more information on the measurement threshold policies and events, refer to the HP Operations Smart Plug-in for Microsoft Active Directory documentation.

ETI/HI	Policy Name	Policy Description
Access Permissions Errors	ADSPI_ SecErr Access Permissions	Checks the errors access permissions
	ADSPI_ SecErr Access Permissions_2k8+	
CName Records Availability	ADSPI- DNS_DC_ CNAME_Chk	Ensures that DNS contains the expected CNAME resource records for the LDAP service.
	ADSPI- DNS_DC_ CNAME_Chk _2k8+	
DC LDAP Query Response Time	ADSPI- Response Time_ Query	Monitors the response time of queries made to the domain controller in seconds.
	ADSPI- Response Time_ Query _2k8+	
DC LDAP Bind Response Time	ADSPI- Response Time_ Bind	Monitors the bind response time of the domain controller in seconds.
	ADSPI- Response Time_ Bind _2k8+	
DFSR Service State	ADSPI_DFSR_2K8+	Checks the distributed file service replication service.

ETI/HI	Policy Name	Policy Description
DIT Disk Space Availability	ADSPI- DIT_DIT Percent Full	Monitors the amount of free space on the DIT disk drive.
	ADSPI- DIT_DIT Percent Full _2k8+	
DIT Disk Queue Length	ADSPI- DIT_ DITQueue Length	Monitors the length on the DIT disk drive.
	ADSPI- DIT_ DITQueue Length _2k8+	
DIT LogFiles Disk Space Availability	ADSPI- DIT_LogFiles Percent Full	Monitors the amount of free space on the DIT log files disk drive.
	ADSPI- DIT_LogFiles Percent Full _2k8+	
DIT LogFiles Disk Queue Length	ADSPI- DIT_LogFiles Queue Length	Monitors the queue length on the DIT log files disk drive.
	ADSPI- DIT_LogFiles Queue Length _2k8+	
DNS Query Response	ADSPI- DNS_DC_ Response	Monitors the response time of DNS queries made by the domain controller in milliseconds.
	ADSPI- DNS_DC_ Response _2k8+	
FRS Status	ADSPI_ NTFRS and ADSPI_ NTFRS _2k8+	Checks the File replication service.
GC LDAP Bind Response Time	ADSPI- Response Time_ GCBind	Monitors the bind response time of the global catalog on the domain controller in seconds.
	ADSPI- Response Time_ GCBind _2k8+	

ETI/HI	Policy Name	Policy Description
GC LDAP Query Response Time	ADSPI- Response Time_ GCQuery	Monitors the response time of queries made to the global catalog domain controller in seconds.
	ADSPI- Response Time_ GCQuery _2k8+	
GC Replication Latency	ADSPI- Rep_GC_ Check_ and_ Threshold	Calculates, stores, and threshold global Catalog replication latency in hours.
	ADSPI- Rep_GC_ Check_ and_ Threshold _2k8+	
Host Records Availability	ADSPI-DNS_DC_A_ Chk	Ensures that DNS contains the expected host resource records for the LDAP service.
	ADSPI-DNS_DC_A_ Chk _2k8+	
Inbound Object Updates Remaining	ADSPI_ ADSRep InBound Object Updates Remaining_ 2K8+	Checks the inbound object updates remaining in packet. Checks the inbound object updates remaining in packet.
	ADSPI_ ADSRepIn Bound Object Updates Remaining	
Inbound Replication Object Rate	ADSPI- Rep_Inbound Objs	Monitors Intersite replication in Active directory. Monitors the number of inbound replication objects.
	ADSPI- Rep_Inbound Objs_ 2k8+	
Inter Site Replication Latency	ADSPI- Rep_Monitor InterSite Replication	Monitors intersite replication in active directory.
	ADSPI- Rep_Monitor InterSite Replication _2k8+	

ETI/HI	Policy Name	Policy Description
Intra Site Replication Latency	ADSPI- Rep_Monitor IntraSite Replication	Monitors intrasite replication in active directory.
	ADSPI- Rep_Monitor IntraSite Replication _2k8+	
ISM Service Status	ADSPI- Rep_ISM_ Chk	Checks the intersite messaging service.
	ADSPI- Rep_ISM_ Chk _2k8+	
KDC Service Status	ADSPI_KDC	Checks the kerberos key distribution center service.
	ADSPI_KDC _2k8+	
Kerberos Authentication Rate	ADSPI_ IQKerberos Authentications _2K8+	Checks the kerberos authentications
	ADSPI_ IQKerberos Authentications	
Kerberos Srv Records Availability	ADSPI- DNS_ Kerberos_ SRV_Chk	Checks for expected DNS SRV resource records registered for the kerberos service.
	ADSPI- DNS_ Kerberos_ SRV_Chk _2k8+	
LDAP Active Threads	ADSPI_ IQLDAP Active Threads _2K8+	Checks the LDAP active threads.
	ADSPI_ IQLDAP Active Threads	
LDAP Client Sessions	ADSPI_ IQLDAP Client Sessions _2K8+	Checks the LDAP client sessions.
	ADSPI_ IQLDAP Client Sessions	

ETI/HI	Policy Name	Policy Description
LDAP Srv Records Availability	ADSPI- DNS_ LDAP_SRV _Chk	Ensures that DNS contains the expected SRV resource records for the LDAP service.
	ADSPI- DNS_ LDAP_SRV _Chk _2k8+	
Logon Errors	ADSPI_ SecErrors Logon	Checks the errors logon.
	ADSPI_ SecErrors Logon _2k8+	
LSASS Page Faults Rate	ADSPI_ HMLSASS PageFaults	Checks the LSASS page faults per second.
	ADSPI_ HMLSASS PageFaults _2k8+	
LSASS Private Bytes	ADSPI_ HMLSASS Private Bytes	Checks the LSASS Private Bytes.
	ADSPI_ HMLSASS Private Bytes _2k8+	
LSASS Processor Time	ADSPI_ HMLSASS Processor Time	Checks the LSASS processor time.
	ADSPI_ HMLSASS Processor Time _2k8+	
LSASS Working Set	ADSPI_ HMLSASS Working Set	Checks the LSASS working set.
	ADSPI_ HMLSASS Working Set _2k8+	
Net Logon Service State	ADSPI_ Net Logon	Checks the Net Logon service.
	ADSPI_ Net Logon _2k8+	

ETI/HI	Policy Name	Policy Description
Non Transitive Membership Evaluations	ADSPI_ Sec NonTrans Memb Eval_ 2K8+	Checks the Non-Transitive Membership Evaluations/sec.
	ADSPI_ Sec NonTrans Memb Eval	
Notify Queue Size	ADSPI_ ADSRep Notify QueueSize_ 2K8+	Checks the notify queue size.
	ADSPI_ ADSRep Notify QueueSize	
NTDS Service State	ADSPI_ NTDS _2k8+	Checks the active directory domain service.
NTFRS Page Faults Rate	ADSPI_ HM NTFRS PageFaults	Checks the NTFRS page faults.
	ADSPI_ HM NTFRS PageFaults _2k8+	
NTFRS Private Bytes	ADSPI_ HM NTFRS Private Bytes	Checks the NTFRS private bytes.
	ADSPI_ HM NTFRS Private Bytes _2k8+	
NTFRS Processor Time	ADSPI_ HM NTFRS Processor Time	Checks the NTFRS processor time.
	ADSPI_ HM NTFRS Processor Time _2k8+	
NTFRS Working Set	ADSPI_ HM NTFRS Working Set	Checks the NTFRS working set.
	ADSPI_ HM NTFRS Working Set	

ETI/HI	Policy Name	Policy Description
NTLM Authentication Rate	ADSPI_ IQNTLM Authentications _2K8+	Checks the NTLM Authentications.
	ADSPI_ IQNTLM Authentications	
Pending Replication Synchronizations	ADSPI_ ADSPending Synchronizations_ 2K8+	Checks the pending replication synchronizations.
	ADSPI_ ADSPending Synchronizations	
Response Time	ADSPI- FSMO_ INFRA_Ping	Monitors the ping response time of the infrastructure FSMO in seconds.
	ADSPI- FSMO_ INFRA_Ping _2k8+	
	ADSPI-F SMO_ NAMING_ Ping	Monitors the ping response time of the domain naming FSMO in seconds.
	ADSPI-F SMO_ NAMING_ Ping _2k8+	
	ADSPI- FSMO_ PDC_Ping	Monitors the ping response time of the PDC FSMO in seconds
	ADSPI- FSMO_ PDC_Ping _2k8+	
	ADSPI- FSMO_ RID_Ping	Monitors the ping response time of the RID FSMO in seconds
	ADSPI- FSMO_ RID_Ping _2k8+	
	ADSPI- FSMO_ Schema_Ping	Monitors the ping response time of the schema FSMO in seconds
	ADSPI- FSMO_ Schema_Ping _2k8+	

ETI/HI	Policy Name	Policy Description
SamSs Service State	ADSPI_ SamSs	Checks the security account manager service.
	ADSPI_ SamSs _2k8+	
Security Descriptor Propagator Queue	ADSPI_ Sec SDPropagator Queue _2K8+	Checks the Security Descriptor Propagator Queue.
	ADSPI_ SecSD Propagator Queue	
Synchronization Failure Rate	ADSPI_ SyncSchema Miss Match	Checks the sync failures on schema mismatch.
	ADSPI_ SyncSchema MissMatch _2K8+	
Sysvol Connectivity	ADSPI- Sysvol_ Connectivity	Connects to each replication partner's sysvol to validate connectivity.
	ADSPI- Sysvol_ Connectivity _2k8+	
Sysvol Disk Space Availability	ADSPI- Sysvol_ PercentFull	Monitors the amount of free space on the sysvol disk drive in terms of percentage.
	ADSPI- Sysvol_ PercentFull _2k8+	
Transitive Membership Evaluations	ADSPI_ SecTrans MembEval _2K8+	Checks the Transitive Member Evaluations/sec.
	ADSPI_ SecTrans Memb Eval	
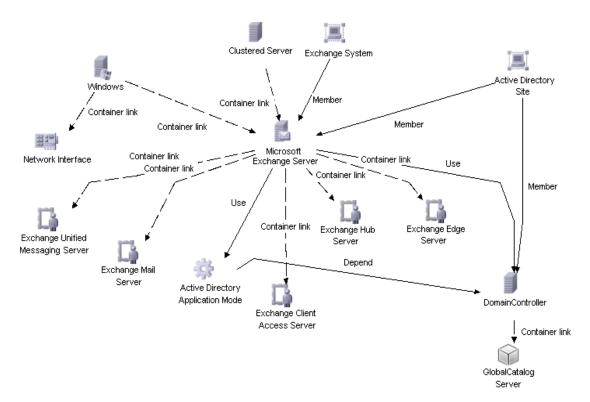
Microsoft Exchange Server 2007 Installation Package

The Microsoft Exchange Server 2007 installation package contains the following artifacts.

CI Types and UCMDB Views
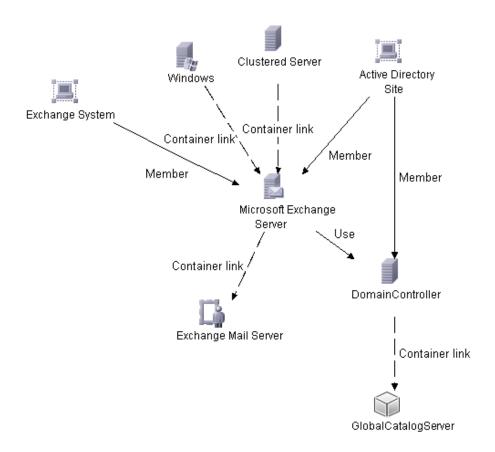
The UCMDB package in the Microsoft Exchange Server installation package contains the following views:

➤ **Exchange_Org_View**: This view refers to the Exchange System, Exchange Unified Messaging Server, Exchange Client Access Server, Exchange Edge Server, Exchange Hub Server, Microsoft Exchange Server, Active Directory Application Mode, and Computer CI types.

➤ Exchange_Mail_View: This view refers to the Exchange System, Exchange Mail Server, Domain Controller, Microsoft Exchange Server, Clustered Server, Active Directory Site, and Computer (Windows) CI types.

Health Indicators

The content pack includes the following Health Indicators (HIs) to monitor Exchange Server-related events:

CI Type	HI	Description	Value
Exchange Client Access Server	Active Sync Connectivity	Indicates the availability of Active Sync Connections on the Exchange Client Access Server	Up, Down
Exchange Client Access Server	Active Sync Latency	Indicates the latency in accessing a user mailbox using Active Sync	Normal, High, Very high
Exchange Client Access Server	Exchange Service Host Status	Indicates the status of Microsoft Exchange Service Host	Up, Down
Exchange Client Access Server	File Distribution Service Status	Indicates the status of Microsoft Exchange File Distribution Service	Up, Down
Exchange Client Access Server	IMAP4 Connectivity	Indicates the availability of IMAP4 connections on the Exchange Client	Up, Down
Exchange Client Access Server	IMAP4 Service Status	Indicates the status of Microsoft Exchange IMAP4 Service	Up, Down
Exchange Client Access Server	IMAP4 Status	Indicates the status of IMAP4 operations on the Exchange Client Access Server	Critical, Normal
Exchange Client Access Server	OWA Connectivity	Indicates the availability of OWA Connections on the Exchange Client Access Server	Up, Down
Exchange Client Access Server	OWA Latency	Indicates the latency in performing OWA operations on the Exchange Client Access Server	Normal, High, Very high

CI Type	HI	Description	Value
Exchange Client Access Server	POP3 Connectivity	Indicates the availability of POP3 Connections on the Exchange Client Access Server	Up, Down
Exchange Client Access Server	POP3 Service Status	Indicates the status of Microsoft Exchange POP3 Service	Up, Down
Exchange Client Access Server	POP3 Status	Indicates the status of POP3 Operations on the Exchange Client Access Server	Critical, Normal
Exchange Edge Server	ADAM Service Status	Indicates the status of Microsoft Exchange ADAM Service	Up, Down
Exchange Edge Server	Edge Credential Service Status	Indicates the status of credential service status for Exchange Edge server.	Up, Down
Exchange Email Server	Average Mail Delivery Time	Indicates the Average Mail Delivery Time on the Exchange Mail Server	Normal, High, Very high
Exchange Email Server	Average Time for PF Delivery	Indicates the average time taken for Public Folder Posts or messages to be delivered to recipients on the Exchange Mail Server	Normal, High, Very high
Exchange Email Server	Database Instance Status	Indicates the status of Exchange Database Instance	Critical, Normal
Exchange Email Server	Exchange Service Host Status	Indicates the status of Microsoft Exchange Service Host	Up, Down
Exchange Email Server	Exchange Memory Status	Indicates the status of memory utilized and available for Microsoft Exchange Process.	Normal, Critical
Exchange Email Server	Information Store Service Status	Indicates the status of Microsoft Exchange Information Store Service	Up, Down

CI Type	HI	Description	Value
Exchange Email Server	Mailbox Assistant Service Status	Indicates the status of Microsoft Exchange Mailbox Assistants Service	Up, Down
Exchange Email Server	Mailbox Receive Queue Length	Indicates the number of messages in the Mailbox Store's Receive Queue	Normal, High, Very high
Exchange Email Server	Mailflow Latency	Indicates the latency in Mail Flow from the given Exchange Mail Server	Normal, High, Very high
Exchange Email Server	MailFlow Status	Indicates the status of Mail Flow on the Exchange Mail Server.	Up, Down
Exchange Email Server	Mail Submission Service Status	Indicates the status of Microsoft Exchange Mail Submission Service	Up, Down
Exchange Email Server	Mapi Connectivity	Indicates the status of MAPI Connectivity on the Exchange Mail Server	Up, Down
Exchange Email Server	Mapi Latency	Indicates the latency in MAPI Connectivity on the Exchange Mail Server	Normal, High, Very high
Exchange Email Server	Public Receive Queue Length	Indicates the number of messages in Public Store's Receive Queue	Normal, High, Very high
Exchange Email Server	Public Replication Queue Length	Indicates the number of Replication messages waiting to be processed	Normal, High, Very high
Exchange Email Server	Replication Service Status	Indicates the status of Microsoft Exchange Replication Service	Up, Down
Exchange Email Server	System Attendant Status	Indicates the status of Microsoft Exchange System Attendant Service	Up, Down

CI Type	HI	Description	Value
Exchange Hub Server	Edge Sync Service Status	Indicates the status of Synchronization service status for Exchange Hub server.	Up, Down
Exchange Server	AD Topology Service Status	Indicates the status of Microsoft Exchange Active Directory Topology Service	Up, Down
Exchange Transport Server	Active Mailbox Delivery Queue Length	Indicates the number of messages in the Active Mailbox Queues.	Normal, High, Very high
Exchange Transport Server	Aggregate Delivery Queue Length	Indicates the number of messages queued for delivery in all queues.	Normal, High, Very high
Exchange Transport Server	Delayed DSN Count	Indicates the number of Delayed Delivery Status Notifications which were generated on the Exchange Transport Server. Very High Values might indicate overload.	Normal, High, Very high
Exchange Transport Server	Failed DSN Count	Indicates the number of Failure Delivery Status Notifications generated	Normal, High, Very high
Exchange Transport Server	Largest Delivery Queue Length	Indicates the number of messages in the largest delivery queue.	Normal, High, Very high
Exchange Transport Server	Poison Queue Length	Indicates the length of Poison Queue on the Exchange Transport Server	Normal, High, Very high
Exchange Transport Server	Remote Delivery Queue Length	Indicates the length of Remote Delivery Queues on the Exchange Transport Server	Normal, High, Very high
Exchange Transport Server	Retry Non Smtp Delivery Queue Length	Indicates the number of messages in retry in the non-SMTP gateway delivery queues.	Normal, High, Very high

CI Type	HI	Description	Value
Exchange Transport Server	Submission Queue Length	Indicates the length of Submission Queue on the Exchange Transport Server	Normal, High, Very high
Exchange Transport Server	Transport Service Status	Indicates the status of Microsoft Exchange Transport Service	Up, Down
Exchange Transport Server	Unreachable Queue Length	Indicates the length of the Unreachable Queue on the Exchange Transport Server	Normal, High, Very high
Exchange Unified Messaging Server	File Distribution Service Status	Indicates the status of Microsoft Exchange File Distribution Service	Up, Down
	Speech Engine Status	Indicates the status of Microsoft Exchange Speech Engine Service	Up, Down
	Unified Messaging Connectivity	Indicates the availability of Unified Messaging Connections on the Microsoft Exchange Unified Messaging Server	Up, Down
	Unified Messaging Status	Indicates the status of Microsoft Exchange Unified Messaging Service	Up, Down

Event Type Indicators

The installation package includes the following Event Type Indicators (ETIs) to monitor Exchange Server-related events:

