

HP Business Service Management

for the Windows and Linux operating systems

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Using Service Level Management

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- Enter into discussions with other software customers
- Research and register for software training

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To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

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Welcome to This Guide

This guide describes how to use HP Service Level Management to monitor the contracts your organization has with service providers and customers, both internal and external, and produce reports that measure service level agreement (SLA) compliance.

This chapter includes:

- How This Guide Is Organized on page 11
- Who Should Read This Guide on page 12
- How Do I Find the Information That I Need? on page 12
- Additional Online Resources on page 15
- Documentation Updates on page 16

How This Guide Is Organized

The guide contains the following parts:

Part I Service Level Management Administration

Describes how to work with the Service Level Management Administration component to define service CIs and SLAs mapped to IT metrics, to represent the business services, infrastructure services, and service level agreements, maintained by your organization.

Part II Service Level Management Reports

Describes how to work with the Service Level Management application to produce reports that track and analyze service levels, and check compliance with business objectives.

Part III Service Level Management Repositories

Describes the KPIs, Indicators, and Business Rules Repositories, which enable you to manage the key performance indicators (KPIs), event type indicators (ETIs), health indicators (HIs), and business rules used by Service Level Management.

Who Should Read This Guide

This guide is intended for the following users of HP Business Service Management:

- HP Business Service Management administrators
- HP Business Service Management application administrators
- HP Business Service Management end users

Readers of this guide should be knowledgeable about navigating and using enterprise applications, and be familiar with HP Business Service Management and enterprise monitoring and management concepts.

How Do I Find the Information That I Need?

This guide is part of the HP Business Service Management Documentation Library. This Documentation Library provides a single-point of access for all Business Service Management documentation.

You can access the Documentation Library by doing the following:



- In Business Service Management, select **Help > Documentation Library**.
- From a Business Service Management Gateway Server machine, select **Start > Programs > HP Business Service Management > Documentation**.



Topic Types

Within this guide, each subject area is organized into topics. A topic contains a distinct module of information for a subject. The topics are generally classified according to the type of information they contain.

This structure is designed to create easier access to specific information by dividing the documentation into the different types of information you may need at different times.

Three main topic types are in use: **Concepts**, **Tasks**, and **Reference**. The topic types are differentiated visually using icons.

Topic Type	Description	Usage
Concepts 	Background, descriptive, or conceptual information.	Learn general information about what a feature does.
Tasks 	Instructional Tasks. Step-by-step guidance to help you work with the application and accomplish your goals. Some task steps include examples, using sample data. Task steps can be with or without numbering: <ul style="list-style-type: none">➤ Numbered steps. Tasks that are performed by following each step in consecutive order.➤ Non-numbered steps. A list of self-contained operations that you can perform in any order.	<ul style="list-style-type: none">➤ Learn about the overall workflow of a task.➤ Follow the steps listed in a numbered task to complete a task.➤ Perform independent operations by completing steps in a non-numbered task.
	Use-case Scenario Tasks. Examples of how to perform a task for a specific situation.	Learn how a task could be performed in a realistic scenario.

Topic Type	Description	Usage
Reference 	General Reference. Detailed lists and explanations of reference-oriented material.	Look up a specific piece of reference information relevant to a particular context.
	User Interface Reference. Specialized reference topics that describe a particular user interface in detail. Selecting Help on this page from the Help menu in the product generally opens the user interface topics.	Look up specific information about what to enter or how to use one or more specific user interface elements, such as a window, dialog box, or wizard.
Troubleshooting and Limitations 	Troubleshooting and Limitations. Specialized reference topics that describe commonly encountered problems and their solutions, and list limitations of a feature or product area.	Increase your awareness of important issues before working with a feature, or if you encounter usability problems in the software.

Additional Online Resources

Troubleshooting & Knowledge Base accesses the Troubleshooting page on the HP Software Support Web site where you can search the Self-solve knowledge base. Choose **Help > Troubleshooting & Knowledge Base**. The URL for this Web site is <http://h20230.www2.hp.com/troubleshooting.jsp>.

HP Software Support accesses the HP Software Support Web site. This site enables you to browse the Self-solve knowledge base. You can also post to and search user discussion forums, submit support requests, download patches and updated documentation, and more. Choose **Help > HP Software Support**. The URL for this Web site is www.hp.com/go/hpsupport.

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract.

To find more information about access levels, go to:

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To check for recent updates, or to verify that you are using the most recent edition of a document, go to the HP Software Product Manuals Web site (<http://h20230.www2.hp.com/selfsolve/manuals>).

Part I

Service Level Management Administration

1

Introducing Service Level Management

This chapter includes:

Concepts

- Service Level Management - Overview on page 20
- The Audit Log on page 24
- Data Purging on page 24

Concepts

Service Level Management - Overview

In Service Level Management (SLM), an administrator defines service level agreements (SLAs) that represent the formal and informal contracts your organization has with your service providers and customers. SLAs include operational level agreements (OLAs), and underpinning contracts (UCs).

Service Level Management determines compliance with your SLAs by measuring your business applications. You can define business service entities (Business Service and Infrastructure Service CIs) that represent the service offerings in your service catalog, and map measurements for service-related processes and network components to each service CI. The service CIs are added to your SLAs. You can also add CIs representing service-related processes and components, directly to your SLAs.

The data produced by the service-related measurements helps you determine whether the availability and performance requirements of users and infrastructure are being met. Service Level Management calculates key performance indicator (KPI) and health indicator (HI) values from the received availability and performance data, and compares them with required service level objectives. The results are displayed in reports.

You begin by examining performance trends and setting baselines for a variety of business processes. These baselines in turn enable you to establish realistic service level objectives for system availability and performance, within the different subsidiaries, geographical locations, or organizations that you serve.

Note: In general, the usage of the terms **agreement** or **SLA**, in both the Business Service Management user interface and in the documentation, includes SLAs, OLAs, and UCs; one exception to this is in the user interface pages where you specifically select **SLA** as the SLA type.

Service Level Management administration and reporting are accessed from two different areas of HP Business Service Management:

- "Service Level Management Administration" on page 21
- "Service Level Management Application" on page 23
- "Viewing BSM Information in an External Portal" on page 23

Service Level Management Administration

To access the Service Level Management administration pages, select **Admin > Service Level Management**.

Service Level Management Administration includes the following tabs:

- **Agreements Manager.** From this tab, you create SLAs and recalculate existing SLAs.
 - **SLAs.** You manage SLAs, OLAs, and UCs that reflect actual agreements you have with your service providers and customers. The SLAs enable you to build reports showing the level of service management. For details, see "Building SLAs with the SLAs Wizard" on page 31.
 - **Recalculations.** You can run recalculations on an SLA, usually after making retroactive changes. For details, see "Recalculation for SLAs" on page 67.
- **SLA Data Corrections.** In this tab, you define retroactive data corrections for incidents that may skew results and which you may want to exclude from reports. For details, see "Adjusting SLA Data" on page 183.
- **SLA Alerts.** In this tab, you define alert schemes to notify users of changes in SLA status. For details, see "Administer SLA Alerts" on page 339.
- **Assignments.** In this tab, you can view and modify:
 - The definitions for the automatic assignment of KPIs, HIs, and business rules to monitoring CIs included in an SLA.
 - The definitions for the automatic propagation of KPIs to higher-level CIs.

For details, see "Assignment and Propagation Overview" on page 234.

- **Services Manager.** In this tab, you define service CIs to represent business and infrastructure services provided and consumed by your department. For details, see "Manage Services" on page 165.
- **Repositories.** From this tab, you can define offering packages, calendars, and outage categories, and define new KPIs, HIs, and rule types.
 - **Service and CI Offerings.** Offerings packages (service offerings and CI offerings) define KPIs and objective thresholds to use with the services and other CIs in an SLA. For details, see "Service and CI Offerings" on page 205.
 - **Calendars.** Calendars specify periods during which objectives must be checked. Service Level Management provides two default calendars (**24x7** and **Business Hours**); you can define more if needed. For details, see "Calendars for SLAs" on page 295.
 - **Outage Categories.** Outage categories can be used in Service Level Management reports, to make results more meaningful. Service Level Management provides default categories (Database, Network, Undefined, and Webserver); you can define more outages categories if needed. For details, see "Status Alerts for SLAs" on page 68.
 - **KPIs.** Service Level Management includes default KPIs that are used when defining SLAs and offering packages. For details, see "KPI Repository" on page 525.
 - **Indicators.** Service Level Management includes default HIs and ETIs that are assigned to CIs. For details, see "Indicators Repository" on page 543.
 - **Business Rules.** Service Level Management includes default business rules that are used with the KPIs and HIs. For details, see "Business Rule Repository" on page 547.

The Rules API can be used to create new rules; for details see "SLM Rules API" on page 651.

Service Level Management Application

To access the Service Level Management application pages, select **Applications > Service Level Management**.

The Service Level Management application includes the following tabs:

- **Status Snapshot.** In this tab, you view current and forecast status for the best-performing or worst-performing SLAs, and a summary of status in previous periods. For details, see "Status Snapshot Report" on page 499.
- **SLA Reports.** From this tab, you can access Service Level Management reports that show you results for KPIs and HIs, enable you to see how well service levels compare with your goals, and provide information on current, forecast, and over-time statuses for SLAs and CIs. For details, see "Service Level Management Reports - Overview" on page 418.
- **Alerts.** From this tab, you can access the SLA Alerts reports, showing information on triggered alerts for the SLAs. For details, see "SLA Alerts Report" on page 511.
- **Outage Reports.** From this tab, you can access reports that show data on outages that have occurred for CIs included in SLAs. For details, see "Outage Reports" on page 425.
- **SLA Management.** In this tab, you select service-related views to view information about the connections between your services, organization entities, and SLAs. You can link to related reports that assist you in understanding the connection. For details, see "About SLA Management" on page 425.

Viewing BSM Information in an External Portal

You can use the BSM menu command **Admin > Link to This Page** to generate a link, which can be copied to an external portal in order to view BSM information.

For details, see "Linking to a Specific Page" in *Platform Administration*.

The Audit Log

You use the audit log to track configuration changes to your SLAs and services. The audit log displays all configuration changes that can affect reports.

As the audit log can become very long, you can use filters to display only those SLAs and services in which you are interested.

The audit log tracks the following changes:

- Creation or deletion of an SLA.
- Any changes made to an SLA.
- The addition of a configuration item (CI) to, or removal from, an SLA.
- Any changes made to services and offering packages.
- Any changes to data correction scheduling, including the creation, editing, and removal of data corrections.
- Any changes to the calendars.
- Any changes to user permissions.

For details on using the audit log, see "Audit Log" in *Platform Administration*.

Data Purging

Data collection tables can grow to a very large size, and thus need occasional purging. For details on managing historical data and the Purging Manager, see "Partitioning and Purging Historical Data from Databases" in *Platform Administration*.

Service Level Management calculates aggregated data for SLA reports, and this aggregated data is stored for long periods. However, the raw data from the various monitoring sources is stored in the database for limited periods, according to the purging policy for each data type (see the settings on the **Admin > Platform > Setup and Maintenance > Data Partitioning and Purging** page).

If you want to re-aggregate data (when doing SLA recalculations) from earlier periods, you need to make sure that the raw data is available to do the calculations for those periods. For example, if there is a two week purging policy for SiteScope data, but your organization sometimes needs to recalculate SLAs four weeks retroactively, then you need to change the purging policy for SiteScope to four weeks so that SiteScope data is available for the calculations.

If you need to re-aggregate data for further back than three months, then as well as making sure that the raw data is available, you must also change the default three month limit for the recalculation policy. To modify the limit, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Applications**, select **Service Level Management**, and locate the **Recalculation period limit** entry. Modify the value according to the period you need. (It is not recommended to lengthen the period because of the increased time required for the recalculation task.)

For information on recalculation, see "Recalculation for SLAs" on page 67.

Caution:

- If you recalculate an SLA for a period when the raw data has already been purged, you lose the previously calculated data for that period.
 - Increasing the data stored in the database can impact on system performance. Changes to the purging policy and recalculation policy settings are advanced tasks that should be performed only by an administrator or HP Software Support.
-

2

SLAs in Service Level Management

This chapter includes:

Concepts

- Agreements Manager - Overview on page 29
- Building SLAs with the SLAs Wizard on page 31
- CIs in SLAs on page 33
- Indicators for CIs on page 39
- Providers and Customers for Services and SLAs on page 44
- Weights for KPI Calculations on page 45
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- Recalculation for SLAs on page 67
- Status Alerts for SLAs on page 68

Tasks

- How to Use SLM to Monitor Your Service Agreements on page 69
- How to Define an SLA in the SLA Wizard - Use-Case Scenario on page 75

Chapter 2 • SLAs in Service Level Management

- How to Modify an SLA - Use-Case Scenario on page 91
- How to Update Topology Changes to an SLA on page 102
- How to Customize Target Names on page 103

Reference

- Agreements Manager User Interface on page 104

Troubleshooting and Limitations on page 164

Concepts

Agreements Manager - Overview

Note: In general, usage of the terms **SLA** or **agreement** in both the Business Service Management user interface and documentation includes SLAs, OLAs, and UCs; one exception to this is in the user interface pages where you specifically select **SLA** as the SLA type. For details on these terms, see "SLAs, OLAs, and UCs" on page 46.

You use the Agreements Manager to create and manage your SLAs.

In the Agreements Manager, you create service level agreements (SLAs, OLAs, and UCs) that represent contracts entered into by your department with service providers and customers. To achieve this, you extract measurements information from the actual service contract, and interpret this information within an SLA by adding the appropriate configuration items (CIs).

Service Level Management monitors the SLAs to check compliance with your service contracts. Your users can view Service Level Management reports to see how well actual service levels compare with SLA goals.

The SLAs are based on CIs representing the services you need to monitor. You add to each SLA the Business Service and Infrastructure Service CIs, that are in turn mapped to the service-related CI topology that supports the service (the CIs that actually measure the performance of your infrastructure components and business applications). You can also add service-related CIs directly to the SLA.

Before you create the SLAs, you must populate the Run-time Service Model (RTSM) with the required service-related CIs, and model your topologies. You can model service topologies using the Modeling Studio or from the Services Manager in SLM. For details, see "Modeling Studio" in the *Modeling Guide*, and "Manage Services" on page 165.

Compliance with SLA objectives is measured using the input from two types of indicators attached to CIs: key performance indicators (KPIs) and health indicators (HIs). These indicators are assigned automatically to CIs, together with their business rules and objective thresholds, based on assignment definitions and offering packages. For details, see "Indicators for CIs" on page 39.

Within each SLA, you can also attach additional KPIs and HIs to the CIs.

Service Level Management includes default indicators, with default rules and values. If you want to use customized KPIs, HIs, or rules with the CIs, you should define them before creating your SLA. For details, see "How to Customize a KPI" on page 531, "How to Customize a Business Rule Template" on page 554, and "Indicators Repository" on page 543.

For more information on how to build SLAs, see "Building SLAs with the SLAs Wizard" on page 31.

Note: Service Level Management uses its own indicators and rules, and not those of Service Health.

Example of Interpreting a Service Level Agreement

The following is an example of clauses in a service level agreement:

Users will be able to access the HP Web site within 8 seconds for 98% of the time during West Coast business hours. After business hours, they will be able to access the site within 12 seconds for 95% of the time.

...

The average round-trip transmission between a UUNET-designated Hub Router in the Sunnyvale metropolitan area and a UUNET-designated Hub Router in the Chicago metropolitan area will take 120 milliseconds or less during business hours and 150 milliseconds or less after business hours.

When defining an SLA in Service Level Management to represent this SLA, the clauses are interpreted as the following calendars and KPI objectives (for previously created Business Process Monitor, SiteScope, and Real User Monitor CIs):

Term	During Business Hours	After Business Hours
Calendar	9 AM to 5 PM, Monday to Friday PST	5 PM to 9 AM, Monday to Friday PST 5 PM Friday to 9 AM Monday PST
CI 1 (measures availability objective)	98%	95%
CI 2 (measures response time objective)	Home page must download within 8 seconds.	Home page must download within 12 seconds.
CI 3 (measures network response time)	120 milliseconds from hub router in Sunnyvale to hub router in Chicago	150 milliseconds from hub router in Sunnyvale to hub router in Chicago

Building SLAs with the SLAs Wizard

You define SLAs in the SLA Wizard. The SLA Wizard enables you to combine into a single SLA all the components needed to determine compliance with your service contract goals. These components define the monitoring environment and measurements that are applied for the SLA, and include CIs, indicators, thresholds, calendars, and tracking periods.

The SLA can be based on service CIs, or non-service CIs that relate to the SLA services, or a combination of both.

Tip: It is recommended that you base your SLA on services; you should add non-service CIs directly to the SLA only if the services are not sufficient.

Basing the SLA on service CIs facilitates integration with other service-based solutions. The service CIs (Business Service CIs or Infrastructure Service CIs) can be defined before you define the SLA (in the Services Manager page), or can be defined from the Select CIs page of the SLA Wizard. For task details, see "How to Define a Service for an SLA – Use-Case Scenario" on page 169.

A service CI has an attached topology of all the CIs in the RTSM that are related to that service. For example, you might create a Business Service CI called **Online Payment Service**, and attach all CIs in the system that are related to the online payment service to that Business Service CI. The **Online Payment Service** CI can then be added to any SLA you create that involves the online payment service.

The non-service CIs that you add to your SLAs can be individual leaf CIs, or whole CI hierarchies that are not part of a service topology.

After adding a service CI or other CI topology to your SLA, you have the option to fine-tune the CIs that are included in the SLA. For example, the Business Service CI **Online Payment Service** includes in its topology all CIs that monitor a particular Web server. This Web server is not applicable for the SLA you are creating, so you use the Fine Tuning option in the SLA Wizard to filter the **Online Payment Service** topology, and exclude the unnecessary CIs. All other service-related CIs that are part of the **Online Payment Service** CI topology remain attached to the SLA.

During SLA creation, you define the offering packages to use for the CIs. The offering packages types are:

- **Service offerings** for service CIs
- **CI offerings** for non-service CIs (that are not part of a service hierarchy)

Offering packages include KPIs, rules, and objectives to apply for each CI. You can customize offering package content as required. For task details, see "How to Create or Edit a Service or CI Offering" on page 210.

When there is a need, you can also fine-tune information for individual CIs within the SLA, including KPIs, HIs, objectives, selectors, outages, and calculation weights (this is intended for users with advanced understanding of CI and indicator functioning).

Tip: It is recommended that, as far as possible, you set up offering packages and assignments for specialized monitoring, and use those preconfigured settings when defining the SLA, rather than making manual changes to HIs and KPIs in the SLA.

For user interface details, see "New SLA/Edit SLA Wizard" on page 136. For task details, see "How to Use SLM to Monitor Your Service Agreements" on page 69, and "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75.

CIs in SLAs

SLAs are built from the CIs that represent your service-related network components and applications.

This section includes the following topics:

- "Measuring SLA Performance with CIs" on page 33
- "Consuming Metrics and Event Data in SLAs" on page 34
- "Impact Model and CI Hierarchies" on page 35
- "Filtering of Non-Persistent CIs" on page 38
- "Maximum CIs in an SLA" on page 38
- "Working with SiteScope Groups, Monitors, and Measurements" on page 39

Measuring SLA Performance with CIs

The KPIs and HIs attached to each CI measure the performance of each CI, by comparing the data received for the CI over a calculation period with defined SLA objectives, to provide an indication of how well SLA goals are being met.

For example, you might add the following CIs to your SLAs (either individually, or as part of a hierarchy for a CI), to check if availability percentages and performance times reflect the terms of the SLA:

- A CI from the Business Process Monitor domain that measures the time taken to add a purchase to a shopping cart.
- A CI from the SiteScope domain that measures runtime for a servlet on a WebLogic application server.
- A CI from the SiteScope domain that measures the percentage of free disk space on a database server.

Caution: The SiteScope **Health** groups that are automatically created for every SiteScope machine have no business impact. The SiteScope Monitor CIs that are included in the **Health** groups should not be included in SLAs.

For information on which CIs are added to the SLA as part of a hierarchy for a CI, see "Impact Model and CI Hierarchies" on page 35.

When required, your SLAs can include Business Process Monitor domain CIs, broken down by location. For details, see "Breakdown by Location for BPM CIs" on page 48.

For more information on KPIs and HIs, see "Indicators for CIs" on page 39.

Consuming Metrics and Event Data in SLAs

The results calculated for the CIs in your SLAs can be derived from metrics and/or events consumed within BSM:

- **Metrics.** Metrics arrive in samples, sent to BSM by the data collectors, for example, a sample from a Business Process Monitor containing metrics on the response time for running a transaction. The metric samples are mapped to an HI on a monitored CI, and the HI rule calculates a result (value/status) based on the metrics accumulated over the calculation period.

- **Events.** For events arriving to BSM, the Service Health statuses of the corresponding HI are stored in a database. SLM reads the status changes from the database, and calculates a value for the HI, using the HI Availability rule. For example, over an hour calculation period, the rule calculates the percentage of time the HI was not in failure status during the hour. For more details, see "HI Availability" on page 591.

For information on events in BSM, see *Using Operations Management*.

Impact Model and CI Hierarchies

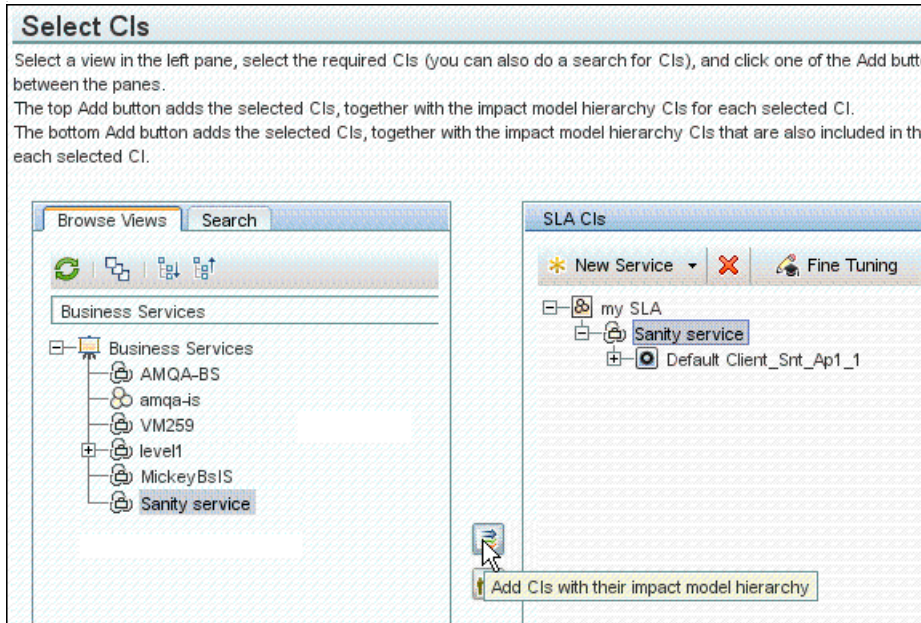
When defining an SLA, you can add individual CIs, or add group CIs that derive their status from a hierarchy of CIs that impact the added CIs. For example, you might add a Business Service CI with a hierarchy of service-related CIs that make up that service.

The BSM impact model determines the direction of impact between the CIs in the hierarchy, using calculated relationships. These calculated relationships determine the propagation direction between parent and child CIs.

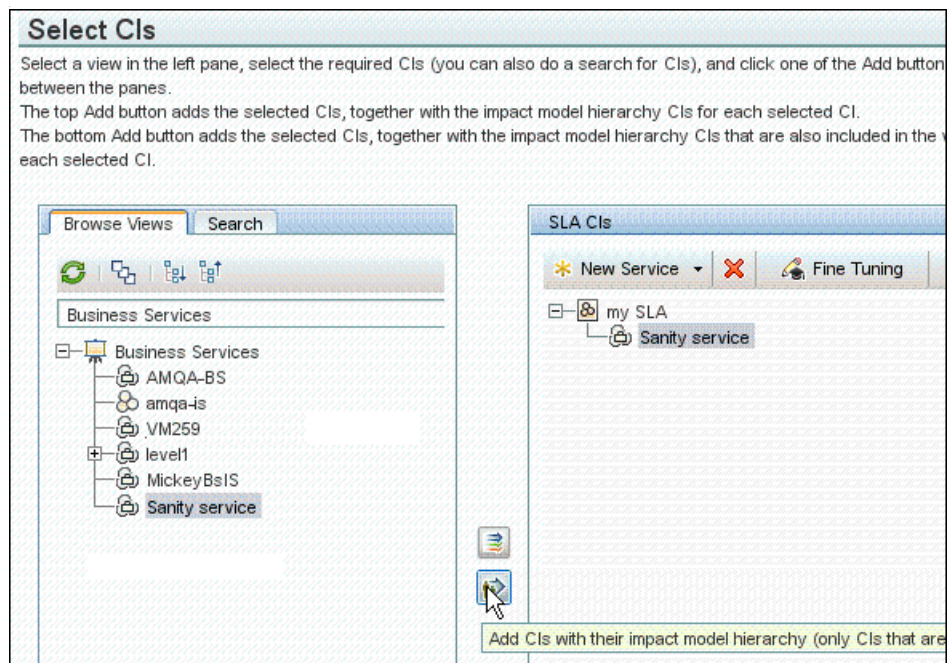
When there is no calculated relationship between a parent CI and a child CI, the child CI is automatically excluded from the topology for a service or other group CI within the SLA.

When adding a CI and its hierarchy to an SLA, you can choose to add the entire impact hierarchy from the RTSM for the selected CI. Alternatively, you can choose to add a limited impact hierarchy that includes CIs that impact the selected CI only if they appear in the view from which you are adding the CI to the SLA. For details, see "Select CIs Page" on page 140.

In the following example, using the **Add CIs with their impact model hierarchy** button to add the Sanity service CI to the SLA, adds the CI to the SLA together with a hierarchy of child CIs that do not appear in the Business Services view in the left pane:



If the **Add CIs with their impact model hierarchy (only CIs that are included in the view)** button is used to add the Sanity service CI to the SLA, only that CI is added; the hierarchy of child CIs for the CI are not included in the Business Services view and so are not added to the SLA:



For more information on the impact model used by BSM, see "Impact Modeling" in the *Modeling Guide*.

Each CI you select to add to an SLA is added directly under the SLA root. All the hierarchy for the CI (according to your impact selection) is added under the CI.

Filtering of Non-Persistent CIs

CIs that are defined to receive non-persistent samples cannot be included in an agreement. Persistent data refers to data that is stored in the database, while non-persistent data is reported only to the bus. If you try to add prohibited CIs to an SLA, you get a message listing the CIs that are excluded from the agreement.

The non-persistent CITs are defined in the **Prohibited configuration item types** XML file, accessed from the Infrastructure Settings Manager. To modify the list of CITs, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**:

- Select **Applications**.
- Select **Service Level Management**.
- Locate the **Prohibited configuration item types (CIT)** entry, and change as required.

Maximum CIs in an SLA

The number of CIs that can be included in an SLA is determined by the deployment scale defined for SLM in Server Deployment (accessed from Platform Administration). By default, you can define up to the following:

- Small scale deployment - up to 500 CIs.
- Medium scale deployment - up to 1000 CIs.
- Large scale deployment - up to 2500 CIs.

To modify these limits, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**:

- Select **Applications**.
- Select **Service Level Management**.
- Locate the **Maximum number of CIs for SLA** entry, and change as required.

Working with SiteScope Groups, Monitors, and Measurements

The recommended way to create an SLA is using the CIs that represent your service-related network components and applications.

However, if you are working with SiteScope, and you have already set up your CI structure with SiteScope groups, monitors, and measurements, you can use the **System Monitors** view to create an SLA based on these elements. Within this view, the KPI and HI assignment mechanism assigns KPIs and HIs to groups, monitors, and measurements as required.

Indicators for CIs

The performance of an SLA is calculated based on the performance of the CIs in the SLA, and the performance of the CIs is measured using two types of indicators, KPIs and HIs. The KPIs and HIs definitions include, as appropriate, business rules, objective thresholds, and selectors. The indicators are attached automatically to the CIs that you add to an SLA.

For each monitoring domain, SLM provides default indicators. If you import additional content packs into BSM, the appropriate indicators for the data are added to SLM and automatically used for the relevant CIs.

This section also includes:

- "KPIs for CIs" on page 40
- "HIs for CIs" on page 42
- "Selectors" on page 43

KPIs for CIs

Key performance indicators (KPIs) provide high-level information on how well each CI in an SLA is performing, compared with the objectives set for that CI and its KPI within the SLA. Each KPI calculation is based on data from HIs, child or sibling KPIs, or a combination of these, according to the business rule for the KPI.

Each KPI has a business rule that calculates KPI status or value (or both). For example, you can specify a rule that sets the status of the KPI to the worst status of any HI attached to the CI, or to the average value of all KPIs attached to the child CIs. Each change in status for a KPI attached to a CI may in turn trigger a change in status for the KPI on the parent CI, and so forth up the hierarchy.

Service Level Management assigns the KPIs to each CI in an SLA, together with the business rule and objective thresholds used by each KPI, based on a combination of KPI assignment definitions and offering package definitions. Assignment is automatically activated when you add CIs to an SLA, remove CIs from an SLA, or modify links between a CI and its parent CIs in an SLA. For more information, see "Assignment and Propagation Overview" on page 234. For more information on offering packages, see "Offering Packages in SLAs" on page 208.

In addition, you can manually attach KPIs to the CIs within an SLA, and edit the attached KPIs. You can attach a KPI to any CI, at any level in the SLA hierarchy. For details on attaching and editing KPIs, see "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113.

The KPIs, whether attached automatically or manually, propagate up the CI hierarchy in the SLA based on KPI propagation definitions. For details on propagation definitions, see "Propagation Rules" on page 241.

When adding KPIs to a CI, note the following:

- By default, a maximum of 6 KPIs can be attached to any CI. (You can change this in the Infrastructure Settings page, see "Maximum number of KPIs to a CI" on page 41.)
- The KPIs that you attach to a CI, or changes that you make to a KPI for a CI, are only active within the current SLA. These changes have no effect on the CI or KPIs within other SLAs.

- The applicable rule list displayed for the KPI may vary, depending on the specific CI type to which the KPI is attached.
- Service Level Management uses its own KPIs, only viewable in Service Level Management reports. The exception to this is the PNR KPI, which is used to show SLA data in Service Health. For details, see "Viewing PNR Data for SLAs in Service Health" on page 66.

KPI Domains

Domains are groups of KPIs that monitor similar functions; KPIs are assigned to domains within the KPI repository. For example, the Network domain contains the Network Availability and Network Performance KPIs, while the Business Health and Business Performance KPIs are assigned to the Business domain.

Within the KPI repository you can create a domain to suit your organization's needs. For user interface details, see "New KPI/Edit KPI Dialog Box" on page 540.

Maximum number of KPIs to a CI

By default, you can assign up to six KPIs to a single CI in an SLA.

To modify this limit, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**:

- Select **Applications**.
- Select **Service Level Management**.
- Locate the **Maximum number of KPIs for a single CI** entry and modify as needed. You can enter a value between 3 and 20.

HIs for CIs

Health indicators (HIs) provide fine-grained measurements on the CIs that represent your monitored applications and business services. Some HIs provides business metrics such as backlog and volume, while others monitor various aspects of performance and availability such as CPU load or disk space. HIs are based on the data consumed by BSM, calculating results from metrics in the incoming samples sent by data collectors, or from status changes recorded for events sent to BSM, and thus represent the actual monitored components in the hierarchy of calculations for an SLA.

For an introduction to health indicators, see "Health Indicators and KPIs - Overview" in *Using Service Health*.

KPIs and HIs are automatically assigned to the monitored CIs in an SLA. When the rule for a KPI defines that its calculation is based on HIs, the KPI is assigned only when at least one of its related HIs is also defined to be assigned to the CI, based on the HI assignment definitions. For more information, see "Assignment and Propagation Overview" on page 234.

You can manually attach HIs to the CIs within an SLA, and edit the attached HIs. For details on attaching and editing KPIs, see "Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box" on page 105.

The definition for each HI includes a rule, rule parameters, objectives for the selected calendar and tracking periods (optional) and a selector. By default, the HI uses the same objective thresholds as the corresponding KPI (taken from the offering package for the CI). The selector defines which data samples on the database are relevant for the HI (see "Selectors" on page 43).

As with KPIs, the Business Logic Engine calculate a value for the HI, and compares the value with the objective thresholds for the HI to assign a status (depending on the rule definitions).

Note: When the Synthetic User Transaction Performance HI and the BPM Percentile rule are used together for a BPM CI, the definition for the rule includes an import mechanism that can import the transaction threshold settings. For details, see "Imported Transaction Thresholds" on page 62.

Maximum number of HIs to a CI

By default, you can assign up to ten HIs to a single CI in an SLA.

To modify this limit, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**:

- Select **Applications**.
- Select **Service Level Management**.
- Locate the **Maximum number of Health Indicators for a single CI** entry and modify as needed. You can enter a value between 3 and 20.

Selectors

When a monitored CI is assigned an HI, the HI properties include a selector. A selector is a filter definition that defines which samples are relevant for the HI calculation. The Business Logic Engine uses the selector to identify and utilize the data that is relevant for each CI and its HIs. Different selectors can be used by different HIs (with corresponding rules), enabling the use of different samples for each HI attached to the same CI.

Note: Selectors are also used for the Outages KPI when using certain outage rules.

Each selector filter consists of one or more selector expressions, defining the conditions for identifying a relevant data sample. There is an AND relationship between each of the selector expressions within a filter, dictating that all conditions must be met (all selector expressions must have result TRUE) for a data sample to qualify for that selector filter.

If more than one sample type is relevant for the HI, then the selector can contain multiple filters. There is an OR relationship between each selector filter, dictating that a data sample needs to meet the requirements of only one of the selector filters to qualify for the HI.

If you define a new HI instance for a CI, SLM uses a default selector for the HI. The default selector definitions include the health indicator type and the RTSM ID of the CI. The default selector is defined in an XML file, accessed from **Admin > Platform > Setup and Maintenance > Infrastructure Settings > Applications Context > Service Level Management > Default selector for new health indicators**.

Note: The default selector is applied only when defining an HI on a single CI, not when defining an HI for multiple CIs.

For user interface details, see "Selector Area" on page 111.

For a task on defining selectors, see "How to Define Selectors for HIs" in *Using Service Health*.

Providers and Customers for Services and SLAs

When creating SLAs and services, you can define the service provider providing the services being consumed, and the customer consuming the services. They can be part of your internal IT department or external. If required, you can associate a provider with each service, and associate a different provider with the SLA that contains those services.

The service providers and customers are added as organization entities in the RTSM, as part of the Business Units view, and are then available to use with any other SLAs or services. If required, you can create relationships between Organization CIs, and define additional Organization CIs, in the **Admin > RTSM Administration > Modeling > IT Universe Manager** page. For each Organization CI, you can build a hierarchy of components.

For user interface details, see "Select Customer Dialog Box" on page 156, and "Select Provider Dialog Box" on page 157.

After linking organization entities to your SLAs, you can see information organized by providers and customers in some of the Service Level Management reports and in the SLA Management tab. You can also see information on the services associated with providers in the Service Providers view (available in the SLA Management tab and in Service Health).

Weights for KPI Calculations

You define weights for CIs in the SLA Wizard (see "CI Data Area - Weights Tab" on page 154).

You define weights on child CIs, so that a weighted child CI has more impact on the KPI calculations for the parent CI than the other child CIs. The weights are only applied for KPIs that have a rule that uses weights, for example, if the rule calculates a percentage. All group rules that calculate an average based on child KPI results, take child weights into consideration in calculations.

For example, your SLA includes a Business Application CI that contains two Business Transaction CIs. You decide that availability and performance for the first BT CI are more important than for the second, and so you give the CIs weights of 2 and 1. When Service Level Management calculates the KPI values for the Business Application CI, child CI 1 contributes two thirds of the overall score and CI 2 contributes one third.

Tip: When assigning weights to CIs, it may be helpful to consider the percentage weight you want to give each CI. For example, if you have two CIs and you think one should carry 40% of the weight and the other 60%, you could set their weights at 40 and 60 respectively.

Note: By default, Six Sigma calculations do not take weighting into account.

SLAs, OLAs, and UCs

When defining an SLA in Service Level Management, you can classify it as one of the following SLA types:

- **OLA (operational level agreement).** An internal agreement covering the delivery of services which support the IT organization. OLA is usually used to indicate that the contract addresses system hardware (machines, routers, and so on).
- **SLA (service level agreement).** Written agreement between a service provider and customer, that documents agreed service levels for a service. SLA is usually used to indicate that the contract addresses services (applications, services, business processes, and so on).
- **UC (underpinning contract).** A contract with an external supplier covering delivery of services that support the IT organization in their delivery of services.

These classifications are used to filter and organize SLA data in Service Level Management reports.

Manually Changing SLA Content

When defining an SLA, you define the SLA properties, and must select the CI hierarchies you want to include in the SLA from the available views. You can also assign your own customized offering packages, to define the KPI and HI values that are used for the CIs.

After defining these aspects of an SLA, SLM automatically assigns all indicators and parameters needed by the SLA to monitor your services, using default values and the values defined in the offering packages.

You can fine-tune, modify, and override many of the SLA elements, as described below:

- Use the fine-tuning option to specify the specific CIs in a CI hierarchy that you want to include in the SLA. For user interface details, see "Fine Tuning Dialog Box" on page 132.
- Use the location breakdown option to include location for BPM CIs in the SLA. For details, see "Breakdown by Location for BPM CIs" on page 48.
- On the Configure SLA Indicators page, you can manually attach additional KPIs or HIs to any CI included in the SLA, or delete KPIs and HIs from a CI. This can include KPIs that are not part of the assignment of the offering package for the CI, and new KPIs that you create in the repositories. For user interface details, see "Configure SLA Indicators Page" on page 147.
- You can edit the rule, parameter, or objective thresholds for any KPI or HI. Within an SLA, you also have the option to edit these aspects for individual indicators within the SLA, overriding the assignment and offering package values that were used for the indicators.

For user interface details, see "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113, and "Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box" on page 105.

Breakdown by Location for BPM CIs

Note: In Business Service Management 9.x there is no longer an **Include Locations** option in the SLA Wizard.

BSM provides the ability to breakdown by location the business applications, business transaction flows, and business transactions that are monitored by the Business Process Monitor (BPM) domain. This breakdown functionality is available exclusively within an SLA, and enables you to breakdown a location by its BPM CIs, or to breakdown BPM CIs by their assigned location.

Adding location breakdown to an SLA enables you to drill down in the SLM reports to see results per location; or enables you to remove a specific location from an SLA, so that results from that location do not impact on the overall SLA metrics.

The breakdown is performed from the Select CIs Page of the SLA Wizard, after the CIs have been added to the SLA. (For details on the page, see "Select CIs Page" on page 140.)

This section also includes:

- "Adding Breakdown by Location to an SLA" on page 49
- "Location Breakdown Examples" on page 50
- "About Breakdown CIs" on page 55
- "Topologies for Multiple Domains" on page 55
- "Reversing Location Breakdown" on page 59

Adding Breakdown by Location to an SLA

You perform a location breakdown in the **SLA CIs** pane of the Select CIs Page (for UI details, see page 140) by selecting the relevant option from the **Breakdown** menu (available from the toolbar, or by right-clicking the relevant CI). The Breakdown option is enabled when you select a Business Application, Business Transaction Flow (BTF), Business Transaction (BT), or Location CI, as long as the CI is monitored by BPM. You can also select multiple CIs (of the same CIT) for breakdown.

The breakdown creates breakdown CIs for the relevant BPM locations running the transactions.

Note: Locations are defined in the Location Manager, and assigned to the BPM data collectors that monitor the applications or business transaction flows. For details, see "Location Manager" in *Platform Administration*.

After activating a location breakdown, the SLA CIs pane displays a new topology of breakdown CIs. The relevant location name is automatically added to the end of each CI name, for example, **MyApplication from Tokyo**. The breakdown CIs are additional CIs added to the SLA, with their own default KPIs and health indicators (HIs).

The following are the breakdown CI types:

- **SLM BPM Application from Location**
- **SLM BPM BTF from Location**
- **SLM BPM Transaction from Location**

The breakdown is recursive, with CIs from the relevant locations added at each relevant layer under the original CI. The breakdown topology for an application therefore includes 3 layers of breakdown CIs for the application, BTFs, and BTs.

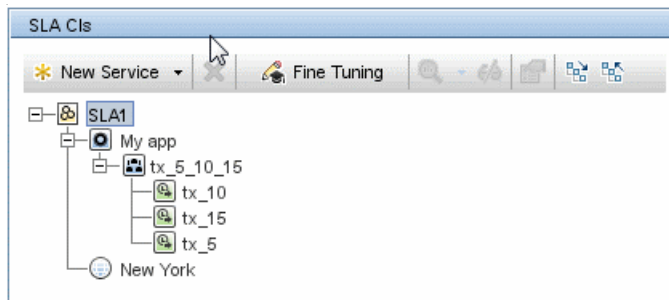
Note the following points:

- Best practices: The breakdown options should be used selectively; the breakdown may add many additional CIs to the SLA and to the RTSM, which may impact performance and capacity.
- If you want the location breakdown to apply retroactively for the SLA (so that you can see location breakdown results over time in the SLA reports), you need to perform recalculation for the SLA. For details, see "Recalculation for SLAs" on page 67.
- If additional locations are added in the future for a BPM application in a breakdown, or additional BPM applications are added for a location in a breakdown, these are not automatically added to the SLA. To synchronize the location breakdown in the SLA with these changes, open the Edit SLA Wizard and reapply the breakdown option for the relevant CI. For details, see "New SLA/Edit SLA Wizard" on page 136.
- You cannot apply a breakdown to a CI which is already part of a breakdown configuration, meaning CIs with a broken ancestor node, or a broken descendant node.

A broken node is a CI which has child CIs of the following CITs: application by location, BTF by location, or BT by location. A broken ancestor node is possible in the case of a CI monitored by multiple domains.

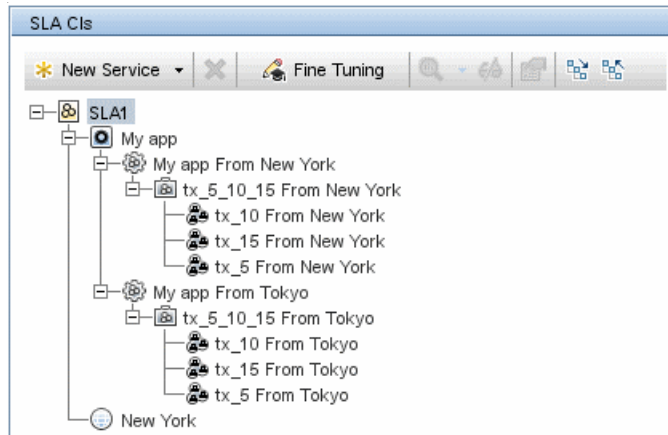
Location Breakdown Examples

In the following examples, location breakdown is performed in an SLA that contains a Business Application CI, **My app** and a Location CI, **New York**. The topology for **My app** contains BTF and BT CIs.



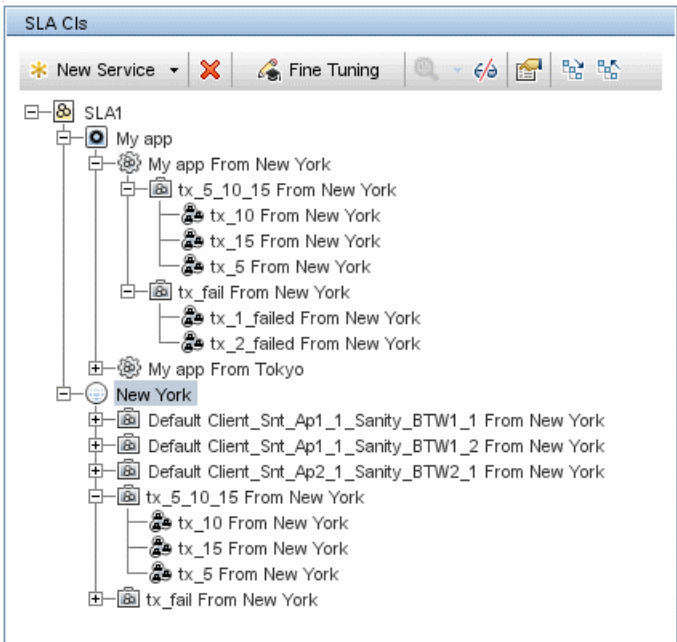
Full Application Breakdown Example

The SLM Administrator selects the **Breakdown > Breakdown by location** option for the Business Application CI, **My app**. The original topology under **My app** is replaced by two branches containing breakdown CIs for the locations New York and Tokyo. There are three layers of breakdown CIs; for example, for New York there are application, BTF, and BT breakdown CIs, all corresponding to the CIs in the original **My app** topology.



Location CI Breakdown Example

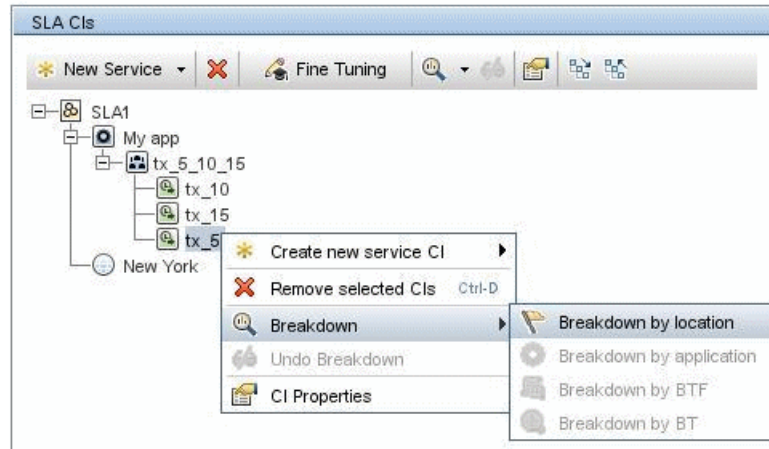
After performing the application breakdown, the SLM Administrator now selects the **Breakdown > Breakdown by BTF** option for the Location CI, New York. A breakdown topology is added under the Location CI, containing all BTF and BT breakdown CIs (**SLM BPM BTF from Location** and **SLM BPM Transaction from Location**) that relate to applications monitored from New York. The BTF and BT breakdown CIs for the My app application are repeated in the topology.



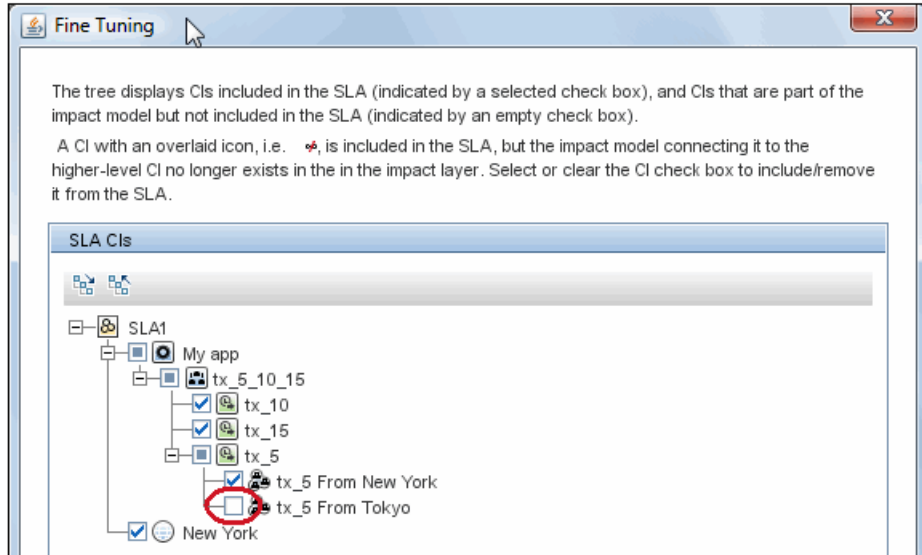
Exclude Data From a Specific Location Example

Instead of adding a full breakdown topology to the SLA, the SLM Administrator simply wants to exclude data from Tokyo for the transaction tx_5.

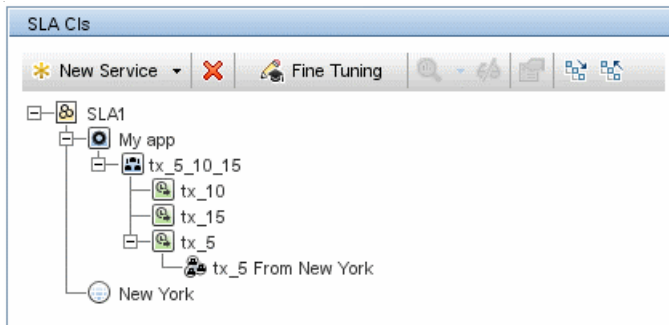
The SLM Administrator selects the **Breakdown > Breakdown by location** option for the BT CI tx_5.



A new branch is added under tx_5 containing **SLM BPM Transaction from Location** CIs for the locations New York and Tokyo. The SLM Administrator opens the Fine Tuning dialog box and clears the check box for tx_5 from Tokyo.



The SLA topology is now set to include data for the business transaction tx_5 only when it is run from New York.



About Breakdown CIs

The breakdown CIs are handled in BSM as follows:

- The SLM assignment mechanism automatically attaches the relevant default KPIs and HIs to each created breakdown CI. (For details on assignments, see "Indicator Assignments and Propagations" on page 233.)
- Once the breakdown CIs are added to an SLA, they can be treated as any other CIs in the SLA, including modifying or adding KPIs and HIs.
- The breakdown CITs are specialized CITs for SLM, and are only relevant within the SLM domain. They are not consumed by any other BSM application.

Topologies for Multiple Domains

When you add a location breakdown topology to an SLA, SLM checks which domains are monitoring each business transaction, business transaction flow, and application in the branch selected for breakdown. If the CIs are monitored only by BPM, then the BTF and BT CIs in the original topology are removed from the SLA and only the breakdown topology remains.

However, if any of the BT CIs in the original topology are receiving monitoring data from any other domain (for example, from Real User Monitor), then those CIs and their parent CIs remain in the SLA, in the original topology—only the BTs that are monitored solely by BPM are removed from the original topology. BTF CIs and CI Collection CIs (containing one or more BTF CIs) remain in the original topology if they still have child CIs, and are removed if there is no non-BPM monitored transaction left in their hierarchy.

SLM performs the following logic to clean up the KPIs and HIs from the original topology, so that the BPM metrics impact the SLA through the new breakdown topology (and not also through the original topology).

- 1 The default KPIs and HIs used for data from the BPM domain are as follows:

KPI	HI
Application Availability	Synthetic User Transaction Availability
Application Performance	Synthetic User Transaction Performance
Application Response Time	BPM Response Time

For each of the above KPIs assigned to a CI in the original topology, when KPI calculation is impacted by HIs, the BPM HIs are removed from the **Related Health Indicators** field for the KPI, breaking the connection between the two entities.

Note: These KPIs and HIs are defined by an infrastructure setting, based on the default SLM BPM KPI assignment. If you make any changes to this assignment, or if you edit the infrastructure setting definition, this will impact which KPIs and HIs are removed from the multiple domain topology. Only KPIs with related HIs are taken into account. This infrastructure setting is defined in **Admin > Platform > Setup and Maintenance > Infrastructure Settings > Applications > Service Level Management > BPM Breakdown KPI assignments**.

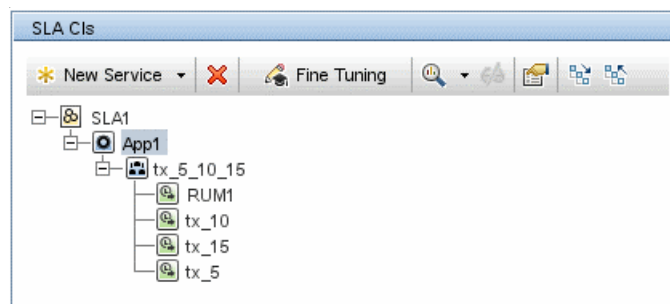
- 2 SLM checks if the KPIs on the CIs are still impacted by data from HIs in other domains (for example, RUM). If there are no other impacting HIs for a KPI, then that KPI is removed.
For example, if the Application Availability KPI on a BT CI is impacted by both the Synthetic User Transaction Availability HI (BPM domain) and the Real User Transaction Availability HI (RUM domain), then the Application Availability KPI still remains attached to the CI and impacting the KPI after the Synthetic User Transaction Availability HI is removed.
- 3 SLM checks if any of the HIs on the CIs are still impacting a KPI. If not, the HI is removed. If the HI is still relevant (for any CI), it remains.

Note: If a custom KPI is attached to the CI, for example, Custom Availability KPI, and that KPI is impacted by one of the BPM HIs, for example, the Synthetic User Transaction Availability HI, then that HI is left in the original topology, even though the Application Availability KPI is removed.

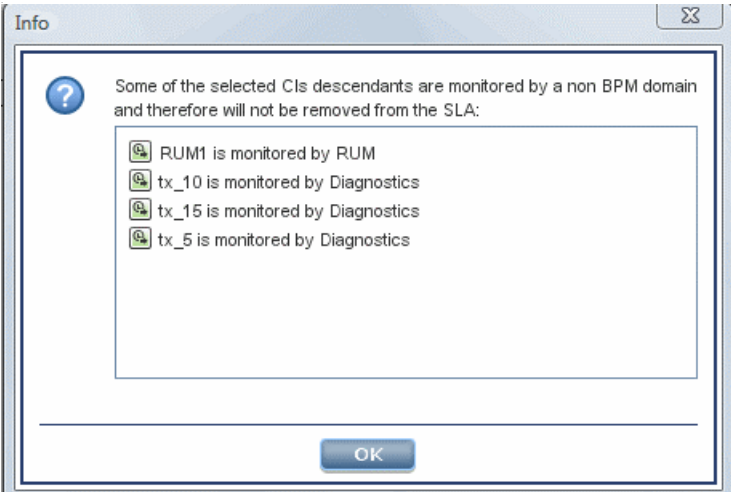
- 4 The SLM assignment mechanism assigns KPIs and HIs to the new topology.

Multiple Domains Example

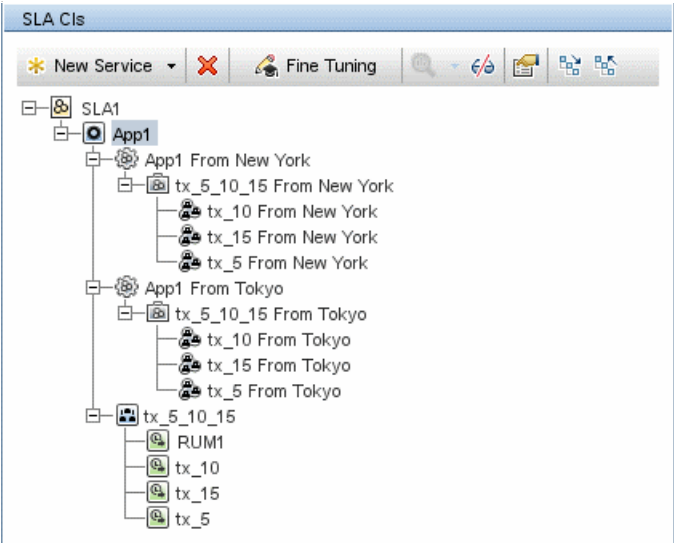
An SLA contains the Business Application CI, App1, which includes CIs monitored by the BPM domain and other domains.



The SLM Administrator selects the **Breakdown > Breakdown by Location** option for the Business Application CI. SLM displays an information dialog box, stating that some CIs are monitored by other domains.



After the breakdown, the SLA still contains the original topology (which is now calculated based on RUM and Diagnostics data, and not impacted by BPM data), in addition to the BPM location breakdown topology.



Reversing Location Breakdown

If you have performed a location breakdown for BPM CIs in an SLA, and you want to revert to the original topology, you can select the CI where you performed the breakdown and click the **Undo Breakdown** button.

The breakdown CIs are removed and the original impact topology is restored in the SLA, using the default KPIs and HIs for the BPM data.

After saving your changes to the SLA, perform recalculation for the SLA if you want the changes to apply retroactively to the SLA data (see "Recalculation for SLAs" on page 67).

Note the following points:

- If you have removed specific BTF or BT CIs using the fine tuning option, this CI filtering is canceled by the breakdown reversal. All the relevant CIs are now included in the SLA.
- If you have customized KPI or HI definitions on a CI within a breakdown, the breakdown reversal deletes the customization. The SLM assignment mechanism automatically attaches the default KPIs and HIs to each CI in the original impact model.
- Customizations on CIs monitored by domains other than BPM (for example monitored by RUM) are not changed following breakdown reversal.
- HI objectives for CIs monitored by BPM are taken from the default KPI objectives, and not from customized KPI objectives.

Configuring SLAs Using SiteScope and EMS Data

You can set up an SLA using SiteScope or EMS Integration data, as follows:

SiteScope Data in SLAs

If you have created custom views which display SiteScope monitor CIs attached to the monitored CIs, when creating an SLA based on SiteScope data, do not drag the monitor CIs into the SLA. Instead, drag the monitored CIs themselves into the SLA. For example, if your topology includes a database CI and a monitor CI attached to it, drag the database CI itself into the SLA.

The KPI and HI assignment mechanism automatically assigns the relevant indicators to the monitored CI, according to what is actually monitored on the CI. If you define mapping between monitor measurements to an HI within System Availability Management or SiteScope, SLM automatically assigns the new HIs to the monitored CI in the SLA. For details on adding HIs within SiteScope, see "How to Create and Manage Indicator Assignments" in *Using System Availability Management*.

Note: SLM assigns HIs to the CIs monitored by SiteScope using the SiteScope Dynamic Health Indicator Assignment, which is defined on the Configuration Item CI type. Within this assignment you can modify which rule is used to calculate these HIs; for details, see "SiteScope Dynamic HI Assignment" on page 240.

SiteScope Monitors that Do Not Report Topology

There are a number of SiteScope monitors which do not report topology by default; for details see "Monitors Not Reporting Topology Data By Default" in *Using System Availability Management*.

If you want to include data from these monitors in your SLA, you have the following options:


- Manually set up the monitors to report topology; for details, see "How to Configure Topology Reporting" in *Using System Availability Management*.
- Open the **System Monitors** view, and drag the relevant monitor CIs into your SLA.

Imported Transaction Thresholds

The following sections describe how Service Level Management automatically imports Business Process Monitor transaction thresholds, and how to override the import process.

How Imported Transaction Threshold Works

BPM Business Transaction CIs are created using the transaction threshold settings defined in **Admin > End User Management**. The transaction threshold settings define **OK**, **Minor**, and **Critical** statuses for the Business Transaction CIs.

Set Transaction Thresholds						
Define the transaction thresholds						
						
Transaction ...	Scripts	OK (sec.)	Minor (sec.)	Critical (sec.)	Outlier (sec.)	Availability (...)
trans_10	MediumProfSc...	8	8-12	12	45	90
trans_1	MediumProfSc...	8	8-12	12	45	90
trans_2	MediumProfSc...	8	8-12	12	45	90
trans_3	MediumProfSc...	8	8-12	12	45	90
trans_4	MediumProfSc...	8	8-12	12	45	90
trans_5	MediumProfSc...	8	8-12	12	45	90
trans_6	MediumProfSc...	8	8-12	12	45	90
trans_7	MediumProfSc...	8	8-12	12	45	90
trans_8	MediumProfSc...	8	8-12	12	45	90
trans_9	MediumProfSc...	8	8-12	12	45	90

When the Synthetic User Transaction Performance HI using the BPM Percentile rule is defined for a Business Transaction CI in an SLA, the definition for the rule includes an import threshold mechanism. This mechanism imports the value defined for the monitor's **OK** threshold into the **Percentile Condition** parameter for the rule. (For information on the rule, see "BPM Percentile" on page 579.)

Health Indicator	
Health Indicator:	Synthetic User Transaction Performance
Business Rule:	BPM Percentile

Health Indicator Properties	
Business Rule Parameters	
Trimming condition:	< [] seconds
Percentile condition:	< [8] seconds
No data timeout:	3600 seconds

Note the following:

- This import mechanism is applied to Business Transaction CIs and SLM BPM Transaction from Location CIs.
- You can override the imported threshold by editing the HI in the SLA Wizard.

Hard Code the Percentile Condition Parameter

If you want to hard code a different value for the Percentile Condition parameter, you can do so in the HI assignment definitions for the Business Transaction CIs.

- 1 On the Health Indicator Assignments page, select **Business Transaction > BPM Business Transaction HI Assignments** and click the **Edit** button.
- 2 In the **Health Indicator Configurations** area, select **Synthetic User Transaction Performance** and click the **Edit** button.
- 3 Change the value for the rule's Percentile condition parameter to the required value. For example, you might change the Percentile condition to **Value="10"**.

Edit Health Indicator For Assignment: BPM Business Transaction HI Assignments

Define a Health Indicator Configuration

Health Indicator

* Health Indicator: Synthetic User Transaction Performance

* Business Rule: BPM Percentile

* Priority: 0

Business Rule Parameters

Calculation method: ☐ Sample Based ☒ Time Based

Ignore timed out trimming: False

No data timeout: 3600 seconds

* Percentile condition: < 8 seconds ☐ Convert milliseconds to seconds

Trimming condition: seconds ☐ Convert milliseconds to seconds

* You can drag properties from CI Type Properties list or press Ctrl + i while editing a field to set the value to the selected property.

For more information on editing assignments, see "How to Define a KPI or HI Assignment" on page 250.

Six Sigma for SLAs

You can produce Service Level Management reports that show data from a Six Sigma perspective. To see Six Sigma data for a CI, you define Six Sigma calculations for the CI in the SLA Wizard.

At the monitoring level, define a Six Sigma rule for HIs used by the CI. Define for the CI one of the Six Sigma KPIs, either Availability Six Sigma or Performance Six Sigma, using the business rule Six Sigma Group. The KPI should be calculated based on the HIs for the CI.

For Service Level Management to calculate the number of failures for a CI, all HIs used by the KPI, or all child KPIs for the KPI on a group CI, must include a Six Sigma rule.

When defining objectives for HIs and KPIs using Six Sigma business rules, you enter Six Sigma objective values between 0 and 6 with up to three decimal points. This defines the objective against which Service Level Management measures the time taken to execute a process, or the time that a business application or a service is up and running.

Tip: It is recommended that you set up offering packages and assignments for Six Sigma, and use those preconfigured settings when defining the SLA, rather than making manual changes in the SLA.

For details on Six Sigma KPIs and rules, see "List of Service Level Management Business Rules" on page 557.

To see Six Sigma data in reports, see "Configuring Additional Values to Use with KPIs" on page 438.

Viewing PNR Data for SLAs in Service Health

In the views displayed in Service Health, you can include PNR (Point of No Return) data for CIs that are included in your SLAs.

The PNR KPI enables you to view how well SLA objectives are being met. When the PNR KPI is defined for a CI, a bar is displayed in Service Health indicating how much more time (in percentages) the CI can be unavailable before the SLA is in breach of contract.

The PNR KPI is defined for the CI in Service Health Administration, and is calculated based on the unavailability of the CI in Service Level Management.

For more details, see "Enabling PNR (Point of No Return) Display within Service Health" on page 552.

Permissions for Working with SLAs

After defining an SLA, the HP Business Service Management administrator must give users permission to work with the SLA. Users with view permission can view or generate reports for their SLAs. You define permissions in **Admin > Platform > Users and Permissions**.

For general information on defining permissions, see "Permissions Overview" in *Platform Administration*.

Note: If you change a user's permissions for a specific SLA, the user must log out and log in again to view the changes.

Recalculation for SLAs

Note to HP Software-as-a-Service Users: HP Operations administers the recalculation task functionality. For information about recalculation, contact HP Software-as-a-Service Support.

SLM automatically recalculates the SLA data once an hour, for the data received two hours ago. That is, if the time is now 07:30 AM, SLM recalculated the data at 7:00 AM for data that was received between 05:00 AM and 06:00 AM.

Note: If you create a new SLA for a period in the past, then Service Level Management automatically runs recalculation.

In addition, you can schedule recalculation tasks to update the data in your SLAs. You generally use recalculation after making retroactive changes. For example:

- After defining a data correction event for the previous week, you should run the recalculation process to show the effect of the data correction on results.
- In the case of a connection problem with a site where data is sent after a one day delay, you should run recalculation so that this data is also included in calculations. (Service Level Management automatically supports "late arrivals," that is, data that reaches the database up to one hour after the data is recorded. However, for data reaching the database after a longer period of time, you must run the recalculation function.)
- After viewing the reports of a specific SLA, you notice that the objective definition was set too high. You edit the objective and run recalculation so that the change is reflected in the historical data.

Service Level Management performs aggregation retroactively on existing data only when an SLA is recalculated. If the SLA is not recalculated, previous data is displayed in the report even though it may not answer the criteria set by the changes.

Recalculation tasks are scheduled from the "Agreements Manager Page" on page 124. Recalculation is only enabled if an SLA can be recalculated. The functionality is disabled for SLAs with state **Preliminary** or **Pending**, and for **Terminated** SLAs that ended too long ago for recalculation.

After scheduling a recalculation task, you can cancel the scheduled task if it has not yet begun running. Once the task is running, a message is displayed in the **State** column on the Agreements Manager page, for example, **Recalculation Progress: 25%**.

By default, the earliest date at which the recalculation process can begin running is three months back (default set in the Infrastructure Settings Manager). For details, see "Data Purging" on page 24.

Caution: If you recalculate an SLA for a period when the raw data has already been purged, you lose the data that was already calculated for that period. For more information, see "Data Purging" on page 24.

Status Alerts for SLAs

You can create alert schemes to notify users if an SLA is not reaching its targets, or if its status is changing for the worse. You can also create alert schemes based on changes in the forecasted status.

The SLA Alerts report provides information on triggered alerts.

For details, see "SLA Alerts Overview" on page 340.

Tasks

How to Use SLM to Monitor Your Service Agreements

This task describes how to set up the various components available in SLM to help you define, manage, and monitor your SLAs, according to the specific needs of all stakeholders.

Most of these components have default values that are applied to the SLA contents, and some (for example, the Assignments and Propagation pages) are accessed only to perform advanced customization. Therefore, all task steps are optional, and provide only a suggested working order; most of the steps can be performed before, during, or after creating SLAs.

This task includes the following steps:

- "Prerequisites" on page 70
- "Customize KPIs, HIs, and business rules" on page 70
- "Customize assignments and propagations" on page 70
- "Define calendars" on page 71
- "Define services" on page 71
- "Define service and CI offerings" on page 72
- "Define outage categories" on page 72
- "Define SLAs" on page 72
- "Grant permissions" on page 73
- "Define downtime events" on page 73
- "Define alerts" on page 73
- "View SLA data in reports" on page 74

1 Prerequisites

Make sure that your Business Service Management installation includes an SLM license, the data collectors to report monitoring data to BSM are running, and that the RTSM is populated with the service-related CIs that you require for your SLA.

Note: If your SLM license is expired, you can view data and generate reports for existing SLAs, but you cannot create new SLAs.

2 Customize KPIs, HIs, and business rules

If you require custom KPIs, HIs, or business rules to use with your SLAs, you define them in the SLM repositories.

- For details on creating custom KPIs, see "How to Customize a KPI" on page 531.
- For details on creating custom HIs, see "Indicators Repository Overview" on page 544.
- For details on creating custom rules, see "How to Customize a Business Rule Template" on page 554 and "SLM Rules API Overview" on page 653.

3 Customize assignments and propagations

You can customize the default assignment of KPIs and HIs to CIs, or the way that the KPIs propagate up the SLA hierarchy.

- For details on customizing assignments, see "How to Define a KPI or HI Assignment" on page 250.
- For details on customizing propagations, see "How to Define a KPI Propagation Rule" on page 255.

4 Define calendars

If you require custom calendars for your organization, to calculate data for periods other than those defined in the default calendars, define them using the Calendar Wizard. For user interface details, see "New Calendar/ Edit Calendar Wizard" on page 310.

For examples of setting up a calendar, see "How to Define an SLA Calendar - Use-Case Scenario" on page 299.

Example:

Acme Publishing house has an internal contract between the IT and eBusiness departments for a database service with a required service offering. The Service Level Administrator wants to set up a service level agreement in Service Level Management to monitor compliance for the contract.

Acme has business hours that differ from the predefined Business Hours calendar, so the administrator creates a custom calendar for the company hours:

Calendars			
Name	Entity Type	Period Type	Description
1000to12000	Custom	Weekly	
24x7	Predefined	Weekly	24 hours, 7 days a w
Acme Business Week	Custom	Weekly	
Business Hours	Predefined	Weekly	8:00-17:00, Monday-

5 Define services

Create Business Service and Infrastructure Service CIs in the Services Manager to represent your IT services. Each service CI is mapped to the service topology that supports the service.

For task details on defining service CIs, see "How to Define a Service for an SLA – Use-Case Scenario" on page 169.

6 Define service and CI offerings

Modify the predefined offerings packages, and create custom ones, to define the objectives required for your services and SLAs.

For task details on defining offering packages, see "How to Create or Edit a Service or CI Offering" on page 210.

7 Define outage categories

Define custom outage categories (to add to the preconfigured ones) to help categorize probable outage causes for the service-related CIs when generating Outage reports.

For details on the outage categories user interface, see "Outage Categories Page" on page 323.

8 Define SLAs

Create SLAs using the SLA Wizard.

For details on the wizard user interface, see "New SLA/Edit SLA Wizard" on page 136.

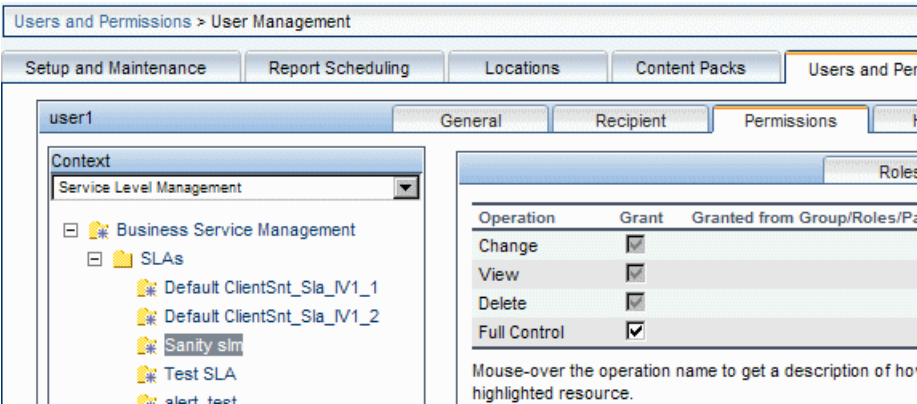
For task details, see "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75.

9 Grant permissions

Grant permission to users for the created SLAs, so that other users can view, modify, or generate reports for the SLAs. For details, see "Permissions for Working with SLAs" on page 66.

Example

In the Platform Administration > Users and Permissions > User Management page, the Service Level Administrator sets permissions for user1 to have full control for a new SLA:



10 Define downtime events

Define downtimes to exclude periods of planned downtime or scheduled events from the SLA calculations.

For details, see "Adjusting SLA Data - Overview" on page 184.

11 Define alerts

You can define alerts to notify users about changes to the status of an SLA during one of the specified tracking periods.

For task details, see "How to Define an SLA Alert Scheme" on page 342.

12 View SLA data in reports

Once data has been collected and aggregated for the SLAs, you can view performance results in the various report tabs of the Service Level Management application.

For details on viewing reports, see "How to View SLA and Outage Reports" on page 444.

How to Define an SLA in the SLA Wizard - Use-Case Scenario

This use-case scenario describes defining an SLA using the SLA Wizard. For user interface details, see "New SLA/Edit SLA Wizard" on page 136.

Acme Publishing house has an internal contract between the IT and eBusiness departments for a database service and application at expected service offering levels. The Service Level Administrator, Aya, needs to define a service level agreement in Service Level Management to monitor compliance for the contract.

This scenario includes the following steps:

- "Background" on page 75
- "Define SLA properties" on page 76
- "Select CIs" on page 80
- "Select offerings and calendars" on page 85
- "Configure SLA indicators" on page 88
- "Check SLA details" on page 89
- "Results" on page 90

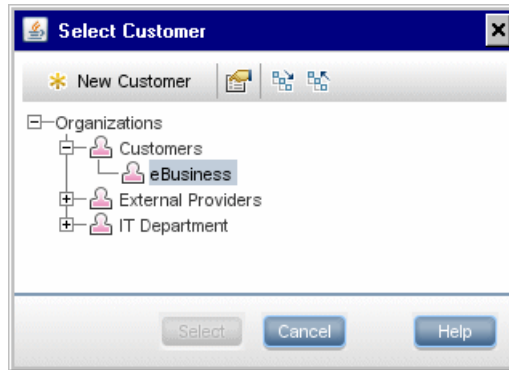
1 Background

Before creating the SLA, Aya checks that the CIs, location, service offerings, and calendar that are required for the SLA have all been defined in BSM. For details, see "How to Use SLM to Monitor Your Service Agreements" on page 69.

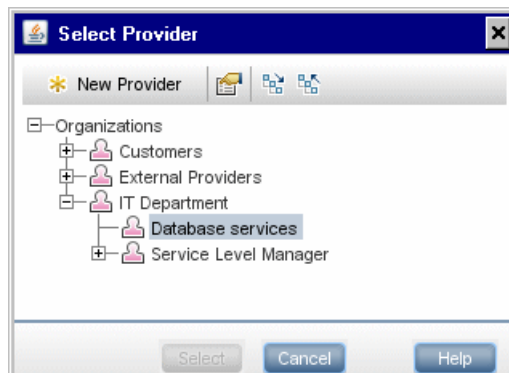
2 Define SLA properties

Aya clicks **New SLA** on the Agreement Managers page to open the New SLA Wizard, and defines the SLA properties.

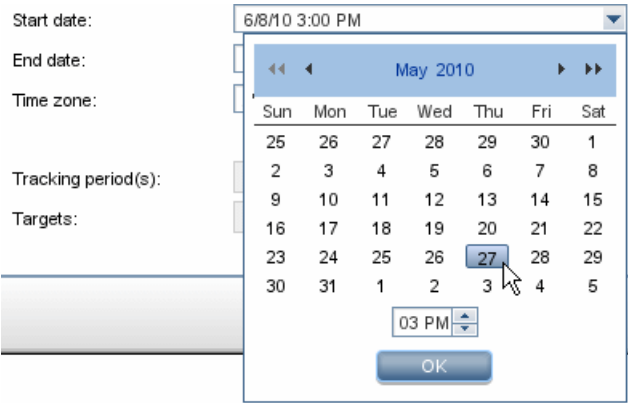
- For **Customer**, she opens the Select Customer dialog box and defines a new customer under the **Customers** branch, eBusiness.



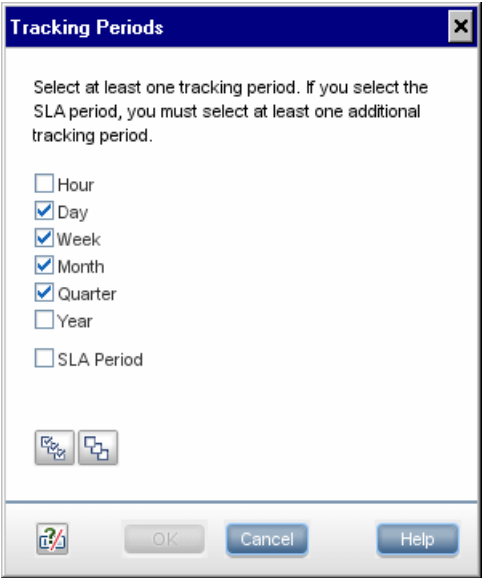
- For **Provider**, she opens the Select Provider dialog box and defines a new provider under the **IT Department** branch, Database services.



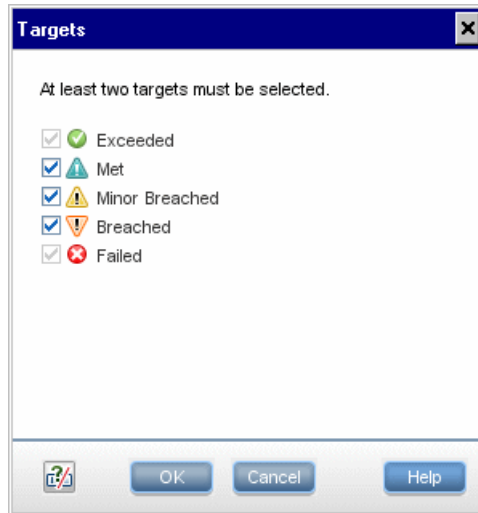
- For **Start date**, she clicks the arrow at the end of the box to open the calendar and selects the date from which she wants the SLA to start calculations. This is the date from which the service contract actually took effect, so the SLA needs to be calculated from this date.