CI Type	ETI	Description	Value
Exchange Hub Server	Edge Synchronization Status	Indicates the status of Edge Synchronization	Up, Down
	Load Exchange Topology	Indicates if Exchange Topology Information could be read or loaded from Active Directory	Up, Down
	Submission ThreadCount	Indicates the percentage of Submission Threads currently running on the Exchange Hub Server. If the value is Very High then no new threads will be created and mail submission will fail.	Normal, High
Exchange Mail Server	Active Directory Access	Indicates the status of Active Directory Accessibility from Exchange Mail Server	Up, Down
	Available Transaction Log Disk Space	Indicates the degree of Available Free Disk Space for Exchange Transaction Logs on the Exchange Mail Server	Normal, Low, Near Capacity
	Hub Server Reachability	Indicates if Exchange Hub Servers are reachable from the Exchange Mail Server.	Up, Down
	Mail Submission Status	Indicates the status of Mail Submission on the Exchange Mail Server	Up, Down

Correlation Rules

The content pack includes the following rules to correlate Exchange Server-related events.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

Exchange::Clustered Server:Memory Load >> Exchange Memory Status

Description: Memory Load Impacts Memory Available for Exchange		
Cause		
CIT: Clustered Server	ETI: Memory Load	Value: Paging
Symptom		
CIT: Exchange Mail Server	ETI: Exchange Memory Status	Value: Critical

Exchange::Clustered Server:Memory Usage Level >> Exchange Memory Status

Description: Memory Usage Level Impacts Memory Available for Exchange		
Cause		
CIT: Clustered Server	ETI: Memory Usage Level	Value: Near Capacity
Symptom		
CIT: Exchange Mail Server	ETI: Exchange Memory Status	Value: Critical

Exchange::Clustered Server:PageFile Usage >> Exchange Memory Status

Description: Page File Usage on the Computer which hosts Exchange Mail Server Impacts Exchange Memory Status		
Cause		
CIT: Clustered Server	ETI: Page File Usage	Value: Near Capacity
Symptom		
CIT: Exchange Mail Server	ETI: Exchange Memory Status	Value: Critical

Exchange::Clustered Server:Ping Availability >> Hub Server Reachability & Mail Submission Status

Description: Ping Availability of Exchange Mail Server Impacts Mail Submission and Hub Server Reachability		
Cause		
CIT: Clustered Server	ETI: Ping Availability	Value: Unavailable
Symptom 1		
CIT: Exchange Mail Server	ETI: Hub Server Reachability	Value: Down
Symptom 2		
CIT: Exchange Mail Server	ETI: Mail Submission Status	Value: Down

Exchange::DomainController:DC LDAP Bind Response Time >> Client Accessibility

Description: LDAP Bind Response Time Impacts Client Accessibility		
Cause		
CIT: Domain Controller	ETI: DC LDAP Bind Response Time	Value: Very High
Symptom 1		
CIT: Exchange Client Access Server	ETI: OWA Latency	Value: High
Symptom 2		
CIT: Exchange Client Access Server	ETI: Active Sync Latency	Value: High

Exchange::DomainController:DC LDAP Bind Response Time >> Mailflow Latency

Description: LDAP Bind Response Time Impacts Mail flow Latency		
Cause		
CIT: Domain Controller	ETI: DC LDAP Bind Response Time	Value: Very High
Symptom		
CIT: Exchange Client Access Server	ETI: Mail Flow Latency	Value: High

Exchange::DomainController:DC LDAP Bind Response Time >> Transport Queue Length

Description: LDAP Bind Response Time Impacts Transport Queue Length		
Cause		
CIT: Domain Controller	ETI: DCLDAPBindResponseTime	Value: Very High
Symptom 1		
CIT: Exchange Mail Server	ETI: Active Mailbox Delivery Queue Length	Value: High
Symptom 2		
CIT: Exchange Hub Server	ETI: Remote Delivery Queue Length	Value: Very High
Symptom 3		
CIT: Exchange Hub Server	ETI: Delayed DSN Count	Value: Very High
Symptom 4		
CIT: Exchange Hub Server	ETI: Submission Queue Length	Value: Very High

Exchange::DomainController:DC LDAP Query Response Time >> Client Accessibility

Description: LDAP Query Response Time Impacts Client Accessibility		
Cause		
CIT: Domain Controller	ETI: DC LDAP Query Response Time	Value: Very High
Symptom 1		
CIT: Exchange Client Access Server	ETI: OWA Latency	Value: High
Symptom 2		
CIT: Exchange Client Access Server	ETI: Active Sync Latency	Value: High

Exchange::DomainController:DC LDAP Query Response Time >> Mailflow Latency

Description: LDAP Query Response Time Impacts Mail flow Latency		
Cause		
CIT: Domain Controller	ETI: DC Query Response Time	Value: Very High
Symptom		
CIT: Exchange Client Access Server	ETI: Mail Flow Latency	Value: High

Exchange::DomainController:DC LDAP Query Response Time >> Transport Queue Length

Description: LDAP Query Response Time Impacts Transport Queue Length		
Cause		
CIT: Domain Controller	ETI: DC Query Response Time	Value: Very High
Symptom 1		
CIT: Exchange Mail Server	ETI: Active Mailbox Delivery Queue Length	Value: High
Symptom 2		
CIT: Exchange Hub Server	ETI: Remote Delivery Queue Length	Value: Very High
Symptom 3		
CIT: Exchange Hub Server	ETI: Delayed DSN Count	Value: Very High
Symptom 4		
CIT: Exchange Hub Server	ETI: Submission Queue Length	Value: Very High

Exchange::Exchange Client Access Server:IMAP4 Service Status >> IMAP4 Connectivity

Description: IMAP4 Service impacts IMAP4 Connectivity		
Cause		
CIT: Exchange Client Access Server	ETI: IMAP4 Service Status	Value: Down
Symptom		
CIT: Exchange Client Access Server	ETI: IMAP4 Connectivity	Value: Down

Exchange::Exchange Client Access Server:POP3 Service Status >> POP3 Connectivity

Description: POP3 Service impacts POP3 Connectivity		
Cause		
CIT: Exchange Client Access Server	ETI: POP3 Service Status	Value: Down
Symptom		
CIT: Exchange Client Access Server	ETI: POP3 Connectivity	Value: Down

Exchange::Exchange Hub Server:Active Mailbox Delivery Queue Length >> Mail Flow Latency

Description: Active Mailbox Delivery Queue Length Impacts Mail Flow Latency		
Cause		
CIT: Exchange Hub Server	ETI: Active Mailbox Delivery Queue Length	Value: Very High
Symptom		
CIT: Exchange Mail Server	ETI: Mail Flow Latency	Value: Very High

Exchange::Exchange Hub Server:Submission Queue Length >> MailFlow Latency

Description: Submission Queue Length Impacts Mail Flow Latency		
Cause		
CIT: Exchange Hub Server	ETI: Submission Queue Length	Value: Very High
Symptom		
CIT: Exchange Mail Server	ETI: Mail Flow Latency	Value: Very High

Exchange::Exchange Hub Server:Submission Thread Count >> Mail Submission Status

Description: Submission Thread Count Impacts Mail Submission on Exchange Mail Server		
Cause		
CIT: Exchange Hub Server	ETI: Submission Thread Count	Value: Very High
Symptom		
CIT: Exchange Mail Server	ETI: Mail Submission Status	Value: Down

Exchange::Exchange Hub Server:Transport Service Status >> Mail Submission Status & Mail Flow Status

Description: Transport Service Impacts Mail Submission and Mail Flow		
Cause		
CIT: Exchange Hub Server	ETI: Transport Service Status	Value: Down
Symptom 1		
CIT: Exchange Mail Server	ETI: Mail Flow Status	Value: Down
Symptom 2		
CIT: Exchange Mail Server	ETI: Mail Submission Status	Value: Down

Exchange::Exchange Mail Server:Hub Server Reachability >> Mail Submission Status

Description: Hub Server Reachability Impacts Mail Submission		
Cause		
CIT: Exchange Mail Server	ETI: Hub Server Reachability	Value: Down
Symptom 1		
CIT: Exchange Mail Server	ETI: Mail Submission Status	Value: Down

Exchange::Exchange Mail Server:Information Store Service Status >> Client Accessibility

Description: Information Store Service Impacts Client Accessibility		
Cause		
CIT: Exchange Mail Server	ETI: Information Store Service Status	Value: Down
Symptom 1		
CIT: Exchange Client Access Server	ETI: Active Sync Connectivity	Value: Down
Symptom 2		
CIT: Exchange Client Access Server	ETI: IMAP4 Connectivity	Value: Down
Symptom 3		
CIT: Exchange Client Access Server	ETI: OWA Connectivity	Value: Down
Symptom 4		
CIT: Exchange Client Access Server	ETI: POP3 Connectivity	Value: Down

Exchange::Exchange Mail Server:Information Store Service Status >> Mail Flow Status & Mapi Connectivity

Description: Information Store Service Impacts Mail Flow and Mapi Connectivity		
Cause		
CIT: Exchange Mail Server	ETI: Information Store Service Status	Value: Down
Symptom 1		
CIT: Exchange Mail Server	ETI: Mail Flow Status	Value: Down
Symptom 2		
CIT: Exchange Mail Server	ETI: Mapi Connectivity	Value: Down

Exchange::Exchange Mail Server:Mail Submission Service Status >> Mail Flow Status

Description: Mail Submission Service Impacts Mail Flow		
Cause		
CIT: Exchange Mail Server	ETI: Mail Submission Service Status	Value: Down
Symptom		
CIT: Exchange Mail Server	ETI: Mail Flow Status	Value: Down

Exchange::Exchange Unified Messaging Server:Speech Engine Status >> Unified Messaging Status

Description: Speech Engine Service Impacts Unified Messaging Service		
Cause		
CIT: Exchange Unified Messaging Server	ETI: Speech Engine Status	Value: Down
Symptom		
CIT: Exchange Unified Messaging Server	ETI: Unified Messaging Status	Value: Down

Exchange::Microsoft Exchange Server:AD Topology Service Status >> Client Access Services

Description: Active Directory Topology Service Impacts Client Access Services		
Cause		
CIT: ExchangeServer	ETI: AD Topology Service Status	Value: Down
Symptom 1		
CIT: Exchange Client Access Server	ETI: File Distribution Service Status	Value: Down
Symptom 2		
CIT: Exchange Client Access Server	ETI: Exchange Service Host Status	Value: Down
Symptom 3		
CIT: Exchange Client Access Server	ETI: IMAP4 Service Status	Value: Down
Symptom 4		
CIT: Exchange Client Access Server	ETI: POP3 Service Status	Value: Down

Exchange::Microsoft Exchange Server:AD Topology Service Status >> Hub Transport Services

Description: Active Directory Topology Service Impacts Hub Transport Services		
Cause		
CIT: Exchange Server	ETI: AD Topology Service Status	Value: Down
Symptom 1		
CIT: Exchange Hub Server	ETI: Transport Service Status	Value: Down
Symptom 2		
CIT: Exchange Hub Server	ETI: Edge Sync Service Status	Value: Down

Exchange::Microsoft Exchange Server:AD Topology Service Status >> Other Exchange Mail Server Services

Description: Active Directory Topology Service Impacts Mail Server Services		
Cause		
CIT: ExchangeServer	ETI: AD Topology Service Status	Value: Down
Symptom 1		
CIT: Exchange Mail Server	ETI: Mail Submission Service Status	Value: Down
Symptom 2		
CIT: Exchange Mail Server	ETI: Mailbox Assistant Service Status	Value: Down
Symptom 3		
CIT: Exchange Mail Server	ETI: Replication Service Status	Value: Down
Symptom 4		

Description: Active Directory Topology Service Impacts Mail Server Services		
CIT: Exchange Mail Server	ETI: Exchange Service Host Status	Value: Down
Symptom 5		
CIT: Exchange Mail Server	ETI: Active Directory Access	Value: Down
Symptom 6		
CIT: Exchange Mail Server	ETI: Mapi Connectivity	Value: Down
Symptom 7		
CIT: Exchange Mail Server	ETI: Mail Flow Status	Value: Down

Exchange::Microsoft Exchange Server:AD Topology Service Status >> Unified Messaging Services

Description: Active Directory Topology Service Impacts Unified Messaging Services		
Cause		
CIT: ExchangeServer	ETI: AD Topology Service Status	Value: Down
Symptom 1		
CIT: Exchange Unified Messaging Server	ETI: File Distribution Service Status	Value: Down
Symptom 2		
CIT: Exchange Unified Messaging Server	ETI: Unified Messaging Status	Value: Down

Exchange::Network Interface:Network IO >> Client Accessibility

Description: Network IO Impacts Client Accessibility		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Exchange Client Access Server	ETI: Active Sync Latency	Value: Very High
Symptom 2		
CIT: Exchange Client Access Server	ETI: OWA Latency	Value: Very High

Exchange::Network Interface:Network IO >> Mail Flow Latency

Description: Network IO Impacts Mail Flow Latency		
Cause		
CIT: Network Interface	ETI: NetworkIO	Value: High
Symptom		
CIT: Exchange Mail Server	ETI: MailFlowLatency	Value: High

Exchange::Network Interface:Network IO >> Transport Queue Length

Description: Network IO Impacts Transport Queue Length		
Cause		
CIT: Network Interface	ETI: Network IO	Value: High
Symptom 1		
CIT: Exchange Hub Server	ETI: Active Mailbox Delivery Queue Length	Value: Very High
Symptom 2		

Description: Network IO Impacts Transport Queue Length		
CIT: Exchange Hub Server	ETI: Remote Delivery Queue Length	Value: Very High
Symptom 3		
CIT: Exchange Hub Server	ETI: Delayed DSN Count	Value: Very High
Symptom 4		
CIT: Exchange Hub Server	ETI: Submission Queue Length	Value: Very High

Exchange::Windows:CPU Load >> Edge TransportQueueLength

Description: CPU Load Impacts Edge Transport Queue Length		
Cause		
CIT: Windows	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: Exchange Edge Server	ETI: Submission Queue Length	Value: Very High
Symptom 2		
CIT: Exchange Edge Server	ETI: Active Mailbox Delivery Length	Value: Very High
Symptom 3		
CIT: Exchange Edge Server	ETI: Aggregate Delivery Queue Length	Value: Very High

Exchange::Windows:CPU Load >> Hub TransportQueueLength

Description: CPU Load Impacts Hub Transport Queue Length		
Cause		
CIT: Windows	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: Exchange Hub Server	ETI: Submission Queue Length	Value: Very High
Symptom 2		
CIT: Exchange Hub Server	ETI: Active Mailbox Delivery Length	Value: Very High
Symptom 3		
CIT: Exchange Hub Server	ETI: Aggregate Delivery Queue Length	Value: Very High

Exchange::Windows:CPU Load >> OWA Latency & Active Sync Latency

Description: CPU Load Impacts OWA and Active Sync Latency		
Cause		
CIT: Windows	ETI: CPU Load	Value: Bottlenecked
Symptom 1		
CIT: Exchange Client Access Server	ETI: OWA Latency	Value: Very High
Symptom 2		
CIT: Exchange Client Access Server	ETI: Active Sync Latency	Value: High

Exchange::Windows:Logical Disk Free Space >> Exchange Database

Description: Available Disk Space on Logical Disk Impacts Exchange Database		
Cause		
CIT: Windows	ETI: LogicalDisk Free Space	Value: Near Capacity
Symptom 1		
CIT: Exchange Mail Server	ETI: Available Transaction Log Disk Space	Value: Unavailable
Symptom 2		
CIT: Exchange Mail Server	ETI: Database Instance Status	Value: Critical

Exchange::Windows:Memory Load >> Exchange Memory Status

Description: Memory Load Impacts Memory Available for Exchange		
Cause		
CIT: Windows	ETI: Memory Load	Value: Paging
Symptom		
CIT:Exchange Mail Server	ETI: Exchange Memory Status	Value: Critical

Exchange::Windows:Memory Usage Level >> Exchange Memory Status

Description: Memory Usage Level Impacts Memory Available for Exchange		
Cause		
CIT: Windows	ETI: Memory Usage Level	Value: Near Capacity
Symptom		
CIT: Exchange Mail Server	ETI: Exchange Memory Status	Value: Critical

Exchange::Windows:PageFile Usage >> Exchange Memory Status

Description: Page File Usage on the Computer which hosts Exchange Mail Server Impacts Exchange Memory Status		
Cause		
CIT: Windows	ETI: Page File Usage	Value: Near Capacity
Symptom		
CIT: Exchange Mail Server	ETI: Exchange Memory Status	Value: Critical

Exchange::Windows:Ping Availability >> Hub Server Reachability & Mail Submission Status

Description: Ping Availability of Hub Server Impacts Mail Submission and Hub Server Reachability		
Cause		
CIT: Windows	ETI: Ping Availability	Value: Unavailable
Symptom 1		
CIT: Exchange Mail Server	ETI: Mail Submission Status	Value: Down
Symptom 2		
CIT: Exchange Mail Server	ETI: Hub Server Reachability	Value: Down

Tool Definitions

Start MSExchange Information Store Service: Starts the Microsoft Exchange Information service on a Microsoft Exchange 2007 server.

Start MS Exchange Transport Service: Starts the Microsoft Exchange Transport Service on a Microsoft Exchange 2007 Transport server.

Graph Templates

The following table lists the graph templates present in the content pack and mapped policies.

Graph Templates	Metric Name	Policy Description
Information Store Users and Connections	EXSPI-8X Dc-Information Store Performance	Collects performance data on Microsoft Exchange IS object
MAPI RPC Performance		
Virtual Memory Largest Block Size		
Virtual Memory Large Free Block Megabytes Usage		
Virtual Memory 16MB Free Block Trend		
MAPI RPC Latency Levels	EXSPI-8X Dc-Outlook Client	Logs Outlook client metrics
Outlook Client Failures		
Outlook Client RPC Performance		

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

Note: For more information on the measurement threshold policies and events, refer to the HP Operations Smart Plug-in for Microsoft Exchange Server documentation.

ETI/HI	Policy Name	Policy Description
Active Mailbox Delivery Queue Length	EXSPI-8X Edge Th-Active Mailbox Delivery Queue Length	Active Mailbox Delivery Queue Length is the number of messages in the active mailbox queues.
	EXSPI-8X Hub Th-Active Mailbox Delivery_ QLength	Alarm on Active Mailbox Delivery Queue Length perfmon counter.
ADAM Service Status	EXSPI-8X_ Check_ ADAM Service Status	Checks the status of Microsoft Exchange ADAM Service
ADT Topology Service Status	EXSPI-8X_ Check_AD Topology Service Status	Checks the status of Microsoft Exchange Active Directory Topology Service
Aggregate Delivery Queue Length	EXSPI-8X Edge Th-Agg Delivery QLength -All_Queues	Aggregate Delivery Queue Length -All_Queues is the number of messages queued for delivery in all queues.
	EXSPI-8X Hub Th-Agg Del_ QLength -All_ Queues	Alarm on Aggregate Delivery Queue Length -All_Queues perfmon counter.
Average Mail Delivery Time	EXSPI-8X IS Mailbox Average Delivery Time	Information Store mailbox average delivery time.

ETI/HI	Policy Name	Policy Description
Average Time for PF Delivery	EXSPI-8X IS Public Average Delivery Time	Information store public average delivery time.
Database Instance Status	EXSPI-8X Information Store Db Log Threads Waiting	Alarm on information store threads waiting to write to transaction log
Delayed DSN Count	EXSPI-8X Edge Th-Delay DSNs	Delay DSNs is the number of delivery status notification (DSNs) messages that have been generated.
	EXSPI-8X Hub Th-Delay DSNs	Alarm on delay DSNs perfmon counter
Edge Credential Service Status	EXSPI-8X_ Check_ Edge Credential Service Status	Checks the status of Microsoft Exchange Credential Service
Edge Synchronization Status	EXSPI-8X- MSExchange Mail Submission Events'	Reports Microsoft Exchange mail submission events.
Edge Sync Service Status	EXSPI-8X_ Check_HUB Exchange Edge Sync Service Status	Checks the status of Microsoft Exchange EdgeSync Service
Exchange Memory Status	EXSPI-8X Information Store Memory Errors	Alarm on the number of Microsoft Exchange memory errors.
Exchange Service Host Status	EXSPI-8X_ Check_ MBExchange Service Host Status	Checks the status of Microsoft Exchange Mailbox Service Host
Failed DSN Count	EXSPI-8X Edge Th-Failure DSNs Total	Failure DNSs is the number of failure delivery status notifications (DSNs) messages that have been generated.
	EXSPI-8X Hub Th-FailureDSNsTotal	Alarm on failure DSNs total perfmon counter

ETI/HI	Policy Name	Policy Description
Hub Server Reachability	EXSPI-8X-MSExchange Mail Submission Events'	Reports Microsoft Exchange mail submission events.
File Distribution Service Status	EXSPI-8X_ Check_ CASFile Distribution Service Status	Checks the status of Microsoft Exchange File Distribution Service
IMAP4 Service Status	EXSPI-8X_ Check_ IMAP4 Service Status	Checks the status of Microsoft Exchange IMPA4 Service
IMAP4 Status	EXSPI-8X IMAP4 Failed Connection Rate	IMAP4 failed connections percentage
Information Store Service Status	EXSPI-8X_ Check_ Information Store Service Status	Checks the status of Microsoft Exchange Information Store Service
Largest Delivery Queue Length	EXSPI-8X Edge Th-Largest Delivery Queue Length	Largest Delivery Queue Length is the number of messages in the largest delivery queue.
	EXSPI-8X Hub Th-Largest Delivery_ QLength	Alarm on Largest Delivery Queue Length perfmon counter.
Load Exchange Topology	EXSPI-8X MsExchange EdgeSync Events	Reports Microsoft Exchange edgesync events.
Mailbox Assistant Service Status	EXSPI-8X_ Check_ Mailbox Assistant Service Status	Checks the status of Microsoft Exchange Mailbox Assistants Service.
Mailbox Receive Queue Length	EXSPI-8X IS Mailbox Receive Queue Length	Checks the information store mailbox receive queue length.
Mail Submission Service Status	EXSPI-8X_ Check_ Mail Submission Service Status	Checks the status of Microsoft Exchange Mail Submission Service
Mail Submission Status	EXSPI-8X-MSExchange Mail Submission Events'	Reports Microsoft Exchange mail submission events.

ETI/HI	Policy Name	Policy Description
Poison Queue Length	EXSPI-8X Hub Th-Poison _QLength	Alarm on poison queue length perfmon counter
	EXSPI-8X Edge Th-Poison Queue Length	Poison message queue length is the number of messages in the poison message queue.
POP3 Service Status	EXSPI-8X_ Check_ POP3 Service Status	Checks the status of Microsoft Exchange POP3 Service
POP3 Status	EXSPI-8X POP3 Failed Connection Rate	POP3 failed connections percentage
Public Receive Queue Length	EXSPI-8X IS Public Receive Queue Length	Checks the information store public receive queue length.
Public Replication Queue Length	EXSPI-8X IS Public Replication Queue Length	Checks the information store replication queue length.
Remote Delivery Queue Length	EXSPI-8X Edge Th-Active Remote Delivery Queue Length	Reports the number of messages in the active remote delivery queues.
	EXSPI-8X Hub Th-Active Remote Delivery_ QLength	Alarm on active remote delivery queue length perfmon counter.
Replication Service Status	EXSPI-8X_ Check_ Replication Service Status	Checks the status of Microsoft Exchange Mailbox Replication Service
Retry Non Smtp Delivery Queue Length	EXSPI-8X Edge Th-Retry Non-SMTP Delivery Queue Length	Retry Non-SMTP Delivery Queue Length is the number of messages in retry in the non-SMTP gateway delivery queues.
	EXSPI-8X Hub Th-RetryNon-SmtpDelivery_QLength	Alarm on Retry Non-Smtp Delivery Queue Length perfmon counter.
Speech Engine Status	EXSPI-8X_ Check_ Speech Engine Status	Checks the status of Microsoft Exchange Speech Engine Service

ETI/HI	Policy Name	Policy Description
Submission Thread Count	EXSPI-8X MsExchange Store Driver Events	Reports the events generated for the source Microsoft Exchange store driver.
Submission Queue Length	EXSPI-8X Edge Th-Submission Queue Length	Number of messages in the submission queue.
	EXSPI-8X Hub Th-Submission _QLength	Alarm on submission queue length perfmon counter.
System Attendant Status	EXSPI-8X_ Check_ System Attendant Status	Checks the status of Microsoft Exchange Mailbox System Attendant Service
Transport Service Status	EXSPI-8X_ Check_ HUB Exchange Transport Service Status	Checks the status of Microsoft Exchange Transport Service
	EXSPI-8X_ Check_ EDGE Exchange Transport Service Status	Checks the status of Microsoft Exchange Transport Service
Unified Messaging Status	EXSPI-8X_ Check_ Unified Messaging Status	Checks Unified Messaging service status.
Unreachable Queue Length	EXSPI-8X Hub Th-Unreachable_ QLength	Alarm on unreachable queue length perfmon counter
	EXSPI-8X Edge Th-Unreachable Queue Length	Unreachable queue length is the number of messages in the unreachable queue.

Infrastructure Installation Package

Note: You can use the Infrastructure installation package only with the Smart Plug-in for UNIX operating system 4.11, Smart Plug-in for Windows operating system 9.11, and Smart Plug-in for Virtualization Infrastructure 1.00.
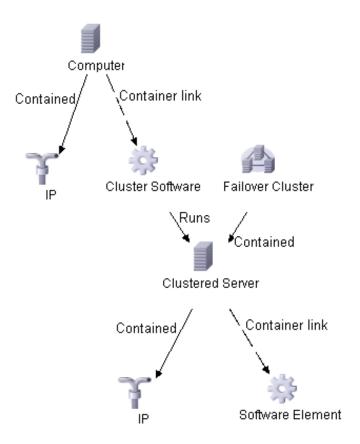
The Infrastructure installation package contains the following artifacts.

CI Types and UCMDB Views
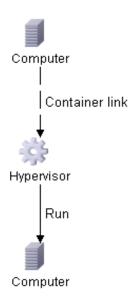
The UCMDB package in the Infrastructure installation package contains the following views:

➤ **CPU_Infrastructure**: This view refers to the CPU and Computer CI types.

➤ **Filesystem_Infrastructure**: This view refers to the File System and Computer CI types.

➤ **NetworkInterface_Infrastructure**: This view refers to the Network Interface and Computer CI types.
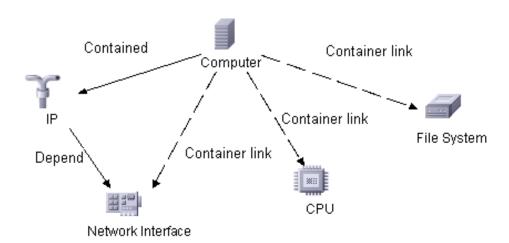
➤ **HACluster_Infrastructure**: This view refers to the Computer (Windows or UNIX), Cluster Software, Clustered Server, Failover Cluster, Software Element, and IP Address CI types.
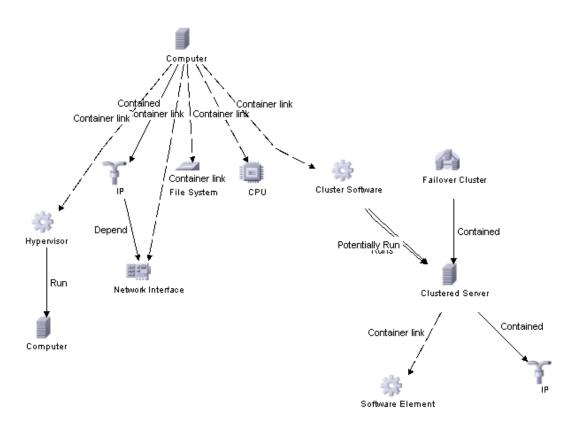
➤ **Virtualization Infrastructure**: This view refers to the Computer and Hypervisor CI types. The following image shows the relationship between the CI types

➤ **Systems Infrastructure**: This view refers to the Computer (Windows or UNIX), CPU, File System, Network Interface, and IP Address CI types. The following image shows the relationship between the CI types

➤ **Infrastructure_Common**: This view represents a combined view for the HACluster_Infrastructure, Systems_Infrastructure, and Virtualization_Infrastructure views.

Health Indicators

The content pack includes the following Health Indicators (HIs) to monitor Infrastructure-related events:

CI Type	HI	Description	Value
Clustered Server	Cluster Resource Group Status	Status of the resource group in a failover cluster. Down status implies that applications hosted on this resource group (IP) are no longer accessible.	Online, Failed, Offline, Reached SPOF Condition
Computer	Batch Job Service	Availability of Batch Job Service (UNIX/Linux Cron, Windows Schedule Task Services)	Available, Unavailable
Computer	CPU Load	CPU Load	Normal, Constrained, Busy, Overloaded, Bottlenecked
Computer	CPU Entitlement Usage Level	Percentage of entitlement (CPU cycles allotted) used by a virtual machine. May exceed 100%.	Normal, Higher/ Much higher than normal, Lower/ Much lower than normal
Computer	Event Logging	Availability of Event Logging service (UNIX/Linux syslog, Windows Event Logger services)	Available, Unavailable
Computer	Kernel Handles Usage	Capacity utilization of kernel handles (file handles, process handles, semaphores, message queues)	Normal, Near Capacity

CI Type	HI	Description	Value
Computer	Memory Load	Memory Load is an indicator of memory pressure on a computer - high memory utilization and pressure to obtain more memory via paging. If left unattended the system may reach point of excessive paging and an unstable state.	Normal, Paging
Computer	Memory Usage Level	Memory usage level for the system Near Capacity - most memory is used up Normal - enough memory is available for efficient functioning of system and applications Low - A lot of memory is free on system indicating wastage	Normal, Low, Higher/ Much higher than normal, Lower/ Much lower than normal, Near capacity
Computer	Ping Availability	Indicates the Processing System is reachable via ping measured by SiteScope	Available, Unavailable
Computer	Resource Usage	Resource usage done by processes/services running on the system.	Normal, High
Computer	Root Disk Usage Level	Disk usage on primary (root) disk on system. It refers to space utilization on root (/) filesystem on UNIX and Linux systems and to C: or whatever is defined through System Drive setting on Windows systems.	Normal, High
Computer	RPC Service	Availability of RPC Service	Available, Unavailable

CI Type	HI	Description	Value
Computer	System Status	Current State of computer system. Suspended, Hang and Unknown states apply only to virtual machines.	Up, Suspended, Down, Hang, Unknown
Computer	Swap Usage Level	Swap device usage level for the system Near Capacity - most swap space is used up Normal - enough swap space is available for efficient functioning of system and applications Low - A lot of swap space is free on system indicating wastage	Normal, Higher/ Much higher than normal, Lower/ Much lower than normal, Near Capacity
Computer	Virtualization Overhead	Amount of additional memory used by VMware ESX server to hold the virtual machine's runtime information. This depends on size of virtual machine memory, operating system running thereon. This value is usually constant and does not vary highly.	Normal, Higher/ Much higher than normal, Lower/ Much lower than normal
CPU	CPU Usage Level	CPU Usage Level	Normal, High, Higher/ Much higher than normal, Lower/Much lower than Spike, Busy, Idle

CI Type	HI	Description	Value
Failover Cluster	Private Network Connectivity	Connection Status of the internal cluster network. Status of down implies that networking between cluster node is not happening and there is a chance that the cluster is split.	Up, Partial, Down
File System	Disk Usage Level	Disk Usage Level	Normal, Low, Near Capacity
Network Interface	Network IO	Bytes/Packets going in and out via the network interface. High rates indicate high bandwidth utilization.	Normal, Higher/ Much higher than normal, Lower/ Much Lower than normal, High
Unix	Filesystem Usage Level	Indicates the degree of used space of a UnixOS filesystem	Normal, High
	Swap Space Available	Swap device usage level for the system Near Capacity - most swap space is used up Normal - enough swap space is available for efficient functioning of system and applications Low - A lot of swap space is free on system indicating wastage	Normal, Higher than normal, Lower than normal,
Windows	Logical Disk Free Space	Indicates the degree of free space of a WinOS Logical Disk	Normal, Low, Near Capacity
	PageFile Usage	Indicates how much of the paging file capacity is utilized on a Windows OS	Normal, High, Near Capacity

Event Type Indicators

The installation package includes the following Event Type Indicators (ETIs) to monitor Infrastructure-related events:

CI Type	ETI	Description	Value
Computer	Batch Jobs	One or more scheduled tasks/ cron jobs failed on the system.	Failed
Network Interface	Interface Errors	Hardware errors on physical network interface device. High number of errors indicates that hardware is performing as well as expected and may need a replacement of network interface device.	High
	Packet Collisions	Collision rate on outgoing packets. A rising rate of collisions versus outbound packets is an indication that the network is becoming increasingly congested.	High

Correlation Rules

The content pack includes the following rules to correlate Infrastructure-related events.

For more information on how the correlation rules work, see *HP Operations Manager i Concepts Guide*.

System::Computer:CPU Load >> CPU Usage Level

Description: CPU usage of one or more CPUs on the system is high as the system is in a CPU bottleneck.		
Cause		
CIT: CPU	ETI: CPU Load	Value: Bottlenecked
Symptom		
CIT: CPU	ETI: CPU Usage Level	Value: High/ Much higher Than Normal

System::Computer:Memory Load >> CPU Load

Description: CPU bottleneck caused by paging		
Cause		
CIT: Computer	ETI: Memory Load	Value: Paging
Symptom		
CIT: Computer	ETI: CPU Load	Value: Bottlenecked

System::Computer:Memory Load >> Memory Usage Level

Description: Memory usage on system is high as the system is in a memory bottleneck		
Cause		
CIT: Computer	ETI: Memory Load	Value: Paging
Symptom		
CIT: Computer	ETI: Memory Usage	Value: Much Higher Than Normal/ Near Capacity

System::Computer:Memory Usage Level >> Swap Usage Level

Description: High memory Usage results in swapping		
Cause		
CIT: Computer	ETI: Memory Usage	Value: Near Capacity
Symptom		
CI: Computer	ETI: Swap Usage Level	Value: Much Higher Than Normal/ Near Capacity

System::Computer:Resource Usage >> CPU Usage Level

Description: Process using high amount of cpu on system causing system cpu usage high		
Cause		
CIT: Computer	ETI: Resource Usage	Value: High
Symptom		
CIT: CPU	ETI: CPU Usage Level	Value: High/ Much Higher Than Normal

System::Computer:Resource Usage >> Memory Usage Level

Description: Process using high amount of memory on system causing system memory usage high		
Cause		
CIT: Computer	ETI: Resource Usage	Value: High
Symptom		
CIT: Computer	ETI: Memory Usage Level	Value: Much Higher Than Normal/ Near Capacity

System::File System:Disk Usage Level >> Swap Usage Level

Description: Swap usage caused by system drive full		
Cause		
CIT: File System	ETI: Disk Usage Level	Value: Near Capacity
Symptom		
CIT: Computer	ETI: Swap Usage Level	Value: Much Higher Than Normal/ Near Capacity

Virtual::Computer:CPU Entitlement Usage Level >> CPU Usage Level

Description: Hypervisor is constrained by high cpu usage done by VM		
Cause		
CIT: Computer	ETI: CPU Entitlement Usage Level	Value: Much Higher Than Normal
Symptom		
CIT: CPU	ETI: CPU Usage Level	Value: High/ Much Higher Than Normal

Virtual::Computer:Memory Usage Level >> Memory Usage Level

Description: Hypervisor is constrained by high mem usage done by VM		
Cause		
CIT: Computer	ETI: Memory Usage Level	Value: Much Higher Than Normal
Symptom		
CIT: Computer	ETI: Memory Usage Level	Value: Much Higher Than Normal/ Near Capacity

Virtual::Computer:Ping Availability >> Ping Availability

Description: VMs are unavailable as the ESX host running the VMs is down.		
Cause		
CIT: Computer	ETI: Ping Availability	Value: Unavailable
Symptom		
CIT: Computer	ETI: Ping Availability	Value: Unavailable

Graph Templates

The content pack includes the Systems Infrastructure graph family, which is mapped to the Computer CI type.