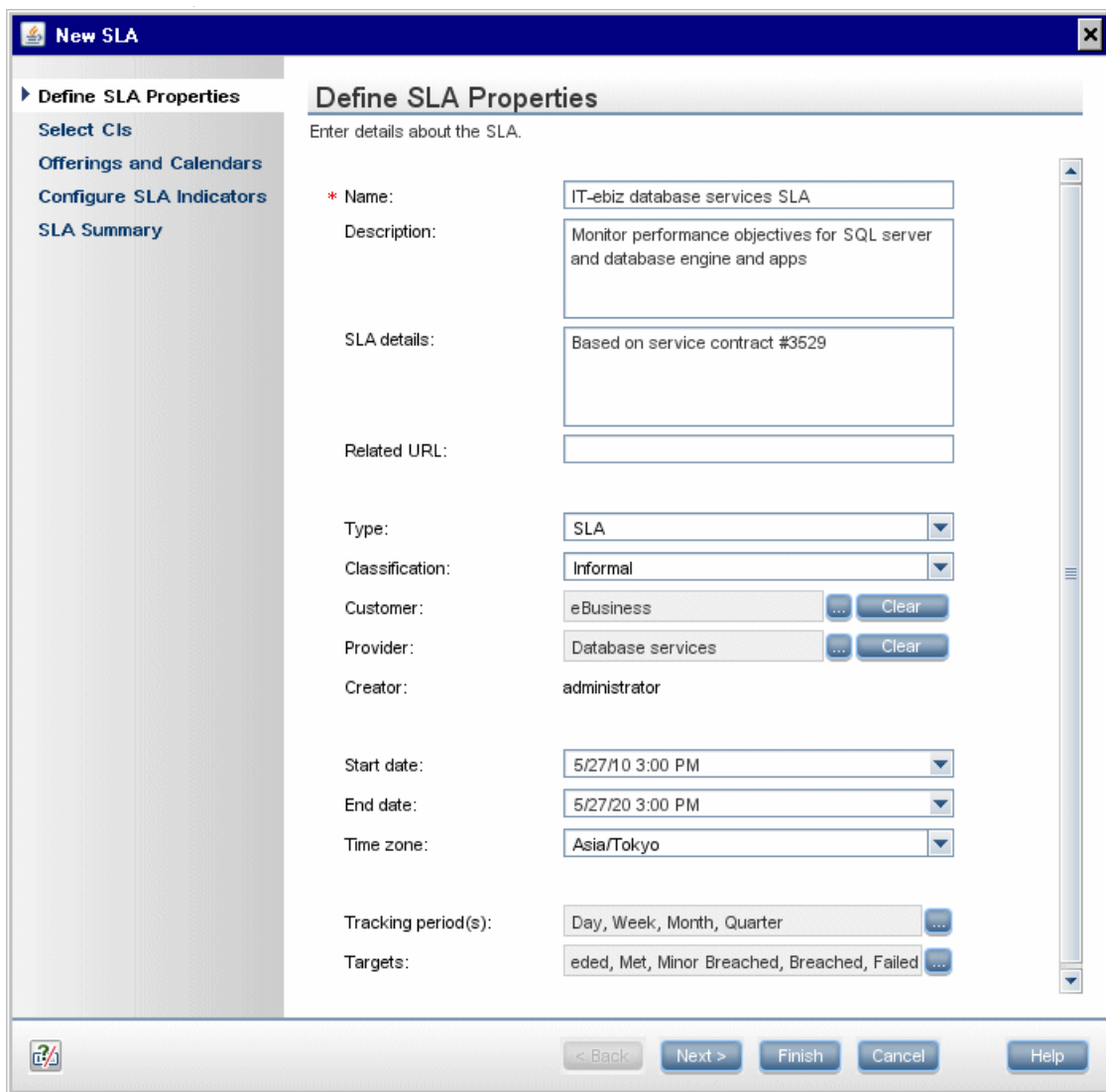
- For **Tracking Periods**, she opens the Tracking Periods dialog box to add **Quarter** to the tracking periods already selected by default.



- For **Targets**, she opens the Targets dialog box to add **Met**, **Minor Breached**, and **Breached** to the targets already selected by default.



The Define SLA Properties page looks as follows:



New SLA

Define SLA Properties

Select CIs
Offerings and Calendars
Configure SLA Indicators
SLA Summary

Enter details about the SLA.

* Name: IT-ebiz database services SLA

Description: Monitor performance objectives for SQL server and database engine and apps

SLA details: Based on service contract #3529

Related URL:

Type: SLA

Classification: Informal

Customer: eBusiness ... Clear

Provider: Database services ... Clear

Creator: administrator

Start date: 5/27/10 3:00 PM

End date: 5/27/20 3:00 PM

Time zone: Asia/Tokyo

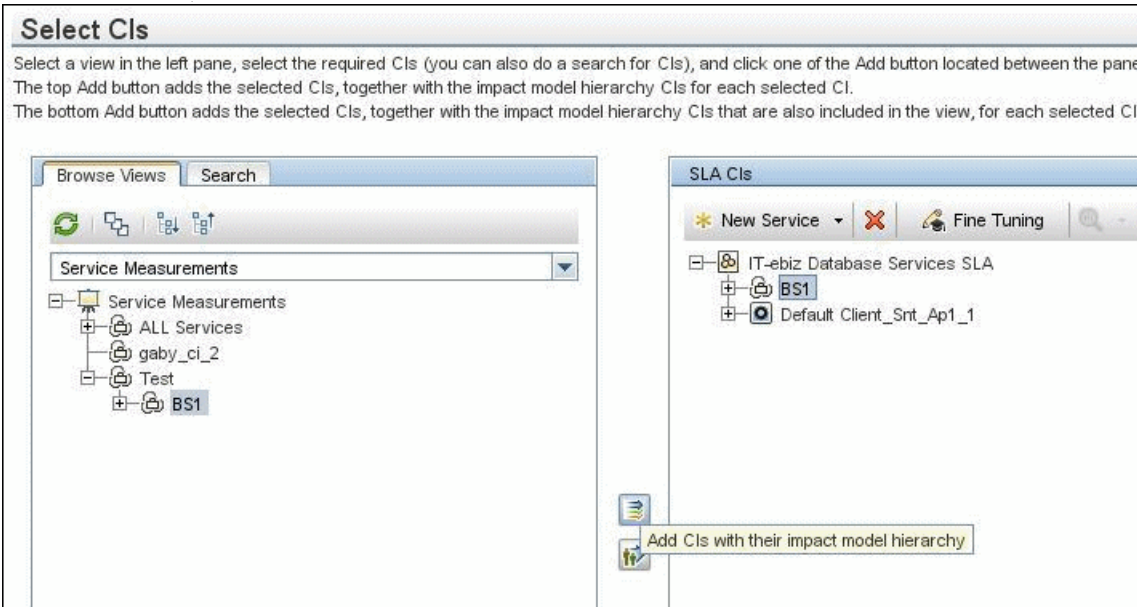
Tracking period(s): Day, Week, Month, Quarter ...

Targets: eded, Met, Minor Breached, Breached, Failed ...

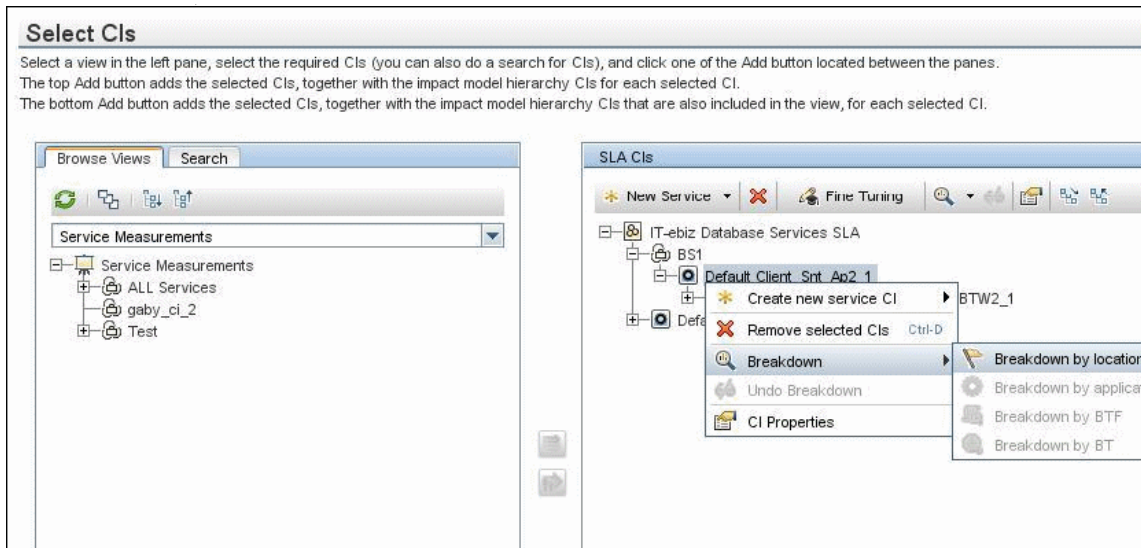
< Back Next > Finish Cancel Help

3 Select CIs

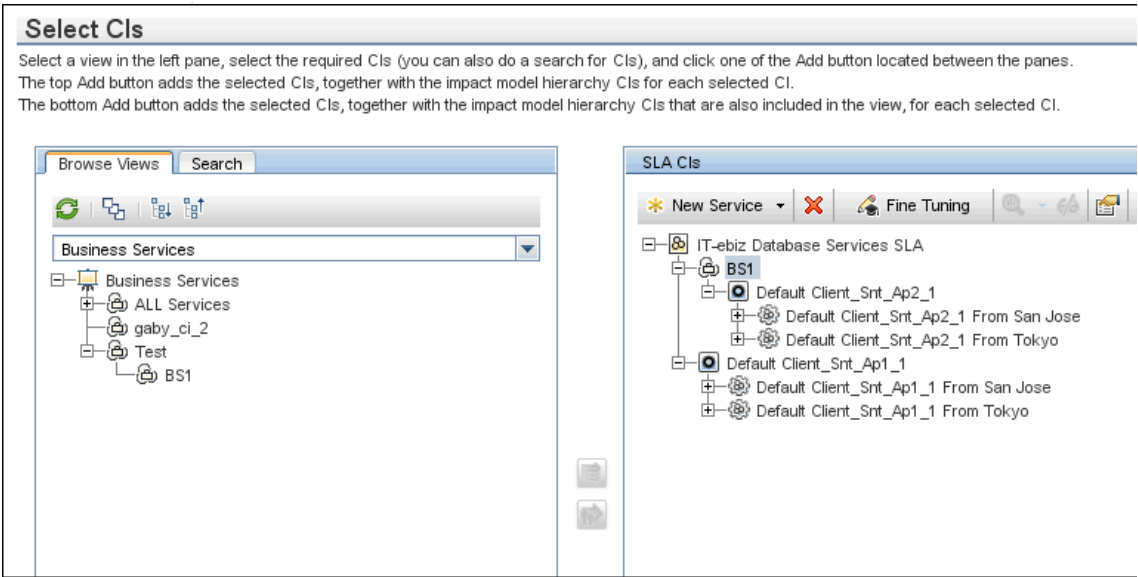
In the Select CIs page, Aya adds the relevant Business Service CI and Application CI to the SLA, together with all their model hierarchy.



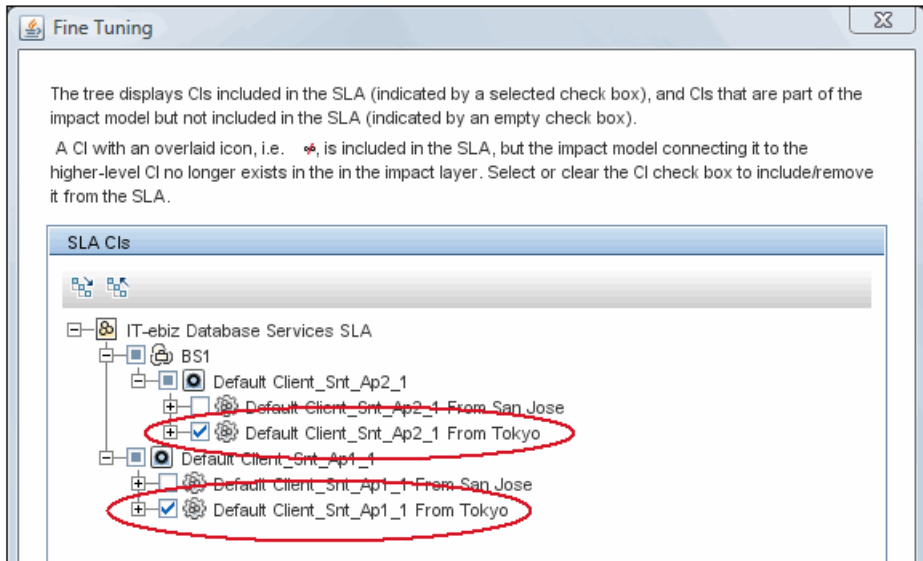
Only reported data from the Tokyo location is relevant for this SLA, so Aya accesses the CI menu commands to perform a breakdown by location for the BPM business application CIs.



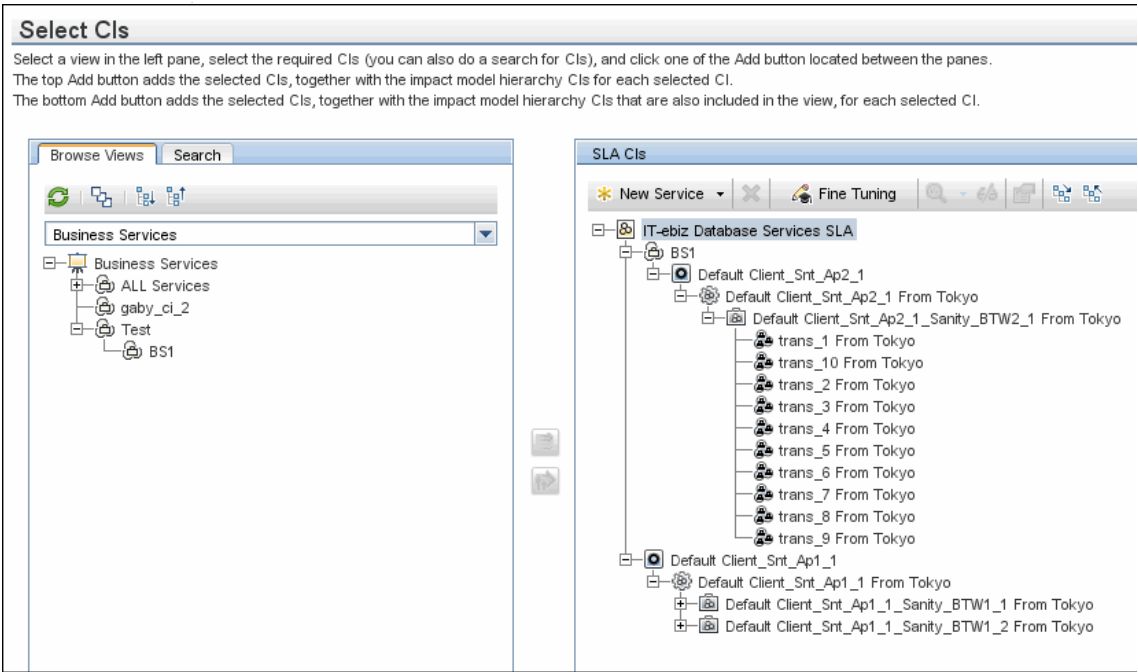
After the breakdown, the SLA CIs pane contains BPM CIs for each location.



Aya then opens the Fine Tuning dialog box and clears the check boxes for the locations that are not relevant for this SLA, leaving the Tokyo location CIs selected.



After clicking **OK** in the Fine Tuning dialog box, the SLA CIs pane displays only the included CIs.



4 Select offerings and calendars

In the Offerings and Calendars page, Aya wants to change the offering packages assigned to the CIs. Instead of the Default offering packages, the SLA is to use custom offering packages previously defined on the Service and CI Offerings page. These custom offering packages contain KPI objectives in line with the eBusiness department’s expectations, and are based on an additional custom calendar (**Monday to Saturday**) that reflects the eBusiness department’s operational hours.

To change the offering packages, Aya selects the relevant line in the **Service and CI Offerings** area, and clicks the **Edit service/CI offering selection** button.

Offerings and Calendars

In the Service and CI Offerings table, select a service offering for each displayed service CI. CI hierarchies that are not part of a service CI are combined into the group entry "Other CIs (non-Service CIs)". Select a CI offering for this group.

Service and CI Offerings

Edit service/CI offering selection

	Service/CI Offering	Offering Calendars
<div>SLA Services</div>		
<div><div>BS1</div></div>	Default	24x7, Business Hours
<div>Other CIs (non-Service CIs)</div>		
<div><div>non-Service CIs</div></div>	Default	24x7, Business Hours

SLA Calendars

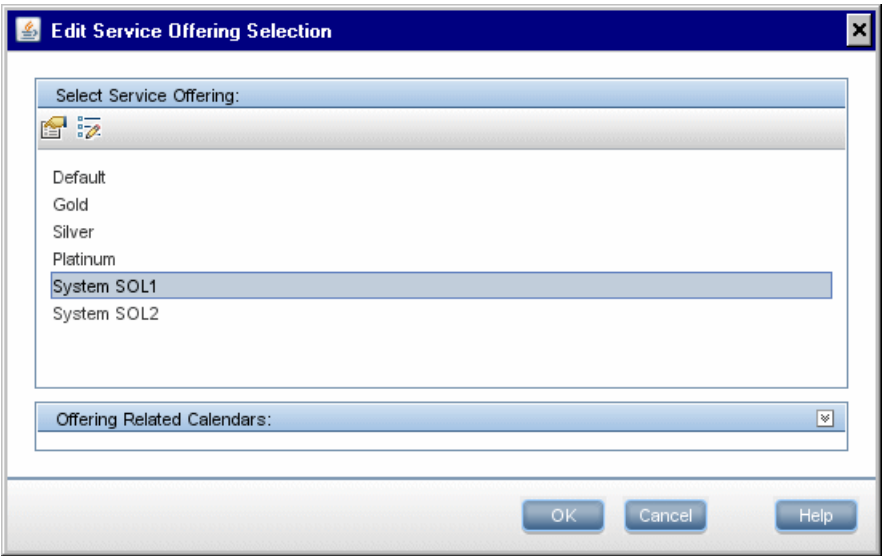
Select the calendars used by this SLA:

☒ 24x7

☐ Business Hours

85

For the Business Service CI, in the Edit Service Offering Selection dialog box, she selects the required service offering.



She repeats the operation for the non-Service CIs. Then, in the **SLA Calendars** area, she selects the calendars to be used for monitoring this SLA.

Offerings and Calendars

In the Service and CI Offerings table, select a service offering for each displayed service CI. CI hierarchies that are part of a service CI are combined into the group entry "Other CIs (non-Service CIs)". Select a CI offering for this group

Service and CI Offerings

CIs	Service/CI Offering	Offering Calendars
<div>SLA Services</div> <div><div>BS1</div></div>	System SOL1	24x7, Business Hours, Monday t...
<div>Other CIs (non-Service CIs)</div> <div><div>non-Service CIs</div></div>	System O1	24x7, Business Hours, Monday t...

.....

SLA Calendars

Select the calendars used by this SLA:

☐ 24x7

☒ Business Hours

☒ Monday to Saturday

5 Configure SLA indicators

In the Configure SLA Indicators page, Aya wants to add weighting to certain BPM transactions, so that the relative importance of those transactions is reflected in the performance status results for the applications in the SLA.

She selects the appropriate row in the top table, then selects the **Weights** tab in the CI Data area, and defines the required weight for each transaction.

Configure SLA Indicators

Edit and define KPIs and health indicators for this SLA.

IT-ebiz Database Services SLA

Hide KPIs

CI Name	CI Type	KPIs			
IT-ebiz Database Services SLA	Service Level Agreement				
BS1	BusinessService				
Default Client_Snt_Ap2_1	BusinessApplication				
Default Client_Snt_Ap2_1 From Tokyo	SLM BPM Application from Location				
Default Client_Snt_Ap2_1_Sanity_BTW2_1 From Tokyo	SLM BPM BTF from Location				
trans_1 From Tokyo	SLM BPM Transaction from Location				
trans_10 From Tokyo	SLM BPM Transaction from Location				
trans_2 From Tokyo	SLM BPM Transaction from Location				
trans_3 From Tokyo	SLM BPM Transaction from Location				
trans_4 From Tokyo	SLM BPM Transaction from Location				
trans_5 From Tokyo	SLM BPM Transaction from Location				
trans_6 From Tokyo	SLM BPM Transaction from Location				
trans_7 From Tokyo	SLM BPM Transaction from Location				
trans_8 From Tokyo	SLM BPM Transaction from Location				
trans_9 From Tokyo	SLM BPM Transaction from Location				
Default Client_Snt_Ap1_1	BusinessApplication				
Default Client_Snt_Ap1_1 From Tokyo	SLM BPM Application from Location				
Default Client_Snt_Ap1_1_Sanity_BTW1_1 From Tokyo	SLM BPM BTF from Location				
Default Client_Snt_Ap1_1_Sanity_BTW1_2 From Tokyo	SLM BPM BTF from Location				

CI Data: Default Client_Snt_Ap2_1_Sanity_BTW2_1 From Tokyo

KPIs

Health Indicators

Weights

trans_1 From Tokyo:

trans_10 From Tokyo:

trans_2 From Tokyo:

trans_3 From Tokyo:

trans_4 From Tokyo:

1.0

1.0

1.0

1.0

1.0

Legend

Application Availability

Application Performance

Application Response Time

Outages

6 Check SLA details

In the Summary page, Aya checks the SLA details, and makes sure the **Start SLA** check box is selected, so that the SLA starts running immediately.

New SLA

Define SLA Properties

Select CIs

Offerings and Calendars

Configure SLA Indicators

SLA Summary

SLA Summary

Check the SLA details are correct. To initiate the SLA, select the "Start SLA" check box; the SLA starts calculating the start date is in the past, and enters pending state, if the start date is in the future.

Description:

Monitor performance objectives for SQL server and database engine and apps

Start date:

Thu May 27 2010 09:00 PM IDT

End date:

Wed May 27 2020 09:00 PM IDT

Time zone:

Asia/Tokyo

Type:

SLA

Classification:

Informal

Customer:

eBusiness

Provider:

Database services

Calendars:

Monday to Saturday, Business Hours

Tracking period(s):

Day, Week, Month, Quarter

Targets:

Exceeded, Met, Minor Breached, Breached, Failed

☒ Start SLA

7 Results

The SLA is added to the Service Level Agreements table.

Agreements Manager

Agreements ManagerSLA Data CorrectionsSLA AlertsAssignmentsServices ManagerRepositories

Service Level Agreements

Name	Description	Type	Start Date	State	Last Calculation
Finance NY		SLA	Tue May 25, 2010 03:	Running	Sun May 30, 2010 09:00 AM
IT-ebiz Database Services SLA	Monitor performa...	SLA	Thu May 27, 2010 06:	Running	Sun May 30, 2010 09:00 AM
IT Health SLA	application health	SLA	Sat May 1, 2010 02:00	Preliminary	
sla_alrt		SLA	Tue May 25, 2010 01:	Running	Sun May 30, 2010 09:00 AM
Test Breakdown		SLA	Sun May 23, 2010 01:	Running	Sun May 30, 2010 09:00 AM

The stakeholders can see results for the SLA in the Service Level Management reports.

SLA Reports > CI Summary

Status SnapshotSLA ReportsAlertsOutage ReportsSLA Management

CI Summary 3/28/11 12:00 AM-3/30/11 12:00 AM Asia/Jerusalem

Data

CIs	Application Availability (%)	
	Business Hours	Monday to Saturday
Default Client_Snt..._BTW1_1 From Tokyo	60.000	60.000
tx 10 From Tokyo	100.000	100.000
tx 15 From Tokyo	100.000	100.000
tx 1 failed From Tokyo	0.000	0.000
tx 2 failed From Tokyo	0.000	0.000
tx 5 From Tokyo	100.000	100.000

Exceeded

Met

Minor Breached

Breached

Failed

How to Modify an SLA - Use-Case Scenario

This use-case scenario describes how to modify various aspects of an SLA. The scenario demonstrates an end-to-end workflow which combines various areas of SLM administration.

Acme Bank has created an SLA based on an internal contract between its IT and HR departments, to verify that various internal transactions are meeting expected service offering levels. The Service Level Administrator, Aya, wants to add a KPI to the business transaction CIs in this SLA, to monitor transaction availability using a custom calculation rule.

Aya creates a rule using the Rules API. She then creates a new health indicator which uses this rule to calculate the HI, and a new KPI which is based on this HI. She then modifies the SLA's offering package to set objectives for the new KPI.

Aya then uses the assignment mechanism to automatically assign the new HI and KPI to the relevant CIs in the SLA. She then edits the SLA to use the new offering package for her business services. Finally, she synchronizes the SLA to add the new HI and KPI to the monitored business transactions.

This scenario includes the following steps:

- "Create a calculation rule" on page 92
- "Create a KPI" on page 92
- "Create a health indicator" on page 93
- "Edit the SLA's offering package" on page 94
- "Add the HI to the relevant HI assignment" on page 95
- "Add the KPI to the relevant KPI assignment" on page 97
- "Edit the business service in the SLA to include the new offering package" on page 98
- "Assign the offering package to the service in the SLA" on page 99
- "Synchronize the SLA" on page 100
- "Result" on page 101

1 Create a calculation rule

Aya has defined a custom calculation to calculate HI values based on business transaction samples. She uses the Rules API to create a new sample-based rule. For details, see "SLM Rules API Overview" on page 653.

In the business rules repository, she clones the API Sample Rule and opens the new rule for editing. She renames the rule, defines it as a rule for calculating HIs, and enters Acme’s custom calculation script. For user interface details, see "Business Rules Repository Page" on page 643.

Repositories > Business Rules

Agreements ManagerSLA Data CorrectionsSLA AlertsAssignmentsServices ManagerRepositories

Rules

Name	Domain	Type	
API Duration-Based Sample Rule	General	Predefined	Use this rule
API Group And Sibling Rule	General	Predefined	Use this rule
API Outage By Samples Rule	General	Predefined	Use this rule
API Sample Rule	General	Predefined	Use this rule
API Simplified Average Rule	General	Predefined	Use this rule
API Simplified Duration-Based Average Rule	General	Predefined	Use this rule
Acme Sample Rule	General	Custom	Custom rule
Application Quality	Integrations	Predefined	Calculates th

2 Create a KPI

In the KPI repository, Aya clones the Application Availability KPI, and renames the new KPI. This KPI will be calculated based on the new HI. For user interface details, see "KPIs Repository Page" on page 538.

Repositories > KPIs

Agreements ManagerSLA Data CorrectionsSLA AlertsAssignmentsServices ManagerRepositories

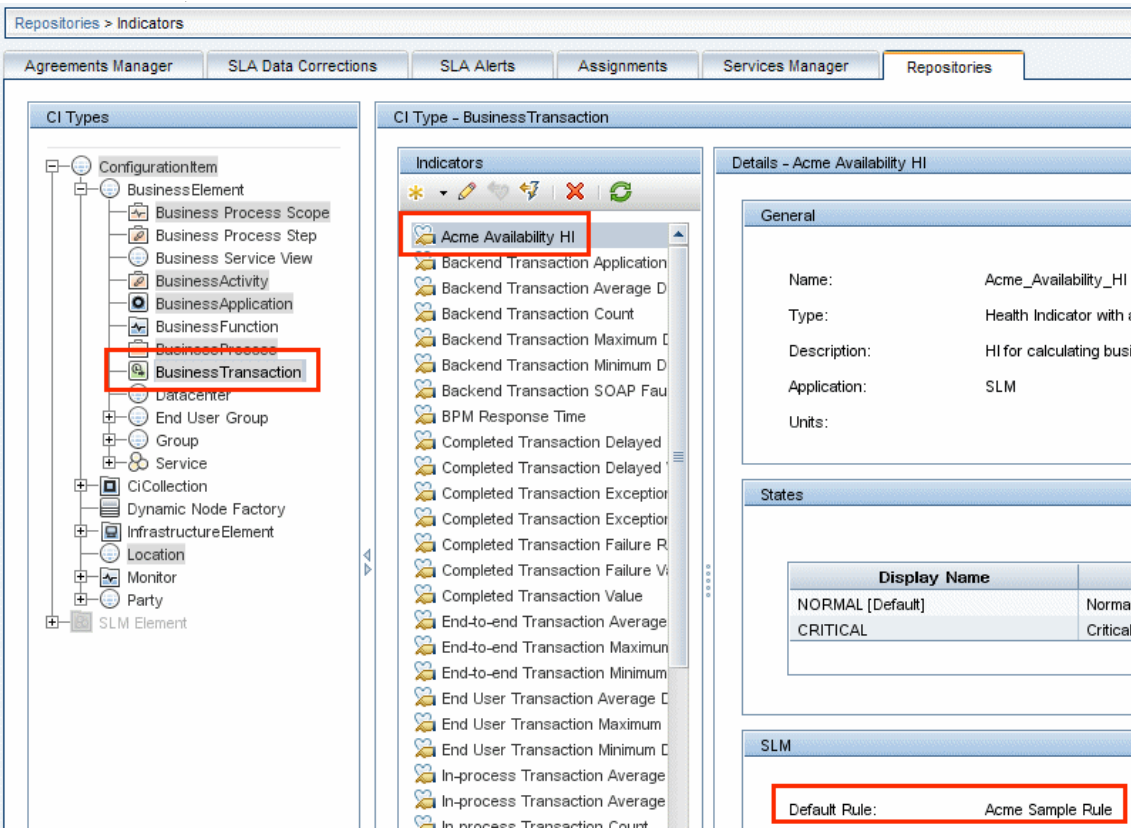
KPIs

Name	Domain	
Acme Availability KPI	Application	Custom
Application	Application	Predefined
Application Availability	Application	Predefined

3 Create a health indicator

In the indicators repository, Aya opens the list of indicators defined for the Business Transaction CI type. She creates a new HI called Acme Availability HI. She defines the HI for SLM only, and sets its default rule to Acme Sample Rule.

For details on the indicators repository, see "Indicators Repository Overview" on page 544.

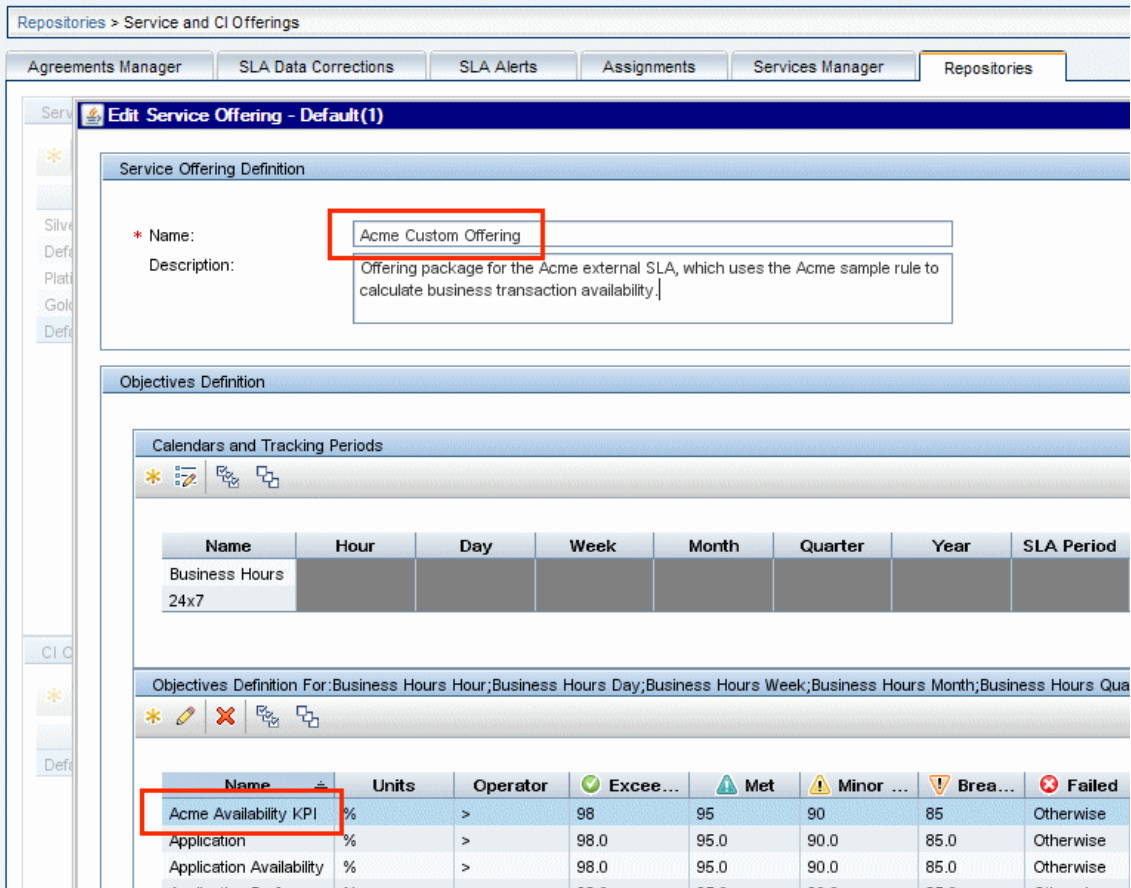


4 Edit the SLA's offering package

Aya now wants to edit her SLA's offering package to add the new KPI to the package, and set objectives for the KPI.

In the Service and CI Offerings repository, she clones the Default offering package and renames the clone Acme Custom Offering. She adds the new KPI to the offering package, and sets objectives for the KPI.

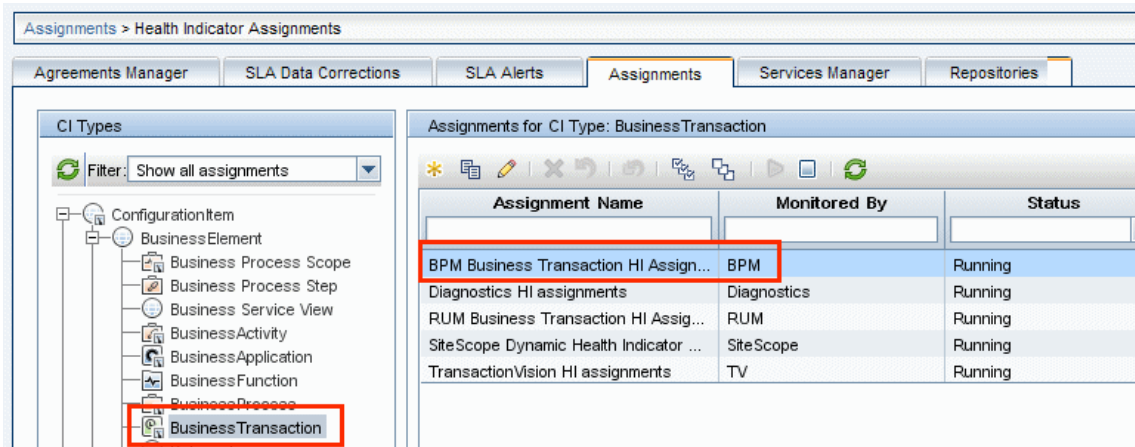
For user interface details, see "Service and CI Offerings Page" on page 222.



5 Add the HI to the relevant HI assignment

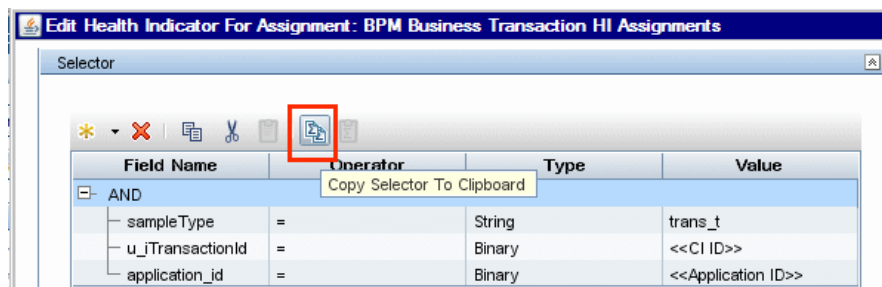
Aya now edits the health indicator assignment which assigns HIs to business transaction CIs monitored by BPM.

In the Health Indicator Assignments page, she opens the list of HI assignments for the Business Transaction CI type. She then opens the BPM assignment for editing. For user interface details, see "Health Indicator Assignments Page" on page 258.



HI definitions include a selector, which is a filter that defines which samples are relevant for the HI calculation. Aya wants the new HI to be calculated based on the same samples which are used to calculate the other HIs in the BPM assignment. She therefore copies the selector from an existing HI, to re-use the same selector definition on the new HI.

From the list of HIs in the assignment, she opens the BPM Response Time HI for editing, and copies its selector definitions to the clipboard.



She now exits the BPM Response Time HI, and adds a new HI to the assignment. She selects the Acme Availability HI, and in its Selector area she pastes the selector definitions from the clipboard.

Add Health Indicator To Assignment

Define a Health Indicator Configuration

Health Indicator

* Health Indicator: **Acme Availability HI**

* Business Rule: **Acme Sample Rule**

* Priority: 0

API Rule Definitions

Selector

Paste Selector From Clipboard

Field Name	Operator	Type	Value
AND			
sampleType	=	String	trans_t
u_transactionId	=	Binary	<<CI ID>>
application_id	=	Binary	<<Application ID>>

After Aya saves her changes, the HI assignment for business transactions monitored by BPM now includes the new HI.

Health Indicator Configurations

Health Indicator	Business Rule
BPM Response Time	BPM Average Response Time
Synthetic User Transaction Availability	BPM Average Availability
Synthetic User Transaction Performance	BPM Percentile
Acme Availability HI	Acme Sample Rule

6 Add the KPI to the relevant KPI assignment

Aya now edits the KPI assignment which assigns KPIs to business transaction CIs monitored by BPM.

In the KPI Assignments page, she opens the list of KPI assignments for the Business Transaction CI type. She then opens the BPM assignment for editing.

For user interface details, see "KPI Assignments Page" on page 262.

In the KPI Configurations area she adds the new KPI to the assignment. She selects the Acme Availability KPI, and defines it as calculated based on HIs. In the list of related HIs, she specifies the Acme Availability HI.

Add KPI To Assignment

Define a KPI Configuration.

KPI

KPI: Acme Availability KPI

Calculated Based On: HIs

Related Health Indicators: Acme Availability HI

Business Rule: Worst Child (Max.)

After Aya saves her changes, the KPI assignment for business transaction CIs monitored by BPM contains the new KPI.

KPI Configurations

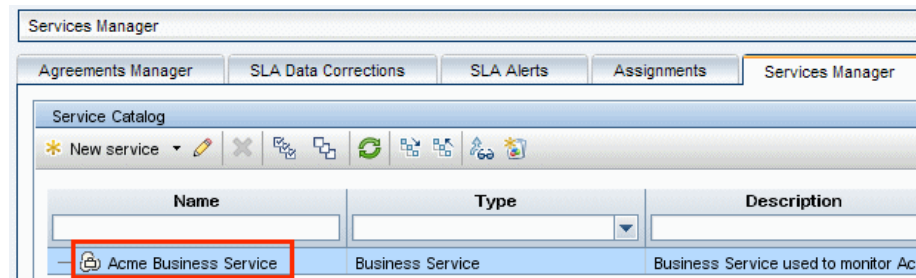
KPI	Calculated Based On	Related Health Indicators
Acme Availability KPI	HIs	Acme Availability HI
Application Availability	HIs	Synthetic User Transaction Avail...
Application Performance	HIs	Synthetic User Transaction Perf...

7 Edit the business service in the SLA to include the new offering package

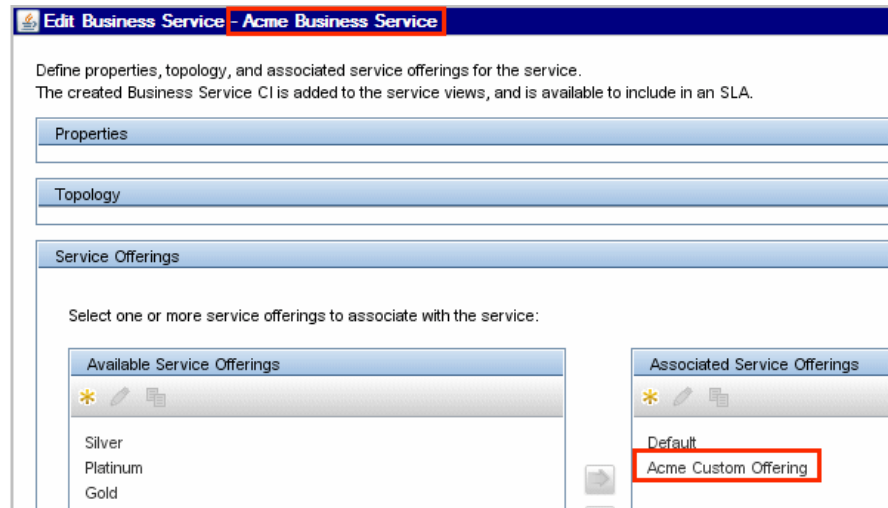
Aya now wants to add the new offering package to the list of applicable offerings, in order to select this offering for the SLA using the SLA Wizard.

Within the Services Manager, Aya opens the Acme Business Service for editing; this service is used in the SLA to monitor business transactions.

For user interface details, see "Services Manager Page" on page 180.



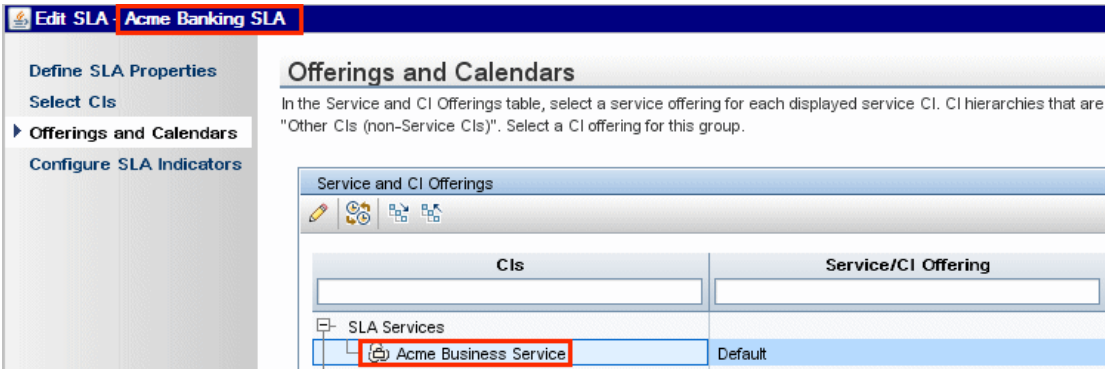
In the Service Offerings area which defines the list of applicable offerings, she adds the Acme Custom Offering; this offering includes the new KPI.



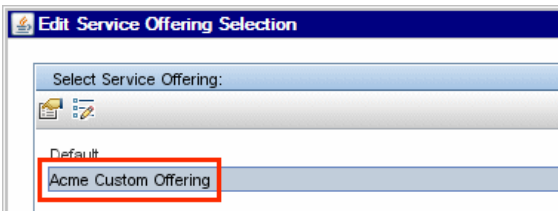
8 Assign the offering package to the service in the SLA

Within the Agreement Managers page, Aya now open the Acme SLA for editing. In the Offerings and Calendars page, she selects the Acme Business Service, and opens it for editing.

For user interface details, see "New SLA/Edit SLA Wizard" on page 136.



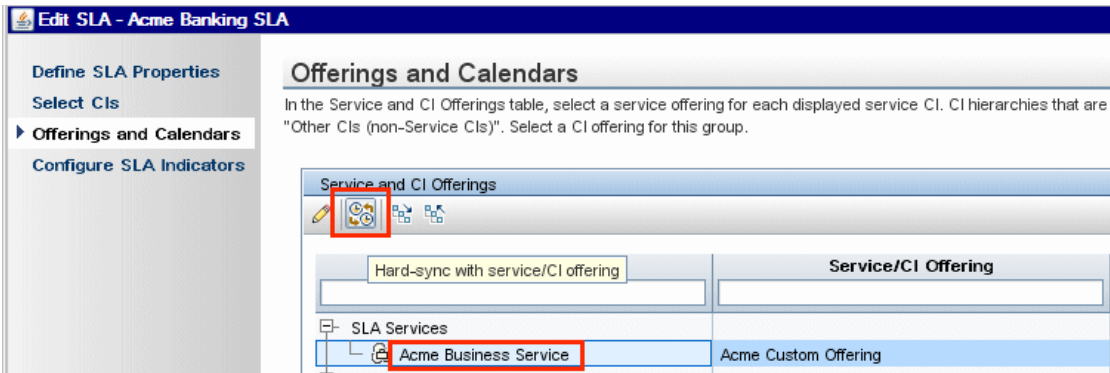
She selects the Acme Custom Offering as the service offering for this business service.



9 Synchronize the SLA

In the Offerings and Calendars page, she selects the Acme Business Service, and perform a hard-sync of the SLA's Service CIs with related Offering.

Note: In this scenario, Aya performs synchronization because she knows her original SLA has not been manually customized. If her original SLA had been modified, Aya would create a new SLA rather than override her customizations. For example, if any KPI definitions were changed on the CIs in the SLA after the SLA was created, synchronization would revert them to their original settings.








10 Result

In the Configure SLA Indicators page, the new KPI now appears on the business transaction CIs, and it is automatically propagated to their parent CIs.

Configure SLA Indicators

Edit and define KPIs and health indicators for this SLA.





Acme Banking SLA



CI Name	CI Type	KPIs
Acme Banking SLA	Service Level Agreement	Acme A... Applica... Applica...
Acme Business Service	BusinessService	Acme A... Applica... Applica...
UpdateEmployeeTaxRate	Business TransactionFlow	Acme A... Applica... Applica...
UpdateTaxRate	BusinessTransaction	Acme A... Applica... Applica... Applica...
login	BusinessTransaction	Acme A... Applica... Applica... Applica...
logout	BusinessTransaction	Acme A... Applica... Applica... Applica...
searchEmployee	BusinessTransaction	Acme A... Applica... Applica... Applica...
viewDetails	BusinessTransaction	Acme A... Applica... Applica... Applica...
updateEmployeeSalary	Business TransactionFlow	Acme A... Applica... Applica...
Update Salary	BusinessTransaction	Acme A... Applica... Applica... Applica...
login	BusinessTransaction	Acme A... Applica... Applica... Applica...
logout	BusinessTransaction	Acme A... Applica... Applica... Applica...

CI Data: UpdateTaxRate

KPIsHealth Indicators



KPI Name	Business Rule	KPI Domain	Calculated Based On	Related Health Inc
Acme Availability KPI	Worst Child (Max.)	Application	Hls	Acme Availability HI
Application Availability	Group Average Value	Application	Hls	Synthetic User Trans
Application Performance	Group Average Value	Application	Hls	Synthetic User Trans
Application Response Time	Group Average Value	End User	Hls	BPM Response Time

How to Update Topology Changes to an SLA

If a new CI is added to the existing impact topology for a service CI or other CI, the new CI is not automatically added to the SLAs that include the CI topology. You must update each SLA, as described below.

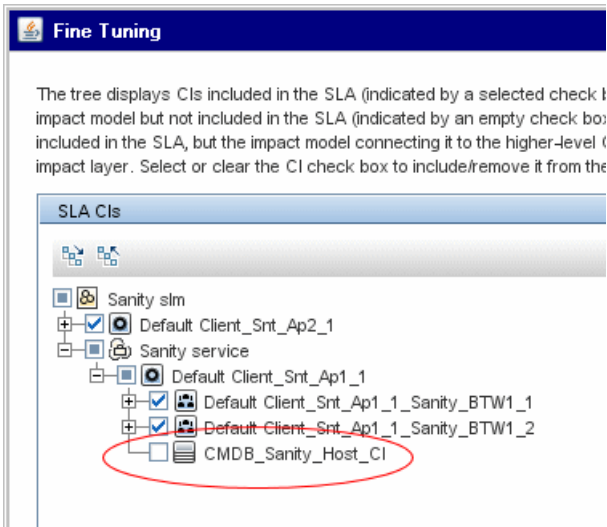
Note: If CIs are removed from the topology, this change is automatically updated to the SLAs containing the CI topology.

For information on service topologies, see "Service Topologies" on page 167.

To update an SLA with an addition to the impact topology:

- 1 In the **Service Level Management > Agreements Manager** page, open the Edit SLA Wizard for the SLA.
- 2 In the Select CIs page, open the Fine Tuning dialog box, and select the check boxes for the added CIs.

In the example below, the circled CI has been added to the service topology, but is not included in the SLA as long as the check box for the CI is not selected.



- 3 Save the changes in the Fine Tuning dialog box, and save the Edit SLA Wizard, to update the new CIs to the SLA.
- 4 Run recalculation for the SLA if you want the change to affect historical data for the SLA. For details, see "Recalculation for SLAs" on page 67.

How to Customize Target Names

This task describes how to change the names used for the Service Level Management targets, for example, if you want to change the name of the Breached SLA target.

- 1 Open the **Admin > Platform > Setup and Maintenance > Infrastructure Settings** page.
- 2 Select the context **Applications**, then select **Service Level Management** from the dropdown list.
- 3 Locate the **Targets** entry. Modify the values in the file as required.

For example, to change the default name of **Breached SLA** to **Contravened SLA**, change:

```
<Target Color="ff3333" Default="true" Id="0"
Name="settings.slm.targets.def.target.breached.text"/>
```

to:

```
<Target Color="ff3333" Default="true" Id="0" Name="Contravened SLA"/>
```

Reference

Agreements Manager User Interface

This section includes (in alphabetical order):

- Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box on page 105
- Add KPI for CI/Edit KPI for CI Dialog Box on page 113
- Add New Selector Field/Edit Selector Field Dialog Box on page 119
- Add Outages KPI/Edit Outages KPI Dialog Box on page 120
- Add/Remove Associated Service Offerings Dialog Box on page 122
- Agreements Manager Page on page 124
- Define Recalculation Task Dialog Box on page 129
- Edit Health Indicators in KPI Calculation Dialog Box on page 130
- Edit Service Offering/CI Offering Selection Dialog Box on page 131
- Fine Tuning Dialog Box on page 132
- Modified Values for <HI/KPI Name> Dialog Box on page 134
- New SLA/Edit SLA Wizard on page 136
- Select Customer Dialog Box on page 156
- Select Provider Dialog Box on page 157
- Selector Expression Operators - Reference on page 158
- Targets Dialog Box on page 160
- Tracking Periods Dialog Box on page 161
- Warning Dialog Box on page 162



Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box

This dialog box enables you to define or edit a health indicator on a CI or for multiple CIs.

To access	In the SLA Wizard > Configure SLA Indicators page > Health Indicators tab , select one or more CIs in the upper part of the page, then click either the Add Health Indicator button or the Edit Health Indicator button.
Important information	<ul style="list-style-type: none"> ➤ The areas displayed in the dialog box vary, depending on the selected business rule. ➤ When defining an HI for multiple CIs, if one or more of the CIs already has that HI attached, then a Warning dialog box is displayed when you click Save. For details, see "Warning Dialog Box" on page 162.
See also	<ul style="list-style-type: none"> ➤ "Indicators for CIs" on page 39 ➤ "Indicators Repository Overview" on page 544


Health Indicator Area

User interface elements are described below:

UI Element (A-Z)	Description
Business Rule	<p>The business rule used with this HI to calculate measurement and status. The dropdown list contains all rules that are applicable for the selected CIs (according to CI type).</p> <p>If you change the HI in the Health Indicator box, then the Business Rule box displays the default rule for the HI on the selected CI. For multiple CIs, if the HIs are using different rules, then the Business Rule box displays [Mixed Values].</p> <p>After selecting a rule, the dialog box is automatically updated to display the areas that are relevant for the selected rule.</p> <p>For information on each individual HI rule, see "List of Service Level Management Business Rules" on page 557.</p> <p>Tooltip: When the Quick Help is enabled, you can view a short explanation of each rule by placing the cursor over the Business Rule box.</p>
Health Indicator	<p>(This parameter is disabled when editing an HI.)</p> <p>The dropdown list contains all HIs that are relevant for all of the selected CIs (according to CI type), as defined in the Indicator Repository. For details, see "Indicator Repository Overview" on page 682. Health indicators that are already attached to all selected CIs are not included in the list.</p>

Health Indicator Properties Area

After you select a business rule, the Health Indicator Properties area displays the areas (**Business Rule Parameters**, **API Rule Definitions**, **Objectives**, and **Selector**) that are relevant for the selected rule, as described in the following sections.

Note: Some areas in the dialog box are displayed by default with the area collapsed. Click the expand arrow  button to see the area contents.

Business Rule Parameters Area

This area enables you to view and modify rule parameters for the selected rule.

If required, modify the parameter values by entering a new value in the appropriate boxes. Information is provided after some boxes to indicate the type of value that can be entered, or the units for the value (for example, **Any Number**, **Text**, **seconds**).

To view a short explanation of each parameter, enable the Quick Help and place the cursor over the parameter box.

For information on rule parameters and possible values, refer to the relevant rule in "List of Service Level Management Business Rules" on page 557 and to the rule parameters in "List of Service Level Management Business Rule Parameters" on page 635.

API Rule Definitions Area

This area is displayed when you select an API rule in the Business rule list. It enables you to define and modify your own rule, based on the selected Rules API template. For details, see "SLM Rules API Overview" on page 653.

The scripts and parameters included in the API Rule Definitions area vary, depending on the selected rule. For details on what is required for each rule, see the following:

- **API Duration-Based Sample Rule.** See "API Duration-Based Sample Rule" on page 667.
- **API Outage by Samples Rule.** See "API Outage by Samples Rule" on page 673.
- **API Sample Rule.** See "API Sample Rule" on page 664.
- **API Simplified Average Rule.** See "API Simplified Average Rule" on page 655.
- **API Simplified Duration-Based Average Rule.** "API Simplified Duration-Based Average Rule" on page 656.

Objectives Area

This area enables you to view and modify the objective for the HI. The objective defines the target thresholds for each time slot (calendars broken down by tracking periods) relevant for the HI. The measurement for the HI during each time slot (calculated by the business rule) is compared with the threshold values to determine status for the HI.

Important information	<ul style="list-style-type: none">➤ The calendars, tracking periods, and threshold target categories that are included for an HI depend on the definitions for the SLA defined in the previous pages of the SLA Wizard.➤ Most HIs that are automatically assigned to the CIs have default objective threshold values. When you manually add an HI to a CI, you must define the threshold values.➤ When the objective thresholds have default values, these values are taken from the corresponding KPI. The KPI takes the values from the service offering or CI offering that is used for the CI. For more details, see "Offering Packages in SLAs" on page 208.➤ If there are no objective thresholds defined for the HI, Service Level Management still calculates a measurement for the HI, but the HI will have blue status in the SLA reports (no objective defined).➤ For information on defining objectives for Six Sigma rules, see "Six Sigma for SLAs" on page 65.
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User interface elements are described below (unlabeled elements are shown in angle brackets):





UI Element (A-Z)	Description
Calendars and Tracking Periods	<p>Displays a table of the calendars used for the SLA, broken down by the tracking periods defined for the SLA, so that each cell represents a time slot.</p> <ul style="list-style-type: none">➤ Click a time slot to select it; click it again to clear the selection.➤ Click a calendar name to select all time slots for that calendar. Click it again to clear the selections.➤ Click the Select all button to select all time slots in the table. Click the Clear selection button to clear all selected time slots. <p>After selecting time slots, define the threshold values for the time slots in the Thresholds area.</p>
Thresholds	<p>Each row displays a target defined for the SLA, with its corresponding status icon.</p> <p>When one or more time slots are selected in the Calendars and Tracking Periods table:</p> <ul style="list-style-type: none">➤ Select the relevant operator to use with the thresholds, for example, \geq. The same operator is used for each threshold.➤ Enter the required threshold value for each target in the appropriate box. <p>Make sure that:</p> <ul style="list-style-type: none">➤ The values are appropriate for the unit of measurement defined by the business rule. For example, for a rule that calculates percentage values, the threshold values should be between 0 and 100.➤ The values you enter are logically ordered.





Selector Area

This area enables you to define a selector to catch the data samples that are relevant for this HI on this CI.

Important information	<p>If you select Use Default, the selector is taken from the HI Assignments, if there is an assignment that matches this CI and HI.</p> <p>If not, its selector is taken from Admin > Platform > Setup and Maintenance > Infrastructure Settings > Service Level Management > Default Selector for New HIs.</p>
Relevant tasks	"How to Define Selectors for HIs" in <i>Using Service Health</i>
See also	"Selectors" on page 43

User interface elements are described below:

UI Element (A-Z)	Description
	<p>Add Row. The dropdown list contains two options:</p> <ul style="list-style-type: none"> ➤ Add Selector Expression. Enables you to define a selector expression to add to the selector filter currently selected in the Selector table. The added selection expression has an AND relationship. ➤ Add OR Clause. Enables you to define a selector expression to add to the selector table, as the first expression in a new selector filter. The new selector filter has an OR relationship with other selector filters in the Selector.
	Edit. Opens the Edit Selector Field dialog box for the currently selected selector expression row, where you can edit the expression details.
	Delete. Deletes one or more selected selector expressions rows. The button deletes a whole selector filter if the AND or OR heading for the filter is selected.
	Copy. Use to copy a selector expression row to the clipboard. The copied expression row is then available to paste within the current selector.

UI Element (A-Z)	Description
	<p>Cut. Use to cut one or more selector expression rows and paste them elsewhere within the selector.</p> <p>Note: The rows continue to appear until you click Paste.</p>
	<p>Paste. Pastes the selector expression rows on the clipboard to the current selector. The expressions are pasted after the selected row in the table.</p> <p>If you are pasting a whole selector filter, it is pasted as a new filter (with OR relationship).</p>
	<p>Copy Selector to Clipboard. Copies the entire contents of the selector to the clipboard, for use in other HI selectors.</p>
	<p>Paste Selector From Clipboard. Pastes the entire selector stored on the clipboard to the HI, replacing any selector information previously there.</p>
AND	Group heading for a single selector filter in the Selector table.
Expression Summary	Once you have defined a selector, this area displays a summary of the selector conditions.
Field Name	The field that is searched for in the incoming data samples, to compare with the selector expression. For details on the sample fields, see "Data Samples" in <i>Reports</i> .
Operator	<p>The relational operator that is used to compare the actual value for the referenced field against the value defined in the selector expression.</p> <p>For details on each operator usage, see "Selector Expression Operators - Reference" on page 158.</p>
OR	Group heading for each selector filter in the Selector table, when there are two or more filters.
Type	The data type for the specified value (can be String, Double, Integer, Long, Boolean, Float, or Binary).

UI Element (A-Z)	Description
Use Default	<p>Select this check box to use the default selector definition. If there is an HI assignment that matches this CI and HI, the default from the assignment is used. If not, its selector is taken from Admin > Platform > Setup and Maintenance > Infrastructure Settings > Service Level Management > Default Selector for New HIs.</p> <p>To define a non-default selector, clear this check box.</p>
Value	The value that is compared with the actual field value in the data samples.

Add KPI for CI/Edit KPI for CI Dialog Box

This dialog box enables you to define and edit a KPI on a CI or for multiple CIs.


To access	In the SLA Wizard > Configure SLA Indicators page > KPIs tab , select one or more CIs in the upper part of the page, then click either select the Add KPI option or the click the Edit KPI button.
Important information	<ul style="list-style-type: none"> ➤ The KPI definitions apply only to the KPI within the current SLA; different definitions can be applied to the same KPI defined for the same CI in a different SLA. ➤ The areas displayed in the dialog box vary, depending on the selected business rule. ➤ When you attach a KPI to multiple CIs, the KPI is added to all CIs that do not already have that KPI attached. All instances of the KPI have the same defined business rule and properties. ➤ When defining a KPI for multiple CIs, if one or more of the CIs already has that KPI attached, then a Warning dialog box is displayed when you click Save. For details, see "Warning Dialog Box" on page 162.

Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	<ul style="list-style-type: none">➤ "Indicators for CIs" on page 39➤ "List of Service Level Management KPIs" on page 532➤ For general information on working with KPIs, see "KPI Repository" on page 525.

KPI Area

User interface elements are described below:

UI Element (A-Z)	Description
Business Rule	<p>Select the business logic to be used for calculating the KPI value. After selecting a rule, the dialog box is automatically updated to display the areas that are relevant for the selected rule.</p> <p>Service Level Management displays only those rules that are applicable for both the KPI and the selected CI types (including API rule templates).</p> <p>If you have selected multiple CIs and these CIs use different rules to calculate this shared KPI, [Mixed Values] is displayed.</p> <p>Tooltip: When the Quick Help is enabled, you can view a short explanation of each rule by placing the cursor over the Business Rule box.</p>
Calculated Based On	<p>Select one of the following calculation methods for the KPI:</p> <ul style="list-style-type: none"> ➤ HIs. The KPI is calculated based on the HIs assigned to the selected CI. ➤ Child KPIs. The KPI is calculated based on the KPIs assigned to the child CIs of the selected CI. ➤ HIs and child KPIs. The KPI is calculated based on both the HIs assigned to the selected CI, and on the KPIs assigned to the child CIs for the selected CI. ➤ HIs; if none, use child KPIs. The KPI is calculated based on the HIs assigned to the selected CI; if there are no HIs assigned to the CI, the KPI is calculated by the KPIs assigned to the child CIs for the selected CI.

UI Element (A-Z)	Description
KPI	<p>(This parameter is disabled when editing an KPI.)</p> <p>The dropdown list contains all KPIs, apart from those that are already associated with the selected CI. For multiple CI selection, the list contains all KPIs apart from those that are associated with all selected CIs.</p> <p>For details on KPIs, see "List of Service Level Management KPIs" on page 532.</p> <p>Create new KPI in the repositories link: Displayed only when adding a KPI to the CIs. Click the link to open the New KPI dialog box where you can create a new KPI in the KPI Repository; after saving the new KPI, it is available to select in the Add KPI for CI dialog box.</p>
Related Health Indicators	<p>(This parameter is disabled when Child KPIs is defined as the Calculated Based On option, or if an API rule is selected.)</p> <p>Lists the HIs (selected from the HIs that are attached to the selected CIs) that are used to calculate the KPI on the CIs.</p> <p>To modify the list, click the Edit  button. For details, see "Edit Health Indicators in KPI Calculation Dialog Box" on page 130.</p>

Business Rule Parameters Area

This area is displayed when the selected business rule has parameters that can be modified.

Parameters generally have default values. Define or edit the parameter values, as required.

Tip: When the Quick Help is enabled, you can view a short explanation of each parameter by placing the cursor over the parameter box.

API Rule Definitions Area

This area is displayed when you select an API rule as the business rule for the KPI. Use this area to define the calculation logic of the API rule. For details on the rule, see "API Group and Sibling Rule" on page 656.

For details on defining API rules, see "SLM Rules API" on page 651.

Objectives Area

This area enables you to view and modify the objective for the KPI. The objective defines the target thresholds for each time slot (calendars broken down by tracking periods) relevant for the KPI. The measurement for the KPI during each time slot (calculated by the business rule) is compared with the threshold values to determine status for the KPI.

Important information	<ul style="list-style-type: none">➤ The calendars, tracking periods, and threshold target categories that are included for a KPI depend on the definitions for the SLA defined in the previous pages of the SLA Wizard.➤ Most KPIs that are automatically assigned to CIs have default threshold values, taken from the values from the service offering or CI offering that is used for the CI. For more details, see "Offering Packages in SLAs" on page 208. When you manually add a KPI to CI, you must define the threshold values.➤ If there are no objective thresholds defined for the KPI, Service Level Management still calculates a measurement for the KPI, but the KPI will have blue status (no objective defined) in the SLA reports.➤ The objective thresholds must be logical. Service Level Management performs some validation on the entered values.➤ For information on defining objectives for Six Sigma KPIs, see "Six Sigma for SLAs" on page 65.
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User interface elements are described below:

UI Element (A-Z)	Description
Calendars and Tracking Periods	<p>Displays a table of the calendars used for the SLA, broken down by the tracking periods defined for the SLA, so that each cell represents a time slot.</p> <ul style="list-style-type: none"> ➤ Click a time slot to select it; click it again to clear the selection. ➤ Click a calendar name to select all time slots for that calendar. Click it again to clear the selections. ➤ Click the Select all button to select all time slots in the table. Click the Clear selection button to clear all selected time slots. <p>After selecting time slots, define the threshold values for the time slots in the Thresholds area.</p>
Thresholds	<p>Each row displays a target defined for the SLA, with its corresponding status icon.</p> <p>When one or more time slots are selected in the Calendars and Tracking Periods table:</p> <ul style="list-style-type: none"> ➤ Select the relevant operator to use with the thresholds, for example, \geq. The same operator is used for each threshold. ➤ Enter the required threshold value for each target in the appropriate box. <p>Ensure:</p> <ul style="list-style-type: none"> ➤ that the values are appropriate for the unit of measurement defined by the business rule. For example, for a rule that calculates percentage values, the threshold values should be between 0 and 100. ➤ that the values you enter are logically ordered.

Add New Selector Field/Edit Selector Field Dialog Box

This dialog box enables you to define a selector expression, as part of the selector for an HI or an Outages KPI. The selector expression is compared against each incoming data sample, generating a result of either TRUE or FALSE.

To access	In the Add Health Indicator/Edit Health Indicator for CI dialog box or in the Add Outages KPI/Edit Outages KPI dialog box, in the Selector area, click Add Selector Expression or Add OR Clause (or click the Edit button for an existing selector expression).
Relevant tasks	"How to Define Selectors for HIs" in <i>Using Service Health</i>
See also	"Selectors" on page 43

User interface elements are described below:

UI Element (A-Z)	Description
Field Name	The field that is searched for in the incoming data samples, to compare with the selector expression. For details on the sample fields, see "Data Samples" in <i>Reports</i> .
Operator	<p>The relational operator, used to compare the value defined in the Value box in the selector expression, against the actual field value in the data sample.</p> <p>For example, if the selected operator is not a prefix of, then the text entered in the Value box is compared with the beginning of the value for the relevant field in each data sample. When the prefix value in the sample does not match, the selector expression gives a TRUE result.</p> <p>Select the required operator from the dropdown list. For details on each operator usage, see "Selector Expression Operators - Reference" on page 158.</p>

UI Element (A-Z)	Description
Type	The data type used in the samples for the specified value, for example, String, Integer, and so forth.
Value	The value that is compared with the actual field value in the data sample, to establish if the sample qualifies as TRUE for this selector expression.

Add Outages KPI/Edit Outages KPI Dialog Box

This dialog box enables you to define the business rule and properties for an Outages KPI attached to a CI in an SLA.

To access	In the SLA Wizard > Configure SLA Indicators page > KPIs tab , either open the Add KPI menu and select Add Outage , or double-click an Outages KPI entry in the table.
Important information	<ul style="list-style-type: none"> ➤ The Outages KPI for a monitoring CI is calculated from either the availability results for the CI (as calculated by another KPI for availability attached to the CI), or calculated directly from the data received in samples for the CI. The method used depends on the business rule defined for the Outages KPI. If you define a business rule that uses data in the samples, the Outages KPI dialog box includes a selector to define the relevant samples. ➤ When defining an Outages KPI for multiple CIs, if one or more of the CIs already has an Outages KPI attached, then a Warning dialog box is displayed when you click Save. For details, see "Warning Dialog Box" on page 162.
Relevant tasks	"How to Use SLM to Monitor Your Service Agreements" on page 69
See also	<ul style="list-style-type: none"> ➤ "Outages" on page 319 ➤ "List of Service Level Management Business Rules" on page 557

Business Rule Area

Select the business rule that you want to use for the Outages KPI. Only the rules appropriate to the CI are included in the dropdown list.

Tooltip: When the Quick Help is enabled, you can view a short explanation of the selected business rule by placing the cursor over the box.

KPI Properties: Business Rule Parameters Area

This area enables you to define the parameters relevant for the selected business rule. The parameters vary, according to the selected rule.

User interface elements are described below:

UI Element (A–Z)	Description
<Rule parameters>	<p>Edit the rule parameters as required. For details on each rule parameter, see "List of Service Level Management Business Rule Parameters" on page 635.</p> <p>Tooltip: When the Quick Help is enabled, you can view a short explanation of each parameter by placing the cursor over the parameter box.</p>
Default category	<p>Select the outage category that describes the most probable cause of an outage for this CI, or leave the category as Undefined. You can define additional outage categories by clicking New Outage Category.</p> <p>The outage categories can be used to filter and organize data in the outage reports.</p> <p>Note: You can also assign an outage category after an outage occurs, in the Outage Summary report page (see "Outage Summary Report" on page 484). However, it is recommended to categorize outages during SLA creation.</p>
New Outage Category	<p>Open the New Outage Category dialog box, where you define a name and description for the new outage category. The new outage category is automatically added to the list on the Admin > Service Level Management > Repositories > Outage Categories tab.</p>


KPI Properties: Selector Area

This area is displayed only for certain business rules, such as BPM Outage or SiteScope Outage Rule.





For user interface details on defining selectors, see "Selector Area" on page 111.

 **Add/Remove Associated Service Offerings Dialog Box**

This dialog box enables you to modify the list of service offerings that are associated with the currently selected service. Before you can select a service offering to use for a service within the SLA, that service offering must be associated with the service.

To access	In the SLA Wizard > Offerings and Calendars page > Edit Service Offering Selection dialog box , click the Select Service Offerings  button.
Important information	<p>Modifying the list of associated service offerings for a service impacts the list for the service itself, not only for the service instance within the current SLA. For example, the newly associated service offering will be available for that service in the service catalog.</p> <p>However, if you disassociate a service offering that is already in use for the service in another SLA, the other SLA is not affected by the change to the associated service offerings.</p>
Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	"Offering Packages in SLAs" on page 208

User interface elements are described below:




UI Element	Description
	Move to Associated Service Offerings. Adds the service offerings selected in the left pane to the list of service offerings associated with the selected service.
	Move to Available Service Offerings. Removes service offerings selected in the right pane from the list of service offerings associated with the selected service.
	Move all to Associated Service Offerings. Adds all the service offerings in the left pane to the list of service offerings associated with the selected service.
	Move all to Available Service Offerings. Removes all associated service offerings (apart from the Default service offering) listed in the right pane from the list of service offerings associated with the selected service. Note: The Default service offering is associated with every service by default and cannot be removed from the associated service offerings list.
Available Service Offerings	Lists the defined service offerings that are not currently associated with the selected service.
Associated Service Offerings	Lists the service offerings that currently associated with the selected service.










Agreements Manager Page







This page enables you to create SLAs or to perform actions on existing SLAs. Service Level Management displays those SLAs which you, the logged-in user, have permissions to view.


To access	Select Admin > Service Level Management > Agreements Manager
Important information	For information on working with tables in the user interface, see "Common Report and Page Elements" in <i>Reports</i> .
Relevant tasks	"How to Use SLM to Monitor Your Service Agreements" on page 69
See also	"SLAs in Service Level Management" on page 27








User interface elements are described below:

UI Element (A-Z)	Description
	New SLA. Opens the New SLA Wizard where you define a new SLA.
	Edit SLA. Opens the Edit SLA Wizard, where you can modify most SLA properties. Note: <ul style="list-style-type: none">➤ You can modify the Start date and Time zone only during agreement creation, or if the agreement is still in Preliminary or Pending state (in which case, you can modify the agreement in edit mode). Once the agreement is running or terminated, you cannot change these options.➤ If the changes you make to the SLA affect historical data, you may want to run the recalculation process.
	View SLA. This button is enabled when you select an SLA for which you have viewing permissions only. It opens the SLA Wizard in disabled mode.

UI Element (A-Z)	Description
	<p>Clone SLA. Clones the SLA. A copy is added to the list of SLAs, with the same SLA name and the copy number after the name. For example, My SLA (2). You can then edit the details of the copy, including renaming it.</p> <p>The cloned SLA inherits all the properties of the original SLA. The creator of the new SLA is the user who cloned it.</p> <p>The start and end of the clone is the same as the original SLA. However, if those dates conflict with the purging policy (by default, earliest start date = current date minus 3 months), then the default start and end dates are applied to the cloned SLA (current date and current date + 10 years, respectively).</p> <p>Note: To clone an SLA, you need to have change permissions for the original SLA.</p>
	<p>Delete SLA. Removes all selected SLAs, and all calculations for them, from Service Level Management.</p>
	<p>Select All. Selects all SLAs in the table.</p>
	<p>Clear Selection. Clears all selections in the table.</p>
	<p>Refresh. Updates the table with the most recent data and changes made by other users.</p>
	<p>Start SLA. Begins running the selected SLAs. You can use this button to immediately start running an SLA, even when it is set to begin running in the future.</p>
	<p>Terminate SLA. Terminates the selected SLAs. A terminated SLA cannot be restarted.</p>
	<p>Recalculate SLA. Opens the Define Recalculation Task Dialog Box where you can schedule recalculation of the SLA. For details, see "Recalculation for SLAs" on page 67.</p>
	<p>Cancel Scheduled Recalculation. Cancels a future scheduled recalculation task for the SLA.</p>


UI Element (A-Z)	Description
	Open SLAs Summary Report. Opens the SLAs Summary Report in a new browser window, displaying data for the selected SLAs.
	<p>Convert SLA. For pre-9.x SLAs, creates a new SLA which is aligned to the BSM 9.x concept as follows:</p> <ul style="list-style-type: none"> ➤ Monitor CIs are removed from the SLA, and replaced with the monitored CIs themselves. ➤ Health indicators are added to monitored CIs, and KPIs are calculated based on these HIs. <p>For details, see "Converting 8.x SLAs to the BSM 9.x Format" in the <i>HP Business Service Management Upgrade Guide</i> PDF.</p> <p>Note: This button is only visible if you have upgraded to BSM 9.x.</p>
	<p>Open SLA Conversion Report. After you have converted a pre-9.x SLA, select the generated SLA and click to open the conversion report. This report lists the differences between the original SLA and the new one.</p> <p>For details, see "Converting 8.x SLAs to the BSM 9.x Format" in the <i>HP Business Service Management Upgrade Guide</i> PDF.</p> <p>Note: This button is only visible if you have upgraded to BSM 9.x.</p>
	Export to Excel. Opens the Export Table dialog box, enabling you to save the Service Level Agreements table information in Microsoft Excel format.
	Export to PDF. Opens the Export Table dialog box, enabling you to save the Service Level Agreements table information in PDF format.
	When the Service Level Agreements table contains multiple pages of entries, use the page scroll to move between pages.

UI Element (A-Z)	Description
	Change visible columns. Opens the Choose Columns to Display dialog box where you select the columns you want to display in the table. Your settings apply for you (the current user) only, and are saved for future sessions.
Creator	The user name of the person that created the SLA.
Customer	The customer for the SLA services.
Description	The description defined for the SLA.
End Date	The date and time when Service Level Management stopped/will stop calculating the SLA.
Last Calculation	The date and time of the last calculation for the SLA data. Service Level Management recalculates the SLA data once an hour, for the previous hour. That is, if the time is now 07:30 AM, Service Level Management recalculated the data at 7:00 AM for data that was received between 05:00 AM and 06:00 AM.
Name	The SLA name.
Provider	The provider of the SLA services.
Service Offering	The service offerings included in the SLA, in alphabetical order.
Services	The services included in the SLA, in alphabetical order.
Start Date	The date and time when Service Level Management began/will begin calculating the SLA. Note: This date is not the SLA creation date.

UI Element (A-Z)	Description
State	<p>The current operational state of the SLA. Can be one of the following:</p> <ul style="list-style-type: none"> ➤  Pending The SLA has been started, but its start date is in the future. You can terminate a pending SLA (click the Terminate SLA button). ➤  Preliminary The SLA has not begun running. The SLA is at this state if you did not select the Start SLA check box on the Summary page of the New SLA Wizard. Click the Start SLA button to start calculations for the SLA. ➤  Running The SLA begins collecting data. Once the SLA enters this state, you cannot change the start date and time zone, but you can change the end date to any date later than the current date. You can terminate a running SLA (click the Terminate SLA button). ➤  Terminated The SLA finished running and no longer collects data. A terminated SLA cannot be restarted. (However, you can clone a terminated SLA.) <p>An SLA is terminated in one of two ways: By manually stopping it (clicking the Terminate SLA button), or when its end date has passed. The SLA terminates on the next hour after it is stopped.</p> <p>Note: You can recalculate a terminated SLA, up to the termination date.</p> <ul style="list-style-type: none"> ➤  Recalculating The SLA is in the process of being recalculated. The progress of the recalculation is shown in percentages. For details, see "Recalculation for SLAs" on page 67. ➤  Awaiting Recalculation The SLA is scheduled for recalculation at the displayed date and time. ➤  Failed Recalculation Service Level Management failed to recalculate the SLA.
Type	<p>Whether the SLA is classified as an SLA, OLA, or UC. For an explanation of these SLA types, see "SLAs, OLAs, and UCs" on page 46.</p>

Define Recalculation Task Dialog Box

This dialog box enables you to run the recalculation process to update the data in your SLAs. You generally run recalculation tasks after making retroactive changes.

To access	In the Agreements Manager page, select an SLA and click the Recalculation SLA  button.
Important information	<p>Note for HP Software-as-a-Service customers: HP Operations administers the recalculation task functionality. For information about recalculation, contact HP Software-as-a-Service Support.</p> <p>If you recalculate an SLA for a period when the raw data has already been purged, you will lose the stored data for that period. To verify the purging policy, see "Data Purging" on page 24.</p>
See also	"Recalculation for SLAs" on page 67

User interface elements are described below:

UI Element (A-Z)	Description
Recalculate from	<p>In the dropdown calendar, define from when SLM should recalculate the SLA.</p> <ul style="list-style-type: none"> ➤ The selected date and time must be later than the start date and time for the SLA (this is the date and time displayed by default for the Recalculate from parameter). ➤ The selected date and time should be earlier than the Last Calculation date and time (which you can view in the Agreements Manager page). ➤ The selected date and time cannot be more than the default recalculation period (3 months). For information on changing the default, see "Data Purging" on page 24.

UI Element (A-Z)	Description
Schedule the task to start	<p>In the dropdown calendar, define when the recalculation task should start.</p> <ul style="list-style-type: none"> ➤ If you select a date and time that has already passed, the recalculation task starts immediately. ➤ If the recalculation date and time are in the future, the scheduling information is displayed in the tooltip for the State column on the Agreements Manager page.







Edit Health Indicators in KPI Calculation Dialog Box

This dialog box enables you to determine, within the current SLA, which of the HIs attached to a CI will impact calculation of a specific KPI for the CI (when the KPI calculation is based on HIs).

To access	In the SLA Wizard > Configure SLA Indicators page > Add KPI for CI/Edit KPI for CI dialog box , click the Edit button in the Related Health Indicators box.
Important information	<ul style="list-style-type: none"> ➤ When a single CI is selected in the upper pane of the Configure SLA Indicators page, the lists in this dialog box include all HIs that are attached to the currently selected CI. ➤ When multiple CIs are selected, this dialog box shows only the HIs that the selected CIs have in common, as follows: <ul style="list-style-type: none"> ➤ An HI that all selected CIs use with the current KPI is listed in the Selected Health Indicators pane. ➤ An HI that only some of the selected CIs use with the current KPI is listed in the Available Health Indicators pane.
See also	"Indicators for CIs" on page 39

User interface elements are described below:



UI Element (A-Z)	Description
	Move to Selected Health Indicators. Adds the health indicators selected in the left pane to the list of health indicators used for the current KPI (right pane).
	Move to Available Health Indicators. Removes the health indicators selected in the right pane from the list of health indicators used for the current KPI.
	Move all to Selected Health Indicators. Adds all the health indicators in the left pane to the list of health indicators used for the current KPI (right pane).
	Move all to Available Health Indicators. Removes all the health indicators listed in the right pane from the list of health indicators used for the current KPI.
Available Health Indicators	Lists the health indicators that are common to all selected CIs, but not used by every CI for the current KPI.
Selected Health Indicators	Lists the health indicators that are currently used with the selected KPI (for all selected CIs).

Edit Service Offering/CI Offering Selection Dialog Box

This dialog box enables you to change the offering package used for services or CIs in an SLA, and to view offering package details.

To access	In SLA Wizard > Offerings and Calendars page, select the row for a service, or the non-Service CIs row, and click the Edit service/CI offering selection button.
Relevant tasks	<ul style="list-style-type: none"> ➤ "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75 ➤ "How to Update Offering Package Changes to SLAs" on page 220
See also	"Offering Packages in SLAs" on page 208

User interface elements are described below:


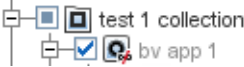
UI Element	Description
	Offering properties. Opens the <Offering package name> Service Offering/CI Offering Properties dialog box, where you can view details for the selected offering package.
	Select service offerings. (Only applicable for service offerings.) Opens the Add/Remove Applicable Offerings for the Service dialog box, where you can modify the list of service offerings that are associated with the service.
Select Service Offering/Select CI Offering	Select the offering package from the list that you want to use for the selected Service CI/non-Service CIs in the current SLA.
Offering Related Calendars	Lists the calendars used by the selected offering package.

 **Fine Tuning Dialog Box**

This dialog box enables you to fine tune the service topology included in the SLA.

To access	In the SLA Wizard > Select CIs page, click the Fine Tuning button.
Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	"Impact Model and CI Hierarchies" on page 35

User interface elements are described below:


UI Element (A-Z)	Description
SLA CIs	<p>Displays the service topologies of the CIs added to the SLA.</p> <p>The tree displays CIs included in the SLA (indicated by a selected check box), and CIs that are part of the impact model but not included in the SLA (indicated by an empty check box).</p> <p>You can select or clear the check box for each CI to include it in, or remove it from, the current SLA. When you clear the check box for a CI, all its subtree is removed (even if it has selected children), and the check box for all parent CIs changes to , indicating that there are CIs in the subtree that are not included in the SLA.</p> <p>If a new CI is added to the topology for a CI included in an SLA, the new CI is not automatically included in the SLA—you must open the SLA for editing and select the check box for the new CI in the Fine Tuning dialog box, to include the CI in the SLA.</p> <p>Note: A CI with an overlaid icon is included in the SLA, but the impact model connecting it to the higher-level CI no longer exists in the impact layer. In the following example, the overlay icon shows that there is no impact relation between the parent CI and the child CI:</p> 

 **Modified Values for <HI/KPI Name> Dialog Box**






This dialog box is displayed on clicking **Save** when editing an HI or KPI for multiple CIs, when you change a field that has [Mixed Values] to a specific value. [Mixed Values] indicates a field that has different values across the selected CIs.

The dialog box enables you to choose which fields should be overridden and which should be left with the original value.





Modified Values for BPM Response Time Health Indicator













Some of the fields were changed from [Mixed Values] to a specific value.
The table does not display the individual values defined for Objectives section entries, N/A is displayed instead.
If you select the Override check box for an Objectives section entry, it applies all new threshold and operator values for all time slots.



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Override	CI Name	Section	Field Name	Old Value	New Value
<input checked="" type="checkbox"/>	 trans_1	Rule Parameters	Trimming condition		< 8.5
<input checked="" type="checkbox"/>	 trans_1	Rule Parameters	Ignore timed out trimmi...	false	false
<input checked="" type="checkbox"/>	 trans_1	Objectives	N/A	N/A	N/A
<input checked="" type="checkbox"/>	 trans_10	Rule Parameters	Trimming condition		< 8.5
<input checked="" type="checkbox"/>	 trans_10	Rule Parameters	Ignore timed out trimmi...	true	false
<input checked="" type="checkbox"/>	 trans_10	Objectives	N/A	N/A	N/A
<input checked="" type="checkbox"/>	 trans_2	Rule Parameters	Trimming condition		< 8.5
<input checked="" type="checkbox"/>	 trans_2	Rule Parameters	Ignore timed out trimmi...	false	false
<input checked="" type="checkbox"/>	 trans_2	Objectives	N/A	N/A	N/A

 Hide Details

Save

Cancel


Help

To access	Define parameters in the Edit Health Indicator for CI dialog box, Edit KPI for CI dialog box, or Edit Outages KPI dialog box when multiple CIs are selected, then click Save .
Important information	<div><div>► For information on working with tables in the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</div><div>► KPI or HI objective threshold values are not displayed for each CI, N/A is displayed instead.</div></div>

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Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	<ul style="list-style-type: none"> ➤ "Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box" on page 105 ➤ "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113 ➤ "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120

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

UI Element (A-Z)	Description
	Show Details. Opens a dialog box showing details of the values defined for the CI.
CI Name	The name of the CI affected by the value change.
Field Name	The name of the field in the edit dialog box that has a conflict for the value change.
New Value	The new value you defined for the field.
Override	<p>Select the check box to replace the old value with the new value. Clear the check box if you want the original value to remain.</p> <p>For conflicts in the Objectives section, selecting the check box overrides all existing objective settings for the relevant CI, and replaces them with the objective settings you defined in the Edit dialog box (meaning all new threshold and operator values for all time slots that you defined).</p>
Old Value	The value for the field before you made the change.
Section	The area of the Edit dialog box where the changed field appears.
Show Details/Hide Details	This button enables you to view or hide the table of impacted CIs.

New SLA/Edit SLA Wizard

This wizard enables you to define and edit SLAs representing your service contracts: service level agreements (SLAs), operational level agreements (OLAs), and underpinning contracts (UCs).


To access	Use one of the following: <ul style="list-style-type: none">➤ On the Admin > Service Level Management > Agreements Manager page, click New SLA, or click the Edit button for an existing SLA.➤ On the Admin > Service Level Management > Services Manager page, select one or more services and click the Create Service Agreement from selected service(s)  button.
Important information	After editing an SLA, if the changes you made affect the historical data, you may want to run the recalculation process.
Relevant tasks	<ul style="list-style-type: none">➤ "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75➤ "How to Use SLM to Monitor Your Service Agreements" on page 69
Wizard map	This wizard contains: Define SLA Properties Page > Select CIs Page > Offerings and Calendars Page > Configure SLA Indicators Page > SLA Summary Page
See also	"SLAs in Service Level Management" on page 27


Define SLA Properties Page


This page enables you to define general properties for the SLA.

Important information	<p>General information about this wizard is available here: "New SLA/Edit SLA Wizard" on page 136.</p> <p>The Description, Name, and SLA Details each have a maximum length, depending on the character set. If you exceed the limit a message appears.</p>
Wizard map	<p>The New SLA/Edit SLA Wizard contains:</p> <p>Define SLA Properties Page > Select CIs Page > Offerings and Calendars Page > Configure SLA Indicators Page > SLA Summary Page</p>

User interface elements are described below:

UI Element (A-Z)	Description
Classification	<p>Classifies the SLA as formal or informal.</p> <p>Default value: Formal</p>
Creator	The user name of the person that defined the SLA.
Customer	<p>The customer associated with the SLA. Click the ellipsis  button to open the Select Customer dialog box, where you can select an existing customer or define a new customer.</p> <p>For more information, see "Providers and Customers for Services and SLAs" on page 44.</p>
Description	A description of the SLA.
End date	<p>The date and time that the SLA stops calculating, according to the time zone selected for the SLA. To change the date, click the date link to open a calendar, and select the date and time you require.</p> <p>The end date must be later than the start date.</p> <p>Default value: 10 years after the current date and time.</p>
Name	A unique name for the SLA.

UI Element (A-Z)	Description
Provider	<p>The service provider associated with the SLA. Click the ellipsis  button to open the Select Provider dialog box, where you can select an existing provider or define a new provider.</p> <p>For more information, see "Providers and Customers for Services and SLAs" on page 44.</p>
Related URL	URL for a Web page or FTP site containing information that relates to this SLA.
SLA details	Details about the SLA that you want available to Service Level Management users, for example, the SLA aims, provisioning, and special information.
Start date	<p>The date and time from which the SLA starts calculations, according to the time zone selected for the SLA.</p> <p>To change the date, click the date link to open a calendar, and select the date and time you require. The start date cannot be more than 3 months prior to the current date and time. (If you need longer than 3 months, the data purging policy for Service Level Management must be changed. For details, see "Data Purging" on page 24.)</p> <p>You can modify the Start date only during agreement creation, or if the agreement is still in Preliminary or Pending state (in which case, you can modify the agreement in edit mode).</p> <p>Default value: The current date and time (to the nearest hour).</p> <p>Note: When a new SLA starts running from the current date and time, Service Level Management immediately begins calculations. However, the SLA does not have results of value until at least an hour after raw data is available in the database for calculations.</p>
Targets	Click the link to open the Targets dialog box, where you select the KPI targets (status categories) to be applied for this SLA.



UI Element (A-Z)	Description
Time zone	<p>Specify the time zone for the SLA. Service Level Management calculates the data in reports according to this time zone.</p> <p>You can modify the Time zone only during agreement creation, or if the agreement is still in Preliminary or Pending state (in which case, you can modify the agreement in edit mode).</p> <p>Default value: The time zone of the user.</p>
Tracking period(s)	<p>The tracking periods used in this SLA for compiling data, and for viewing data in Service Level Management reports. Click the ellipsis  button to open the Tracking Periods dialog box, where you select the required tracking periods.</p> <p>Default value: Day, Week, Month</p> <p>For more information, see "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Type	<p>Select the type of SLA:</p> <ul style="list-style-type: none"> ➤ SLA (service level agreement) ➤ OLA (operational level agreement) ➤ Underpinning Contract <p>Default value: SLA</p> <p>For more information, see "SLAs, OLAs, and UCs" on page 46.</p>


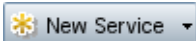


Select CIs Page



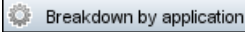

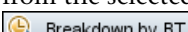


This page enables you to add CIs and service topologies to the SLA, and to fine tune the topologies. You can also add trigger a breakdown by location for BPM CIs, so that the location breakdown CIs can be included in the SLM.

Important information	<ul style="list-style-type: none">➤ General information about this wizard is available here: "New SLA/Edit SLA Wizard" on page 136.➤ The SLA Wizard filters for view bundles tagged as SLM, Service_Health, or bam. Only views associated with these bundles are displayed in the Select CIs page. Any new view that is added in the RTSM is automatically associated with the SLM and Service_Health bundles.➤ After adding CIs, you can click Finish to move directly to the Summary page; in this case, Service Level Management applies default settings to the selected CIs.
Wizard map	The New SLA/Edit SLA Wizard contains: Define SLA Properties Page > Select CIs Page > Offerings and Calendars Page > Configure SLA Indicators Page > SLA Summary Page
See also	<ul style="list-style-type: none">➤ "CIs in SLAs" on page 33➤ "Breakdown by Location for BPM CIs" on page 48

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

UI Element (A-Z)	Description
	Refresh. Updates the views with any changes in the RTSM.
	Add CIs with their impact model hierarchy. This button adds the CIs selected in the left pane to the SLA, and also adds all CIs that have an impact relationship on the selected CIs (according to the impact model). Each CI subtree is added directly under the SLA root.

UI Element (A-Z)	Description
	<p>Add CIs with their impact model hierarchy (only CIs that are included in the view). This button adds the CIs selected in the left pane to the SLA, and also adds all CIs that have an impact relationship on the selected CIs (according to the impact model), if those CIs are included in the current view.</p> <p>Each CI subtree is added directly under the SLA root.</p>
	<p>Select either New Business Service or New Infrastructure Service from the dropdown list. Opens the New Service dialog box, where you define the Service CI (see "New Business or Infrastructure Service/ Edit Service Dialog Box" on page 176). The new CI (with its subtree) is added to the current SLA and to the service catalog.</p>
	<p>Remove selected CIs. Removes the selected CIs, and each CI's subtree, from the SLA.</p>
	<p>Opens the Fine Tuning dialog box, displaying all CIs that are included in the SLA or in the relevant impact models. You can fine tune the SLA topology by including or removing specific CIs. For details, see "Fine Tuning Dialog Box" on page 132.</p>

UI Element (A-Z)	Description
	<p>Breakdown. Select one of the options from the dropdown list to trigger the addition of location breakdown BPM CIs to the SLA:</p> <ul style="list-style-type: none"> ➤  Breakdown by location Enabled when a Business Application, Business Transaction Flow, or Business Transaction CI is selected (provided that the topology receives data from the BPM domain). This option adds a recursive topology of breakdown CIs for the selected CI and its child CIs, for each relevant BPM location. ➤  Breakdown by application Enabled when a Location CI is selected (provided that the location is used for data from the BPM domain). This option adds a recursive topology of breakdown CIs for all Business Application CIs and their child CIs, running from the selected BPM location. ➤  Breakdown by BTF Enabled when a Location CI is selected (provided that the location is used for data from the BPM domain). This option adds a recursive topology of breakdown CIs for all Business Transaction Flow CIs and their child CIs, running from the selected BPM location. ➤  Breakdown by BT Enabled when a Location CI is selected (provided that the location is used for data from the BPM domain). This option adds breakdown CIs for all Business Transaction CIs running from the selected BPM location. <p>For more information, see "Breakdown by Location for BPM CIs" on page 48.</p>
	<p>Undo Breakdown. Select a CI where a breakdown was defined, and click to undo the breakdown and restore the original topology.</p> <p>For details, see "Breakdown by Location for BPM CIs" on page 48.</p>
	<p>CI Properties. Opens the CI Properties dialog box, displaying properties for the CI.</p>

UI Element (A-Z)	Description
<Left pane> - CI Selector	<p>Enables you to select the CIs to include in the SLA.</p> <p>In the Browse Views tab, select the required view from the dropdown list, then select the required CIs (use the SHIFT and CTRL keys to select multiple CIs). You can also use the Search tab to search for the required CIs within the current view.</p> <p>Add the selected CIs to the SLA using one of the Add... buttons between the panes. Each selected CI is added together with all or part of its impact model hierarchy, depending on which Add... button is used. The CIs included in the SLA are displayed in the topology in the SLA CIs pane.</p> <p>Repeat for each view that contains CIs you want to add to the SLA.</p> <p>For more information on using the CI Selector functionality, see "CI Selector" on page 453.</p> <p>Tooltip: Hold the cursor over a CI to see the full CI name and the CI type.</p>
SLA CIs	<p>Displays the CIs included in the SLA.</p> <p>Tooltip: Hold the cursor over a CI to see the full CI name and the CI type.</p> <p>Shortcut menu: Right-click a CI to display menu options for the CI.</p>

 **Offerings and Calendars Page**

This page enables you to select the offering packages to be applied to the CIs in the SLA, and the calendars to be used for the SLA.



Important information	<ul style="list-style-type: none">➤ General information about this wizard is available here: "New SLA/Edit SLA Wizard" on page 136.➤ After defining offerings and calendars, if you do not need to fine tune indicators for the SLA, you can click Finish to move directly to the Summary page.
Wizard map	The New SLA/Edit SLA Wizard contains: Define SLA Properties Page > Select CIs Page > Offerings and Calendars Page > Configure SLA Indicators Page > SLA Summary Page
See also	<ul style="list-style-type: none">➤ "Service and CI Offerings" on page 205➤ "Calendars for SLAs" on page 295

Service and CI Offerings Area

This area enables you to modify the offering packages used for the CIs in the SLA.

Tip: For information on the available filtering and organization options for the table, see "Common Report and Page Elements" in *Reports*.

User interface elements are described below:

UI Element (A-Z)	Description
	<p>Edit service/CI offering selection. When a Service CI is selected, this button opens the Edit Service Offering Selection dialog box. When the non-Service CIs group is selected, this button opens the Edit CI Service Offering Selection dialog box. In the dialog box, you can change the offering package used for the CIs in the SLA.</p>
	<p>Hard-sync with service/CI offering. If the CI offering or service offering assigned to this CI has been changed on the Repositories > Service and CI Offerings page, you can use this button to update the changes to the SLA. You can also use this button to update changes made to the assignment and propagation rules.</p> <p>The KPI, HIs, and objective thresholds for the selected CI within this SLA will be overwritten with the values defined in the offering package.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ In some cases, a KPI may be deleted by the hard-sync, if the assignments or offering packages for the KPI has changed. ➤ After using the hard-sync button to update the SLA, run recalculation if you want the changes to affect the historical data.
<p>CIs</p>	<p>This column displays (as relevant):</p> <ul style="list-style-type: none"> ➤ The service CIs (Business Service and Infrastructure Service) added under the SLA root, and any child service CIs that are in the service CI hierarchy, as long their direct parent is also a service CI. ➤ The non-Service CIs group. This is a single entry, representing all the non-Service CIs added under the SLA root, and all CIs in their subtrees.

UI Element (A-Z)	Description
Offering Calendars	Lists all calendars associated with the selected offering package. The calendars are listed alphabetically.
Service/CI Offering	<p>The name of the service offering or CI offering used for the specified service CI, or for the non-Service CI group, in the SLA.</p> <p>To change the offering package, select the row and click the Edit button.</p> <p>Default value: The Default service offering or Default CI offering.</p>

SLA Calendars Area

This area enables you to select the calendars be used for the SLA.

User interface elements are described below:

UI Element	Description
SLA Calendars	<p>Lists the calendars that are common to all offering packages selected for use in this SLA. (The calendars are listed in the Offering Calendars column in the Service and CI Offerings Area.) Select one or more calendars that you want to apply for the SLA (up to a maximum of three).</p> <p>If no calendars are listed, then there are no common calendars for the selected offering packages. Modify the offering packages selected for the CIs to obtain at least one common calendar.</p> <p>Tooltip: Hold the cursor over a calendar name to view the calendar description.</p> <p>Note: When editing an SLA, if a new service and service offering is added that does not use one of the calendars previously selected for the SLA, then the previously selected calendar may still appear in the list. This is despite the fact that the calendar is no longer common to all packages.</p>

Configure SLA Indicators Page

This page enables you to fine tune the indicators that are automatically assigned to the CIs in the SLA. You can define new KPIs and health indicators, or edit the existing ones. You can also configure CI weights to be used in indicator calculations.

The page is divided into three areas. The upper area (SLA Area) provides general information on the CIs in the SLA. The left lower area (CI Data area) contains tabs that provide information on the CIs selected in the upper area. The right lower area (Legend area) provides full names for the KPI icons displayed in the upper pane.

Important information	<ul style="list-style-type: none"> ➤ General information about this wizard is available here: "New SLA/Edit SLA Wizard" on page 136. ➤ In order for the automatic indicator assignment process to work, all KPI and HI assignments should be valid. For details, see "Indicator Assignments and Propagations" on page 233. ➤ When you add an HI to a CI, its selector is taken by default from the HI Assignments, if there is an assignment that matches this HI. If not, its selector is taken from Admin > Platform > Setup and Maintenance > Infrastructure Settings > Service Level Management > Default Selector for new HIs.
Wizard map	<p>The New SLA/Edit SLA Wizard contains:</p> <p>Define SLA Properties Page > Select CIs Page > Offerings and Calendars Page > Configure SLA Indicators Page > SLA Summary Page</p>
See also	<ul style="list-style-type: none"> ➤ "CIs in SLAs" on page 33 ➤ "Status Alerts for SLAs" on page 68

SLA Area

This area enables you to view the CIs included in the SLA, and their assigned KPIs. Select a CI to view indicators and weights for those CIs in the CI Data area. You can also select multiple CIs and view and modify indicators in one operation.

Tip: For information on the available filtering and organization options for the table, see "Common Report and Page Elements" in *Reports*.

User interface elements are described below:

UI Element (A-Z)	Description
<Filter Box>	<p>At the top of each column there is a box which enables you to filter specific elements in the column; for example you can select a CIT, or one or more KPIs to be displayed. To filter by CI Name, press Enter to activate the filter.</p> <p>When a CI matches a filter, its parent CIs are displayed as well. To select the CIs which match a filter (for example for a bulk action), click the Select by Filter button.</p>
CI Name	<p>Displays the hierarchy of CIs that are included in the SLA.</p> <p>Select a CI or multiple CIs to display information for the selected CIs in the bottom area. Use the CTRL and SHIFT keys to select multiple CIs.</p> <p>Within the CI hierarchy a CI may appear more than once (for example, if there is more than one path to it within the topology). If you select a CI that appears more than once, all appearances of the CI are selected.</p> <p>Shortcut menu: Right-click a CI to view CI properties.</p>
CI Type	The CIT for each CI.
KPIs	Displays icons representing the KPIs assigned to each CI; the Legend area (on the lower right) identifies each KPI icon.

Legend Area






The Legend area on the bottom right side of the screen provides full names for the icons displayed in the KPIs column in the upper pane.

CI Data Area - KPIs Tab

This tab displays details on the KPIs that are assigned to the CI or CIs selected in the upper area of the Configure SLA Indicators page. You can use the KPIs tab to edit, add, or remove KPIs.

When multiple CIs are selected, the KPIs tab displays only those KPIs that are common to all selected CIs.

User interface elements are described below:

UI Element (A-Z)	Description
	<p>Select Add KPI from the dropdown menu to open the Add KPI dialog box, where you define a new KPI for the selected CIs.</p> <p>Select Add Outages KPI from the dropdown menu to open the Add Outages KPI dialog box, where you define details for the Outages KPI attached to the selected CIs.</p> <p>Note: A maximum of 6 KPIs can be attached to a CI (in addition to the Outages KPI).</p>
	<p>Edit KPI. Opens the Edit KPI for CI dialog box, where you can modify KPI details.</p>
	<p>Delete KPIs. Deletes the selected KPIs from the selected CIs.</p>
	<p>Export to Excel. Opens the Export Table dialog box, enabling you to export information on the KPIs tab to a Microsoft Excel file.</p>
	<p>Export to PDF. Opens the Export Table dialog box, enabling you to save the information on the KPIs tab in PDF format.</p>

UI Element (A-Z)	Description
Business Rule	<p>The business rule used to calculate the measurement and status for the KPI. If you have selected multiple CIs using different business rules for the KPI, the cell displays [Mixed Values].</p> <p>For information on the rules, see "Business Rule Repository" on page 547.</p>
Calculated Based On	<p>The calculation method used for the KPI:</p> <ul style="list-style-type: none"> ➤ Health Indicators and child KPIs. The KPI calculation is based on both the health indicators assigned to the relevant CI, and the KPIs assigned to the child CIs. ➤ Assigned health indicators. The KPI calculation is based on the health indicators assigned to the relevant CI. ➤ KPIs assigned to child CIs. The KPI calculation is based on the KPIs assigned to the child CIs. ➤ Health indicators if available; or child KPIs. The KPI calculation is based on the health indicators assigned to the relevant CI; if there are no health indicators, the calculation is based on the KPIs assigned to the child CIs. <p>If the selected CIs are using different methods to calculate the KPI, [Mixed Values] is displayed.</p>
KPI Domain	<p>The domain that this KPI belongs to. A domain defines a logical group of KPIs, where the KPIs all represent similar measurements. For details, see "KPI Domains" on page 41.</p>






UI Element (A-Z)	Description
KPI Name	The KPI assigned to the selected CIs. For information on each KPI, see "List of Service Level Management KPIs" on page 532.
Related Health Indicators	<p>Lists the health indicators associated with the KPI. If multiple CIs are selected, this field lists the health indicators associated with the KPI, that are common to all selected CIs.</p> <p>Note:</p> <ul style="list-style-type: none">➤ A health indicator that is used for only some of the selected CIs is not included in the list.➤ No Health Indicators in common. This is displayed if one or more of the selected CIs have health indicators associated with the KPI, but there are no health indicators that are common to all selected CIs and the KPI.➤ No Health Indicators. This is displayed if none of the selected CIs have health indicators associated with the KPI.

CI Data Area - Health Indicators Tab

This tab displays details on the health indicators that are monitoring data for the CI or CIs selected in the upper area of the Configure SLA Indicators page. You can use the Health Indicators tab to edit, add, or remove health indicators.

When multiple CIs are selected, the Health Indicators tab displays only those health indicators that are common to all selected CIs.

User interface elements are described below:


UI Element (A-Z)	Description
	Add Health Indicator. Opens the Add Health Indicator dialog box, where you define a new health indicator to collect measurements for the selected CIs.
	Edit Health Indicator. Opens the Edit Health Indicator dialog box, where you edit details for the selected health indicator.
	Delete Health Indicators. Deletes the selected health indicators from the selected CIs.
	Export to Excel. Opens the Export Table dialog box, enabling you to export information on the Health Indicators tab to a Microsoft Excel file.
	Export to PDF. Opens the Export Table dialog box, enabling you to save the information on the Health Indicators tab in PDF format.
Business Rule	The business rule used to calculate the measurement and status for the health indicator. If you have selected multiple CIs using different business rules for the health indicator, the cell displays [Mixed Values] . For information on the rules, see "Business Rule Repository" on page 547.
Health Indicator Name	The health indicators assigned to the selected CI, or common to all selected CIs.
Related KPIs	Lists the KPIs which use this health indicator in their calculations for the selected CI. When multiple CIs are selected, the field lists only KPIs that are common to all selected CIs for this health indicator.

CI Data Area - Weights Tab

This tab enables you to assign a weight to each of the child CIs for a selected CI. The weights are used to reflect the relative importance of each child CI in KPI calculations for the parent CI.

Important information	The weights apply for all KPIs and HIs for the CI, within the current SLA (where the business rule for the indicator takes weights into account).
See also	"Weights for KPI Calculations" on page 45

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

UI Element	Description
	Resets all weights to 1.0
<Weight for CI>	Enter the required weight for the CI. You can only assign weights when a parent CI with more than one child CI is selected. Default: 1.0

SLA Summary Page

This page displays a summary of the SLA details, and enables you to start running the SLA.

Important information	<ul style="list-style-type: none"> ➤ General information about this wizard is available here: "New SLA/Edit SLA Wizard" on page 136. ➤ This page is not included when you open the SLA Wizard in edit mode. ➤ Use the Back button to modify the SLA details. ➤ After creating the SLA, you must verify that users are granted permissions to work with it.
Wizard map	The New SLA/Edit SLA Wizard contains: Define SLA Properties Page > Select CIs Page > Offerings and Calendars Page > Configure SLA Indicators Page > SLA Summary Page
See also	"Permissions for Working with SLAs" on page 66

User interface elements are described below:



UI Element	Description
Start SLA	<p>Select the check box to initiate the SLA as soon as you save it. Service Level Management starts calculating the SLA immediately if the start date is in the past; the SLA enters Pending state if the start date is in the future.</p> <p>If you clear the check box, the SLA enters Preliminary state, and you can manually start the SLA at a later time from the Agreements Manager Page.</p> <p>Default: The check box is selected by default.</p>

Select Customer Dialog Box

This dialog box enables you to select the customer associated with the SLA, or to define a new customer.

To access	In the Agreements Manager page, open the SLA Wizard > Define SLA Properties page, and click the ellipsis button (...) beside the Customer box.
Important information	<ul style="list-style-type: none">► The customers are represented in BSM by Organization CIs and can be viewed in the Business Units view.► You can also define customers in Admin > RTSM Administration > Modeling > IT Universe Manager.
See also	"Providers and Customers for Services and SLAs" on page 44

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



UI Element	Description
	Opens the Create Customer dialog box, where you define a name for the new customer. The button is enabled when you select the Customers folder or other entry in the tree in the Select Customer dialog box. The new customer is added as a child to the selected CI.
	CI Properties. Opens the CI Properties dialog box, where you can view details for the selected entry.
<Tree>	Displays the customers and other CIs defined under the branches of the Business Units view. Select the required customer. Shortcut menu: Right-click an entry to view menu options.

Select Provider Dialog Box

This dialog box enables you to select a service provider, or to define a new service provider. Service provider are associated with services and SLAs.

To access	<p>Use one of the following:</p> <ul style="list-style-type: none"> ➤ In the Agreements Manager page, open the SLA Wizard > Define SLA Properties page, and click the ellipsis button (...) beside the Provider box. ➤ In the Services Manager page, open the New Service or Edit Service dialog box and click the ellipsis button (...) beside the Provider box.
Important information	<ul style="list-style-type: none"> ➤ Service providers are represented in BSM by Organization CIs and can be viewed in the Business Units view. ➤ You can also define service providers in Admin > RTSM Administration > Modeling > IT Universe Manager.
Relevant tasks	<ul style="list-style-type: none"> ➤ "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75 ➤ "How to Define a Service for an SLA – Use-Case Scenario" on page 169
See also	"Providers and Customers for Services and SLAs" on page 44

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

UI Element	Description
	<p>Opens the Create Provider dialog box, where you define a name for the new provider. This creates a new Organization CI with the defined name.</p> <p>The button is enabled when you select a folder or other entry in the tree in the Select Provider dialog box. The new provider is added as a child to the selected CI.</p>
	<p>CI Properties. Opens the CI Properties dialog box, where you can view details for the selected entry.</p>
<Tree>	<p>Displays the service providers and other CIs defined under the branches of the Business Units view. Select the required provider.</p> <p>Shortcut menu: Right-click an entry to view menu options.</p>

 **Selector Expression Operators - Reference**

The following table describes the relational operators used in the selector expressions for HIs and Outages KPIs. The operators are used to compare the value defined in the selector expression against the property value in the data sample.

To access	Operators for selector expressions are defined in the Add New Selector Field dialog box or Edit Selector Field dialog box.
See also	<ul style="list-style-type: none">➤ "Add New Selector Field/Edit Selector Field Dialog Box" on page 119➤ "Selectors for Metric-Based HIs" in <i>Using Service Health</i>

User interface elements are described below:

UI Element	Description
!=	The value for the specified property in the data sample must not be equal to the value defined in the selector expression.
<	The value for the specified property in the data sample must be smaller than the value defined in the selector expression.
<=	The value for the specified property in the data sample must be less than or equal to the value defined in the selector expression.
=	The value for the specified property in the data sample must exactly equal the value defined in the selector expression.
>	The value for the specified property in the data sample must be greater than the value defined in the selector expression.
>=	The value for the specified property in the data sample must be more than or equal to the value defined in the selector expression.
matches	The value for the specified property in the data sample must match the value defined in the selector expression. Tip: This operator is performance intensive; where possible, it is recommended to use the is a suffix of operator instead.
does not match	The value for the specified property in the data sample must be different from the value defined in the selector expression. Tip: This operator is performance intensive; where possible, it is recommended to use the is not a suffix of operator instead.
is a prefix of	The value for the specified property in the data sample must start with the string defined in the selector expression.

UI Element	Description
is not a prefix of	The value for the specified property in the data sample must not start with the string defined in the selector expression.
is a suffix of	The value for the specified property in the data sample must end with the string defined in the selector expression.
is not suffix of	The value for the specified property in the data sample must not end with the string defined in the selector expression.
is contained in	<p>The value for the specified property in the data sample must be contained in the list of values in the Value box.</p> <p>Enter the list of values in the Value box separated by commas. The total string can be up to 100 characters long.</p>
is not contained in	<p>The value for the specified property in the data sample must not be one of the values in the list in the Value box.</p> <p>Enter the list of values in the Value box separated by commas. The total string can be up to 100 characters long.</p>



Targets Dialog Box

This dialog box enables you to select the target (objective) categories associated with the SLA. Only the selected targets are available when defining KPI objectives, for the KPIs within this SLA.

To access	In the SLA Wizard > Define SLA Properties page, click the ellipsis button (...) beside the Targets box.
Important information	<ul style="list-style-type: none">➤ The Exceeded and Failed targets are always selected by default.➤ You can change the default names used for the targets. For details, see "How to Customize Target Names" on page 103.

Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	"Status/Targets in Reports" on page 423

Tracking Periods Dialog Box

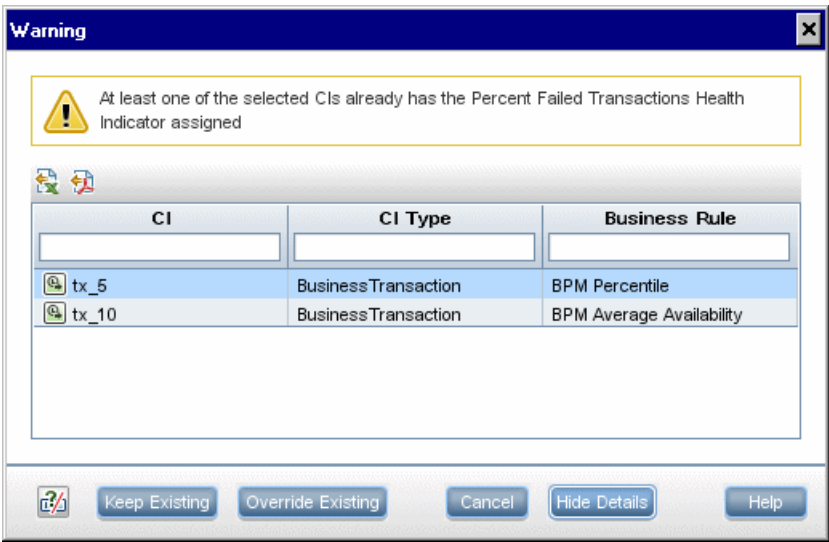
This dialog box enables you to select the tracking periods that are used to track SLA status and compile data. The tracking periods define the granularity for calculation in Service Level Management reports. For example, data can be compiled per hour or per week.

To access	In the SLA Wizard > Define SLA Properties page, click the ellipsis button (...) beside the Tracking Period(s) box.
Important information	<ul style="list-style-type: none"> ➤ Select SLA period to enable users to view reports that include data from the start date of the SLA until the present. ➤ You must select at least one tracking period (not including SLA period).
Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	"Tracking Range and Granularity in Service Level Management" on page 432

 **Warning Dialog Box**

This Warning dialog box is displayed on clicking **Save** when defining an HI, KPI, or Outages KPI on multiple CIs, if one or more of the CIs already has that HI or KPI attached.

This dialog box enables you to choose how to proceed when there is a conflict between multiple versions of the same HI.



To access	Define parameters in the Add Health Indicator for CI dialog box, Add KPI for CI dialog box, or Add Outages KPI dialog box when multiple CIs are selected, then click Save .
Relevant tasks	"How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75
See also	<ul style="list-style-type: none">➤ "Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box" on page 105➤ "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113➤ "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120

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

UI Element	Description
<Table>	Lists the CIs (out of the selected CIs) that already have the defined HI assigned to them, and shows the business rule in use for each instance of the HI on each CI.
Keep Existing	This button keeps all existing settings for each instance of the HI on the CIs listed in the table. Only the selected CIs that did not previously have the HI attached are assigned the new HI, with the settings you defined in the Add Health Indicator dialog box.
Override Existing	This button overrides all existing settings for the HI on the CIs listed in the table, and replaces them with the HI settings you defined in the Add Health Indicator dialog box (in addition to assigning the HI to selected CIs that did not previously have the HI attached).
Cancel	This button closes the Warning dialog box, and returns you to the Add Health Indicator dialog box without applying any changes.
Show Details/Hide Details	This button enables you to view or hide the table of impacted CIs.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for SLAs.

- **Profile database missing:** Some pages in Service Level Management cannot be displayed until a default profile database is set. For details on setting profile databases, see "Database Administration" in *Platform Administration*.
- **Data continuity issue:** If a transaction in an HP Virtual User Generator script is renamed, BSM considers it as a new transaction. A new BPM Business Transaction CI is created in the RTSM using the new name, and the CI with the old transaction name is removed after it stops receiving samples. If the CI is included in a Service Level Management SLA, you do not see historical data for it (from before the transaction name change).

3

Manage Services

This chapter includes:

Concepts

- Services in Service Level Management - Overview on page 166
- Service Topologies on page 167
- Services Manager Permissions on page 168

Tasks

- How to Define a Service for an SLA – Use-Case Scenario on page 169

Reference

- Services Manager User Interface on page 176

Concepts

Services in Service Level Management - Overview

SLM Services Manager provides management for the services provided by, or consumed by, your organization, such as project management services, application development for departmental applications, Web development services, email services, backup services, and so forth.

All services relevant for your organization are represented within BSM as either Business Service CIs or Infrastructure Service CIs, as appropriate:

- ▶ **Business Service CI.** This represents a business, or IT service used by the business. A business service is a service that a business provides to another business (B2B), or that one organization provides to another within a business (for example, payment processing). An IT service is a business service that the IT organization provides to support business services, or to support IT's own operations.
- ▶ **Infrastructure Service CI.** This is an IT Service that is not directly used by the business, but is required by the IT service provider so they can provide other IT services, for example, directory services, naming services, or communication services. Infrastructure service is a synonym for technical service in ITILv3.

The service CIs create a catalog of IT services in the RTSM for internal and external customers. The service CIs can be viewed in the Business Services view.

A service CI has a service topology that supports the business or infrastructure service, created by mapping to the service CI the key business processes, applications, and infrastructure that the service depends on.

The monitoring metrics collected for the CIs in the service topology propagate up to the service CI, enabling you to see the impact of performance problems on the service, and to analyze trends and performance objectives from a service level. For more information, see "Service Topologies" on page 167.

The service CIs are used as the foundation for defining SLAs, working with defined service offering packages to measure compliance with service level management goals.

You manage the service catalog from the Services Manager. For user interface details, see "Services Manager Page" on page 180.

For a scenario for working with service CIs, see "How to Define a Service for an SLA – Use-Case Scenario" on page 169.

Tip: If BSM is integrated with HP Service Manager, the service catalog can include services created as a result of incidents reported by Service Manager. For details, see "Integration with HP Service Manager" on page 325.

Service Topologies

Each service CI is connected to a topology of CIs that support the service. This service topology is created by mapping the Business Service or Infrastructure Service CI to the service-related CIs that represent the underlying processes and infrastructure for the service.

When creating a service in SLM, you directly access the Modeling Studio component of RTSM Administration, with the appropriate model in focus for the type of service you are defining (business or infrastructure). In the Modeling Studio window, you define the service topology for the service CI. For information on how to create CIs and add CIs to the service topology in Modeling Studio, see "IT Universe Manager" in the *Modeling Guide*.

You can define the service topology when you create the service CI, or at a later time. After defining the service topology, you can see the topology displayed in the **Topology** area of the New Service and Edit Service dialog boxes. For details, see "New Business or Infrastructure Service/Edit Service Dialog Box" on page 176.

The service topology can include other service CIs; these CIs are displayed as child CIs of the parent service in the service catalog table.

The service topology is dynamically updated by some changes made in the RTSM. When a CI is removed from the service topology, this change is automatically updated to the SLAs containing the service CI. However, a CI that is added to the service topology is not automatically added to SLAs, and you must update the SLAs if you want the SLAs to include the new CI. For details, see "How to Update Topology Changes to an SLA" on page 102.

You can view service CIs and their topologies in the Service Measurements view.

Services Manager Permissions

In order to make changes to the Services Manager (add, edit, or delete services), users must have the appropriate permissions for the Business Services view.

You define Services Manager permissions in **Admin > Platform > Users and Permissions > User Management**. In the **Permissions** tab, select **RTSM** as the **Context** list, expand the **Views** resource, and select the **Business Services** entry. You can then set permissions for the view and its contents.

For general information on defining permissions, see "Permissions Overview" in *Platform Administration*.

Tasks

How to Define a Service for an SLA – Use-Case Scenario

This use-case scenario describes how Kim, the Service Level Management administrator, creates a Business Service CI to represent a financial service provided by the accounting department and used by other departments in his company. The financial service is to be used as part of an SLA.

This scenario includes the following steps:

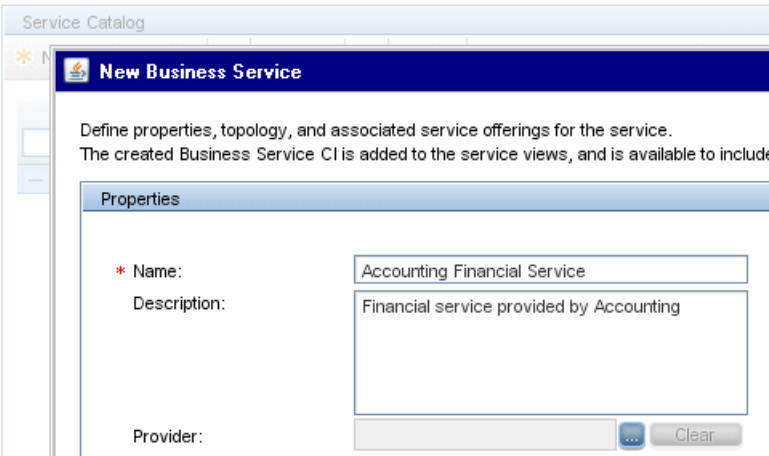
- "Background" on page 169
- "Define the Business Service CI properties" on page 169
- "Define the service provider" on page 170
- "Define the service topology" on page 171
- "Define the associated service offerings" on page 172
- "Create an SLA based on the service" on page 174

1 Background

Before creating the Business Service CI, Kim verified that the CIs representing the processes and infrastructure that support the financial service, were defined in the RTSM.

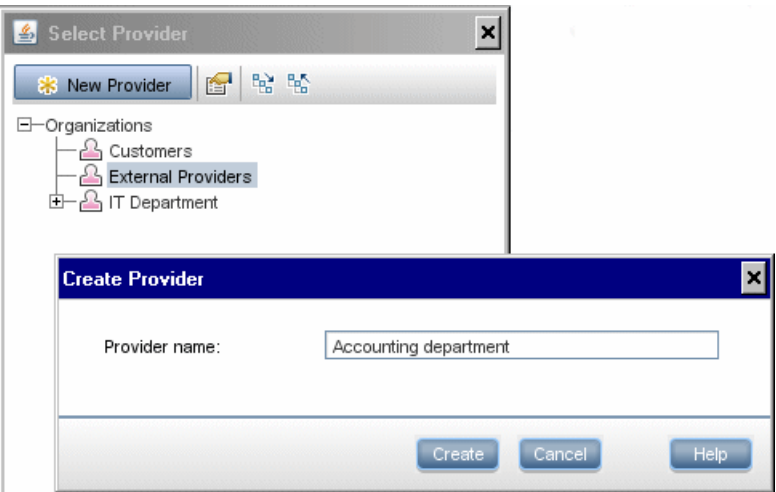
2 Define the Business Service CI properties

Kim accesses the Services Manager page and opens the New Business Service dialog box. In the **Properties** area, he defines a unique name and a description for the new CI.



3 Define the service provider

Kim clicks the ellipsis button beside the **Provider** box to select the provider for the service. The accounting department is not listed, so he selects the External Providers branch and clicks **New Provider** to define a new Organization CI for the Accounting department service provider.

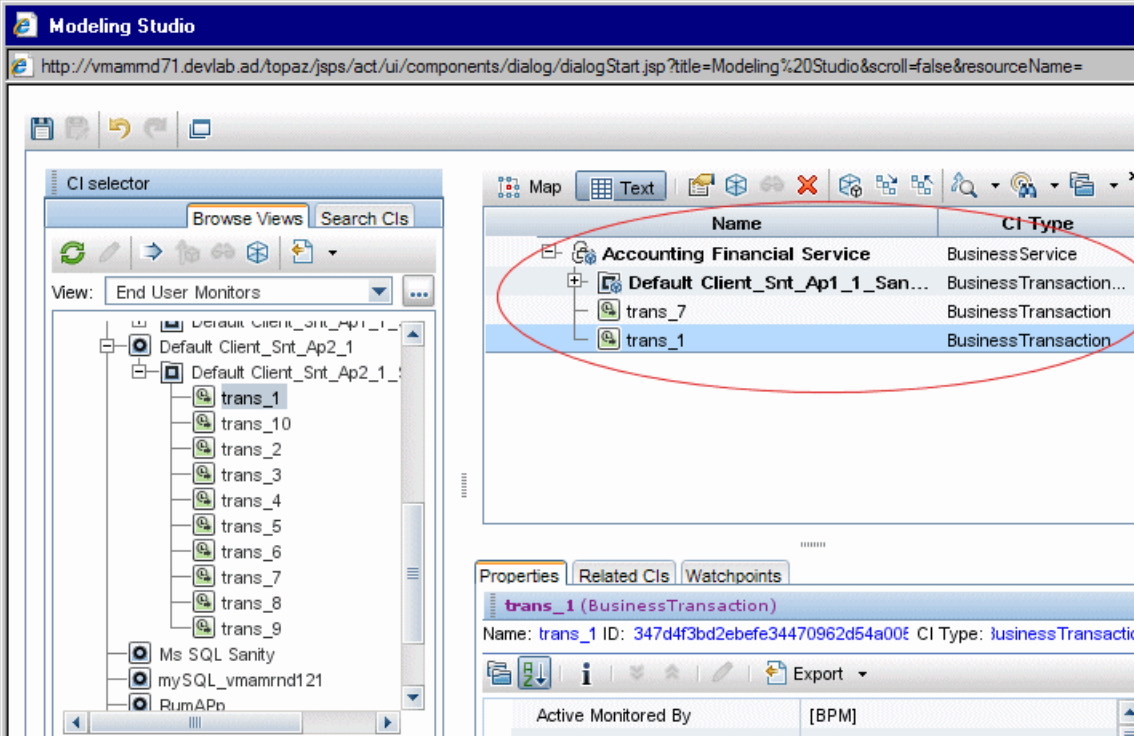


The new provider is added to the list in the Select Provider dialog box, and Kim selects this provider for the new service.

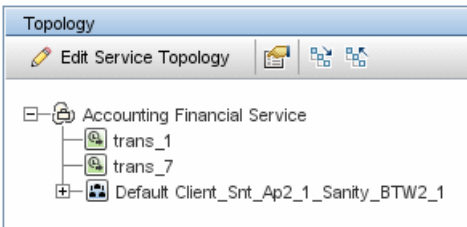
4 Define the service topology

In the **Topology** area, Kim clicks **Edit Service Topology**.

In the displayed Modeling Studio window, he creates a topology for the Financial Accounting Service Business Service CI, by adding to it the service-related CIs that represent the infrastructure and processes used by the financial service.



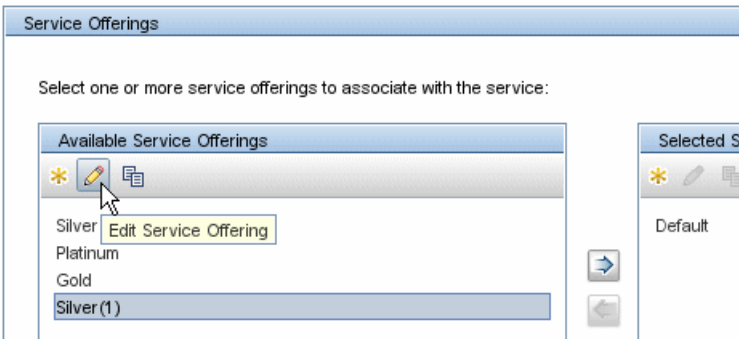
After clicking **OK** in the Modeling Studio window, the defined service topology is displayed in the **Topology** area of the New Business Service dialog box.




5 Define the associated service offerings

In the **Service Offering** area, Kim finds that none of the existing service offerings provide the objective requirements needed for the new service, but the **Silver** service offering is close to what is needed.

Kim uses the **Clone Service Offering** option to make an copy of the Silver service offering, then opens the copy for editing.



In the Edit Service Offering - Silver(1) dialog box, Kim defines a new name and description for the service offering, and makes the necessary changes in the **Objectives Definition** area. (For more information on editing service offerings, see "How to Create or Edit a Service or CI Offering" on page 210.)

 **Edit Service Offering - Silver(1)**


Service Offering Definition

* Name: Financial Service Offering


Description: For use with financial service

Objectives Definition


Calendars and Tracking Periods



Name	Hour	Day	Week	Month	Quarter
Business ...					
24x7					

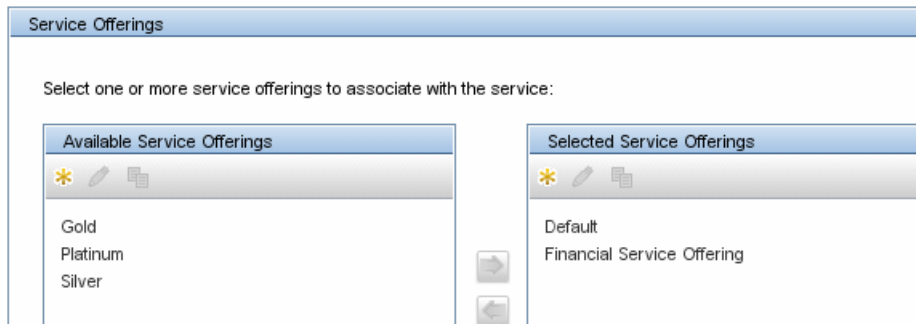


Objectives Definition For: Business Hours Hour; 24x7 Week; 24x7 Month



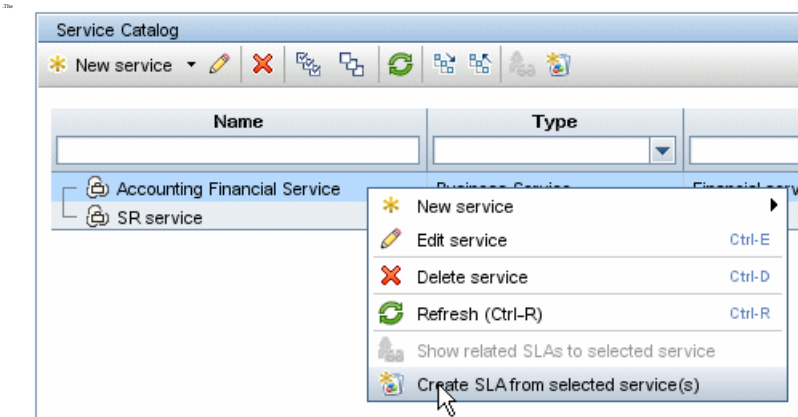
Name	Units	Operator	Exce...	Met	Minor...	
System Pe...		>	95.0	90.0	85.0	83
Application...	seconds	<	10.0	11.0	12.0	13

After saving the changes, Kim moves the new service offering into the **Selected Service Offerings** area.

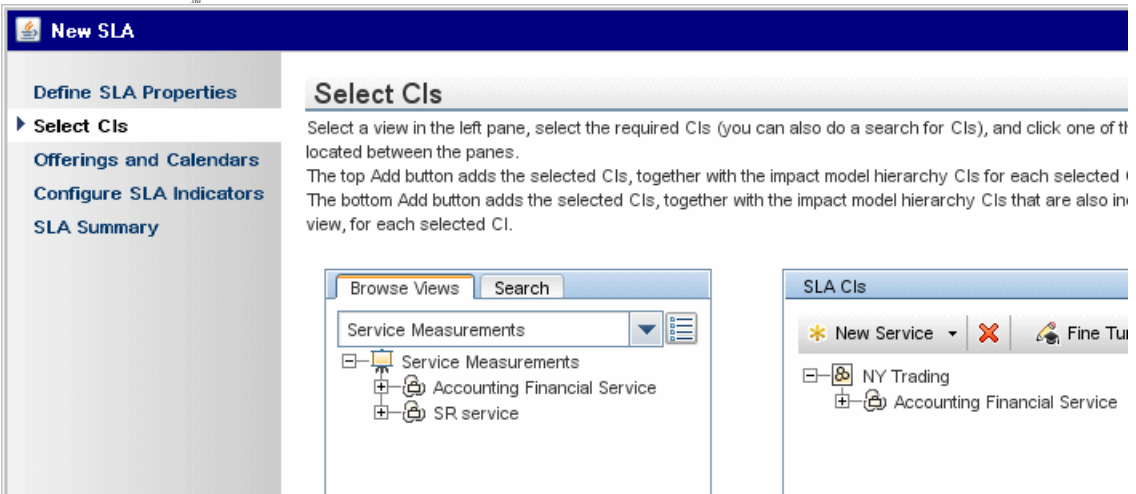


6 Create an SLA based on the service

After saving the new service, it is added to the list of services in the Service Catalog table. Kim selects the service name and selects **Create SLA from selected service(s)** in the shortcut menu.



The SLA Wizard opens in a new browser window, with the Accounting Financial Service CI already defined in the **Select CIs** page. Kim defines the rest of the information for the SLA. (For more information on creating SLAs, see "How to Use SLM to Monitor Your Service Agreements" on page 69.)



Reference



Services Manager User Interface

This section includes (in alphabetical order):

- New Business or Infrastructure Service/Edit Service Dialog Box on page 176
- Related SLAs Dialog Box on page 179
- Services Manager Page on page 180



New Business or Infrastructure Service/Edit Service Dialog Box

This dialog box enables you to define a Business Service or Infrastructure Service CI representing a service provided by or consumed by your organization.

To access	Use one of the following: <ul style="list-style-type: none">➤ Select Admin > Service Level Management > Services Manager. Click the New Service button and select New Business Service or New Infrastructure Service, or click the Edit Service button.➤ In the SLA Wizard > Select CIs page, select one of the New Service menu options.
Important information	You can define additional properties for the new CI in Admin > RTSM Administration > Modeling Studio .
Relevant tasks	"How to Define a Service for an SLA – Use-Case Scenario" on page 169
See also	"Services in Service Level Management - Overview" on page 166

Properties Area



User interface elements are described below:



UI Element (A-Z)	Description
Description	This field has a maximum length, depending on the character set. If you exceed the limit a message appears.
Location	The geographical or logical location for this service. Click the ellipsis button (...) to open the Select Location dialog box, where you can select a location or define a new one. For details, see "Location Manager" in <i>Platform Administration</i> .
Name	The service name must be unique. This field has a maximum length, depending on the character set. If you exceed the limit a message appears.
Provider	The service provider for this service. Click the ellipsis button (...) to open the Select Provider dialog box, where you can select a provider or define a new one. For details, see "Providers and Customers for Services and SLAs" on page 44.

Topology Area

This area enables you to define and manage the service topology that supports the service CI. For more information, see "Service Topologies" on page 167.

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

UI Element (A-Z)	Description
	CI Properties. Opens the CI Properties dialog box, displaying properties for the selected CI.
	Expand All. Displays all the CIs in the topology.




UI Element (A-Z)	Description
	Collapse All. Displays only the highest level of the topology.
<Topology>	<p>When editing a service, the Topology area displays the underlying service topology defined for the service CI.</p> 
Edit Service Topology	<p>This button opens the Modeling Studio application in a new browser window, with the appropriate model in focus for the type of service you are defining (business or infrastructure). Define or edit the topology for the service.</p> <p>For details on defining topologies in Modeling Studio, see "IT Universe Manager" in the <i>Modeling Guide</i>.</p>

Service Offerings Area

This area enables you to associate service offerings with the service.

Important information	New service offerings that you define in the Service Offerings area, and all changes you make to existing service offerings, are updated to the service offering repository.
Relevant tasks	"How to Create or Edit a Service or CI Offering" on page 210
See also	"Service and CI Offerings" on page 205

User interface elements are described below:



UI Element (A-Z)	Description
	New Service Offering. Opens the Service Offering Definition dialog box, where you define a new service offering. The new service offering is added to the list in the table.
	Edit Service Offering. Opens the Service Offering Definition dialog box for a selected service offering, enabling you to edit the service offering details.
	Clone Service Offering. Clones the selected service offering, and adds the copy to the list in the table with the name "Copy of <name>". You can then edit the copy as required and rename it.
Available Service Offerings	Lists the available service offerings that can be associated with the service. Use the arrows to move a service offering to the Selected Service Offerings column.
Selected Service Offerings	Lists the service offerings to be associated with the service. At least one service offering must be added to the list before you can save the service.

Related SLAs Dialog Box

This dialog box enables you to view information on the SLAs that include a selected service.

To access	In the Services Manager page, click Show related Service Agreements to selected service .
Important information	This button is disabled if the selected service is not included in any SLA.
See also	"Building SLAs with the SLAs Wizard" on page 31

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









UI Element	Description
	Export to Excel. Opens the Export Table dialog box, enabling you to save the contents of the Related SLAs table in Microsoft Excel format.
	Export to PDF. Opens the Export Table dialog box, enabling you to save the Related SLAs table in PDF format.
Customer	The customer for the SLA services.
Description	The description defined for the SLA.
Name	The SLA name.
State	<p>The current operational state of the SLA. For an explanation of each state, see "Agreements Manager Page" on page 124.</p> <p>You can filter the contents of the table by selecting a State from the dropdown list.</p>


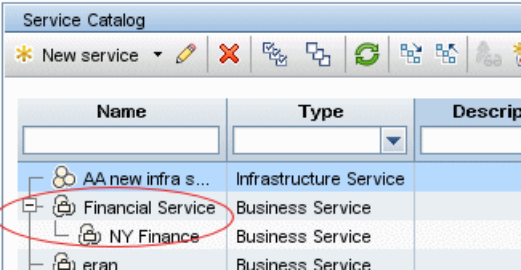
 **Services Manager Page**

This page displays the service catalog contents, and enables you to manage your Business Service and Infrastructure Service CIs and their associated service offerings.

To access	Select Admin > Service Level Management > Services Manager
Relevant tasks	"How to Define a Service for an SLA – Use-Case Scenario" on page 169
See also	"Services in Service Level Management - Overview" on page 166

User interface elements are described below:

UI Element (A-Z)	Description
	New Service. Opens the New Service dialog box, where you create a new Business Service or Infrastructure Service CI. For details, see "New Business or Infrastructure Service/Edit Service Dialog Box" on page 176.
	Edit Service. Opens the Edit <Service name> Service dialog box, where you can modify the parameters for the selected service CI. For details, see "New Business or Infrastructure Service/Edit Service Dialog Box" on page 176.
	Delete Service. Deletes the selected service CIs. Note: You cannot delete a service CI currently being consumed by an SLA.
	Select All. Selects all service CIs in the Service Catalog table.
	Clear Selection. Deselects all service CIs in the Service Catalog table.
	Refresh. Updates the information in the Service Catalog table. Use to refresh the table after clearing filter options.
	Show related Service Agreements to selected service. Opens the Related SLAs dialog box, listing the SLAs that include the selected service.
	Create Service Agreement from selected service(s). Opens the SLA Wizard in a new window, enabling you to create an SLA based on one or more selected service CIs. If you select a service with child service CIs, then that service CI and all its child service CIs are added to the SLA.
Description	The user-defined description for the service CI.

UI Element (A-Z)	Description
Name	<p>The service CI name. Click the Expand  button next to a service CI name to view the child service CIs included in that service's topology.</p> 
Provider	The service provider (Organization CI) associated with the service CI.
Service Offerings	The service offerings associated with the service CI, listed alphabetically.
Type	Shows whether the service CI is a Business Service or an Infrastructure Service.
Used by SLAs	Shows whether the service CI is currently included in an SLA.

4

Adjusting SLA Data

This chapter includes:

Concepts

- Adjusting SLA Data - Overview on page 184
- Retroactive SLA Data Corrections on page 185

Tasks

- How to Schedule Planned and Retroactive Downtime for an SLA on page 187
- How to Define a Data Correction - Examples on page 193

Reference

- SLA Data Corrections User Interface on page 197

Concepts

Adjusting SLA Data - Overview

System or network downtime can skew the data for CIs associated with the affected components. To compensate for this, BSM enables you to schedule downtime and data correction periods, for planned and retroactive downtime events and other events that affect data in SLA. The relevant periods are excluded from SLA calculations, and are marked with Downtime status in Service Level Management reports.

You can define a one-time event or a schedule for recurring downtime events, and you can define whether the events impact specific SLAs or all SLAs.

There are two methods for adjusting the SLA data:

- **Planned downtime.** For future events, for example, a planned upgrade, maintenance event, or holiday, you define and manage downtimes using the Downtime Management page in Platform Administration. For details, see "Downtime Management" in *Platform Administration*.

Note:

- Downtimes affect only the data received after the event is defined, and from the start date defined for the downtime. If you want to change a downtime retroactively so it affects your SLA, then you should define a data correction. For details, see "Retroactive SLA Data Corrections" on page 185.
 - The Downtime Event Description area that can be displayed in SLM reports does not include information for planned downtimes, only for data correction schedules.
-

- **Retroactive downtime.** For retroactive events, for example, a power outage or unplanned maintenance, you define and manage data correction schedules in SLM. For details, see "Retroactive SLA Data Corrections" on page 185.

When an SLA, or CIs in an SLA, include periods of downtime, the SLM reports show the relevant periods marked as Downtime status (colored lavender), regardless of whether the downtime originated from a planned downtime in Downtime Management or from an SLA data correction in SLM.

For task details, see "How to Schedule Planned and Retroactive Downtime for an SLA" on page 187.

Retroactive SLA Data Corrections

You define SLA data correction schedules to make retroactive adjustments to SLA data. (Downtimes defined in the Downtime Management page in Platform Administration only affect future data.)

For example, you discover that testing of an application is causing disruption to a server monitored by your SLAs. The testing will continue for an hour a day over the next week, so you define a downtime (in the Platform Administration Downtime Management page) for the future testing. But you also want to exclude from your SLAs the data from testing periods that have already taken place, so you define an SLA data correction schedule for those time periods.

The data correction periods are excluded from SLA calculations, and are marked with Downtime status in Service Level Management reports. In addition, the Downtime Event Description area displayed in reports (displayed by enabling the option in the Advanced Options dialog box), provides information on data corrections that are applicable to the report. For details, see "Advanced Options Dialog Box" on page 447.

You define SLA data correction schedules in the SLA Data Correction Schedule Dialog Box. For details, see page 198.

After defining or editing an SLA data or correction schedule, you need to run recalculation on your SLAs so that the data changes are applied to the SLAs. For details, see "Recalculation for SLAs" on page 67.

Note: When defining an SLA Data Corrections Schedule, the dialog box also allows you to define future events. However, you should not use the data correction for defining future events, these should only be defined as downtimes in the Downtime Management page in Platform Administration.

Caution: If you define a data correction and recalculate the SLA, then later delete the data calculation, then the data correction is not taken into consideration in any future recalculations of the SLA.

Tasks

How to Schedule Planned and Retroactive Downtime for an SLA

This task describes how to schedule periods of planned downtime and retroactive downtime (data corrections) to adjust the data in SLAs. The relevant downtime periods are shown with Downtime status in Service Level Management reports, and any data reported for the CIs in downtime can be excluded from SLA calculations.

This task includes the following steps:

- "Prerequisites" on page 187
- "Define a planned downtime" on page 188
- "Define a data correction" on page 190
- "Run recalculation" on page 191
- "Results" on page 191

1 Prerequisites

At least one SLA must be defined before you can define a downtime or data correction schedule. For details about defining SLAs see "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75.

You must have change permissions for any SLA that you want to include in a downtime or data correction schedule. For details, see "User Management — Overview" in *Platform Administration*.

2 Define a planned downtime

You define a planned downtime that impacts SLA data in the **Admin > Platform > Downtime Management** page. Click the **Create new downtime** button to open the New Downtime Wizard and define the required information for the downtime.

The downtimes that you define for CIs in the New Downtime Wizard impact various actions associated with the CIs across BSM (in addition to any impact you define within the SLM domain).

For user interface details, see "New Downtime Wizard" in *Platform Administration*.

On the Action Page of the wizard:

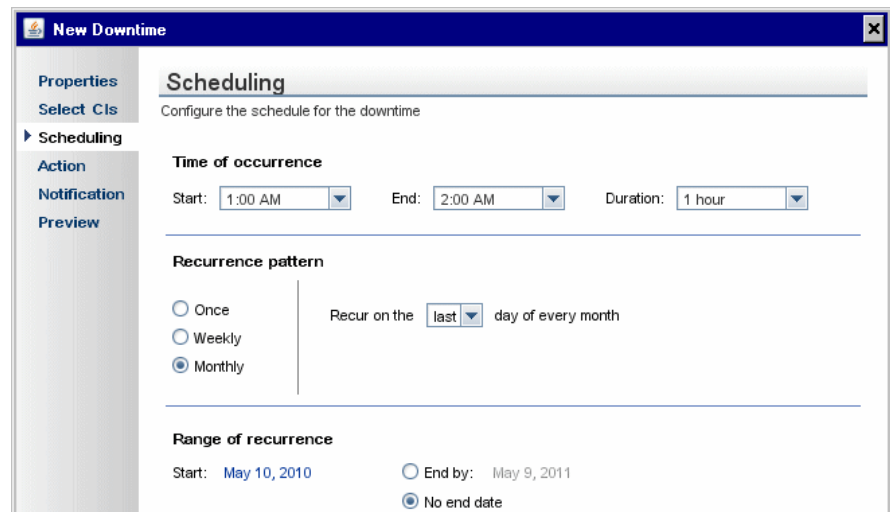
- Select the fourth radio button for **Enforce downtime on Reports and KPI calculations; suppress events, alerts & notifications**.
- Select the **Affect related SLAs** check box.
- Select the relevant radio button:
 - **All**. Select if you want the downtime applied to the relevant CIs in all SLAs that include the CIs.
 - **Selected**. Select if you want the downtime applied to the relevant CIs only within specific SLAs. After selecting this option, the ellipsis button is enabled. Click to open the Select SLAs dialog box and select the SLAs you want the downtime to impact. (Only SLAs that contain at least one of the selected CIs are included in the Available SLAs list.)



Example of a monthly downtime:

On the last day of every month, a SiteScope machine is scheduled for an hour's maintenance at 1:00 AM. Therefore, the IT Ops director must define a recurring event and exclude all relevant CIs from reports and SLAs during this period.

- 1 The IT Ops director accesses the Downtime Management page and opens the New Downtime Wizard.
- 2 On the Select CIs page, he adds the impacted SiteScope profile CIs (the CI descendants are added automatically).
- 3 On the Scheduling page, he sets **Time of occurrence** to 1:00 AM with duration of 1 hour. In the **Recurrence pattern** area, he selects **Monthly** and sets recurrence to the last day of the month. **Range of recurrence** is **No end date**.



The screenshot shows the 'New Downtime' wizard with the 'Scheduling' tab selected. The left sidebar contains links for Properties, Select CIs, Scheduling (active), Action, Notification, and Preview. The main content area is titled 'Scheduling' and includes the instruction 'Configure the schedule for the downtime'.

Time of occurrence

Start: 1:00 AM End: 2:00 AM Duration: 1 hour

Recurrence pattern

☐ Once
☐ Weekly
☒ Monthly

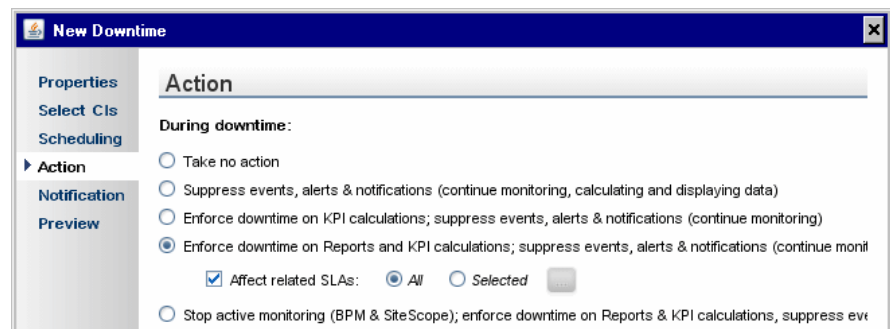
Recur on the last day of every month

Range of recurrence

Start: May 10, 2010 End by: May 9, 2011

☒ No end date

- 4 On the Action page, he selects the fourth radio button, and sets the downtime to affect all SLAs.



The screenshot shows the 'New Downtime' wizard with the 'Action' tab selected. The left sidebar contains links for Properties, Select CIs, Scheduling, Action (active), Notification, and Preview. The main content area is titled 'Action' and includes the instruction 'During downtime:'.

During downtime:

☐ Take no action
☐ Suppress events, alerts & notifications (continue monitoring, calculating and displaying data)
☐ Enforce downtime on KPI calculations; suppress events, alerts & notifications (continue monitoring)
☒ Enforce downtime on Reports and KPI calculations; suppress events, alerts & notifications (continue monitoring)

☒ Affect related SLAs: ☒ All ☐ Selected

☐ Stop active monitoring (BPM & SiteScope); enforce downtime on Reports & KPI calculations, suppress ev

3 Define a data correction

You define a data correction to retroactively adjust SLA data for unplanned downtime in the SLA Data Correction Schedule dialog box. For user interface details, see "SLA Data Correction Schedule Dialog Box" on page 198.

- In the **Event Schedule General Properties** area, select the **Exclude data reported** check box, so that the data reported during the scheduled period is excluded from SLA calculations. Clear the check box if the data correction is informational only.
- In the **Scheduling** area of the dialog box, define how often the data correction is applied to the SLA data, by selecting the type of schedule, and its duration or frequency:
 - **One-time data correction.** Select the **Once** radio button, and define a start date. Then, either select the **End time** radio button and define the end date and time, or select the **Event duration** radio button and enter the duration for the data correction in days, hours, and minutes.
 - **Recurring data correction.** Select the **Daily, Weekly, Monthly** or **Yearly** radio button and define how often the data correction occurs. In the **Duration and Recurrence range** area, set the start date and the duration for the data correction, then, either select the **End time** radio button and define the end date and time to limit the recurrences to end at a certain date, or select the **No end date** radio button if you want the recurrence to be open-ended.

For examples of defining one-time and recurring data corrections, see "How to Define a Data Correction - Examples" on page 193.

4 Run recalculation

For each SLA that is impacted by an SLA data correction, you must run recalculation so that SLM implements the data adjustment. For details, see "Recalculation for SLAs" on page 67.

5 Results

In **Applications > Service Level Management > SLA Reports**, access the required report. The data that is impacted by the downtime or data correction is shown in Downtime status.

To view information on the data corrections that are relevant for the data in a report (including data corrections that do not impact on the reported data), open a report, click the **Advanced Options** link, and select the **Downtime Event Description** check box. After generating the report, the relevant data corrections are displayed in the Downtime Event Descriptions area.

Example:

In the following example, a data correction was defined for May 5th for the Client_1 application in the Springfield Finance Server SLA. After recalculating the SLA, the CI Summary report shows the Client_1 CI and its child CIs with Downtime status for the day.

CI Summary 5/4/10 12:00 AM-5/11/10 12:00 AM Asia/Jerusalem						
Data						
	5/4	5/5	5/6	5/7	5/8	
CIs	24x7	24x7	24x7	24x7	24x7	
Client_1	60.000	-	60.000	60.000		
Client_1	60.000	-	60.000	60.000		
tx 10	100.000	-	100.000	100.000		
tx 15	100.000	-	100.000	100.000		
tx 1 failed	0.000	-	0.000	0.000		
tx 2 failed	0.000	-	0.000	0.000		
tx 5	100.000	-	100.000	100.000		
<div><div></div> Exceeded<div></div> Failed<div></div> No Data<div></div> Downtime</div>						
Downtime Events Descriptions						
Alert Name	Description	Start Date	End Date	Alert Type	Impact	Excluded from
Springfield server		5/5/10 12:00 AM	5/6/10 12:00 AM	SLA	SLA: Springf... Client_1	Yes
test DT		5/10/10 9:00 AM	5/11/10 9:00 AM	SLA	SLA: amit te...): amit test	Yes

How to Define a Data Correction - Examples

The following tasks give examples of defining SLA data corrections for a one-time event and for a recurring event.

Note: This task is part of a higher-level task. For details, see "How to Schedule Planned and Retroactive Downtime for an SLA" on page 187.

Example of a one-time data correction:

The VP of eBusiness looks through the previous day's SLAs Summary reports and realizes that, due to maintenance in the Springfield office, the Web applications server had been down for three hours and all BPM CIs from that location have failed. She needs to define a retroactive data correction and adjust the reports to reflect the downtime.

- 1** She clicks **New** in the **SLM Administration > SLA Data Corrections** page to open the SLA Data Correction Schedule dialog box.
- 2** She enters a name and description for the data correction and leaves the **Exclude data reported** check box selected, so that the data reported during the scheduled period is excluded from SLA calculations.

- 3 In the **Scheduling** area, she selects the **Once** radio button, and defines the start date and time of the server problem, then selects the **Data correction duration** radio button and defines a 3 hour duration for the data correction.

The screenshot shows the 'SLA Data Correction Schedule' dialog box. It has two main sections: 'Event Schedule General Properties' and 'Scheduling'. In the 'General Properties' section, the 'Name' field contains 'SPRWEB04 down' and the 'Description' field contains 'Web appl server down, bxs failed'. The checkbox 'Exclude data reported during event (use this to remove scheduled maintenance periods from the report)' is checked. In the 'Scheduling' section, the 'Once' radio button is selected. Below this, the 'Duration and Recurrence range:' section shows 'Start date: 5/10/10 4:55 PM' and 'End time: 5/10/10 4:55 PM'. The 'Event duration' is set to 0 days, 03 hours, and 00 minutes.

- 4 In the **Data Correction Schedule Action** area, she selects one of the SLAs that cover the Springfield office contracts (she must create a data correction for each SLA), and then clicks **CI Filter** and selects the appropriate CI.

The screenshot shows the 'Event Schedule Action' dialog box. It contains a dropdown menu for 'SLA:' with 'Springfield Finance Server' selected. Below this is a 'CI Filter' button and a text field containing 'collection1'. At the bottom, there is a note: 'Note that this event will affect results also for the descendants of the selected CIs.'

- 5 After creating the data correction, she recalculates the SLA for the relevant time period.

Example of a weekly recurring data correction:

The IT Ops manager discovers that, as a result of upgrading and testing a server's graphics card for a new map application, there was a slowdown of the server. The tests were run at 7:00 AM for one hour every other Tuesday, over the past six weeks. All SLAs that monitor the server were affected, and so he defines a data correction to appear in reports to explain the slowdown.

- 1** He defines a new SLA data correction, and enters a name and detailed description for the downtime (each SLA needs its own event).
- 2** He clears the **Exclude data reported** check box, so that this data correction is informational only, no adjustment is made to the SLA calculations.

SLA Data Correction Schedule

Event Schedule General Properties

Name: * WEBSF-004 maint

Description: Server tests run every other Tuesday caused operations slowdown

☐ Exclude data reported during event (use this to remove scheduled maintenance periods from the report)

- 3** In the **Scheduling** area, he selects the **Weekly** radio button, and defines a frequency of every 2 weeks on Tuesday.

Scheduling

☐ Once ☐ Daily ☒ Weekly ☐ Monthly ☐ Yearly

Frequency:

Every 2 week(s) on:

☐ Sunday ☐ Monday ☒ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

- 4** In the **Duration and Recurrence range** area, he sets the start date and time for the first Tuesday testing period, and selects a duration of one hour. He selects the **End time** radio button and defines the end date and time for six weeks after the first testing.

Duration and Recurrence range:
Start date: [5/10/10 7:00 AM](#)
Event duration: hours, minutes.
☐ No end date
☒ End time: [6/15/10 12:00 PM](#)
Note: Dates are specified according to the user time zone which is set to Asia/Jerusalem

- 5** In the **Data Correction Schedule Action** area, he selects the relevant SLA, clicks **CI Filter**, and selects the server.
- 6** After saving the data correction, he verifies that the data correction information appears in the reports.

Note: There is no need to recalculate the SLA, since this data correction is for information only (**Exclude data reported** check box was not selected).

Reference



SLA Data Corrections User Interface

This section includes:

- CI Selection Dialog Box on page 197
- SLA Data Correction Schedule Dialog Box on page 198
- SLA Data Corrections Page on page 202



CI Selection Dialog Box

This dialog box enables you to select the CI that is impacted by an SLA data correction schedule for an SLA.

To access	In the SLA Data Correction Schedule Dialog Box, select an SLA and click CI Filter .
Relevant tasks	"How to Schedule Planned and Retroactive Downtime for an SLA" on page 187

The dialog box displays the topology of CIs for the SLA selected in the SLA Data Correction Schedule dialog box. Select the required CI.

The descendants of the selected CI are also affected by this data correction.

 **SLA Data Correction Schedule Dialog Box**

This dialog box enables you to define data correction schedules for SLAs, so that the SLAs can be retroactively updated to mark the relevant periods as Downtime status in Service Level Management reports.

To access	Select SLA Data Corrections tab > click New or the Edit button for a data correction.
Important information	<ul style="list-style-type: none">➤ When the SLA Data Correction Schedule dialog box is opened in edit mode, you cannot change the defined options for SLA or CI Filter.➤ After defining or editing a data correction schedule you must recalculate the relevant SLAs to retroactively apply the data correction to the SLAs.➤ You can view the data correction details in relevant reports that include the SLA or CI. For details, see "Advanced Options Dialog Box" on page 447.
Relevant tasks	<ul style="list-style-type: none">➤ "How to Schedule Planned and Retroactive Downtime for an SLA" on page 187➤ "How to Define a Data Correction - Examples" on page 193
See also	"Retroactive SLA Data Corrections" on page 185

Data Correction Schedule General Properties Area

User interface elements are described below:

UI Element (A-Z)	Description
Description	Enter a description of the data correction. This field has a maximum length depending on the character set. If you exceed the limit a message appears.
Exclude data reported during data correction	Select the check box if you want data reported during the data correction to be marked as downtime and excluded from SLA calculations. Clear the check box if you want this data correction to be for informational purposes only, and any data reported during the data correction to be treated as usual—to be included in SLA calculations, and not be marked with Downtime status. This is useful, for example, if a machine is working slower than usual due to testing, and you want a data correction to appear in reports to explain the slowdown (without making any changes to the reported data). Default value: The check box is selected by default.
Name	Enter a name for the data correction.

Scheduling Area

Description	Enables you to schedule the time periods during which data is affected. You can define a one-time data correction (Once) or a recurring data correction (Daily, Weekly, Monthly, or Yearly).
Important information	<ul style="list-style-type: none"> ➤ Dates are specified according to the user's time zone. ➤ The specific parameters displayed in this area depend on the schedule type you select. ➤ The granularity for scheduling is defined by the granularity of the SLA calculation cycle. This is 5 minutes (by default).

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

UI Element (A-Z)	Description
<Schedule type>	<p>Select the schedule type for the data correction: Either a one-time data correction (Once) or a recurring data correction (Daily, Weekly, Monthly, or Yearly).</p> <p>Your selection determines the parameters displayed in the rest of the Scheduling area.</p>
Data correction duration	<ul style="list-style-type: none">➤ For a "once" data correction, select the Data correction duration radio button if you want to define a fixed duration for the data correction, and set the duration in days, hours, and minutes.➤ For a recurring data correction, set the duration of the data correction in hours and minutes. The maximum duration for a recurring data correction is 23 hours and 59 minutes.
End time	<p>Select the End time radio button if you want to define an end date for the data correction, or to limit the data correction recurrences to end at a certain date.</p> <p>Click the date link to set the required end date and time.</p> <p>Default value: Current date and time.</p>
Frequency	<p>In the Frequency area, you define how often a recurring data correction is to occur. For example, you can set the data correction to occur:</p> <ul style="list-style-type: none">➤ For a Daily data correction—every 5th day.➤ For a Weekly data correction—every 3 weeks, on Tuesday and Friday.➤ For a Monthly data correction—on the 10th day of every month, or the 1st day of every fourth month.➤ For a Yearly data correction— every July 4th.

UI Element (A-Z)	Description
No end date	Select the No end date radio button if you want the recurring data correction to be open-ended (unbound).
Start date	Click the link to set the required start date and time. Default value: Current date and time.