Graph Templates	Metric Name
CPU Comparison	GBL_CPU_TOTAL_UTIL
CPU Details	BYCPU_ID BYCPU_CPU_SYS_MODE_UTIL BYCPU_CPU_USER_MODE_UTIL BYCPU_CSWITCH_RATE BYCPU_INTERRUPT_RATE BYCPU_STATE BYCPU_CPU_CLOCK BYCPU_CPU_TOTAL_UTIL
CPU Details of Logical System	GBL_CPU_ENTL_UTIL GBL_CPU_PHYS_USER_MODE_UTIL GBL_CPU_PHYS_SYS_MODE_UTIL GBL_CPU_PHYS_TOTAL_UTIL GBL_CPU_SHARES_PRIO
CPU Gauges	GBL_CPU_TOTAL_UTIL
CPU Utilization Baseline	GBL_CPU_TOTAL_UTIL
CPU Summary	GBL_CPU_INTERRUPT_UTIL GBL_CPU_SYS_MODE_UTIL GBL_CPU_USER_MODE_UTIL
CPU Entitlement by Logical Systems	BYLS_CPU_ENTL_MIN BYLS_CPU_ENTL_MAX
CPU Summary by Logical Systems	BYLS_LS_ID BYLS_CPU_ENTL_UTIL BYLS_CPU_PHYS_TOTAL_UTIL BYLS_CPU_SHARES_PRIO

Graph Templates	Metric Name
Configuration Details	GBL_SYSTEM_ID GBL_OSNAME GBL_OSRELEASE GBL_MACHINE_MODEL GBL_COLLECTOR GBL_NUM_CPU GBL_NUM_DISK GBL_NUM_NETWORK GBL_MEM_PHYS GBL_SWAP_SPACE_AVAIL_KB TBL_PROC_TABLE_AVAIL GBL_LOGGING_TYPES GBL_THRESHOLD_CPU GBL_THRESHOLD_PROCMEM GBL_THRESHOLD_DISK GBL_LOGFILE_VERSION GBL_MACHINE GBL_OSKERNELTYPE_INT GBL_MEM_AVAIL TBL_BUFFER_CACHE_AVAIL GBL_OSVERSION
Disk Throughput	BYDSK_PHYS_BYTE_RATE
Disk Summary	GBL_DISK_UTIL_PEAK GBL_FS_SPACE_UTIL_PEAK GBL_DISK_PHYS_BYTE_RATE GBL_DISK_PHYS_IO_RATE GBL_DISK_LOGL_READ_RATE
Disk Space	FS_SPACE_UTIL FS_SPACE_UTIL

Graph Templates	Metric Name
Disk Details	BYDSK_DEVNAME BYDSK_PHYS_READ_BYTE_RATE BYDSK_PHYS_READ_RATE BYDSK_PHYS_WRITE_BYTE_RATE BYDSK_PHYS_WRITE_RATE BYDSK_UTIL BYDSK_REQUEST_QUEUE BYDSK_AVG_SERVICE_TIME BYDSK_LOGL_READ_RATE BYDSK_LOGL_WRITE_RATE BYDSK_DIRNAME BYDSK_ID
Filesystem Details	FS_DIRNAME FS_SPACE_UTIL FS_MAX_SIZE FS_SPACE_USED FS_SPACE_RESERVED FS_TYPE FS_DEVNAME FS_DEVNO FS_INODE_UTIL FS_MAX_INODES FS_BLOCK_SIZE FS_FRAG_SIZE
Global CPU Forecast	GBL_CPU_TOTAL_UTIL
Global History	GBL_CPU_TOTAL_UTIL GBL_DISK_UTIL_PEAK GBL_SWAP_SPACE_UTIL GBL_MEM_UTIL GBL_ACTIVE_PROC
Global Run Queue Baseline	GBL_RUN_QUEUE

Graph Templates	Metric Name
Global Details	GBL_CPU_TOTAL_UTIL GBL_ACTIVE_PROC GBL_PRI_QUEUE GBL_RUN_QUEUE GBL_RUN_QUEUE GBL_DISK_PHYS_IO_RATE GBL_DISK_PHYS_BYTE_RATE GBL_DISK_LOGL_IO_RATE GBL_MEM_CACHE_HIT_PCT GBL_MEM_PAGEOUT_RATE GBL_MEM_SWAPOUT_RATE GBL_MEM_UTIL GBL_MEM_USER_UTIL GBL_MEM_SYS_AND_CACHE_UTIL GBL_SWAP_SPACE_UTIL GBL_FS_SPACE_UTIL_PEAK GBL_NET_PACKET_RATE GBL_NET_IN_PACKET_RATE GBL_NET_OUT_PACKET_RATE GBL_NFS_CALL_RATE GBL_NET_COLLISION_1_MIN_RATE GBL_NET_ERROR_1_MIN_RATE GBL_SYSCALL_RATE GBL_CPU_SYS_MODE_UTIL GBL_CPU_USER_MODE_UTIL GBL_NUM_USER GBL_ALIVE_PROC GBL_STARTED_PROC_RATE
Individual CPUs	BYCPU_CPU_TOTAL_UTIL
Individual Networks	BYNETIF_IN_BYTE_RATE BYNETIF_OUT_BYTE_RATE BYNETIF_IN_PACKET_RATE BYNETIF_OUT_PACKET_RATE

Graph Templates	Metric Name
Memory Summary	GBL_MEM_UTIL GBL_MEM_USER_UTIL GBL_MEM_SYS_AND_CACHE_UTIL GBL_MEM_CACHE_HIT_PCT GBL_MEM_QUEUE GBL_MEM_SWAPOUT_RATE GBL_MEM_PAGEOUT_RATE GBL_MEM_PG_SCAN_RATE
Multiple Global Forecasts	GBL_CPU_TOTAL_UTIL GBL_DISK_UTIL_PEAK GBL_SWAP_SPACE_UTIL GBL_RUN_QUEUE GBL_MEM_PAGEOUT_RATE GBL_NET_IN_PACKET_RATE GBL_NET_OUT_PACKET_RATE GBL_ACTIVE_PROC
Memory Summary by Logical Systems	BYLS_LS_ID BYLS_MEM_ENTL_UTIL BYLS_MEM_PHYS_UTIL BYLS_MEM_SWAPPED BYLS_MEM_OVERHEAD BYLS_MEM_SHARES_PRIO
Network Summary	GBL_NET_OUT_PACKET_RATE GBL_NET_IN_PACKET_RATE GBL_NET_ERROR_RATE
Percentage Utilization of CPU Entitlement by Logical Systems	BYLS_CPU_ENTL_UTIL
Percentage Utilization of Memory Entitlement by Logical Systems	BYLS_MEM_ENTL_UTIL
Percentage Utilization of Total Physical CPU by Logical Systems	BYLS_CPU_PHYS_TOTAL_UTIL

Graph Templates	Metric Name
Process Details	PROC_PROC_NAME PROC_PROC_CMD PROC_PROC_ID PROC_CPU_TOTAL_UTIL PROC_DISK_PHYS_IO_RATE PROC_INTEREST PROC_STOP_REASON PROC_APP_ID PROC_PRI PROC_MEM_RES PROC_MEM_VIRT PROC_CPU_USER_UTIL PROC_CPU_SYS_MODE_UTIL PROC_PARENT_PROC_ID PROC_USER_NAME PROC_RUN_TIME PROC_INTERVAL_ALIVE
Seasonal CPU Forecast	GBL_CPU_TOTAL_UTIL
System Configuration	GBL_SYSTEM_ID GBL_MACHINE GBL_MACHINE_MODEL GBL_CPU_CLOCK GBL_OSNAME GBL_OSVERSION GBL_OSRELEASE GBL_MEM_PHYS GBL_ACTIVE_CPU GBL_NUM_CPU GBL_NUM_DISK GBL_NUM_NETWORK GBL_COLLECTOR GBL_SWAP_SPACE_AVAIL GBL_LOGGING_TYPES GBL_THRESHOLD_CPU GBL_GMTOFFSET

Graph Templates	Metric Name
Network Interface Details	BYNETIF_NAME BYNETIF_IN_BYTE_RATE BYNETIF_IN_PACKET_RATE BYNETIF_OUT_BYTE_RATE BYNETIF_OUT_PACKET_RATE BYNETIF_QUEUE BYNETIF_COLLISION_RATE BYNETIF_ERROR_RATE
Virtualization Configuration	GBL_SYSTEM_ID GBL_OSNAME GBL_OSVERSION GBL_OSRELEASE GBL_LS_TYPE GBL_LS_ROLE GBL_NUM_L GBL_NUM_CPU BYLS_LS_ID BYLS_LS_NAME BYLS_NUM_CPU BYLS_NUM_NETIF BYLS_NUM_DISK BYLS_LS_OSTYPE BYLS_CPU_ENTL_MIN BYLS_CPU_ENTL_MAX BYLS_MEM_ENTL_MIN BYLS_MEM_ENTL_MAX

Policies Setting ETIs

The following table lists the content pack ETIs and SPI policies that set the ETIs.

ETI	Mapping Rule	Policy Name	Policy Description
CPU Load	Win OSSPI CPU Bottleneck Alert / Normal	WINOSSPI-CpuBottleneck _Win2k	Detects CPU bottlenecks on a Windows 2000 system.
CPU Load	Unix OS SPI CPU Bottleneck Normal, Unix OS SPI CD CPU Bottleneck / Normal	OSSPI- cpuutil	Monitors CPU utilization
		OSSPI- CD_Cpu _Load	Checks the CPU Load
Memory Load	Win OSSPI Memory Load Alert / Normal	WINOSSPI-Memory bottleneck _Win2k	Detects memory bottlenecks on a Windows 2000 system.
Memory Usage Level	Win / UNIX OSSPI Memory Usage Alert / Normal	WINOSSPI- SysMon _Physical MemCheck	Checks the Available Bytes counter of the Memory object.
		OSSPI- CD_Mem_ Load	Checks the memory Load
Event Logging	Win OSSPI Event Log Alert / Normal	WINOSSPI- Event Log Service	Checks the Event Log service and its corresponding process.
RPC Service	Win OSSPI RPC Service Unavailable / Availability Normal	WINOSSPI- RPC Service -Win2k	Checks the Remote Procedure Call (RPC) windows 2000 Service and its corresponding process.
Page File Usage	Win OS SPI Pagefile Usage Alert / Normal	WINOSSPI- SysMon _PageFile Check	Checks the percentage Usage counter of the Paging File object.

ETI	Mapping Rule	Policy Name	Policy Description
Swap Space Available	Unix OS SPI Swap Space Utilization Alert / Norma / Alert Swapmon / Swapmon Normal	OSSPI- swapmon	Monitors Swap utilization
		OSSPI-CD_ Swap_Res	Checks the Swap Res
Root Disk Usage Available	Unix OS SPI Root Disk Usage Level Alert / Normal	OSSPI- diskutil	Monitors disk space utilization on root disk

SiteScope Installation Package

The SiteScope installation package contains the following artifacts.

Mapping Rules and ETIs

The following table lists the mapping rules that set the ETIs of different content packs.

ETI/HI	Installation package to which ETI/HI belongs	Mapping Rule
FRS Status	Microsoft Active Directory	SiS_map_ADSolu_FRSStatus
ISM Service Status	Microsoft Active Directory	SiS_map_ADSolu_SMServiceStatus
KDC Service Status	Microsoft Active Directory	SiS_map_ADSolu_KDCServiceStatus
Replication Activity Performance	Microsoft Active Directory	SiS_map_ADSolu_ ReplicationActivityPerformance
Sysvol Connectivity	Microsoft Active Directory	SiS_map_ADSolu_ SysvolConnectivity
ADAM Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcADAM
AD Topology Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcADTopo
Edge Credential Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcCS
Edge Sync Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcES
Exchange Service Host Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcHost
File Distribution Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcFD

ETI/HI	Installation package to which ETI/HI belongs	Mapping Rule
IMAP4 Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcIMAP4
Mailbox Assistant Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcMA
Mail Submission Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcMS
POP3 Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcPOP3
Replication Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcRS
Speech Engine Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcSE
System Attendant Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcSA
Transport Service Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcTrans
Unified Messaging Status	Microsoft Exchange Server	SiS_map_ExcSolu_SvcUM
Disk Usage Level	Infrastructure	SiS_map_DiskMonUsage
CPU Load	Infrastructure	SiS_map_CPUMon_normal
		SiS_map_CPUMon_busy
Filesystem Usage	Infrastructure	SiS_map_DiskMon
Logical Disk Free Space Win	Infrastructure	SiS_map_DiskMon
Memory Usage Level	Infrastructure	SiS_map_MemMon_normal
		SiS_map_MemMon_error

ETI/HI	Installation package to which ETI/HI belongs	Mapping Rule
Page File Usage WIN	Infrastructure	SiS_map_WinResMon_ PFUsg_normal
		SiS_map_WinResMon_ PFUsg_high
Ping Availability	Infrastructure	SiS_map_PingMon
Swap Usage Level	Infrastructure	SiS_map_UXRes_ SwapSp_normal
		SiS_map_UXRes_ SwapSp_high
Archive Status	Oracle	SiS_map_OraMon_ ArchLogDestStatus_normal
		SiS_map_OraMon_ ArchiveLogDestStatus_error
Def Buffer pool Busy Ratio	Oracle	SiS_map_Ora_ DefaultBufferPoolBusyWaitRatio
Def Bufferpool Hit Ratio	Oracle	SiS_map_Ora_ DefBPoolHitRatio
Dictionary Cache Miss Ratio	Oracle	SiS_map_Ora_ DictCacheHitRatio
Dispatcher Busy Ratio By Net	Oracle	SiS_map_Ora_ DispatcherBusyRatioByNet
Dispatcher Process Queue Response Time ByNet	Oracle	SiS_map_Ora_ DispatcherProcessQueue ResponseTime
Latch Hit Ratio	Oracle	SiS_map_Ora_LatchHitRatio
Long Table Scans Pct	Oracle	SiS_map_Ora_ LongTableScansPct
Memory Sort Rate	Oracle	SiS_map_Ora_MemSort_HI
Row Cache Hit Ratio	Oracle	SiS_map_Ora_ RowCacheHitRatio_HI
Tablespace FSFI	Oracle	SiS_map_Ora_TbspFSFI_HI
Tablespace Usage Level	Oracle	SiS_map_Ora_TbspcUsageLevel

ETI/HI	Installation package to which ETI/HI belongs	Mapping Rule
Locks In Use Percentage	Microsoft SQL Server	SiS_map_SQLServ_ LockMemoryUsed
Runnable Workers Ratio	Microsoft SQL Server	SiS_map_SQLServ_ RunnableWorkersRatio
Users Connected Pct	Microsoft SQL Server	SiS_map_SQLServ_ UsersConnected

🎲 UCMDB Packages

HP OMi uses UCMDB packages to upload predefined content to the UCMDB or exchange customized content between instances of the UCMDB. A UCMDB package is usually a collection of one or more XML files containing UCMDB models, view patterns, view instances, and so on.

The following table gives an overview of the contents of a UCMDB package:

Content Type	Description
UCMDB View Model	Descriptions of CI types, their relationships and dependencies, and details of the underlying architectural model.
View Instances	Predefined or customized views of the UCMDB.
TQL Queries	Requests to retrieve and display specific data from the configuration management database (CMDB).
Enrichment rules	Extensions to UCMDB models, for example: ➤ Add new configuration items and relationships to the CMDB ➤ Delete specific instances of configuration item from the CMDB ➤ Update attribute values of specific configuration item instances in the CMDB

♣ Content Packs

HP OMi uses content packs to exchange customized data between instances of the HP OMi management server. A content pack can contain a complete snapshot of all (or any part of) the rules, tools, mappings, and assignments that you define and configure to help users manage your IT environment. For more information about the actions you can perform on content packs, see:

➤ "Exporting Content Packs" on page 578

➤ "Importing Content Packs" on page 579

➤ "Content Pack Definitions" on page 579

➤ "Dependencies in Content Packs" on page 580

The following table gives an overview of the items you can include in a content pack:

Content Type	Description
Key Performance Indicators	Configuration and calculation of key performance indicators (KPI).
Event Indicator	Configuration and calculation of event type indicators.
Event Type Mapping Rules	Rules that map the attributes of HP Operations Manager messages to HP OMi events. For more information, see "Mapping Rules by CI Type Dialog" on page 289.
Event correlation	Rules that correlate similar or related events. For more information, see "Correlation Rules" on page 315.
Performance graphs	Information about the graph family templates used to generate performance graphs.
Tools	Definitions for customized tools that the HP OMi software administrator or subject matter experts have configured for users.

Content Type	Description
UCMDB view mappings	Contents of the list of views displayed in the Selected View list in the Top View pane in the Health Perspective tab.
Context-sensitive Menus	HP OMi-specific extensions to context-sensitive menus, for example, to launch HP OMi configuration tools, start custom tools for specific CI types, and display HP OMi graphs.

You exchange content packs between instances of HP OMi by exporting a content pack to a file and importing the content pack file into the another HP OMi management server.

HP OMi uses a content pack definition to specify the contents of a content pack. For more information about content pack definitions, see "Content Pack Definitions" on page 579.

Note: Creating a content pack is a two-step process. First you define the contents of the content pack, then you use the definition to create the content pack using the Content Pack manager.

The Content Pack manager displays an overview of the contents of the currently selected content pack. For more information about the contents of the various tabs in the Content Pack Details pane, see "Content Pack Manager Graphical User Interface" on page 599.

Exporting Content Packs

Using the Content Pack manager, you can export configuration data to a file. The export file is known as a content pack and contains the references to configuration data, and the referenced data. The exported content pack is an XML file whose contents you can view in a text editor.

The configuration data in a content pack makes references to configuration items stored in the UCMDB used by the system from which the content pack was exported. If these configuration items are not present in the UCMDB used by the system onto which you want to import the content pack, the configuration data in the content pack cannot work.

Tip: Use the features provided by the UCMDB to export and import configuration items.

The user roles enables you to restrict access to the Content Pack manager's import and export features.

For more information about exporting content packs, see "Exporting Content Packs" on page 592.

Importing Content Packs

Using the Content Pack manager, you can import configuration data from a file. When starting an import action, you can specify whether to overwrite any existing data or leave the existing data unchanged (Ignore), only adding new data.

If you want to run a test of the import operation without actually importing any of the listed data, you can use the Test feature. The Test feature is a useful way of listing the unresolved dependencies that the imported content pack definition contains.

For more information about importing content packs, see "Importing Content Packs" on page 594. For more information about the options available in the import operation, see "Import Content Pack Dialog" on page 614.

Content Pack Definitions

HP OMi uses a content pack definition to specify the contents of a content pack, which is the medium HP OMi uses to exchange configuration data between systems. A content pack definition contains a list of the data to be included in a content pack when you use the Export feature to prepare a package for exchange with another management server.

The Content Packs Definitions pane enables you to view and manage the content pack definitions. For example, you can perform the following actions:

➤ Create, modify, and save a content pack definition

➤ Delete a content pack definition

➤ Export or import an existing definition along with the configuration data it references

🔵 Dependencies in Content Packs

The rules, tools, and definitions in the content packs are associated with particular configuration item types. The configuration item types are part of a hierarchy that involves relationships, for example, between other configuration item types, key performance indicators, indicators, and indicator values. Configuration item types have a fixed position in the context of the hierarchy, and KPI and HI assignments are often inherited from further up and passed on down the hierarchy.

Note: A configuration item type and any of its data, such as rules, tools, and definitions cannot exist in isolation. The exchange operation also imports or exports the context of the exchanged data.

The default assignment of health indicators to key performance indicators and key performance indicators to configuration item types is, for the most part, configured automatically. However, you can create new health indicators and assign them to key performance indicators manually.

KPI calculation rules, health indicators, tool definitions, and correlation rules, exist in the context of a specific configuration item type. Adding rules, indicators, tools, and so on to a content pack definition, the assignment to any configuration item type is also included in the definition. When you use the content pack definition to export a content pack, you should be aware of the following important points:

➤ If you select a configuration item type for inclusion in a content pack definition, all KPI assignments and health indicators are included. All KPIs and health indicators assigned to any descendents of the selected configuration item type are also included. The CI type is not itself is not exported.

➤ If you include a key performance indicator in a content pack definition, any assigned health indicators, health indicator values, mapping rules, filters, and any relationships between these items are automatically included.