Data Correction Schedule Action Area

User interface elements are described below:




UI Element (A-Z)	Description
CI Filter	<p>This parameter is displayed after you select a specific SLA in the SLA box.</p> <p>Click the CI Filter link to open the CI Selection dialog box, where you select the CI that is impacted by the data correction.</p> <p>After selecting a CI, the CI Filter parameter displays the name of the CI.</p> <p>Note: To perform a multi-selection, press Ctrl and select more than one CI.</p>
SLA	<p>If the data correction is for a specific CI in an SLA, select the required SLA from the list.</p> <p>If the data correction affects all SLAs, select All SLAs (you must have edit permissions for all SLAs). The data correction is then recursively applied for all CIs in each SLA.</p> <p>Default value: All SLAs</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ The SLA list includes only those SLAs for which you have edit permissions. ➤ If you select All SLAs, and the SLAs have different time zones, then the data correction date and time displayed in reports may not be relevant for all the SLAs.

 **SLA Data Corrections Page**

This page lists the data corrections defined for SLAs, and enables you to create, edit, or delete data corrections.

To access	Select Admin > Service Level Management > SLA Data Corrections .
Relevant tasks	"How to Schedule Planned and Retroactive Downtime for an SLA" on page 187
See also	"Retroactive SLA Data Corrections" on page 185

User interface elements are described below:

UI Element (A-Z)	Description
	Edit Data Correction. Opens the SLA Data Correction Schedule dialog box enabling you to edit data correction details.
	Delete Data Correction(s). Deletes the selected data corrections. Any reports generated from this time reflect the deletion. Service Level Management also updates the Audit Log. For details, see "The Audit Log" on page 24. Note: You must recalculate the relevant SLAs again after deleting the data correction, if you want to remove the impact of the data correction on the SLA data. For details, see "Recalculation for SLAs" on page 67.
	Create New Data Correction. Opens the SLA Data Correction Schedule dialog box enabling you to define a new data correction schedule.
End Date	The date and time when the data correction terminates.
Impact	The name of the SLA impacted by the data correction (or displays All SLAs), and the names and type of the impacted CIs.

UI Element (A-Z)	Description
Name	The name defined for the data correction.
Scheduling	The frequency of the data correction schedule: <ul style="list-style-type: none">➤ Single. This is a one-time occurring data correction.➤ Recurring. This is a data correction scheduled for repeated occurrence (daily, weekly, monthly, or yearly).
Start Date	The date and time from which the data correction begins.
Type	Displays SLA .

5

Service and CI Offerings

This chapter includes:

Concepts

- Offering Packages - Overview on page 206
- Predefined Offering Packages on page 207
- Offering Packages in SLAs on page 208

Tasks

- How to Create or Edit a Service or CI Offering on page 210
- How to Update Offering Package Changes to SLAs on page 220

Reference

- Service and CI Offerings User Interface on page 222

Troubleshooting and Limitations on page 231

Concepts

Offering Packages - Overview

As part of the process of creating an SLA, you select the offering packages to be used by the CIs in the SLA. Offering packages define the business performance objectives for the KPIs and HIs attached to the CIs.

There are two types of offering packages:

- **Service offerings.** These are fine-tuned to define the performance requirements for each specific service (represented by Business Service or Infrastructure Service CIs) included in your SLA. Service offerings are associated with the services, setting service level expectations to meet the different business needs of your service consumers. For example, you may offer an application-hosting service at platinum level to your external customers, and at silver level to internal customers within the company.
- **CI offerings.** These provide general performance requirements for all CIs that are not part of a specific service within your SLA (non-service CIs).

Each offering package defines objectives for the KPIs. An objective contains all the target thresholds for a KPI instance across all the time slots (the tracking periods in each calendar).

Service Level Management provides predefined offering packages (see "Predefined Offering Packages" on page 207); you can also define your own offering packages, which can be based on existing offering packages, or completely custom-designed (see "How to Create or Edit a Service or CI Offering" on page 210).

Predefined Offering Packages

Service Level Management provides four service offerings and one CI offering out-of-the-box. These are included in the list on the **Admin > Service Level Management > Repositories > Service and CI Offerings** page. These offerings packages contain predefined KPI objectives, for different quality of service.

The predefined service offerings are:

- **Platinum.** This service offering is designed for mission-critical applications, and systems that must function more or less continuously. Thresholds are set at high levels, for example, the threshold for **Exceeded** status for the availability and performance KPIs is set at > **99%**.
- **Gold.** This service offering is designed for business-critical applications. Thresholds are set at moderately high levels, for example, the threshold for **Exceeded** status for the availability and performance KPIs is set at > **97%**.
- **Silver.** This service offering is designed for infrastructure with less demanding availability requirements, such as test and development servers or non-mission critical websites. Thresholds are set at a moderate levels, for example, the threshold for **Exceeded** status for the availability and performance KPIs is set at > **95%**.
- **Default.** This service offering is designed to provide standard thresholds for a service. For example, the threshold for **Exceeded** status for the availability and performance KPIs is set at > **98%**.

There is one predefined CI offering, **Default**. This CI offering is designed to provide standard thresholds for a non-service CI. For example, the threshold for **Exceeded** status for the availability and performance KPIs is set at > **98%**.

Each predefined offering package covers the two default calendars, **24x7** and **Business Hours**, and has thresholds defined for every KPI objective for the following KPIs:

- **Application.** For details, see "Application" on page 532.
- **Application Availability.** For details, see "Application Availability" on page 532.

- Application Performance. For details, see "Application Performance" on page 532.
- Application Response Time. For details, see "Application Response Time" on page 532.
- MTBF (Mean Time Between Failures). For details, see "MTBF (Mean Time Between Failures)" on page 534.
- MTBSI (Mean Time Between System Incidents). For details, see "MTBSI (Mean Time Between System Incidents)" on page 534.
- MTTR (Mean Time to Repair). For details, see "MTTR (Mean Time to Repair)" on page 534.
- System Availability. For details, see "System Availability" on page 536.
- System Performance. For details, see "System Performance" on page 536.
- User Availability. For details, see "User Availability" on page 537.
- User Performance. For details, see "User Performance" on page 537.

You can edit the predefined offering packages, but you cannot delete them.

Offering Packages in SLAs

On the Offerings and Calendars Page of the SLA Wizard, you define the offering package to use with each root service CI and child service CI, and with all the non-service CIs, within that SLA.

- For each service CI included in the SLA, you select the specific service offering to be used for that service from the list of service offerings associated with that service. You define the associated service offerings when you add the service to the Service Manager, or you can modify the list from within the SLA.
- If you include one or more non-service CIs at the root level in the SLA, you select the CI offering to be used for those CIs. You select one CI offering from the list of all available CI offerings.

Once you have selected the required offering packages, the objectives in those offering packages are applied to the service CI or the non-service CIs, and to the topology under those CIs, within the confines of the SLA. The objectives, together with the relevant KPI and HI assignments, determine which KPIs and HIs are attached to the monitoring level CIs. The objectives also define the target thresholds used for the KPIs and HIs attached to the CIs.

Note the following:

- If a CI appears more than once in the SLA, associated with more than one service, and using different offering packages, then the KPI definitions are merged, so that all relevant indicators are attached to the CI, regardless of the CI path. The most stringent objective threshold values from the attached offering packages are used for the indicators.
- Only the targets and tracking periods that you define to include in the current SLA (on the Define SLA Properties Page of the SLA Wizard) are actually used for each attached KPI and HI; the values defined in the offering packages for other targets and tracking periods are ignored.
- Only the calendars that you define to use for the current SLA (on the Offerings and Calendars Page of the SLA Wizard) are actually used for monitoring each CI; other calendars included in the offering packages are ignored.
- Within an SLA, you have the option to override the offering package and assignments by manually editing the KPIs, HIs, and objectives for CIs. For details, see "Manually Changing SLA Content" on page 46.

Tasks

How to Create or Edit a Service or CI Offering

This task describes how to create and edit offering packages. You can edit the predefined offering packages, and define your own custom offering packages.

Note: Any offering package can be edited by any user, even if the offering package is used for a CI within an SLA. See "How to Update Offering Package Changes to SLAs" on page 220.

This task includes the following steps:

- "Open the Service Offering/CI Offering dialog box" on page 211
- "Specify offering package properties" on page 211
- "Select calendars" on page 211
- "Select time slots" on page 213
- "Set objectives" on page 214
- "Results" on page 219

1 Open the Service Offering/CI Offering dialog box

You create and edit both service and CI offerings from the **Repositories > Service and CI Offerings** page. You can also create and edit service offerings only, from the New Service or Edit Service dialog box (accessed from the Services Manager page).

In the Service and CI Offering page, you can create a new offering package in one of the following ways:

- To create a new offering package (with no predefined objective thresholds), click the **New Service Offering** or **New CI Offering** button. The New Service Offering or New CI Offering dialog box is opened, containing by default the **Application Performance** and **Application Availability** KPIs (without defined thresholds), and the two predefined calendars, **24x7** and **Business Hours**.
- To create a service offering based on an existing service offering, or a CI offering based on an existing CI offering, select the required entry in the table and click the relevant **Clone...** button. The copy is added to the table, ready for editing.
- To create a service offering based on an existing CI offering, or a CI offering based on an existing service offering, select the required entry in the table and click the relevant **Copy to...** button. The copy is added to the other table, ready for editing.

For user interface details, see "Service and CI Offerings Page" on page 222.

2 Specify offering package properties

Enter a name and description for the service offering or CI offering in the **Service/CI Offering Definition** area.

For user interface details, see "New/Edit Service Offering/CI Offering Dialog Box" on page 226.

3 Select calendars

Define the calendars to use with this offering package:

- To add or remove calendars to/from the table, click the **Select Calendars** button and select the calendars for the offering package from the list of available calendars.

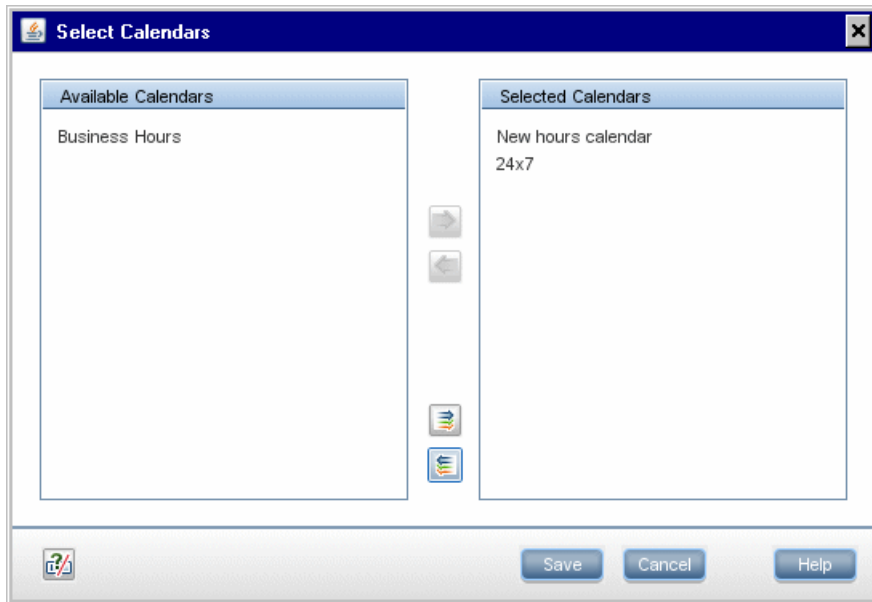


- To create a new calendar to use with the offering package, click the **New Calendar** button to open the New Calendar Wizard. For details on creating the calendar, see "How to Customize Calendar Default Settings" on page 306.




After creating the calendar, it is added to the Calendar and Tracking Periods table, and available to use with other offering packages.

Example:

For an offering package, the **24x7** calendar and user-defined **New hours calendar** are required, but the default **Business Hours** calendar is not. The changes are made in the Select Calendars dialog box:



The selected calendars are displayed in the Calendar and Tracking Periods table:

Objectives Definition			
Calendars and Tracking Periods			
  			
Name	Hour	Day	Week
24x7			
New hours calendar			




4 Select time slots

In the **Calendar and Tracking Periods** table, select the required time slots for an objective. You will then define the thresholds for a KPI to apply during these time slots.

Select the time slots by clicking on the required cells, or by clicking a calendar name, or by using the **Select All** button.

Example:

The administrator wants to define a set of KPI thresholds for all tracking periods in the **New hours calendar**, and for the **Week** and **Quarter** tracking periods in the **24x7** calendar. He selects all the appropriate time slots in the table (and can then define the thresholds for those time slots).

Objectives Definition							
Calendars and Tracking Periods							
  							
Name	Hour	Day	Week	Month	Quarter	Year	SLA Period
24x7							
New hours calendar							

5 Set objectives

In the **Objectives Definition For** table, you add or remove KPIs, and define the thresholds used for the KPIs. The offering packages can include any of the SLM KPIs.

- To add a KPI, click the **Add KPI to Offering** button and select the KPI you want to include. Only the KPIs that are not already included in the offering package are listed. Either define the target thresholds, or leave them all as 0. Any values you define in the Add KPI to Offering dialog box are applied for all time slots for that KPI (you can later modify the values for specific time slots).
- To modify the target thresholds for a KPI, select the required time slots, then select the KPI and click the **Edit** button. Define the required operator and thresholds in the Edit KPI dialog box.

Note the following when defining objectives:

- There is some validation of logical order with the selected operator for the entered values.
- It is not mandatory to define a value for every KPI target. You can leave a target empty by clearing the value for that target in the Edit KPI dialog box.
- If a KPI does not have target values defined during a particular time slot, then the SLM reports show that KPI with the numerical value for the time slot, but with status **No Data** (blue).
- If there is at least one target value defined for a KPI during a particular time slot, but not all targets have values, then in SLM reports that include that KPI instance for a CI, only the defined targets are displayed for that time slot.

For example, if for a particular time slot and KPI there is a value defined for **Exceeded**, and all other targets are left undefined, then for that time slot in the reports the KPI only has two possible statuses, **Exceeded** or **Failed**.

- When more than one time slot is selected, and there are different threshold values or operators defined for a KPI across the selected time slots, then each affected cell in the table and in the Edit KPI dialog box displays [**Mixed Values**].









Example:

The administrator adds a new KPI, Software Availability, to the predefined Platinum service offering, and defines thresholds for the targets:

The screenshot shows a software interface for editing a service offering. The main window is titled "Edit Service Offering - Platinum". Inside, there is a section for "Service Offering Definition" with fields for "Name" (Platinum) and "Description" (Designed for mission-critical applications a). Overlaid on this is a smaller dialog box titled "Add KPI To Offering". This dialog box contains fields for "Name" (Software Availability), "Units" (%), and "Operator" (>=). Below these are five rows for defining thresholds, each with a status icon and a value field: "Exceeded:" (green checkmark, 90), "Met:" (blue triangle, 85), "Minor Breached:" (yellow triangle, 80), "Breached:" (orange triangle, 75), and "Failed:" (red X, Otherwise). At the bottom of the dialog are "Save", "Cancel", and "Help" buttons.

Status	Value
Exceeded:	90
Met:	85
Minor Breached:	80
Breached:	75
Failed:	Otherwise

The new KPI is added to the list of KPIs in the table, with the threshold values defined for all time slots:

Calendars and Tracking Periods							
   							
Name	Hour	Day	Week	Month	Quarter	Year	SLA Period
Business H... 24x7							
Objectives Definition For:Business Hours Hour;Business Hours Day;Business Hours Week;Business Hours Month;Business Hours Qu							
   							
Name	Units	Opera...	Exceeded	Met	Minor B...	Breached	Failed
System Performance		>	99.0	96.0	93.0	90.0	Otherwise
Application Respons...	seconds	<	7.0	8.0	9.0	10.0	Otherwise
System Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
Application Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
Application	%	>	99.0	96.0	93.0	90.0	Otherwise
User Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
User Performance	%	>	99.0	96.0	93.0	90.0	Otherwise
MTBF	seconds	>	43200.0	36000.0	28800.0	21600.0	Otherwise
Application Performa...	%	>	99.0	96.0	93.0	90.0	Otherwise
MTTR	%	>	99.0	96.0	93.0	90.0	Otherwise
MTBSI	seconds	>	43200.0	36000.0	28800.0	21600.0	Otherwise
Software Availability	%	>=	90	85	80	75	Otherwise

The Administrator wants different threshold values for the KPI during the 24x7 calendar time slots, so he selects those time slots in the Calendars and Tracking Periods table and opens the Edit KPI dialog box for the Software Availability KPI:

Calendars and Tracking Periods

✱ ✎ ✕ ✎ ✎

Name	Hour	Day	Week	Month	Quarter	Year	SLA Period
Business H...							
24x7							

Objectives Definition For:24x7 Hour;24x7 Day;24x7 Week;24x7 Month;24x7 Quarter;24x7 Year;24x7 SLA Period

✱ ✎ ✕ ✎ ✎

Name	Units	Opera...	✓ Exceeded	⚠ Met	⚠ Minor B...	⚠ Breached	✕ Failed
System Performance		>	99.0	96.0	93.0	90.0	Otherwise
Application Respons...	seconds	<	7.0	8.0	9.0	10.0	Otherwise
System Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
Application Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
Application	%	>	99.0	96.0	93.0	90.0	Otherwise
User Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
User Performance	%	>	99.0	96.0	93.0	90.0	Otherwise
MTBF	seconds	>	43200.0	36000.0	28800.0	21600.0	Otherwise
Application Performa...	%	>	99.0	96.0	93.0	90.0	Otherwise
MTTR	%	>	99.0	96.0	93.0	90.0	Otherwise
MTBSI	seconds	>	43200.0	36000.0	28800.0	21600.0	Otherwise
Software Availability	%	>=	90	85	80	75	Otherwise

In the Edit KPI dialog box, he defines the required thresholds:

Edit KPI

Name:

Software Availability

Units:

%

Operator:

>=

Exceeded:

95

Met:

85

Minor Breached:

78

Breached:

75

Failed:











Otherwise

Save

Cancel

Help

In the Edit Service Offering dialog box, when the Administrator selects multiple time slots, certain cells for the Software Availability KPI display **Mixed Values**.

Calendars and Tracking Periods							
							
Name	Hour	Day	Week	Month	Quarter	Year	SLA Period
Business H... 24x7							
Objectives Definition For:Business Hours Day;Business Hours Week;Business Hours Month;Business Hours Quarter;Business Hours							
							
Name	Units	Opera...	Exceeded	Met	Minor B...	Breached	Failed
System Performance		>	99.0	96.0	93.0	90.0	Otherwise
Application Respons...	seconds	<	7.0	8.0	9.0	10.0	Otherwise
System Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
Application Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
Application	%	>	99.0	96.0	93.0	90.0	Otherwise
User Availability	%	>	99.0	96.0	93.0	90.0	Otherwise
User Performance	%	>	99.0	96.0	93.0	90.0	Otherwise
MTBF	seconds	>	43200.0	36000.0	28800.0	21600.0	Otherwise
Application Performa...	%	>	99.0	96.0	93.0	90.0	Otherwise
MTTR	%	>	99.0	96.0	93.0	90.0	Otherwise
MTBSI	seconds	>	43200.0	36000.0	28800.0	21600.0	Otherwise
Software Availability	%	>=	[Mixed Values]	85	[Mixed Values]	75	Otherwise

6 Results

The service offering or CI offering is added to the appropriate table on the Service and CI Offerings page, and is available for:

- (service offering only) associating with service CIs, see "How to Define a Service for an SLA – Use-Case Scenario" on page 169).
- using within SLAs, see "How to Define an SLA in the SLA Wizard - Use-Case Scenario" on page 75.

How to Update Offering Package Changes to SLAs

You may need to make changes to both custom and predefined offering packages as a result of changes made elsewhere in Service Level Management, and you may need to make these changes after the offering package is used in an SLA. For example:

- ▶ If you add new calendars to Service Level Management, you must edit the relevant offering packages to include the calendars.
- ▶ If you add new KPIs in the repositories, and you want the KPIs to be assigned to CIs, you must add the new KPIs to both the relevant KPI assignment (see "How to Define a KPI or HI Assignment" on page 250) and to the relevant offering packages.
- ▶ If you want to remove a KPI from CIs in an SLA, you can remove the KPI from the relevant offering packages.
- ▶ You may want to change the threshold values used for a KPI by changing the values in the offering packages.

Changes you make to the offering packages are not automatically updated to the SLAs where the offering packages are used. Use the following processes to update the changes.

To add a new calendar to an SLA:

If you added a new calendar to offering packages, you can include the calendar in the relevant SLAs as follows:

- 1** Open the SLA in edit mode. (See "New SLA/Edit SLA Wizard" on page 136.)
- 2** Navigate to the Offerings and Calendars Page.
- 3** Select the calendar check box in the SLA Calendars list (the calendar is listed only if it is included in all offering packages used by the SLA).
- 4** Click **OK** to save the changes. The objectives of all indicators of all CIs are updated as a result of adding the calendar.
- 5** Run recalculation for the SLA if you want the change to impact the historical data. See "Define Recalculation Task Dialog Box" on page 129.

To update other offering package changes to an SLA:

- 1** Open the SLA in edit mode. (See "New SLA/Edit SLA Wizard" on page 136.)
- 2** Navigate to the Offerings and Calendars Page.
- 3** Select the row for the CI that is using the changed offering package.



- 4** Click the **Hard-sync** button.
- 5** Click **OK** to save the changes. The hard-sync affects all CIs associated with the service. KPIs, HIs, and objective values for the selected CI and its CI topology (within this SLA) are all reassigned, according to the values defined in the offering package and assignments.
- 6** Run recalculation for the SLA if you want the change to impact the historical data. See "Define Recalculation Task Dialog Box" on page 129.

Reference

Service and CI Offerings User Interface

This section includes:








- Service and CI Offerings Page on page 222
- Add KPI to Offering/Edit KPI Dialog Box on page 224
- New/Edit Service Offering/CI Offering Dialog Box on page 226

Service and CI Offerings Page

This page enables you to manage the offering packages used within SLAs: the service offering packages used for service CIs, and the CI offering packages used for non-service CIs.

To access	Select Admin > Service Level Management > Repositories > Service and CI Offerings .
Important information	Service Level Management comes with four predefined service offerings: Default , Gold , Platinum , Silver ; and with one predefined CI offering: Default . You cannot delete these predefined offering packages.
Relevant tasks	"How to Create or Edit a Service or CI Offering" on page 210
See also	"Offering Packages - Overview" on page 206

The following table describes the toolbar buttons and tables in both the Service Offerings and CI Offerings areas:

UI Element	Description
	New Service Offering/New CI Offering. Opens the New Service Offering dialog box/New CI Offering dialog box, where you define a new offering package.
	Edit Service Offering/Edit CI Offering. Opens the Edit <Name> Service Offering dialog box/New <Name> CI Offering dialog box, where you can modify the offering package details.
	Clone Service Offering/Clone CI Offering. Adds a copy of the selected service offering/CI offering to the table with the name "Copy of <name>". You can then edit the copy as required and rename it.
	Copy to CI Offerings. Adds a copy of the selected service offering to the CI Offerings table with the name "Copy of <name>". You can then edit the copy as required for the CI offering, and rename it.
	Copy to Service Offerings. Adds a copy of the selected CI offering to the Service Offerings table with the name "Copy of <name>". You can then edit the copy as required for the service offering, and rename it.
	Delete Service Offering/Delete CI Offering. Deletes the selected service offerings/CI offerings. Note: You cannot delete the predefined service offerings or CI offering, or service offerings or CI offerings that are in use within an SLA.
	Refresh. Updates the table with changes made by other users (including changes made to service offerings or CI offerings while working in the Services Manager page).
Description	Hold the cursor over the description to view the complete text in a tooltip.

UI Element	Description
Name	The name defined for the offering package. Displays Copy of <Name> for cloned offering packages (whether they were copied from the Service Offerings table or the CI Offerings table). Tip: You can rename the predefined offering packages, if required.
Type	Identifies whether the offering package is one supplied with Service Level Management (Predefined), or user-defined (Custom).



Add KPI to Offering/Edit KPI Dialog Box

This dialog box enables you to define the objective thresholds to use with a KPI in an offering package. The objective thresholds are set for defined time periods within a calendar (time slots). You can also define additional KPIs to use in the offering package.

To access	On the Service and CI Offerings page, open the New/Edit Service Offering/CI Offering dialog box > click the Add KPI to Offering button or the Edit KPI button.
Important information	When adding a new KPI to an offering package, the objective thresholds that you define in the Add KPI to Offering dialog box are set for <i>all</i> time slots, regardless of the time slots selected when you opened the New KPI dialog box. After adding the new KPI, you should edit the threshold values for each time slot, as required. When you open the KPI in edit mode, the changes you make in the Edit KPI dialog box are applied only for the selected time slots.
Relevant tasks	"How to Create or Edit a Service or CI Offering" on page 210
See also	"Offering Packages in SLAs" on page 208

User interface elements are described below:

UI Element (A-Z)	Description
Exceeded, Met, Minor Breached, Breached	<p>The KPI objectives for which you set thresholds. Enter the required threshold value for each objective. If you do not want to define a value for an objective, clear the value in the objective box (even if the value is 0.0).</p> <p>The threshold values must be logically. Some automatic validation is performed.</p>
Failed	<p>The value for this KPI objective is always Otherwise. This means that every value with actual data that falls beyond the Breached threshold is given Failed status.</p>
Name	<p>The KPI name. When defining a new KPI to be added to the KPIs table for the offering package, select from the dropdown list.</p>
Operator	<p>The measurement operator to be used with the objective thresholds for the KPI. Select from:</p> <ul style="list-style-type: none"> ➤ < Less than ➤ <= Less than or equal to ➤ > Greater than ➤ >= Greater than or equal to
Units	<p>The units of measurement used for the KPI value, for example, \$ or %. The units are taken from the KPI definition, and the field is non-editable in this dialog box.</p>

New/Edit Service Offering/CI Offering Dialog Box

The information below describes the content of the following dialog boxes:

- New Service Offering
- New CI Offering
- Edit Service Offering - <name>
- Edit CI Offering - <name>
- <Name> Service Offering Properties
- <Name> CI Offering Properties

These dialog boxes enable you to create, edit, or review offering packages to be used with Service CIs (for business services or infrastructure services) and with non-service CIs.

Each offering package defines the required objectives for the KPIs associated with the CIs.

To access	<p>Use one of the following:</p> <ul style="list-style-type: none"> ➤ Select Repositories > Service and CI Offerings, then click one of the New Service Offering/Edit Service Offering or New CI Offering/Edit CI Offering buttons. ➤ (For service offerings only) In Services Manager, open the New Service/Edit Service dialog box. In the Service Offerings area, click one of the New Service Offering or Edit Service Offering buttons. ➤ In the SLA Wizard > Offerings and Calendars page > Edit Service/CI Offering Selection dialog box, click the Offering Properties button, to open the <name> Service/CI Offering Properties dialog box. This dialog box is in read-only mode.
Important information	<ul style="list-style-type: none"> ➤ Changes made to an offering package are not automatically updated to SLAs. See "How to Update Offering Package Changes to SLAs" on page 220. ➤ When the properties dialog for the service offering or CI offering is opened from the SLA Wizard, it is for viewing purposes only, you cannot make any changes.
Relevant tasks	<ul style="list-style-type: none"> ➤ "How to Create or Edit a Service or CI Offering" on page 210 ➤ "How to Update Offering Package Changes to SLAs" on page 220
See also	"Offering Packages - Overview" on page 206

Service Offering/CI Offering Definition Area

These fields have maximum lengths depending on the character set. If you exceed the limit a message appears.

User interface elements are described below:





UI Element (A-Z)	Description
Description	Description of the offering package.
Name	Name given to the offering package.

Objectives Definition Area

This area enables you to select time slots in the **Calendar and Tracking Periods** table, in order to then define KPI objectives for the selected time slots in the **Objectives Definition For:** table. A time slot is a specific tracking period within a specific calendar.

Calendar and Tracking Periods Table

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

UI Element (A-Z)	Description
	New Calendar. Opens the New Calendar Wizard, where you define a new calendar to use with the offering package. The new calendar is added to the table, and to the list of available calendars for SLM. For details, see "New Calendar/Edit Calendar Wizard" on page 310.
	Select Calendars. Opens the Select Calendars dialog box, where you select which calendars to use with this offering package from the available calendars.
	Select All. Selects all time slots in all calendars.
	Clear Selection. Clears all selected time slots in all calendars.






UI Element (A-Z)	Description
<Time slot>	<p>Each individual tracking period cell within each calendar is a time slot.</p> <ul style="list-style-type: none"> ➤ Click a time slot to select it; click it again to clear the selection. ➤ Click a calendar name to select all time slots for that calendar. Click it again to clear the selections. ➤ Click the Select All button to select all time slots in the table. Click the Clear Selection button to clear all selected time slots. ➤ You can see a list of the currently selected time slots in the Objectives Definition For: table header.
<Tracking period>	<p>All tracking periods that are available for SLAs, such as Hour, Day, and so forth.</p>
Name	<p>Lists the calendars that are used for this offering package. To change the calendar selection, use the Select Calendars button.</p> <p>Click a calendar name to select all time slots for the calendar.</p> <p>Default values: 24x7, Business Hours.</p>

Objectives Definition For <Selected Time Slots> Table

The table displays the objective thresholds for each KPI, as defined for the currently selected time slot(s). The table is disabled until one or more time slots are selected in the **Calendar and Tracking Periods** table.

Tip: Click a table column to sort by that column.

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

UI Element (A-Z)	Description
	Add KPI to Offering. Opens the Add KPI to Offering dialog box, where you select a KPI to add to the KPIs list for this offering package, and define thresholds. For details, see "Add KPI to Offering/Edit KPI Dialog Box" on page 224.
	Edit KPI. Opens the Edit KPI dialog box, where you can modify thresholds for the KPI currently selected in the table. For details, see "Add KPI to Offering/Edit KPI Dialog Box" on page 224. The button is enabled when only one KPI is selected.
	Delete KPI. Deletes all selected KPIs.
	Select All. Selects all KPIs.
	Clear Selection. Clears all selections in the table.
Exceeded/Met/Minor Breached/Breached/Failed	The KPI targets for which you are setting thresholds. When more than one time slot is selected, and there are different threshold values defined for the KPI across the selected time slots, then the cell displays {Mixed values} . Select each time slot individually to see the values for that time slot. Note: The Failed target always displays Otherwise , meaning that every value with actual data that falls beyond the Breached threshold is given Failed status.
Name	Lists the KPIs that are used for this offering package. Default value: When defining a new offering package, Application Performance and Application Availability KPIs are included in the table by default (but can be removed).

UI Element (A-Z)	Description
Operator	The measurement operator to be used with the objective thresholds for the KPI, for example, >, <, >=, <= .
Units	The units of measurement used for the KPI value, for example, \$ or %. The units are taken from the KPI definition.

Troubleshooting and Limitations

This section describes troubleshooting and limitations for service and CI offerings.

- The objective thresholds entered in the Service Offering Definition/CI Offering Definition dialog box must be logical for the operator, and ordered logically. (Service Level Management performs some validation for the entered values.)
- After making changes to a offering package that is in use with an SLA, and running the hard-sync option in the SLA, you must run a recalculation task if you want the changes to be reflected in the previously aggregated data for the reports. For details, see "Define Recalculation Task Dialog Box" on page 129.

6

Indicator Assignments and Propagations

This chapter includes:

Concepts

- Assignment and Propagation Overview on page 234
- Assignments in Service Level Management on page 235
- Understanding Assignments on page 238
- SiteScope Dynamic HI Assignment on page 240
- Propagation Rules on page 241
- How Propagation Rules are Implemented on page 244
- Validation on page 249

Tasks

- How to Define a KPI or HI Assignment on page 250
- How to Create KPI Assignments on End User Subgroups on page 252
- How to Define a KPI Propagation Rule on page 255

Reference

- Indicator Assignments User Interface on page 257

Troubleshooting the Assignment Mechanism on page 294

Concepts

Assignment and Propagation Overview

When you create a new SLA and assign CIs to the SLA, or when the topology of an SLA is changed, the KPI and HI assignment mechanism is automatically triggered. This mechanism assigns the appropriate KPIs and HIs to each CI, based on its CI type (CIT).

When a KPI is assigned to a CI, or when a CI is attached to another CI, the propagation mechanism propagates the appropriate KPIs to the parent CIs. By default, when a KPI is assigned to a CI the KPI is automatically propagated to the CI's parents. Propagation rules enable you to define exceptions to the default KPI propagation, and to propagate other KPIs, the same KPI using a different rule, or no KPIs.

For details about the assignment mechanism, see "Understanding Assignments" on page 238. For details about the propagation mechanism, see "Propagation Rules" on page 241.

Note: To access the Assignments tab in Service Level Management administration, you must have user permissions of **Admin** or higher.

Assignments in Service Level Management

In Service Level Management, an assignment defines which indicators *can* be assigned to a CI, and not which indicators *are* assigned to the CI (as in Service Health). The assignment definitions determine which KPIs and HIs can be assigned to the CIs in the SLA, while the offerings determine which KPIs and HIs are in fact assigned to each CI.

When you make changes to an assignment, these changes do not affect existing SLAs. If you add a CI to an SLA, the new settings are implemented on the CI. If you want to update settings on an existing SLA, perform manual synchronization in the SLA Wizard.

This section includes the following topics:

- "HIs in Service Level Management Assignments" on page 235
- "KPIs in Service Level Management Assignments" on page 236
- "HI Assignment in Operations Management or NNMI" on page 236
- "Outage KPI Assignments in Operations Management or SiteScope" on page 237
- "Operations Management Assignments Without Topology Synchronization" on page 237

HIs in Service Level Management Assignments

In Service Level Management, if an HI is assigned to a CI, but the offering does not assign it to the CI, or if this HI does not contribute to any KPI, the HI will not appear in the SLA. In contrast, in Service Health HIs can be assigned to a CI even if it does not contribute to any KPI.

In Service Level Management, only HIs that are defined in assignments, or manually added to a CI, can be created on a CI. In contrast, in Service Health an HI can be created dynamically from an event which has an ETI and a corresponding HI, even if this HI is not defined in an assignment.

KPIs in Service Level Management Assignments

If a KPI is defined in an assignment as calculated based on HIs, and it has a list of related HIs defined for it in the assignment, it will only be assigned if the related HIs are also assigned.

If a KPI is not defined as based on HIs, or if it does not have a list of related HIs defined in the assignment, it will always be assigned.

HI Assignment in Operations Management or NNMi

By default, the Operations Management and NNMi content packs create assignments that place all the possible HIs that are relevant for monitoring a CI on that CI type.

If you are only interested in monitoring specific HIs on a CI in your SLA, manually edit the assignment to match the policy on your SPIs. For example, if your SLA should only include CPU, disk space, and ping, delete all other HIs from the corresponding CIs.

This manual deletion can be performed either in the SLA Wizard for specific SLAs, or in the Assignments tab for all SLAs. If you want these changes to take effect on future SLAs, perform this using the Assignments tab.

Outage KPI Assignments in Operations Management or SiteScope

If you have System Availability KPIs on your monitored infrastructure elements, and you want to also have Outage KPIs assigned, start one of the KPI assignments that use the System Availability KPI to calculate outages. These assignments are on the Infrastructure Element CIT, and are called **Outage Assignment for OM Infrastructure Element** and **Outage Assignment for SiteScope Infrastructure Element**.

Note: If you activate a KPI assignment to calculate outages based on System Availability you must also create a corresponding propagation rule, since the default group rule is Outage Based on Business Availability. You can also change the rule manually, in the Configure SLA Indicators page of the SLA Wizard.

Operations Management Assignments Without Topology Synchronization

Assignments for Operations Management come in two variants: one has the **Monitored By** field defined as **OM**, while the other has this field blank. The assignments that have this field blank are stopped by default.

If you are working with Operations Management and you are not using Topology Synchronization with BSM (but rather you are synchronizing using the RTSM), stop the default Operations Management assignments and start the assignments that have the **Monitored By** field blank. Perform this change on all CITs you want in your SLA.

For details, see "Topology Synchronization" in *Using Operations Management*.

This action will cause BSM to treat all discovered CIs which are not coming from a domain such as SiteScope, EUM, and so on, as monitored by Operations Management.

Understanding Assignments

Assignments are mechanisms that are activated under certain conditions to incorporate specific data into Service Level Management. An assignment includes a condition and a task, as follows:

- **Condition.** This describes a CI, or sets conditions on the attributes of a CI.
- **Task.** This describes the KPIs, HIs, and business rules that are assigned to the CIs when the condition occurs, and a CI is added to an SLA, or an SLA is modified.

For details on creating assignments, see "How to Define a KPI or HI Assignment" on page 250.

This section also includes the following topics:

- "Assignment Mechanism" on page 238
- "Inheriting and Overriding Assignments" on page 239
- "Assignment Types" on page 239

Assignment Mechanism

The assignment mechanism is automatically activated when you add CIs to an SLA, remove CIs from an SLA, or modify links between a CI and its parent CIs in an SLA.

The assignment mechanism performs the following actions:

- Attaches the relevant KPIs or HIs to the CI.
- Assigns business rules for the KPIs or HIs.
- Assigns selectors for HIs (and for the Outages KPI).

The assignment uses the thresholds defined in the service offering levels attached to the Service CIs. For details, see "Service and CI Offerings" on page 205.

The assignment mechanism is a BSM service named KPI_ENRICHMENT. The service completes the missed assignments as soon as BSM is restarted, after it has been stopped. The assignment mechanism is deployed on the Data Processing server.

Inheriting and Overriding Assignments

Assignments on higher level CITs are inherited by their descendant CITs. When an assignment is inherited, the name of the source CIT appears in parentheses after the assignment name on the child CIT.

An inherited assignment cannot be deleted on a child CIT. If you override an inherited assignment, you can delete the overriding assignment on the child CIT. If you delete an assignment on a parent CIT, it is deleted on its descendant CITs as well.

When you edit an inherited assignment, the edited assignment appears in bold text in the assignments table. You can restore an overriding assignment to its original inherited definitions.

Inherited assignments are not displayed if they are invalid, because these assignments are not relevant for the child CIT. An invalid assignment is only shown on the CIT where it can be fixed. Once it is no longer invalid, it appears on the descendant CITs.

Assignment Types

There are three types of KPI and HI assignments:

- **Predefined.** Out-of-the-box assignments that have not been modified. These assignments can be edited but not deleted. If you edit a predefined assignment, it is labeled Predefined (Customized).
- **Predefined (Customized).** Out-of-the-box assignments that have been edited. These assignments cannot be deleted, but you can restore them to their default settings.
- **Custom.** New assignments that you have created.

SiteScope Dynamic HI Assignment

Service Level Management contains a default assignment named **SiteScope Dynamic Health Indicator Assignment**, which assigns HIs to the CIs monitored by SiteScope. This assignment dynamically assigns HIs to these CIs based on the metrics you have chosen to monitor within SiteScope. If you change the definitions of what is monitored on a CI within SiteScope, the assignment engine will determine the HIs dynamically in run time.

You **cannot** perform the following:

- Create another dynamic assignment.
- Delete this assignment.
- Add HIs to this dynamic assignment, or remove HIs from the assignment.
- Modify the condition or selector defined for an HI in this assignment.

You **can** make the following changes within the dynamic assignment:

- Change the HI calculation rule. Note that the new rule is used to calculate *all* of the HIs assigned via this assignment.
- Change the rule parameters and rule thresholds (where relevant).
- Stop the assignment if necessary.

Propagation Rules

By default, when a KPI is assigned to a CI the KPI is automatically propagated to the CI's parents. The business rule used to calculate the propagated KPI on the CI's parents is the default group rule defined in the KPI repository. KPIs are propagated from child CIs to parent CIs; HIs are not propagated to parent CIs.

Propagation rules enable you to define exceptions to the default KPI propagation. Using propagation rules you can specify that when a KPI is assigned to a CI one of the following occurs:

- No KPI is propagated to the CI's parent CI.
- The same KPI is propagated to the parent CI, but with a business rule that is not the default group rule.
- One or more different KPIs are propagated to the CI's parent CI.

Each propagation rule is defined per CI type, and includes a condition and a task, as follows:

- **Condition.** The condition describes the CIT of the child CI, the CIT of the parent CI, and the KPI assigned to the child CI. When these conditions are met, the task is then applied.
- **Task.** The task describes which KPIs and business rules are propagated to the parent CI.

You can define and view propagation rules using the Propagation Rules tab, which is part of the Service Level Management Administration Assignments tab. For user interface details, see "Assignments Tab" on page 257.

Note: If a parent CI is already assigned a specific KPI, and the propagation is defined as propagating the same KPI from the child CI, the KPI is not propagated from the child CI.

Some limitations apply when the same KPIs are propagated to the parent CI from multiple child CIs. For details, see "Propagation Limitations" on page 248.

This section also includes the following topics:

- "Default Propagation" on page 242
- "When is the Propagation Mechanism Activated" on page 243
- "Inheriting Propagation Rules" on page 243
- "Recommended Procedure" on page 243

Default Propagation

By default, KPIs are propagated as follows:

- Each KPI attached to any child CI of any parent CI is automatically propagated to the parent CI.
- The KPI is assigned the KPI's default group business rule as defined in the KPI definition in the KPI repository. For details, see Default Group Rule in "New KPI/Edit KPI Dialog Box" on page 540.
- The default propagation is not visible in the user interface. You cannot modify it.
- The thresholds used by the KPIs are not defined in the propagation task; they are defined in the service or CI offering attached to the Service CIs. For details, see "Service and CI Offerings" on page 205.

Note: Propagation rules respond to changes within the KPI and rule repositories. For example, if you have defined a propagation rule using a particular KPI, and this KPI is removed from the repository, the propagation rule becomes invalid.

When is the Propagation Mechanism Activated

The propagation mechanism is triggered when:

- You create an SLA, and you complete the wizard flow. For details, see "New SLA/Edit SLA Wizard" on page 136.
- The topology of an SLA changes, either by adding or removing a CI or a link.
- You edit an SLA, and you delete a KPI, or add a new KPI. For details, see "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113.

Inheriting Propagation Rules

Propagation rules on higher level CITs are inherited by their descendant CITs. When a propagation rule is inherited, the name of the source CIT appears in parentheses after the propagation rule name on the child CIT.

An inherited propagation rule cannot be deleted on a child CIT. If you delete a propagation rule on a parent CIT, it is deleted on its descendant CITs as well.

If there are two rules on a CIT; one inherited from a parent CIT, and one assigned to the CIT itself, then the one assigned to the CIT itself will be applied.

Recommended Procedure

You create a set of propagations for a topology, meaning that for each level of parent CI in the hierarchy, you must create a set of propagations. A lot of the propagations are repetitive so the correct procedure is to:

- 1** Create a set of general propagations of **Type 1** for a specific parent CI.
- 2** Create a set of more specific propagations of **Type 2** for a specific KPI and a specific parent CI.
- 3** Create a set of more specific propagations of **Type 3** for a specific KPI, a specific child CI, and a specific parent CI.

- 4 Create a set of non-propagations of **Type 4** for a specific KPI, a specific child CI, and a specific parent CI.

The propagations are then sorted and applied to each parent CI. For details, see "How Propagation Rules are Implemented" on page 244.

How Propagation Rules are Implemented

The matcher of the propagation mechanism considers all the propagation definitions and sorts them before applying them. All the customized propagations that you define are added to a list of existing propagations that is already sorted.

This section also includes the following topics:

- "Propagation Logic" on page 244
- "De-propagation" on page 247
- "Propagation Limitations" on page 248

Propagation Logic

A propagation is defined per triplet (parent CI type, child CI type, and KPI attached to the child CI type). The matcher sorts the complete list of propagations according to the algorithm described below.

1 Parent sorting:

- A comparison triplet parent CI that is equal to the propagation parent CI (the number of hierarchy levels is 0 in the model hierarchy) is better than a comparison triplet parent CI that is derived – with a larger number of hierarchy levels – from the propagation parent CI.
- A comparison triplet parent CI that is derived, in the class model, from the propagation parent CI with a smaller number of hierarchy levels is better than a comparison triplet parent CI that is derived from the propagation parent CI, with a larger number of hierarchy levels.

2 Child sorting:

The mechanism performs the same type of sorting as the parent CI sorting on the child CI.

3 KPI sorting:

The sorting is performed on the KPI where the KPI corresponding to the triplet KPI is better than **Any KPI**.

For each KPI that is propagated from a child CI type to a parent CI type (comparison triplet), the matcher scans the list of sorted propagations to find the propagation that most closely matches the triplet. A propagation is considered a match when:

- The parent CI type and the child CI type in the propagation correspond exactly to the comparison triplet parent CI or child CI, **OR** the child CI class in the comparison triplet is derived (in the class model hierarchy) from the child CI type in the propagation and the same for the parent CI type.

AND

- The propagation KPI has the same ID number as the comparison triplet KPI **OR** the propagation condition specifies **Any KPI**.

The first propagation in the sorted list is used.

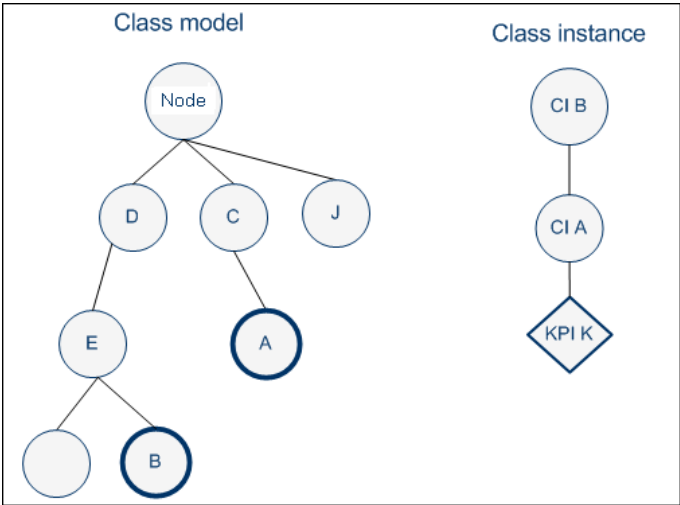
Example:

The predefined and customized propagations defined are as follows:

No	Propagation Condition			How does the propagation match the triplet (parent CI=B, child CI=A, and KPI=K)?
	Parent CI	Child CI	KPI	
1	Node	Node	All	The propagation includes the triplet.
2	J	Node	All	The propagation does not include the triplet.
3	D	C	All	CI B is derived from CI E, CI D and CI A is derived from CI C in the class model, and the propagation is for all KPIs, so the propagation includes the triplet.
4	E	Node	K	CI B is derived from CI E and CI A is included in Node in the class model, and the propagation is for the K KPI, so the propagation includes the triplet.

No	Propagation Condition			How does the propagation match the triplet (parent CI=B, child CI=A, and KPI=K)?
	Parent CI	Child CI	KPI	
5	E	C	All	CI B is derived from CI E and CI A is derived from CI C in the class model, and the propagation is for all KPIs, so the propagation includes the triplet.
6	E	C	K	CI B is derived from CI E and CI A is derived from CI C in the class model, and the propagation is for the K KPI, so the propagation includes the triplet.

The class model is provided in the picture below.



The result of the sorting procedure is as follows:

- 1 Propagation 6 is at the top of the list as its parent CI type is E (most specific), child CI type C (most specific) and KPI type is K (explicit type).
- 2 Propagation 5 comes after propagation 6 as its only difference with 6 is its generic KPI type.
- 3 Propagation 4 comes after as its child CI type (Node) is more generic than propagation 5's child CI type (C).

- 4** Propagations 3, 2, and 1 are listed afterwards (in this order), as their parent type is less specific (higher in the hierarchy) than type E.
- 5** Propagation 1 goes to the bottom of the list as it is the most generic propagation.

When the propagation mechanism tries to find the closest matching propagation definition to the triplet (parent=CI B, child=CI A and KPI=KPI K) propagation 6 is at the top of the list and is therefore selected.

De-propagation

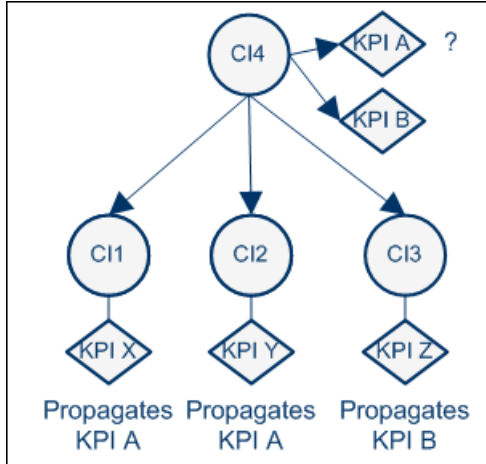
When you delete a KPI attached to a child CI in the Define KPIs page of the SLAs wizard, or remove a link, the de-propagation mechanism is activated for this KPI.

The de-propagation mechanism performs the following steps:

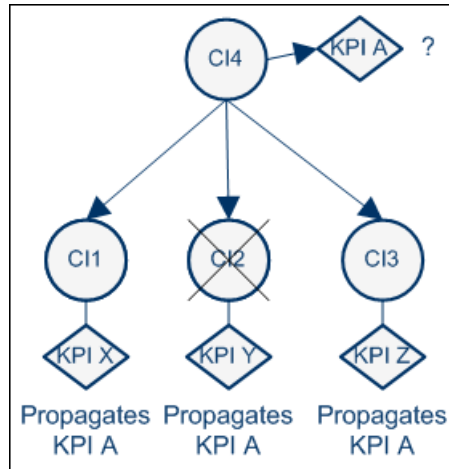
- 1** Searches all the available propagations, for the single propagation that corresponds to the deleted KPI, the child CI it is attached to and the parent CI in the view, using the matcher of the propagation mechanism. The selected propagation rule includes the set of potential KPIs that are propagated by the deleted KPI to from the child CI to the parent CI.
- 2** Retains from the potential KPIs only the KPIs that are currently attached to the parent CI.
- 3** For each KPI (other than the deleted KPI) attached to the child CI or any child CI of the parent CI (siblings) the de-propagation mechanism searches for the propagations that propagate the potential KPIs (from step 2) from the child CIs to the parent CI. KPIs that are propagated by those propagations and correspond to the potential KPIs are removed from the list of potential KPIs.
- 4** The remaining KPIs are deleted from the parent CI.
- 5** The de-propagation mechanism is then applied to the next level of the view topology for each remaining potential KPI.

Propagation Limitations

- If you propagate the same KPI A from different child CIs (CI1 and CI2) with a different propagation, the propagation that affects the parent CI (CI4) regarding KPI A can be either one of the propagations (from CI1 or CI2). Because of this uncertainty, it is recommended to avoid specifying different propagations that propagate the same KPI with different rules and/or thresholds.



- According to the previous limitation, if you propagate the same KPI A from different child CIs (CI1, CI2, or CI3), the propagation that affects the parent CI (CI4) regarding KPI A can be either one of the propagations.



Note: Propagation rules have no retroactive effects; if you make any changes to propagation rules, the changes only affect from that point on.

Validation

The validation mechanism checks that each assignment rule is valid. A tooltip on the CIT tree shows the number of valid and invalid assignments for each CIT.

The CIT toolbar contains a filter to enable you to focus attention on invalid assignments; when you select **Invalid Assignments Only**, the CIT tree expands all the CIT nodes that have invalid assignments.

If there is a problem with an assignment (for example, if an invalid business rule is defined, if an assignment is not unique, or if a referenced property does not exist for the CIT in the RTSM), you can open the assignment for editing. The dialog box that appears contains details regarding which area in the assignment definition is problematic, and should be fixed.

Tasks

How to Define a KPI or HI Assignment

The following section describes how to configure KPI or HI assignments.

Note: For an example showing how to use this task, see "How to Modify a KPI Assignment – Use-Case Scenario" in *Using Service Health*.

This task includes the following steps:

- "Create an assignment or open an assignment for editing" on page 250
- "Configure the assignment condition and task" on page 251
- "Override an inherited assignment" on page 252

1 Create an assignment or open an assignment for editing

To create a new assignment or open an existing assignment for editing, select **Admin > Service Level Management > Assignments**. Depending on the type of assignment you are defining, select the **KPI Assignments** or **Health Indicator Assignments** tab. For user interface details, see "Assignments Tab" on page 257.

Assignments are defined according to CI type (CIT). Select a CIT in the **CI Types** pane, and perform one of the following actions in the **Assignments for CI type** pane:

- To create a new assignment on the CIT, click the **Add** button.
- To clone an existing assignment on the CIT, select an assignment and click the **Duplicate** button. The original assignment is still available, and the new cloned assignment opens automatically for editing.
- To edit an existing assignment on the CIT, select an assignment and click the **Edit** button.

2 Configure the assignment condition and task

An assignment definition includes a condition and a task. The condition describes specific characteristics of a CI. The task describes the KPIs or HIs that are to be assigned automatically to the CI when the condition occurs.

For KPI assignment user interface details, see "Add/Edit KPI Assignments for CI Type Dialog Box" on page 269. For HI assignment user interface details, see "Add/Edit Health Indicator Assignments for CI Type Dialog Box" on page 280.

- a** In the **Assignment Settings** area, define general assignment information.
- b** (Optional) In the **Condition** area, specify the application which is monitoring the CI; this is the value of the CI's **Monitored By** attribute within the RTSM.

Note: To add a value to the **Monitored By** list, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings > Foundations > Sources Configuration**, and edit the entry **Possible Values for Monitored By**.

- c** (Optional) To add additional conditions based on CI properties, click the **Add** button in the **Condition** area, and define one or more property conditions. All of the property conditions must be true for the condition to be met. To edit property conditions, click the field that you want to modify, and edit its contents.
- d** In the **KPI Configurations** area (for KPI assignments) or the **Health Indicator Configurations** area (for HI assignments), define the following:
 - For KPI assignments, define the KPIs that you want assigned to the CIs when the condition is met. For each KPI, specify its business rule and which HIs it uses in its calculation. Note that if a KPI is based on HIs, and the CI has none of the specified HIs assigned, the KPI will not be assigned to the CI. For user interface details, see "Add/Edit KPI to Assignment Dialog Box" on page 274.

- For HI assignments, define the HIs that you want assigned to the CIs when the condition is met. For each HI, specify its priority, business rule, and the selector that defines which data samples are relevant for the HI. For user interface details, see "Add/Edit Health Indicator to Assignment Dialog Box" on page 284.

3 Override an inherited assignment

When an assignment is inherited from a parent CIT, the name of the source CIT appears in parentheses after the assignment name on the child CIT. When overriding an inherited assignment, note the following:

- When you override an inherited assignment, the edited assignment appears in bold text in the assignments table. To restore an overriding assignment to its original inherited definitions, select the assignment and click the **Restore** button.
- The condition of an inherited assignment cannot be edited. To edit the condition, clone the inherited assignment, edit the clone, and delete the original inherited assignment.
- An inherited assignment cannot be deleted on a child CIT. If you override an inherited assignment, you can delete the overriding assignment on the child CIT. If you delete an assignment on a parent CIT, it is deleted on its descendant CITs as well.

Note: When you stop a default assignment and then restart it, the assignment type changes from **Predefined** to **Predefined (Customized)**. To restore the original Predefined type, click **Restore to Default**.

How to Create KPI Assignments on End User Subgroups

To enhance performance, no KPIs are assigned by default to the End User Subgroup CIT. Although there are HI and KPI assignments for this CIT, they are stopped out-of-the-box. The following section describes how to activate assignments on this CIT, if you want your SLA to include KPIs on end user subgroups.

This task includes the following steps:

- "Start the KPI assignment" on page 253
- "Start the HI assignment" on page 253
- "Synchronize existing SLAs" on page 253
- "Edit HIs on end user subgroup CIs, when creating an SLA" on page 253

1 Start the KPI assignment

To start the KPI assignment on the End User Subgroup CIT, select **Admin > Service Level Management > Assignments > KPI Assignments**. From the CI Types tree in the left pane, drill down to **Business Element > End User Group > End User Subgroup**.

From the list of assignments in the right pane, select **End User Subgroup KPI Assignments** monitored by Real User Monitor, and click the **Start** button.

For user interface details, see "Add/Edit KPI Assignments for CI Type Dialog Box" on page 269.

2 Start the HI assignment

Select the **Assignments > Health Indicator Assignments** tab. In the CI Types tree in the left pane, select **End User Subgroup**.

From the list of assignments in the right pane, select **End User Subgroup Assignments** monitored by Real User Monitor, and click the **Start** button.

3 Synchronize existing SLAs

If you created an SLA before starting the End User Subgroup assignments, open the SLA Wizard and perform a hard-sync of the SLA's Service/Non-Service CIs with related Offering.

4 Edit HIs on end user subgroup CIs, when creating an SLA

In each SLA where you want KPIs to be calculated on end user subgroups, edit the HIs used in the KPI calculation to filter according to application.

Open each HI for editing, and add a selector expression so that the HI is filtered by the application which contains the end user subgroup.

- a** To filter HIs by application, you must first have the application ID. Open **Applications > Service Health > 360 View**. Locate the application which contains the end user subgroup for which you want KPIs assigned. Select the **Show > Properties** menu command on the application CI. Copy the value of the **CMDB ID** property.
- b** Within **Admin > Service Level Management**, open an SLA for editing using the SLA Wizard. Within the **Configure SLA Indicators** page, select an end user subgroup CI.
- c** In the **CI Data** pane, select the **Health Indicators** tab and open an HI for editing.
- d** In the Selector area, add a selector expression, as follows:
 - **Field Name.** Type **application_id**.
 - **Operator.** To define one application ID, select the equals sign (=). To define more than one application ID, select **is contained in**.
 - **Type.** Select **Binary**.
 - **Value.** Enter the application ID. If you are entering more than one application ID, enter each of the IDs separated by a comma.

* Field Name:	* Operator:	* Type:	* Value:
application_id	=	Binary	3b15a10e186f366b30b70da0f9f8d62d

OK Cancel Help

How to Define a KPI Propagation Rule

The following section describes how to configure a KPI propagation rule.

This task includes the following steps:

- "Create a propagation rule or open a propagation rule for editing" on page 255
- "Configure the propagation rule's condition and task" on page 255

1 Create a propagation rule or open a propagation rule for editing

To create a new propagation rule or open an existing propagation rule for editing, select **Admin > Service Level Management > Assignments > Propagation Rules**.

Propagation rules are defined according to CI type (CIT). Select a CIT in the **CI Types** pane to show its defined assignments and propagations. Perform one of the following actions in the **Assignments for CI type** pane:

- To create a new propagation rule on the CIT, click the **Add** button.
- To clone an existing propagation rule on the CIT, select a propagation rule and click the **Duplicate** button. The original propagation rule is still available, and the new propagation rule opens automatically for editing.
- To edit an existing propagation rule on the CIT, select a propagation rule and click the **Edit** button.

For user interface details, see "Assignments Tab" on page 257.

2 Configure the propagation rule's condition and task

A propagation rule definition includes a condition and a task. The condition describes specific characteristics of a CI: its CIT, the CIT of its parent CI, and the KPI assigned to the CI. The task describes the KPIs and business rules that are propagated to the parent CI when the condition occurs.

For user interface details, see "Add/Edit Propagation Rule for CI Type Dialog Box" on page 289.

- a** In the **Rule Settings** area, define general propagation rule information.
- b** In the **Condition** area, specify the CIT of the parent CI, and the KPIs assigned to the child CI. Note the following:
 - If the parent CI is the root of the SLA, select **Service Level Agreement** as the parent CIT.
 - If you select **Any KPI**, the condition is filled if the CI has any KPIs assigned. For example, if you do not want any KPI propagated to the parent CI, select this option, and define the task as **Do Not Propagate the KPI**.
- c** In the **Task** area, specify one of the following:
 - **Do not propagate the KPI**. Select this option if you do not want the KPI propagated from the child CI to the parent CI.
 - **Propagate the KPI using another rule**. Select this option if you want the KPI propagated, but using a business rule that is not the default group rule defined for this KPI. Specify the business rule that you want used for the KPI on the parent CI.
 - **Propagate custom KPIs**. Select this option if you want different KPIs propagated to the parent CI, or if you want to propagate the same KPI and rule, but using different rule thresholds. For each KPI, specify the business rule that you want used on the parent CI, and rule thresholds if relevant. For user interface details, see "Add/Edit KPI for Propagation Rule Dialog Box" on page 293.

Note: Propagation rules have no retroactive effects; if you make any changes to propagation rules, the changes only affect from that point on.

Reference

Indicator Assignments User Interface

This section includes:

- Assignments Tab on page 257
- Health Indicator Assignments Page on page 258
- KPI Assignments Page on page 262
- Propagation Rules Page on page 266
- Add/Edit KPI Assignments for CI Type Dialog Box on page 269
- Add/Edit KPI to Assignment Dialog Box on page 274
- Add/Edit Health Indicator Assignments for CI Type Dialog Box on page 280
- Add/Edit Health Indicator to Assignment Dialog Box on page 284
- Add/Edit Propagation Rule for CI Type Dialog Box on page 289
- Add/Edit KPI for Propagation Rule Dialog Box on page 293

Assignments Tab

This tab enables you to create or edit KPI and HI assignments for each CI type, and to create or edit non-default KPI propagation rules for each CI type.

To access	Select Admin > Service Level Management > Assignments .
Relevant tasks	<ul style="list-style-type: none"> ➤ "How to Define a KPI or HI Assignment" on page 250 ➤ "How to Define a KPI Propagation Rule" on page 255
See also	"Assignment and Propagation Overview" on page 234

User interface elements are described below:

UI Element (A-Z)	Description
Health Indicator Assignments	<p>When you create a new SLA and assign CIs to the SLA, the assignment mechanism assigns the appropriate HIs to each CI, based on its CI type (CIT).</p> <p>Click to open the Health Indicator Assignments page, to create or edit HI assignments. For details, see "Health Indicator Assignments Page" on page 258.</p>
KPI Assignments	<p>When you create a new SLA and assign CIs to the SLA, the assignment mechanism assigns the appropriate KPIs to each CI, based on its CI type (CIT).</p> <p>Click to open the KPI Assignments page, to create or edit KPI assignments. For details, see "KPI Assignments Page" on page 262.</p>
Propagation Rules	<p>By default, when a KPI is assigned to a CI the KPI is automatically propagated to the CI's parents. Propagation rules enable you to define exceptions to the default KPI propagation, and to propagate other KPIs, the same KPI using a different rule, or no KPIs.</p> <p>Click to open the Propagation Rules page, to create or edit KPI propagation rules. For details, see "Propagation Rules Page" on page 266.</p>

 **Health Indicator Assignments Page**

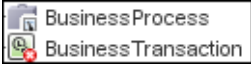
This page enables you to create or edit HI assignments for a CI type. When you create a new SLA and assign CIs to the SLA, the assignment mechanism assigns the appropriate HIs to each CI, based on its CI type (CIT).


To access	Select Admin > Service Level Management > Assignments > Health Indicator Assignments .
Relevant tasks	"How to Define a KPI or HI Assignment" on page 250
See also	<ul style="list-style-type: none">➤ "Assignment and Propagation Overview" on page 234➤ "Understanding Assignments" on page 238

CI Types Pane

This pane displays a hierarchy of CI types; select a CI type to manage its HI assignments.

User interface elements are described below:





UI Element (A-Z)	Description
<CI Type>	<p>The Configuration Item hierarchy contains typical CITs. The SLM Element list contains breakdown CI types such as BPM Application from Location. These are CIs that are created using a breakdown; for details, see "Breakdown by Location for BPM CIs" on page 48.</p> <p>Each CI type is displayed with its CIT icon.</p> <p>If a CIT has an assignment or propagation rule defined, the CIT icon has a small overlay icon in its lower right corner. If there are invalid assignments or propagation rules, the overlay icon indicates this.</p> <p>In the following image, the BusinessProcess CIT has one or more assignments or propagation rules defined, while the Business Transaction CIT has an invalid assignment or propagation rule.</p>  <p>A tooltip shows the number of KPI assignments, HI assignments, and propagation rules for the CIT. The tooltip also indicates which category contains any invalid definitions.</p> <p>If you have invalid definitions, you can select the relevant tab (KPI Assignments, HI Assignments, or Propagation Rules). The user interface will indicate the source of the problem, and you can fix it if necessary.</p>









UI Element (A-Z)	Description
	Refresh. Refreshed the CI Types pane and the Assignments pane display.
Filter	<p>This filter enables you to display all assignments and propagation rules (default setting); only valid assignments; or only invalid assignments.</p> <p>When you select Invalid Assignments Only, the CIT tree expands all the CIT nodes that have invalid assignments.</p> <p>If you want to resolve invalid assignments, open each assignment for editing. The dialog box that appears contains details on what needs to be fixed in the assignment definitions.</p>

Health Indicator Assignments Tab

This tab displays details regarding the HI assignments for the CIT selected in the **CI Types** pane. You can use this tab to add, edit, or remove assignments. Each line represents one assignment on the selected CIT.

User interface elements are described below:

UI Element (A-Z)	Description
	Add. Creates a new HI assignment.
	Duplicate. Copies a selected HI assignment, and open the copy for editing.
	Edit. Edits the details of a selected HI assignment.
	<p>Delete. Deletes one or more selected HI assignments.</p> <p>Assignments that are inherited from parent CITs cannot be deleted on the child CIT, but only on the parent CIT.</p>

UI Element (A-Z)	Description
	Restore From Parent CIT. Restores a selected overridden assignment to its original settings. For details, see "How to Define a KPI or HI Assignment" on page 250.
	Restore to Default. Restores a selected edited assignment, whose Type is Predefined (Customized), to its original settings. For details, see "How to Define a KPI or HI Assignment" on page 250.
	Select all. Selects all the HI assignments.
	Clear Selection. Clears the selection of HI assignments.
	Start. Starts running a selected HI assignment on existing CIs, and on new CIs.
	Stop. Stops running a selected HI assignment.
	Refresh. Refreshes the Assignments display.
	Change visible columns. Selects the columns you want to display in the table.
Assignment Name	The name of the assignment.
Description	The description of the assignment.
Health Indicators	The HIs that are assigned to CIs of the selected CIT, based on the assignment.
Monitored By	List of values of the Monitored By attribute within the RTSM; the assignment is only applicable if the CI contains one of the listed values as its Monitored By attribute.

UI Element (A-Z)	Description
Status	The assignment status: <ul style="list-style-type: none">➤ Running. The assignment has been started and is running on the appropriate CIs.➤ Stopped. The assignment has been stopped and is not running.
Type	Indicates one of the following assignment types: <ul style="list-style-type: none">➤ Custom. New assignments.➤ Predefined. Out-of-the-box assignments that have not been modified.➤ Predefined (Customized). Out-of-the-box assignments that have been modified. You can restore such an assignment to its original settings using the Restore to Default button.



KPI Assignments Page

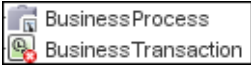
This page enables you to create or edit KPI assignments for each CI type. When you create a new SLA and assign CIs to the SLA, the assignment mechanism assigns the appropriate KPIs to each CI, based on its CI type (CIT).


To access	Select Admin > Service Level Management > Assignments > KPI Assignments .
Relevant tasks	"How to Define a KPI or HI Assignment" on page 250
See also	<ul style="list-style-type: none">➤ "Assignment and Propagation Overview" on page 234➤ "Understanding Assignments" on page 238

CI Types Pane

This pane displays a hierarchy of CI types; select a CI type to manage its KPI assignments.

User interface elements are described below:





UI Element (A-Z)	Description
<CI Type>	<p>The Configuration Item hierarchy contains typical CITs. The SLM Element list contains breakdown CI types such as BPM Application from Location. These are CIs that are created using a breakdown; for details, see "Breakdown by Location for BPM CIs" on page 48.</p> <p>Each CI type is displayed with its CIT icon.</p> <p>If a CIT has an assignment or propagation rule defined, the CIT icon has a small overlay icon in its lower right corner. If there are invalid assignments or propagation rules, the overlay icon indicates this.</p> <p>In the following image, the BusinessProcess CIT has one or more assignments or propagation rules defined, while the Business Transaction CIT has an invalid assignment or propagation rule.</p>  <p>A tooltip shows the number of KPI assignments, HI assignments, and propagation rules for the CIT. The tooltip also indicates which category contains any invalid definitions.</p> <p>If you have invalid definitions, you can select the relevant tab (KPI Assignments, HI Assignments, or Propagation Rules). The user interface will indicate the source of the problem, and you can fix it if necessary.</p>









UI Element (A-Z)	Description
	Refresh. Refreshes the CI Types pane and the Assignments pane display.
Filter	<p>This filter enables you to display all assignments and propagation rules (default setting); only valid assignments; or only invalid assignments.</p> <p>When you select Invalid Assignments Only, the CIT tree expands all the CIT nodes that have invalid assignments.</p> <p>If you want to resolve invalid assignments, open each assignment for editing. The dialog box that appears contains details on what needs to be fixed in the assignment definitions.</p>

KPI Assignments Tab

This tab displays details regarding the KPI assignments for the CIT selected in the **CI Types** pane. You can use this pane to add, edit, or remove assignments. Each line represents one assignment on the selected CIT.

User interface elements are described below:

UI Element (A-Z)	Description
	Add. Creates a new KPI assignment.
	Duplicate. Copies a selected KPI assignment, and open the copy for editing.
	Edit. Edits the details of a selected KPI assignment.
	<p>Delete. Deletes one or more selected KPI assignments.</p> <p>Assignments that are inherited from parent CITs cannot be deleted on the child CIT, but only on the parent CIT.</p>

UI Element (A-Z)	Description
	Restore From Parent CIT. Restores a selected overridden assignment to its original settings. For details, see "How to Define a KPI or HI Assignment" on page 250.
	Restore to Default. Restores a selected edited assignment, whose Type is Predefined (Customized), to its original settings. For details, see "How to Define a KPI or HI Assignment" on page 250.
	Select all. Select all the KPI assignments.
	Clear Selection. Clear the selection of KPI assignments.
	Start. Starts running a selected KPI assignment on existing CIs, and on new CIs.
	Stop. Stops running a selected KPI assignment.
	Refresh. Refreshes the Assignments display.
	Change visible columns. Selects the columns you want to display in the table.
Assignment Name	The name of the assignment.
Description	The description of the assignment.
KPIs	The KPIs that are assigned to CIs of the selected CIT, based on the assignment.
Monitored By	List of values of the Monitored By attribute within the RTSM; the assignment is only applicable if the CI contains one of the listed values as its Monitored By attribute.

UI Element (A-Z)	Description
Status	The assignment status: <ul style="list-style-type: none">➤ Running. The assignment has been started and is running on the appropriate CIs.➤ Stopped. The assignment has been stopped and is not running.
Type	Indicates one of the following assignment types: <ul style="list-style-type: none">➤ Custom. New assignments.➤ Predefined. Out-of-the-box assignments that have not been modified.➤ Predefined (Customized). Out-of-the-box assignments that have been modified. You can restore such an assignment to its original settings using the Restore to Default button.

Propagation Rules Page



This page enables you to create or edit non-default KPI propagation rules for each CI type. By default, when a KPI is assigned to a CI the KPI is automatically propagated to the CI's parents. Propagation rules enable you to define exceptions to the default KPI propagation, and to propagate other KPIs, the same KPI using a different rule, or no KPIs.

To access	Select Admin > Service Level Management > Assignments > Propagation Rules .
Relevant tasks	"How to Define a KPI Propagation Rule" on page 255
See also	<ul style="list-style-type: none">➤ "Assignment and Propagation Overview" on page 234➤ "Propagation Rules" on page 241

CI Types Pane

This pane displays a hierarchy of CI types; select a CI type to manage its KPI propagation rules.

User interface elements are described below:









UI Element (A-Z)	Description
	<p>Refresh. Refreshes the CI Types pane and the Assignments pane display.</p>
<p><CI Type></p>	<p>The Configuration Item hierarchy contains typical CITs. The SLM Element list contains breakdown CI types such as BPM Application from Location. These are CIs that are created using a breakdown; for details, see "Breakdown by Location for BPM CIs" on page 48.</p> <p>Each CI type is displayed with its CIT icon.</p> <p>If a CIT has an assignment or propagation rule defined, the CIT icon has a small overlay icon in its lower right corner. If there are invalid assignments or propagation rules, the overlay icon indicates this.</p> <p>In the following image, the BusinessProcess CIT has one or more assignments or propagation rules defined, while the Business Transaction CIT has an invalid assignment or propagation rule.</p> <div data-bbox="625 881 873 946" data-label="Image">  </div> <p>A tooltip shows the number of KPI assignments, HI assignments, and propagation rules for the CIT. The tooltip also indicates which category contains any invalid definitions.</p> <p>If you have invalid definitions, you can select the relevant tab (KPI Assignments, HI Assignments, or Propagation Rules). The user interface will indicate the source of the problem, and you can fix it if necessary.</p>
<p>Filter</p>	<p>This filter enables you to display all assignments and propagation rules (default setting); only valid assignments; or only invalid assignments.</p> <p>If you want to resolve invalid assignments, open each assignment for editing. The dialog box that appears contains details on what needs to be fixed in the assignment definitions.</p>

Propagations Rule Tab

This pane displays the non-default KPI propagation rules for the CIT selected in the **CI Types** pane. You can use this pane to add, edit, or remove propagation rules. Each line represents one propagation rule on the selected CIT.

A propagation rule defines (based on CITs) that if a specified KPI is assigned on a CI, the CI's parent CIs will either be assigned this KPI with a different rule, no KPIs, or one or more other KPIs.

User interface elements are described below:

UI Element (A-Z)	Description
	Add. Creates a new propagation rule.
	Duplicate. Copies a selected propagation rule, and open the copy for editing.
	Edit. Edits the details of a selected propagation rule.
	Delete. Deletes one or more selected propagation rules.
	Select all. Selects all the propagation rules.
	Clear Selection. Clears the selection of propagation rules.
	Refresh. Refreshes the Assignments pane display.
	Change visible columns. Selects the columns you want to display in the table.
Assigned KPI	When this KPI is assigned to the selected CIT, the propagation rule is applied to the parent CIT.
Description	The description of the propagation rule.

UI Element (A-Z)	Description
Parent CI Type	The parent CIT on which the propagation rule is applied.
Propagated KPIs	<p>This indicates one of the following:</p> <ul style="list-style-type: none"> ➤ <KPI names>. The listed KPIs are propagated to the parent CIT (and not the KPI which is assigned to the child CIT). ➤ None. No KPIs are propagated to the parent CIT. ➤ Same KPI with <business rule name>. The KPI that is assigned to the child CIT is propagated to the parent CIT, but with a different business rule.
Propagation Rule Name	The name of the propagation rule.



Add/Edit KPI Assignments for CI Type Dialog Box

This dialog box enables you to add or edit a KPI assignment on a CIT.

To access	<p>In the Assignments tab, select a CIT in the CI Type pane. Within the Assignments for CI Type pane, the KPI Assignments tab displays the KPI assignments for the selected CIT.</p> <ul style="list-style-type: none"> ➤ To add a KPI assignment to the selected CIT, click the Add button. ➤ To edit a KPI assignment, select the assignment and click the Edit button.
Important information	<p>When an assignment is inherited from a parent CIT, the name of the source CIT appears in parentheses after the assignment name. If you edit an inherited assignment, the edited assignment is displayed in bold text. The condition of an inherited assignment cannot be edited; to edit, clone the inherited assignment, edit the clone, and delete the original inherited assignment.</p>
Relevant tasks	"How to Define a KPI or HI Assignment" on page 250

Assignment Settings Area





User interface elements are described below:

UI Element (A-Z)	Description
Description	(Optional) Enter a description for the assignment.
ID	Displays the internal ID of the assignment.
Name	Enter a name for the assignment.

Condition Area

The condition defines which characteristics a CI must have so that the KPI assignment is relevant for the CI. Each line in the table represent a property condition; the assignment is relevant if all the property conditions are filled. If no property conditions are defined, the KPIs are assigned to all CIs of the CIT with the specified Monitored By attribute.

User interface elements are described below:






UI Element (A-Z)	Description
	Select all. Selects all the property conditions.
	Clear Selection. Clears the selection of property conditions.
	Add. Adds a new property condition.
	Delete. Deletes a selected property condition.

UI Element (A-Z)	Description
Monitored By	<p>Specify the value of the Monitored By attribute within the RTSM; the assignment is only applicable to a CI if the CI contains this value as its Monitored By attribute.</p> <p>This field is optional.</p> <p>Note: To add a value to the Monitored By list, select Admin > Platform > Setup and Maintenance > Infrastructure Settings:</p> <ul style="list-style-type: none"> ➤ Select Foundations. ➤ Select Sources Configuration. ➤ Locate the entry Possible Values for Monitored By field, and edit as needed.
Operator	<p>Relational operator that the condition uses when comparing the actual value for the property against the value defined in the condition. The expression gives a result of TRUE or FALSE for each CI. For details on the possible operators, see "Property Condition Operator" on page 273.</p>
Property Name	<p>This drop-down list contains all of the attributes of the RTSM class for the selected CIT. Select an attribute to define the condition, using the Operator and Value fields.</p>
Value	<p>Enter the required value for the property. This is the property value that the condition compares with the value in the RTSM class attribute.</p>

KPI Configurations Area

This area enables you to define which KPIs will be assigned to the CIs which fill the assignment condition.

User interface elements are described below:

UI Element (A-Z)	Description
	Select all. Selects all the KPIs.
	Clear Selection. Clears the selection of KPIs.
	Add KPI. Creates a new KPI.
	Edit KPI. Edits the details of a selected KPI.
	Delete KPIs. Deletes one or more selected KPIs.
Business Rule	The business rule used to calculate the KPI. For information on each rule, see "List of Service Level Management Business Rules" on page 557.
Calculated Using Status Of	This indicates if the KPI is calculated by: <ul style="list-style-type: none"> ➤ Health indicators and child KPIs. The KPI is calculated by the HIs assigned to the CI, and by the KPIs assigned to the child CIs. ➤ Health indicators. The KPI is calculated by the HIs assigned to the CI. ➤ Health indicators; if none, use child KPIs. The KPI is calculated by the HIs assigned to the CI; if there are no HIs assigned, the KPI is calculated by the KPIs assigned to the child CIs.

UI Element (A-Z)	Description
KPI	The name of the KPI assigned to the selected CI. For information on each KPI, see "List of Service Level Management KPIs" on page 532.
Related Health Indicators	<p>The list of HIs whose values are used in calculating this KPI.</p> <p>If the KPI is calculated based on HIs, it KPI will <i>only</i> be assigned if one (or more) of these HIs exists on the CI. If none of the HIs exist on the CI, the KPI is not assigned.</p>

Property Condition Operator

Use one of the following values:

Value	Description
Equals	Returns true when the value of the RTSM class attribute equals the value specified in the value attribute of the property condition.
Does not equal	Returns true when the value of the RTSM class attribute does not equal the value specified in the value attribute of the property condition.
Is like	Returns true when the value of the RTSM class attribute matches the string in the value attribute of the property condition. The string of the value attribute can contain % as a wildcard. % may represent 0 or more characters.
Is not like	Returns true when the value of the RTSM class attribute does not match the string in the value attribute of the property condition. The string of the value attribute can contain % as a wildcard. % may represent 0 or more characters.
Contains	Returns true when the value of the RTSM class attribute equals one of the elements that is listed in the value attribute of the property condition. The elements in the list should be separated with a comma.

Value	Description
Is contained in	Returns true when the value attribute of the property condition equals one of the elements listed in the value of the RTSM class attribute, when the RTSM attribute type is string_list .
Is NULL	Checks where the CI attribute was not assigned a value. Returns true when the RTSM class attribute is empty.
Is not NULL	Checks where the CI attribute was assigned a value. Returns true when the RTSM class attribute is not empty.
Is true	Returns true when the RTSM class attribute value is true .
Is false	Returns true when the RTSM class attribute value is false .



Add/Edit KPI to Assignment Dialog Box

This dialog box enables you to add or edit a KPI within a KPI assignment.

To access	In the Add/Edit KPI Assignments for CI Type dialog box, in the KPI Configurations area, click Add , or select a KPI and click Edit .
Relevant tasks	"How to Define a KPI or HI Assignment" on page 250

KPI Area

User interface elements are described below:

UI Element (A-Z)	Description
Business Rule	The business rule used to calculate the KPI. For information on each rule, see "List of Service Level Management Business Rules" on page 557.
Calculated Using Status Of	This indicates if the KPI is calculated by: <ul style="list-style-type: none"> ➤ Health indicators and child KPIs. The KPI is calculated by the HIs assigned to the CI, and by the KPIs assigned to the child CIs. ➤ Health indicators. The KPI is calculated by the HIs assigned to the CI. ➤ Health indicators; if none, use child KPIs. The KPI is calculated by the HIs assigned to the CI; if there are no HIs assigned, the KPI is calculated by the KPIs assigned to the child CIs.
KPI	The name of the KPI assigned to the selected CIT. For information on each KPI, see "List of Service Level Management KPIs" on page 532.
Related Health Indicators	The list of HIs whose values are used in calculating this KPI. The KPI will <i>only</i> be assigned if one (or more) of these HIs exists on the CI. If none of the HIs exist on the CI, the KPI is not assigned.

CI Type Properties Area

This area contains a list of the attributes of the RTSM class for the selected CIT. If you are creating an API rule, you can drag attributes from this area to the API area.

API Rule Definitions Area




This area is displayed when you select the API Group and Sibling rule in the Business Rule list. Enter the KPI calculation script for the rule you are creating; for details, see "API Group and Sibling Rule" on page 950.



Selector Area

This area is displayed when you define an Outages KPI based on a selector. The selector catches data samples from the incoming data that meet the filter criteria.

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

Selector Toolbar

UI Element	Description
	Select one of the following: <ul style="list-style-type: none">➤ Add Selector Expression. Add a selector expression to an expression group; each selector expression that you add narrows the filter.➤ Add OR Clause. Add an expression group (which can contain one or more selector expressions). Note. When the first expression group is added it is labeled AND; when additional groups are added all the groups are labeled OR.
	Delete. Deletes one or more selected selector expressions or groups.
	Copy. Select one or more selector rows and click to copy the rows to the clipboard.

UI Element	Description
	<p>Cut. Select one or more selector rows and click to cut the rows to the clipboard.</p>
	<p>Paste. Pastes rows from the clipboard to a new location.</p> <p>If you are pasting a selector <i>group</i>, it is pasted as a new group.</p> <p>If you are pasting a selector <i>expression</i>, there are two Paste options:</p> <ul style="list-style-type: none"> ➤ If you select a row before you click Paste, the expression is pasted after the selected row. ➤ If you do not select a row but just click Paste, a new group is created containing the expression.
<p>Copy Selector to Clipboard</p>	<p>Copy the entire selector definition to the clipboard.</p>
<p>Paste Selector From Clipboard</p>	<p>Paste the entire selector definition from the clipboard.</p>

Selector Definitions

UI Element	Description
Field Name	Enter the name of a reference property that the selector expression searches for in the incoming data samples. For details on the samples, see "Data Samples" in <i>Reports</i> .
Operator	<p>The relational operator that the selector expression uses when comparing the actual value for the property against the value defined in the selector. The expression gives a result of TRUE or FALSE for each data sample.</p> <p>Select an option from the list. The option can be:</p> <ul style="list-style-type: none"> ➤ = or !=. Filters the samples where the value of the sample field specified in the Field box equals or is not equal to the value specified in the Value box. ➤ > or <. Filters the samples where the value of the sample field specified in the Field box is less or more than the value specified in the Value box. ➤ in or not In. Use the separator Value box. The value specified in the Value box can only be 100 characters long. ➤ >= or <=. Filters the samples where the value of the sample field specified in the Field box is more or equal to or less or equal to the value specified in the Value box. ➤ prefix or notPrefix. Filters in the samples where the sample field value starts with the string entered in the Value box. ➤ suffix or notSuffix. Filters in the samples where the sample field value ends with the string entered in the Value box. ➤ like or notLike. The expression you enter in the Value box should follow the Java standard for regular expression. <p>Note: It is recommended to use the suffix or notSuffix operators instead of the like and notLike operators that are performance intensive.</p>

UI Element	Description
Type	The type of value in the data sample (can be String, Double, Integer, Long, Boolean, Float, or Binary).
Value	<p>The property value that the expression compares with the value in the data sample.</p> <p>You can use RTSM class attributes to define selector values; drag an attribute from the CI Type Properties area to the selector value field.</p> <p>Example: An HI is assigned for a business transaction monitored by Business Process Monitor. The selector defines which samples will be used to calculate HI instances of this type, using the following selector definition:</p> <p>sampleType = trans_t AND u_iTransactionId = <<CI ID>></p> <p>The selector determines which samples are valid based on the transaction ID, which is the CI ID.</p> <p>Note: If your assignment contains referenced properties (Ref Prop) in the selector, the attribute on the CI should not contain any of the following characters: " & ' < ></p>
Expression Summary	Once you have defined a selector, this area displays a summary of the selector conditions.

Add/Edit Health Indicator Assignments for CI Type Dialog Box

This dialog box enables you to add or edit an HI assignment on a CIT.

To access	<p>In the Assignments tab, select a CIT in the CI Type pane.</p> <p>Within the Assignments for CI Type pane, the Health Indicator Assignments tab displays the HI assignments for the selected CIT.</p> <ul style="list-style-type: none">➤ To add an HI assignment to the selected CIT, click the Add button.➤ To edit an HI assignment, select the assignment and click the Edit button.
Important information	<p>When an assignment is inherited from a parent CIT, the name of the source CIT appears in parentheses after the assignment name. If you edit an inherited assignment, the edited assignment is displayed in bold text. The condition of an inherited assignment cannot be edited; to edit, clone the inherited assignment, edit the clone, and delete the original inherited assignment.</p>
Relevant tasks	<p>"How to Define a KPI or HI Assignment" on page 250</p>

Assignment Settings Area





User interface elements are described below:

UI Element (A-Z)	Description
Description	(Optional) Enter a description for the assignment.
ID	Displays the internal ID of the assignment.
Name	Enter a name for the assignment.

Condition Area

The condition defines which characteristics a CI must have so that the HI assignment is relevant for the CI. Each line in the table represent a property condition; the assignment is relevant if all the property conditions are filled. If no property conditions are defined, the HIs are assigned to all CIs of the CIT with the specified Monitored By attribute.

User interface elements are described below:






UI Element (A-Z)	Description
	Select all. Selects all the property conditions.
	Clear Selection. Clears the selection of property conditions.
	Add. Adds a new property condition.
	Delete. Deletes a selected property condition.
Monitored By	<p>Specify the value of the Monitored By attribute within the RTSM; the assignment is only applicable to a CI if the CI contains this value as its Monitored By attribute. This field is optional.</p> <p>Note: To add a value to the Monitored By list, select Admin > Platform > Setup and Maintenance > Infrastructure Settings:</p> <ul style="list-style-type: none"> ➤ Select Foundations. ➤ Select Sources Configuration. ➤ Locate the entry Possible Values for Monitored By field, and edit as needed.
Operator	Relational operator that the condition uses when comparing the actual value for the property against the value defined in the condition. The expression gives a result of TRUE or FALSE for each CI. For details on the possible operators, see "Property Condition Operator" on page 273.

UI Element (A-Z)	Description
Property Name	This drop-down list contains all of the attributes of the RTSM class for the selected CIT. Select an attribute to define the condition, using the Operator and Value fields.
Value	Enter the required value for the property. This is the property value that the condition compares with the value in the RTSM class attribute.

Health Indicator Configurations Area

This area enables you to define which HIs will be assigned to the CIs which fill the assignment condition.

User interface elements are described below:

UI Element (A-Z)	Description
	Select all. Selects all the HIs.
	Clear Selection. Clears the selection of HIs.
	Add Health Indicator. Creates a new HI.
	Edit Health Indicator. Edits the details of a selected HI.
	Delete Health Indicator. Deletes one or more selected HIs.
Business Rule	The business rule used to calculate the HI. For information on each rule, see "List of Service Level Management Business Rules" on page 557.
Health Indicator	The name of the HI assigned to the selected CI.

Property Condition Operator

Use one of the following values:

Value	Description
Equals	Returns true when the value of the RTSM class attribute equals the value specified in the value attribute of the property condition.
Does not equal	Returns true when the value of the RTSM class attribute does not equal the value specified in the value attribute of the property condition.
Is like	Returns true when the value of the RTSM class attribute matches the string in the value attribute of the property condition. The string of the value attribute can contain % as a wildcard. % may represent 0 or more characters.
Is not like	Returns true when the value of the RTSM class attribute does not match the string in the value attribute of the property condition. The string of the value attribute can contain % as a wildcard. % may represent 0 or more characters.
Contains	Returns true when the value of the RTSM class attribute equals one of the elements that is listed in the value attribute of the property condition. The elements in the list should be separated with a comma.
Is contained in	Returns true when the value attribute of the property condition equals one of the elements listed in the value of the RTSM class attribute, when the RTSM attribute type is string_list .
Is NULL	Checks where the CI attribute was not assigned a value. Returns true when the RTSM class attribute is empty.
Is not NULL	Checks where the CI attribute was assigned a value. Returns true when the RTSM class attribute is not empty.
Is true	Returns true when the RTSM class attribute value is true .
Is false	Returns true when the RTSM class attribute value is false .

 **Add/Edit Health Indicator to Assignment Dialog Box**

This dialog box enables you to add or edit an HI within an HI assignment.

To access	In the Add/Edit Health Indicator Assignments for CI Type dialog box, in the Health Indicator Configurations area, click Add , or select an HI and click Edit .
Relevant tasks	"How to Define a KPI or HI Assignment" on page 250

Health Indicator Area

User interface elements are described below:

UI Element (A-Z)	Description
Business Rule	The business rule used to calculate the HI. For information on each rule, see "List of Service Level Management Business Rules" on page 557.
Health Indicator	The name of the HI assigned to the selected CIT.
Priority	By default, each HI has a priority of zero (0). If the assignment mechanism runs a number of assignments on a CI, and more than one assignment assigns the same HI, the priority can be used to fine-tune which to assign. For example, if an HI is supposed to be assigned to a CI based on two different assignments, and the HI in one assignment has a higher priority than in the other, the definitions of the higher priority one will be assigned.

CI Type Properties Area

This area contains a list of the attributes of the RTSM class for the selected CIT. If you are defining HI selector or thresholds, or you are creating an API rule, you can drag attributes from this area to the API, threshold or selector area.

The attributes listed under the heading **General Properties** are grouped according to attribute type (for example binary or string). In addition, when defining a selector, the following attributes are available under the heading **Selector Related Properties**:

- **CI ID.** The ID of the CI in the RTSM.
- **HI Type ID.** The HI's internal ID in the Indicator Repository.
- **ETI Name.** The name of the ETI related to the HI.
- **Application ID.** For business transaction or business transaction flow CITs only, this is the ID of the application which contains the business transaction or the business transaction flow.
- **Session ID.** The ID of the SiteScope instance sending the sample; this is only available if monitored by SiteScope.

API Rule Definitions Area

This area is displayed when you select an API rule in the Business rule list. For details, see "SLM Rules API" on page 651.

User interface elements are described below:






UI Element (A-Z)	Description
KPI Calculation Script	Enter the KPI calculation script for the rule you are creating. The contents of the script depends on the rule type; for details see "SLM Rules API Overview" on page 653.
Sample Fields	Enter the names of the sample fields you want to use in the script. Separate between the sample names with a comma.

Selector Area

This area enables you to define the selector for the HI. The selector catches data samples from the incoming data that meet the filter criteria.

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

Selector Toolbar

UI Element	Description
	Select one of the following: <ul style="list-style-type: none">➤ Add Selector Expression. Add a selector expression to an expression group; each selector expression that you add narrows the filter.➤ Add OR Clause. Add an expression group (which can contains one or more selector expressions). Note. When the first expression group is added it is labeled AND; when additional groups are added all the groups are labeled OR.
	Delete. Deletes one or more selected selector expressions or groups.
	Copy. Select one or more selector rows and click to copy the rows to the clipboard.
	Cut. Select one or more selector rows and click to cut the rows to the clipboard.
	Paste. Pastes rows from the clipboard to a new location. If you are pasting a selector <i>group</i> , it is pasted as a new group. If you are pasting a selector <i>expression</i> , there are two Paste options: <ul style="list-style-type: none">➤ If you select a row before you click Paste, the expression is pasted after the selected row.➤ If you do not select a row but just click Paste, a new group is created containing the expression.

UI Element	Description
Copy Selector to Clipboard	Copy the entire selector definition to the clipboard.
Paste Selector From Clipboard	Paste the entire selector definition from the clipboard.

Selector Definitions

UI Element	Description
Field Name	Enter the name of a reference property that the selector expression searches for in the incoming data samples. For details on the samples, see "Data Samples" in <i>Reports</i> .
Operator	<p>The relational operator that the selector expression uses when comparing the actual value for the property against the value defined in the selector. The expression gives a result of TRUE or FALSE for each data sample.</p> <p>Select an option from the list. The option can be:</p> <ul style="list-style-type: none"> ➤ = or !=. Filters the samples where the value of the sample field specified in the Field box equals or is not equal to the value specified in the Value box. ➤ > or <. Filters the samples where the value of the sample field specified in the Field box is less or more than the value specified in the Value box. ➤ in or not In. Use the separator Value box. The value specified in the Value box can only be 100 characters long. ➤ >= or <=. Filters the samples where the value of the sample field specified in the Field box is more or equal to or less or equal to the value specified in the Value box. ➤ prefix or notPrefix. Filters in the samples where the sample field value starts with the string entered in the Value box. ➤ suffix or notSuffix. Filters in the samples where the sample field value ends with the string entered in the Value box. ➤ like or notLike. The expression you enter in the Value box should follow the Java standard for regular expression. <p>Note: It is recommended to use the suffix or notSuffix operators instead of the like and notLike operators that are performance intensive.</p>

UI Element	Description
Type	The type of value in the data sample (can be String, Double, Integer, Long, Boolean, Float, or Binary).
Value	<p>The property value that the expression compares with the value in the data sample.</p> <p>You can use RTSM class attributes to define selector values; drag an attribute from the CI Type Properties area to the selector value field.</p> <p>Example: An HI is assigned for a business transaction monitored by Business Process Monitor. The selector defines which samples will be used to calculate HI instances of this type, using the following selector definition: sampleType = trans_t AND u_iTransactionId = <<CI ID>></p> <p>The selector determines which samples are valid based on the transaction ID, which is the CI ID.</p> <p>Note: If your assignment contains referenced properties (Ref Prop) in the selector, the attribute on the CI should not contain any of the following characters: " & ' < ></p>
Expression Summary	Once you have defined a selector, this area displays a summary of the selector conditions.



Add/Edit Propagation Rule for CI Type Dialog Box

This dialog box enables you to add or edit a KPI propagation rule on a CIT.

To access	<p>In the Assignments tab, select a CIT in the CI Type pane. Within the Assignments for CI Type pane, the Propagation Rules tab displays the KPI propagation rules for the selected CIT.</p> <ul style="list-style-type: none"> ➤ To add a propagation rule to the selected CIT, click the Add button. ➤ To edit a propagation rule, select the propagation rule and click the Edit button.
Relevant tasks	"How to Define a KPI Propagation Rule" on page 255

Rule Settings Area

User interface elements are described below:

UI Element (A-Z)	Description
Description	(Optional) Enter a description for the propagation rule.
Name	Enter a name for the propagation rule.

Condition Area

The condition defines which characteristics a CI must have so that the KPI propagation rule is relevant for the CI. The condition includes the CIT of the CI, the CIT of its parent CI, and the KPI assigned to the child CI. When these conditions are met, the task is then applied.

User interface elements are described below:






UI Element (A-Z)	Description
KPI assigned to source CI type	<p>This drop-down list contains the KPIs that can be assigned to the child CI. Select a KPI to define the condition.</p> <p>If you select Any KPI, the condition is filled if the CI has any KPIs assigned.</p> <p>For example, if you do not want any KPI propagated to the parent CI, select this option, and define the task as Do Not Propagate the KPI.</p>

UI Element (A-Z)	Description
Parent CI type	<p>Select the CIT of the parent CI.</p> <p>The Configuration Item hierarchy contains typical CITs.</p> <p>The SLM Element list contains the following elements that are unique to SLM, which can be selected as parent CITs:</p> <ul style="list-style-type: none"> ➤ Service Level Agreement ➤ Breakdown CIs such as BPM Application from Location. These are CIs that are created using a breakdown; for details, see "Breakdown by Location for BPM CIs" on page 48.
Source CI type	<p>This is the CI type which you selected in the CI Types pane. When the specified KPI is assigned to a CI with this CI type, and its parent CI is the specified parent CIT, the condition is met.</p>

Task Area

This area enables you to define which KPIs and business rules are propagated to the parent CI, when the condition is met.

User interface elements are described below:

UI Element	Description
	New. Adds a new KPI for propagation.
	Edit. Edits the details of a selected KPI.
	Delete. Deletes one or more selected KPIs.
	Select all. Select all the KPIs.
	Clear Selection. Clear the selection of KPIs.
Do not propagate the KPI	Select this option if you do not want the KPI propagated to the parent CI.
Propagate the KPI using a different rule	<p>Select this option if you want the KPI propagated to the parent CI, using a rule that is not the KPI's default group rule. Select a rule from the drop-down list.</p> <p>The list contains the rules that are applicable for the KPI and for the parent CIT. If you selected Any KPI in the condition area, the list contains the rules that are applicable for the parent CIT.</p>
Propagate custom KPIs	<p>Select this option if you want different KPIs propagated to the parent CI, or if you want to propagate the same KPI and rule, but using different rule thresholds. After selecting this option, add one or more KPIs for propagation.</p> <p>If you select this option and do not add any KPIs, no KPIs are propagated.</p>

UI Element	Description
KPI	The name of the KPI propagated to the parent CIT. For information on each KPI, see "List of Service Level Management KPIs" on page 532.
Business Rule	The business rule used to calculate the KPI. For information on each rule, see "List of Service Level Management Business Rules" on page 557.

Add/Edit KPI for Propagation Rule Dialog Box

This dialog box enables you to add or edit a KPI within a KPI propagation rule.

To access	In the Add/Edit KPI Propagation Rule for CI Type dialog box, in the Task area, click New or select a KPI and click Edit .
Relevant tasks	"How to Define a KPI Propagation Rule" on page 255

KPI Area

User interface elements are described below:

UI Element (A-Z)	Description
Business Rule	The business rule used to calculate the KPI. For information on each rule, see "List of Service Level Management Business Rules" on page 557.
KPI	The name of the KPI propagated to the parent CIT. For information on each KPI, see "List of Service Level Management KPIs" on page 532.

API Rule Definitions Area

This area is displayed when you select the API Group and Sibling rule in the Business Rule list.

Enter the KPI calculation script for the rule you are creating; for details, see "API Group and Sibling Rule" on page 656.

Troubleshooting the Assignment Mechanism

If the Assignment Mechanism is not working properly, you can use the following System Health monitors to help locate the source of the problem:

- **KES Availability.** Monitors that the Assignment Mechanism is up and running for each customer.
- **KES Content.** Monitors that the Assignment Mechanism content is valid.

For details, see "Data Processing Server Monitors" in *Platform Administration*.

7

Calendars for SLAs

This chapter includes:

Concepts

- Calendars - Overview on page 296
- Updating Calendar Changes to SLAs and Offering Packages on page 297

Tasks

- How to Define an SLA Calendar - Use-Case Scenario on page 299
- How to Customize Calendar Default Settings on page 306

Reference

- Calendars User Interface on page 310

Concepts

Calendars - Overview

Calendars define the periods for which Service Level Management performs data calculations.

In your organization, you probably have different service levels requirements for different periods of the day or night, or for certain days of the week or year. For example, performance and availability are more crucial to a Web retailer during a busy shopping period before a holiday. Likewise, resource allocators in an ERP system must have 99% availability every working morning, whereas at other times 97% might be acceptable.

To monitor your business processes at these crucial times, you define calendars that span the periods you want to monitor. When a calendar is used by an SLA, Service Level Management checks during the calendar periods for compliance with the SLA objectives.

Service Level Management includes two default calendars: **24x7** and **Business Hours**. You can define additional calendars for your organization in the Calendar Wizard. (For details, see "New Calendar/Edit Calendar Wizard" on page 310.) The defined calendars are then available when defining offering packages, and applied within SLAs according to your selections. You can define as many calendars as you need, but you can only select up to three to be used within a specific SLA.

For information on updating calendar changes to offering packages and SLAs, see "Updating Calendar Changes to SLAs and Offering Packages" on page 297.

Service Level Management reports organize results according to calendars. You can add calendar descriptions to Service Level Management reports. For details, see "Advanced Options Dialog Box" on page 447.

Note: Calendars use default settings for first day of the week and month. To modify these settings, see "How to Customize Calendar Default Settings" on page 306.

Maximum calendars in an SLA

By default, you can define up to three calendars in an SLA.

You can change this limit to either two or four calendars per SLA, as follows: In **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Applications**, select **Service Level Management**, and modify the **Maximum number of calendars per SLA** value as required.

Updating Calendar Changes to SLAs and Offering Packages

The following describes how to update calendar changes to the offering packages and SLAs.

Offering packages

- If you add a new calendar in SLM, it is automatically available for use within every offering package. You can edit the relevant offering packages to use the new calendar. For details, see "How to Create or Edit a Service or CI Offering" on page 210.
- Modifying calendars has no impact on offering packages.

SLAs

- If you set an offering package to use a new calendar, and you want that calendar to be used going forward within an existing SLA, you must open the relevant SLA in edit mode and select the calendar in the Offerings and Calendars page. For details on the page, see "Offerings and Calendars Page" on page 144.

- If you change the setting for first day of the week or month, this affects SLA calculation, and the relevant SLAs may need recalculated to implement the change. For task details, see "How to Customize Calendar Default Settings" on page 306.
- If you modify a calendar, the changes are automatically updated to the SLA at the next SLA calculation. If you want the change to affect historical data, you must run recalculation.

Tasks

How to Define an SLA Calendar - Use-Case Scenario

This use-case scenario describes how the Service Level Management Administrator creates a new compound calendar, based on weekly and yearly calendars tailored to the needs of his company.

This scenario includes the following steps:

- "Background" on page 299
- "Define a weekly calendar" on page 300
- "Define a yearly calendar" on page 302
- "Define compound calendars" on page 303
- "Results" on page 305

1 Background

The Acme company provides Web services targeted at particular countries. They require a high availability level for their services during peak periods, defined as the standard business hours for each country, and a lower availability level during off-peak periods.

In order to create SLAs to monitor the service levels for a particular European country, Sam, the SLA Administrator, defines 4 new calendars: a weekly calendar that covers typical business hours, a yearly calendar that takes into account national holidays, and 2 compound calendars that combine the two.

Sam then adds a range with a start time of 3 PM and an end time of 7 PM for each day.

Calendar
Properties
Calendar
Pattern
Calendar
Summary

Weekly Calendar Definition

To add a time or date to the Calendar, click a cell. To remove the time or date, click the cell again. To enter a range, select the times or dates in the lower part of a calendar, select the range in the lower table and click **Clear**. To remove all active times from the grid, click **Clear All**. To continue, click **Finish**.

Calendar ☒ Active hours ☐ Free hours

hour	12:00 AM	01:00 AM	02:00 AM	03:00 AM	04:00 AM	05:00 AM	06:00 AM	07:00 AM	08:00 AM	09:00 AM	10:00 AM	11:00 AM	12:00 PM	01:00 PM	02:00 PM	03:00 PM	04:00 PM	05:00 PM	06:00 PM	07:00 PM
Sun																				
Mon																				
Tue																				
Wed																				
Thu																				
Fri																				
Sat																				

Add Range:

Start time: End time: Day(s) of Week:

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

3 Define a yearly calendar

Sam defines a new calendar in the New Calendar Wizard, based on the **Yearly** period type. This calendar denotes the annual national holidays for the target country.

On the Yearly Calendar Definition page, he clicks on individual cells to show the holiday days as active days.

Calendar Properties

Calendar Pattern

Calendar Summary

Yearly Calendar Definition

To add a time or date to the Calendar, click a cell. To remove the time or date, click the cell again. To enter a range, select the times or dates in the lower table and click **Add**. To remove part of a calendar, select the range in the lower table and click **Clear**. To remove all active times from the grid, click **Clear All**. To continue, click **Finish**.

Calendar

Active days

Free days

day \ month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
January																															
February																															
March																															
April																															
May																															
June																															
July																															
August																															
September																															
October																															
November																															
December																															

Add Range:

Start day:

1

End day:

1

Month(s) of the Year:

January
February
March

4 Define compound calendars

Sam defines two new calendars in the New Calendar Wizard, based on the **Compound** period type. The first calendar is for peak periods over the year for the target country, and the second calendar is for off-peak periods.

For the peak periods calendar, on the Compound Calendar Definition page, Sam selects to use the weekly and yearly calendars that he previously defined. He selects **Include** for the weekly calendar, so that the weekly business hours are included in the compound calendar. He selects **Exclude** for the yearly calendar, so that the national holiday days marked in the calendar are excluded from the compound calendar.

Calendar Properties

Calendar Pattern
Calendar Summary

Compound Calendar Definition

To include a calendar in the compound calendar, select its **In Use** check box. Then select **Include** for the calendar to be included in the calculation, and **Exclude** for the calendar to be removed from the calculation. For example, to define a calendar that monitors business hours but does not include the first day of the month, define a yearly calendar that includes the first day of the month only. Select this calendar and the Business Hours calendar, then select the **Exclude** button for this calendar and the **Include** button for the Business Hours calendar.

In Use	Name	Period Type	Include	Exclude
<input type="checkbox"/>	Business Hours	Weekly	<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="checkbox"/>	Target Country - National Holidays	Yearly	<input type="radio"/>	<input checked="" type="radio"/>
<input type="checkbox"/>	24x7	Weekly	<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="checkbox"/>	Target Country - Business Hours	Weekly	<input checked="" type="radio"/>	<input type="radio"/>

For the off-peak periods calendar, on the Compound Calendar Definition page, Sam selects to use the weekly and yearly calendars that he previously defined. He selects **Exclude** for the weekly calendar, so that the weekly business hours are excluded from the compound calendar. He selects **Include** for the yearly calendar, so that the national holiday days marked in the calendar are included in the compound calendar.

Calendar Properties

Calendar Pattern

Calendar Summary

Compound Calendar Definition

To include a calendar in the compound calendar, select its **In Use** check box. Then select **Include** for the calendar to be included in the calculation, and **Exclude** for the calendar to be removed from the calculation. For example, to define a calendar that monitors business hours but does not include the first day of the month, define a yearly calendar that includes the first day of the month only. Select this calendar and the Business Hours calendar, then select the **Exclude** button for this calendar and the **Include** button for the Business Hours calendar.

In Use	Name	Period Type	Include	Exclude
<input type="checkbox"/>	Business Hours	Weekly	<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="checkbox"/>	Target Country - National Holidays	Yearly	<input type="radio"/>	<input checked="" type="radio"/>
<input type="checkbox"/>	Target Country - Peak Periods	Compound	<input checked="" type="radio"/>	<input type="radio"/>
<input type="checkbox"/>	24x7	Weekly	<input checked="" type="radio"/>	<input type="radio"/>
<input checked="" type="checkbox"/>	Target Country - Business Hours	Weekly	<input type="radio"/>	<input checked="" type="radio"/>

5 Results

The two compound calendars created by Sam are available for use with the offering packages and SLAs.

The screenshot shows a 'New Service Offering' window. The 'Service Offering Definition' tab is active, displaying fields for 'Name' (Target Country Peak Offering) and 'Description' (Defines objectives for peak hours in target). A 'Select Calendars' sub-dialog is open, showing a list of 'Available Calendars' (Target Country - Nation, Target Country - Busine, Target Country - Off-Pe, Business Hours, 24x7) and a 'Selected Calendars' list (Target Country - Peak I). Navigation arrows are visible between the lists.

Select Calendars	
Available Calendars	Selected Calendars
Target Country - Nation	Target Country - Peak I
Target Country - Busine	
Target Country - Off-Pe	
Business Hours	
24x7	

How to Customize Calendar Default Settings

This task describes how to change the settings used by Service Level Management for first day of the week (default = Monday) or first day of the month (default = 1st).

Note:

- Changing the first day of the week or the first day of the month affects SLA calculation. However, changing the first day of the month did not impact SLA calculation in versions prior to Business Service Management 8.03.
 - Downtime definitions do not use **First day of month** settings.
 - You can also change the value for the first month of the first quarter, but this does not have any affect on SLA calculation or reports.
-

This scenario includes the following steps:

- "Access the Infrastructure Settings page" on page 306
- "Change the first day of the week" on page 307
- "Change the first day of the month" on page 307
- "Recalculate SLAs" on page 307
- "Results" on page 308

1 Access the Infrastructure Settings page

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

2 Change the first day of the week

If you want to modify the first day of the working week used by Service Level Management:

- a** In the **Select Context** area on the Infrastructure Settings page, select the **Foundations** radio button, then **Calendar** from the Foundations dropdown list.
- b** In the **Calendar Options** table, locate the **First day of week** option, and modify the value as required.

3 Change the first day of the month

If you want to modify the first day of the month used by Service Level Management:

- a** In the **Select Context** area on the Infrastructure Settings page, select the **Foundations** radio button, then **Calendar** from the Foundations dropdown list.
- b** In the **Calendar Options** table, locate the **First day of month** option, and modify the value as required.

Note: Due to functional limitations, the value for **First day of month** cannot be higher than 28.

- c** In the **Select Context** area, select the **Applications** radio button, then **Service Level Management** from the Applications dropdown list.
- d** Locate the **Use Calendar First day of month setting in SLM calculations and reports** option in the table. Change the value to **true**.

4 Recalculate SLAs

Changing the first day of the week or the first day of the month affects SLA calculation, so if you change the default values for either of them, you need to recalculate all SLAs that use the Week or Month tracking period, as appropriate.

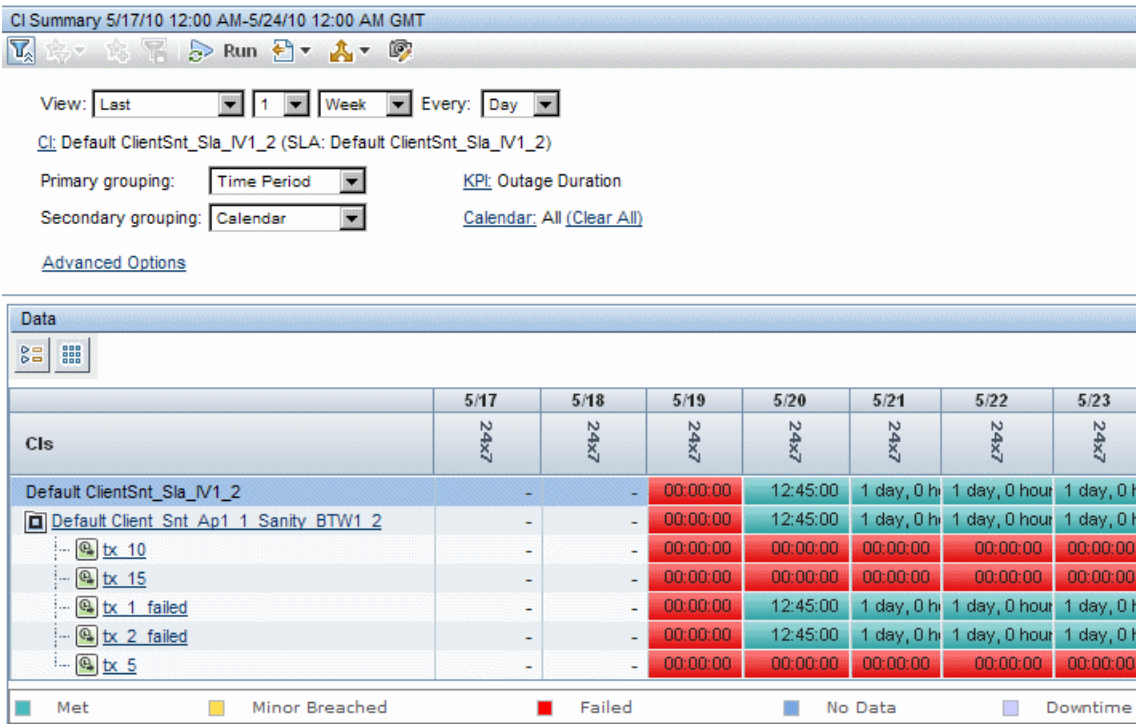
You recalculate SLAs from the **Admin > Service Level Management > Agreements Manager** page.

5 Results

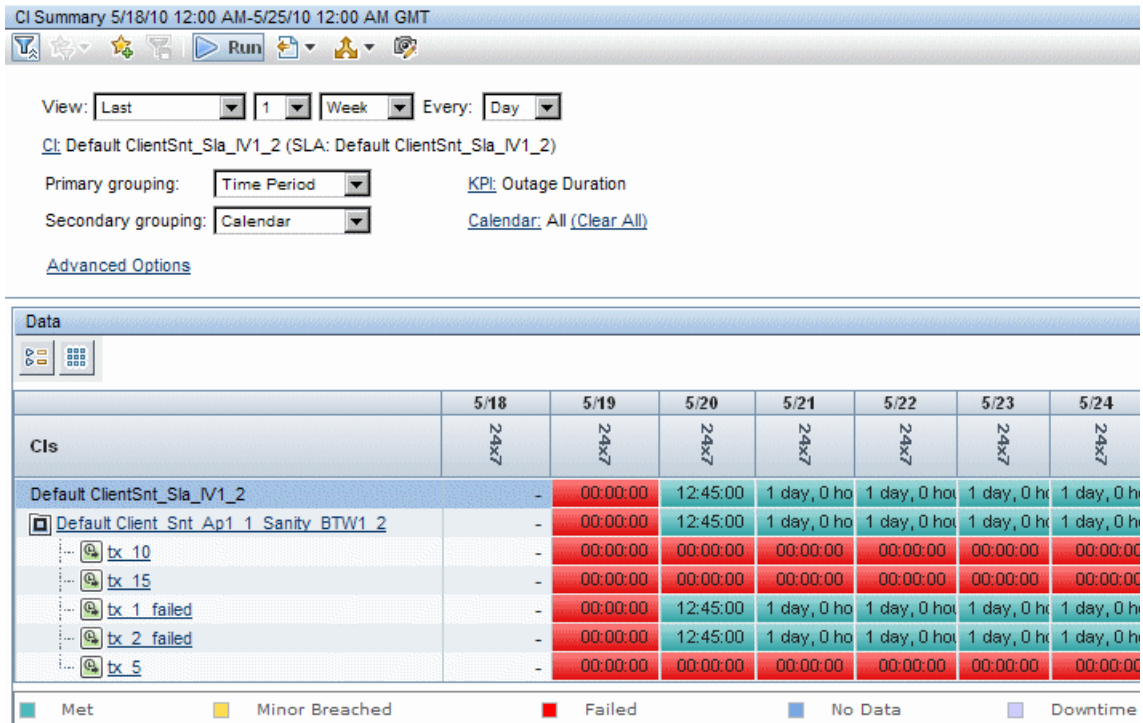
After changing the first day of the week or first day of the month settings, reports that use relative dates (such as last week or month to date) display different results. Reports using fixed dates are unaffected; for example, if you generate a report for July 1st to July 31st, the report shows data for those dates, regardless of what date is defined for first day of the month.

Example:

Before changing the first day of week setting, a CI Summary report generated for the **Last Week** shows results for the previous week from Monday, May 17th through Sunday, May 23rd:



After changing the first day of the week value to Tuesday, the report for the last week shows results from Tuesday, May 18th through Monday, May 24th:



Reference

 **Calendars User Interface**

This section includes:

- New Calendar/Edit Calendar Wizard on page 310
- Calendars Page on page 317

 **New Calendar/Edit Calendar Wizard**

This wizard enables you to define calendar schedules to use with your SLAs.

To access	Select Repositories > Calendar > click the New Calendar button or the Edit Calendar button.
Important information	<ul style="list-style-type: none">➤ If you define new calendars, you must add the new calendars to the service offerings and CI offerings that you require them for, including the preconfigured offering packages. For details, see "How to Create or Edit a Service or CI Offering" on page 210.➤ If you update one of the calendars included in a compound calendar, the compound calendar itself is automatically updated.➤ The date, time, and days of week are according to the server locale.
Relevant scenario	"How to Define an SLA Calendar - Use-Case Scenario" on page 299

Wizard map	This wizard contains: Calendar Properties Page > Calendar Pattern: Weekly Calendar Definition Page / Calendar Pattern: Yearly Calendar Definition Page / Calendar Pattern: Compound Calendar Definition Page > Calendar Summary Page
See also	"Calendars for SLAs" on page 295

Calendar Properties Page

This page enables you to define calendar properties and select the period type for the calendar.

Important information	<ul style="list-style-type: none"> ➤ General information about this wizard is available here: "New Calendar/Edit Calendar Wizard" on page 310. ➤ When you open the Calendar Wizard in edit mode, the Properties page lists any SLAs that are using the calendar.
Wizard map	The New Calendar/Edit Calendar Wizard contains: Calendar Properties Page > Calendar Pattern: Weekly Calendar Definition Page / Calendar Pattern: Yearly Calendar Definition Page / Calendar Pattern: Compound Calendar Definition Page > Calendar Summary Page
See also	"Calendars - Overview" on page 296

User interface elements are described below:

UI Element (A-Z)	Description
Choose period type	<p>Select the radio button for the period type on which you want to base the calendar:</p> <ul style="list-style-type: none">➤ Weekly. The calendar is based on a weekly cycle, for example, every Sunday from 1:00 AM to 3:00 AM.➤ Yearly. The calendar is based on a yearly cycle, for example, the month of December or annual vacations.➤ Compound. The calendar combines existing calendars. For example, if you have a yearly calendar monitoring January to October, and a weekly calendar monitoring business hours, you can combine the two calendars into a compound calendar that monitors business hours from January to October.
Description	<p>The description should not be longer than 500 characters and can consist of any characters and spaces.</p>
Name	<p>The name should not be longer than 50 characters and can consist of alphanumeric characters and spaces.</p>

Calendar Pattern: Weekly Calendar Definition Page

This page enables you to define a weekly pattern of active times for the calendar.

Important information	<ul style="list-style-type: none"> ► General information about this wizard is available here: "New Calendar/Edit Calendar Wizard" on page 310. ► You see this page in the Calendar Wizard if you selected Weekly on the Calendar Properties Page.
Wizard map	The New Calendar/Edit Calendar Wizard contains: Calendar Properties Page > Calendar Pattern: Weekly Calendar Definition Page / Calendar Pattern: Yearly Calendar Definition Page / Calendar Pattern: Compound Calendar Definition Page > Calendar Summary Page
See also	"Calendars - Overview" on page 296

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

UI Element (A-Z)	Description
<Calendar grid>	<p>A time grid containing a cell for each day of the week/ 30 minute period. Click a cell to make that day/time "active" in the calendar. Click the cell again to remove it from the calendar.</p> <p>Active times are shown in blue, free times (times not included in calendar) in gray.</p>
Add	Adds the selected time range to the calendar grid.

UI Element (A-Z)	Description
Add Range	<p>Enables you to add or clear a time range in the calendar grid. Select the start time and end time for the range, then select the days of the week for which the time range is to apply. Click Add to add the selected range as an "active" time period. Click Clear to remove the selected range (mark it as a "free" period).</p> <p>Tips:</p> <ul style="list-style-type: none">➤ Use the CTRL and SHIFT keys to select multiple days.➤ To quickly create a calendar that spans the whole week, apart from a shorter period such as working hours, define a range from 12 AM - 12 AM for all the days of the week and click Add. Then define the range for the second period and click Clear.
Clear	Removes the selected time range from the calendar grid.
Clear All	Removes all active times from the grid.



Calendar Pattern: Yearly Calendar Definition Page

This page enables you to define a yearly pattern of active times for the calendar.

Important information	<ul style="list-style-type: none">➤ General information about this wizard is available here: "New Calendar/Edit Calendar Wizard" on page 310.➤ You see this page in the Calendar Wizard if you selected Yearly on the Calendar Properties Page.
Wizard map	The New Calendar/Edit Calendar Wizard contains: Calendar Properties Page > Calendar Pattern: Weekly Calendar Definition Page / Calendar Pattern: Yearly Calendar Definition Page / Calendar Pattern: Compound Calendar Definition Page > Calendar Summary Page
See also	"Calendars - Overview" on page 296

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

UI Element (A-Z)	Description
<Calendar grid>	<p>A time grid containing a cell for each month/day. Click a cell to make that date "active" in the calendar. Click the cell again to remove it from the calendar.</p> <p>Active times are shown in blue, free times (times not included in calendar) in gray.</p>
Add	Adds the selected time range to the calendar grid.
Add Range	<p>Enables you to add or clear a time range in the calendar grid. Select the start day and end day for the range, then select the months of the year for which the time range is to apply. Click Add to add the selected range as an "active" time period. Click Clear to remove the selected range (mark it as a "free" period).</p> <p>Tip: Use the CTRL and SHIFT keys to select multiple months.</p>
Clear	Removes the selected time range from the calendar grid.
Clear All	Removes all active times from the grid.



Calendar Pattern: Compound Calendar Definition Page

Enables you to select the calendars to include in the new compound calendar.

Important information	<ul style="list-style-type: none">➤ General information about this wizard is available here: "New Calendar/Edit Calendar Wizard" on page 310.➤ You see this page in the Calendar Wizard if you selected Compound on the Calendar Properties Page.
Wizard map	The New Calendar/Edit Calendar Wizard contains: Calendar Properties Page > Calendar Pattern: Weekly Calendar Definition Page / Calendar Pattern: Yearly Calendar Definition Page / Calendar Pattern: Compound Calendar Definition Page > Calendar Summary Page
See also	"Calendars - Overview" on page 296

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







UI Element (A-Z)	Description
<Calendar table>	Lists all existing calendars.
In Use	Select the check box for a listed calendar to include it in the compound calendar.
Include/Exclude	Enabled after selecting the In Use check box for a calendar. Select either the Include or Exclude radio button for each calendar, as follows: <ul style="list-style-type: none">➤ Include. This option includes the calendar in the calculations for the compound calendar.➤ Exclude. This option excludes the calendar from the calculations for the compound calendar.


Calendars Page

This page lists the calendars defined for Service Level Management (including the predefined calendars) and enables you to create, edit and delete calendars.

To access	Select Admin > Service Level Management > Repositories > Calendars .
Important information	<ul style="list-style-type: none"> ► The calendars table is not refreshed automatically. ► For information on working with tables in the user interface, see "Common Report and Page Elements" in <i>Reports</i>.
See also	"Calendars - Overview" on page 296

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

UI Element (A-Z)	Description
	New Calendar. Opens the Calendar Wizard, where you define a new calendar.
	Edit Calendar. Opens the Calendar Wizard for the selected calendar, enabling you to edit calendar details.
	<p>Clone Calendar. Creates a clone of the calendar. The copy has the same name as the original, followed by a numeral to indicate the copy version, for example: <calendar name>(1).</p> <p>You can use the copy to define a new calendar with a similar schedule.</p>
	Delete Calendar. You cannot delete any calendar that is in use by any other calendar or offering package.
	Refresh. Updates the page with changes made by other users.
	Export to Excel. Opens the Export Table dialog box, enabling you to save the calendar information in the table in Microsoft Excel format.

UI Element (A-Z)	Description
	Export to PDF. Opens the Export Table dialog box, enabling you to save the calendar information in the table in PDF format.
<Calendar list>	The available calendars. Double-click a calendar to open the Calendar Wizard in edit mode.
Description	The calendar description.
Entity Type	Displays Predefined for the calendars supplied with Service Level Management, and Custom for user-defined calendars.
Name	The calendar name.
Period Type	The cycle that the calendar is based on. This can be Weekly , Yearly , or Compound (a combination).
Used by SLAs	A check mark indicates that the calendar is in use by one or more SLAs. Tip: To view a list of the SLAs using the calendar, open the calendar in edit mode.

8

Outages

This chapter includes:

Concepts

- Outages in SLAs on page 320
- Outage Categories on page 322

Reference

- Outage Categories User Interface on page 323

Concepts

Outages in SLAs

An outage is a period of time during which a measurement fails. Service Level Management calculates outages for CIs in your SLAs using the Outages KPI attached to individual CIs.

A CI is considered to have an outage if a measurement has one or more failures, and the failures meets the criteria defined in the rule used for the Outages KPI (there are different rules for different domains, for example, for BPM, SiteScope). For example, a CI can be in outage because a single failure has a duration of at least the minimum duration defined in the outage rule, or because a minimum number of failures has been reached.

The Outages KPI can be attached only once to each CI. The Outages KPI and corresponding outage rule are generally attached automatically to monitoring CIs in SLAs, according to the assignment definitions. The KPI then propagates up the hierarchy using the propagation definitions for each CI type. For details, see "Indicator Assignments and Propagations" on page 233. For details on the available outage rules, see "List of Service Level Management Business Rules" on page 557.

You can view the Outages KPI definitions for each CI within an SLA in the Add Outage dialog box, described in "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120. You can change the rule for the Outages KPI, modify the rule parameters, and define an outage category (see "Outage Categories" on page 322).

The Outages KPI does not itself appear in reports; however, it must be attached to a CI in order to view data in the outage reports (for details, see "Outage Reports" on page 425). If you want to view outage information in other Service Level Management reports, you can attach outage-connected KPIs to the CI, such as Number of Outages, Outage Duration, and Time Between Outages. These KPIs can be displayed in many of the reports in the SLA Reports tab.

Note: Changing the rule for the Outages KPI may affect results for the other outage-connected KPIs.

How an Outage Starts and Ends

An outage starts when the criteria specified in the outage rule are met, as follows:

- **Outage by samples.** An outage starts if the samples for the CI have reached a minimum number of consecutive failures, and the combined duration covered by the failed samples has reached the defined minimum duration.
- **Outage based on availability or system availability.** An outage starts if the CI's Availability KPI result over the SLA calculation cycle (default = 5 minutes) is less than the defined threshold for the Outages KPI, and the availability has been less than the threshold for the defined minimum duration. (This means that outages have a granularity of 5 minutes, by default.)

An outage ends (and is then included in the reports), when the following occurs:

- **Outage by samples.** The outage is ended if a successful sample arrives for the CI.
- **Outage based on availability or system availability.** The outage is ended if the CI's Availability KPI result over the SLA calculation cycle (default = 5 minutes) reaches the threshold defined in the Outages KPI.
- **All outages.** Any outage is ended if:
 - The Outages KPI includes a maximum outage duration value, and this maximum is reached.
 - The CI enters downtime.

- The monitoring period defined by the calendar ends.

Note that the 24x7 calendar continues infinitely, so outages cannot be ended by this calendar. When viewing reports filtered by this calendar, any ongoing outages do not appear; however, for the same period outage may appear when you filter by other calendars, because an ongoing outage is ended when a calendar period ends.

Note: Outage based on availability should only be used when availability is time-based. If availability is sample-based, the results are meaningless.

For examples of outages, see the outage rules in "List of Service Level Management Business Rules" on page 557.

For detailed examples of outage by samples, see "Examples - API Outage by Samples Rule" on page 705. Note that these examples are relevant to understanding outages even if you are not working with the Rules API.

Outage Categories

Outage categories are used in Service Level Management reports, to make outage results more meaningful. The outage categories enable you to categorize the probable outage cause for a CI.

You can assign an outage category to a CI as part of the Outages KPI definition (see "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120); you can also assign an outage category to an outage in the Outage Summary report (see "Outage Summary Report" on page 484). However, it is recommended to categorize outages during SLA creation.

Service Level Management contains preconfigured outage categories for **Database**, **Network**, **Webserver**, and **Undefined** (for outages from non-defined sources). You can create your own additional outage categories. For details, see "Outage Categories Page" on page 323.

Reference

Outage Categories User Interface

This section includes:



- Outage Categories Page on page 323
- New Outage Category/Edit Outage Category Dialog Box on page 324



Outage Categories Page

This page enables you to manage the outage categories defined for Service Level Management.

To access	Select Admin > Service Level Management > Repositories > Outage Categories .
Important information	New outage categories can also be defined from the Add Outages KPI/Edit Outages KPI Dialog Box described on page 120.
See also	"Outages in SLAs" on page 320

User interface elements are described below:

UI Element (A-Z)	Description
	New Outage Category. Opens the Outage Category dialog box, where you define a new outage category.
	Edit Outage Category. Opens the Edit Outage Category dialog box, where you can modify the outage category name or description.

UI Element (A-Z)	Description
	Delete Outage Category. Deletes a selected custom outage category. (You can delete multiple categories.) You cannot delete predefined outage categories, or outage categories that are used for an outage rule within an SLA.
	Refresh. Updates the page with changes made by other users.
Outage Categories table	Lists the predefined and custom (user-defined) outage categories. Click a column header to sort the table by that column.



New Outage Category/Edit Outage Category Dialog Box

This dialog box enables you to create and edit outage categories. The outage categories categorize the probable outage cause for a CI.

To access	Use one of the following: <ul style="list-style-type: none">➤ In the Repositories > Outage Categories page, click Add Outage Category or Edit Outage Category.➤ In the Add Outages KPI/Edit Outages KPI Dialog Box, click New Outage Category.
See also	"Outage Categories" on page 322

User interface elements are described below:

UI Element	Description
Name	Enter a meaningful name for the new outage category. If you change the name when editing the outage category, the new name is automatically updated to SLAs that use that outage category.
Description	Enter a description for the outage category.

9

Integration with HP Service Manager

This chapter includes:

Concepts

- Integration with HP Service Manager - Overview on page 326
- Service Level Management KPIs for System Incidents on page 327
- Use Case Example: Incident HIs During a Single Period on page 331
- Use Case Example: Incident HIs Across Periods on page 336

Concepts

Integration with HP Service Manager - Overview

Business Service Management integrates with HP Service Manager to collect information on open incidents for services, and present the information within Business Service Management applications.

The data for incidents is retrieved from HP Service Manager using the EMS Integration tool, which sets up a SiteScope Service Manager monitor to import the topology for the services and their incidents. The result of this process is to create new business service CIs with child EMS Monitor CIs (or to create EMS Monitor CIs attached to existing service CIs). The topology can be seen in the Service Measurements view. For details on working with the EMS Integration tool, see "Integration Administration Application Overview" in *Solutions and Integrations*.

The data for each EMS Monitor CI is updated by the incoming event samples from HP Service Manager, providing an ongoing record of the lifecycle for each incident. This information is used by the incident HIs and KPIs in Service Level Management.

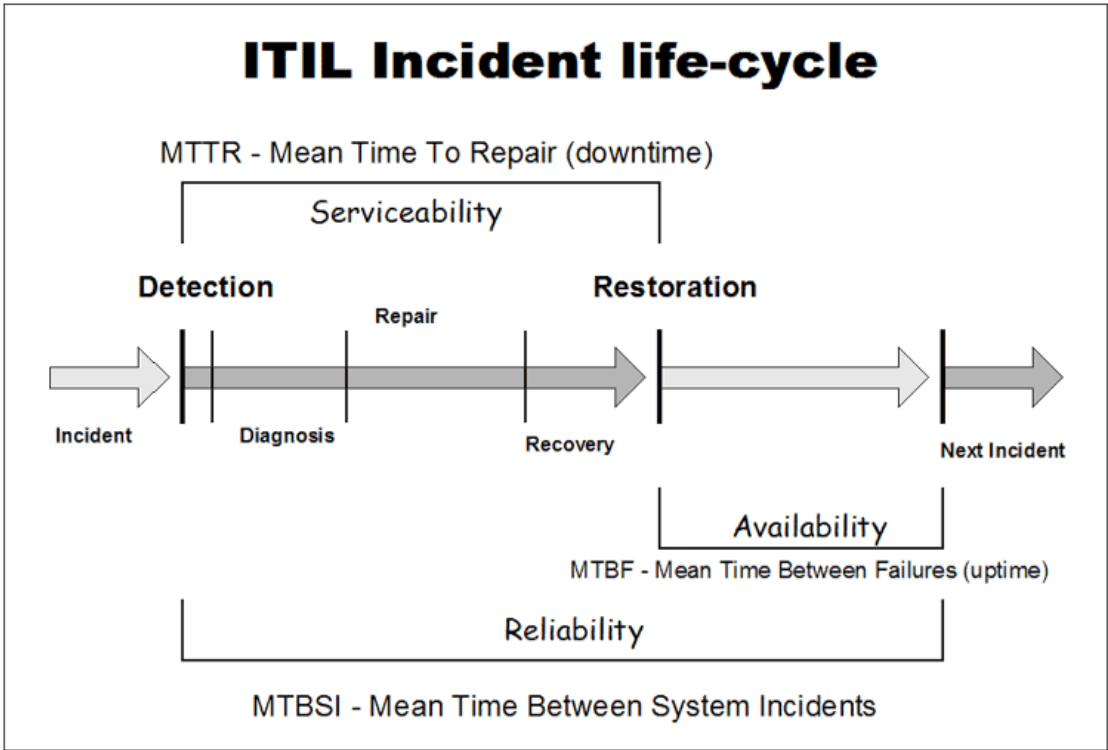
Service Level Management KPIs for System Incidents

You include system incidents in SLAs by adding the relevant service CI, or the child EMS Monitor CI, to the SLA in the **Admin > Service Level Management > Agreements Manager** page.

When a system incident is added to an SLA, specific HIs and KPIs for handling HP Service Manager data are automatically attached to the EMS Monitor CI:

- **MTTR.** The Mean Time to Repair KPI and its associated HI provide information on the percentage of incidents during a time period whose repair time was within a specified threshold. The rule for the HI is the MTTR rule, described in "MTTR (Mean Time to Recover)" on page 593.
- **MTBF.** The Mean Time Between Failures KPI and its associated HI provide information on the average time span when there were no open incidents for a service, during a time period. The rule for the HI is the MTBF rule, described in "MTBF (Mean Time Between Failures)" on page 592.

- **MTBSI.** The Mean Time Between System Incidents KPI and its associated HI provide information on the average time span between the opening of one incident to the opening of the next incident, during a time period. The rule for the HI is the MTBSI rule, described in "MTBSI (Mean Time Between System Incidents)" on page 593.



Incident State and Severity Values

The calculations for the MTTR, MTBF, and MTBSI EMS Monitor HIs use the status (state) and severity values received for the incidents in the samples from HP Service Manager:

- The status of the incident received in a sample, for example, **Open** or **Pending**, indicates the current point in the lifecycle of the incident. A new sample is sent for every change in the incident status.

Service Level Management uses the incident status to define the **Initial State** parameter (marking the start of repair time) and **Final State** parameter (marking the end of repair time) for the incident HIs. By default, the incident statuses used for these parameters are **Open** and **Closed**.

- The severity for the incident received in the sample, for example, **High** or **Average**, enables filtering of the incidents to be included in calculations.

By default, Service Level Management sets the **Severity** parameter for the incident HIs to **3** (equivalent to **Average** urgency in HP Service Manager). This means that incidents of severity 3 or higher (higher severities are 1 and 2) are included in the calculations for the HI.

The default parameter values for the incident HIs are defined in the corresponding rules for the HIs. You can change the default values from the **Admin > Service Level Management > Repositories > Business Rules** page. For details, see "New/Edit Rule Parameter Dialog Box" on page 648.

You can also modify the default parameter values for the HIs attached to individual CIs within an SLA. You do this by editing the HI within the SLA Wizard from the **Admin > Service Level Management > Agreements Manager** page. For details, see "Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box" on page 105.

If required, you can assign multiple instances of the incident HIs to a CI, and define different parameter values for each one, to compare different parts of the incident lifecycle. To do this you must create custom HIs as required (for example, you might create MTTR2, MTTR3, and so forth). You can then attach the new HIs to CIs on the Configure SLA Indicators Page of the SLA Wizard.

For details on creating new HIs, see "Indicators Repository Overview" on page 544.

HI Calculation Principles

The following principles apply when calculating the HI values:

- All calculations take into consideration the calendars for the SLA, and exclude downtime.
- An incident is considered in the calculations for a calendar if its **Initial State** timestamp is within the calendar. Only the repair time within that calendar is counted for calculation purposes.
- If an incident starts in one tracking period and ends in a different tracking period, it is not included within the calculation for each period, but is included for a longer period that includes the two shorter periods. For example, if an incident starts on Monday and ends on Wednesday, the data for the incident is not included for Monday or for Wednesday—but is shown in the data for the entire week that includes these days.

Use Case Example: Incident HIs During a Single Period

The following use case gives examples of calculations for incidents that were opened for a service CI during a single day. Each new incident creates an EMS Monitor CI as a child of the service CI, and the calculations are done for the incident HIs attached to the EMS Monitor CIs—MTTR, MTBF, and MTBSI EMS Monitor HIs.

Use Case Details

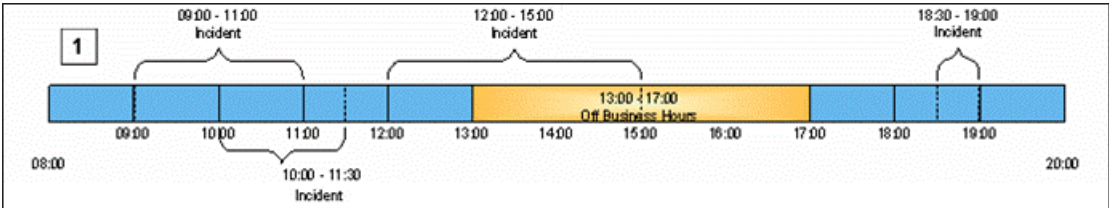
The details for the use case are as follows:

- Calculations are made for a day tracking period.
- The monitored period during a day is 08:00 to 20:00.
- There are two calendars monitored by the SLA:
 - Business hours from **08:00-13:00** and **17:00-20:00** (shown in blue in results)
 - Off business hours from **13:00-17:00** (shown in gold in results)
- The SLA targets are **Exceeded** and **Failed**.
- The objective set for the MTTR EMS Monitor HI is: **70%** of the incidents must be resolved in:
 - **<= 01:30** in business hours
 - **<= 04:00** in off business hours

Note: In the MTTR results for each example, **m** means that the objective was met, **b** means that the objective was breached.

- The objective set for the MTBF EMS Monitor HI is: Average time between failures must be **>= 01:30**
- The objective set for the MTBSI EMS Monitor HI is: Average time between incidents occurring must be **>= 03:00**

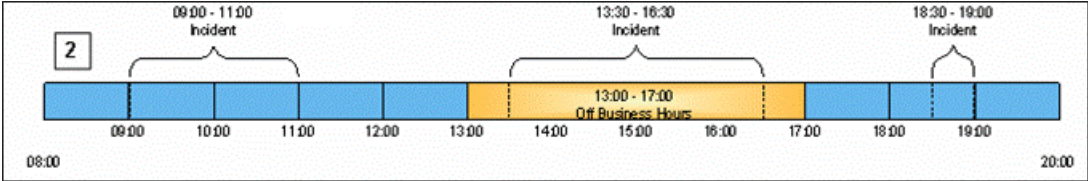
Case 1 Results



1. **Case 1 – Business Hours:**
 - a. Incident 1: **start** 09:00; **end** 11:00 (duration 02:00).
 - b. Incident 2: **start** 10:00; **end** 11:30(duration 01:30).
 - c. Incident 3: **start** 12:00; **end** 13:00 (duration 01:00).
 - d. Incident 4: **start** 18:30; **end** 19:00 (duration 00:30).
2. **Case 1 – Off Business Hours**
 - a. **No incidents**

Case 1	MTTR	MTBF	MTBSI
Business Hours	b,m,m,m = 75%	$(1+0.5+1.5+1)/4=01:00$	$(1+2+2.5)/3=02:45$
Off Business Hours	No data	02:00	No data

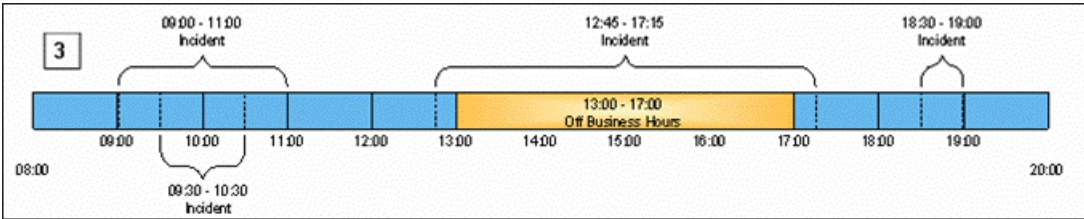
Case 2 Results



1. **Case 2 – Business Hours:**
 - a. Incident 1: **start** 09:00; **end** 11:00 (duration 02:00).
 - b. Incident 2: **start** 18:30; **end** 19:00 (duration 00:30).
2. **Case 2 – Off Business Hours:**
 - a. Incident 1: **start** 13:30, **end** 16:30

Case 2	MTTR	MTBF	MTBSI
Business Hours	b,m = 50%	$(1+3.5+1)/3=$ 01:53	$(5.5)/1=$ 05:30
Off Business Hours	m = 100%	$(0.5+0.5)/2=$ 00:30	No data

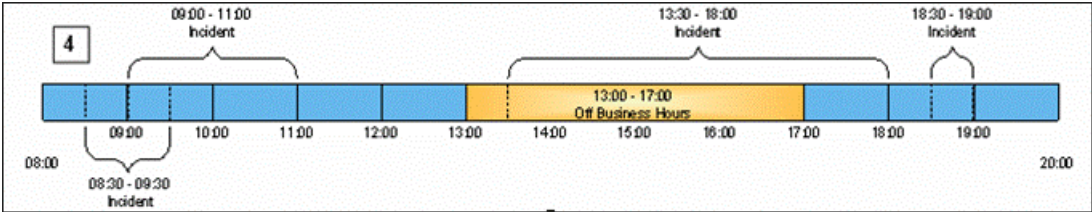
Case 3 Results



1. **Case 3 – Business Hours:**
 - a. Incident 1: **start** 09:00; **end** 11:00 (duration 02:00).
 - b. Incident 2: **start** 09:30; **end** 10:30 (duration 01:00).
 - c. Incident 3: **start** 12:45; **end** 17:15 (duration 00:30).
 - d. Incident 4: **start** 18:30; **end** 19:00 (duration 00:30).
2. **Case 3 – Off Business Hours:**
 - a. **No Incidents.**

Case 3	MTTR	MTBF	MTBSI
Business Hours	b+m+m+m = 75%	(1+1.75+1.25+1)/4= 01:15	(0.5+3.25+2)/3= 01:40
Off Business Hours	No data	No data	No data

Case 4 Results



1. **Case 4 – Business Hours:**
 - a. Incident 1: **start** 08:30; **end** 09:30 (duration 01:00).
 - b. Incident 2: **start** 09:00; **end** 11:00 (duration 02:00).
 - c. Incident 3: **start** 18:30; **end** 19:00 (duration 00:30).
2. **Case 4 – Off Business Hours:**
 - a. Incident 1: **start** 13:30; **end** 17:00 (duration 03:30).

Case 4	MTTR	MTBF	MTBSI
Business Hours	m, b, m = 66%	$(0.5+3.5+1)/3=$ 01:40	$(0.5+5.5)/2=$ 03:00
Off Business Hours	m = 100%	$(0.5)/1=$ 00:30	No data

Use Case Example: Incident HIs Across Periods

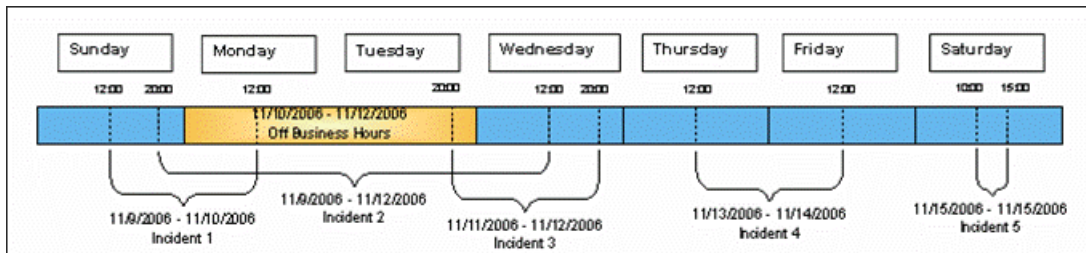
The following use case gives examples of calculations for incidents that were opened for a service CI over the course of a week. Each new incident creates an EMS Monitor CI as a child of the service CI, and the calculations are done for the incident HIs attached to the EMS Monitor CIs—MTTR, MTBF, and MTBSI EMS Monitor HIs.

Use Case Details

The details for the use case are as follows:

- Calculations are made for day and week tracking periods.
- There are two calendars monitored by the SLA:
 - Business hours: Sunday, Wednesday, Thursday, Friday, Saturday (shown in blue in results)
 - Off business hours: Monday, Tuesday (shown in gold in results)
- The SLA targets are **Exceeded** and **Failed**.
- The objective set for the MTTR EMS Monitor HI is: **70%** of incidents must be resolved within 30 hours.

Use Case Results



Business Hours (blue):

- **Sunday:** No closed incidents
- **Monday:** Not relevant - off business hours

- **Tuesday:** Not relevant - off business hours
- **Wednesday:** 1 incident (opened on Sunday) with duration of 16 hours (amount of open time during business hours)
- **Thursday:** No closed incidents
- **Friday:** 1 incident (opened on Thursday) with duration of 24 hours
- **Saturday:** 1 incident with duration of 5 hours

Note: Incidents that are opened on one day and are closed on a different day are ignored in the calculations for each day, but included in the week calculations.

KPI	Daily Results						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
MTTR	No data	No data	No data	No data	no data	No data	100%
MTBF	No data	No data	No data	No data	no data	No data	09:30
MTBSI	No data	No data	No data	No data	No data	No data	No data

KPI	Week results
MTTR	100%
MTBF	14:45 $((12+16+22+9)/4)$
MTBSI	31:20 $((8+40+46)/3)$

Off Business Hours (gold):

KPI	Daily Results						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
MTTR	No data	no data	No data	No data	No data	No data	No data
MTBF	No data	No data	No data	No data	No data	No data	No data
MTBSI	No data	No data	No data	No data	No data	No data	No data

KPI	Week results
MTTR	No data
MTBF	No data
MTBSI	No data

10

Administer SLA Alerts

This chapter includes:

Concepts

- SLA Alerts Overview on page 340
- SNMP Traps on page 340

Tasks

- How to Define an SLA Alert Scheme on page 342
- How to Configure a Notification SNMP Trap on page 344

Reference

- SNMP-Specific Codes on page 346
- Alerts MIB Varbinds on page 346
- SLA Alerts Administration User Interface on page 347

Troubleshooting and Limitations on page 372

Concepts

SLA Alerts Overview

SLA alerts notify you or another user of specified changes to the status of an SLA during one of the specified tracking periods.

For a detailed introduction to alerts, see "Alerts Overview" in *Platform Administration*.

For details on configuring and managing SLA alerts, see "SLA Alerts Page - Administration" on page 370. For details on the SLA alerts that were triggered, see "SLA Alerts Report" on page 519.

If you have the Event Management Foundation license, an event is automatically forwarded to Operations Management, when an SLA alert is triggered in BSM.

If BSM integrates with HP Operations Manager, an event is automatically forwarded to HP Operations Manager (OM), when an SLA alert is triggered in BSM. For details, see "HP Operations Manager" in *Solutions and Integrations*.

SNMP Traps

You can create a Simple Network Management Protocol (SNMP) trap to attach to an alert. This SNMP trap includes the Object Identifiers (OIDs) and their values based on the alert's data. The SNMP trap is sent when the alert criteria is met and the alert is triggered.

You can then view the alert notice with any SNMP management console. For detail on setting SNMP traps, see "How to Configure a Notification SNMP Trap" on page 344.

The MIB file, located at <**HPBSM root directory on the Data_processing server**>\HPBAC\SNMP_MIBS\CIAalerts.mib, contains the mapping of Object Identifiers (OIDs) to alert-related data. The mapping is detailed in "Alerts MIB Varbinds" on page 346.

The alert type and its SNMP-specific code is detailed in "SNMP-Specific Codes" on page 346.

Tasks

How to Define an SLA Alert Scheme

You set up an alert scheme to monitor current status or forecast status for one or more SLAs, and to define the notifications that are sent when the alert is triggered.

This task includes the following steps:

- "Prerequisite" on page 342
- "Define SLAs" on page 342
- "Define SLA alert schemes" on page 342
- "Customize the alert features – optional" on page 343
- "Set up to open an event when an alert is triggered in BSM" on page 343
- "Results" on page 344

1 Prerequisite

Perform the steps described in "How to Set Up an Alert Delivery System" in *Platform Administration*.

2 Define SLAs

Before setting up an alert scheme, you must have defined one or more SLAs. To define an SLA, select **Admin > Service Level Management > Agreements Manager**.

3 Define SLA alert schemes

Use the Create New Alert wizard to create an alert scheme for one or more SLAs.

An alert scheme includes the definition of the conditions that cause the alert to be triggered, and the actions that are taken when the alert is triggered. The conditions can be the status change, the SLAs whose status change triggers the alert, the tracking periods. The actions can be the files to execute or the SNMP traps to send, when the alert is triggered. The Create New Alert wizard is described in "Create New Alert/Edit Alert Wizard" on page 349.

While creating the alert or afterwards, you can attach to an alert:

- **A notification URL.** The notification URL is sent when the alert criteria is met and the alert is triggered. It passes alert information to external systems, such as a customer Web application. For user interface details, see "Create URL/Edit URL Dialog Box" on page 367.
- **An executable file.** The executable file is sent when the alert criteria is met and the alert is triggered. It writes information in special logs or to insert information into external databases. For user interface details, see "Create Executable File Dialog Box/Edit Executable File Dialog Box" on page 348.
- **An SNMP trap.** The SNMP trap is sent when the alert criteria is met and the alert is triggered. You can view the alert notice with any SNMP management console in your organization. For concept details, see "SNMP Traps" on page 340. For user interface details, see "Create SNMP Trap/Edit SNMP Trap Dialog Box" on page 363.

4 Customize the alert features – optional

You can customize some alert features. For details, see "How to Customize Alerts" in *Platform Administration*.

5 Set up to open an event when an alert is triggered in BSM

If you have an Event Management Foundation license, you can open events in Operations Management when an alert is triggered in BSM.

If BSM integrates with HPOM, you can open events in HPOM when an alert is triggered in BSM. For details, see "HP Operations Manager" in *Solutions and Integrations*.

6 Results

You can view the alert schemes you have created in the SLA Alerts page. For details, see "SLA Alerts Page - Administration" on page 370.

You can manage the defined alert schemes: clone, edit, delete, enable or disable and perform searches. For details, see "SLA Alerts Page - Administration" on page 370.

You can view a log of the alerts that were triggered in the SLA Alerts report and the details of each alert in the SLA Alert Notifications report. For details, see "View SLA Alert and SLA Alert Notification Reports" on page 513.



How to Configure a Notification SNMP Trap

If you configured alerts to send SNMP traps, it is recommended that you configure your SNMP management console to read the alerts MIB. This configuration enables you to see a name, rather than an OID, when working in the management console.

Note: HP Business Service Management uses the AM alerts MIB 5.0 by default.

This task includes the following steps:

- "Specify the host address of the SNMP trap" on page 345
- "Check the mapping of the OIDs to the alert data and configure the Alerts MIB – optional" on page 345

1 Specify the host address of the SNMP trap

You specify the default host address of the SNMP trap in the Create New/Edit SNMP Trap dialog box. For user interface details, see "Create SNMP Trap/Edit SNMP Trap Dialog Box" on page 363.

You can also specify a global default host address in the Infrastructure Settings. For details, see the **Default SNMP Target Address/Default SNMP Port** in "How to Customize Alerts" in *Platform Administration*.

2 Check the mapping of the OIDs to the alert data and configure the Alerts MIB – optional

If you specified to send SNMP traps in your alert scheme, it is recommended that you configure your SNMP management console to read the alerts MIB. This configuration enables you to see a name, rather than an OID, when working in the management console.

Note: HP Business Service Management uses the AM alerts MIB 5.0 by default.

To configure the alerts MIB in your SNMP management console:

- a** Copy the alerts MIB file **CIAAlerts.mib** from **Tools_and_Uutilities\SNMP_MIBS** on the HP Business Service Management Documentation and Utilities DVD to your SNMP management console.
- b** To view the alerts varbinds, use your SNMP management console's MIB browser. For a list of varbinds and their descriptions, see "Alerts MIB Varbinds" on page 346.
- c** Using your SNMP management console's event configuration utility, configure the notification content and method for the various alert types. For a list of alert types and their corresponding SNMP-specific codes, see "SNMP-Specific Codes" on page 346.

Reference

SNMP-Specific Codes

The SNMP-specific code for an SLA alert is **1**. Its type is: **Transaction response time Alert Frequency: Even once**.

Use this code when configuring alert notification events in your SNMP management console. For details, see "How to Configure a Notification SNMP Trap" on page 344.

Alerts MIB Varbinds

The tables list the varbinds used in the alerts MIB. For task details, see "How to Define an SLA Alert Scheme" on page 342.

Object Identifier	MIB Label	Description
1.3.6.1.4.1.5233.6	ciAlerts	Subject
1.3.6.1.4.1.5233	HP	Company name
1.3.6.1.4.1.5233.6.1	alertId	Unique alert ID
1.3.6.1.4.1.5233.6.2	alertName	Alert name
1.3.6.1.4.1.5233.6.3	alertDescription	Alert description
1.3.6.1.4.1.5233.6.4	alertEventTime	Time of the event that triggered the alert
1.3.6.1.4.1.5233.6.5	alertCIId	The ID of the CI the alert was sent for
1.3.6.1.4.1.5233.6.6	alertCIName	The name of the CI the alert was sent for
1.3.6.1.4.1.5233.6.7	alertKPIId	The ID of the KPI the alert was sent for

Object Identifier	MIB Label	Description
1.3.6.1.4.1.5233.6.8	alertKPIName	The name of the KPI the alert was sent for
1.3.6.1.4.1.5233.6.9	alertKPIValue	The value of the KPI – if available (only for monitor CIs)
1.3.6.1.4.1.5233.6.10	alertPrevious Severity	Previous severity of the CI
1.3.6.1.4.1.5233.6.11	alertNextSeverity	Current severity of the CI (the change from previous severity to current severity is what triggered the alert)
1.3.6.1.4.1.5233.6.12	alertBACURL	The URL of the BSM Gateway server.



SLA Alerts Administration User Interface

This section describes:

- Create Executable File Dialog Box/Edit Executable File Dialog Box on page 348
- Create New Alert/Edit Alert Wizard on page 349
- Create SNMP Trap/Edit SNMP Trap Dialog Box on page 363
- Create URL/Edit URL Dialog Box on page 367
- New Event Generation Dialog Box on page 368
- SLA Alerts Page - Administration on page 370

Create Executable File Dialog Box/Edit Executable File Dialog Box

This dialog box enables you to define a command line for running an executable file. BSM runs the executable file (for example, an .exe or .bat file) when the alert is triggered.

To access	In the Actions page of the Create New Alert wizard, click New Executable File or the Edit button for a listed executable file.
Important information	<ul style="list-style-type: none">▶ You can embed alert parameters in the executable file. The parameters are substituted with the relevant values when the message is formatted.▶ The executable file is run from the Business Service Management Data Processing Server, so the path to the executable file must be available from the server machine.▶ The executable file must not be interactive (no user response required) and should not have a user interface.

The Create Executable File or Edit Executable File dialog box includes the following elements:

UI Element (A-Z)	Description
Enter Command	<p>Enter the command line using the following format:</p> <p><full path to program from Business Service Management Data Processing Server machine> <program command line switches></p> <p>You embed the alert parameters in the switch section of the command line. The parameters are substituted with the actual values before the command line is executed.</p> <p>Example:</p> <p>C:\Bin\MyAlertReporter.exe -title "<Alert Name> for <SLA Name>" -Text "<Current Status>"</p>

UI Element (A-Z)	Description
Field	Select alert parameters to insert into the command line. Use the same parameters for forecast status alerts. For a list of parameters, see "SLA Alert Attributes" on page 378.
Insert Field	Inserts the alert parameter displayed in the Field box into the Enter Command box. The alert parameter is added at the cursor location, between double angle brackets.



Create New Alert/Edit Alert Wizard

This wizard enables you to create an SLA alert scheme to notify you or another user of changes to SLA status (current status or forecast status).

To access	Select Admin > Service Level Management > SLA Alerts , then click New Alert , or the Edit button for an existing alert.
Important information	<ul style="list-style-type: none"> ➤ If you have an Event Management Foundation license, and you create an SLA alert without specifying a recipient or an action for the alert. When you complete the definition of such an alert, the message: The alert you just defined opens an event in Operations Manager i when the communication with Operations Manager i is enabled is displayed in the Summary page. ➤ Set up specific parameters to enable the communication with OM. For details, see "How to Configure BSM Alerts to Forward an Event When the Alert is Triggered" in <i>Solutions and Integrations</i>.
Wizard map	The Create New Alert/Edit Alert Wizard contains: Welcome > General Page > Related SLAs Page > Templates and Recipients Page > Actions Page > Summary Page
See also	"How to Define an SLA Alert Scheme" on page 342

 **General Page**

This page enables you to define alert scheme parameters and alert conditions.