➤ KPI assignments to health indicators are included in the content pack definition and the content pack itself. These assignments are re-established on import, assuming the appropriate health indicators and configuration item types are available on the target system. For more information, see "Importing Content Packs" on page 594.

➤ The hierarchy of configuration item types and the overall context are also included in the content pack definition

➤ If you include a correlation rule in a content pack definition, any indicators, indicator values, mapping rules, and filters referenced in the rule are also included as well as any relationships between the various included items.

Note: The content pack definition defines the original relationships to configuration item types and any relationships between the included items. The content pack definition does not include the configuration item types themselves. To exchange configuration item types, use the features provided by the UCMDB.

🔀 Topology Synchronization

HP OMi provides the command-line tool **opr-startTopologySync** that enables you to synchronize topology data, such as services and managed nodes, from HP Operations Manager to the UCMDB.

On startup, the **opr-startTopologySync** tool uses parameters defined and stored in the settings manager. The topology synchronization process requires the following prerequisites:

➤ Connection between HP OMi and the HP Operations Manager management servers

➤ HP Operations Manager management server configured to forward events to HP OMi

➤ Access to both the HP OMi database and the UCMDB

You can run the **opr-startTopologySync** tool manually from the command-line or according to a defined schedule, for example, with the Windows task scheduler.

Note: For multi-system, distributed installations, the **opr-startTopologySync** tool must be run on the Processing Server system.

For more information about the settings for the topology synchronization tool, see "Topology-Based Event Correlation Settings" on page 670. For more information about the **opr-startTopologySync** command, see "Topology Synchronization Command-Line Interface" on page 621.

Note: Some features are only available to users who are logged on with the appropriate authorization. If you are logged on to HP OMi without administrative authorization, you might be required to supply a user name and password to start Content Packs tools.

🪶 Searching and Filtering CI Types

In this task, you learn how to search for specific CI types and view CI types that match specified filter criteria. There are two filters:

➤ Show only CI types with assigned content

➤ Show CI types contained within a specified view

Tip: For information on button actions, see "Content Pack Manager Graphical User Interface" on page 599.

Searching for a CI Type

You can use the Search field to locate the first instance of the CI type name or part of a name that you specify.

To search for a specified CI type:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Manage Content** > **Content Packs**

2 In the Search field, enter a string.

Note: The search string must be at least three characters long. Searching is started as soon as the third character is entered and the first match is highlighted. This prerequisite avoids searches being started too often and resources being blocked. Names with less than three characters cannot be found.

The first CI type in the CI Types tree to match the specified string is highlighted. If that CI is not initially visible, the CI tree is expanded to display the CI Type.

3 Select the 🔍 button to find the next occurrence of the CI Type for which you are searching.

Finding CI Types with Assigned Content

You can use the filter to display all CI types that have content assigned to them.

To filter the CI tree to show only CI types with assigned content:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Manage Content** > **Content Packs**

2 Select a content pack and open the **Content** tab.

3 In the Filter pane, select **Show only CI types with assigned content**.

The CI Types pane displays only those CI types that have content assigned.

Note: You can use the Show only CI types with assigned content filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned content. You can also chose not to display empty folders by selecting **Hide empty folders**.

Filtering the CI Types Tree with a View

You can use the filter to display all CI types that are contained within a certain view.

To filter the CI Types tree with a view:

1 Open the Indicators manager from Operations Management Administration:

Admin > **Operations Management** > **Manage Content** > **Content Packs**

2 Select a content pack and open the **Content** tab.

3 In the Filter pane, select **View**.

The View field becomes active.

4 Select the Browse Views (...) button to open the Views selection dialog box.

5 Select the view that you want to use, and select **OK**.

The CI Types tree is updated to display only the CI types that match the view selected.

You can use the Expand (⬚) and Collapse (⬚) buttons to expand or collapse the CI tree. The **Expand** (⬚) button expands all CI types (but not content folders) which are under the selected CI type. The **Collapse** (⬚) button collapses all open nodes except for the selected node.

If no item matches the filter, the No CI type found message is displayed.

Note: You can use the Show only CI types with assigned content filter and the filtering by a selected view together. The result displays only CI types contained within the specified view and with assigned content. You can also chose not to display empty folders by selecting **Hide empty folders**.

⚓ Exchanging a Content Pack

This task lists and briefly describes the individual steps you need to take to complete the process of exchanging a content pack between two HP OMi management servers.

Tip: For information on button actions, see "Content Pack Manager Graphical User Interface" on page 599.

This task includes the following steps:

➤ "Prerequisites" on page 586
➤ "Create a Content Pack Definition" on page 586
➤ "Export a Content Pack" on page 586
➤ "Import a Content Pack" on page 587

1 Prerequisites

To create and exchange a content pack, you need access to the HP OMi Content Pack manager and detailed knowledge of the topology of the IT environment you are monitoring.

The CI types used must be available.

You also need to know which artifacts (for example, rules, tools, mappings, and definitions) to select for inclusion in the content pack, which configuration item types they belong to, and where to find them.

2 Create a Content Pack Definition

For detailed instructions that describe how to create a content pack definition, see "Creating Content Pack Definitions" on page 590.

3 Export a Content Pack

For detailed instructions describing how to export the content pack definition and its content to a file, see "Exporting Content Packs" on page 592.

4 Import a Content Pack

For detailed instructions describing how to import the content pack you created in the previous step, see "Importing Content Packs" on page 594.

❧ Exchanging UCMDB Packages

This task lists and briefly describes the individual steps you need to take to complete the process of exchanging a UCMDB package between two HP OMi management servers.

Tip: For information on button actions, see "Content Pack Manager Graphical User Interface" on page 599.

This task includes the following steps:

➤ "Prerequisites" on page 588

➤ "Create a UCMDB package" on page 588

➤ "Export a UCMDB package" on page 588

➤ "Import a UCMDB package" on page 589

5 Prerequisites

To create and exchange a UCMDB package, you need access to the UCMDB package manager and detailed knowledge of the items and resources you want to include in the package.

You also need to know which components, such as XML files containing UCMDB models, view patterns, view instances, to select for inclusion in the UCMDB package.

6 Create a UCMDB package

For detailed instructions describing how to create a UCMDB package, define the contents of a UCMDB package, see "Creating UCMDB Packages" on page 596.

7 Export a UCMDB package

For detailed instructions describing how to export a UCMDB package to a file, see "Exporting UCMDB Packages" on page 597.

8 Import a UCMDB package

For detailed instructions describing how to import a UCMDB package to a management server, see "Importing UCMDB Packages" on page 598.

⚓ Creating Content Pack Definitions

In this task, you learn how to define the contents of a content pack containing HP OMi configuration data, for example, rules, tools, health indicators, and key performance indicators for configuration items. To complete this task, you need access to the Content Pack manager and detailed knowledge of the configuration items whose configuration data you want to export. You also need to understand which health indicators and key performance indicators are assigned to the configuration items for export.

Tip: For information on button actions, see "Content Pack Manager Graphical User Interface" on page 599.

To create a content pack definition:

1 Open the Content Packs manager from Operations Management Administration:

   Admin > Operations Management > Manage Content > Content Packs

2 In the Content Pack Definitions pane, select the ✳ button. The Create New Content Pack Definition dialog box opens.

3 Enter a name and display name for the content pack definition.

4 Add a short description summarizing the content pack definition, and select **OK**.

   The Content Pack manager displays the new content pack definition in the Content Pack Definitions list and the Details pane.

5 To add items to (or remove them from) a content pack definition, select the **Content** tab and drag items between the **Available Content** and **Included Content** panes, for example, Indicators, Tool Definitions, KPI Rule Definitions, Correlation Rules, and View Mappings.

Tip: HP OMi warns you if you try to include items that are already present in the Included Content list. You can choose to cancel the operation or overwrite existing content.

6 Use the Content Pack Summary pane in the General tab to make sure that the new content pack definition contains all the items you want.

7 Select the button to save the definition and commit the changes to the database.

🔖 Exporting Content Packs

In this task, you learn how to export a content pack containing HP OMi configuration data for configuration items. To complete this task, you need access to the HP OMi Content Pack manager and detailed knowledge of the configuration items whose definitions you want to export. You also need to understand which health indicators and key performance indicators are assigned to the configuration items for export.

Tip: For information on button actions, see "Content Pack Manager Graphical User Interface" on page 599.

To export a content pack:

1 Open the Content Packs manager from Operations Management Administration:

   Admin > **Operations Management** > **Manage Content** > **Content Packs**

2 In the Content Pack Definitions pane, select the content pack that you want to export.

3 To export the selected content pack to an XML-format file, select the 🔃 button.

   The Select location for download dialog box opens.

Tip: By default, HP OMi saves the content pack to the file system on the system where you are running the Content Pack manager. If you want to save the file in an alternative location, make sure that you have access to that location.

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4 Select the location where you want to save the content pack and select **Save**.

Note: When selecting a mapping rule in the Content Manager and adding to a Content Pack, all ETI values of the ETI referenced by the mapping rule are automatically added to the export.

🖋 Importing Content Packs

In this task, you learn how to import a content pack containing HP OMi configuration data. To complete this task, you need access to Operations Management Administration and detailed knowledge of the HP OMi configuration data that you want to import. A successful export and import operation requires the same configuration items to be available on both the source and target systems.

Tip: For information on button actions, see "Content Pack Manager Graphical User Interface" on page 599.

To import a content pack:

1 Open the Content Pack manager from Operations Management Administration:

   Admin > **Operations Management** > **Manage Content** > **Content Packs**

2 To open the Import Content Pack dialog box, in the Content Pack Definitions pane, select the 🖹 button.

   The Import Content Pack dialog box opens.

3 In the Import Content Pack dialog box, use the **Browse (...)** button to locate the content pack you want to import. The default location for HP OMi content packs is:

   %TOPAZ_HOME%\conf\opr

   If a two machine deployment is used, this directory is located on the processing server.

Note: By default, HP OMi looks for content packs in the file system on the system where you start the browser session. If the browser is running on a remote system, you must navigate to the file system of the HP OMi host system.

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4 Use the check boxes provided in the Import Content Pack dialog box to indicate if you want the import operation to overwrite all existing data, or ignore existing data and just add any new data. You can also run a test without importing any data to see if any problems exist. For more information about the icons, labels, and options in the Import Content Pack dialog box, "Import Content Pack Dialog" on page 614.

5 Select **Import** to start the import or test operation.

🪁 Creating UCMDB Packages

In this task, you learn how to define the contents of a UCMDB package. To complete this task, you need to have access to the UCMDB package manager and detailed knowledge of items and resources you want to include in the package.

To create a UCMDB package:

1 Open the Universal CMDB Package Manager:

Admin > **Universal CMDB** > **Settings** > **Package Manager**

2 Select the ✚ button to start the Create Custom Package wizard.

3 In the Package Properties screen, enter a name, description, and category for the new UCMDB package and select **Next**.

4 Follow the instruction displayed in the Create Custom Package wizard.

⚑ Exporting UCMDB Packages

In this task, you learn how to export a UCMDB package. The export operation writes the package to an XML file and places the file in the location you choose. To complete this task, you need to have access to the UCMDB package manager and detailed knowledge of the items and resources included in the package you want to export.

To export a UCMDB package:

1 Open the Universal CMDB Package Manager:

Admin > **Universal CMDB** > **Settings** > **Package Manager**

2 Select the ⚑ button to start the Export package dialog box.

3 In the Export package dialog box, type a name for the exported package, choose where to save the package, specify what contents to include in the exported package, and select **OK**.

4 Make sure that the exported package is placed in the desired location.

❧ Importing UCMDB Packages

In this task, you learn how to import a UCMDB package. The import operation uploads the contents of the specified package to the UCMDB. To complete this task, you need to have access to the UCMDB package manager and detailed knowledge of the items and resources included in the package you want to import.

To import a UCMDB package:

1 Open the Universal CMDB Package Manager:

Admin > **Universal CMDB** > **Settings** > **Package Manager**

2 Select the ⬇ button to start the Deploy Packages to Server dialog box.

3 In the Deploy Packages to Server dialog box, select the ✚ button to browse to the location where the package you want to deploy is stored, and select **Open**.

Note: The default location for UCMDB packages on the HP OMi management server is: *%TopazHome%*\mam_lib\opr\content.

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4 Make sure that the package you want to import is displayed in the Deploy Packages to Server dialog box and select **OK**.

🔍 Content Pack Manager Graphical User Interface

This section describes the information displayed in the Content Pack manager. The information in this section describes the buttons, icons, labels, and menu options that you use to create the content packs and their definitions. In this section, you can find information about the following topics:

HP OMi provides a number of content pack definitions for SPIs that you can either use in the default configuration or, if necessary, modify to suit the demands of your environment.

Tip: HP OMi provides several ways to perform actions with buttons or menu items. The buttons in the Definitions pane duplicate the options available in the Definition and Exchange menus, which you can also find in context-sensitive menus.

In this section, you can find information about the following parts of the Content Packs manager:

➤ **Content Pack Definitions**

Displays a list of all the content pack definitions that are available for your environment. For more information, see "Content Pack Definitions Pane" on page 600.

➤ **General Details**

Displays high-level information concerning the properties of the currently selected content pack definition and a short summary of the content pack's content. For more information, see "Content Pack General Tab" on page 603.

➤ **Content**

Displays details of the content included in the package definition, for example, indicators, KPI Rule definitions, correlation rules, tool definitions, and top view mappings. For more information, see "Content Pack Content Tab" on page 609.

🔍 Content Pack Definitions Pane

A content pack definition describes the items included in a content pack. A content pack is a snapshot of the HP OMi configuration data, and other items that you have defined to help manage the resources in the IT environment you are monitoring with HP OMi. The Content Pack manager displays a list of all known content pack definitions.

Tip: Use the **Cancel Edits** option to undo any changes you make to a content pack definition and revert to the last saved version, if available.

The Content Pack Definitions pane displays the GUI elements listed in the following table.

GUI Element	Description
🔄	Refreshes the contents of the displayed list. Use if new content becomes available while you are working or you have uploaded new contents (for example, from the command-line interface).
✳	Opens the Create New Content Pack Definition dialog box. Requires you to enter a name and description for the new content pack definition. Select **OK** to display the new content pack definition in the **Content Pack Definitions** pane.
💾	Saves the newly created content pack definition or any changes you have to an existing definition.
↺	Cancels edits of selected content pack definition. Clears (resets) any changes made in the current session and reverts to the last saved version of the content pack definition.
✖	Removes the selected content pack definition from the list of definitions displayed and from the database.

GUI Element	Description
	Opens the Import Content Pack Definition dialog box, which enables you to specify (or browse to) a file that contains the definition details for import. The import action overwrites existing items (or associated KPIs and HIs) of the same name by default. Unresolved references in the imported definition (for example, to unknown CI types) are not allowed.
	Opens the Select location for download dialog box, which enables you to specify or browse to a file location where you want to export the definition details.
	Displays help about the active window, pane, or dialog box.

Context-Sensitive Menus

HP OMi provides many context-sensitive menus, for example, in the CI Tree and the Event Browser. The context-sensitive menus enable quick and direct access to information about selected elements and actions that you can perform on them.

You display a context-sensitive menu by right-clicking an element in the GUI. The information available and the actions that are possible from a context-sensitive menu depend on the element you right-click and the context in which it exists.

The context-sensitive menu in the Content Pack Definitions list includes the following elements:

GUI Element (A-Z)	Description
Cancel Edit	Discards all current unsaved edits and reverts to the saved values.
Delete Item	Removes the selected content pack definition from the list of definitions displayed and from the database.

GUI Element (A-Z)	Description
Export Content Pack Definition and Content	Creates an XML-format file containing the content pack definition and all contents.
Import Content Pack Definition and Content	Imports the specified content pack definition and all contents.
New Item	Opens the Create New Content Pack Definition dialog box. Requires you to enter a name and description for the new content pack definition. Select **OK** to display the new content pack definition in the Content Pack Definitions pane.
Save Item	Saves the newly created content pack definition or any changes you have to an existing definition.

🔍 Content Pack General Tab

The General tab of the Content Pack manager displays the name and a short description of the content pack definition you are adding or modifying along with a summary of the content pack's contents.

Tip: Use the **Cancel Edit** option to undo any changes you make to a content pack definition and return to the last saved version, if available.

The Content Pack Information section displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Description	Brief description of the content pack definition you want to add to (or have selected in) the Content Pack Definitions pane. Use the Description box to remind other users of the scope and content of the content pack.
Display Name	External name for the content pack definition you want to add to (or have selected in) the Content Pack Definitions pane. The external name is the name that you want to expose to users.
ID	No action required. The content pack ID is assigned automatically when the content pack is first created.
Name	*For internal use only:* Name of the content pack definition you want to add to (or have selected in) the Content Pack Definitions pane. The name is limited to a maximum length of 80 characters of the following type: A-Z, a-z, 0-9, _ (underscore)

The Content Pack Summary section displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Correlation Rules (#)	List of the topology-based correlation rules included in the content pack. Expanding the list of rules displays the following additional information: ➤ **Cause CI Type**: Configuration item types configured as a cause in a correlation rule. ➤ **Correlation Rule**: Display name of the correlation rule to be imported or exported. ➤ **Description:** Summary of the correlation rule.
Event Type Indicators (#)	List of the event type indicator definitions (ETI) included in the currently selected content pack definition. The total number of ETI definitions included in the selected content pack is indicated in brackets, for example: (10). Expanding the list of ETI definitions displays the following additional information: ➤ **CI Type**: Type of configuration item to which the ETI is assigned (for example: Application, Host, or Oracle System). ➤ **ETI**: Name of the event indicator assigned to the selected configuration item type. ➤ **Description**: Brief summary of the ETI definition.
Graph Categories (#)	List of the HP OMi graph categories included in the content pack Graph categories are sub-groups of graphs that are logically grouped within a graph family. Expanding the list of graph categories displays the following additional information: ➤ **CI Type**: Type of configuration item to which a graph family is mapped, for example, Host. ➤ **Graph Category**: Display name of the graph category to which the configuration item type is mapped, for example, Agent Performance.

GUI Element (A-Z)	Description
Graph Families (#)	List of the HP OMi graph families that are included in the content pack. Expanding the list of graph families displays the following additional information: ➤ **CI Type**: Type of configuration item to which a graph family is mapped, for example, Hosts. ➤ **Graph Family**: Display name of the graph family to which the configuration item type is mapped, for example, Agent Performance.
Graph Family Mappings (#)	List of the HP OMi graph families included in the content pack that are mapped to a specific configuration item type. Expanding the list of graph families displays the following additional information: ➤ **CI Type**: Type of configuration item to which a graph family is mapped, for example, Hosts.
Health Indicators (#)	List of the health indicator definitions (HI) included in the currently selected content pack definition. The total number of HI definitions included in the selected content pack is indicated in brackets, for example: (10). Expanding the list of HI definitions displays the following additional information: ➤ **CI Type**: Type of configuration item to which the HI is assigned (for example: Application, Host, or Oracle System). ➤ **Health Indicator**: Name of the health indicator assigned to the selected configuration item type. ➤ **Description**: Brief summary of the ETI definition.