Important information	<ul style="list-style-type: none">➤ The forecast calculations are based on averages, so if an SLA contains a KPI that is based on an accumulative result (the Outage Duration KPI or the Number of Outages KPI), the calculations yield inaccurate forecast results. Do not create a status alert scheme for SLAs that contain either of these KPIs.➤ After saving an SLA alert scheme, you cannot change the alert type from status to forecast, or vice versa.➤ General information about the wizard is available at "Create New Alert/Edit Alert Wizard" on page 349.
Wizard map	The Create New Alert/Edit Alert Wizard contains: Welcome > General Page > Related SLAs Page > Templates and Recipients Page > Actions Page > Summary Page

User interface elements are described below:

UI Element (A-Z)	Description
Alert Type	<p>Select the required type:</p> <ul style="list-style-type: none"> ➤ Forecast Alert. The alert scheme monitors changes in the SLA forecast status. ➤ Status Alert. The alert scheme monitors changes in the current SLA status. <p>Note: You cannot modify the Alert Type when editing an alert scheme.</p>
Condition	<p>Select the required condition:</p> <ul style="list-style-type: none"> ➤ Send alert if status worsens. Triggers the alert when the current or forecast status of an SLA is worse than the previous status. For example, if the status changes from Met to Minor Breached, the alert is triggered. Statuses No Data and Downtime are ignored. ➤ Send alert if status improves. Triggers the alert when the current or forecast status of the SLA is better than the previous status. For example, if the status changes from Breached to Minor Breached, the alert is triggered. Statuses No Data and Downtime are ignored. ➤ Send alert if status value was changed from. Sets the appropriate conditions for sending an alert. Select the appropriate status in the from and to boxes. ➤ Send alert if status value was changed from <status1> to <status2> to set the appropriate conditions for sending an alert. Select the appropriate status in the from box, and in the to box. The available statuses are: Any Status (only available in the from box), Exceeded, Met, Minor Breached, Failed, and No Data. If you select Any Status, the alert is triggered when the SLA's KPI status changes from any status to the target status.

UI Element (A-Z)	Description
Definition	<p>Select the required definition:</p> <ul style="list-style-type: none"> ➤ All Tracking Periods. The alert scheme monitors all tracking periods. ➤ Selected Tracking Periods. You select the tracking periods in the next stage of the procedure. <p>Note: For a forecast status alert scheme, the Alert Definition parameter is disabled and the forecast calculation is automatically applied to all tracking periods.</p>
Description	<p>Enter a description to appear in the SLA Alerts report.</p> <p>Limitation: The string should be less than 1000 characters.</p>
Name	<p>The name of the alert scheme must be unique.</p> <p>Limitation: The string should be less than 250 characters.</p>
Notification Frequency	<p>Select the required notification frequency:</p> <ul style="list-style-type: none"> ➤ Send alert for every trigger occurrence. Send an alert each time the condition is triggered. ➤ Send no more than one alert per. Send an alert once only during the time period you select, even if the condition is triggered more than once during that time period.

Related SLAs Page

This page enables you to select the SLAs. Where relevant, it enables you to select the tracking periods or the SLA forecasting periods that the alert scheme should monitor.

Important information	General information about the wizard is available at "Create New Alert/Edit Alert Wizard" on page 349.
Wizard map	The Create New Alert/Edit Alert Wizard contains: Welcome > General Page > Related SLAs Page > Templates and Recipients Page > Actions Page > Summary Page

User interface elements are described below:

UI Element (A-Z)	Description
Base Forecasting On	<p>This parameter is displayed for alert schemes of the Forecast Alert type (selected in the previous page of the wizard).</p> <p>Select the analysis period to use for the forecast calculation. The results from the analysis period serve as the basis for the forecast calculation, on the assumption that the SLA performs in the future as it did during this analysis period.</p> <p>The options for this parameter are based on the SLA tracking period, up to the current date. The available options include only the tracking periods that are common to all SLAs added to the Selected SLAs list, and that are also included in the following list:</p> <ul style="list-style-type: none"> ➤ Week to date ➤ Month to date ➤ Quarter to date ➤ Year to date

UI Element (A-Z)	Description
Give Forecasting For	<p>This parameter is displayed for alert schemes of Forecast Alert type (selected in the previous page of the wizard).</p> <p>Select the period that you want the forecast to cover. For example, select End of month for a forecast of the SLA status at the end of the current month.</p> <p>The options for this parameter are based on the SLA tracking periods; however, only the tracking periods that are common to all SLAs added to the Selected SLAs list, and that are also included in the following list, are available:</p> <ul style="list-style-type: none"> ➤ End of week ➤ End of month ➤ End of quarter ➤ End of year
Selected SLAs	Lists the SLAs (including OLAs and UCs) that are monitored by the alert scheme.
SLAs	<p>Lists all the SLAs except those that have been terminated. The list displays those SLAs for which you have change or delete permission.</p> <p>Add SLAs from the SLAs list to the Selected SLAs list:</p> <ul style="list-style-type: none"> ➤ To add an SLA to the Selected SLAs list, select the SLA in the left pane and use the upper arrow. ➤ To remove an SLA from the Selected SLAs list, select the SLA in the right pane and use the lower arrow. ➤ Select multiple SLAs by holding down the CTRL key while making your selections.

UI Element (A-Z)	Description
Tracking Periods	<p>Enables you to select the tracking periods that you want the alert scheme to monitor. The Tracking Periods table is displayed only if you selected the following in the previous page of the wizard:</p> <ul style="list-style-type: none"> ➤ Alert Type: Status Alert ➤ Alert Definition: Selected Tracking Periods <p>After you select SLAs, the available tracking periods are listed in the table. The available options include each tracking period that is defined for at least one of the selected SLAs.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ An alert scheme cannot be defined for the Hour tracking period. For this reason, this tracking period does not appear in the table. ➤ For each included SLA, the alert scheme monitors only the selected tracking periods that are relevant for that SLA. <p>Tip: To make your selections, you can also use the buttons at the bottom of the list for Select All, Clear All, and Invert Selection.</p>



Templates and Recipients Page

This page enables you to define to whom a triggered alert should be sent, and to define the template to be used for each alert type.

Important information	<ul style="list-style-type: none">➤ General information about the wizard is available at "Create New Alert/Edit Alert Wizard" on page 349.➤ The default character set for email, SMS, and pager messages sent by Business Service Management is UTF-8. You can change the default to ISO-2022-JP. For details on changing the character set to ISO-2022-JP, see "Modify the alerts triggering defaults" in "How to Customize Alerts" in <i>Platform Administration</i>.➤ You cannot edit the email, SMS, and Pager message templates.
Wizard map	The Create New Alert/Edit Alert Wizard contains: Welcome > General Page > Related SLAs Page > Templates and Recipients Page > Actions Page > Summary Page

User interface elements are described below:

UI Element (A-Z)	Description
Email message template	<p>Select the email template format to be used when BSM sends the alert to recipients:</p> <ul style="list-style-type: none"> ➤ Short HTML email message/short text email message. These messages include the change in status only. ➤ Long HTML email message/long text email message. These messages include a subject line and body. <p>HP Business Service Management supports secure mail. For details, see "Email Tab" in <i>Platform Administration</i>.</p> <p>Note: The text displayed in pager messages can only be in English except for the fields inserted by the user when defining the template. These fields values are displayed in the relevant language. Those fields can be for example: Alert Name, Alert description, KPI name, and so on.</p>
New recipient	<p>Opens the Recipient Properties dialog box, where you can define a new recipient. For details, see "Recipients Page" in <i>Platform Administration</i>.</p>

UI Element (A-Z)	Description
Pager template	<p>Select the pager template format to be used when BSM sends the alert to recipients:</p> <p>Choose between:</p> <ul style="list-style-type: none"> ➤ Long SMS/Pager message. The message includes the change in status and information about the SLA. ➤ Short SMS/Pager message. The message includes the change in status only. <p>Pager messages are sent through email to the service provider. The email address is: <Pager provider access number>@<Pager provider email address>.</p> <p>Note: The text displayed in pager messages can only be in English except for the fields inserted by the user when defining the template. These fields values are displayed in the relevant language. Those fields can be for example: Alert Name, Alert description, KPI name, and so on.</p>
SMS template	<p>Select the SMS template format to be used when HP Business Service Management sends the alert to recipients:</p> <p>Choose between:</p> <ul style="list-style-type: none"> ➤ Long SMS/Pager message. The message includes the change in status and information about the SLA. ➤ Short SMS/Pager message. The message includes the change in status only. <p>SMS messages are sent through email to the service provider. The email address is: <SMS provider access number>@<SMS provider email address></p>

Message Syntax

The syntax used in the message is a subset of one of the following:

- Syntax for a long or short HTML template:

sla_name status *condition-change*. Status is *current_status*.

Status Change Time:	<i>trigger_time</i>
Tracking Period:	<i>hour/day/week/month/quarter/year/sla_period</i>
Previous Status:	<i>previous_status</i>
Alert Name:	<i>alert_name</i>
Alert Description:	<i>alert_description</i>

SLM CI Summary Report

For more details log into HP Business Service Management

- Syntax for a long or short text template:

sla_name status *condition-change*. Status is *current_status*

Status Change Time: *trigger-time*

Previous Status: *previous-status*

Alert name: *alert-name* (Long text)

Alert Description: *alert-description*

Data Name: *sla-name*

Time Since Condition Threshold Met: *time-period* + *time since end of time-period*

SLM CI Summary Report

For more details log into HP Business Service Management

The SLM CI Summary Report link opens the CI Summary report for the relevant SLA the alert was defined for and for the relevant time period (for example, if the alert was triggered for the 'Month' Tracking Period, the CI Summary report covers the 'Month to date' time period.

For details, see "CI Summary Report" on page 458.

The link to the log into HP Business Service Management opens the BSM application.

Examples of HTML and Text Messages

The email messages that the user receives depend on the format you select in the **Email message template**, **SMS template**, or **Pager template** list. The structure of the messages is described in "Message Syntax" on page 359.

➤ **Example of a long HTML email, SMS, or Pager message**

sla2 Status worsened. Status is **Failed**.

Status Change Time:	5/20/10 8:59 AM (Eastern Daylight Time) -0400
Tracking Period:	Month
Previous Status:	Exceeded
Alert Name:	change to crit
Alert Description:	

[SLM CI Summary Report](#)
For more details log into [HP Business Service Management](#)

► **Example of a long text email, SMS, or Pager message**

sla2 status changed to Failed.
 Status Change Time: 5/20/10 8:59 AM (Eastern Daylight Time) -0400
 Previous Status: Minor
 Alert name: change to crit
 Alert Description:
 Data Name: sla2
[SLM CI Summary Report](#)
 For more details log into [HP Business Service Management](#)

► **Example of a short HTML email, SMS, or Pager message**

sla2 status changed to **Failed**.
[SLM CI Summary Report](#)
[For more details log into HP Business Service Management](#)

► **Example of a short text email, SMS, or Pager message**

sla2 status changed to Failed.
[SLM CI Summary Report](#)
[For more details log into HP Business Service Management](#)



Actions Page

This page enables you to define actions that you want to Business Service Management to perform when an alert is triggered.

Important information	General information about the wizard is available at "Create New Alert/Edit Alert Wizard" on page 349.
Wizard map	The Create New Alert/Edit Alert Wizard contains: Welcome > General Page > Related SLAs Page > Templates and Recipients Page > Actions Page > Summary Page

User interface elements are described below:

UI Element (A-Z)	Description
Executable Files	<p>Lists the executable files that run when the alert is triggered. You can edit or delete an executable file.</p> <p>New Executable File. Opens the Create New Executable File dialog box. For details, see "Create Executable File Dialog Box/Edit Executable File Dialog Box" on page 348.</p>
Generate Events	<p>Lists the event template you have selected as the event template to be used to map triggered alerts to events.</p> <p>New Event Generation. Defines a new event (using the Event Template) based on a defined event triggering condition. For details, see "New Event Generation Dialog Box" on page 368.</p> <p>The event is available in HP Operations Manager, and Operations Manager <i>i</i>.</p>
SNMP Traps	<p>Lists the SNMP traps that run when the alert is triggered.</p> <p>New SNMP Trap button. Opens the Create New SNMP Trap dialog box. For details, see "Create SNMP Trap/Edit SNMP Trap Dialog Box" on page 363.</p>
URLs	<p>Lists the URLs, with embedded alert parameters, that are accessed by Business Service Management when the alert is triggered. You can edit or delete a URL.</p> <p>New URL button. Opens the Create New URL dialog box. For details, see "Create URL/Edit URL Dialog Box" on page 367.</p>


Summary Page

This page lists the settings you defined for the alert scheme.

Important information	<ul style="list-style-type: none"> ➤ General information about the wizard is available at "Create New Alert/Edit Alert Wizard" on page 349. ➤ To make changes to the alert scheme, click Back or click the alert scheme page in the left menu to go directly to the page you want to change. ➤ Click OK to save the alert scheme.
Wizard map	<p>The Create New Alert/Edit Alert Wizard contains:</p> <p>Welcome > General Page > Related SLAs Page > Templates and Recipients Page > Actions Page > Summary Page</p>

Create SNMP Trap/Edit SNMP Trap Dialog Box

This dialog box enables you to create or edit an SNMP trap to attach to an alert. This SNMP trap is sent when the alert criteria is met. The alert notice can be viewed with any SNMP management console.

To access	Click New SNMP Trap or the appropriate  button in the SNMP Trap area in the Actions page of the Alerts Wizard.
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Important information	<ul style="list-style-type: none">➤ HP Business Service Management uses the CI alerts MIB by default and supports SNMP V2.➤ To enable alerts through SNMP trap, it is recommended that you configure your SNMP management console to read the alerts MIB. For details, see "How to Define an SLA Alert Scheme" on page 342. This enables you to see names, rather than Object IDs (OIDs), when working in the management console.➤ The MIB file is located at <HPBSM root directory on Data_processing_server> \HPBAC\SNMP_MIBS\CIAlerts.mib.
Relevant tasks	"How to Configure a Notification SNMP Trap" on page 344

User interface elements are described below:

UI Element (A-Z)	Description
Destination host IP	<p>Enter the IP address or name of the destination host to which the SNMP traps are sent. Example of an IP address: 1.1.1.1. Example of a destination host: \\HostName</p> <p>If Service Level Management displays a default host destination, you can accept the default, or replace it with another IP address or name.</p> <p>If you do not enter a port number, Service Level Management uses a default port number.</p> <p>The default values for the SNMP trap destination host and port are set in Infrastructure Settings Manager.</p> <p>To modify the default values, select Admin > Platform > Setup and Maintenance > Infrastructure Settings:</p> <ul style="list-style-type: none"> ➤ Select Foundations: ➤ Select Alerting. ➤ In the Triggered Alerts table, locate Default SNMP port and the Default SNMP target address. Modify the values as required. <p>Enter the host address.</p> <p>You can use different formats:</p> <ul style="list-style-type: none"> ➤ If you work with alerts for profiles, use the following format: <ul style="list-style-type: none"> ➤ <target_host_IP_address> ➤ <target_host_IP_address>[:<port_number>] ➤ If you work with RTSM, use the following format: <ul style="list-style-type: none"> ➤ <target_host_name target_host_IP_address> ➤ <target_host_name target_host_IP_address>[:<port_number>]

UI Element (A-Z)	Description
Enter custom destination host IP	Select to use the host IP specified in the Destination host IP box.
Use general destination host IP	Select to use the host IP specified in the Infrastructure Settings. For details on the default host address, see Default SNMP Target Address / Default SNMP Port in "Modify the alerts triggering defaults" in <i>Platform Administration</i> .

Create URL/Edit URL Dialog Box

This dialog box enables you to define a URL with embedded predefined alert parameters. The parameters are substituted with the relevant values when the URL is accessed, so that the alert information can be inserted into special logs or external databases.

To access	In the Actions page of the Create New Alert wizard, click New URL or the Edit button for a listed URL.
Important information	<ul style="list-style-type: none"> ➤ The URL is accessed when an alert is triggered, so that the alert can be sent through a Web site, for example, using Active Server Pages, CGI, or Perl. The URL can activate an executable program on a Web server, report to a custom database, activate a Web-based fax service, and so on. ➤ When accessing a URL, HP Business Service Management supports the GET method only. This enables the URL to be copied from HP Business Service Management, pasted into an email, and sent to the user. (If the POST method was used, the HTML file would first have to be saved on the client computer, and then sent by the administrator to the specific user.) ➤ For information on the differences between the methods, see one of the following: <ul style="list-style-type: none"> ➤ http://www.cs.tut.fi/~jkorpela/forms/methods.html ➤ http://en.wikipedia.org/wiki/HTTP

The dialog box includes the following elements:

UI Element (A-Z)	Description
Enter URL	<p>Enter the URL in the box, and inset alert parameters where required.</p> <p>When embedding alert parameters in a URL, use the following format:</p> <p>http://<servername>.<domainname>?<alert parameters></p> <p>For example:</p> <p>http://financesystem.com?name=<AlertName>&sla=<SLA Name>&TriggerTime=<Trigger Time>&CurrentStatus=<Current Status></p>
Field	<p>Select alert parameters to insert into the URL. Use the same parameters for forecast status alerts. For a list of the alert parameters, see "SLA Alert Attributes" on page 378.</p>
Insert Field	<p>Inserts the alert parameter displayed in the Field box into the Enter URL box. The alert parameter is added at the cursor location, between double angle brackets.</p>

 **New Event Generation Dialog Box**

This dialog box enables you to select an event template, which is used to generate an event when an alert is triggered.

To access	Click the New Event Generation button in the Generate Events area, in the Actions page of the Alerts Wizard.
Relevant tasks	"How to Define an SLA Alert Scheme" on page 342

User interface elements are described below:





UI Element	Description
<List of templates>	Select an event template and click OK. Note: This list contains the event templates defined in the SLA Template Repository. For details on how to create a new template or modify an existing template, see "SLA Template Repository Dialog Box" on page 379.





 **SLA Alerts Page - Administration**

You use this page to create SLA alert schemes (based on current status or forecast status), or to perform actions on existing alert schemes. The page lists the existing alert schemes.

To access	Select Admin > Service Level Management > SLA Alerts .
Important information	Note: The left-pane displays the SLA Selector where you can select an SLA in the SLA tree. The SLAs that appear in the SLA tree are the SLAs for which the user has view permissions. The alerts listed in the right-pane are attached to the selected SLA.
See also	"How to Define an SLA Alert Scheme" on page 342

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

UI Element (A-Z)	Description
	New alert. Opens the Create New Alert wizard where you can create a new SLA alert. For details, see "Create New Alert/Edit Alert Wizard" on page 349.
	Click to clone. Clones the selected alerts. BSM adds a copy of the alert scheme to the profile tree, with a new name. Rename and edit the alert schemes as required.
	Click to edit. Edits the selected alert in the Alert Wizard. For details, see "Create New Alert/Edit Alert Wizard" on page 349.
	Click to delete. Deletes the selected alerts.

UI Element (A-Z)	Description
	<p>Activate (enable) alert. Activates the selected alerts if they are disabled.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ If an alert is activated, BSM sends an alert notice when the trigger conditions defined in the alert occur. ➤ To activate multiple alerts simultaneously, click and drag from the first alert to the last alert you want to select, and click the button.
	<p>Deactivate (disable) alert. Deactivates the selected alerts if they are activated.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ When an alert is deactivated, BSM does not send an alert notice when the trigger conditions defined in the alert occur. ➤ To deactivate multiple alerts simultaneously, click and drag from the first alert to the last alert you want to select, and click the button.
	<p>Refresh. Click to refresh the display.</p>
	<p>Open Template Repository Manager. Opens the SLA Template Repository dialog box where you can manage a user notification or an event (using the Event Template) based on a defined alert triggering condition. When the alert is triggered, the event template is used to map the alert information to the event information. For details, see "SLA Template Repository Dialog Box" on page 379.</p>
<p><Common report elements></p>	<p>See "Common Report and Page Elements" in <i>Reports</i>.</p>
<p>Alert Name</p>	<p>The name of the alert scheme. For a long name, hold the cursor over the name to view it in full in a tooltip.</p> <p>Click the column header to sort the list by this column, in either ascending or descending order.</p>

UI Element (A-Z)	Description
Alert Type	Shows whether the alert scheme is monitoring current status (SLM Alert) or forecast status (Forecast Alert).
Condition	The condition that trigger an alert. For example, if the SLA status worsens.
Recipients	The names of the users who are to be informed when an alert is triggered. Click the column header to sort the list by this column, in either ascending or descending order.
Status	Indicates if the alert scheme is active (enabled) or inactive (disabled).

Troubleshooting and Limitations

This section describes troubleshooting and limitations for alerts.

Invalid Characters

The following characters are invalid:

Where	Invalid Characters
Alert name and alert description	' ~ ! @ # \$ % ^ & * - + = [] { } \ / ? . , " ' : ; < >
Recipient name	' ~ ! @ # \$ % ^ & * - + = [] { } \ / ? . , " ' : ; < >
Message sender name in alerts	' ~ ! # \$ % ^ * _ - + = { } \ / ? . ' <space>
SMTP server name in alerts	_ . -

Audit Log

Each change you make to an SLA alert scheme is logged into the SLA Alert Administration log.

To access that information click **Admin > Platform > Setup and Maintenance > Audit Log** and select **SLA Alert Administration** in the **Context** list. For details about the user interface, see "Audit Log Page" in *Platform Administration*.

11

Event Template for SLA Alerts

This chapter includes:

Concepts

- Event Template for SLA Alerts Overview on page 376

Tasks

- How to Configure the Event Template on page 377

Reference

- SLA Alert Attributes on page 378
- SLA Template Repository Dialog Box on page 379

Concepts

Event Template for SLA Alerts Overview

The Event Template maps an event triggering condition (for example, the triggering condition of an SLA alert scheme) to an event attributes. The attributes are specific to the application (for example, the SLA alert attributes).

SLA alerts have a default Event Template. You can create a template by modifying the default Event Template.

When the event trigger condition is met (meaning that the SLA alert is triggered), and if you have configured the SLA alert to send an event, the event attributes are populated by the relevant triggered SLA alert conditions, and create an event corresponding to the alert. The event is then available to HP Operations Manager, or Operations Manager *i*.

For task details, see "How to Configure the Event Template" on page 377.

For user interface details, see "SLA Template Repository Dialog Box" on page 379.

Tasks

How to Configure the Event Template

This task describes how to configure the Event Template so events are created when SLA alerts are triggered.

This task includes the following steps:

- "Configure the alerts" on page 377
- "Configure the Event Template – optional" on page 377
- "Results" on page 377

1 Configure the alerts

Configure the alert schemes that, when triggered, create the relevant events.

For details about creating SLA alerts, see "How to Define an SLA Alert Scheme" on page 342.

2 Configure the Event Template – optional

You can modify the default Event Template or you can configure a new template that maps an alert's attributes to the corresponding event attributes. You can create several templates for each type of alert.

For user interface details, see "SLA Template Repository Dialog Box" on page 379.

3 Results

The relevant Event Templates are created and the default selected so events are created when SLA alerts are triggered.

Reference

 **SLA Alert Attributes**

The table lists the attributes you can use in the General tab for CI Status alerts:

Attribute	Description
Alert Detailed Description	A collection of the alert’s parameters that form an overall description of the alert. The template for this description appears in the default log notification template of the alert.
Alert ID	The unique ID assigned to the alert scheme. Example: a148edca593f423aa36c256e687ad58f
Alert Name	The alert name specified in the alert scheme.
Alert Summary	A short description of the alert as specified in the alert scheme definition. It is not editable.
Alert Trigger Time	The time when the alert was triggered. Example: Tue Jan 05 6:07:29 PM 2010 (IST) (+0200)
Alert User Description	The description of the alert you provided when you created the alert.
BSM DNS	The name of the machine on which BSM is installed. Example: machineName.devlab.ad
Current Status Key	The current status key of the SLA related to the alert.
Current Status Name	The displayed name of the status key of the SLA related to the alert.

Attribute	Description
Event Severity	The severity of the event corresponding to the SLA Alert. You can set it to correspond exactly to the alert's severity or to another value; for example: major, or critical.
Previous Status Key	The key of the previous status of the Tracking Period before the change that triggered the SLA alert.
Previous Status Name	The name of the status of the Tracking Period before the change that triggered the SLA alert.
SLA ID	The ID of the SLA whose change of status triggers the SLA alert.
SLA Name	The name of the SLA whose change of status triggers the SLA alert.
Tracking Period	The name of the tracking period.

SLA Template Repository Dialog Box

This dialog box enables you to map an SLA alert's attributes to an event's attributes.






To access	Select Admin > Service Level Management > SLA Alerts , and click Open Template Repository Manager .
Important information	<ul style="list-style-type: none"> ► To modify the existing default template or to create a new template, duplicate the existing template and edit the duplicated copy. You can then modify the new or edited template as the default template. ► When an alert is triggered, the values of the Event Template attributes are changed into the relevant values of the alert attributes.

Relevant tasks	"How to Configure the Event Template" on page 377
See also	<ul style="list-style-type: none">➤ "Event Template for SLA Alerts Overview" on page 376➤ "Attributes Area" on page 385

Templates Area


This area lists the existing templates. It enables you to add new templates, duplicate existing templates, edit template names, and delete existing templates.

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

UI Element (A-Z)	Description
	New template. Creates a new event template. A template named New Template appears in the Templates list. Its mandatory properties fields (except the Template name) are empty.
	Duplicate selected template. Duplicates the selected template.
	Rename selected template. Enables you to edit the name of the selected template.
	Set selected template to be the default template. Sets the selected template as the default template. In the tree of templates, the icon also indicates the default template.
	Delete selected template. Deletes the selected template.
<Template>	Lists the existing event templates. Default: A default template is specified for each type of alert. The default template has the following format: <Alert Type> Default Template

Properties Area

This area enables you to give a name or to change the name of the active template.

UI Element (A-Z)	Description
	Discard changes. Resets the values entered in the template fields to their original values.
Select	<p>This button is displayed only when you create or edit an existing alert. It is not displayed when you access the alert template from the Template Repository button in the SLA Alerts page. (Administration).</p> <p>Click Select to enable the creation of an event when the SLA alert is triggered. The event is mapped to the SLA alert using the template you selected.</p> <p>The template is used to generate events in HP Operations Manager. For details, see "Generate Events in HP Operations Manager when BSM Alert is Triggered" in <i>Solutions and Integrations</i>.</p>
Set the selected template to be the default template	Select to make the current template the default template.
Template Name	The name of the active template.

General Tab

This area enables you to define a new Event Template or to edit an existing one.

Important information	<p>If necessary, select the relevant attribute in the Attributes area and drag it into the relevant box in the General tab.</p> <p>You can also select a specific attribute and click ALT+I while editing text to insert that attribute in the text.</p> <p>For a detailed list of attributes, see "SLA Alert Attributes" on page 378.</p>
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User interface elements are described below (unlabeled elements are shown in angle brackets):

UI Element (A-Z)	Description
Category	<p>Used to organize or group events. Out-of-the-box categories are provided.</p> <p>You can specify your own categories as part of the event creation rules.</p> <p>Default: SLA Alert</p> <p>Note: Depending on your permissions, you can define your own categories. Permissions are configured in Admin > Platform > User and Permissions.</p>
CI hint	<p>Information about the CI that is related to the event. This attribute is used for providing hints to enable the event processing to find the correct related CI (RTSM ID of the related CI).</p> <p>Add the attributes using the following format: UCMDB: <<SLA ID>>.*</p> <p>Example:</p> <ul style="list-style-type: none"> ➤ RTSM as hint "UCMDB:3bcbb67a6233cfd0e400e7c1e637db5" ➤ A set of natural identifiers: "oracle:database:987"
Close key pattern	<p>Enables the event that is sent to close all the events whose Key attribute matches the Close Key Pattern expression. You can use wildcards (*).</p> <p>Add the attributes using the following format: <<Alert Name>>: <<Entity ID>>.*</p> <p>Example: host1.hp.com:DB_ess1:ConnectionPoolUtilization:* closes all the events whose key starts with host1.hp.com:DB_ess1:ConnectionPoolUtilization.</p>
Description	<p>Detailed information describing the event.</p> <p>Add the attributes using the following format: Alert Name:<<Alert Name>> CI Name: <<SLA Name>> <<Alert Details Description>><<Alert User Description>></p>

UI Element (A-Z)	Description
Event Type Indicator	<p>Links between the event and the tracking period so information about the tracking period can be updated as a result of submitting the event.</p> <p>Add the attributes using the following format: <<ETI/Hi Name>>[:<<ETI/Hi State>>[:ETI Numeric Value]]]</p> <p>Default: SLA Alert:<<Current Status Key>>.</p> <p>Example:</p> <ul style="list-style-type: none"> ➤ Health indicator with state and numeric value for a Database CI: ConnectionPoolUtilization:High:0.88 ➤ Health indicator with state for a Node CI: MemoryBottleneck:Active ➤ Event Type Indicator (ETI) without a state (does not trigger a health indicator): RebootOccurred
Generating source hint	<p>Information about the monitoring application and the corresponding probe/agent that is responsible for creating the event.</p> <p>Add the attributes using the following format: <<BSM>></p> <p>Example: BSM:BSMserver1.hp.com, OM:omserver32.deu.hp.com:agentId0c9da6d8-3e08-45cd-9b12-b49a1ca4de20</p>
Host hint	<p>Information about the CI of type Node that is hosting the CI related to the event.</p> <p>The host can be identified by RTSM Id, DNS name, IPv4 Address, IPv6 Address, MAC Address, HP L-Core Core ID.</p> <p>Example: IPV4:15.15.12.13, DNS:h1.mercury.il; CoreId: 0c9da6d8-3e08-45cd-9b12-b49a1ca5de20</p>

UI Element (A-Z)	Description
Key	<p>A unique string representing the type of event that occurred. Two events have the same key if, and only if, the two events represent the same situation in the managed environment. Events with the same key are treated as duplicates.</p> <p>Add the attributes using the following format: <<Alert Name>>:<<Entity>>:<<Event Severity>></p> <p>Example: host1:hp.com:DB_ess1:ConnectionPoolUtilization:High</p>
Log only	<p>Assign the value:</p> <ul style="list-style-type: none"> ➤ true to send the event to the history event browser as a "close" event. Such an event goes through the complete event processing, but has its Life Cycle State set to close so it closes itself. ➤ false to send the event if the alert is configured to send an event. <p>Add the attributes using the following format: true or false</p> <p>Default value: True. Depending on your permissions, you can modify the default.</p> <p>Example: Typical examples are events that result in resetting a health indicator to a normal or good state, or an event signaling that a previous problem no longer exists (where the problem was reported in another event).</p>
Severity	<p>The severity of the event. It represents the translation of the alert CI status into the event severity.</p> <p>The severity levels can be: Unknown, Normal, Warning, Minor, Major, Critical.</p> <p>This information enables you to map the triggering event status to the event severity level.</p> <p>Add the attributes using the following format: <<Event Severity>></p> <p>Example: Warning</p>

UI Element (A-Z)	Description
Subcategory	SLA Alerts default templates do not have subcategories.
Submit close key condition	When you select the option, you must enter a value in the Close key pattern box.
Title	<p>Describes the occurrence represented by the event. The title should include information about what threshold has been crossed (or other trigger conditions), and the current values.</p> <p>Add the attributes using the following format for SLA alerts:</p> <p><<Alert Name>> Triggered on CI: <<SLA Name>> Trigger condition</p> <p>Note: Since the text is typically shown within a single line in the event browser, it is recommended that the most relevant information is at the beginning of the text.</p>

Attributes Area

Use this area to specify the attributes.

Important information	<p>Select the relevant attribute in the Attributes area and drag it into the relevant box in the General tab.</p> <p>You can also select a specific attribute and click ALT+I while editing text to insert that attribute in the text.</p> <p>For details about the attributes, see "SLA Alert Attributes" on page 378.</p>
------------------------------	---



Custom Attributes Tab

Use this tab to add custom attributes.

When you create or edit a mapping in the Event Template dialog box, you can chose an attribute that was configured in Operations Management, or you can create a custom attribute. The custom attributes configured in Operations Management provide additional features for the events mapped using these attributes. For details about the difference between the Operations Management custom attributes and the Event Template custom attributes, see the Operations Management documentation.

Important information	<p>A custom attribute consists of a key and a value (both are strings). The value can be any string and is used by the Event Template as any other value.</p> <p>Limitations:</p> <ul style="list-style-type: none">➤ Make sure that the name of the attribute you are defining is unique and does not already exist in the list of factory attributes.➤ If you add to a template a custom attribute with a key similar to a constant attribute's key, the custom attribute is deleted. For details about the constant attributes, see "Constant Attributes" on page 388.➤ Duplicate keys are not allowed. If the new key name already exists, the custom attribute is automatically deleted.➤ Event Template attributes are changed into the value of the relevant attribute of the triggered alert. When the attribute does not correspond to existing alert attributes (when it is a custom attribute), then the value specified in the Custom Attributes tab for the relevant attribute is used.
------------------------------	--

User interface elements are described below:

UI Element	Description
	<p>Lists the options available for creating a new event template. You can select:</p> <ul style="list-style-type: none"> ➤ New key. To create a new key. A new row opens in the Name/Value table. ➤ Known key. Opens a submenu with the known keys as options. You can select the relevant key. A new row opens in the Name/Value table, with the name of the selected key in the Name column. You can then enter the value of the key in the corresponding Value column. <p>Note: The known keys are defined in Operations Manager <i>i</i>. Such keys have additional capabilities. Keys defined in the SLA Alert Template Repository dialog box only have a value and are used as strings.</p>
	<p>Deletes the selected attributes from the table.</p>
<p>Name and Value</p>	<p>Each event can have any number of custom attributes. You use custom attributes to provide additional information that is not provided by any of the other Event Template attributes or that is contained in any of the other attributes. Each custom attribute is a Name-Value pair, where you enter the name of the attribute in the Name field and the value of the attribute in the Value field.</p> <p>This feature may be used when you manage the environment of multiple customers using one instance of the product. The multiple customers might be handled by a custom attribute object. For details about the available attributes, see "Attributes Area" on page 385.</p> <p>Example: Name = "Customer" ; Value = "XYZ Company"</p>

Constant Attributes

The Event Template uses the constant attributes to represent the fields that appear in the General tab (title, category, subcategory, and more).

Note: Do not use these attribute's keys as the keys to custom attributes.

The constant attribute's keys are:

- Category
- RelatedCiHint
- CloseKeyPattern
- TimeCreated
- Description
- EtiHint
- NodeHint
- Key
- LogOnly
- OriginalData
- Severity
- SubmitCloseKey
- SourceCiHint
- SubCategory
- Title

12

SLM Web Services API

This chapter includes:

Concepts

- Introducing the SLM Web Services API on page 390
- Using the SLM Web Services on page 391

Reference

- SLM Web Services' Operations on page 392

Concepts

Introducing the SLM Web Services API

The SLM Web Services API is an integration tool enabling administration of SLAs from an application either internal or external to BSM. The SLM Web services support the creation and management of SLAs, also in an HP Software-as-a-Service (HP SaaS) deployment.

Prerequisite Knowledge

Users of the API should be familiar with Service Level Management administration and SOAP concepts.

Permissions

The administrator provides login credentials for connecting with the Web services. The credentials must be those of a user with Administrator permissions, or the SLA owner.

For details on setting permissions in the Permissions Manager, see "Permissions Overview" in *Platform Administration*.

Supported Operations

The following Web service operations are supported:

- Create SLA (with no CI)
- Get SLA general properties
- Update SLA general properties
- Delete SLA
- Add Service to SLA
- Delete Service from SLA
- Get Services that are included in the SLA

Using the SLM Web Services

The SLM Web Services API enables submitting a service request. The engine returns an error description if it cannot parse the statement or does not run successfully. If there is no error, the results of the request are returned.

The Web services are described in a SOAP WSDL file, located at:

`http://<server>:8080/slm_ws/services/SlmServices?wsdl`

The port specification is only necessary for non-standard installations. Consult your system administrator for the correct port number.

Developers can use a development environment to generate code from WSDL for calling the Web services. The WSDL describes the interface operations and operation parameters.

Reference

SLM Web Services' Operations

This section describes the operations for the SLM Web services.

- "createSLA" on page 392
- "updateSLA" on page 393
- "deleteSLA" on page 394
- "getSLAProperties" on page 394
- "addServicesForSLAWithOfferings" on page 395
- "deleteServiceFromSLA" on page 395
- "getSLAServicesFullPath" on page 396
- "getServiceSLAs" on page 397.

createSLA

Creates a new SLA with the specified SLA properties.

Operation signature:

String createSLA(String customerId, SlaPropertiesDTO properties)

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
properties	The properties used for initializing the new SLA, as follows: name,description,agreementDetails,type(OLA, SLA,UC), classification (internal, external); startDate,endDate,timeZoneId,customerId, providerId,trackingPeriods

Return-value: Returns the ID of the SLA in the RTSM.

Exception: Throws `SlmWebServiceException` if the user cannot create another SLA; for example, because the user does not have the necessary permissions to create the SLA, or if the number of allowed SLAs has been reached.

updateSLA

Updates the SLA with the new properties.

Operation signature:

`updateSLA(String customerId, String SLAId, SlaPropertiesDTO properties)`

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
SLAId	The RTSM ID of the SLA to update.
properties	The properties to be updated.

Exceptions:

- Throws `SlaDoesNotExistsException` if an SLA with the given ID does not exist.
- Throws `SlmWebServiceException` if a system problem occurs that prevents the operation to execute successfully.

deleteSLA

Deletes the specified SLA.

Operation signature:

deleteSLA(String customerId, String SLAId)

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
SLAId	The RTSM ID of the SLA you want to delete.

Exception: Throws `SlmWebServiceException` when any type of error occurs.

getSLAProperties

Retrieves the properties of the specified SLA.

Operation signature:

SlaPropertiesDTO getSLAProperties(String customerId, String SLAId)

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
SLAId	The RTSM ID of the SLA with the properties you want to retrieve.

Exception: Throws `SlmWebServiceException` when any type of error occurs.

addServicesForSLAWithOfferings

Adds the specified services and their impact sub-tree to the SLA. The matching service offering is used for each service.

Operation signature:

```
String[] addServicesForSLAWithOfferings(String customerId, String slaid,
ServiceWithOffering[] servicesWithOffering)
```

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
SLAId	The RTSM ID of the SLA to which you want to add services.
servicesWithOffering	<p>The services to add to the SLA with matching service offering names.</p> <p>Each <code>ServiceWithOffering</code> includes: <code>serviceId</code>, <code>serviceName</code>, <code>offeringName</code></p> <p>Note:</p> <ul style="list-style-type: none"> ➤ <code>offeringName</code> must be provided. ➤ You must provide at least one of <code>serviceId</code> or <code>serviceName</code>. If <code>serviceId</code> is missing, the server will try to obtain it using the <code>serviceName</code>.

Return-value: Returns an array of validation error messages (empty array if none).

Exception: Throws `SlmWebServiceException` if a system problem occurs that prevents the operation from executing successfully.

deleteServiceFromSLA

Removes the specified services and their paths from the specified SLA.

Operation signature:

```
deleteServiceFromSLA(String customerId, String SLAId, Service[] services)
```

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
SLAId	The RTSM ID of the SLA from which you want to remove the services.
services	The services you want to remove from the SLA. Each service includes: <code>serviceId</code> , <code>serviceName</code> If <code>serviceId</code> is missing, the server will try to obtain it using the <code>serviceName</code> .

Exceptions: Throws `SlmWebServiceException` when any type of error occurs.

getSLAServicesFullPath

Retrieves the services of the specified SLA.

Operation signature:

`ServiceFullPath[] getSLAServicesFullPath(String customerId, String SLAId)`

Example: Example of SLA with services 4, 5:

```
{id1, id2, id3, id4}
{id1, id2, id5}
```

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
SLAId	The RTSM ID of the SLA

Return-value: Returns the full paths of the services in the SLA.

Exceptions: Throws `SlmWebServiceException` when any type of error occurs.

getServiceSLAs

Returns the SLAs that include the specified service.

Operation signature:

String[] getServiceSLAs(String customerId, String serviceId)

Operation arguments:

Argument	Description
customerId	Typically 1 (apart from in an HP SaaS environment).
serviceId	The RTSM ID of the service.

Return-value: Returns an array of SLA IDs that include the specified service.

Exceptions: Throws `SlmWebServiceException` when any type of error occurs.

13

SLM External API

This chapter includes:

Concepts

- SLM External API on page 400
- Get SLA Configuration Data on page 401
- Get SLA Calculation Results on page 404
- Get Calendars on page 406
- Get Tracking Periods on page 408
- Get KPIs on page 410
- Get Indicator Statuses on page 412

Concepts

SLM External API

You can use the SLM external API to retrieve SLA configuration properties and SLA calculation results, in order to consume this data in external applications.

The API enables you to access and process SLM data from outside BSM. For details, see:

- "Get SLA Configuration Data" on page 401
- "Get SLA Calculation Results" on page 404
- "Get Calendars" on page 406
- "Get Tracking Periods" on page 408
- "Get KPIs" on page 410
- "Get Indicator Statuses" on page 412

The service log file is located under: **<Gateway server root directory>\log\EJBContainer\slmExternalAPI.log**.

Return values are supported in XML and JSON formats.

Authentication should be done using basic access authentication method. For details and examples refer to http://en.wikipedia.org/wiki/Basic_access_authentication.

Get SLA Configuration Data

You can use the following to get SLA configuration data.

API Syntax

```
http://<Gateway Server>/topaz/slm/customers/<CustomerId>/sla/<slaid>
```

The API uses the following parameters:

- **customerId.** Customer ID (use **1** for non-HP SaaS deployment).
- **slaid.** SLA RTSM ID (non-mandatory parameter; leave empty to get all SLAs in the system).

The following is an example of the API output:

```
<sla>
  <id>c808d3ddce3d849c1cc0d667bec7f6cc</id>
  <name>TestSLA3</name>
  <description></description>
  <details></details>
  <timezone>Central Standard Time</timezone>
  <type>SLA</type>
  <creator>administrator</creator>
  <url></url>
  <classification>Formal</classification>
  <customer>
    <customerId>e35cded4b3a628a8da4b9cf352007467</customerId>
    <customerName>IT Department</customerName>
  </customer>
  <provider>
    <providerId>ae9ea545c5f99adb52d7edd641bbf8ef</providerId>
    <providerName>Customers</providerName>
  </provider>
  <state>Running</state>
  <startDate>1290938400</startDate>
  <endDate>1608631200</endDate>
  <targets>
    <target>0</target>
    <target>5</target>
    <target>20</target>
    <target>10</target>
    <target>15</target>
  </targets>
  <trackingPeriods>
    <trackingPeriod>3ef2dfe04fa07c349e72ca9e7b04e2af</trackingPeriod>
    <trackingPeriod>bffe0ea9334ff7f309e969eec3c9c266</trackingPeriod>
    <trackingPeriod>a562b09777271425835abadb12f32e73</trackingPeriod>
    <trackingPeriod>f9f77b20f986fbb2eb064b0a30ece93d</trackingPeriod>
    <trackingPeriod>4ecf36e0eb88816745a8849db029c73f</trackingPeriod>
  </trackingPeriods>
  <calendars>
    <calendar>ecf840eef788851986195301aba206fd</calendar>
  </calendars>
</sla>
```

The output fields are as follows:

Field	Description
slald	SLA ID
name	SLA name
description	SLA description
details	SLA details
type	OLA, SLA, or UC
creator	Username of the user which created the SLA
timezone	SLA time zone
url	Link to the contract details from an external source.
classification	Formal or informal
customer	CI ID and name of the organization specified as the customer of the SLA.
provider	CI ID and name of the organization specified as the provider of the SLA.
state	Preliminary, Running, or Terminated
startDate	SLA start date, long value representing the date in milliseconds since January 1, 1970. 00:00:00 GMT.
endDate	SLA end date, long value representing the date in milliseconds since January 1, 1970.
targets	IDs of the SLA targets
trackingPeriods	IDs of the tracking periods
calenders	IDs of the SLA calendars

Return Codes

The API returns the following return codes:

Name	Error Code	Description
UNAUTHORIZED	401	User has no view permission for selected SLA
NOT_FOUND	404	SLA not found
INTERNAL_SERVER_ERROR	500	General failure

 Get SLA Calculation Results

You can use the following to retrieve the SLA calculation results; this API supports filtering by CI, KPI, tracking periods, and calendars.

API Syntax

```
http://<Gateway Server>/topaz/slm/customers/<CustomerId>/ciSummary/<view>/sla/<slaid>? calendar=<calendarId>&startDate=<startDate>&cilds=<cilds>&kpild=<kpild>
```

The API uses the following parameters:

- **customerId.** Customer ID (use 1 for non-HP SaaS deployment).
- **view.** Mandatory; report view. Use one of the following: hour, day, week, month, quarter, year, weekToDate, monthToDate, quarterToDate, yearToDate or slaToDate.
- **slaid.** SLA ID (use "all" for all SLAs).
- **calendars.** Optional, SLA calendar ID (leave empty for all SLA defined calendars, see "Get Calendars" on page 406).
- **startDate.** Mandatory for closed periods only, in seconds.
- **endDate.** Mandatory for closed periods only, in seconds.

- **cilds**. Optional. Comma separated CI IDs; leave empty for all SLA CIs (or SLA nodes when **slald** is "all").
- **kpild**. Optional. KPI internal ID (as it appears in the KPI repository UI); leave empty for all KPIs. This API does not support Outage KPI.

The following is an example of the API output:

```
<slaStatus>
  <slald>2c4d69f2784021a6a94b7a40100ba31f</slald>
  <cild>b8ae7539b0cb338f3bce84b4866647eb</id>
  <startDate>1293832800</startDate>
  <endDate>1294225200</endDate>
  <trackingPeriod>a562b09777271425835abadb12f32e73</trackingPeriod>
  <calendar>dd9ef8826c553d3e217fa0b3bf03f0a0</calendar>
  <kpiType>220</kpiType>
  <kpiDisplayName>SLM Status</kpiDisplayName>
  <kpiStatus>0</kpiStatus>
  <statusDisplayName>Failed</statusDisplayName>
  <kpiValue>0</kpiValue>
</slaStatus>
```

The output fields are as follows:

Field	Description
slald	SLA ID
cild	CI ID
startDate	Period start time, long value representing the date in seconds since January 1 1970
endDate	Period end time, long value representing the date in seconds since January 1 1970
trackingPeriod	Tracking period of the sample: hour, day, week, month, quarter, year, SLA period (see "Get Tracking Periods" on page 408).
calendar	Calendar of the sample (see "Get Calendars" on page 406).
kpiType	KPI ID (see "Get KPIs" on page 410).

Field	Description
kpiDisplayName	KPI display name
kpiStatus	KPI status ID (see "Get Indicator Statuses" on page 412).
statusDisplayName	KPI status display name
kpiValue	KPI numeric value

Return Codes

The API returns the following return codes:

Name	Error Code	Description
BAD_REQUEST	400	<ul style="list-style-type: none"> ➤ Unsupported view ➤ Start date is after the end date ➤ startDate, endDate are missing for closed view (closed period)
UNAUTHORIZED	401	User has no view permission for selected SLA
INTERNAL_SERVER_ERROR	500	<ul style="list-style-type: none"> ➤ Result size has exceeded the maximum quota ➤ General failure

Get Calendars

You can use the following to retrieve the calendars defined in the system.

API Syntax

```
http://<Gateway Server>/topaz/slm/customers/<CustomerId>/repositories/calendars/
<calendarId>
```

The API uses the following parameters:

- **customerId.** Customer ID (use **1** for non-HP SaaS deployment).
- **calendarId.** Calendar ID (leave empty for all calendars in the system).

The following is an example of the API output:

```
<calendars>
  <calendar>
    <id>5c6c09ec3d61db775333bb5beb5ea863</id>
    <name>testcalc</name>
    <description></description>
    <scheduleDescription>Friday 3:00 AM - 3:30 AM, Wednesday 2:30 PM - 3:00
PM, Thursday 5:30 PM - 6:00 PM, Wednesday 3:30 AM - 4:30 AM, Tuesday 11:00 AM -
11:30 AM, Friday 10:00 AM - 10:30 AM, Monday 2:00 AM - 2:30 AM, Wednesday 7:00
AM - 7:30 AM, Thursday 10:30 AM - 11:00 AM, Sunday, Monday 6:30 AM - 7:00 AM,
Friday 2:00 PM - 2:30 PM, Monday 8:00 PM - 8:30 PM, Thursday 9:00 PM - 9:30 PM
    </scheduleDescription>
  </calendar>
  <calendar>
    <id>ecf840eef788851986195301aba206fd</id>
    <name>24x7</name>
    <description>24 hours, 7 days a week</description>
    <scheduleDescription>Sunday, Monday, Tuesday, Wednesday, Thursday,
Friday, Saturday 12:00 AM - 12:00 AM
    </scheduleDescription>
  </calendar>
  <calendar>
    <id>86594b724cb03e2647b2a86b08103a28</id>
    <name>Business Hours</name>
    <description>8:00-17:00, Monday-Friday</description>
    <scheduleDescription>Monday, Tuesday, Wednesday, Thursday, Friday 8:00
AM - 5:00 PM
    </scheduleDescription>
  </calendar>
</calendars>
```

The output fields are as follows:

Field	Description
id	Calendar ID
name	Calendar display name
description	Calendar description
scheduleDescription	A string representing the calendar scheduling configuration.

Return Codes

The API returns the following return codes:

Name	Error Code	Description
NOT_FOUND	404	Calendar not found
INTERNAL_SERVER_ERROR	500	General failure

 **Get Tracking Periods**

You can use the following to retrieve the tracking periods defined in the system.

API Syntax

```
http://<Gateway Server>/topaz/slm/customers/<CustomerId>/trackingPeriods/
<trackingPeriodId>
```

The API uses the following parameters:

- **customerId**. Customer ID (use **1** for non-HP SaaS deployment).
- **trackingPeriodId**. Tracking period ID (leave empty for all tracking periods in the system).

The following is an example of the API output:

```
<trackingPeriods>
  <trackingPeriod>
    <id>a562b09777271425835abadb12f32e73</id>
    <name>Month</name>
  </trackingPeriod>
  <trackingPeriod>
    <id>dd613d616284c14ec848a4fa5d939655</id>
    <name>Hour</name>
  </trackingPeriod>
  <trackingPeriod>
    <id>2e57ee4d9c4f6b50a1d01385a861aa4b</id>
    <name>Day</name>
  </trackingPeriod>
  <trackingPeriod>
    <id>4ecf36e0eb88816745a8849db029c73f</id>
    <name>Week</name>
  </trackingPeriod>
  <trackingPeriod>
    <id>3ef2dfe04fa07c349e72ca9e7b04e2af</id>
    <name>Quarter</name>
  </trackingPeriod>
  <trackingPeriod>
    <id>f9f77b20f986fbb2eb064b0a30ece93d</id>
    <name>Year</name>
  </trackingPeriod>
  <trackingPeriod>
    <id>bffe0ea9334ff7f309e969eec3c9c266</id>
    <name>SLA period</name>
  </trackingPeriod>
</trackingPeriods>
```

The output fields are as follows:

Field	Description
id	Tracking period ID
name	Tracking period display name

Return Codes

The API returns the following return codes:

Name	Error Code	Description
INTERNAL_SERVER_ERROR	500	General failure

 **Get KPIs**

You can use the following to retrieve the KPIs defined in the system.

API Syntax

```
http://<Gateway Server>/topaz/slm/customers/<CustomerId>/repositories/indicators/kpis/<kpild>
```

The API uses the following parameters:

- **customerId.** Customer ID (use **1** for non-HP SaaS deployment).
- **kpild.** KPI ID (leave empty for all KPIs in the system).

The following is an example of the API output:

```
<kpis>
  <kpi>
    <id>1</id>
    <name>Legacy System</name>
  </kpi>
  <kpi>
    <id>1311</id>
    <name>Value</name>
  </kpi>
  <kpi>
    <id>1310</id>
    <name>Exceptions</name>
  </kpi>
  <kpi>
    <id>615</id>
    <name>Operational Status</name>
  </kpi>
  <kpi>
    <id>6</id>
    <name>Application Performance</name>
  </kpi>
  <kpi>
    <id>7</id>
    <name>Application Availability</name>
  </kpi>
  <kpi>
    <id>1500</id>
    <name>Generic</name>
  </kpi>
</kpis>
```

The output fields are as follows:

Field	Description
id	KPI ID
name	KPI display name

Return Codes

The API returns the following return codes:

Name	Error Code	Description
NOT_FOUND	404	KPI not found
INTERNAL_SERVER_ERROR	500	General failure

 **Get Indicator Statuses**

You can use the following to retrieve indicator statuses.

API Syntax

```
http://<Gateway Server>/topaz/slm/customers/<CustomerId>/repositories/indicators/
targets
```

The API uses the following parameter:

customerId. Customer ID (use **1** for non-HP SaaS deployment).

The following is an example of the API output:

```
<targets>
  <target>
    <id>20</id>
    <name>Exceeded</name>
  </target>
  <target>
    <id>15</id>
    <name>Met</name>
  </target>
  <target>
    <id>10</id>
    <name>Minor Breached</name>
  </target>
  <target>
    <id>5</id>
    <name>Breached</name>
  </target>
  <target>
    <id>0</id>
    <name>Failed</name>
  </target>
  <target>
    <id>-4</id>
    <name>Downtime</name>
  </target>
  <target>
    <id>-2</id>
    <name>No Data</name>
  </target>
</targets>
```

The output fields are as follows:

Field	Description
id	Target/Status ID (as it appears in the calculation results)
name	Target/Status display name

Return Codes

The API returns the following return codes:

Name	Error Code	Description
INTERNAL_SERVER_ERROR	500	General failure

Part II

Service Level Management Reports

14

Working with the Service Level Management Application

This chapter includes:

Concepts

- Service Level Management Reports - Overview on page 418
- Producing Reports on page 422
- Status/Targets in Reports on page 423
- Outage Reports on page 425
- About SLA Management on page 425
- Aggregated Data on page 426
- Status Forecast for SLAs on page 426
- Time Zones on page 431
- Tracking Range and Granularity in Service Level Management on page 432
- Primary Grouping/Secondary Grouping on page 434
- Additional Values in Reports on page 435
- Tooltip for KPIs in Reports on page 443

Tasks

- How to View SLA and Outage Reports on page 444

Reference

- Service Level Management Application User Interface on page 446

Troubleshooting and Limitations on page 509

Concepts

Service Level Management Reports - Overview

Service Level Management reports show you how well actual service levels compare with your goals. The reports provide you and your users with a bird's eye view of the whole system, and enable you to get an early warning of potential problems, before SLA violations occur.

You can view reports from a Six Sigma perspective, and you can store report data and share reports. You can also use the SLA Status Alerts report to view a log of alerts sent during a specified time period—for details, see "SLA Alerts Report" on page 511.

Tip: You can also use the Service Report framework to create a custom report with elements from Service Level Management and Service Health. The Service Report employs a multidimensional data model. For details, see "Service Report" in *Reports*.

 **Report Summaries**

The following table summarizes the Service Level Management reports:

Report Name	Description	Use This Report To...
Status Snapshot	Displays up-to-date information about the best-performing or worst-performing SLAs in the current tracking periods, and in previous, closed periods. For details, see "Status Snapshot Report" on page 499.	Track best-performing and worst-performing SLAs, and get a quick snapshot of SLA status.
SLA Status	Displays current and forecast status for SLAs over a selected tracking period. For details, see "SLA Status Report" on page 490.	Determine if current service levels may lead to a future breach of the SLA.
SLAs Summary	Displays a list of SLAs and their status, organized by KPI/calendar/time period. For details, see "SLAs Summary Report" on page 495.	View a summary of data for all (or specific) SLAs.
CI Summary	Displays status for CIs in the branch for a selected CI (up to four levels), organized by KPI/calendar/time period. For details, see "CI Summary Report" on page 458.	Find CIs that failed to reach their objectives.
HI CI Summary	Displays status for CIs and HIs within a specific SLA. For details, see "HI CI Summary Report" on page 470.	Find the CIs and health indicators that failed to reach their objectives.

Report Name	Description	Use This Report To...
CI Impact	<p>Displays a CI's impact across several SLAs. The report displays status organized by KPI/calendar/time period.</p> <p>For details, see "CI Impact Report" on page 450.</p>	Compare the availability and performance of a CI across several SLAs.
CI Status	<p>Displays status for CIs in the branch for a selected CI (up to four levels), for a selected time range, calendar, and KPI.</p> <p>For details, see "CI Status Report" on page 455.</p>	View configuration information, such as objectives, for each CI.
Time Range Comparison	<p>Enables you to compare status for up to eight time ranges for CIs in an SLA. Displays status for CIs in the branch of a selected CI (up to four levels), for a selected calendar and KPI.</p> <p>The added value in this report is that it displays a trend between two time ranges.</p> <p>For details, see "Time Range Comparison Report" on page 505.</p>	Compare time ranges to determine whether availability and performance have improved.
CIs Over Time	<p>Displays a graphic display of status over time for selected CIs, for a specific KPI and calendar.</p> <p>For details, see "CIs Over Time Report" on page 461.</p>	Follow the results of a particular CI over a time period and compare with other CIs.

Report Name	Description	Use This Report To...
CI Time Comparison	Displays a graphic display of KPI results over time for a selected CI in an SLA, and enables you to perform a comparison with a different time period, so that you can compare results for the KPI in the different periods. For details, see "CI Time Comparison Report" on page 465.	See how well a CI has performed during different time periods.
Outage Summary	Displays a list of outages for selected CIs. For details, see "Outage Summary Report" on page 484.	View outage information for a specific SLA.
Outage Breakdown	Displays a graphic display for breakdown of outage categories by CI outages, or a breakdown of CI outages by outage categories. You view data according to outage duration or number of outages, for a specific calendar. For details, see "Outage Breakdown Report" on page 474.	View a breakdown of all outages for certain CIs, to see to which category a CI belongs (Database, Network, Webserver, Undefined, or user-defined).
Outage Distribution	Displays a graphic display of outage distribution by CI or by outage category. You view data according to outage duration or number of outages, for a specific calendar. For details, see "Outage Distribution Report" on page 478.	View the outage distribution for selected CIs, to see which CI or category has the most outages, or has outages with the longest duration.

Producing Reports

For a general explanation of how to work with all HP Business Service Management reports, see "Working in Reports" in *Reports*.

You can generate reports automatically or manually and you can specify a header and a footer for a report. For details, see "Customizing Reports" in *Reports*.

If you have defined downtime or data corrections, Service Level Management reports exclude the data according to the downtime definitions. For details, see "Adjusting SLA Data" on page 183.













Service Level Management:

- Displays a report with the last SLA selected.
- Displays a report with the same filters (for example, KPI, configuration item, time period) as those chosen in a previous report, for the duration of the Web session.
- Displays reports with a minimum time granularity of one hour.
- Generates a report at the same level (for example, SLA, CI, CI's children) as that chosen in a previous report.
- Generates a report according to the aggregated data stored in the database.
- Updates the "to date" views once daily.
- Enables users to add any report to a custom report.
- Enables users to sort a report by any column.
- Can display up to 60 data points in each table. For example, for a month time period, you can choose to view the data organized by weeks (four or five data points) or days (30 or 31 data points). However, you cannot choose to view by hours (~744 data points).

Status/Targets in Reports

SLM assigns a status to SLA targets for KPIs and HIs, based on the calculated values (calculated by the business rule) and comparison of the values against the objective thresholds for the KPI or HI.

Statuses/targets are represented by the following colors and icons:

Target/Status	Color name	Color	Icon
Exceeded	Green		
Met	Aqua		
Minor Breached	Yellow		
Breached	Orange		
Failed	Red		
No Data/No Objectives Defined	Blue		n/a
Downtime	Lavender		n/a

SLA Status

The Status Snapshot report and SLA Status report both display the current status for entire SLAs, during specific tracking periods.

Status for each SLA is calculated using the SLM Status KPI. Every hour, the Service Level Management engine calculates the status-to-date for each KPI attached to the Service Level Agreement CI (the CI at the highest level of the SLA), for every tracking period defined for the SLA. The status-to-date calculations are based on results up to the end of the previous hour, using a running average of the KPI values. You can view the KPIs defined for the Service Level Agreement CI in the SLA Wizard.

The SLM Status KPI takes the hourly status-to-date calculations, and determines what is the worst status held by any of the KPIs attached to the Service Level Agreement CI, in each tracking period. The resulting worst status for each tracking period is saved in the database. When you access the Status Snapshot report or the SLA Status report, the report displays status according to the last saved results (up to the previous hour).

Note: KPIs for the Service Level Agreement CI that do not have a status (because no objectives are defined for the KPI) are ignored in the SLM Status KPI calculations.

For example:

In the **Banking SLA**, the Service Level Agreement CI has two attached KPIs, **Application Availability** and **Application Performance**. The SLA works with **Week** and **Month** tracking periods.

On Tuesday August 12th at 9:00 AM, Service Level Management calculates the status-to-date for the **Banking SLA**, using the results available for up to 8:00 AM. For the current week (calculated from midnight on Sunday), the **Application Availability** KPI has the worst status-to-date (Failed); for the current month (since midnight July 31st), both KPIs have the same status (Minor Breached).

When a user accesses the Status Snapshot report at 9:25 AM, the **Banking SLA** displays Failed status for the Week tracking period and Minor Breached for the Month tracking period.

Also see: "Aggregated Data" on page 426 and "Tracking Range and Granularity in Service Level Management" on page 432.

Outage Reports

Outage reports enable you and your users to manage and control outages (periods of time during which measurements fail), thus improving service levels. There are three outage reports available in Service Level Management:

- Outage Breakdown Report, described on page 474
- Outage Distribution Report, described on page 478
- Outage Summary Report, described on page 484

When you generate a report, Service Level Management calculates (on the fly) whether there have been any outages in the time period you chose, by running the outage business rule associated with the CI. The Minimum duration set in the outage rule determines the length of time considered an outage.

You define outages during SLA creation. For details, see "Outages in SLAs" on page 320.

About SLA Management

SLA Management enables you to view information on services provided by your department, and service associated with your organization entities. You can view data and SLA information about CIs that represent the business process, hardware, or software services associated with your SLAs, and about providers and customers.

For information about providers and customers, see "Providers and Customers for Services and SLAs" on page 44.

To view data in reports, choose between the following views:

- **Business Services.** Enables you to view the related SLAs for each service, and link to the CI Impact report for the selected service.
- **Business Units.** Enables you to view the related SLAs for each provider or customer (represented by Organization CIs), and link to the SLAs Summary report for the selected item.

- **Service Providers.** Enables you to view the related SLAs for providers and their services, and open the SLAs Summary report or CI Impact report for the selected provider or service.

Aggregated Data

All reports are calculated according to aggregated data stored in the database.

When calculating results for previously-aggregated data, Service Level Management rounds out the tracking period. The **From** time is rounded down to the nearest hour, and the **To** time is rounded up to the nearest hour.

Data aggregation for the status-to-date information (for example, week-to-date) displayed in the Status Snapshot report differs from the calculations done in other reports. The Status Snapshot report displays data that is correct up to one or two hours ago, while other Service Level Management reports display data calculated to the last closed day. This means that you may see different data displayed in the Status Snapshot report as compared with other reports, or that the Status Snapshot report already contains data while other reports do not yet have data.

For more information on data aggregation in HP Business Service Management, see "Data Aggregation" in *Reports*.

Status Forecast for SLAs

Service Level Management provides a forecast of SLA status at the end of a period, based on behavior in the past. The status forecast shows you whether continuing to maintain your services at the current levels may lead to a breach of the SLA in the future.

Status forecast is described in the following sections:

- "Status Forecast Calculations" on page 427
- "Status Forecast in Applications" on page 429

Status Forecast Calculations

The forecast is calculated by looking at the behavior of each KPI in the SLA during a previous period, and assuming the same behavior pattern will continue during the forecast period. The extrapolated KPI data is used to calculate a forecast result for each KPI, and the status forecast for the SLA is based on the worst of all KPI statuses.

Two values are defined for the status forecast:

- **Base Forecasting On.** This is the period that the forecast calculations are based on, and the options are determined by the tracking periods defined for the SLA. Depending on the context, the analysis can be based on the "Last <aaa>," or "<aaa> to date," where <aaa> is a tracking period used for the SLA, for example, **Last Month** or **Month to date**. If it is currently halfway through May, selecting **Last Month** gives a forecast based on April's results, and selecting **Month to date** gives a forecast based on the results for May so far.

Note: Forecasting cannot be based on a single hour or on the current day.

- **Give Forecasting For.** This is the period that the forecast is given for, and the options are also based on the tracking periods defined for the SLA, excluding hour and day. The forecast is given for the end of a period that includes the current date, for example **End of week** or **End of Quarter**. If it is currently halfway through May, selecting **End of Quarter** gives a forecast for the current quarter from April 1st to June 30th.

Note:

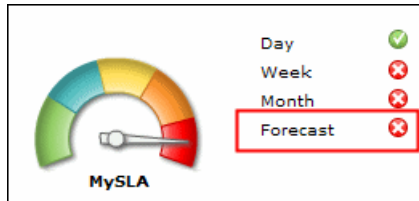
- The forecast calculations are based on averages, so if an SLA contains a KPI that is based on an accumulative result (as is the case for the Outage Duration, Number of Outages, MTBF, MTBSI, and MTTR KPIs), the calculations yield inaccurate forecast results. Do not rely on forecast results for SLAs that contain any of these KPIs.
 - KPIs that are using a status-based rule are excluded from forecast calculations. Status-based rules (for example, Group Average Status or Group Worst Status) give status for the CI based on the statuses of the children, and do not display a value, and are sometimes used for groups that include Business Process Insight or TransactionVision CIs.
 - An SLA must have a tracking period of at least a week or more to generate a forecast for it.
 - If the SLA was inactive at any point during the analysis period, then that period cannot be used for forecasting.
 - The forecast does not take account of any downtime defined for the future period.
-

Status Forecast in Applications

Status forecast is calculated in the following Service Level Management contexts:

Status Snapshot Report:

A status forecast is calculated for the SLAs displayed in the **Current Periods** pane of the **Applications > Service Level Management > Status Snapshot** report.



The forecast is calculated based on all calendars for the SLA, and using default tracking periods. To set different default periods, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Applications**, select **Service Level Management**, and locate the required parameter. Modify the value as required.

The default tracking periods for the Status Snapshot report are as follows:




















- **Week (base calculation period).** This is the default tracking period that the status forecast calculation is based on, meaning that calculations are based on the SLA results for the last (prior) week. To set a different default tracking period, modify the value for the **Status forecast: Base calculation period** parameter.
- **Month (calculated period).** This is the default tracking period that the status forecast is calculated for, meaning that the status forecast is given for the end of the current month. To set a different default tracking period, modify the value for the **Status forecast: Calculated period** parameter.

You can filter the Status Snapshot report to show the SLAs with the worst status forecast. See "Status Snapshot Report" on page 499.

Note: Status forecast is displayed for an SLA only if the SLA is set to use both the default tracking periods (defaults defined in the Infrastructure Settings page), and if data is found that can be used to calculate the forecast result.

SLA Status Report:

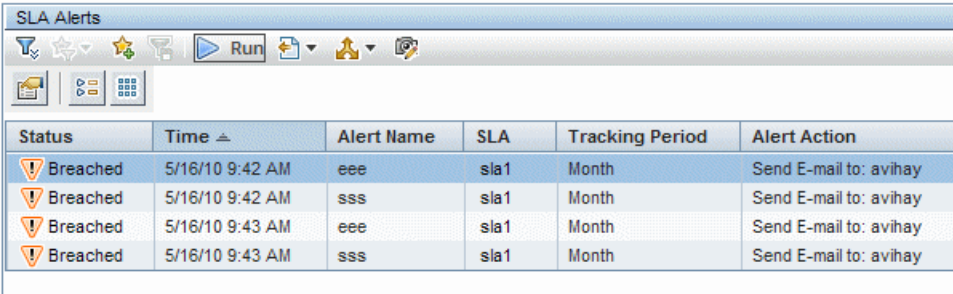
You can generate a status forecast for selected SLAs in the **Applications > Service Level Management > SLA Reports > SLA Status** report. The forecast is calculated for the tracking periods and calendar that you select. The report also shows the status trend for the base forecasting period, and calculates the expected breach date for the SLA, where appropriate.

SLA Status				
<div> Run </div> <div></div>				
SLAs	Month to date Trend	Current Status 6/14/2010-6/15/2010	Forecasting Status 6/14/2010-6/21/2010	Expected Breach Date
All RUM(1)		No Data	No Data	-
All RUM(Business Hours)		Critical	Critical	-
Atali-Vadim(Business Hours)		OK	Warning	6/18/2010
EUG		No Data	No Data	-
EUSubgroup - FTP		No Data	No Data	-
<div><div> Exceeded</div><div> Met</div><div> Minor Breached</div><div> Breached</div></div>				
Service Level Management displays reports according to the SLA's time zone.				
<div> The following agreements do not have the selected tracking periods and/or calendars: RUM Apps - only Sessions, OTHERS EUSg - K, OTHERS EUSg</div>				

SLA Alert Schemes:

You define SLA alert schemes in the **Admin > Service Level Management > SLA Alerts** page, to monitor the status forecast for an SLA and trigger an alert if the status forecast changes. You define the forecast tracking periods as part of the alert scheme, and the status forecast is recalculated every hour, for all calendars.

The triggered alerts are viewed in the **Applications > Service Level Management > SLA Alerts** tab.



The screenshot shows the 'SLA Alerts' window. It has a toolbar with icons for filters, favorites, a 'Run' button, and other functions. Below the toolbar is a table with the following data:

Status	Time	Alert Name	SLA	Tracking Period	Alert Action
⚠ Breached	5/16/10 9:42 AM	eee	sla1	Month	Send E-mail to: avihay
⚠ Breached	5/16/10 9:42 AM	sss	sla1	Month	Send E-mail to: avihay
⚠ Breached	5/16/10 9:43 AM	eee	sla1	Month	Send E-mail to: avihay
⚠ Breached	5/16/10 9:43 AM	sss	sla1	Month	Send E-mail to: avihay

Time Zones

Service Level Management calculates reports according to an SLA's time zone, so that data is linked to the appropriate calendar. However, Service Level Management displays dates and times according to the time zone settings of the machine on which it is installed (the user's time zone).

Reports can contain data from different time zones: when reports include data for more than one SLA, and the SLAs are defined for different time zones, each SLA's data is reported according to the SLA's time zone.

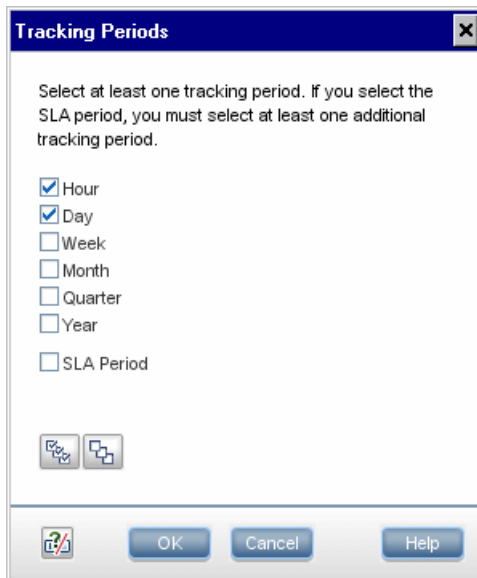
For reports calculated for the **last** time period, data is displayed according to the user's time zone.

Tracking Range and Granularity in Service Level Management

Tracking periods in Service Level Management define the time periods for aggregating data, and are used for tracking the SLA. You select tracking periods in Service Level Management reports to define the granularity for calculations.

The tracking periods for an SLA are defined in the SLA Wizard. (See "Define SLA Properties Page" on page 137.) You select at least one tracking period from **Hour**, **Day**, **Week**, **Month**, **Quarter**, **Year**. In addition, you can select **SLA period**, which tracks status for the SLA from the start of the SLA till the present.



The tracking periods that you select in the SLA determine which granularities are available in reports. For example, say you select the **Hour** and **Day** tracking periods for an SLA:




Tracking Periods

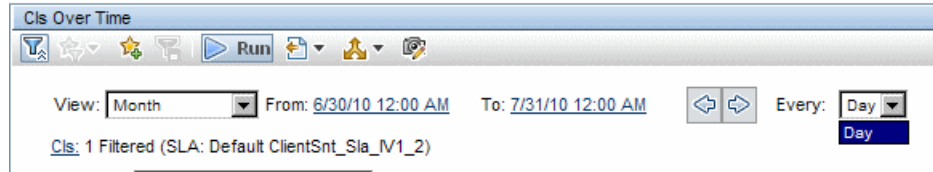
Select at least one tracking period. If you select the SLA period, you must select at least one additional tracking period.

☒ Hour
☒ Day
☐ Week
☐ Month
☐ Quarter
☐ Year
☐ SLA Period

 **OK** **Cancel** **Help**

In the CIs Over Time report, a user chooses to view a month's report. Because the **Week** tracking period was not defined for the SLA, the **Week** granularity is not available for the report (it does not appear in the **Every** list):



General information on working with the tracking range and granularity in reports can be found in "Time Range and Granularity" in *Reports*.

The following additional information applies when using the tracking range and granularity settings in Service Level Management reports:

- For certain reports, the tracking periods that appear in the **View** list depend on the tracking periods defined for the SLA. That is, if the SLA includes only Day and Week, you cannot generate a report to show results by quarter.
- The **SLA to date** option may be included in the **View** list for reports that display data about a single SLA. When selected, the report time range begins at the start date of the SLA and continues till the current time.
- The **Last** option in the **View** list enables you to display data for the last part of a tracking period. For example, you could generate a report for the last week. When you use this option, the data is displayed according to the user time zone (whereas in all other views, the data is displayed according to the SLA time zone).
- Service Level Management can display up to 60 data points in one report. This means, for example, that if you select a month time period, you cannot view the report with an hourly granularity, because there are more than 60 hours in a month.
- For reports that are based on a weekly tracking period, calculations depend on which day is selected as the first day of the week. You define the first day of the week in the Infrastructure Settings Manager. For details, see "How to Customize Calendar Default Settings" on page 306.

- Data for Service Level Management reports is calculated at midnight. When the tracking range for a report is set "to date," then the data is shown for up to the previous midnight. For example, if you select the tracking range **Month to date** on Wednesday May 14th, the report shows data for the month up to midnight (end of day) on Tuesday May 13th.

This means that for a report generated for **Month to date** on the first day of a new month, for example, May 1st, there is no available calculated data for that month, and the report instead shows the data up to the previous midnight, meaning the data for April. The same principle applies for reports for **Week to date**, **Quarter to date**, and **Year to date**. The actual time range of the data presented in the report is shown in the report header.

This logic is not applied for status forecast calculations—when a forecast is calculated on the first day of a new week/month/year based on status-to-date, it uses the to-date data for the new period, resulting in a no-data status.

- If a report is generated for a tracking period that has no defined objective targets, the value for the period is displayed without a status. For example, an Outages KPI is defined with objectives for a month tracking period, but no objectives are defined for a week tracking period. If a report is then generated on a weekly basis, it gives only the number of outages for each week without a status.

Primary Grouping/Secondary Grouping

In the SLAs Summary, CI Summary, and CI Impact reports, you can organize the results under two levels of headings, a primary grouping and a secondary grouping. The data is then organized according to the secondary grouping.

The grouping options are time period, KPI, and calendar. Once you select an option as the primary grouping, it is not available as an option for the secondary grouping.

If you only want one heading level, select **None** for the secondary grouping—the data is then organized only by the primary grouping.

In the following example, the time periods are shown as the primary heading, and the calendars are shown as secondary headings under each time period.

CI Summary 6/27/10 12:00 AM-7/4/10 12:00 AM Asia/Jerusalem

View: From: 6/27/10 12:00 AM To: 7/4/10 12:00 AM Every:

CI: [Sanity service \(SLA: Sanity slm\)](#)

Primary grouping: KPI: [Application Availability](#)

Secondary grouping: [Calendar: All \(Clear All\)](#)

[Advanced Options](#)

Data

CIs	6/27			6/28		
	1000to12000	24x7	Business Hours	1000to12000	24x7	Business Hours
Sanity service	60.000	60.000	-	60.000	60.000	60.000
Default Client Snt Ap1 1	60.000	60.000	-	60.000	60.000	60.000
Default Client Snt Ap1 1 Sanity BTW1 1	60.000	60.000	-	60.000	60.000	60.000
tx 10	100.000	100.000	-	100.000	100.000	100.000
tx 15	100.000	100.000	-	100.000	100.000	100.000

Additional Values in Reports

Service Level Management is able to perform statistical calculations on certain KPIs, so that additional information is provided along with the main value. For example, for an Availability KPI, you can view the total number of samples, the number of failed samples, deviation from target, and so forth.

The following sections describe the additional values and how to view them in the Service Level Management reports:

- "Additional Values List" on page 436
- "Displaying Additional Values" on page 437



Additional Values List

The additional values available in Service Level Management reports are as follows (listed alphabetically):

Additional Value	Description
Deviation from Target (numerical value or %)	The deviation of the KPI value from the Exceeded target for the KPI. There are two versions of this additional value, numeric or percentage. For example: If the average response time over a day is 5.5 seconds, and the Exceeded target for that day is 4 seconds, the Deviation from target value is (numerical) 1.5 seconds or (percentage) 37.5%.
DPMO	Defects per million opportunities. Used with the Six Sigma Availability and Performance KPIs.
Failures	The number of unsuccessful samples during the sampling period.
Met Threshold	The number of samples that met the Exceeded target threshold for the KPI during the sampling period.
Number of Periods	Used with MTBF and MTBSI KPIs. The number of periods between incidents that the KPI calculation is based on.
Number of Incidents	Used with the MTTR KPI. The number of incidents that the KPI calculation is based on.
Samples	The number of samples included in the KPI value calculation. Note: For Business Process Insight and TransactionVision KPIs, in some cases the Samples value shows the number of business process instances or business transaction instances that are included in the calculation, rather than the number of samples.
Standard Deviation	The standard deviation from the Exceeded target for the KPI.

Additional Value	Description
Successes	The number of successful samples during the sampling period. Each KPI has its own "success" condition. For example, for the Availability KPI, a successful sample contains an "available" result, and for the Performance KPI, success is based on the sample meeting the threshold defined for the KPI parameter Percentile Condition .
Trimmed Samples	The number of samples that were excluded from the KPI value calculation, because of a filtering threshold set for the KPI (for example: Ignore any response time sample that exceeds 60 seconds).

Displaying Additional Values

In order for an additional value to be displayed in a Service Level Management report, the additional value must be configured for use with the KPI, and the **Show Additional Values** setting must be selected in the report.

When the HIs for the KPI uses a time-based calculation method, only the Samples additional value is displayed; the calculation method must be changed to sample-based in order to view other additional values.

The following sections describe how to configure these settings:

- "Configuring Additional Values to Use with KPIs" on page 438
- "Configuring Sample-Based Calculation for KPIs" on page 440
- "Configuring Reports to Display Additional Values" on page 441

Configuring Additional Values to Use with KPIs

The KPI/additional value settings are defined in the **Additional Values XML**. This XML file lists the additional values that are valid for each KPI, and shows whether the additional value is configured for use in the reports (**calculate="true"**).

The **Samples**, **Number of Periods**, and **Number of Incidents** options are by default configured for use in the reports with all relevant KPIs. All other options are set to not be used (**calculate="false"**). For example, the following shows the default settings for the **User Performance** KPI:

```
</KPI>
<KPI id="111" name="User Performance">
  <Additional-Value calculate="true" id="1" name="numOfSamples"/>
  <Additional-Value calculate="false" id="5" name="Deviation From Targets"/>
  <Additional-Value calculate="false" id="6" name="Deviation From Targets
  (%)"/>
</KPI>
```

To modify which additional values are configured for use with each KPI, select **Admin > Platform > Setup and Maintenance > Infrastructure Settings**, choose **Applications**, select **Service Level Management**, and locate the **Additional Values** entry on the page. Click the **Edit** button to view the file contents. It is recommended that you copy the file contents to an XML editor to make changes.

Note: Configuring more additional values for calculation may cause slower report generation.

If an additional value is not listed for a specific KPI in the Additional Values XML, then it is not valid for that KPI. The following table shows the additional values that are valid for each KPI:

Note: The table does not include the following additional values:

- **Samples.** Valid for every KPI apart from Outages KPIs and the MTBF, MTBSI, and MTTR KPIs.
 - **Number of Periods.** Valid for the MTBF and MTBSI KPIs.
 - **Number of Incidents.** Valid for the MTTR KPI.
-

KPI/ Additional Value	Trimmed Samples	Successes	Failures	Deviation from Target	Standard Deviation	DPMO	Met Threshold
Availability System Availability User Availability	No	Yes	Yes	Yes	No	No	No
Performance	Yes	No	Yes	Yes	No	No	Yes
System Performance	Yes	No	No	Yes	Yes	No	No
User Performance	No	No	No	Yes	No	No	No
Response Time	Yes	No	No	Yes	Yes	No	No
Six Sigma Availability	No	Yes	Yes	Yes	No	Yes	No

KPI/ Additional Value	Trimmed Samples	Successes	Failures	Deviation from Target	Standard Deviation	DPMO	Met Threshold
Six Sigma Performance	Yes	No	Yes	Yes	No	Yes	Yes
Application Network Security System	No	No	No	No	No	No	No

Configuring Sample-Based Calculation for KPIs

When the calculation method used for the HIs for a KPI are time-based, the only additional value that is displayed in the reports is **Samples**. In order to see other additional values, you must change the calculation method to sample-based.

The calculation method is defined in the rule for the HI in the **Calculation Method** parameter. This parameter is only applicable for certain rules, and by default is set to time-based. (To see which rules use the Calculation Method parameter, see "List of Service Level Management Business Rules" on page 557.)

You change the calculation method to sample-based in the Health Indicator for CI dialog box, described in "Add Health Indicator for CI/Edit Health Indicator for CI Dialog Box" on page 105. You must make the change individually for each HI attached to the KPI, if you want to see all additional values for that KPI.

Health Indicator Properties

Business Rule Parameters

Trimming condition: < seconds

No data timeout: 3600 seconds

☐ Ignore timed out trimming

Calculation method: ☒ Sample Based ☐ Time Based

If you make the change after the SLA has been calculated, you need to run recalculation (see "Recalculation for SLAs" on page 67).

Note: When looking at additional values for a KPI, where the various HIs used to calculate the KPI are using a combination of sample-based rules and time-based rules, then the values shown for the **Successes** and **Failures** parameters at the group level are incorrect (because the time-based rules do not calculate success).

Configuring Reports to Display Additional Values

Additional values can be viewed in the reports in the **Applications > Service Level Management > SLA Reports** tab, with the exception of the SLA Status report.

In order to view additional values in a report, the **Additional Values** option must be selected in the Advanced Options dialog box. This option is selected by default for all applicable reports. For details, see "Advanced Options Dialog Box" on page 447.

The additional values are displayed in the tooltip for a cell in the report (and also in additional columns in the CI Status report).

CI Summary 6/27/10 12:00 AM-7/4/10 12:00 AM Asia/Jerusalem

Data

CIs	6/27			1000to12000
	1000to12000	24x7	Business Hours	
Sanity service	60.000	60.000	-	60.000
Default Client Snt Ap1 1	60.000	60.000		60.000
Default Client Snt Ap1 1 Sanity BTW1 1	60.0			
tx 10	100.0			
tx 15	100.0			
tx 1 failed	0.0			
tx 2 failed	0.0			
tx 5	100.0			

Sanity service

Application Availability: 60.000 %
Status: Failed
Business Rule: Group Average Value
Exceeded: >98.000 %
Samples: 240

Tooltip for KPIs in Reports

Hold the pointer over a result to view information about the KPI:

Application Availability (%)	Application Performance (%)	
24x7	24x7	24x7
80.000	66.667	
100.000	100.000	
100.000		
100.000	Default Client_Snt_Ap2_1	
100.000	Application Availability: 100.000 %	
100.000	Status: Exceeded	
100.000	Business Rule: Group Average Value	
100.000	Exceeded: >98.000 %	
100.000	Met: >95.000 %	
100.000	Minor Breached: >90.000 %	
100.000	Breached: >85.000 %	
100.000	Samples: 2,310	

The tooltip displays information about the KPI, based on what is defined in the SLA (for details, see "New SLA/Edit SLA Wizard" on page 136). The tooltip content varies, depending on the report and the selections made in the Advanced Options dialog box.

The following parameters may be included:

- **CI.** The name of the CI.
- **Date.** The date that the result is for.
- **<KPI>.** The actual calculated result for the KPI.
- **Status.** The status given to the KPI by comparing the result against the target objectives.
- **Business Rule.** The rule used for the KPI calculations.
- **Exceeded/Met/Minor Breached/Breached.** The value defined for each target objective for the KPI.
- **Samples.** This is one of the additional parameters added using the Additional Values option. For details, see "Configuring Reports to Display Additional Values" on page 441.

Tasks

How to View SLA and Outage Reports

The following steps explain how to work with Service Level Management to view reports in the SLA Reports and Outage Reports tabs.

This task includes the following steps:

- "Define SLAs" on page 444
- "Select the required report" on page 444
- "Set report filters" on page 445
- "Add descriptions and additional values to reports" on page 445
- "Add a header and footer to a report" on page 445
- "Generate report and use to evaluate SLA goals" on page 445
- "View the report according to a Six Sigma calculation" on page 445
- "Share the report or save report data" on page 445

1 Define SLAs

Define SLAs using the SLA Wizard.

For task details, see "How to Use SLM to Monitor Your Service Agreements" on page 69.

2 Select the required report

Select the report you want to view from the **Applications > Service Level Management > SLA Reports** or **Outage Reports** tab. For a brief description of each report and when you would use it, see "Service Level Management Reports - Overview" on page 418.

3 Set report filters

Select the required values for filters such as the View granularity bar, CI, KPIs, Calendars, and so forth. For details, see the documentation for that report.

4 Add descriptions and additional values to reports

Use the Advanced Options link to add descriptions to the report. For details on the user interface, see "Advanced Options Dialog Box" on page 447.

5 Add a header and footer to a report

A header or footer defined for a report in the Custom Manager takes precedence over a header or footer defined in the Infrastructure Settings Manager Reporting section. That is, the former overwrites the latter. For details on defining headers and footers, see "Configuring a Report Header and Footer" in *Reports*.

6 Generate report and use to evaluate SLA goals

Click the **Generate** button to generate a report for the data you have chosen, and drill down in the report as required.

7 View the report according to a Six Sigma calculation

You can view results from a Six Sigma perspective. This is on condition that the SLA has been defined with a Six Sigma KPI. For details on this topic, see "Six Sigma for SLAs" on page 65.

8 Share the report or save report data

You can print, format, and export reports. For details, see "Common Report and Page Elements" in *Reports*.

Reference

Service Level Management Application User Interface

This section includes (in alphabetical order):

- Advanced Options Dialog Box on page 447
- CI Impact Report on page 450
- CI Selector on page 453
- CI Status Report on page 455
- CI Summary Report on page 458
- CIs Over Time Report on page 461
- CI Time Comparison Report on page 465
- HI CI Summary Report on page 470
- Outage Breakdown Report on page 474
- Outage Distribution Report on page 478
- Outage Summary Report on page 484
- SLA Management Page on page 488
- SLA Status Report on page 490
- SLAs Dialog Box on page 494
- SLAs Summary Report on page 495
- Status Snapshot Report on page 499
- Time Range Comparison Report on page 505

Advanced Options Dialog Box

This dialog box enables you to add descriptions and additional values to the report, or customize display aspects of the report.

To access	Select Applications > Service Level Management , open a report and click Advanced Options in the report filter area.
Important information	<ul style="list-style-type: none"> ➤ Not all options are available for all reports. ➤ All additional data is displayed in a separate area below the report data. ➤ The settings made in the Advanced Options dialog box while working in any report, remain selected during the current session for all applicable Service Level Management reports, until you change the selection and run a report.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

User interface elements are described below:

UI Element (A-Z)	Description
Calendar Description	Displays a description and details for the calendars selected for the report, as defined during calendar creation.
CI Description	Includes the name and description of all CIs that are included in the report.

UI Element (A-Z)	Description
Downtime Event Description	<p>Displays the Downtime Events Descriptions area in each report. This area provides details on the SLA data corrections that generate Downtime status for SLAs or CIs in the report. The area contains data corrections that meet the following criteria:</p> <ul style="list-style-type: none"> ➤ The data correction falls within the report's time period. ➤ The data correction affects a CI that is included in the report. <p>The Impact column displays the name of the SLA and CI that is impacted by the data correction event.</p> <p>The Excluded from Reports column indicates if the data correction is currently enabled (displays Yes) or disabled (displays No). If it is disabled, the data correction is for informational purposes only, it has no impact on the reports data.</p> <p>For details on defining data corrections, see "SLA Data Correction Schedule Dialog Box" on page 198.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ A data correction is displayed in the Downtime Events Descriptions area if it meets the criteria given above, even if the SLA has not been recalculated to apply the data correction schedule. ➤ The Downtime Events Descriptions area does not provide details on downtimes (defined in the Downtime Management page in Platform Administration), though the report may include CIs with Downtime status as a result of a downtime event. ➤ For data corrections that impact all SLAs, the start and end date given for the data correction may not be accurate for SLAs with different time zones.
Hierarchy Depth	<p>Select a value between 0 and 3 to define the number of CI levels that are displayed in the report under the selected CI.</p> <p>Default value: 3</p>

UI Element (A-Z)	Description
Number of digits after decimal point	<p>Select a value between 0 and 3 to define the number of digits after the decimal point that is displayed for numerical values in the report.</p> <p>Default value: 3</p> <p>Note: If you change the default displayed in the report, Service Level Management continues to calculate objectives using the default value.</p>
Show Additional Values	<p>Includes additional values in the report, as relevant for the KPIs. For details, see "Additional Values in Reports" on page 435.</p> <p>The additional values are displayed in the tooltip for a cell. In addition, in the CI Status report, the data is displayed in columns in the report. You can select the column format:</p> <p>Expanded columns. (Default value) Displays each additional value in a separate column.</p> <p>Grouped column. Displays the additional values grouped in a single column.</p>
Show all Health Indicators	<p>(Only for HI CI Summary report.) Displays the All Health Indicators area in the report, showing HI information for all CIs included in the branch of the SLA selected for the report.</p> <p>For details, see "HI CI Summary Report" on page 470.</p>
Show objective details as columns	<p>(Only for Time Range Comparison report.) Adds a column displaying objectives for the selected KPI per CI to a Time Range Comparison report.</p>
Show related Health Indicators	<p>(Only for HI CI Summary report.) Displays the Related Health Indicators area in the report, showing HI information for a selected CI in the report.</p> <p>For details, see "HI CI Summary Report" on page 470.</p>

UI Element (A-Z)	Description
Show SLA details as columns	(Only for SLAs Summary report.) Adds columns displaying SLA type, customer, and provider for each SLA to the SLAs Summary report (instead of displaying this information in a tooltip for the SLA name).
SLA Description	Displays various information on the SLA, according to the properties defined on the Define SLA Properties Page during SLA creation. The SLA Description is displayed for all SLAs included in the report.




CI Impact Report

This report displays KPI results for a selected CI across all the SLAs in which it is included.

You can use this report to compare the KPI results for a CI across several SLAs.

CI Impact 5/31/10 12:00 AM-6/7/10 12:00 AM						
Data						
CIs	Application Availability (%)		Application Performance (%)		Application Response Time (seconds)	
	24x7	Business Hours	24x7	Business Hours	24x7	Business Hours
tx_10 From San Jose (BD)	100.000	-	0.000	-	9.999	-
tx_10 From San Jose (eranTest)	100.000	100.000	0.000	0.000	9.999	9.999
tx_10 From San Jose (BD(1))	-	-	-	-	-	-
<div><div></div> Exceeded <div></div> Failed <div></div> No Data <div></div> Downtime</div>						

To access	Select Applications > Service Level Management > SLA Reports > CI Impact .
Important information	You must click  after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	<p>Enables you to include descriptions and additional values in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.</p>
Calendar	<p>Displays the names of the calendars selected for inclusion in the report. To change the selection, click the Calendar link to open the Calendar dialog box. The dialog box lists all calendars used by the SLAs that contain the selected CI.</p> <p>Note: You can include all relevant calendars by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
CI	<p>Displays the name of the CI selected for inclusion in the report.</p> <p>To change the selection, click the CI link. For user interface details, see "CI Selector" on page 453.</p>

UI Element (A-Z)	Description
KPI	<p>Displays the names of the KPIs selected for inclusion in the report. To change the selection, click the KPI link to open the KPI dialog box. The dialog box lists all KPIs that are attached to the selected CI in all SLAs.</p> <p>Note: You can include all relevant KPIs by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
Primary Grouping/ Secondary Grouping	<p>Select the first and second level column headers to be used for presenting data in the report. For details on this topic, see "Primary Grouping/Secondary Grouping" on page 434.</p>

Report Content

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

UI Element (A-Z)	Description
<Table cell>	<p>Displays the numerical result for the KPI. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
CI	<p>Lists each instance of the CI in all SLAs. The name of the SLA appears in brackets after the name of the CI.</p> <p>Click a CI name to drill down to the CI Summary report, which displays the branch for the CI. Use the breadcrumbs at the top of the page to return to the CI Impact report.</p> <p>Tooltip: Hold the pointer over the name of a CI to view the full name in a tooltip.</p>

CI Selector

This dialog box enables you to select the CI or CIs to be included in a Service Level Management report, for the duration of a Web session. The report provides information based on the selected CIs.

To access	Select Applications > Service Level Management , open a report and click CI or CIs in the report filter area.
Important information	The elements included in the dialog box vary, depending on the current report.








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


UI Element (A-Z)	Description
<CI topology tree>	<p>Displays the CIs in the selected SLA.</p> <p>Select the required CI, or, for reports that have multiple CI selection, select the check boxes for the required CIs.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ For some reports, when you select a CI, the entire branch under the CI is displayed in the report. ➤ The root node (Logical CI) is not a valid selection as a CI for the report. If you use the Select All option to select multiple CIs, clear the check box for the root Logical CI.
<SLA box>	<p>Select the SLA containing the required CIs from the dropdown list (start typing in the SLA name to filter the list).</p> <p>Note: If you select another SLA before clicking OK, all previous CI selections are discarded. Only the CIs selected in the currently displayed SLA are saved for the report filter when you click OK.</p>

UI Element (A-Z)	Description
Browse tab	The default mode for the CIs dialog box, enabling you to select an SLA and CIs.
Search tab	<p>Click Search to move to Search mode, where you can search for CIs in the currently selected view.</p> <p>Shortcut menu: After searching, right-click a CI and select the Select in tree option to display the Browse tab with that CI selected.</p>

CI Status Report

This report displays KPI results, objectives, and sample information, for a CI and its descendants. You can use this report to view configuration information, such as objectives, for each CI.

CI Status 5/31/10 12:00 AM-6/7/10 12:00 AM Asia/Jerusalem			
Data			
CIs	Application Availability (%)	Objectives	Samples
BS1	80.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	37,496
 Default Client Snt Ap1 1	60.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	17,501
 CMDB Sanity Host CI	-	-	-
 Default Client Snt Ap1 1 Sanity BTW1 1	60.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	8,749
 tx 10	100.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	1,750
 tx 15	100.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	1,749
 tx 1 failed	0.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	1,750
 tx 2 failed	0.000	Exceeded: > 98.0 % Met: > 95.0 % Minor Breached: > 90.0 % Breached: > 85.0 %	1,750
		Exceeded: > 98.0 %	

To access	Select Applications > Service Level Management > SLA Reports > CI Status .
Important information	You must click  Run after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i> . See also "Tracking Range and Granularity in Service Level Management" on page 432.
Advanced Options	Enables you to include descriptions and additional values in the report, and customize some display aspects. You can include additional values in columns in the report. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Select a calendar. The list includes the calendars used for the SLA containing the CI.
CI	Displays the name of the CI selected for the report, and the name of the SLA that contains the CI. The report includes all CIs in the branch under the selected CI. You can also select the CI representing the whole SLA, to include all CIs in the SLA in the report. To change the selection, click the CI link. For user interface details, see "CI Selector" on page 453.
KPI	Select a KPI. The list includes the KPIs relevant for the selected CI.



Report Content


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

UI Element (A-Z)	Description
<Additional values columns>	<p>If the report is set to show additional values (set in the Advanced Options dialog box), the values are displayed either in a single grouped column or in multiple columns, according to your selection.</p> <p>For details on this topic, see "Additional Values in Reports" on page 435.</p>
<KPI cell>	<p>Displays the numerical result for the KPI. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
CI	<p>Displays the CIs included in the selected branch of the SLA (up to four levels). Click a CI name to drill down to the branch under that CI. (You can return to the previous level using the breadcrumbs at the top of the page.)</p> <p>Tooltip: Hold the pointer over a CI name to view the full name in a tooltip.</p>
Objectives	Displays the objectives defined for the KPI, for the selected calendar.

 **CI Summary Report**

This report displays KPI results for CIs in a specific SLA. You can use this report to find the CIs that failed to reach their objectives.

CI Summary 5/31/10 12:00 AM-6/7/10 12:00 AM Asia/Jerusalem				
 Run				
Data				
				
CIs	Application Availability (%)		Application Performance (%)	
	24x7	Business Hours	24x7	Business Hours
BS1	80.000	80.000	66.667	66.667
Default Client Snt Ap1 1	60.000	60.000	33.333	33.333
CMDB Sanity Host CI	-	-	-	-
Default Client Snt Ap1 1 Sanity BTW1 1	60.000	60.000	33.333	33.333
tx 10	100.000	100.000	0.000	0.000
tx 15	100.000	100.000	0.000	0.000
tx 1 failed	0.000	0.000	-	-
tx 2 failed	0.000	0.000	-	-
tx 5	100.000	100.000	100.000	100.000
Default Client Snt Ap1 1 Sanity BTW1 2	60.000	60.000	33.333	33.333
tx 10	100.000	100.000	0.000	0.000
tx 15	100.000	100.000	0.000	0.000
tx 1 failed	0.000	0.000	-	-
tx 2 failed	0.000	0.000	-	-
tx 5	100.000	100.000	100.000	100.000

To access	Select Applications > Service Level Management > SLA Reports > CI Summary .
Important information	You must click  after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	<p>Enables you to include descriptions and additional values in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.</p>
Calendar	<p>Displays the names of the calendars selected for inclusion in the report. To change the selection, click the Calendar link to open the Calendar dialog box. The dialog box lists the calendars used by the selected SLA.</p> <p>Note: You can include all relevant calendars by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
CI	<p>Displays the name of the CI selected for the report, and the name of the SLA that contains the CI. The report includes all CIs in the branch under the selected CI.</p> <p>You can also select the CI representing the whole SLA, to include all CIs in the SLA in the report.</p> <p>To change the selection, click the CI link. For user interface details, see "CI Selector" on page 453.</p>

UI Element (A-Z)	Description
KPI	<p>Displays the names of the KPIs selected for inclusion in the report. To change the selection, click the KPI link to open the KPI dialog box. The dialog box lists the KPIs that are relevant for the CIs in the selected branch.</p> <p>Note: You can include all relevant KPIs by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
Primary Grouping/ Secondary Grouping	<p>Select the first and second level column headers to be used for presenting data in the report. For details on this topic, see "Primary Grouping/Secondary Grouping" on page 434.</p>

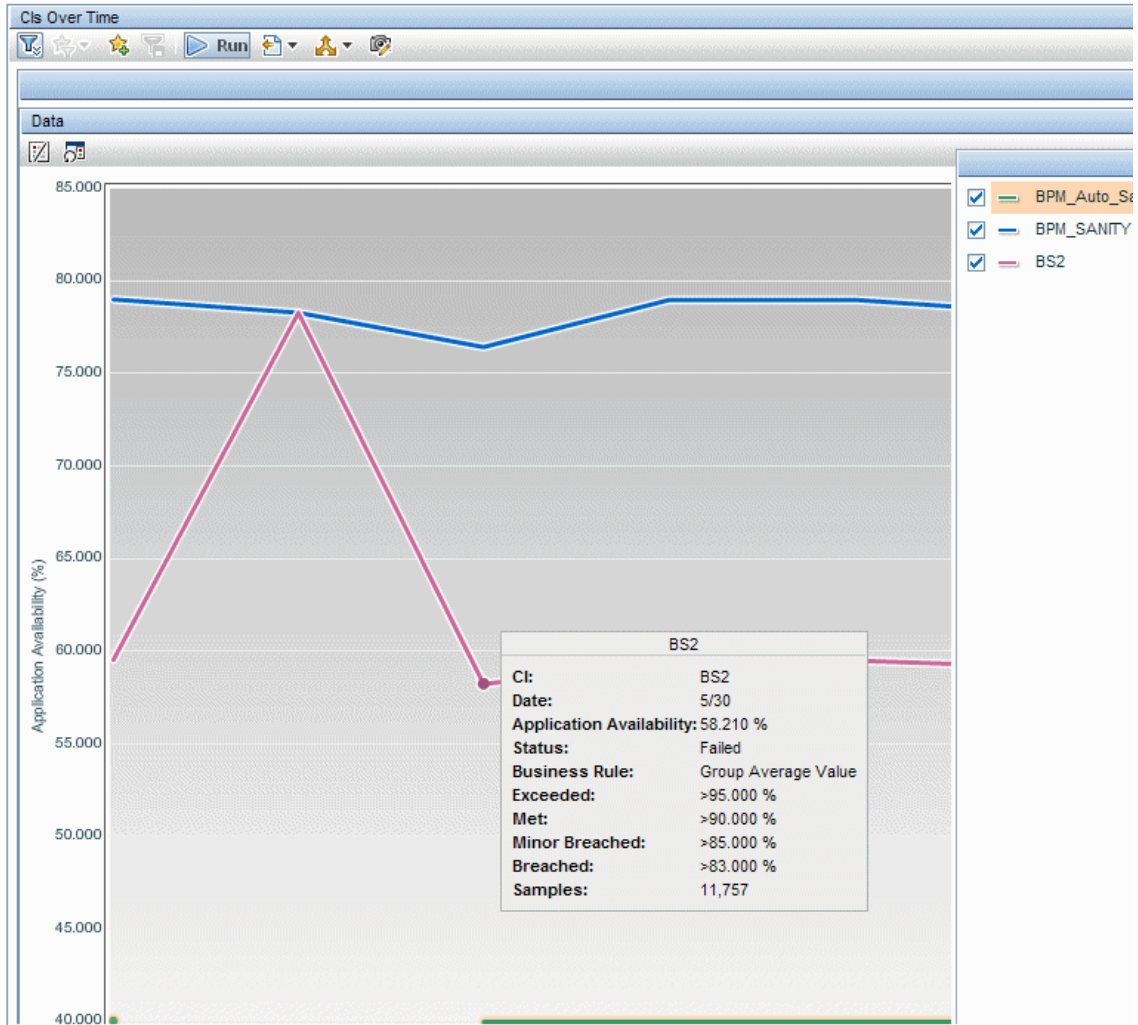
Report Content


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

UI Element (A-Z)	Description
<Table cell>	<p>Displays the numerical result for the KPI. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
CI	<p>Displays the CIs included in the selected branch of the SLA (up to four levels). Click a CI name to drill down to the branch under that CI. (You can return to the previous level using the breadcrumbs at the top of the page.)</p> <p>Tooltip: Hold the pointer over a CI name to view the full name in a tooltip.</p>

CIs Over Time Report

This report displays KPI results over a time period for selected CIs. You can use this report to compare the behavior of CIs over time.



To access	Select Applications > Service Level Management > SLA Reports > CIs Over Time .
Important information	<ul style="list-style-type: none"> ➤ Results can be displayed in graph or table format. ➤ You must click  after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444



Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	Enables you to include descriptions and additional values in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Select a calendar. The list includes the calendars used by the relevant SLA.
CIs	<p>Displays the number of CIs selected for the report, and the name of the SLA that contains the CIs.</p> <p>To change the selection, click the CIs link. For user interface details, see "CI Selector" on page 453.</p>
KPI	Select a KPI. The list includes the KPIs relevant for the selected CIs.

View as Graph Tab

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

UI Element (A-Z)	Description
	Show/Hide Legend. Toggles between displaying or hiding the legend box.
	Dock Legend. After dragging the legend box to a new location, this button docks it back in its default position, to the right of the graph.
<Graph line>	<p>Displays results for the selected KPI on the CI during the time period.</p> <p>The targets defined for the KPI are displayed on the graph as target lines, color-coded as relevant for each target and labeled with the target name, for example, Failed.</p> <p>Tooltip: Hold the pointer on the graph line, directly over a time period entry, to display the node on the graph line, and to view information (including status) for the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
<Legend box>	<p>The legend box is displayed by default to the right of the graph. You can drag and drop the box to where you want, by clicking on the blue bar at the top of the box.</p> <p>Select the check boxes for the CIs you want to appear in the graph. Select a CI entry to highlight the line for that CI in the graph.</p>
Time Period	Lists the time periods included in the report, according to the selected granularity.

View as Table Tab

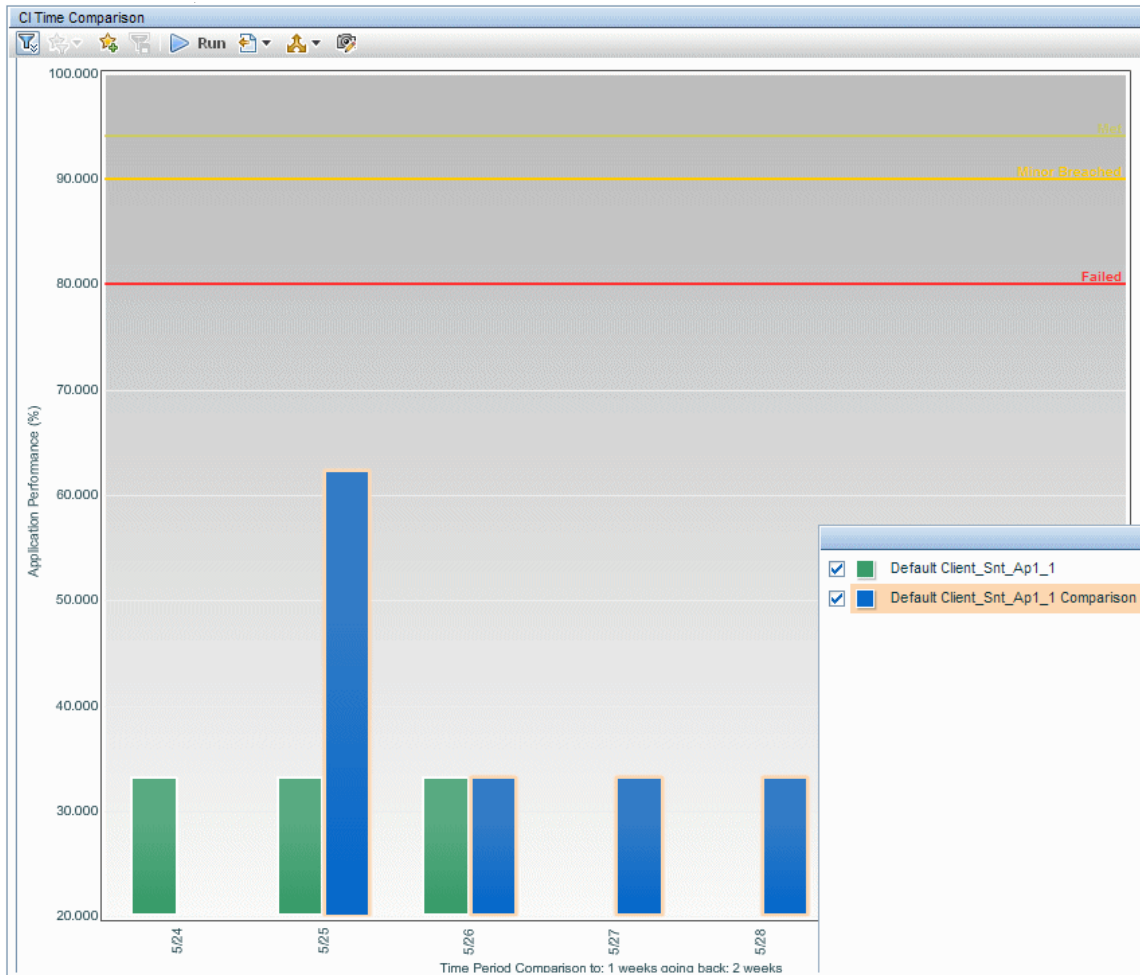
User interface elements are described below (unlabeled elements are shown in angle brackets):


UI Element (A-Z)	Description
<Table cell>	<p>Displays the numerical result for the selected KPI on each CI. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
Time Period	<p>Lists the time periods included in the report, according to the selected granularity.</p> <p>Tooltip: Hold the pointer over a time period to view the exact time and date that the time period started.</p>

CI Time Comparison Report

This report displays KPI results over time for a selected CI in an SLA, and enables you to perform a comparison with a different time period, so that you can compare results for the KPI in the different periods.

You can use this report to see how well a CI has performed during different time periods.



To access	Select Applications > Service Level Management > SLA Reports > CIs Time Comparison .
Important information	<ul style="list-style-type: none"> ➤ Results can be displayed in graph or table format. ➤ The time periods shown in the report are based on the SLA time zone. ➤ You must click  after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444




Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i> . See also "Tracking Range and Granularity in Service Level Management" on page 432.
Advanced Options	Enables you to include descriptions and additional values in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Select a calendar. The list includes the calendars used for the SLA containing the selected CI.
CI	Displays the name of the CI selected for inclusion in the report, and the name of the SLA that contains the CI. To change the selection, click the CI link. For user interface details, see "CI Selector" on page 453.
KPI	Select a KPI. The list includes the KPIs attached to the selected CI within this SLA.

View as Graph Tab


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

UI Element (A-Z)	Description
	Show/Hide Legend. Toggles between displaying or hiding the legend box.
	Dock Legend. After dragging the legend box to a new location, this button docks it back in its default position, to the right of the graph.
	Time comparison. Opens the Time Comparison dialog box, where you define the time range to be used for the time comparison against the time range selected for the report. For details, see "Time Comparison" in <i>Reports</i> .
<Graph bar>	<p>Displays bars showing the KPI results, for each time slot during the time period (according to the granularity defined in the report filter).</p> <p>The bar color indicates whether it represents the original CI (for the report time period) or the CI in the comparison time period, according to the legend displayed in the floating legend box.</p> <p>The targets defined for the KPI are displayed on the graph as target lines, color-coded as relevant for each target and labeled with the target name, for example, Failed.</p> <p>Tooltip: Hold the pointer over a bar to view a tooltip containing information about the KPI. The tooltip color indicates the status for the KPI during that time slot. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>

UI Element (A-Z)	Description
<Legend box>	<p>The legend box is displayed by default to the right of the graph. You can drag and drop the box to where you want, by clicking on the blue bar at the top of the box.</p> <p>Select the check boxes for the specific CI by time period results that you want to appear in the graph.</p> <p>Select an entry to highlight the bars for that CI time period in the graph.</p>
Time Period	<p>Lists the time periods included in the report, according to the selected granularity.</p> <p>The report displays the time period for the original CI, when the original CI is selected in the legend box, for the comparison time period, when the comparison option is selected in the legend box.</p>

View as Table Tab

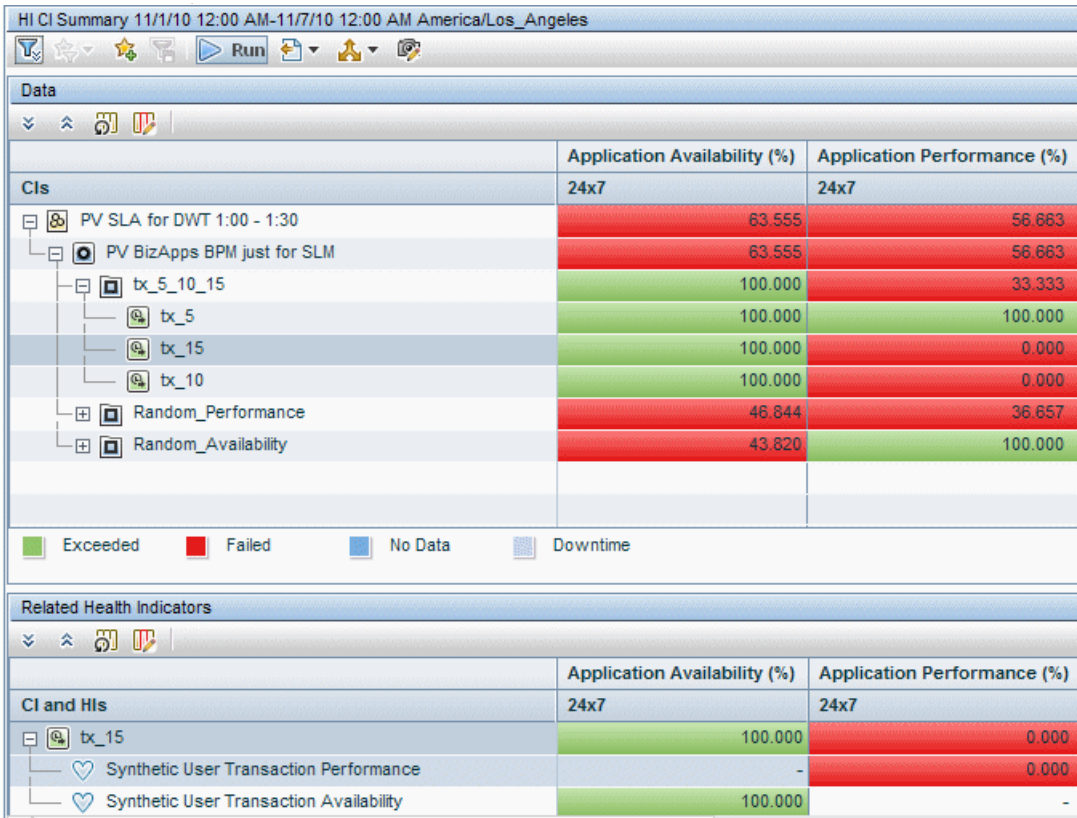
User interface elements are described below (unlabeled elements are shown in angle brackets):


UI Element (A-Z)	Description
	<p>Time comparison. Opens the Time Comparison dialog box, where you define the time range to be used for the time comparison against the time range selected for the report. For details, see "Time Comparison" in <i>Reports</i>.</p>

UI Element (A-Z)	Description
<Table cell>	<p>Displays the result for the selected KPI during that time slot. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
Time Period	<p>The first Time Period column lists the time slots during the time period selected for the report, according to the selected granularity.</p> <p>After defining a time comparison period, the second Time Period column list the time slots during the comparison period.</p>

 **HI CI Summary Report**

This report displays KPI results for configuration items (CIs), results for their associated health indicators, within a specific SLA. You can use this report to find the CIs and health indicators that failed to reach their objectives.



To access	Select Applications > Service Level Management > SLA Reports > HI CI Summary .
Important information	You must click  Run after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	<p>Enables you to display the related health indicators for a selected CI, or to display all health indicators for all CIs. Also enables you to include descriptions and additional values in the report, and customize other display aspects. For details, see "Advanced Options Dialog Box" on page 447.</p>
Calendar	<p>Displays the names of the calendars selected for inclusion in the report. To change the selection, click the Calendar link to open the Calendar dialog box. The dialog box lists the calendars used by the selected SLA.</p> <p>Note: You can include all relevant calendars by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
CI	<p>Displays the name of the CI selected for the report, and the name of the SLA that contains the CI. The report includes all CIs in the branch under the selected CI.</p> <p>You can also select the CI representing the whole SLA, to include all CIs in the SLA in the report.</p> <p>To change the selection, click the CI link. For user interface details, see "CI Selector" on page 453.</p>

UI Element (A-Z)	Description
KPI	<p>Displays the names of the KPIs selected for inclusion in the report. To change the selection, click the KPI link to open the KPI dialog box. The dialog box lists the KPIs that are relevant for the CIs in the selected branch.</p> <p>Note: You can include all relevant KPIs by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
Primary Grouping/ Secondary Grouping	<p>Select the first and second level column headers to be used for presenting data in the report. For details on this topic, see "Primary Grouping/Secondary Grouping" on page 434.</p>

Report Content

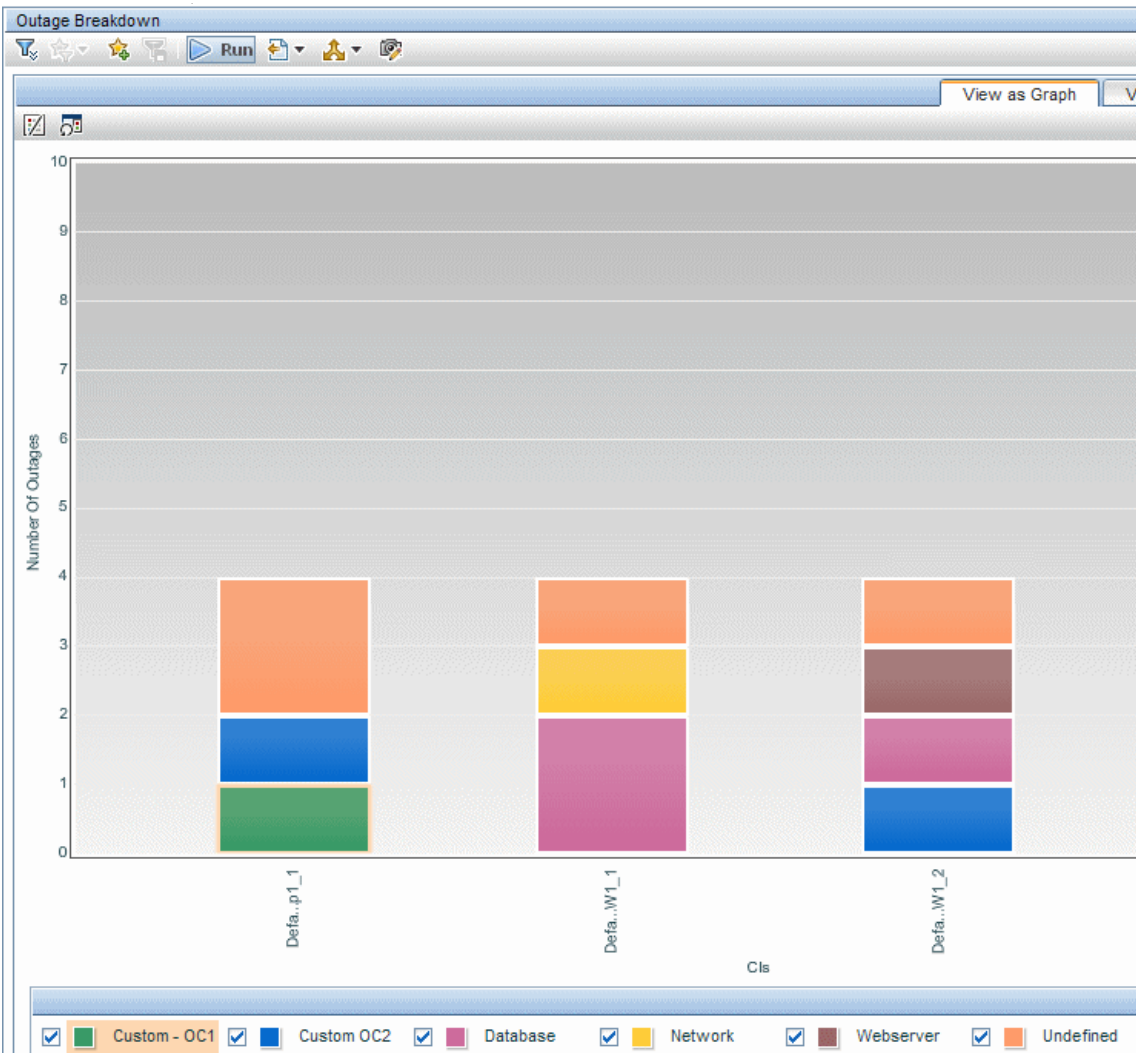
User interface elements are described below (unlabeled elements are shown in angle brackets):


UI Element (A-Z)	Description
<Table cell>	<p>Displays the numerical result for the KPI or health indicator, according to the groupings you selected for the report filter. The background color shows the status for the KPI or health indicator (based on the target objectives).</p> <p>Tooltip: For KPI cells, hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
All Health Indicators table	<p>This table is displayed when Show All Health Indicators is selected in the Advanced Options Dialog Box.</p> <p>Displays KPI information for the CIs, and results for their attached HIs, within the selected branch of the SLA. Only those HIs that are relevant for the KPIs included in the report are displayed.</p> <p>Tooltip: Hold the pointer over a CI name or HI name to view the full name in a tooltip.</p>

UI Element (A-Z)	Description
Data table	<p>Displays KPI information for the CIs within the selected branch of the SLA (up to three levels).</p> <p>Select a CI to view health indicator information for that CI in the Related Health Indicator table (when displayed).</p> <p>Tooltip: Hold the pointer over a CI name to view the full name in a tooltip.</p>
Related Health Indicators table	<p>This table is displayed when Show Related Health Indicators is selected in the Advanced Options Dialog Box (this option is selected by default).</p> <p>Displays KPI information for the CI selected in the Data table, and for its associated health indicators (if the CI has associated health indicators). Only those health indicators that are relevant for the KPIs included in the report are displayed.</p> <p>Tooltip: Hold the pointer over a CI name or health indicator name to view the full name in a tooltip.</p>

🔑 Outage Breakdown Report

This report displays a breakdown of outage categories by selected CIs, or a breakdown of CI outages by outage categories. You view data according to outage duration or number of outages, during a specific calendar.



To access	Select Applications > Service Level Management > Outage Reports > Outage Breakdown .
Important information	<ul style="list-style-type: none"> ► Results can be displayed in graph or table format. ► You must click  after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444
See also	"Outages in SLAs" on page 320

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	Enables you to include descriptions in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Select a calendar. The list includes only those calendars that are used by the SLA.

UI Element (A-Z)	Description
Categories	<p>Displays the names of the outage categories selected for inclusion in the report. To change the selection, click the Categories link to open the Categories dialog box. The dialog box lists the available predefined outage categories—Database, Network, Webserver, and Undefined—and any user-defined categories.</p> <p>Default value: All</p> <p>Note: You can include all relevant outage categories by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
CIs	<p>Displays the number of CIs selected for the report, and the name of the SLA that contains the CIs.</p> <p>Tooltip: Hold the cursor over the CIs link to view the names of the selected CIs.</p> <p>To change the selection, click the CIs link. For user interface details, see "CI Selector" on page 453.</p>
Grouping	<p>Select a radio button according to how you want the data organized in the report:</p> <ul style="list-style-type: none"> ➤ CIs. Displays outage data and outage categories per included CI. ➤ Categories. Displays outage data for CIs per included outage category.
KPI	<p>Displays the name of the Outages KPI used for outage calculations in the report, either Number of Outages or Outage Duration. To change the selection, click the KPI link to open the KPI dialog box.</p>

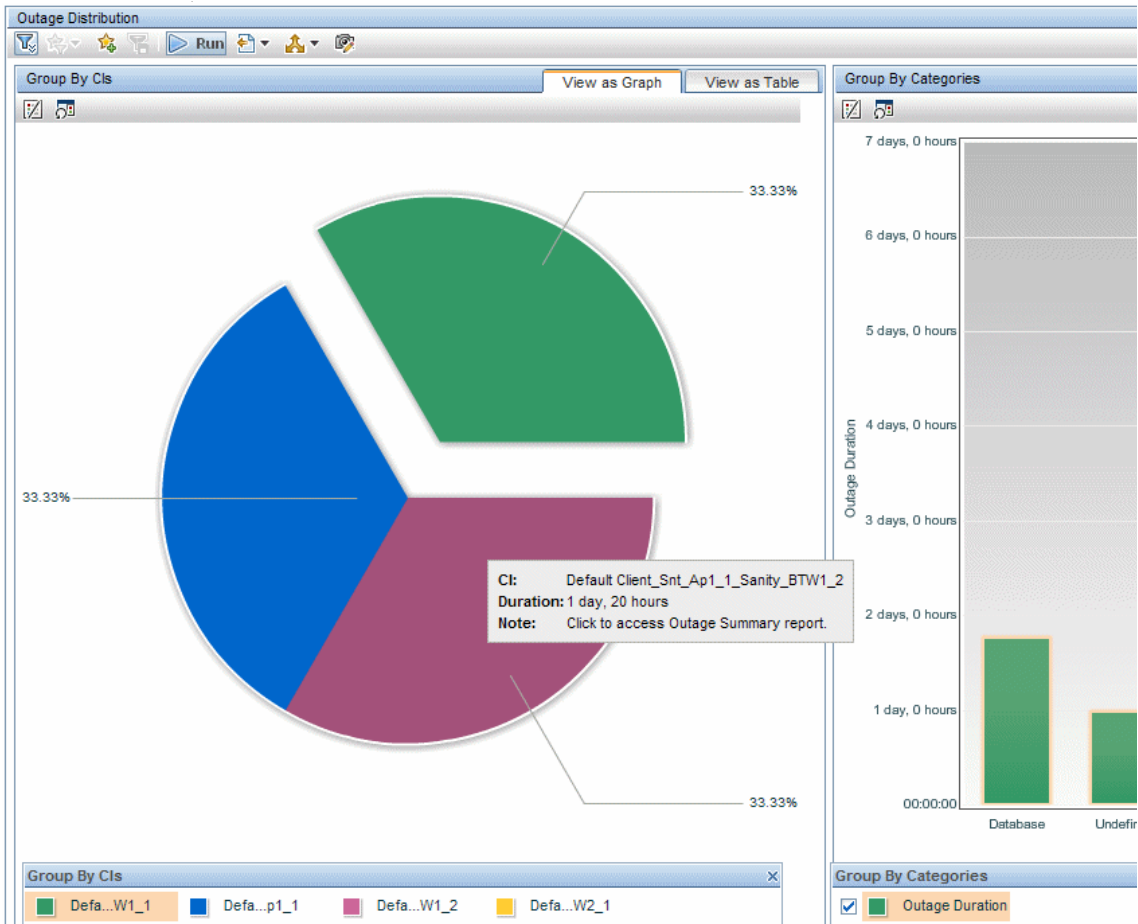
Report Content


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

UI Element (A-Z)	Description
<Table cell/Graph bar>	<p>Displays the number of outages or duration of outages for each CI or outage category during the selected time period.</p> <p>The bars on the graph tab are color-coded by either CI or category, according to your Grouping selection.</p> <p>Click a bar section or table cell to drill down to the Outage Summary Report, which displays information on the outage for the relevant CI and category, during the same time period. Use the breadcrumbs at the top of the page to return to the Outage Breakdown report.</p> <p>Tooltip: Hold the pointer over a cell or bar to view the CI and category name, and KPI results.</p>

📌 Outage Distribution Report

This report displays outage distribution by CIs or outage categories. You can use this report to see which CI or category has the most outages, or has outages with the longest duration.



To access	Select Applications > Service Level Management > Outage Reports > Outage Distribution .
Important information	<ul style="list-style-type: none"> ► Results can be displayed in graph or table format. ► You must click  Run after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444
See also	"Outages in SLAs" on page 320

Report Settings



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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	Enables you to include descriptions in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Select a calendar. The list includes only those calendars that are used by the SLA.

UI Element (A-Z)	Description
Categories	<p>Displays the names of the outage categories selected for inclusion in the report. To change the selection, click the Categories link to open the Categories dialog box. The dialog box lists the available predefined outage categories—Database, Network, Webserver, and Undefined—and any user-defined categories.</p> <p>Default value: All</p> <p>Note: You can include all relevant outage categories by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
CIs	<p>Displays the number of CIs selected for the report, and the name of the SLA that contains the CIs.</p> <p>Tooltip: Hold the cursor over the CIs link to view the names of the selected CIs.</p> <p>To change the selection, click the CIs link. For user interface details, see "CI Selector" on page 453.</p>
Grouping	<p>Select a radio button according to how you want the data organized in the report:</p> <ul style="list-style-type: none"> ➤ CIs. Displays outage distribution across the included CIs. In the graph tab, this information is shown in pie chart format. ➤ Categories. Displays outage distribution per included outage category. In the graph tab, this information is shown in pie chart format. ➤ Both. Displays both the CIs and the categories groupings on the page. In the graph tab, Group by CIs is in pie chart format, and Group by Categories is in bar chart format.
KPI	<p>Displays the name of the Outages KPI used for outage calculations in the report, either Number of Outages or Outage Duration. To change the selection, click the KPI link to open the KPI dialog box.</p>

Group by CIs Pane



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

UI Element (A-Z)	Description
	Show/Hide Legend. Toggles between displaying or hiding the legend box.
	Dock Legend. After dragging the legend box to a new location, this button docks it back in its default position, underneath the graph.
<Legend box>	<p>The legend box is displayed by default underneath the graph. You can drag and drop the box to where you want, by clicking on the blue bar at the top of the box.</p> <p>Select an entry to highlight the pie slice for that CI time period in the graph.</p>
View as Graph tab	<p>Displays a pie chart giving outage distribution (in percentage) for the included CIs, if you selected CIs or Both as the Grouping option.</p> <p>The percentages are based on the results for the selected KPI, so that each pie slice shows either the percentage of the total outages, or the percentage of the overall outage time (within the filters selected for the report).</p> <p>Shortcut menu: Right-click a pie slice to drill down to the Outage Summary Report, which displays outage information from all outages for the relevant CI, during the same time period. Use the breadcrumbs at the top of the page to return to the Outage Breakdown report.</p> <p>Tooltip: Hold the pointer over a pie slice to view the actual KPI results.</p>

UI Element (A-Z)	Description
View as Table tab	<p>Displays either the total number of outages or total outage duration per CI, for the selected time period.</p> <p>Click in a cell to drill down to the Outage Summary Report, which displays outage information from all outages for the relevant CI, during the same time period. Use the breadcrumbs at the top of the page to return to the Outage Breakdown report.</p> <p>Tooltip: Hold the pointer over a cell to view the KPI results.</p>

Group by Categories Pane

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

UI Element (A-Z)	Description
	Show/Hide Legend. Toggles between displaying or hiding the legend box.
	Dock Legend. After dragging the legend box to a new location, this button docks it back in its default position, underneath the graph.
<Legend box>	The legend box is displayed by default underneath the graph. You can drag and drop the box to where you want, by clicking on the blue bar at the top of the box. Select the check boxes for the specific categories that you want to appear in the graph. Select an entry to highlight the bars for that category in the graph.
View as Graph tab	Displays a bar chart that, for each outage category, shows the total number of outages or total outage duration during the selected time period. Shortcut menu: Right-click a bar to drill down to the Outage Summary Report, which displays outage information for all outages in the relevant outage category, during the same time period. Use the breadcrumbs at the top of the page to return to the Outage Breakdown report. Tooltip: Hold the pointer over a bar to view the KPI results.

UI Element (A-Z)	Description
View as Table tab	<p>Displays either the total number of outages or total outage duration by outage category, for the selected time period.</p> <p>Click in a cell to drill down to the Outage Summary Report, which displays outage information from all outages in the relevant outage category, during the same time period. Use the breadcrumbs at the top of the page to return to the Outage Breakdown report.</p> <p>Tooltip: Hold the pointer over a cell to view the KPI results.</p>

 **Outage Summary Report**

This report lists the outages for selected CIs. Use this report to view outage information for a specific SLA, to see the reason for the breach of contract.


Outage Reports > Outage Summary

Status SnapshotSLA ReportsAlertsOutage ReportsSLA Management

Outage Summary 6/6/10 12:00 PM-6/7/10 12:00 PM Asia/Jerusalem

Data

CIs	Start Date	End Date	Duration	Category
Default Client_Snt_Ap1_1	6/6/10 12:00 AM	6/6/10 9:00 PM	21:00:00	Custom - OC1
Default Client_Snt_Ap1_1	6/6/10 10:00 PM	6/6/10 11:00 PM	01:00:00	Custom OC2
Default Client_Snt_Ap1_1	6/7/10 12:00 AM	6/7/10 9:00 PM	21:00:00	Undefined
Default Client_Sanity_BTW1_1	6/6/10 12:00 AM	6/6/10 9:00 PM	21:00:00	Network
Default Client_Sanity_BTW1_1	6/6/10 10:00 PM	6/6/10 11:00 PM	01:00:00	Database
Default Client_Sanity_BTW1_1	6/7/10 12:00 AM	6/7/10 9:00 PM	21:00:00	Database
Default Client_Sanity_BTW1_2	6/6/10 12:00 AM	6/6/10 9:00 PM	21:00:00	Database
Default Client_Sanity_BTW1_2	6/6/10 10:00 PM	6/6/10 11:00 PM	01:00:00	Custom OC2
Default Client_Sanity_BTW1_2	6/7/10 12:00 AM	6/7/10 9:00 PM	21:00:00	Webserver

To access	Select Applications > Service Level Management > Outage Reports > Outage Summary .
Important information	<ul style="list-style-type: none"> ➤ After generating a report, you can add a comment to each outage explaining the reason for the outage, and you can categorize the outages, so that you or your users can sort the report by category. ➤ You must click  Run after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444
See also	"Outages in SLAs" on page 320

Report Settings


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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	Enables you to include descriptions in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Select a calendar. The list includes the calendars used by the relevant SLA.

UI Element (A-Z)	Description
Categories	<p>Displays the names of the outage categories selected for inclusion in the report. To change the selection, click the Categories link to open the Categories dialog box listing all available outage categories.</p> <p>Note: You can include all categories by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
CIs	<p>Displays the number of CIs selected for the report, and the name of the SLA that contains the CIs.</p> <p>Tooltip: Hold the cursor over the CIs link to view the names of the selected CIs.</p> <p>To change the selection, click the CIs link. For user interface details, see "CI Selector" on page 453.</p>

Report Content

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

UI Element (A-Z)	Description
	<p>(Displayed in the toolbar above the report, after a report is generated.)</p> <p>Select a row in the report, then click this button to open the Outage Details dialog box, where you can assign a category to the outage or enter a description for it. If you need additional outage categories, define them in the Outage Categories Page. For more information, see "Outage Categories" on page 322.</p> <p>It is recommended to categorize each outage to make outage reports more meaningful.</p> <p>Note: The change takes effect the next time the report is generated.</p>
Category	The category allocated to the outage. You can categorize the outage from this report.
CI	The name of the CI.
Description	<p>The description of the outage. You can add a description to an outage from this report.</p> <p>Tooltip: To view the description in full, if it is concatenated, hold the pointer over the Description field.</p>
Duration	The duration in hours, minutes, and seconds.
End Date	The end date and time of the outage.
Start Date	The start date and time of the outage.

 **SLA Management Page**

This page enables you to select service-related views to view information about the connections between your services, organization entities, and SLAs. You can link to related reports that assist you in understanding the connection.

To access	Select Applications > Service Level Management > SLA Management .
See also	"Providers and Customers for Services and SLAs" on page 44

User interface elements are described below:









UI Element (A-Z)	Description
Left Pane: CI Selector	<p>In the left pane you can display one of the following views:</p> <ul style="list-style-type: none">➤ Business Services. Contains all Business Service and Infrastructure Services defined in the RTSM. For details, see "Services in Service Level Management - Overview" on page 166.➤ Business Units. Contains all Organization CIs, representing service providers and customers, defined in the RTSM. For details, see "Providers and Customers for Services and SLAs" on page 44.➤ Service Providers. Contains all Organization CIs that represent internal and external service providers, and the service CIs associated with the provider. For details, see "How to Define a Service for an SLA – Use-Case Scenario" on page 169. <p>Shortcut menu: Right-click a CI and select Show > Properties to display CI properties.</p>



UI Element (A-Z)	Description
Right Pane: SLA Management	<p>The right pane content changes according to the current selection in the left pane:</p> <ul style="list-style-type: none"> ➤ Introductory information about SLA Management is displayed when you first enter the page or select the view name. ➤ When the Business Services view name is selected, the right pane displays a table listing the business and infrastructure services, their associated providers, and their descriptions. ➤ When a service CI is selected (in the Business Services view or the Service Providers view), the right pane displays details about the service (description, provision, and provider). If there are associated SLAs for the service, the pane also displays details about the SLAs in a table. Click the CI Impact Report button to open the CI Impact report for the selected service CI in a new window, using default filter settings or the report filter settings last used during the current Web session. ➤ When a Business Unit CI representing a provider or customer is selected (in the Business Services view or the Service Providers view), the right pane displays details about the CI (description, contact details). If there are associated SLAs for the provider or customer, the pane also displays details about the SLAs in a table. Click the SLAs Summary Report button to open the report for all customers or for all providers (as relevant) in a new window. All SLAs that are associated with the customers/providers are included in the report. The report uses default filter settings or the report filter settings last used during the current Web session.







 **SLA Status Report**


This report displays SLA status for the current period, and provides a forecast of SLA status at the end of a calculation period.
You can use this report to see if continuing to maintain your services at the current levels may lead to a breach of the SLA on a future date.


SLA Status


 Run 




SLAs 	Month to date Trend	Current Status 6/14/2010-6/15/2010	Forecasting Status 6/14/2010-6/21/2010	Expected Breach Date
All RUM(1)		No Data	No Data	-
All RUM(Business Hours)		Critical	Critical	-
Atali-Vadim(Business Hours)		OK	Warning	6/18/2010
EUG		No Data	No Data	-
EUSubgroup - FTP		No Data	No Data	-


 Exceeded


 Met

 Minor Breached

 Breached

Service Level Management displays reports according to the SLA's time zone.

 The following agreements do not have the selected tracking periods and/or calendars:
RUM Apps - only Sessions, OTHERS EUSg - K, OTHERS EUSg

To access	Select Applications > Service Level Management > SLA Reports > SLA Status .
Important information	<ul style="list-style-type: none"> ➤ SLAs that do not correspond to the filtering criteria (for example, they do not use the defined calendar) are not included in the report. The excluded SLAs are listed under the report. ➤ The usual logic used in Service Level Management reports when generating a report for week/month/year to date on the first day of a new period, is to use the results for the last week/month/year; however, in the SLA Status report, the Current Status for <x> to date on the first day of a period is calculated from the beginning of that period (the first hours). As a result, you may see different current status when you compare results for <x> to date in the SLA Status report and in the SLAs Summary report. ➤ You must click  Run after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444
See also	<ul style="list-style-type: none"> ➤ "Status Forecast for SLAs" on page 426 ➤ "SLA Status" on page 423

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>

UI Element (A-Z)	Description
Advanced Options	Enables you to include descriptions and additional values in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Base Forecasting On	Select the time period to be used as the base calculation period for the forecast calculation. The available options are determined by the tracking periods defined for the included SLAs (excluding hour or the current day).
Calendar	Select the calendar for which the status calculation should be made. The available options are the calendars used by the selected SLAs, or All . When you select All , the forecast is calculated for all calendars, and the worst results for each SLA are shown in the report.
Give Forecasting For	Select the time period that you want the forecast to cover. The current status is calculated for the same tracking period to-date. For example, selecting End of Quarter gives a forecast for the end of the current quarter, and current status for the current quarter-to-date. The available options are determined by the tracking periods defined for the included SLAs (excluding hour and day).
SLAs/Customers/Providers/Services	The SLAs field (may be called Providers , Customers , or Services , if you previously filtered by one of these options) displays the names of the SLAs, providers, customers, or services selected for the report. To change the selection, click the SLAs/Providers/Customers/Services link. For details on the user interface for changing the selection, see "SLAs Dialog Box" on page 494. Note: You can select all SLAs/Customers/Providers/Services by clicking the Clear All link. This clears the displayed selection and replaces it with All .

Report Content

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

UI Element (A-Z)	Description
<Base Forecasting On period> Trend	<p>Displays arrows indicating the trend between the current status and the status used for forecasting. A green arrow means that SLA status is improving, a red arrow means that status is deteriorating, blue is no data. When there is no trend (status is constant), both arrows are displayed in color.</p> <p>Tooltip: Hold the pointer over the trend arrows to see the dates for the trend periods.</p>
Current Status	<p>Displays the status-to-date for the SLA based on the Give Forecasting For tracking period and the selected calendar. For example, the current status could be calculated from the SLA results from the start of the month to the current date, during business hours. For more information, see "SLA Status" on page 423.</p> <p>Tooltip: Hold the pointer over the status bar to see the status and tracking period.</p>
Expected Breach Date	<p>Displays the date and time that SLA status is expected to fall below status Exceeded. A value is displayed in this column only if:</p> <ul style="list-style-type: none"> ➤ The SLA current status is Exceeded (green). ➤ The forecast status is worst than Exceeded. <p>Note: If you edit KPI thresholds in an SLA but you do not recalculate the SLA for the entire period on which forecasting is based, the expected breach date may appear blank. You must perform recalculation for the entire period on which forecasting is based, in order to generate an expected breach date.</p>

UI Element (A-Z)	Description
Forecasting Status	<p>Displays the status forecast for the selected tracking period and calendar. For example, the forecast could be calculated for the end of the current month for business hours, based on the SLA results for the last day.</p> <p>Tooltip: Hold the pointer over the status bar to see the status and forecast tracking period.</p>
SLAs	<p>Lists the SLAs included in the report.</p> <p>Tooltip: Hold the pointer over a long SLA name to view it in full.</p>

SLAs Dialog Box

This dialog box enables you to filter the SLAs to be included in a Service Level Management report.

To access	Select Applications > Service Level Management , open a report and click SLAs or Providers or Customers or Services in the report filter area. (The link name depends on the category you previously selected for the filter.)
Important information	<ul style="list-style-type: none">➤ SLAs generally implies all SLA types (SLAs, OLAs, UCs).➤ Only the SLAs for which you have viewing permission are displayed in the SLAs dialog box and in the report. For more information, see "Permissions for Working with SLAs" on page 66.
See also	<ul style="list-style-type: none">➤ "Providers and Customers for Services and SLAs" on page 44➤ "SLAs, OLAs, and UCs" on page 46➤ "Services in Service Level Management - Overview" on page 166

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

UI Element (A-Z)	Description
<List of SLAs/ Providers/ Customers/ Services>	Select the check box for each option that you want to include in the report filter. Only those SLAs that are associated with a selected filter option are included in the report.
Select From	<p>Select the category of filter options you require:</p> <ul style="list-style-type: none"> ► SLAs. Enables you to select from the available agreement types—SLAs, OLAs, and UCs. ► Providers. Enables you to select from all providers that are associated with at least one SLA. ► Customers. Enables you to select from all customers that are associated with at least one SLA. ► Services. Enables you to select from all services that are included in at least one SLA.

SLAs Summary Report

This report displays a list of SLAs and their status for selected KPIs and calendars. You can use this report to view a summary of data for all (or specific) SLAs.


SLAs Summary 6/1/10 12:00 AM-6/8/10 12:00 AM

Run

Data

SLAs	Application Availability (%)		Application Performance (%)	
	24x7	Business Hours	24x7	Business Hours
BD	60.000	-	33.333	-
Default ClientSnt Sla IV1 1	60.000	-	33.333	-
Default ClientSnt Sla IV1 2	-	-	-	-
by locations	74.041	75.047	94.381	94.362
eranTest	80.000	80.000	66.667	66.667

Exceeded
Met
Minor Breached
Breached
Failed
No Data

To access	Select Applications > Service Level Management > SLA Reports > SLAs Summary .
Important information	<ul style="list-style-type: none">➤ You can drill down from this report to the CI Summary report. This enables you to identify the measurement causing a problem in an SLA.➤ You must click  Run after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i> . See also "Tracking Range and Granularity in Service Level Management" on page 432.
Advanced Options	Enables you to include descriptions and additional values in the report, and customize some display aspects. For details, see "Advanced Options Dialog Box" on page 447.
Calendar	Displays the names of the calendars selected for inclusion in the report. To change the selection, click the Calendar link to open the Calendar dialog box. The dialog box lists all calendars used by the selected SLAs. Note: You can include all relevant calendars by clicking the Clear All link. This clears the displayed selection and replaces it with All .

UI Element (A-Z)	Description
KPI	<p>Displays the names of the KPIs selected for inclusion in the report. To change the selection, click the KPI link to open the KPI dialog box. The dialog box lists all KPIs attached to the selected SLAs.</p> <p>Note: You can include all relevant KPIs by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
Primary Grouping/ Secondary Grouping	<p>Select the first and second level column headers to be used for presenting data in the report. For details on this topic, see "Primary Grouping/Secondary Grouping" on page 434.</p>
SLAs/Customers/ Providers/Services	<p>The SLAs field (may be called Providers, Customers, or Services, if you previously filtered by one of these options) displays the names of the SLAs, providers, customers, or services selected for the report.</p> <p>To change the selection, click the SLAs/Providers/Customers/Services link. For details on the user interface for changing the selection, see "SLAs Dialog Box" on page 494.</p> <p>Note: You can select all SLAs/Customers/Providers/Services by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>

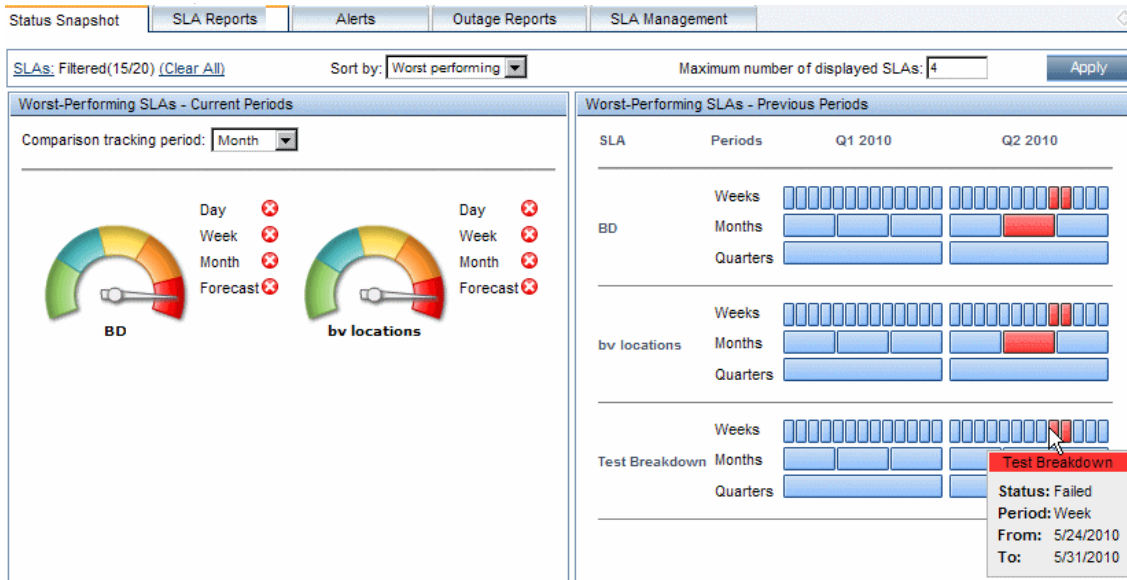
Report Content

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

UI Element (A-Z)	Description
<Table cell>	<p>Displays the numerical result for the KPI. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
SLAs	<p>Displays the SLAs included in the report. Click an SLA name to drill down to the CI Summary report for that SLA. (You can return to the SLAs Summary report using the breadcrumbs at the top of the page.)</p> <p>Tooltip: Hold the pointer over the name of an SLA to view information in a tooltip. To display the information in the table, instead of in the tooltip, click Advanced Options, and select Show SLA details as columns.</p>

Status Snapshot Report

This report displays up-to-date information for the worst or best performing SLAs, or the SLAs with the worst status forecast, in the current tracking periods and in previous tracking periods.



To access	Select Applications > Service Level Management > Status Snapshot .
Important information	<ul style="list-style-type: none"> ► An SLA is included in the Status Snapshot page only if it has relevant data. ► Different SLAs may be displayed in the Current Periods pane and the Previous Periods pane. ► Hold the pointer over a long SLA name to view it in full. ► The Status Snapshot page is refreshed every five minutes. You can change this value in Admin > Platform > Setup and Maintenance > Infrastructure Settings, choose Applications, select Service Level Management, and locate the SLA Status Snapshot refresh timing entry.

See also	<ul style="list-style-type: none">➤ "Status/Targets in Reports" on page 423➤ "Status Forecast for SLAs" on page 426
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Report Settings

User interface elements are described below:

UI Element (A-Z)	Description
Apply	Click to update the report with your changes.
Maximum number of displayed SLAs	<p>Enter a value to limit the number of displayed SLAs (the same value is applied for the Current Periods pane and Previous Periods pane).</p> <p>Default value: 10</p> <p>Note: Entering large values causes slower display time.</p>

UI Element (A-Z)	Description
SLAs/Providers/ Customers/Services	<p>The SLAs field (may be called Providers, Customers, or Services if you previously filtered by one of these categories) displays the name of the option selected for this filter (if there is only one option selected), or displays the number of selected options within the filter category. For example, SLAs: Filtered 2/5 means that filtering is based on category SLAs, and that 2 out of 5 SLAs are included in the filter for the report.</p> <p>The Status Snapshot report is filtered by the selected SLAs, or by the SLAs associated with the selected providers, customers, or services.</p> <p>To change the filter selection, click the field name link. For details on the user interface for changing the selection, see "SLAs Dialog Box" on page 494.</p> <p>Note: You can include all options in the current filter category by clicking the Clear All link. This clears the displayed selection and replaces it with All.</p>
Sort by	<p>Select an option to filter the SLAs included in the Status Snapshot report:</p> <ul style="list-style-type: none"> ➤ Best performing. The report displays the SLAs with the best status results (during the selected Comparison tracking period). ➤ Worst performing. The report displays the SLAs with the worst status results (during the selected Comparison tracking period). <p>Default value: Worst performing</p>

Current Periods Pane

This pane displays SLA status information for the current tracking period, and the predicted SLA status at the end of the forecast period. The included SLAs are those that meet the filter criteria, and that work with the tracking period defined in the **Comparison tracking period** field.

Important information	<p>The status-to-date information displayed in the Status Snapshot report (for example, Week, which gives week-to-date information) shows real-time data that is correct up to one or two hours ago (for details on the status-to-date calculations, see "SLA Status" on page 423).</p> <p>In other Service Level Management reports, status-to-date information is calculated to the last closed day. This means that you may see different data displayed in the Status Snapshot report as compared with other reports, or that the Status Snapshot report already contains data while other reports do not yet have data.</p>
------------------------------	---

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

UI Element (A-Z)	Description
<Gauge>	<p>The gauge for each SLA provides a pictorial representation of the status for the selected Comparison tracking period (for example, Day or Week).</p> <p>Click in a gauge to open the SLA Status report for that SLA.</p> <p>Tooltip: States the status and tracking period for the status.</p>

UI Element (A-Z)	Description
<Tracking period>	<p>Displays the status-to-date for each tracking period defined for the SLA (not including Hour). For example, Week gives the week-to-date status, Month gives the month-to-date status.</p> <p>Tooltip: Hold the pointer over a status icon to see details about its status.</p>
Comparison tracking period	<p>Select the tracking period that is used for the status displayed in each SLA gauge. All tracking periods are available apart from Hour and SLA period.</p> <p>If an SLA meets all other filter requirements, but the selected tracking period is not part of the SLA definition, it is not displayed in the Current Periods pane (it is displayed in the Previous Periods pane).</p> <p>Default value: Month</p>
Forecast	<p>Displays the status forecast for the end of the forecast period.</p> <p>The status forecast is not displayed if the SLA does not have the default forecast calculation tracking periods (as defined in infrastructure settings), or if no data is found that can be used to calculate the forecast.</p> <p>Default values: The default base period is Week, and the default forecasted period is Month. The default values can be changed in the Infrastructure Settings page.</p> <p>For information on how the status forecast is calculated, and on changing the default values, see "Status Forecast for SLAs" on page 426.</p> <p>Tooltip: Hold the pointer over Forecast to see the period the forecast is based on, and the period that the forecast is for.</p>

Previous Periods Pane
























This pane displays SLA status information from previous, closed tracking periods (periods that have passed their end date), over the past six months. The included SLAs are the worst performing/best performing SLAs over the past six months, according to all the filter criteria.


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

UI Element (A-Z)	Description
<Bar chart>	<p>The bar chart for each SLA shows the status of week, month, and quarter periods.</p> <p>If a period is blue, either the period has not yet finished, or no data exists for that period.</p> <p>Tooltip: Hold the pointer over a bar to view information on the bar period and status.</p>

Time Range Comparison Report

This report displays KPI results for a CI branch across different time ranges. You can use this report to compare KPI results over different time periods.

Time Range Comparison			
     			
Data			
Clis	Week to date	Week	Trend
Default Client_Snt_Ap1_1 From San Jose	60.000	60.018	
Default Client_Snt...W1_1 From San Jose	60.000	60.017	
tx_10 From San Jose	100.000	100.000	
tx_15 From San Jose	100.000	100.000	
tx_1 failed From San Jose	0.000	2.555	
tx_2 failed From San Jose	0.000	0.000	
tx_5 From San Jose	100.000	97.528	
Default Client_Snt...W1_2 From San Jose	60.000	60.018	
tx_10 From San Jose	100.000	100.000	
tx_15 From San Jose	100.000	100.000	
tx_1 failed From San Jose	0.000	2.532	
tx_2 failed From San Jose	0.000	0.000	
tx_5 From San Jose	100.000	97.560	
 Exceeded  Failed  No Data  Downtime			

To access	Select Applications > Service Level Management > SLA Reports > Time Range Comparison .
Important information	You must click  after every change you made to the settings in the report filter, to regenerate the report with the changes applied.
Relevant tasks	"How to View SLA and Outage Reports" on page 444

Report Settings

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

UI Element (A-Z)	Description
<Common report elements>	<p>For details on the user interface, see "Common Report and Page Elements" in <i>Reports</i>.</p> <p>See also "Tracking Range and Granularity in Service Level Management" on page 432.</p>
Advanced Options	<p>Enables you to include descriptions and additional values in the report, and customize some display aspects. You can add a column to the report displaying objectives for the selected KPI.</p> <p>For details, see "Advanced Options Dialog Box" on page 447.</p>
Calendar	<p>Select a calendar. The list includes the calendars used by the relevant SLA.</p>
CI	<p>Displays the name of the CI selected for the report. The report displays all CIs in the branch for the selected CI (you can also select the SLA CI).</p> <p>To change the selection, click the CI link. For user interface details, see "CI Selector" on page 453.</p>

UI Element (A-Z)	Description
KPI	Select a KPI. The list includes the KPIs relevant for the selected CI.
Time Ranges	<p>Displays the time ranges selected for the report. Two time ranges are selected by default.</p> <p>To select time ranges, click the Time Ranges link to open the Time Ranges dialog box.</p> <ul style="list-style-type: none">➤ Select the check box for a row to include that time range in the report.➤ By default, the time range label is the name in the Time Range box. If you want a different label displayed in the report, enter it in the relevant Label box.➤ Select the time range for each row. The available time ranges depend on the tracking periods defined for the SLA containing the selected CI.➤ Set dates as required. <p>Note: The trend column is displayed in the report only when exactly two time ranges are selected.</p>

Report Content

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

UI Element (A-Z)	Description
<KPI cell>	<p>Displays the numerical result for the KPI during that time range. The background color shows the status for the KPI (based on the target objectives).</p> <p>Tooltip: Hold the pointer over a cell to view information about the KPI. For details on this topic, see "Tooltip for KPIs in Reports" on page 443.</p>
CI	<p>Displays the CIs included in the selected branch of the SLA (up to four levels). Click a CI name to drill down to the branch under that CI. (You can return to the previous level using the breadcrumbs at the top of the page.)</p> <p>Tooltip: Hold the pointer over a CI name to view the full name in a tooltip.</p>
Objectives	<p>Displays, for each CI, the objectives defined for the attached KPI. This column is displayed if you selected Show Objectives in Column in the Advanced Options dialog box.</p> <p>Note: If a KPI has different objectives defined in each time range, then no objectives are displayed for that CI.</p>
Trend	<p>Displays arrows indicating the trend between the first time range and the second time range. A green arrow means that status is improving, a red arrow means that status is deteriorating, blue is no data. When there is no trend (status is constant), both arrows are displayed in color.</p> <p>This column is displayed only if exactly two time ranges are selected.</p>

Troubleshooting and Limitations

This section provides information to help you troubleshoot Service Level Management reports.

The Reports Log

HP Business Service Management records errors that occur when generating Service Level Management reports in a reports log. The reports log can also include the following activities: report creation, report generation, report filters modification, report drill down, and so on. For details, see "Reports Log" in *Reports*.

15

SLA Alerts Report

This chapter includes:

Concepts

- SLA Alerts Report Overview on page 512

Tasks

- View SLA Alert and SLA Alert Notification Reports on page 513

Reference

- SLA Alert Reports User Interface on page 514

Concepts

SLA Alerts Report Overview

SLA alerts notify you or another user of changes to the status of an SLA.

Note: When defining SLA alert schemes, the term **SLA** includes OLAs and UCs.

For details on configuring and managing SLA alerts, see "SLA Alerts Page - Administration" on page 370.

For details on the SLA Alerts that were triggered, see "SLA Alerts Report" on page 519.

Tasks

View SLA Alert and SLA Alert Notification Reports

The SLA Alerts report is a log of the alerts that are triggered during a specified time period, based on the defined SLA alert schemes. For details, see "SLA Alerts Report" on page 519.