GUI Element (A-Z)	Description
Health Indicator to KPI Rule Assignments (#)	List of the rules and definitions for key performance indicators that are included in the currently selected content pack definition with their assigned health indicator definitions.
	The total number of assignments included is indicated in brackets (15). Expanding the list of definitions displays the following additional information:
	➤ **CI Type**: Type of configuration item to which the KPI rule definition is assigned, for example, Application, Host, or Oracle System.
	➤ **KPI Rule Definition**: Key performance indicator rule used to calculate the status of the selected configuration item type, for example, Performance or Availability.
	➤ **Health Indicator**: Display name of the health indicator assigned to the selected configuration item type.
Indicator Values (#)	List of the indicator values included in the currently selected content pack definition. The total number of indicator values included in the selected content pack is indicated in brackets, for example: (10). Expanding the list of indicator definitions displays the following additional information:
	➤ **ETI/HI**: Name of the indicator assigned to the selected configuration item type.
	➤ **Indicator Value**: Value of the associated indicator definition.

GUI Element (A-Z)	Description
KPI Rule Definitions (#)	List of the rules and definitions for key performance indicators that are included in the currently selected content pack definition. The total number of KPI definitions included is indicated in brackets (15). Expanding the list of definitions displays the following additional information: ➤ **CI Type**: Type of configuration item to which the KPI rule definition is assigned (for example: Application, Host, or Oracle System). ➤ **KPI Rule Definition**: Key performance indicator rule used to calculate the status of the selected configuration item type, for example, Performance or Availability.
Mapping Rules (#)	List of the rules that map event attributes to indicator values. Expanding the list of rules displays the following additional information: ➤ **Mapping Rule**: Name of the mapping rule. ➤ **Description**: Brief summary of the mapping rule definition.

GUI Element (A-Z)	Description
Tool Definitions (#)	List of the tool definitions included in the currently selected content pack definition. The total number of tool definitions included is indicated in brackets (20). Expanding the list of definitions displays the following additional information: ➤ **CI Type**: Configuration item type to which the tool is assigned, for example, Application, Host, or Oracle System. ➤ **Tool**: Display name of the tool included in the exchange file. ➤ **Description**: Summary of the defined tool.
View Mappings (#)	List of the HP OMi views included in the content pack that are mapped to a selected configuration item type, for example, in the View Mapping manager. Expanding the list of definitions displays the following additional information: ➤ **CI Type**: Type of configuration item to which a view is mapped. ➤ **View**: Display name of the view to which the configuration item type is mapped.

🔍 Content Pack Content Tab

The Content tab of the Content Pack manager displays detailed information about the contents and attributes referenced in the content pack definition selected in the Content Pack Definitions pane.

Tip: Selecting a configuration item type automatically selects all assigned content of the CI type and also all assigned content for child CI types. Selecting a specific folder or an individual indicator or KPI rule automatically selects the reference to the configuration item type to which the rule, tool, or definition is related.

The Content Pack Content tab displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
🔄	Refreshes the contents of the displayed lists. Use if new content becomes available while you are working or you have uploaded new contents (for example, from the command-line interface).
(➡)	**Add to Included Content**: Adds the selected object (and any children) in the Available Content pane to be included in the currently selected content pack definition.
(⬅)	**Exclude**: Removes the selected object (and any children) selected in the Included Content pane from the list to be included in the currently selected content pack definition.
(⬅)	**Exclude All**: Removes all items from the list of items selected for inclusion in the content pack.
🔲	**Display All Selected Content Pack Items**: Expands the Included Content list to display all items selected for inclusion in the content pack.

GUI Element (A-Z)	Description
(icon)	**Expand Selection:** Expands the Included Content list to display items belonging to the selected group.
(icon)	**Collapse Others:** Collapses all open branches except for the selected branch.
(icon)	Displays help about the active window, pane, or dialog box.
Available Content	List of all known configuration item types (and any associated configuration data) that are available for your IT environment. Elements included in the currently selected content pack appear in **bold** type. **Tip**: To include an item in a content pack definition, drag the selected configuration item types from the Available Content pane to the Included Content pane or use the Include button. HP OMi warns you if content already exists when you perform an include operation.
CI Types	Hierarchical list representing the configuration item types that you want to monitor in your IT environment. To display the event type indicators, KPIs, and mapping rules associated with a configuration item, browse to and select the item of interest. The various tabs display the details. If the CI Types list is filtered, (filtered) is displayed next to the CI Types title. When CI types and their children have no objects assigned, their entries appear dimmed. When objects are directly assigned to a CI type, their entries appear bolded.

GUI Element (A-Z)	Description
Filter	Used to search for specific CI types and view CI types that match specified filter criteria. There are three filters: ➤ Show only CI types with assigned content ➤ Hide empty folders ➤ View (Shows CI types contained within a specified view) **Note:** If you apply a view to the filter CI Types tree which removes all CI types with assignments, the IT Universe entry remains in normal text, indicating that assignments exist. Remove the view, or select a more appropriate view to display the CI types with assignments that you require. For more information about searching and filtering, see "Searching and Filtering CI Types" on page 583.
Hide empty folders	Hides all elements in the CI Type tree for which no rules, tools, definitions, mappings, and so on have been defined.
Included Content	List of configuration data that is included (or to be considered for inclusion) in the selected content pack along with a reference to the configuration item to which they are related. Indicators and their values are automatically included when you select a mapping rule for inclusion in a content pack. The element you included appears in **bold** font type. *Italic* font type indicates that an element is automatically included because it belongs to a parent element that was selected for inclusion. **Tip**: To exclude an item, select an item (or group of items) and select the **Exclude** button.
Show only CI types with assigned content	Filters the CI Types tree to display all CI types that have content assigned to them.

GUI Element (A-Z)	Description
Unresolvable Content	List of configuration data that is included in the selected content pack but no longer exists in the UCMDB. If this data is no longer required in the Content Pack Definition, it can be excluded. **Tip**: To exclude an item, select an item (or group of items) and select the **Exclude** button.
View	The options in the list enable you to choose the way in which you want to display the contents of the Available Content and Included Content panes, for example: ➤ **CI Type Centric**: Displays all items that are associated with individual configuration item types. Correlation rules are displayed under the CI type referenced as the cause in the correlation rule. ➤ **Correlation Rule List**: Displays only correlation rules that are associated with multiple configuration item types.

Context-Sensitive Menus

HP OMi provides many context-sensitive menus, for example, in the CI Tree and the Event Browser. The context-sensitive menus enable quick and direct access to information about selected elements and actions that you can perform on them.

You display a context-sensitive menu by right-clicking an element in the GUI. The information available and the actions that are possible from a context-sensitive menu depend on the element you right-click and the context in which it exists.

The context-sensitive menu in the Content tab includes the following elements:

GUI Element (A-Z)	Description
Add to Included Content	Adds an item to the list of items to be included in the import or export operation. The items can include: HI definitions, KPI rules definitions, correlation rules, view mappings, and tool definitions.
Collapse Others	Collapses all open branches except for the selected branch.
Display All Selected Content Pack Items	Expands and displays all content pack items that are included in the Included Content list.
Exclude	Removes an item from the list of items to be included in the import or export operation. The items can include: HI definitions, KPI rules definitions, correlation rules, view mappings, and tool definitions.
Exclude All	Removes all items from the list of items selected for inclusion in the content pack.
Expand Selection	Expands the Included Content list to display items belonging to the selected group.

Import Content Pack Dialog

The Import Content Pack dialog box enables you to locate the content pack that you want to import and how you want the import to be performed.

Note: A content pack contains the items to import. A content pack definition lists the items included in the content pack.

The Import Content Pack dialog box displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Browse...	Enables you to browse to the location of the content pack package that you want to import. HP OMi content pack files are XML files.
Cancel	Closes the Import Content Pack dialog box without importing any content data.
Help	Displays help about the active window, pane, or dialog box.
Ignore	On import, when the overwrite option is not set, ignore any object creation errors due to an existing object.
Import	Starts the specified content data import and closes the Import Content Pack dialog box.

GUI Element (A-Z)	Description
Overwrite	Allows HP OMi to overwrite any existing content pack definition or the items if references during the import process. Select to activate.
	Imports all objects contained within the Content Pack, including the Content Pack Definition. Any objects existing in the system with IDs that match objects in the specified Content Pack are overwritten. Any new objects are created. If any IDs do not match, the entire import is aborted.
Test	Runs a simulated import operation using the selected content pack definition, but does not commit any changes to the database.

🔍 Content Pack Manager Command-Line Interface

This section describes the options and parameters available in the ContentManager command-line interface.

The ContentManager command-line interface is located in:

%TOPAZ_HOME%\opr\bin (default: C:\HPBAC\opr\bin)

The ContentManager command accepts the following options:

ContentManager
> **(-h | -version | (-l | -history| -d *<content_pack_name>* |**
> **-i *<in_file>* [-f[-c]] [-t] [-ignore] |**
> **-snapshot | [-e *<content_pack_name>* [-view] [-o *<out_file>*]])**
> **(([-ssl] [-server *<server>*] [-p *<port>*]) | [-u *<URL>*]))**
> **[-username *<user_name>*] [-password *<password>*] [-v]**

For more information about the options recognized by the ContentManager command, see the following list:

-c,-clear

Similar to option -f. Imports all objects contained within the content pack, including the content pack definition. Any objects existing in the target system with IDs that match objects in the specified Content Pack are overwritten. Any new objects are created.

If any IDs do not match, the entire import is cancelled. If any of the content exists and force overwrite is not specified, the import fails with an error.

Additionally, this option removes the following objects from the target system if they are not defined in the content pack:

➤ Any event type indicator values and mapping rules for ETI objects defined in the content pack

➤ Any HI assignments to KPIs for KPI rule definition objects defined in the content pack

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Note: This option may destroy existing objects that are not part of the Content Pack and should only be used by a knowledgeable user.

-d,-delete *<content_pack_name>*

Deletes the content pack definition specified in *<content_pack_name>*. It does not delete the content pack's content. Content includes definitions for event type indicators, health indicators, calculation rules for key performance indicators (KPI), topology-based correlation rules, tool definitions, view mappings, and graph families.

-e,-export *<content_pack_name>*

Exports the named content pack definition and its content to the file specified using the **-output** option.

-f, force-overwrite

Imports all objects contained within the content pack, including the content pack definition. Any objects existing in the target system with IDs that match objects in the specified content pack are overwritten. Any new objects are created.

If any IDs do not match, the entire import is aborted. If any of the content exists and force overwrite is not specified, the import fails with an error.

-h,-help

Displays a summary of the command options and exits.

-history

Lists the content pack import history.

-i,-import *<input_file>*

Imports the content pack definition and its content from the specified file.

-ignore

Imports all new objects contained within the content pack, including the content pack definition, and ignores any objects in the content pack, including the content pack definition, which currently exist within the target system.

-l,-list

Lists the contents of the specified content pack definition.

-o,-output *<output_file>*

Specifies the name of the file to which you want the command to write during the export operation.

-p,-port

Sets the port number. The default port numbers are 80 for HTTP and 443 for HTTPS. Do not specify this option in conjunction with the **-url** option.

-password

Requests the password of the user specified in the **-username** option, whose account is being used for authentication purposes.

-s,-server

Sets the target HP OMi server using either a hostname or an IP address. The specified server must be an HP OMi gateway server. Do not specify this option in conjunction with the **-url** option.

-snapshot

Exports a snapshot of all HP OMi (OPR administration) datastore content.

-ssl

Sets the protocol to HTTPS. The default protocol is HTTP. Do not specify this option in conjunction with the **-url** option. If you do not use the **-port** option to specify a non-standard port, the command uses the standard port number reserved for HTTPS: 443.

-t,-test

Runs import in preview mode and display the results immediately. No changes are committed to the database.

-u, -url *<URL>*

Specifies the URL of the HP OMi gateway server to access. The default value is:

http://localhost:80/opr-admin-server

Do not specify this option in conjunction with the **-server** option.

-username *<user name>*

The name of the user, whose account is being used for authentication purposes.

-v,-verbose

Prints all available command execution information in real time.

-version

Prints the version information of the command and exits.

-view

Use in conjunction with the **-export** option if you want the name of the export content pack *<content_pack_name>* to be interpreted as a the name of a view. Set this option if you want to generate a content pack definition from an existing view. Any rules, tools, and definitions associated with the configuration item types in the specified view are also exported. If the view specified in *<content_pack_name>* does not exist in the UCMDB, the command returns an error and the export operation fails.

The **ContentManager** command displays the following values to indicate the exit status of the requested operation:

Exit Status	Description
0	Successful completion
1	Failure of requested operation
300-399	HTTP Redirection (300-399)
400-499	HTTP Client Error (400-499)
500-599	HTTP Internal Server Error (500-599)

The exit status numbers (300-599) reflect a standard HTTP-status category (and number), for example: Redirection (300-399). For more information about a specific HTTP error status, for example: 307, which signifies a temporary HTTP re-direct, see the publicly available HTTP documentation.

✎ Topology Synchronization Command-Line Interface

This section describes the options and parameters available in the HP OMi topology synchronization command-line interface.

Note: For multi-system, distributed installations, the **opr-startTopologySync** tool must be run on the Processing Server system.

The opr-startTopologySync command accepts the following options:

opr-startTopologySync -touch

The ContentManager command has one options:

-touch

Does not perform the full synchronization. Reads the data saved from the last synchronization from the file system. This data is the same as that used for delta detection. The touch options touches every configuration item to reset configuration item aging and prevent them being deleted during the synchronization process as a result of being too old.

🔍 Troubleshooting and Limitations

This section provides help for those people who are troubleshooting problems relating to content management, including but not limited to: creating, modifying, and enabling configuration items.

Content Not Included in Content Pack

➤ Make sure you perform the Include action at the correct level in the configuration item type hierarchy so that *all* elements assigned to the selected configuration item type (and any children) are included at the same time.

Unresolved References to CIs on Import

➤ Content pack contains references to configuration items that do not exist on the target system. Make sure that the Override and Ignore options are correctly specified before starting the import.

Correlation Rules Symptoms do not Get Correlated

➤ Two or more correlation rules can have same symptom (example S1) and different causes (example C1 & C2). If the symptom and causes trigger in the sequence, C1 - S1 - C2, C1 and S1 gets correlated. C2 does not get correlated with S1. This is an expected behavior.

16

User Management

This chapter introduces the concept of users, user roles, and user views for HP OMi and provides information that helps you understand how to configure and manage the HP OMi software for its users.

This chapter includes:

Concepts

Tasks

Reference

♻ User Management Basics

You can use a default HP OMi user configuration to easily provide access to the features for subject matter experts, for example, database administration, and Microsoft Exchange.

The default user groups are a convenient way to quickly provide a basic working environment for users with knowledge and responsibility in a particular technical area.

The user configuration depends on the role the user fulfills as well as the tasks that the user is likely to perform, for example:

➤ Event management

➤ Software administration

➤ Database administration

➤ Web application administration

➤ Microsoft Exchange administration

User views also provide a way to refine a user's responsibility to particular types of configuration items and the related events. User roles enable you to restrict the scope of a user's responsibility to predefined areas. User authentication enables you to specify the features available to given users, for example, the Indicators manager, the Content Packs manager, the Correlation Rules manager, or the Tools manager.

For more information about the default configurations available for HP OMi users, see "HP OMi Users" on page 626. For more information about the default user views, see "HP OMi User Views" on page 627.

🎲 HP OMi Users

HP OMi enables you to define users and user groups for a specific area of responsibility. Configuring a new user or user group involves granting the appropriate level of access to the views, events, and tools the users need to perform their responsibilities. For example, it is essential for domain experts to be able to see events relating to the domains that they are responsible for configuring and maintaining.

HP OMi also enables you to define the actions that users or user groups can perform on events and their related CIs. The assignment of events to HP OMi user groups is essential in larger environments. It is possible to automate this assignment to particular user groups, for example, by using event categories. Where no event category exists or an event is not assigned to any event category, HP OMi can automatically assign the event to a default category, which is immediately visible to all users or user groups.

Tip: You can use User Management to refine operator responsibilities to particular types of events or areas of expertise. For more information, see .

For more information about the default user views, see .

🟦 HP OMi User Views

HP OMi provides a variety of default views that the HP OMi software administrator can assign to users, for example, when configuring new users or user groups.

Views enable you to define which type of events (related to configuration item types) a user is allowed to see or modify. You can create new (or modify predefined) views to reduce the amount of information presented to regular operators or target the needs of users with experts knowledge in particular fields, for example, database administration, or Microsoft Exchange.

Tip: Default views enable HP OMi software administrators to define the scope of a basic working environment by refining what is and is not displayed to users.

For more information about the default configurations available for HP OMi users, see "HP OMi Users" on page 626.

You can map views to particular types of configuration items and display the list of mapped views in the Health Perspectives Top View pane. The displayed list can also be exported to a file and imported on another instance of HP OMi. For more information about mapping views, see "Mapping Top Views" on page 355. For more information about exporting and importing views, see "Content Packs Manager" on page 430.

🎱 HP OMi User Authentication

HP OMi enables you to define very precisely which objects a user or user group is allowed to see or modify by granting access rights and permissions in specific areas to individual users or user types — either directly or by means of a user group. If you set up user authentication, you can make sure that any user who does not appear on the list of permitted users is refused access to objects and features. As a result, users cannot see the object or feature or they see an error message when they try to view a particular object or start an Administration manager. Only users who log on with the appropriate credentials can view the requested object or start the desired Administration manager.

For example, HP OMi enables you to restrict access to the following elements according to individual user or user group:

➤ Events or individual event categories

➤ Configuration item types that belong to specific UCMDB views

➤ Defined features

➤ Specific Administration managers (for example, Content Packs manager, and Indicators manager)

Tip: Default user groups enable HP OMi software administrators to quickly define the scope of a basic working environment for a specific type of user. A user groups specifies what objects users with responsibility in a particular operational area is allowed to view and modify.

For more information about the default configurations available for HP OMi users, see "HP OMi Users" on page 626.

⚙ HP OMi User Authorization

HP OMi enables you to grant users different levels of access to events on the basis of whether an event is assigned or not. For example, you can allow users full access to any event that is assigned to them and only limited access to any event that is not assigned.

Note: User are always given viewing rights to events that are assigned to them.

Full access to assigned events allows the user to open or close the assigned event, change or work on it, or assign it to another user. Limited access to events that are not assigned to a user either hides the events completely or allows read-only access. You can also choose to grant a user the same access levels both assigned and unassigned events.

To reduce the effort and complexity involved in configuring authorization for individual users, you can grant authorization at the user-group level. Configuring assignment-based authorization at the user-group level makes sure that all users in a group have the same access to any event that is assigned to the group.

For example, you can make sure that all database users have access to database-related events by setting up a group of database users, authorizing full access to assigned events for all users in the database user group, and making sure that all database-related events are assigned to the database user group.

Tip: Sub groups inherit any authorizations granted to the parent group.

For more information about the configuring user authorization, see "Setting HP OMi User Permissions" on page 636.

🔧 Defining HP OMi Users

This task explains how to set up a new user for HP OMi. In this example, you set up a regular operator, who can monitor and manage specific event categories.

This task includes the following steps:

9 Prerequisites

To create and configure new users and user groups, make sure that you have access to Operations Management Administration and have a good understanding of the following areas:

➤ Types of users that require access to HP OMi, for example, operators, subject matter experts, and administrators.

➤ UCMDB views.

➤ Events and event categories.

➤ Stages of the workflow process, for example, Open, In Progress, Resolved, or Closed.

➤ Concepts of event type indicators and their values.

10 Create a new user group

In this step, you create the group that a particular type of user with specific tasks and objectives belongs to. For more information, see "Creating HP OMi User Groups" on page 634.

11 Create a new user

In this step, you create the users that you want to add to the work group you defined in the previous step. For more information, see "Creating HP OMi Users" on page 635.

12 Define user access and permissions

In this step, you configure the scope of the new user's role by defining the actions the new users can perform on events that are assigned to them or to other users, specifying if the user can reset a health indicator, and allowing access to Administration features. For more information, see "Setting HP OMi User Permissions" on page 636.

13 Assign UCMDB views

In this step, you define the objects that the new user is allowed to see and work with. For more information, see "Assigning Views to a User" on page 639.

14 Set entry context

In this step, you define the home page that the user sees when logging on to HP OMi and the features assigned to that user. For more information, see "Setting HP OMi Entry Context" on page 640.

🔧 Defining HP OMi Administrators

This task explains how to set up a new administrator for HP OMi. Administrators can use the HP OMi configuration features. In this example, you set up a software administrator or a subject matter expert who can configure HP OMi for other users.

This task includes the following steps:

➤ "Prerequisites" on page 632
➤ "Create a new user group" on page 632
➤ "Create a new administrative user" on page 633
➤ "Define user access and permissions" on page 633
➤ "Set entry context" on page 633

15 Prerequisites

To and configure new administrator users and user groups, make sure that you have access to Operations Management Administration and have a good understanding of the following areas:

➤ Types of users that require access to HP OMi, for example, operators, subject matter experts, and administrators.

➤ UCMDB views.

➤ Events and event categories.

➤ Stages of the workflow process (Open, In Progress, Resolved, or Closed).

➤ Concepts of event type indicators and their values.

16 Create a new user group

In this step, you create the group to which the HP OMi administrators belong. HP OMi administrators are either experts in a particular field (for example, event correlation, or database management) or software administrators, who installed, configure and maintain the software. For more information, see "Creating HP OMi User Groups" on page 634.

17 Create a new administrative user

In this step, you create the administrative users that you want to add to the work group you defined in the previous step. For more information, see "Creating HP OMi Users" on page 635.

18 Define user access and permissions

In this step, you configure the scope of the new administrator's role by defining the Administration features that the new user can see and use, for example, the Indicators manager, or the Content Packs manager. For more information, see "Setting HP OMi User Permissions" on page 636.

Note: Administrators usually need access to user-related objects such as events in order to test the features they are configuring. For example, an event correlation expert needs to see the events that are referenced in the test correlation rules.

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19 Set entry context

In this step, you define the home page that the user sees when logging on to HP OMi and the features assigned to that user. For more information, see "Setting HP OMi Entry Context" on page 640.

ϒ Creating HP OMi User Groups

This task explains how to set up a user group. The group can contain any type of user.

Tip: For information on button actions, see "User Operations Tab" on page 646.

To define a user group:

1 Open User Management from Platform Administration:

Admin > **Platform** > **Users and Permissions** > **User Management**

2 If you want to add a group to an existing user group, select the existing group, select the ▯▾ icon, and select **Create Group**.

3 In the Create Group dialog box, type the required details, such as: group name, a short description, and select **OK**.

🪶 Creating HP OMi Users

This task explains how to set up a user for HP OMi. In this example, you set up a regular operator, who can monitor and manage specific event categories. You can use the same basic steps to set up other, more specialized user types.

Tip: For information on button actions, see "User Operations Tab" on page 646.

To define a user:

1 Open User Management from Platform Administration:

   Admin > **Platform** > **Users and Permissions** > **User Management**

2 If you want to add a user to an existing group, select the group and then select the 🗋▾ icon and select **Create User.**

Tip: You can create a user by cloning and renaming an existing user.

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3 In the Create User dialog box, type the required details, such as: user name, log-on name, and password, and select **OK**.

   The newly created user can now log on to Operations Management.

🖋 Setting HP OMi User Permissions

In this task, you set or modify the permissions granted to HP OMi users. Regular users require permission to perform operations on HP OMi objects such as, events, event categories, and indicators. Administrative users require access to Administration features and objects.

Tip: For information on button actions, see "User Operations Tab" on page 646.

To set the HP OMi user permissions:

1 Open User Management from Platform Administration:

Admin > **Platform** > **Users and Permissions** > **User Management**

2 In the Groups/Users pane, select the user who you want to configure.

3 In the details pane, use the **Select Context** list to specify the working context for the new user: **Operations Management**.

4 In the context pane, select **Events assigned to user** and, in the **Operations** tab, specify the actions users can perform on events that are assigned to them, for example: Change, Work On /Resolve, and Close. Select **Apply Permissions** to save the changes you make.

Note: User are always given viewing rights to events that are assigned to them.

---

5 In the context pane, select **Events not assigned to user** and, in the Operations tab, specify the actions users can perform on events that are assigned to other users, for example: View, or Close. Select **Apply Permissions** to save the changes you make.

Tip: To grant access to events at a more detailed level, for example, per event category, expand the **Events not assigned to user** item and select the event category that you want to grant permission to work with. The event categories displayed in the context list are defined in the HP OMi settings page. For more information, see "Operations Manager Infrastructure Settings Manager" on page 653.

6 In the context pane, select **Health Indicators** and, in the Operations tab, specify the actions a user can perform on, for example: Reset Health Indicator. Select **Apply Permissions** to save the changes you make.

Tip: Resetting a health indicator manually returns a health indicator's severity status to a defined default value such as Normal. For more information, see "Resetting Health Indicators" on page 103.

7 Administrators and subject matter experts need access to administrative functions. If you want to grant access to all administrator areas, select **Administrative UIs** and, in the Operations tab, select **Grant** for View.

To grant access to Operations Management Administration areas at a more detailed level, for example, per manager, expand the **Administrative UIs** item and select the manager that you want to grant permission to work with, for example, Indicators manager and Correlation Rules manager. Select **Apply Permissions** to save the changes you make.

8 You can control access to tools using tool categories. If you want to grant access to all tool categories, select **Tool Categories** and, in the Operations tab, select **Grant** for Execute.

Tool categories are used to grant access to tools at a more detailed level. Each tool is assigned a category, and for users to be able to use the tools with a certain category, they must be granted execution permissions for this Tool Category. To grant execution permissions, expand the **Tool Categories** item and select the tool that you want to grant permission to work with. Select **Apply Permissions** to save the changes you make.

Note: Changes to a user account are only fully available after a new logon to Operations Management. HP OMi reloads user permissions every 10 minutes by default. However, events already loaded into the browser remain unaffected.

⚓ Assigning Views to a User

In this task, you specify the views that are available to users and the type of access the user has to the view. Views define which UCMDB objects users can see. Access type defines what users can do with the objects they can see, for example, View, Change, or Delete.

Tip: For information on button actions, see "User Operations Tab" on page 646.

To assign a view to a user:

1 Open User Management from Platform Administration:

   Admin > **Platform** > **Users and Permissions** > **User Management**

2 In the Groups/Users pane, select the user or user group you want to configure. If no user or group yet exists, create it now.

3 In the details pane, use the **Select Context** list to specify the context containing the views you want to assign to the new user, for example: CMDB.

4 Scroll down the list of views and select those that you want to assign to the new user or user group.

5 In the Operations tab, use the check boxes in the **Grant** column to indicate the type of access you want to assign to the new user, for example, **View**, **Change**, or **Delete**. Select **Full Control** if you want to grant the new user global rights to the objects referenced in the currently selected view.

6 Select **Apply Permissions** to save the changes.

Note: Changes to a user account are only fully available after a new logon to Operations Management. HP OMi reloads user permissions every 10 minutes by default. However, events already loaded into the browser remain unaffected.

⚒ Setting HP OMi Entry Context

In this task, you learn how to set the application that displays by default and the Event Browser tabs that are available when a user logs on. This is called the start-up context for a user's browser session. In this example, you set the start-up context to HP OMi so that users have immediate access to HP OMi.

Tip: For information on button actions, see "User Operations Tab" on page 646.

To set entry context of an HP OMi user:

1 Open User Management from Platform Administration:

Admin > **Platform** > **Users and Permissions** > **User Management**

2 In the Group/Users pane, select the **Browse** tab.

3 Select the user for which you want to set or change the entry context. The user details appear in the *<user name>* pane.

4 In the *<user name>* pane, select the **Customization** tab.

5 In the Context pane, set the entry context of the user:

➤ If you are setting up a regular user, such as an operator, select the following context: **Application - Operations Management**.

➤ If you are setting up an administrator or a subject matter expert who requires access to Administration features such as the Indicators manager or the Correlation Rules manager, select the following context: **Administration - Operations Management**

6 In the Pages and Tabs pane, the check boxes indicate which pages the user is allowed to see. Select a page to display when the user logs in:

➤ **Ordinary Users**: Select the desired default home page, for example: **Event Perspective**, or **Health Perspective**, and select **Set as Default Entry Page**. HP OMi displays the ⊞ icon next to the selected page.

➤ **Administrators**: If you are setting up an administrator or a subject matter expert who requires access to Administration features, select the feature you want to display when the administrator logs in to HP OMi, for example, Correlation Rules manager for experts in the field of event correlation, and select **Set as Default Entry Page**. HP OMi displays the 🔁 icon next to the selected page.

7 Select **OK** to save all changes.

Note: Changes to a user account are only fully available after a new logon to Operations Management. HP OMi reloads user permissions every 10 minutes by default. However, events already loaded into the browser remain unaffected.

🗝 Importing and Exporting Users and Groups

In this task, you learn how to import user and group configurations exported from one BSM installation to another BSM installation.

Categories are not exported. However, the permissions for categories that do not exist on an installation are imported and stored. If a category is added on the target installation that matches a previously imported category, these existing permissions are applied accordingly.

If users or groups already exist on the target installation, importing new configurations appends additional permissions. If the imported configuration are more restrictive, existing permissions on the target installation are not reduced. Descriptive information on the target installation remains unchanged.

To export user and group configurations:

1 Open the JBoss JMX Management Console on the BSM system from which you want to export the user and group configurations:

http://<*Source BSM Hostname*>:8080/jmx-console

2 Enter a user and password for the JBoss JMX Management Console (default: admin/admin).

3 Under the TOPAZ section, select:

service=Authorization Service Data Import Export

4 In the exportAllTasEntities() section, enter the name of the ZIP archive file (complete path) in the toFilePath field, and select **Invoke**.

All users and group data is be exported to this ZIP archive file.

To import user and group configurations:

1 Copy the ZIP archive file containing the user and group configurations to the BSM system where you want to import the data.

2 Open the JBoss JMX Management Console on the BSM system to which you want to import the user and group configurations:

http://<*Target BSM Hostname*>:8080/jmx-console

3 Enter a user and password for the JBoss JMX Management Console (default: admin/admin).

4 Under the TOPAZ section, select:

service=Authorization Service Data Import Export

5 In the importAllTasEntities() section, enter the name of the zip archive file (complete path) in the fromFilePath field, and select **Invoke**.

All users and group data is imported to the BSM system.

6 Make sure that the new users and groups are available in User Management:

Admin > **Platform** > **Users and Permissions** > **User Management**

🔍 User Context Pane

The Select Context pane in the Users and Permissions settings page enables you to select the HP OMi-related areas for which you want to define the type of access that HP OMi users have.

Tip: Granting access permissions to a user group automatically assigns the same access permissions to any users in the group.

The User Select Context tab displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Administrative UIs	Grants administrators access to the Administration features in the Operations Management Administration, for example: ➤ Correlation Rules manager ➤ Indicators manager ➤ Content Packs manager ➤ View Mappings manager ➤ Performance Graphs manager Users who do not have read access to Operations Management Administration are not be able to see the HP OMi Administration features or see an error message when they try to start an Administration manager.
Events assigned to users	Specifies the type of access a user or user group should have to events that are assigned to them. You can select one or more of the available operations, for example: Open, Work on and Resolve, Close, or Assign to.

GUI Element (A-Z)	Description
Events not assigned to users	Specifies the type of access a user or user group should have to events that are not assigned to them. You can select one or more of the available operations, for example: Open, Work on and Resolve, Close, or Assign to.
Health Indicators	Indicates if the user or user group has access to the feature that enables the resetting of health indicators. For more information about resetting health indicators, see "Resetting Health Indicators" on page 103.

🔖 User Operations Tab

The Operations tab in the Users and Permissions settings displays the permissions granted to users for access to specified objects.

The User Operations tab displays the GUI elements listed in the following table.

GUI Element (A-Z)	Description
Assign To	Enables the user to assign the selected events to a specific user or user group.
Change	Enables the user to change events.
Close	Enables the user to set the life cycle status for the selected events to Closed.
Grant	Select one or more of the available operations to enable access to the object selected in the Context pane, for example: Open, Work on and Resolve, Close, or Assign to.
Granted from Parent...	Indicates with a check if access is already granted through inheritance from another object, such as a user group, a user role, or a parent object.
Inherit	Indicates if the permission can be passed on.
Operation	Type of operation to be performed, for example: View, Open, or Delete. The list of available operations depends on the context selected.
Reset Health Indicator	Enables the user to clear the current status of a health indicator and reset the health indicator to the status specified in the default health indicator value.
Reopen	Enables the user to set the life cycle status for the selected Closed events to Open. The events can now be reassigned to users for further investigation and resolution. **Note:** Reopening symptom events with a closed cause is not possible.

GUI Element (A-Z)	Description
View	Enables the user to view the selected Administrative UI (for example, the Indicators manager, or Correlation Rules manager).
Work On / Resolve	Enables the user to set the life cycle status for the selected events to Work on. This indicates that the underlying problems of the events are under investigation by the user setting the status to In Progress or by another user assigned to the event.
	Enables the user to set the life cycle status for the selected events to Resolved when the underlying problems have been solved.

🔍 Troubleshooting and Limitations

This section provides help for those people who are troubleshooting problems with users and user groups in HP OMi administration.

Users Not Available

➤ User not configured

➤ Incorrect user or group configuration

Users has Incorrect Home Page

➤ Incorrect user settings

Users Sees Incorrect Features on Log On

➤ Incorrect user settings

Users Denied Access to Tools

➤ Browser session started by user who does not have the authorization to launch a tool

➤ Tool definitions not imported into HP OMi

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Infrastructure Settings

This chapter provides an overview of the settings required for HP OMi including information that helps to configure the HP OMi settings.

This chapter includes:

Concepts

➤ Settings Management Basics on page 650

Tasks

➤ Displaying and Editing HP OMi Software Settings on page 652

Reference

➤ Operations Manager Infrastructure Settings Manager on page 653

➤ Troubleshooting and Limitations on page 674

🎲 Settings Management Basics

The Platform Settings page enables you to view and modify the default configuration for Operations Management. The settings displayed on this page determine how HP OMi behaves and performs. Changing settings can affect the performance of both the application itself and the underlying platform. Only users with both the required background knowledge and access permission should attempt to change these settings.

Note: Modified values are displayed in **bold** text. In some cases, the changes you make are not effective immediately. You might have to restart the browser session or a server process.

The Infrastructure Settings Manager page for Operations Management displays details of the following settings:

GUI Element (A-Z)	Description
CI Resolver Settings	Defines how and when configuration items should be resolved.
Content Management	Controls whether import history of content pack import operations is recorded in the data store.
Custom Attribute Settings	List of the attributes that can be added to the HP Operations Manager Event Browser as columns.
Event Cache Settings	Maximum limit for the number of active top level events that are cached on a gateway server. This mechanism is required to prevent the gateway servers from running out of memory, for example, in case of event storms that cause lots of active events.
Event Type Indicator Settings	Controls whether to globally enable mapping rules to override the CMA-driven Event Type Indicator assignment.

GUI Element (A-Z)	Description
Graphing Settings	Defines graph characteristics, including how graphs and charts look, when they are generated, and how often they are refreshed with data.
HPOM Connection Settings	Specifies the connection to the HP Operations Manager for UNIX or HP Operations Manager for Windows management server (including log-on credentials).
HPOM Topology Synchronization Settings	Specifies the base settings to use when synchronizing the topology of the environment monitored by HP OMi and HP Operations Manager.
History Browser Settings	Sets the maximum number of closed events to be displayed in the History Browser.
Topaz Authorization Service Settings	Defines the event categories recognized by HP OMi, for example: Exchange, WebApp, System, or Operating Systems.
Topology-Based Event Correlation Settings	Defines how long HP OMi waits when gathering events before starting the correlation process.
Topology View Settings	Defines the distance (in hops) from a selected configuration item (that does not have a defined view) before HP OMi stops displaying any more related configuration items.
UCMDB Connection Settings	Specifies the connection to the UCMDB (including log-on credentials).
User Interface Settings	Specifies the interval of user interface updates.

For more information about the individual sections on the Infrastructure Settings Manager page for Operations Management, see "Operations Manager Infrastructure Settings Manager" on page 653.

⚒ Displaying and Editing HP OMi Software Settings

This task shows you how to display a complete list of the current infrastructure settings for HP OMi. You can configure all settings using the Edit Setting dialog box.

Tip: For information on button actions, see "Operations Manager Infrastructure Settings Manager" on page 653.

To display and edit HP OMi settings:

1 Open Infrastructure Settings from the Platform Administration:

   Admin > **Platform** > **Setup and Maintenance** > **Infrastructure Settings**

2 Select **Applications** and use the list to set the administration context to **Operations Management**.

3 For any settings that you want to change, select the associated 🖉 button to open the Edit Settings dialog box.

4 Modify the existing settings as required and select **Save**. Alternatively, select **Restore Default** and **Save**, to reset the HP OMi defaults values.

❧ Operations Manager Infrastructure Settings Manager

This section lists and briefly describes the Operations Management settings that the software administrator needs to configure after installation.

Tip: To change existing or default settings, select the 🖉 button.

CI Resolver Settings

The CI Resolver Settings contains the configurations used to control how the CI Resolver manages incoming CI-related information and uses it to identify the best matching CI for a particular event. All attributes of the compared CIs are taken to calculate a similarity using a scoring function. The output of the scoring function indicates how similar two CIs are to each other. The CI with the highest score is selected as the best matching CI.

A typical message is constructed as follows:

<attrib1>:<attrib2>:...:<attribn>@@<hostname>

CI Resolution views these message attributes as possible hints to identify the CI related to the incoming message. The default notation uses colons (:) as hint separators and two at signs (@@) for the host name separator. This notation is backward compatible with service IDs from HP Operations Manager.

Example:

OSSPI:os:filesystem:C@@MyServer.example.com

There are a number of ways to provide hints:

➤ Service ID: **CiInfo**

➤ Custom Attribute: **OPR_CI_INFO**

➤ Application or object

CI Resolution includes two steps:

➤ **Host Resolution**

The property **HostInfo.DnsName** of the event is used to find a matching CI of type host or one of its subtypes.

Note: The property HostInfo.DnsName of the event must contain a fully qualified DNS name.

➤ **CI Resolution**

The CI Resolution tries to find the best matching CI for an event in the following steps:

➤ Resolve the CI from the Topology Sync, if enabled.

➤ Match a list of keywords extracted from the event with the CIs delivered by a number of TQLs. The CI with the highest count of keyword matches plus an association to the host given in the property HostInfo.DnsName of the event is selected.

If there are multiple solutions with the same maximum hint-match count, resolution is stopped and resolution reverts to host. All matching CIs are stored as custom attribute to the corresponding event, indicating that the resolution was not successful or only partially successful. This information can be used to filter events or be displayed in a column in the Event Browser.

The custom attribute summarizes the results of the resolution process, for example, CI ID not found, several CIs with equal scores found, or no CI found. A pointer to the log file that contains further information, such as, the corresponding UUIDs, and additional information about the event is also included.

The following properties of the event are used as keywords by default:

➤ **Category**

➤ **SubCategory**

➤ **Type**

➤ **Application**

➤ **Object**

Note: Custom attributes of the event can also be used. These are set under Operations Management - Custom Attribute Settings.

The following elements are included in the CI Resolver Settings pane.

GUI Element (A-Z)	Description
Cache Refresh Rate	Specifies the frequency with which the CI cache is refreshed (minutes).
CI Resolver Attribute Splitting Rules	Semicolon separated list of attribute/pattern pairs: <CI Type name>.<attribute name>=<regular expression>;<CI Type name>.<attribute name>=<regular expression>;...
CiInfo Host Separation Character	Character used to divide the host name from the CiInfo text string, for example: @@
CiInfo Key Separation Character	Character used to divide the CiInfo text string into keywords used to find CIs in the UCMDB, for example, a colon (:)

GUI Element (A-Z)	Description
Ignore CI Types and Attributes	Types and attributes that should not be taken into account for CI resolution can be specified.
	Some CI attributes do not provide useful information. For example, an attribute value may apply to many CIs but does not help to identify matching CI.
	The CI types and attribute values that should not be considered are specified in an XML-format file. For example:

	`<CiResolver>`
	`    <Attribute>pathname</Attribute>`
	`    <CiType>tablespace</>`
	`</CiResolver>`

Ignore Resolution Hints Text Case	CI Resolver ignores the case of the CI type information when set to true.
TQL Queries	Defines the TQL queries to run for resolving a CI.
Use Topology Sync Shortcut	CI Resolver can use service ID information from Topology Sync to map service IDs directly to CIs.

Content Management Settings

The Content Management Settings contains the available configurations used to customize how the content packs are managed.

The following elements are included in the Content Management Settings pane.

GUI Element (A-Z)	Description
Import History Limit	Maximum number of content pack import operations to be recorded in the data store.
	A record of the characteristics of each content pack is created when the content pack is uploaded into the database. If the storing of this information is occupying an unacceptable amount of disk space, change the default.
	Default is -1, and signifies that there is no limit on the number of import operations recorded. Selecting this value may lead to excessive storage space being used by Content Pack Import History.
	The specified integer in the Value field (for example: 20) sets the maximum limit for the number of import operations recorded. When this value is exceeded, the oldest records are removed.
	When you set this value to 0, adding history entries is disabled. Changes to this value take effect upon next import.

Custom Attribute Settings

The Custom Attribute Settings contains the available configurations used to customize how custom attributes are used.

The following elements are included in the Custom Attributes Setting pane.

GUI Element (A-Z)	Description
Available Custom Attributes	List of custom attributes separated by semicolons (;) that you can add to the Event Browser as columns, for example: "Customer;Region;Manager;Company".

Event Cache Settings

The Event Cache Settings contains the available configurations used to customize how event information is managed.

The following elements are included in the Event Cache Settings pane.

GUI Element (A-Z)	Description
Max Cache Level	Maximal number of active, top-level events to be kept in Event Cache. Default value: 20000
	If the configured maximum is reached the oldest 10% of the top level events are removed from the cache.
	When the number of active, top-level events is less than 80% of the maximum value, the purged events are reloaded.
	For example, if the default Event Cache Max Level of 20000 is reached, the 2000 oldest events are removed. As the number of events in the Event Browser drops to 16000, the purged events are reloaded.
	The settings are per deployment. The same setting is applied to all gateway servers within the same deployment.

Event Type Indicator Settings

The Event Type Indicator Settings contain the configuration setting that you enables you to let ETI mapping rules override indicators specified in custom attributes.

The following elements are included in the Event Type Indicator Settings pane.

GUI Element (A-Z)	Description
Allow Rule Overwrite	Allows ETI Mapping Rules to overwrite indicators specified in custom attributes (CAs).
	Default: False
	If set to false, and CMA-matched event type indicators are recognized, mapping rules are ignored.
	If set to true, the CMAs are still evaluated but mapping rules are used to process events.
	For example, migrating from customized, non-HP OMi-ready SPIs to HP OMi-ready SPIs can result in errors in event processing as new content packs no longer work as expected with the existing handling.
	Allowing mapping rules to override the CMA-driven event assignment leaves the HP OMi administrator in control.

Graphing Settings

The Graphing Settings contain the configuration settings that are used to determine how performance graphs are generated and displayed.

The following elements are included in the Graphing Settings pane.

GUI Element (A-Z)	Description
Daily Maintenance Time	Schedules the time at which regular maintenance tasks occur. The value is specified in HH:MM format, for example: 04:30.
Graph Auto-Refresh Rate	Specifies the interval (in seconds) used to automatically refreshes the displayed graphs.
JVM Minimum Memory	Prevents accepting of new performance graphs requests when there is insufficient memory available in the Java Virtual Machine (JVM). The default minimum value is 0 (zero).
Maximum Instances	Maximum number of Instances that can be launched in a Graph. If a CI has more instances than the value specified here, graphing cannot display those instances.
Metrics Per Graph	Specifies the number of metrics you want to see in a graph. The default value is 8. If you have a value specified for this parameter in the graph template, Graphing chooses the highest value between the two values while drawing the graph.
Report Template	Modifies the properties of the report template. The settings you configure here appear in the Print view of the graph.
Retain Batch Files	Ensures that batch files are retained. Specify true to enable and false to disable this option. The default setting is false.

GUI Element (A-Z)	Description
Show Mouse Hover	If enabled (true), hovering the mouse on the graph area of a drawn graph opens a pop-up window displaying the actual value of the data point and the time interval of the selected data.
	If disabled (false), no pop-up window is opened.
	The default value is true.
	Note: The value selected from the user interface menu option overrides the setting specified for this parameter.
Sort by Maximum Graph Count	Limits the number of graphs drawn for an instance-comparison graph when Metric Data Display Order is specified as average value or reverse average value in the Performance Graphs, for example: 20.
Table Row Count	Configure the default value for the number of rows in a chart (graph in tabular form), for example: 100.
Trace Level	Enable (1) or disable (0) tracing.

HPOM Connection Settings

The HPOM Connection Settings pane contains the Operations Management settings that specify connection information required to communicate with the HP Operations Manager for UNIX or
HP Operations Manager for Windows management server being used to forward events to HP OMi.

Note: HPOM Connection settings are mandatory for the successful synchronization of events and topology between HP OMi and
HP Operations Manager.

The following elements are included in the HPOM Connection Settings pane.

GUI Element (A-Z)	Description
Forwarding Retries	Specifies the number of retries for the HPOM forwarder.
Forwarding Retry Interval	Specifies the time in seconds that the HPOM forwarder waits before trying to reconnect to previously unreachable target server.
HPOM Host	Name of the system hosting the HP Operations Manager management server that is forwarding events. This setting is required for the bi-directional synchronization of events between HP OMi and HP Operations Manager.
HPOM Password	Password for the user that HP OMi uses to connect to the configured HP Operations Manager management server.
HPOM Port	Port number to use when establishing a connection to the HP Operations Manager management server.
HPOM Type	Specify the platform of the HP Operations Manager installation.
HPOM User	User name that HP OMi uses to connect to the configured HP Operations Manager management server.

GUI Element (A-Z)	Description
Use HTTPS for the HPOM Web Service	Set to true to use HTTPS to connect to the HPOM Web service.
Server-Based Flexible Management	Set to true to forward existing events to HPOM.

HPOM Topology Synchronization Settings

The HPOM Topology Synchronization contains the settings used by HP OMi to synchronize its topology with HP Operations Manager.

The binary file to use if you want to set up a topology synchronization task in the Windows scheduler is:

%TOPAZ_HOME%\bin\opr-startTopologySync.bat

For more information about the **opr-startTopologySync.bat** command, see "Topology Synchronization Command-Line Interface" on page 621.

Note: These settings are mandatory for the successful synchronization of the object topology in the environments monitored by HP OMi and HP Operations Manager.

For the successful synchronization of HP OMi and HP Operations Manager topologies, make sure that the following settings are correctly configured:

➤ **HPOM Connection Settings**

The topology synchronization process needs to read the topology data from the HP Operations Manager web service (WS) during synchronization. For more information, see "HPOM Connection Settings" on page 663.

➤ **UCMDB Connection Settings**

The topology synchronization process needs to write information about new and changed configuration items to the UCMDB during the synchronization. For more information, see "UCMDB Connection Settings" on page 672.

The following elements are included in the HPOM Topology Synchronization pane.

GUI Element (A-Z)	Description
Dump Data	Saves all data from the topology synchronization to the hard disk. This setting is not recommended for production systems because it can have a significant negative effect on performance. The default setting is False.
Groovy Scripts	Enables Groovy scripts used to manipulate the synchronization data during the synchronization process.
Packages for Topology Sync	Lists the packages used for the topology synchronizations.
Resolve IPs During Synchronization	Enable IP resolution for nodes without IP address information in HPOM. Enable IP resolution (true) has a negative effect on the synchronization performance.

History Browser Settings

The History Browser Settings contains the available configurations used to customize how closed events are displayed in the History Browser.

The following elements are included in the History Browser Settings pane.

GUI Element (A-Z)	Description
Max Closed Events	Sets the maximum number of closed events to be displayed in the History Browser. Default is 1000.

Topaz Authorization Service Settings

The Topaz Authorization Service Settings contains the configurations that HP OMi uses in conjunction with user management.

Tip: The list of event categories defined here is also available in the user configuration dialog box, where you can grant users or user groups access to work with events and event categories.

The following elements are included in the Topaz Authorization Service Settings pane.

GUI Element (A-Z)	Description
Categories	List indicating event categories recognized by HP OMi separated by semicolons (;), for example: Exchange;WebApp;System.
	Event categories are logical groups of events (for example: database, OpenVMS, or hardware) which can be assigned to HP OMi users.
Refresh Interval	Refresh interval in minutes for reloading user permissions from the database. HP OMi reloads user permissions every 10 minutes by default. However, events already loaded into the browser remain unaffected. Changes to a user account are only fully available after a new logon to Operations Management.

Topology View Settings

The Topology View Settings contain the configuration setting that you can use to change how information is displayed in the Top View pane either in the Health Perspectives tab or the Dashboard.

The following elements are included in the Topology View Settings pane.

GUI Element (A-Z)	Description
CI Centering Mode	Enables updating of the view selector in the Top View when a CI is selected in the view.

Topology-Based Event Correlation Settings

The Event Correlation Settings contain the configuration settings that correlation rules are managed.

The following elements are included in the Topology-Based Event Correlation Settings pane.

GUI Element (A-Z)	Description
Auto-Extend Time Window Mode	Enables the automatic extension of the correlation time period whenever an additional symptom is correlated to the same cause.
	Each time that an event is correlated with a problem, the time period set in the correlation time window is restarted to help enable the correlation of a greater proportion of symptoms associated with the original event.
	The correlation time window is only automatically extended when an a new symptom is added to a cause AND the cause is not yet closed.
	If the cause is already closed, the time window is not extend anymore so that after the last time window elapses, future repetitions of symptoms are no longer correlated to the closed cause.
	This avoids ignoring new similar symptoms. Just because a cause has been closed, it is not necessarily true that the problem is solved. If the same symptoms continue to occur, they were most likely not caused by the closed cause event and should become visible in the Event Browser.

GUI Element (A-Z)	Description
Correlate Closed Cause Events	Controls whether symptoms are correlated to closed causes or not. Default is true. If set to false, no correlation is done with newly occurring symptom events after a cause has been closed. This prevents any auto-closing of new events.
	Correlation takes place regardless of the life cycle state of cause event, as long as events occur within the correlation time window. Correlating a symptom to a closed cause closes the symptom as it is not possible to have open symptoms with a closed cause.
Correlation Time Window	Sets the period of time in seconds that correlation rules wait for all required events to occur before reporting the cause event and emptying the correlation rule cache.
	Cause and symptom events must arrive within that time frame in the correlation engine to be considered for correlation. A time window starts when a first cause or symptom event arrives that cannot be correlated with any other event.
	Default value is 960 seconds (16 minutes).
Max Waiting Queue Size	Maximum number of events waiting to be processed by the correlation engine. If this limit is exceeded, the oldest eventis removed from the queue and no longer considered for correlation.
	Defalut value: 5000
	Valid range of Values: 100-20000
	Changes are activated immediately.

UCMDB Connection Settings

The UCMDB Connection Settings contain the credentials required to access the UCMDB from HP OMi.

Note: UCMDB settings are required by the topology synchronization tool, which synchronizes the topologies of HP OMi and HP Operations Manager. For more information, see "HPOM Topology Synchronization Settings" on page 665.

The following elements are included in the UCMDB Connection Settings pane.

GUI Element (A-Z)	Description
UCMDB Password	Password of the user used to connect to the UCMDB.
UCMDB User Name	User name used to connect to the UCMDB.

User Interface Settings

The User Interface Settings contains the time interval used to update the HP OMi user interface with new event-related data.

The following elements are included in the User Interface Settings pane.

GUI Element (A-Z)	Description
User Interface Update Interval	The interval of user interface updates (in milliseconds). The default value is 5000 ms (5 seconds).

🔍 Troubleshooting and Limitations

This section provides help on troubleshooting problems with users and user roles in HP OMi administration, including creating, modifying, and enabling users.

Event Synchronization Does Not Work

The exchange and synchronization of events between HP OMi and either HP Operations Manager is not working correctly:

➤ Make sure that the name of the HP Operations Manager server is configured in HP OMi. For details, see "HPOM Connection Settings" on page 663.

➤ Make sure that the names of the systems hosting the HP OMi gateways are configured as managed nodes in HP Operations Manager.
HP Operations Manager for Windows only accepts messages containing nodeinfo referring to known nodes.

➤ Make sure that the server-based flexible management policy is configured correctly and deployed on the HP Operations Manager management server. Flexible management is also known as Manager of Manager (MoM).

➤ Make sure that the local time and date is the same on both the HP OMi server and the HP Operations Manager server. Otherwise, the certificate generated for the trust relationship between the servers fails and no communication can take place.

➤ Verify that the installation and configuration of HP OMi created a Sonic queue named **opr_gateway_queue**:

   ➤ Start the Sonic Management Console:
   Start > **Programs** > **Sonic Software** > **SonicMQ*** > **Management Console**

   ➤ Select the **Configure** tag, browse to the **Queues** element, and make sure that the queue named **opr_gateway_queue** exists.

➤ Make sure that both the **Control** daemon and **bbc** (used for communication between HPOM and HP OMi) are running on both the BSM host system and the HP Operations Manager management server system:

```
ovc -status
ovcd      OV Control            CORE   (8452)   Running
ovbbccb   OV Communication Broker  CORE   (2032)    Running
```

If the **ovc -status** command indicates that **ovc** is not running, start **ovc** with the -**start** parameter, for example: **ovc -start**.

Security Certificates are Missing or Incorrect

If security certificates are missing or incorrect, verify security certificates on HP OMi and HP Operations Manager.

Solution

Make sure that HP OMi and HP Operations Manager exchanged security certificates and a trust relationship exists between the servers, as indicated in the following steps.

To verify security certificates and trust relationships:

1 On the BSM system, make sure that the correct security certificate is installed:

```
ovcert -check

OvCoreId set             : OK
Private key installed      : OK
Certificate installed      : OK
Certificate valid        : OK
Trusted certificates installed : OK
Trusted certificates valid    : OK
```

2 List the contents of the certificate

```
ovcert -list

(Sample output)
+-------------------------------------------------------+
| Keystore Content--------------------------------------|
+-------------------------------------------------------+
| Certificates                                    |
|    6073fd42-9326-7531-1b2d-cdab6fa099d4 (*)          |
+-------------------------------------------------------+
| Trusted Certificates:                           |
|    CA_14d14502-1671-7531-13d6-a06656d31bf3          |
+-------------------------------------------------------+
```

3 Make sure that communication is possible between HP OMi and
HP Operations Manager. Run the following command on *both* the BSM host
system and the HP Operations Manager management server system:

```
bbcutil -ping https://<omw server name>
https://<omw server name>: status=eServiceOK
    coreID=14d14502-1671-7531-13d6-a06656d31bf3
    bbcV=06.10.070 appN=ovbbccb appV=06.10.070 conn=7
    time=453 ms
```

4 Make sure that communication is possible between HP OMi and the
HP Operations Manager Message Receiver. Run the following command on
both the BSM host system and the HP Operations Manager management
server system:

```
bbcutil -ping https://<omw server name>/com.hp.ov.opc.msgr
https://<omw server name>: status=eServiceOK
    coreID=14d14502-1671-7531-13d6-a06656d31bf3
    bbcV=06.10.070 appN=ovbbccb appV=06.10.070 conn=7
    time=453 ms
```

Topology Synchronization Fails to Work

Make sure that the following settings are correctly specified:

➤ Database Settings: required to write the ID mapping into the database for resolution of configuration items.

➤ HPOM Connection Settings: required to read the topology data from the HP Operations Manager web service during synchronization.

➤ UCMDB Connection Settings: required to write the configuration item information to the UCMDB during the synchronization.

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