You can view more details on a specific alert in the SLA Alert Notification page. For details, see "SLA Status Alert Notifications" on page 515.

Reference

SLA Alert Reports User Interface

This section describes:



- SLA Status Alert Notifications on page 515
- SLAs Dialog Box on page 518
- SLA Alerts Report on page 519
- Tracking Periods Dialog Box on page 521



SLA Status Alert Notifications

This page displays the triggering information that is available for the alert, including the actual conditions at the time of the alert.

The following is an example of the report.

Alert Details		
Time:	8/20/10 1:14 PM	
Condition:	Status changed from any status to No Data	
Status:	No Data	
Previous Status:	Exceeded	
Alert Name:	BSM9.01-040 SLA Alert - any status to No Data	
SLA:	SLA4Alerts	
Tracking Period:	Month	
Alert Description:	BSM 9.01 build 040 shared EUM env.	
Alert Action:	>" AlertID="<>" SLAName="<>" SLAID="<>" EventSeverity="<>" Description="<>" AlertDetailedDescription="<>" AlertSummary="<>" AlertTriggerTime="<>" Pre CurrentStatusName="<>" CurrentStatusKey="<>" BSMDNS="<>" Tracking Period="<>"; Access http://labm3am221.devlab.ad/topaz/TopazSiteServlet? createSession=true&requestType=login&directLogin=true&directLoginBV=true&directLoginEncrypted=true&userlogin=5F8138FB2D131A1C&userpassword= AlertName="<>&Alert">Send E-mail to: Anna Kuzmina...ertName="<>&Alert	

Action Notifications		
 		
Type	Command	Status
CEM	f3956b93-f7b0-4c4c-8bd0-1e7727c17b6c	Pass
Executable	c:\HPBSM\tools\testAler...Tracking Period="Month"	Pass
SNMPv1	Send trap to 134.44.97.188	Pass
SNMPv1	Send trap to 134.44.99.53	Pass
URL	http://labm3am221.devla...ad&TrackingPeriod=Month	Pass

Message Notifications		
 		
Type	Recipients	Status
E-mail	Anna Kuzmina	Pass

Notification Messages	
E-Mail Message:	SLA4Alerts Status changed from any status to No Data. Status is No Data .
	Status Change Time: 8/20/10 1:14 PM (Eastern European Summer Time) +0300
	Tracking Period: Month
	Previous Status: Exceeded
	Alert Name: BSM9.01-040 SLA Alert - any status to No Data
	Alert Description: BSM 9.01 build 040 shared EUM env.

[SLM CI Summary Report](#)

To access	Click  in the SLA Alerts report.
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Alert Details Area

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

UI Element	Description
Time	The time of the SLA's change of status.
Condition	The condition that trigger an alert. For example, if the SLA status worsens.
Status	The previous status of the SLA.
Previous Status	The status of the SLA before the alert was triggered.
Alert Name	The name of the alert.
SLA	The name of the SLA whose change of status triggered the alert.
Tracking Period	The time period that defines which granularities are to be displayed in the alert.
Alert Description	The description of the alert.
Alert Action	The action that has been assigned to the alert.

Action Notifications Area

User interface elements are described below:

UI Element (A-Z)	Description
<Common report elements>	See "Common Report and Page Elements" in <i>Reports</i> .
Command	The action that was executed: <ul style="list-style-type: none"> ➤ For executables: the command line ➤ For URLs: the URLs ➤ For SNMP traps: Send SNMP trap to <address> ➤ For Open incidents in HP ServiceCenter: Open incident ➤ For Open event in HP Operations Manager (OM)
Status	The status of the action: <ul style="list-style-type: none"> ➤ Pass when the action has been performed. ➤ Fail when the action failed.
Type	The type of action notification: Executable , URL , SNMP trap , OM , or Service Center .

Message Notifications Area

User interface elements are described below:

UI Element (A-Z)	Description
<Common report elements>	See "Common Report and Page Elements" in <i>Reports</i> .
Recipients	The names of the recipients who receive the notification that the alert has been triggered and that the alert scheme has been executed.

UI Element (A-Z)	Description
Status	The status of the message: <ul style="list-style-type: none">► Pass when the message has been sent.► Fail when the message has not been sent.
Type	The type of message notification: email, SMS message, or pager message.

Notification Messages Area

The Notification Messages area displays the type of message followed by the text of the message.

The text of the email messages has different formats, depending on the email format selected by the sender.

HTML is encoded in the report. The text of the email received by the recipient is decoded and is similar to the Pager message text. For details on the available formats, see "Actions Page" on page 361.

The area also includes a link to the CI Summary report for the SLA the alert was defined for and for the relevant time period. For example, if the alert was triggered for the 'Month' Tracking Period, the CI Summary report covers the 'Month to date' time period.

 **SLAs Dialog Box**

This dialog box enables you to select the SLAs to be included in an SLA Alerts report, for the duration of a Web session. The report provides information based on the selected SLAs.

To access this dialog box, click **SLAs** in the reports settings area in the SLA Alerts Report.



SLA Alerts Report

This report lists the alerts that were triggered during a specified time period. Service Level Management alerts proactively inform you of SLA status changes by sending alerts to predefined users.

The following is an example of the SLA Alerts report.

SLA Alerts					
Status	Time	Alert Name	SLA	Tracking Period	Alert Action
Breached	5/16/10 9:42 AM	eee	sla1	Month	Send E-mail to: avihay
Breached	5/16/10 9:42 AM	sss	sla1	Month	Send E-mail to: avihay
Breached	5/16/10 9:43 AM	eee	sla1	Month	Send E-mail to: avihay
Breached	5/16/10 9:43 AM	sss	sla1	Month	Send E-mail to: avihay

To access	Select Applications > Service Level Management > SLA Alerts .
See also	"How to Define an SLA Alert Scheme" on page 342

Report Settings Area



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

UI Element (A-Z)	Description
<Common report elements>	See "Common Report and Page Elements" in <i>Reports</i> .

UI Element (A-Z)	Description
SLAs	Click the SLAs link to open the SLAs Filter dialog box, where you select the SLAs to be included in an SLA Alerts report, for the duration of a Web session. The report provides information based on the selected SLAs. For details, see "SLAs Dialog Box" on page 518.
Tracking Period	Click the Tracking Period link to open the Tracking Periods dialog box where you select the tracking period. For details, see "Tracking Periods Dialog Box" on page 521.

Table Area

User interface elements are described below:

UI Element (A-Z)	Description
	<p>Details. Displays the details of the selected alert notification in the SLA Status Alert Notifications page. For details, see "SLA Status Alert Notifications" on page 515.</p> <p>If the button does not appear in the report, click the Reset the table columns' width  button and make the Details column visible.</p>
Alert Action	<p>The action that is triggered by the alert. For a long name, hold the pointer over the name to view it in full in a tooltip.</p> <p>Note: Open an incident in OM indicates that the alert opened an incident in OM when the alert was triggered and communication with OM was established. For details about establishing communication with OM, see "How to Configure BSM Alerts to Forward an Event When the Alert is Triggered" in <i>Solutions and Integrations</i>.</p>
Alert Name	The name of the alert.
SLA	The name of the SLA to which the alert is attached.

UI Element (A-Z)	Description
Status	The current status of the SLA. The status change (from previous status to current status) triggers the alert.
Time	The time and date when the status changed. The format is: dd/mm/yy hh:mm AM PM (<region>) - <+/- nbr hours>. Example: 5/20/10 8:59 AM (Eastern Daylight Time) - 0400
Tracking Period	The time periods selected during SLA creation. The tracking periods that you select here define which granularities are to be displayed in the alert.

Tracking Periods Dialog Box

This dialog box enables you to select the tracking period for which you can view data in the SLA Alerts report.

To access	Click Tracking Periods in the SLA Alerts Report.
Important information	Select one or more of the tracking periods: Hour, Day, Week, Month, Quarter, Year, or SLA Period . (The tracking periods that are listed are defined during SLA creation. For more information on SLA tracking periods, see "Tracking Range and Granularity in Service Level Management" in <i>Using Service Level Management</i> .)

Part III

Service Level Management Repositories

16

KPI Repository

This chapter includes:

Concepts

- KPI Repository Overview on page 526
- KPIs Based On Monetary Value on page 527

Tasks

- How to Customize a KPI on page 531

Reference

- List of Service Level Management KPIs on page 532
- KPI Repository User Interface on page 538

Concepts

KPI Repository Overview

The KPI Repository page displays the list of predefined and customized KPIs. Those KPIs are available throughout HP Business Service Management to determine how source data is imported. KPIs can be calculated based on other KPIs, HIs, or both. For details, see "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113.

The Service Level Management KPI Repository includes all of the KPIs that can be used in the Service Level Management application. For details, see "List of Service Level Management KPIs" on page 532.

Each KPI is assigned a default business rule (a business rule is built on business logic). For details, see "List of Service Level Management Business Rules" on page 557.

Note: Service Level Management and Service Health use two separate, independent sets of repositories. These repositories contain different KPIs and rules; changing KPIs or rules in Service Level Management has no effect on Service Health (and vice versa). For details on the Service Health repositories, see "KPI Repository" in *Using Service Health*.

KPIs Based On Monetary Value

The Business Process Insight and TransactionVision samples contain data on the count of instances for each measurement category. Where relevant, the samples also contain data on the monetary value of the instances (though monetary values are not always included).

Service Level Management provides HIs, KPIs, and rules that calculate status and business metrics based on the financial information included in the samples.

The following sections describe how to work with this data:

- "Count-Based or Value-Based Results" on page 527
- "Units Used for Value-Based KPIs" on page 529

Count-Based or Value-Based Results

Results calculated for Business Process Insight and TransactionVision HIs and their corresponding KPIs can be either count-based or value-based, depending on the rule used for the HIs. When the rule is count-based (the default for each KPI), the count values received in the samples are used for the calculations; when the rule is value-based, the monetary values received in the samples are used for the calculations.

To change an HI from count-based to value-based, change the rule to a suitable value-based rule and define the required objective thresholds.

The following KPIs can be either value-based or count-based:

For Business Process Insight data:

- Backlog
- Business Impact
- Throughput
- Value (This KPI is value-based only)

Note: The Value Status Percentage KPI also displays results based on monetary values; however, the corresponding HI for this KPI calculates a percentage based on a count of instances with monetary values at each threshold level, as sent by Business Process Insight.

For TransactionVision data:

- Backlog
- Delays
- Exceptions
- Failures
- Value (This KPI is value-based only)

Note: Explanations of these KPIs can be found in "List of Service Level Management KPIs" on page 532.

If you want to see both count-based and value-based versions of the KPI attached to the CI, then you need to clone the KPI template in the repositories to create a second version of the KPI. You can then attach both of the KPI versions to the CI.

If you want an HI to use a value-based rule by default, you must change the defined settings for the CI in the relevant assignment group. For details, see "How to Define a KPI or HI Assignment" on page 250.

Units Used for Value-Based KPIs

The Value KPI displays a monetary value result in the reports, and has a default currency unit of \$ (USD).

The Backlog KPI (for Business Process Insight and TransactionVision data) and the Throughput KPI (only for Business Process Insight data), when using a value-based rule, also display monetary value results in the reports. However there is no default currency unit defined for these KPIs.

Defining or changing the currency unit for these KPIs is done in the KPI Repository, by editing existing KPI templates or defining new ones, depending on your specific requirements (for details on editing and defining KPIs, see "How to Customize a KPI" on page 531).

To work with monetary values with these KPIs, you must consider the requirements for your Business Process Insight and/or TransactionVision data:

- If you require both count-based and value-based versions of the Backlog or Throughput KPIs, then you need to create two different versions of the KPI in the KPI Repository. You can then define a currency unit for the value-based version.
For example, you create a clone of Throughput and also edit the original. One is renamed Throughput-Values and has a defined \$ currency unit; the other is renamed Throughput-Count.
- If you have business processes or transactions using different currency units, then you need to define multiple versions of the KPIs, each with a different defined currency unit.
For example, you have business transactions in three different currencies. You create two clones of Value KPI and rename them Value-Euro and Value-Sterling, and define appropriate currency units for them. You then edit the Value KPI and rename it Value-USD (leaving the \$ currency unit defined).

- If you are working with both Business Process Insight and TransactionVision data in Service Level Management, you need to consider if changes to a KPI are relevant for both data types, or if you need to create separate KPI versions for each data type. For example, you create a clone of the Backlog KPI and also edit the original. One is renamed **Backlog-BPI Values** and has a defined currency unit; the other is renamed **Backlog-TV Count**, and has no unit defined.

Tip: If you decide to use a single KPI for multiple currencies, then you should use one of the status-based group rules for a parent CI with more than one currency amongst the child CIs.

Tasks

How to Customize a KPI

Both the Service Level Management and Service Health KPI repositories use the same functional mechanisms.

Instructions for customizing a KPI in the KPI repository can be found in the section "How to Customize a KPI Template in the Repository" in *Using Service Health*.

Reference



List of Service Level Management KPIs

This section provides information about the KPIs available in the Service Level Management KPI repository.

KPI (KPI #)	Description and Associated Rules
Application (263)	Service Level Management determines if application status results, received in EMS monitor samples for an HP Operations Manager system, are within the SLA objectives. This KPI is automatically assigned to an EMS Monitor CI that you add to an SLA.
Application Availability (101)	Measures availability of End User CIs (Applications, BTFs, and Business Transactions).
Application Performance (106)	Measures performance on End User CIs (Applications, BTFs, and Business Transactions).
Application Response Time (103)	Service Level Management measures the response time for Business Process Monitor transactions, Real User Monitor measurements, and SiteScope measurements.
Availability Six Sigma (104)	Service Level Management measures the Six Sigma availability of CIs and compares the Six Sigma values to the SLA objectives.
Average Outage Duration (212)	Service Level Management calculates the average outage duration, in seconds; that is, the total duration divided by the number of outages. The minimum value is 0 . A negative trend is assigned to this KPI, that is, the lower the average outage duration value, the better.

KPI (KPI #)	Description and Associated Rules
Backlog (612)	Backlog KPI for Business Process Insight Data Displays information on the backlogged instances of the business process, business activity or business process monitor, as measured by Business Process Insight. Note: This KPI does not have a predefined unit. If you are using the KPI with a value-based rule, you need to define a unit for the KPI.
	Backlog KPI for TransactionVision Data Displays information on the backlogged instances of the business transaction, as measured by TransactionVision.
Business Impact (604)	Displays information on the health of backlogged instances of the business process, as measured by Business Process Insight.
Business Performance (632)	Displays information on the response time for completed instances of the business process, business activity or business process duration monitor, as measured by Business Process Insight.
Business Throughput (634)	Displays information on the average hourly volume of completed instances of the business process, as measured by Business Process Insight.
Delays (611)	Displays information on the completed, delayed (late) instances of the business transaction, as measured by TransactionVision. A transaction is defined as late when its response time exceeds a defined threshold in TransactionVision.
Duration (605)	Displays information on the response time for completed instances of the business transaction, as measured by TransactionVision. The KPI is calculated only for completed transactions.
Duration Status Percentage (607)	Displays information on the percentage of completed instances of the business process that had a response time above a certain threshold. The data is measured by Business Process Insight.
Exceptions (609)	Displays information on completed instances of the business transaction that did not follow the expected flow path on the target machines, and are therefore classified as exceptions by TransactionVision.

KPI (KPI #)	Description and Associated Rules
Failures (610)	Displays information on the failed, completed instances of the business transaction, as measured by TransactionVision. A transaction is classified as "failed" when it does not match the attribute or pattern defined as failure in TransactionVision.
Legacy System (260)	Service Level Management determines if system status results, received in EMS monitor samples for an HP Operations Manager system, are within the SLA objectives. This KPI is automatically assigned to an EMS Monitor CI that you add to an SLA (when Automatically define default KPIs for new CIs is selected).
MTBF (Mean Time Between Failures) (3601)	The MTBF KPI indicates the duration of time when there were no open incidents for the service CI. The value is calculated from the average time between incidents, in seconds. Note: When this KPI is included in an SLA, any forecast status calculations for the SLA return inaccurate results. For more information and use case examples, see "Integration with HP Service Manager" on page 325.
MTBSI (Mean Time Between System Incidents) (3602)	The MTBSI KPI indicates the average duration of time, in seconds, between incidents—from the open time of one incident to the open time of the next incident. For more information and use case examples, see "Integration with HP Service Manager" on page 325.
MTTR (Mean Time to Repair) (3600)	The MTTR KPI indicates the percentage of incidents that were repaired within a defined time period, and calculates status based on comparison with a percentage threshold. Repair time is based on the duration of time between two incident statuses (by default, Open and Closed). For more information and use case examples, see "Integration with HP Service Manager" on page 325.
Network Availability (261)	Displays information relating to availability measurements of network devices.

KPI (KPI #)	Description and Associated Rules
Network Performance (264)	Displays information relating to performance measurements of network devices.
Number of Outages (210)	Service Level Management displays the number of outages that occurred during the tracking period. The minimum value is 0 . A negative trend is assigned to this KPI, that is, the lower the number of outages, the better. Note: When this KPI is included in an SLA, any forecast status calculations for the SLA yield inaccurate results.
Outage Duration (211)	Service Level Management calculates the duration of the outages during the tracking period, in minutes. The minimum value is 0 . A negative trend is assigned to this KPI, that is, the shorter the duration of the outage, the better. Note: When this KPI is included in an SLA, any forecast status calculations for the SLA yield inaccurate results.
Outages (200)	This KPI is used by Service Level Management to calculate the outages for a CI included in an SLA. You define the business rule and associated parameters for the Outages KPI in the Configure SLA Indicators Page of the SLA wizard.
Performance Six Sigma (105)	Service Level Management calculates the Six Sigma value and compares it with the Six Sigma objective.
PNR (Point of No Return) (214)	Note: This KPI is for internal HP use only, and should not be modified. The PNR (Point of No Return) KPI is used by HP Business Service Management for internal calculations needed to display Service Level Management data in Service Health. For details about the PNR KPI, see "Enabling PNR (Point of No Return) Display within Service Health" on page 552.
Security (262)	Service Level Management determines if security status results, received in EMS monitor samples for an HP Operations Manager system, are within the SLA objectives.
SLM Month Forecast (231)	Note: This KPI is for internal HP use only and should not be modified. The SLM Month Forecast KPI is used by HP Business Service Management for the internal calculations needed to display the end-of-month forecast status.

KPI (KPI #)	Description and Associated Rules
SLM Quarter Forecast (232)	Note: This KPI is for internal HP use only and should not be modified. The SLM Quarter Forecast KPI is used by HP Business Service Management for the internal calculations needed to display the end-of-quarter forecast status.
SLM Status (220)	Note: This KPI is for internal HP use only and should not be modified. The SLM Status KPI is used by HP Business Service Management for internal calculations needed to display the Status Snapshot. For details, see "Status Snapshot Report" on page 499.
SLM Week Forecast (230)	Note: This KPI is for internal HP use only and should not be modified. The SLM Week Forecast KPI is used by HP Business Service Management for the internal calculations needed to display the end-of-week forecast status.
SLM Year Forecast (233)	Note: This KPI is for internal HP use only and should not be modified. The SLM Year Forecast KPI is used by HP Business Service Management for the internal calculations needed to display the end-of-year forecast status.
Software Availability (107)	Displays information relating to availability of software element CIs (for example, databases, J2EE servers, and web servers).
Software Performance (108)	Displays information relating to performance on software element CIs (for example, databases, J2EE servers, and web servers).
System Availability (100)	Displays information relating to availability of system element CIs, such as servers and disks.
System Performance (102)	Displays information relating to performance measurements of monitored system element CIs, such as servers and disks.

KPI (KPI #)	Description and Associated Rules
Throughput (115)	Throughput KPI for SOA Diagnostics Data The Throughput KPI is used to show the load on a Web service and represents the number of calls per minute. For example, the throughput of the transferMoney service is 5 calls per minute. Throughput is calculated from the total number of Web service calls measured by HP Diagnostics and divided by a time period (defined in minutes).
	Throughput KPI for TransactionVision Data Displays information on the average hourly volume of completed instances of the business transaction, as measured by TransactionVision.
Time Between Outages (213)	Service Level Management calculates the mean time between outages in seconds. The minimum value is 0. A positive trend is assigned to this KPI, that is, the higher the time between outages, the better.
User Availability (110)	Service Level Management calculates the availability percentages of end user measurements or monitors and compares them to the SLA objectives.
User Performance (111)	This KPI displays information related to end-user performance.
Value (606)	Value KPI for Business Process Insight Data Displays information on the monetary value of the completed instances of the business process, business activity or business process value monitor, as measured by Business Process Insight.
	Value KPI for TransactionVision Data Displays information on the average monetary value of the completed business transaction instances, as measured by TransactionVision.
Value Status Percentage (608)	Displays information on the percentage of completed instances of the business process that had a value above a certain threshold. The data is measured by Business Process Insight.



KPI Repository User Interface

This section includes:

- KPIs Repository Page on page 538
- New KPI/Edit KPI Dialog Box on page 540
- Restore Defaults Dialog Box on page 542



KPIs Repository Page











This page displays the list of KPIs available in Service Level Management to determine how source data is imported.

The KPI repository enables an advanced user to modify existing KPIs and create new ones.

To modify a KPI, select the KPI and click the **Edit** button, or right-click the KPI and access the **Edit** menu command. For details, see "New KPI/Edit KPI Dialog Box" on page 540.

To access	Select Admin > Service Level Management > Repositories > KPIs .
Important information	For a list of predefined KPIs, their descriptions, and the rules attached to the KPIs, see "List of Service Level Management KPIs" on page 532.
Relevant tasks	"How to Customize a KPI" on page 531

User interface elements are described below:

UI Element (A-Z)	Description
	New KPI. Click to create a new KPI.
	Clone KPI. Select a KPI and click the Clone KPI button to create a new KPI using the selected KPI as a template. The original KPI does not change. The new KPI's type is Custom.
	Delete KPI. Click to delete one or more selected Custom KPI. If you delete a Predefined (Customized) KPI, it is restored to default. Predefined KPIs cannot be deleted.
	Edit KPI. Click to edit the details of a selected KPI.
	Restore to Default. Select an edited KPI whose Type is Predefined (Customized), and click to restore it to its original settings.
	Refresh. Click to refresh the page.
	Help. Click to display help on predefined KPIs.
	Export to Excel. Click to export the table to an Excel file.
	Export to PDF. Click to export the table to a PDF file.
	Change visible columns. Opens the Choose Columns to Display dialog box, where you select the columns you want to display in the table. By default, the ID column which contains internal KPI ID numbers is not displayed.

UI Element (A-Z)	Description
Default Group Rule	This specifies the group rule that is defined by default for this KPI.
Domain	The domain which contains this KPI. Domains are groups of KPIs which monitor similar functions (for example Application or Network); this enables you to filter KPIs according to these groupings.
ID	The internal ID number used to identify the KPI.
Name	The name of the KPI.
Type	Indicates one of the following KPI types: <ul style="list-style-type: none">➤ Custom. New or cloned KPIs.➤ Predefined. Out-of-the-box KPIs that have not been modified.➤ Predefined (Customized). Out-of-the-box KPIs that have been edited. You can restore such a KPI to its original settings using the Restore to Default button.



New KPI/Edit KPI Dialog Box





This dialog box enables you to define KPI details.

To access	In the KPI Repository page, click the New KPI button, or select a KPI and click the Edit KPI button.
Important information	A list of the KPIs, their descriptions, and the rules attached to the KPIs is available in "List of Service Level Management KPIs" on page 532.
Relevant tasks	"How to Customize a KPI" on page 531

Main Settings Area

This area enables you to define the KPI name, default group rule, and which rules can be applied to the KPI.

User interface elements are described below:

UI Element (A-Z)	Description
	Click this button to move all rules to the Selected Rules list.
	Select a rule and click this button to add it to the Selected Rules list. Select multiple rules by holding down the CTRL key.
	To remove a rule from the list of applicable rules, select it from the Selected Rules list and click this button.
	Click this button to remove all rules from the Selected Rules list.
Applicable Rules	<p>Define which rules can be applied for this KPI, using the two lists:</p> <ul style="list-style-type: none"> ► Unselected Rules. The list of rules which are not applicable to the KPI. ► Selected Rules. The list of rule which can be applied to the KPI. <p>Use the arrow buttons to move rules from one list to the other.</p> <p>For details on the rule applicable for each KPI by default, see "List of Service Level Management KPIs" on page 532.</p>
Default Group Rule	<p>Select the default KPI calculation rule. This list displays all of the available group rules for the applicable rule you selected in the Applicable Rules list.</p> <p>When a KPI is defined for a CI, it is usually added to a parent CI. The parent CI uses the default group rule to calculate the KPI status. For the list of rules, see "List of Service Level Management Business Rules" on page 557.</p>
Domain	<p>Define the domain to which this KPI is assigned.</p> <p>Either select an existing domain, or enter a new domain name for this KPI.</p>
Name	The name of the KPI as it is displayed in the UI.

Advanced Settings Area

UI Element (A-Z)	Description
The KPI is Critical if...	Define the trend for the KPI, as described in "KPI Trend and History Calculation" in <i>Using Service Health</i> . Select: <ul style="list-style-type: none">➤ values are smaller. When the values are small, the KPI is critical.➤ no difference. When the values are not different, the KPI is critical.➤ values are bigger. When the values are large, the KPI is critical.
Units	Enter the type of unit applicable to the rule results displayed in the KPI.

 Restore Defaults Dialog Box

This dialog box enables you to restore predefined KPI settings, for KPIs whose type is Predefined (Customized).

To access	In the Edit KPI dialog box, click the Restore Defaults button.
Relevant tasks	"How to Customize a KPI" on page 531

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

UI Element (A-Z)	Description
<Modified fields>	The KPI definition fields that have been modified are automatically selected. Select the fields which you want restored to default, and click Save .

17

Indicators Repository

This chapter includes:

Concepts

- Indicators Repository Overview on page 544
- The Indicators Repository in SLM on page 544

Concepts

Indicators Repository Overview

The indicators repository contains templates for the event type indicators (ETIs) and health indicators (HIs) associated with each of the CI types (CITs) in your system. These templates include the names of the indicators that can be assigned to a CI based on its CIT, possible states and statuses for each indicator, as well as other details.

Advanced users can modify these ETI or HI templates, and add new indicator templates to CITs, to customize how this information is calculated and presented in BSM.

Within the indicators repository, when you define an HI template you can specify that it will be used by Service Health, by Service Level Management, or by both applications. However, both applications share the same repository, and when you access the indicators repository from either application the same information is displayed.

For details that are specific to SLM, see "The Indicators Repository in SLM" on page 544.

For information on working with the indicators repository, refer to the following sections in *Using Service Health*:

- "How to Create or Edit an ETI or HI Template in the Indicator Repository"
- "Indicator Repository User Interface"

The Indicators Repository in SLM

Although the indicators repository is shared by both Service Health and SLM, there are differences in how it is used by these applications, as described in the following sections.

HI State and Status

Although the repository shows possible HI states (for example, very high or very low), SLM performs calculations based on HI status and not HI state. The repository maps each state to a status, using the standard Service Health statuses: **Normal**, **Warning**, and so on. SLM automatically translates these statuses to the corresponding SLM statuses: **Exceeded**, **Met**, and so on.

Calculations Based on HI Status Change or Metric Data

Unlike Service Health, where HI status and value is calculated in real-time based on sample data, SLM calculations are retroactive. For event-based HIs, the Profile database keeps a record of each HI status change, and SLM calculates the HIs based on these recorded status changes. Data regarding metric-based HIs is also stored in the Profile database, and this data is used to calculate metric-based HI values retroactively.

SLM Elements in the CI Types Hierarchy

The indicators repository enables you to select a CIT, and to define the ETIs and HIs which can be assigned to the CIT. In SLM, in addition to typical CITs, the **CI Types** pane also contains the following elements unique to SLM: Service Level Agreement, and breakdown CIs (such as BPM Application from Location).

You can select one of these from the **SLM Element** list in order to define which ETIs and HIs can be assigned to the selected element. For details on breakdown CIs, see "Breakdown by Location for BPM CIs" on page 48.

18

Business Rule Repository

This chapter includes:

Concepts

- Service Level Management Business Rule Repository - Overview on page 548
- Time-Based and Sample-Based Rule Calculation on page 551
- Enabling PNR (Point of No Return) Display within Service Health on page 552

Tasks

- How to Customize a Business Rule Template on page 554
- How to Enable SiteScope Measurement Type Filtering on page 554
- How to Display Advanced Rule Parameters on page 556

Reference

- List of Service Level Management Business Rules on page 557
- Additional Examples of Business Rule Usage on page 628
- Example of the Value Chain Rule on page 629
- Examples of the EMS Events Availability Rule on page 629
- Example of the HI Availability Rule on page 631
- Examples of the SiteScope Monitor Rule on page 632
- List of Service Level Management Business Rule Parameters on page 635
- Business Rules User Interface on page 642

Concepts

Service Level Management Business Rule Repository - Overview

A business rule is the basic object that receives events (either samples or application messages), deals with processing the data, and holds the process results. Some business rules are based on sample data, and are used to calculate health indicators (HIs). Other rules calculate key performance indicators (KPIs), based on the status or value of HIs and of other KPIs.

The Business Rule Repository contains templates for the rules available throughout Service Level Management. These rule templates are implemented by Service Level Management, so that when the assignment mechanism assigns a specific HI or KPI to a CI in an SLA, the KPI or HI is calculated based on the rule template in the repository. For details, see "Assignment and Propagation Overview" on page 234.

During the creation of an SLA, you can accept the default business rule, or you can define custom rules.

The Business Rule Repository page displays the list of rules available throughout Service Level Management. Advanced users can modify existing rules and create new rules to customize how information is presented.

Within the Business Rule Repository, rules are categorized as follows:

- **Predefined.** Out-of-the-box rules.
- **Predefined (Customized).** Out-of-the-box rules that have been edited.
- **Custom.** New or cloned rules.

For a list of the rules defined for Service Level Management, see "List of Service Level Management Business Rules" on page 557.

For user interface details, see "Business Rules Repository Page" on page 643.

The Rules API can be used to create new rules; for details see "SLM Rules API" on page 651.

Note: Service Level Management and Service Health use two separate, independent sets of repositories. These repositories contain different KPIs and rules; changing KPIs or rules in Service Level Management has no effect on Service Health (and vice versa). For details on the Service Health repositories, see "Business Rule Repository" in *Using Service Health*.

HI and KPI Rules

Business rules consist of the following types:

- **HI business rule.** Measures actual data sources to calculate HI status and value.
- **KPI business rule.** Performs calculations based on data received from other KPIs or HIs.

Each HI and KPI has an associated business rule that defines the logic to be performed (by the Business Logic Engine) to calculate the measurement for the HI or KPI. The properties and objectives assigned to the indicator depend on the selected rule.

The input to a rule can be raw data (for example a Business Process Monitor transaction availability) or calculated data from other rules (for example, an application's availability is the average availability of its children).

HIs are calculated using data from samples, while KPIs are calculated using the values of HIs, and other KPIs. For each KPI, you can define whether it uses HI values, KPI values, or both.

For further details on these two types of rules, see "Health Indicator and KPI Calculation Rules" in *Using Service Health*.

Rule Parameters

Each rule's parameters are used to define input for the rule. The values used for the parameters can be fixed values (defined within the parameter definition) or referenced values taken from the samples.

The rule parameters are defined in the Business Rule Repository, as part of each rule definition. For a list of rule parameters, see "List of Service Level Management Business Rule Parameters" on page 635.

Depending on the type of rule, some rule parameters may be defined in KPI assignments. The values set for these parameters override the definitions in the Business Rule Repository.

Downtime

During downtime, both the samples and the downtime duration are disregarded in rule calculation.

For example, suppose a downtime is defined for a CI between 8:30-9:00. Between 8:00-9:00, 4 availability samples are received: 8:00 - OK; 8:10 - not OK; 8:30 - not OK; 8:45 - not OK.



The samples at 8:30 and 8:45, as well as the duration of the downtime, are not included in the calculation. The calculation is therefore as follows:

- If the rule is **time-based**, there are 10 minutes of positive samples out of total of 30 minutes, giving a result of 33.33% availability for the hour.
- If the rule is **sample-based**, there is 1 positive sample out of a total of 2 samples, giving a result of 50% availability for the hour.

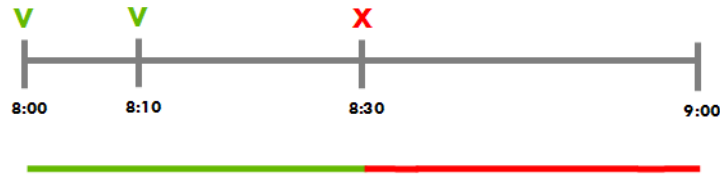
Time-Based and Sample-Based Rule Calculation

SLM calculation rules can be time-based, or sample-based. Time-based rules calculate results by sample duration, while sample-based rules calculate results per sample.

The following examples illustrate the difference between these calculation methods.

BPM Average Availability

Suppose we are monitoring BPM transaction availability, and during 8:00-9:00 three samples are received: 8:00 - available; 8:10 - available; 8:30 - not available.

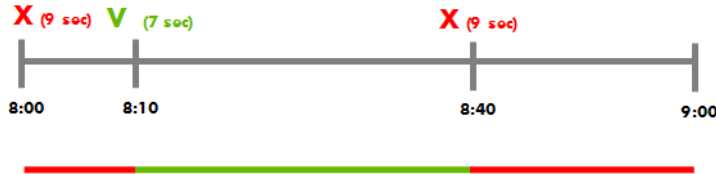


The BPM Average Availability calculation rule has a rule parameter called **Calculation Method**, where you can define whether the rule will be time-based or sample-based.

- If the rule is **time-based**, in the above example the transaction is available for 30 minutes out of 60 minutes, giving a result of 50% availability.
- If the rule is **sample-based**, during the monitored hour there are 2 OK samples out of a total of 3 samples, giving a result of 66.66% availability.

BPM Percentile

Suppose the acceptable response time threshold is set in EUM administration to 8 seconds, and during 8:00-9:00 three response time samples are received: 8:00 - 9 seconds (not OK); 8:10 - 7 seconds (OK); 8:40 - 9 seconds (not OK).



The rule has a **Calculation Method** rule parameter to define whether the rule will be time-based or sample-based.

- If the rule is **time-based**, in the above example the response time is acceptable for 30 minutes out of 60 minutes, giving a result of 50%.
- If the rule is **sample-based**, during the monitored hour there is one acceptable sample out of a total of 3 samples, giving a result of 66.66%.

Enabling PNR (Point of No Return) Display within Service Health

Service Level Management data can be displayed within Service Health using the Service Health PNR (Point of No Return) KPI, which monitors how well SLA objectives are being met.

When the Service Health PNR KPI is defined for a CI, a bar is displayed in Service Health indicating how much more time the CI can be unavailable (based on a specified SLM KPI), before the SLA is in breach of contract. For details on configuring the PNR KPI within Service Health, see "How to Attach a PNR KPI to a CI" in *Using Service Health*.

The PNR KPI in Service Health can calculate PNR values for any Service Level Management KPIs which fill all of the following conditions:

- 1 The rule assigned to the Service Level Management KPI must be enabled to send PNR data to Service Health. To enable this, the rule must have the advanced rule parameter **Is PNR Feeder** set to **true**.
- 2 The rule must be a time-based rule.
- 3 The rule must calculate values using a range of 0-100 (usually measuring percentage of availability).

The following rules are enabled to send PNR data to Service Health by default:

- API rules: "API Group and Sibling Rule" on page 558, "API Sample Rule" on page 559, and "API Duration-Based Sample Rule" on page 557
- "BPM Average Availability" on page 577
- "Group Average Value" on page 587
- "SiteScope Monitor Rule" on page 607

Note: After adding the PNR KPI to a view in Service Health, you must re-calculate the relevant SLA in order for the KPI to receive its status, or wait for the next SLA calculation.

Tasks

How to Customize a Business Rule Template

Both the Service Level Management and Service Health Business Rule repositories use the same functional mechanisms.

Instructions for customizing a rule template in the repository can be found in the section "How to Customize a Business Rule Template in the Repository" in *Using Service Health*.

Note: When creating or editing a rule, the **Advanced Rule Settings** area enables you to specify the CITs for which the rule is applicable. In SLM, in addition to typical CITs, the **CI Types** pane also contains the following elements unique to SLM: Service Level Agreement, and breakdown CIs (such as BPM Application from Location). You can select these from the **SLM Element** list in order to make the rule applicable to the selected element. For details on breakdown CIs, see "Breakdown by Location for BPM CIs" on page 48.

How to Enable SiteScope Measurement Type Filtering

Status for a CI that is monitored by SiteScope is calculated from various HIs. Each HI is calculated from various measurements. For example, the Disk Space HI receives data from two measurements of the SiteScope Disk monitor: percent full, and MB free.

The following rules calculate values for a SiteScope HI based on a single measurement type:

- "SiteScope Average Value" on page 605
- "SiteScope Max. Value" on page 605

- "SiteScope Min. Value" on page 606
- "SiteScope Percentile" on page 610
- "SiteScope Six Sigma Performance" on page 608 (using the Performance Six Sigma KPI)

Two other rules can also use filtering by measurement type: "SiteScope Monitor Rule" on page 607, and "SiteScope Monitor Six Sigma" on page 607. If the measurement type field is left blank, these rules do not use filtering.

To define measurement type for monitoring:

- 1 Within System Availability Management, select the relevant SiteScope monitor. The names of the measurement types used to calculate the CI appear within the **Name** column. Write down the name of the measurement type you want to filter.

The screenshot shows the SiteScope Disk Space Monitor interface. On the left is a tree view of SiteScope monitors, with 'DS Monitor' selected. On the right is a table titled 'SiteScope Disk Space Monitor - "DS Monitor"'. The table has columns: Name, Status, Type, Target, Sum..., Upda..., and Desc. The 'Name' column lists 'Selected node', 'DS Monitor', 'Counters (2 out of 2)', 'MB free', and 'percent full'. The 'Status' column shows icons for each item. The 'Type' column shows 'Disk ...' for 'DS Monitor'. The 'Target' column shows 'SiteS...' for 'DS Monitor'. The 'Sum...' column shows '25% f...' for 'DS Monitor'. The 'Upda...' column shows '6/28/...' for 'DS Monitor'. The 'Desc' column is empty for all items.

Name	Status	Type	Target	Sum...	Upda...	Desc
Selected node						
DS Monitor		Disk ...	SiteS...	25% f...	6/28/...	
Counters (2 out of 2)						
MB free				3088...		
percent full				25%		

- 2 Within the **Admin > Service Level Management > Agreements Manager** page, open the **SLA Wizard**. If the HI has not been assigned automatically, add the relevant SiteScope HI to the CI, and assign a SiteScope performance rule which filters by measurement type.

- 3** In the **Measurement** type rule parameter field, enter the name that appears within System Availability Management (this is not case sensitive).

Health Indicator

Health Indicator:

Business Rule:

Health Indicator Properties

Business Rule Parameters

Trimming condition: (String)

No data timeout: seconds

Measurement type: (String)

Calculation method: ☐ Sample Based ☒ Time Based

- 4** Define objectives as required.

How to Display Advanced Rule Parameters

Some Service Level Management Business Rule parameters are intended for users with an advanced knowledge of Service Level Management and, by default, are hidden from view. If you want these advanced parameters to be displayed, change the default setting.

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

- Select **Applications**.
- Select **Service Level Management**.
- Locate the **Display advanced business logic parameters** entry, and change the value to **True**.

Reference

List of Service Level Management Business Rules

The available rules are as follows:

Rule (Rule #)	Description	Parameters
API Duration-Based Sample Rule (505)	<p>Use this to create a customized rule using the Rules API, to calculate HIs based on data taken from sample fields, using the sample's value and duration within the rule calculation.</p> <p>For details on how the rule works, see "API Duration-Based Sample Rule" on page 667.</p>	<p>"Sample Fields" on page 640</p> <p>"KPI Calculation Script" on page 638</p> <p>"Aggregated Calculation Script" on page 635</p> <p>"Sample Filter Script" on page 641</p> <p>"Sample and Duration Filter Script" on page 640</p> <p>"No data timeout" on page 639</p> <p>"Rule Template Setting Key" on page 640</p> <p>"isGroovyRuleType" on page 638</p> <p>"Is PNR feeder" on page 638</p>

Rule (Rule #)	Description	Parameters
API Group and Sibling Rule (503)	<p>Use this to create a customized rule using the Rules API, to calculate HIs or KPIs based on the values of sibling indicators, or of indicators on child CIs.</p> <p>For details on how the rule works, see "API Group and Sibling Rule" on page 656.</p>	<p>"KPI Calculation Script" on page 638</p> <p>"Rule Template Setting Key" on page 640</p> <p>"isGroovyRuleType" on page 638</p> <p>"Is PNR feeder" on page 638</p>
API Outage by Samples Rule (506)	<p>Use this to create an Outage rule using the Rules API, based on sample fields.</p> <p>For details on how the rule works, see "API Outage by Samples Rule" on page 673.</p>	<p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p> <p>"Max duration" on page 638</p> <p>"Minimum number of failures" on page 639</p> <p>"Sample Fields" on page 640</p> <p>"Outage Calculation Script" on page 639</p> <p>"Sample Filter Script" on page 641</p> <p>"Rule Template Setting Key" on page 640</p> <p>"isGroovyRuleType" on page 638</p> <p>"requires selector" on page 640</p>
















Rule (Rule #)	Description	Parameters
API Sample Rule (504)	<p>Use this to create a customized rule using the Rules API, to calculate HIs based on data received from samples.</p> <p>For details on how the rule works, see "API Sample Rule" on page 664.</p>	<p>"Sample Fields" on page 640</p> <p>"KPI Calculation Script" on page 638</p> <p>"Aggregated Calculation Script" on page 635</p> <p>"Sample Filter Script" on page 641</p> <p>"Rule Template Setting Key" on page 640</p> <p>"isGroovyRuleType" on page 638</p> <p>"Is PNR feeder" on page 638</p>
















Rule (Rule #)	Description	Parameters
API Simplified Average Rule (507)	<p>Use this to create a customized rule using the Rules API, to calculate HIs based on data received from samples.</p> <p>The rule calculates an average of sample field values, using two rule parameters: Enumerator, and Denomination.</p> <p>➤ In the Enumerator field, enter the name of the sample field you want to use in the calculation in the following format: sample.<field name>.</p> <p>To calculate the average value of the sample field dValue, type sample.dValue in the Enumerator.</p> <p>The rule takes the values of this field from the samples that come in during the calculation cycle, and calculates their average. This average becomes the value of the health indicator for the cycle.</p> <p>➤ You can use the Denomination area to perform actions on the above value; the number or value you enter in this area is used to divide the Enumerator result.</p> <p>For example, if you enter sample.dValue in the Enumerator, and 2 in the Denomination, the average of the dValue fields on the samples is divided by two, and the health indicator value is half the average of the sample fields.</p> <p>For further details, see "API Simplified Average Rules" on page 655.</p>	<p>"Enumerator" on page 637</p> <p>"Denomination" on page 636</p>

Rule (Rule #)	Description	Parameters
API Simplified Duration-Based Average Rule (508)	<p>Use this to create a customized rule using the Rules API, to calculate HIs based on data received from samples.</p> <p>The rule calculates an average of sample field values, taking the duration values from the samples themselves.</p> <p>In the Value field, enter the name of the sample field you want to use in the calculation in the following format: Sample.<field name>.</p> <p>The rule takes the durations from the samples and calculates the average of sample field value, divided by their durations.</p> <p>For example, if the value of the specified field was 10 for 40 minutes and 5 for 20 minutes, the rule calculates $(10 \times 40) + (5 \times 2) / 60 = 8.33$. The health indicator's average value for this hour will be 8.33.</p> <p>For further details, see "API Simplified Average Rules" on page 655.</p>	"Value" on page 642

Rule (Rule #)	Description	Parameters
Application Quality (443)	<p>Calculates status for an Application KPI attached to an EMS Monitor CI (monitoring an HP Operations Manager system).</p> <p>SiteScope monitors for the HP Operations Manager system (corresponding to EMS Monitor CIs) send status change event data to Service Level Management. The samples include a severity value for Application status in the monitored Operations Manager application. If this value is less than the value defined in the rule's Severity failure value parameter, then Application severity is considered acceptable.</p> <p>The rule calculates the percentage of samples with acceptable severity level during each calculation period, and compares the percentage with SLA objective targets to determine status for the Application KPI.</p> <p>Example:</p> <p>Service Level Management checks the severity levels for the Application field, contained in the incoming samples for an EMS Monitor CI, Server1. The values received are 1, 3, 2, 3, 2.</p> <p>The values are compared with the value defined in the Severity failure value, which is set as 3. Application severity is therefore considered to be acceptable in 60% of the samples.</p> <p>Server1 is attached to SLA_factory, where the objective threshold for the Application KPI is set as Exceeded > 90%, else Failed. Application severity for Server1 is below this percentage, so status for the KPI is defined as Failed (red).</p>	<p>Note: The parameters for this rule can be modified only in the Service Level Management Business Rule repository; they cannot be modified for an individual KPI defined within an SLA.</p> <p>"Dimension name" on page 637</p> <p>"Severity failure value" on page 641</p> <p>Note: These parameters are hidden. For details, see "How to Display Advanced Rule Parameters" on page 556.</p>

Rule (Rule #)	Description	Parameters
<p>Average Outage Duration (332)</p>	<p>Service Level Management calculates the average outage duration during a specified calendar, by calculating the total outage duration divided by the number of outages.</p> <p>This rule performs calculations by taking the results (for the relevant calendar) of the Outages KPI and rule defined for the CI in the SLA Wizard. This KPI determines the number of outages for the CI. See "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120.</p> <p>Service Level Management calculates the average outage duration on a daily basis (24 hours), and takes into account only the outages that occur in the specific calendar. For example, if the calendar is Business Hours (that is, 9:00 AM to 5:00 PM), then outages that occur at 3:00 AM are not considered.</p> <p>The outages used in the calculation are only those outages that end during the tracking period.</p> <p>This is a KPI calculation rule that uses results of sibling KPIs. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, during a Business Hours calendar three outages occur, with durations of 30, 180, and 30 minutes. The number of outages is 3.</p> <p>Average Outage Duration = $(30+180+30)/3 = 240/3 = 80$ minutes = 4800 seconds.</p> <p>The status of the Average Outage Duration KPI for the CI is set based on this value, and the thresholds set for the KPI.</p>	<p>No parameters</p>

Rule (Rule #)	Description	Parameters																									
Best Child (Max.) (291)	<p>The rule returns the highest value held by any of the HIs and KPIs used in the calculation.</p> <p>For example, when calculating the best status result for the Availability KPI, the child with the highest availability is best (where 100% is the best availability and 0% is the worst).</p> <p>Example:</p> <p>During SLA creation, you set objectives for an Availability KPI:</p> <div><table><tr><td></td><td>Exceeded</td><td>></td><td>98.0</td><td>%</td></tr><tr><td></td><td>Met</td><td>></td><td>97.5</td><td>%</td></tr><tr><td></td><td>Minor Breached</td><td>></td><td>90.0</td><td>%</td></tr><tr><td></td><td>Breached</td><td>></td><td>85.0</td><td>%</td></tr><tr><td></td><td>Failed</td><td>Otherwise</td><td></td><td></td></tr></table></div> <p>A Group CI with attached Availability KPI has three children, CI1, CI2, and CI3, whose Availability KPIs have following values: 95%, 97.6%, 96.3%. At report generation time, the rule returns the highest value (97.6%), and gives the SLA a Met status (the status color is olive).</p>		Exceeded	>	98.0	%		Met	>	97.5	%		Minor Breached	>	90.0	%		Breached	>	85.0	%		Failed	Otherwise			<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p>
	Exceeded	>	98.0	%																							
	Met	>	97.5	%																							
	Minor Breached	>	90.0	%																							
	Breached	>	85.0	%																							
	Failed	Otherwise																									

Rule (Rule #)	Description	Parameters																									
Best Child (Min.) (292)	<p>The rule returns the lowest value held by any of the HIs and KPIs used in the calculation.</p> <p>For example, when calculating the best child result for the Response Time KPI, the child with the shortest response time is best.</p> <p>Example:</p> <p>During SLA creation, you set objectives for a Response Time KPI:</p> <div><table><tr><td></td><td>Exceeded</td><td><</td><td>7.0</td><td>seconds</td></tr><tr><td></td><td>Met</td><td><</td><td>8.0</td><td>seconds</td></tr><tr><td></td><td>Minor Breached</td><td><</td><td>9.0</td><td>seconds</td></tr><tr><td></td><td>Breached</td><td><</td><td>10.0</td><td>seconds</td></tr><tr><td></td><td>Failed</td><td>Otherwise</td><td></td><td></td></tr></table></div> <p>The Group CI with attached Response Time KPI has three children, CI1, CI2, and CI3, whose Response Time KPIs have the following values: 10 seconds, 12 seconds, 8.5 seconds. At report generation time, the rule returns the lowest value (8.5 seconds), and gives the SLA a Minor Breached status (the color is yellow).</p>		Exceeded	<	7.0	seconds		Met	<	8.0	seconds		Minor Breached	<	9.0	seconds		Breached	<	10.0	seconds		Failed	Otherwise			<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p>
	Exceeded	<	7.0	seconds																							
	Met	<	8.0	seconds																							
	Minor Breached	<	9.0	seconds																							
	Breached	<	10.0	seconds																							
	Failed	Otherwise																									

Rule (Rule #)	Description	Parameters
BPI Average Backlog (Count-based) (3706)	<p>Calculates the average number (over time) of backlogged instances for a business process, business activity or business process monitor, based on samples received from Business Process Insight. The calculation is time-based (for details, see "Sample-Based and Time-Based Sampling" in <i>Using Service Health</i>).</p> <p>Example 1:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business process:</p> <p>Sample 1 at 10:00 - 100 backlogged instances Sample 2 at 10:15 - 50 backlogged instances Sample 3 at 10:40 - 100 backlogged instances Sample 4 at 10:50 - 0 backlogged instances</p> <p>Calculation</p> <p>The result received in a sample is considered the value for the time period until the next sample arrives:</p> $(100*15 + 50*25 + 100*10 + 0*10) / (15+25+10+10) = 62.5$ <p>Example 2:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business process:</p> <p>(10:00–10:15 - no data) Sample 1 at 10:15 - 100 backlogged instances Sample 2 at 10:30 - 50 backlogged instances Sample 3 at 10:45 - 100 backlogged instances</p> <p>Calculation</p> <p>The no data period is excluded from the calculation:</p> $(100*15 + 50*15 + 100*15) / (15+15+15) = 83.333333$	"No data timeout" on page 639

Rule (Rule #)	Description	Parameters
BPI Average Backlog (Value-based) (3707)	<p>Calculates the average monetary value (over time) for backlogged instances of a business process, business activity or business process monitor, based on values received in the samples from Business Process Insight. The calculation is time-based (for details, see "Sample-Based and Time-Based Sampling" in <i>Using Service Health</i>).</p> <p>Example 1:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business process:</p> <p>Sample 1 at 10:00 - Value of backlogged instances = \$100 Sample 2 at 10:15 - Value of backlogged instances = \$50 Sample 3 at 10:40 - Value of backlogged instances = \$100 Sample 4 at 10:50 - Value of backlogged instances = \$0</p> <p>Calculation</p> <p>The result received in a sample is considered the value for the time period until the next sample arrives:</p> $(100*15 + 50*25 + 100*10 + 0*10) / (15+25+10+10) = \62.5 <p>Example 2:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business process:</p> <p>(10:00–10:15 - no data) Sample 1 at 10:15 - Value of backlogged instances = \$100 Sample 2 at 10:30 - Value of backlogged instances = \$50 Sample 3 at 10:45: Value of backlogged instances = \$100</p> <p>Calculation</p> <p>The no data period is excluded from the calculation:</p> $(100*15 + 50*15 + 100*15) / (15+15+15) = \83.333333	<p>"No data timeout" on page 639</p>

Rule (Rule #)	Description	Parameters
BPI Average Duration (3708)	Calculates the average time taken by completed instances of a business process, business activity or business process duration monitor, based on the values received in the samples from Business Process Insight. Results are given in seconds.	"No data timeout" on page 639
BPI Business Impact Average Status (Count-based) (3700)	<p>Calculates the average percentage (over time) of backlogged business process instances that have a status equal to, or higher than, the Passed status parameter. The calculation is based on the counts received in the samples from Business Process Insight, and uses weighting to take into account the actual number of non-healthy instances.</p> <p>The Passed status parameter defines one of the health statuses used in Business Process Insight. There are two possible values for the parameter:</p> <ul style="list-style-type: none"> ➤ Healthy (default value). This value means that all healthy backlogged instances (instances that have passed the blockage and can run to completion) are included in the calculation. ➤ At Risk. This value means that all healthy backlogged instances and all at-risk backlogged instances (instances that are not blocked, but may hit the blockage) are included in the calculation. <p>The calculation is time and amount-based (for details, see "Sample-Based and Time-Based Sampling" in <i>Using Service Health</i>).</p>	<p>"No data timeout" on page 639</p> <p>"Passed status" on page 640</p>

Rule (Rule #)	Description	Parameters																				
<div>BPI Business Impact Average Status (Count-based)</div> <div>Continued</div>	<div>Example:</div> <div>Passed status parameter: Healthy</div> <table><tr><th>Sample Time</th><th>Backlog Count</th><th>Healthy Count</th><th>Healthy Percentage</th></tr><tr><td>10:00</td><td>100</td><td>50</td><td>50%</td></tr><tr><td>10:15</td><td>80</td><td>20</td><td>25%</td></tr><tr><td>10:30</td><td>200</td><td>20</td><td>10%</td></tr><tr><td>10:45</td><td>100</td><td>0</td><td>0%</td></tr></table> <div>Calculation:</div> <div>The rule calculates the average weighted percentage using: (time in mins * backlog count * healthy percentage)/ (time in mins * backlog count)</div> <div>Calculation for the hour:</div> <div>(15*100*50) + (15*80*25) + (15*200*10) + (15*100*0) / (15*100) + (15*80) + (15*200) + (15*100) = 135000/7200 = 18.75%</div> <div>If the objectives for the KPI are:</div> <div>Exceeded: >90 (%)</div> <div>Minor Breached: >40 (%)</div> <div>Failed: Otherwise</div> <div>then status for the KPI is Failed (18.75% < 40%)</div>	Sample Time	Backlog Count	Healthy Count	Healthy Percentage	10:00	100	50	50%	10:15	80	20	25%	10:30	200	20	10%	10:45	100	0	0%	
Sample Time	Backlog Count	Healthy Count	Healthy Percentage																			
10:00	100	50	50%																			
10:15	80	20	25%																			
10:30	200	20	10%																			
10:45	100	0	0%																			

Rule (Rule #)	Description	Parameters
BPI Business Impact Average Status (Value-based) (3701)	<p>Calculates the average percentage (over time) of backlogged business process instances that have a status equal to, or higher than, the Passed status parameter.</p> <p>The calculation is based on the monetary values received in the samples from Business Process Insight, and uses weighting to take into account the actual monetary value of the non-healthy instances.</p> <p>The Passed status parameter defines one of the health statuses used in Business Process Insight. There are two possible values for the parameter:</p> <ul style="list-style-type: none">➤ Healthy (default value). This value means that all healthy backlogged instances (instances that have passed the blockage and can run to completion) are included in the calculation.➤ At Risk. This value means that all healthy backlogged instances and all at-risk backlogged instances (instances that are not blocked, but may hit the blockage) are included in the calculation. <p>The calculation is time and amount-based (for details, see "Sample-Based and Time-Based Sampling" in <i>Using Service Health</i>).</p>	<p>"No data timeout" on page 639</p> <p>"Passed status" on page 640</p>

Rule (Rule #)	Description	Parameters																				
BPI Business Impact Average Status (Value-based) Continued	<p>Example:</p> <p>Passed status parameter: Healthy</p> <table><tr><th>Sample Time</th><th>Backlog Value</th><th>Healthy Value</th><th>Healthy Percentage</th></tr><tr><td>10:00</td><td>\$100</td><td>\$50</td><td>50%</td></tr><tr><td>10:15</td><td>\$80</td><td>\$20</td><td>25%</td></tr><tr><td>10:30</td><td>\$200</td><td>\$20</td><td>10%</td></tr><tr><td>10:45</td><td>\$100</td><td>\$0</td><td>0%</td></tr></table> <p>Calculation:</p> <p>The rule calculates the average weighted percentage using: (time in mins * backlog value * healthy percentage)/ (time in mins * backlog value)</p> <p>Calculation for the hour:</p> <p>(15*100*50) + (15*80*25) + (15*200*10) + (15*100*0) / (15*100) + (15*80) + (15*200) + (15*100) = 135000/7200 = 18.75%</p> <p>If the objectives for the KPI are:</p> <p>Exceeded: >90 (%) Minor Breached: >40 (%) Failed: Otherwise</p> <p>then status for the KPI is Failed (18.75% < 40%)</p>	Sample Time	Backlog Value	Healthy Value	Healthy Percentage	10:00	\$100	\$50	50%	10:15	\$80	\$20	25%	10:30	\$200	\$20	10%	10:45	\$100	\$0	0%	
Sample Time	Backlog Value	Healthy Value	Healthy Percentage																			
10:00	\$100	\$50	50%																			
10:15	\$80	\$20	25%																			
10:30	\$200	\$20	10%																			
10:45	\$100	\$0	0%																			
BPI Duration Active Status (3717)	<p>Calculates the percentage of backlog instances for a business process duration monitor. that have duration status equal to, or higher than, the Passed status parameter.</p> <p>The value for the passed status parameter is one of the duration thresholds used in Business Process Insight. The default value for the parameter is OK.</p>	<p>"No data timeout" on page 639</p> <p>"Passed status" on page 640</p>																				

Rule (Rule #)	Description	Parameters
BPI Duration Status (3703)	<p>Calculates the percentage of completed instances for a business process duration monitor that have duration status equal to, or higher than, the Passed status parameter.</p> <p>The value for the passed status parameter is one of the duration thresholds used in Business Process Insight. The default value for the parameter is OK.</p> <p>The calculation takes the relevant fields from the Business Process Insight samples to make the following calculation:</p> <p>count of instances with duration status equal or above passed status/count of completed instances</p> <p>Note: The number of OK instances is calculated from the relevant sample fields using the following logic: (completed_count) – (critical_violations + major_violations + minor_violations + warning_violations)</p> <p>Example:</p> <p>Passed status parameter = OK (highest duration status)</p> <p>Major threshold violated instances: 1000</p> <p>Minor threshold violated instances:1000</p> <p>Warning threshold violated instances: 1000</p> <p>Critical threshold violated instances: 1000</p> <p>Completed instances: 5000</p> <p>Calculation:</p> <p>Number of OK instances = 5000 – (1000+1000+1000+1000) = 1000</p> <p>1000/5000 = 20%</p> <p>20% of the completed instances had a response time that met OK duration threshold status.</p>	<p>"No data timeout" on page 639</p> <p>"Passed status" on page 640</p>

Rule (Rule #)	Description	Parameters
BPI Hourly Throughput (Count-based) (3704)	<p>Calculates the average hourly volume for completed instances of a business process, business activity or business process monitor, based on the completed count received in the samples from Business Process Insight. The rule calculates the total count for each hour, then calculates the average hourly throughput over the required time period.</p> <p>Example:</p> <p>For a three hour period:</p> <ul style="list-style-type: none"> ➤ Between 09:00:00 and 09:59:59, four samples were received from Business Process Insight, with the following values: 09:00 completed_count = 1000 09:15 completed_count = 100 09:30 completed_count = 700 09:45 completed_count = 200 Total completed count is 2000, calculation time is 1 hour. ➤ Between 10:00:00 and 10:59:59, no samples were received. Result for the hour is NO DATA, calculation time is 1 hour. ➤ Between 11:00:00 and 11:59:59, four samples were received: 11:00 completed_count = 0 11:15 completed_count = 0 11:30 completed_count = 0 11:45 completed_count = 100 Total completed count is 100, calculation time is 1 hour. <p>Average throughput over period=2100/3 hours=700</p>	"No data timeout" on page 639

Rule (Rule #)	Description	Parameters
BPI Hourly Throughput (Value-based) (3705)	<p>Calculates the average hourly monetary value for completed instances of a business process, business activity or business process monitor, based on the total value received in the samples from Business Process Insight. The rule calculates the total value for each hour, then calculates the average hourly value over the required time period.</p> <p>Example:</p> <p>For a three hour period:</p> <ul style="list-style-type: none"> ➤ Between 09:00:00 and 09:59:59, four samples were received from Business Process Insight, with the following values: 09:00 completed_value = \$1000 09:15 completed_value = no value 09:30 completed_value = \$700 09:45 completed_value = \$300 Total completed value is \$2000, calculation time is 1 hour. ➤ Between 10:00:00 and 10:59:59, no samples were received. Result for the hour is NO DATA, calculation time is 1 hour. ➤ Between 11:00:00 and 11:59:59, four samples were received: 11:00 completed_value = no value 11:15 completed_value = \$0 11:30 completed_value = \$0 11:45 completed_value = \$100 Total completed value is \$100, calculation time is 1 hour. <p>Average over period = 2100/3 hours = \$700</p>	"No data timeout" on page 639
BPI Maximum Duration (3711)	<p>Assigns status based on the maximum time taken by a completed instance of a business process, business activity or business process duration monitor based on the values received in the samples from Business Process Insight. Results are given in seconds.</p>	"No data timeout" on page 639

Rule (Rule #)	Description	Parameters
BPI Maximum Value (3715)	Assigns status based on the highest monetary value for a completed instance of a business process, business activity or business process value monitor. The values are received in the samples from BPI.	"No data timeout" on page 639
BPI Minimum Duration (3710)	Assigns status based on the minimum time taken by a completed instance of a business process, business activity or business process duration monitor based on the values received in the samples from Business Process Insight. Results are given in seconds.	"No data timeout" on page 639
BPI Minimum Value (3714)	Assigns status based on the lowest monetary value for a completed instance of a business process, business activity or business process value monitor. The values are received in the samples from BPI.	"No data timeout" on page 639
BPI Process Average Value (3716)	Calculates the average monetary value for completed instances of a business process or business activity, based on values received in the samples from Business Process Insight.	"No data timeout" on page 639
BPI Scope Average Value (3712)	Calculates the average monetary value for completed instances of a business process value monitor, based on values received in the samples from Business Process Insight.	"No data timeout" on page 639
BPI Scope Weighted Average Duration (3709)	Calculates the average time taken by completed instances of a business process duration monitor based on the values received in the samples from Business Process Insight, taking into account the weighting given to each instance. The calculation is based on two fields in the samples received from Business Process Insight, as follows: total weighted duration/total value Results are given in seconds.	"No data timeout" on page 639
BPI Scope Weighted Average Value (3713)	Calculates the average monetary value for completed instances of a business process value monitor, taking into account the weighting given to each instance. The calculation is based on two fields in the samples received from Business Process Insight, as follows: total weighted monitor value/total value	"No data timeout" on page 639

Rule (Rule #)	Description	Parameters
BPI Value Status (3702)	<p>Calculates the percentage of completed instances for a business process value monitor that have value status equal to, or higher than, the Passed status parameter.</p> <p>The value for the passed status parameter is one of the value thresholds used in Business Process Insight. The default value for the parameter is OK.</p> <p>The calculation takes the relevant fields from the Business Process Insight samples to make the following calculation:</p> <p>count of instances with value status equal or above passed status/count of completed instances</p> <p>Note: The number of OK instances is calculated from the relevant sample fields using the following logic: (completed_count) – (critical_violations + major_violations + minor_violations + warning_violations)</p> <p>Example:</p> <p>Passed status parameter = OK (highest value status)</p> <p>Major threshold violated instances: 1000</p> <p>Minor threshold violated instances:1000</p> <p>Warning threshold violated instances: 1000</p> <p>Critical threshold violated instances: 1000</p> <p>Completed instances: 5000</p> <p>Calculation:</p> <p>Number of OK instances = 5000 – (1000+1000+1000+1000) = 1000</p> <p>1000/5000 = 20%</p> <p>20% of the completed instances had a value that met OK value threshold status.</p>	<p>"No data timeout" on page 639</p> <p>"Passed status" on page 640</p>

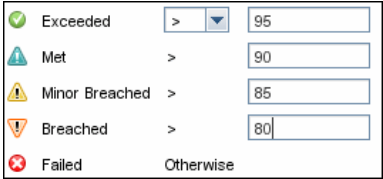















Rule (Rule #)	Description	Parameters
BPM Average Availability (200)	<p>The BPM Average Availability rule calculates the average availability of business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT.</p> <p>Example:</p> <p>An HI calculating availability monitors 10 transactions; 8 transactions are available and 2 transactions are not available. At report generation time, the rule calculates an availability of 80% (8 out of 10 transactions available = 80%). The HI's value is 80%.</p> <p>Note: This example uses a sample-based calculation method. By default, the calculation method is time-based. For details, see "Time-Based and Sample-Based Rule Calculation" on page 551.</p>	<p>"Calculation method" on page 636</p> <p>"Is PNR feeder" on page 638</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p>
BPM Average Response Time (201)	<p>The BPM Average Response Time rule calculates the average response time of business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT.</p> <p>Example:</p> <p>An HI calculating response time monitors 4 transactions for one hour, with the response times 2, 4, 6, and 8 seconds. The average response time is 5 seconds: $(2+4+6+8)/4 = 5$ seconds.</p> <p>Note: This example uses a sample-based calculation method. By default, the calculation method is time-based. For details, see "Time-Based and Sample-Based Rule Calculation" on page 551.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p> <p>"Trimming condition" on page 642</p>

Rule (Rule #)	Description	Parameters
BPM Max. Response Time (202)	<p>The BPM Max. Response Time rule calculates the maximum response time of business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT.</p> <p>Example: An HI calculating response time monitors 4 transactions with the response times 2, 4, 6, and 8 seconds. At report generation time, the rule calculates the maximum response time as 8 seconds.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p> <p>"Trimming condition" on page 642</p>
BPM Min. Response Time (203)	<p>The BPM Min. Response Time rule calculates the minimum response time of business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT.</p> <p>Example: An HI calculating response time monitors 4 transactions with the response times 2, 4, 6, and 8 seconds. At report generation time, the rule calculates the minimum response time as 2 seconds.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p> <p>"Trimming condition" on page 642</p>

Rule (Rule #)	Description	Parameters
BPM Outage (311)	<p>The BPM Outage rule calculates an outage for business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT. An outage occurs if there are more than the minimum number of successive failures, for more than the minimum duration.</p> <p>This is an outage rule.</p>	<p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p> <p>"Max duration" on page 638</p> <p>"Minimum number of failures" on page 639</p> <p>"Ignore timed out trimming" on page 638</p> <p>"requires selector" on page 640</p>
BPM Percentile (205)	<p>The BPM Percentile rule calculates in which percentile the business transaction performance times fall, for business transactions belonging to the Business Transaction CIT (or the SLM BPM Transaction from Location CIT in upgraded environments).</p> <p>Thresholds for transaction times are set within EUM administration; each sample from BPM represents a transaction which was OK/Minor/Critical.</p> <p>The rule checks if a sample has passed (OK), or failed (Minor and Critical), and calculates the percentage of OK samples, based on the Calculation Method parameter (time-based or sample-based calculation). For details, see "Time-Based and Sample-Based Rule Calculation" on page 551.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p> <p>"Trimming condition" on page 642</p>

Rule (Rule #)	Description	Parameters
BPM Percentile (pre-9.0) (204)	<p>Note: This rule uses pre-9.0 calculation logic.</p> <p>This rule calculates in which percentile the Business Process Monitor CI performance times fall, as defined by the Percentile Condition parameter, for Business Process Monitor CIs that belong to the SLM BPM Transaction from Location configuration item type (CIT).</p> <p>Example: The following example is for a sample-based rule. For details, see "Time-Based and Sample-Based Rule Calculation" on page 551.</p> <p>During agreement creation, you set a Percentile Condition of < 8 seconds. There are four samples (S1, S2, S3, and S4) with the following values: 7.5, 7.6, 7.7 and 8.1 seconds. At report generation time, the rule calculates that 3 out of the 4 samples fulfill the percentile condition, returns a percentile of 75, and gives the agreement a Met status.</p> <p>Note: In the Percentile Condition rule parameter settings, although you can choose the > and => operators, they are not valid for this rule's logic.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p> <p>"Percentile condition" on page 640</p> <p>"Trimming condition" on page 642</p>
BPM Six Sigma Availability (206)	<p>The BPM Six Sigma Availability rule calculates the Six Sigma availability value for business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT. The rule compares the number of samples (number of opportunities) with the number of unavailable samples (defects).</p> <p>Example: For a Six Sigma result of 4, you expect that for every million CIs (opportunities), not more than 6,210 fails.</p>	<p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p>

Rule (Rule #)	Description	Parameters
BPM Six Sigma Performance (207)	<p>The BPM Six Sigma Performance rule calculates the Six Sigma performance value for business transactions belonging to the Business Transaction CIT or SLM BPM Transaction from Location CIT. The rule compares the number of measurements (number of opportunities) with the number of failed measurements (DPMO), that is, the number of measurements that did not meet the condition per million measurements.</p> <p>Example: For a Six Sigma result of 3, you are expecting that for every million CIs (opportunities), less than 66,800 do not meet the target performance objective.</p>	<p>"Six Sigma condition" on page 641</p> <p>"Trimming condition" on page 642</p> <p>"No data timeout" on page 639</p> <p>"Ignore timed out trimming" on page 638</p>

Rule (Rule #)	Description	Parameters															
Children Success Ratio (297)	<p>The rule enables you to compare, in the same report, CIs that measure different types of activity, for example, with different targets or calculation results. For example, an SLA that monitors an application server can include a CI to measure the server CPU (in MBs) and another CI to monitor the server memory (in percentages).</p> <p>Service Level Management calculates the status of each child CI (as a percentage). A child CI is considered successful if its status is greater than, or equal to, the Success Status parameter defined in the Children Success Ratio rule.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, during SLA creation, you set objectives for a System Performance KPI as follows:</p> <div data-bbox="486 831 865 1010"><table><tbody><tr><td> Exceeded</td><td>></td><td>95</td></tr><tr><td> Met</td><td>></td><td>90</td></tr><tr><td> Minor Breached</td><td>></td><td>85</td></tr><tr><td> Breached</td><td>></td><td>80</td></tr><tr><td> Failed</td><td>Otherwise</td><td></td></tr></tbody></table></div> <p>The Success status parameter is defined as Met. That is, a child CI is considered successful if its status is greater than, or equal to, Met (in the above case, 75%).</p> <p>Suppose you have a CI with three children: CI1 (measures CPU), CI2 (measures memory), and CI3 (measures ping time). At report generation time, CI1 receives a status of Exceeded (successful), CI2 receives a status of Minor Breached (failed), and CI3 receives a status of Met (successful). Two child CIs out of 3 are successful.</p> <p>The KPI result using this rule is therefore 66.67%. This gives the SLA a Breached status (the status color is orange).</p>	 Exceeded	>	95	 Met	>	90	 Minor Breached	>	85	 Breached	>	80	 Failed	Otherwise		<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p> <p>"Success status" on page 641</p> <p>"Use weighting" on page 642</p>
 Exceeded	>	95															
 Met	>	90															
 Minor Breached	>	85															
 Breached	>	80															
 Failed	Otherwise																

Rule (Rule #)	Description	Parameters															
Cluster Availability (296)	<p>The Cluster Availability rule calculates the availability of a cluster. A cluster is available when a defined, minimum number of child CIs reaches an availability threshold. This rule has a calculation cycle that is set by default to five minutes.</p> <p>Note: You can use this rule only when child CIs use the time-based calculation method (that is, their calculation method cannot be sample-based).</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, suppose you want to build an SLA that reports downtime for tasks in a value chain service (needed to perform a Use Case). Service Level Management should report downtime if the chain is broken. If an application is down, the chain is broken. However, if two applications are down simultaneously, downtime is not doubled. There are five applications in the chain.</p> <p>You create an SLA and set objectives for an Availability KPI so that the Minimum number of children should equal the total number of tasks:</p> <div data-bbox="522 1001 903 1180"> <table border="1"> <tbody> <tr> <td>Exceeded</td> <td>></td> <td>95</td> </tr> <tr> <td>Met</td> <td>></td> <td>90</td> </tr> <tr> <td>Minor Breached</td> <td>></td> <td>85</td> </tr> <tr> <td>Breached</td> <td>></td> <td>80</td> </tr> <tr> <td>Failed</td> <td>Otherwise</td> <td></td> </tr> </tbody> </table> </div> <p>For each calculation cycle (five minutes), if one of the children fails (that is, its result is less than the value in the Availability threshold field), the group CI is considered unavailable during this cycle.</p> <p>For details on defining downtime, see "Adjusting SLA Data" in <i>Using System Availability Management</i>.</p>	Exceeded	>	95	Met	>	90	Minor Breached	>	85	Breached	>	80	Failed	Otherwise		<p>"Availability threshold" on page 635</p> <p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p> <p>"Minimum number of children" on page 639</p>
Exceeded	>	95															
Met	>	90															
Minor Breached	>	85															
Breached	>	80															
Failed	Otherwise																

Rule (Rule #)	Description	Parameters
Diagnostics Backend Transaction Average Duration Rule (50020)	Calculates the average transaction response time in seconds, for Business Transaction CIs monitored by HP Diagnostics.	No parameters
Diagnostics Backend Transaction Count Rule (50017)	Calculates the average transaction count, for Business Transaction CIs monitored by HP Diagnostics.	No parameters
Diagnostics Backend Transaction Maximum Duration Rule (50018)	Calculates the maximum transaction response time in seconds, for Business Transaction CIs monitored by HP Diagnostics.	No parameters
Diagnostics Backend Transaction Minimum Duration Rule (50019)	Calculates the minimum transaction response time in seconds, for Business Transaction CIs monitored by HP Diagnostics.	No parameters

Rule (Rule #)	Description	Parameters
EMS Events Availability (444)	<p>The EMS Events Availability rule calculates status for the System Availability KPI, assigned to an EMS Monitor CI.</p> <p>EMS monitors send event type samples which include an event ID and severity value. Each event is categorized as a failure or non-failure event based on its severity: if the severity is equal or higher than the value of the rule's Lowest severity failure value parameter, the event is a failure; if the severity is lower than the parameter value the event is a non-failure.</p> <p>The KPI's initial status (before any sample is received) is Available. The KPI's status is Available as long as no failure-type events exist for the KPI.</p> <p>The rule result is as follows: Total time the KPI is in Available status / total calculation time.</p> <p>For a detailed example of the rule, see "Examples of the EMS Events Availability Rule" on page 629.</p> <p>No data timeout. The rule does not have a No data timeout parameter.</p> <p>Downtime. The KPI continues to update its status during downtime based on received samples. The time of the downtime is not included in the rule calculation.</p> <p>Samples. The Samples additional value, which indicates the number of samples, is not calculated for this rule.</p>	"Lowest severity failure value" on page 638
External Source Average Availability (230)	This rule is deprecated in BSM 9.x.	
External Source Average Value (231)	This rule is deprecated in BSM 9.x.	

Rule (Rule #)	Description	Parameters												
Group Average Status (303)	<p>The Group Average Status rule calculates the average, weighted status of the child CIs.</p> <p>This rule is used for Business Process Insight and TransactionVision CIs, when performing an arithmetical operation on the KPI values for the child CIs yields a meaningless result.</p> <p>In order to calculate the average status, each KPI status used in Service Level Management is given a value, as follows:</p> <table><tr><th>KPI Status</th><th>Value</th></tr><tr><td>Exceeded</td><td>20</td></tr><tr><td>Met</td><td>15</td></tr><tr><td>Minor Breached</td><td>10</td></tr><tr><td>Breached</td><td>5</td></tr><tr><td>Failed</td><td>0</td></tr></table> <p>The rule multiplies these values by the weight assigned to each status (default weight for each status is 1). You can define status weights to be used globally by the Group Average Status rule by editing the rule parameters in the Business Rule Repository, or you can define weights per CI, by editing the KPI rule parameters in the Add/Edit KPIs page of the SLA Wizard (for details, see "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113).</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p>	KPI Status	Value	Exceeded	20	Met	15	Minor Breached	10	Breached	5	Failed	0	<p>"Breached weight" on page 635</p> <p>"calc_method" on page 636</p> <p>"Exceeded weight" on page 637</p> <p>"Failed weight" on page 637</p> <p>"hi_list" on page 637</p> <p>"Hide objective panel" on page 638</p> <p>"Met weight" on page 639</p> <p>"Minor breached weight" on page 639</p>
KPI Status	Value													
Exceeded	20													
Met	15													
Minor Breached	10													
Breached	5													
Failed	0													

Rule (Rule #)	Description	Parameters
<p>Group Average Status</p> <p>Continued</p>	<p>Example:</p> <p>A Business Process CI included in an SLA has four child CIs. The following lists the status held by each child CI for the Backlog KPI, and the weight assigned to that status:</p> <ul style="list-style-type: none"> ➤ BPI Business Transaction CI1: Status = Failed, weight for Failed = 3 ➤ BPI Business Transaction CI2: Status = Exceeded, weight for Exceeded = 1 ➤ BPI Duration Monitor CI: Status = Met, weight for Met = 1 ➤ BPI Business Process Monitor CI: Status = Minor Breached, weight for Minor Breached = 2 <p>Calculation:</p> <p>The rule calculates the status using:</p> $(\text{status value1} * \text{weight1} + \text{status value 2} * \text{weight2}) / (\text{weight1} + \text{weight2})$ $(0*3 + 20*1 + 15*1 + 10*2) / (3+1+1+2) = 7.86$ <p>The result value is compared with the KPI status values to determine the status for the KPI. $5 < 7.86 < 10$, so status for the parent Backlog KPI is Breached.</p>	
<p>Group Average Value</p> <p>(290)</p>	<p>The Group Average Value calculates the average value of the child CIs. The calculation takes child CI weights into consideration.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>Example:</p> <p>An SLA has 3 child CIs with values 2 (weight: 1), 3 (weight: 2), and 1 (weight: 1). Service Level Management calculates the average value as $((2*1)+(3*2)+(1*1))/4 = (2+6+1)/4 = 9/4 = 2.25$.</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p> <p>"Is PNR feeder" on page 638</p>

Rule (Rule #)	Description	Parameters
Group Sum Value (301)	<p>The Group Sum Value calculates the sum of the weighted values of CIs, for various CI types. The calculation takes child CI weights into consideration.</p> <p>This is the default group rule for SOA operations and SOA Web service entities.</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p>
Group Worst Status (304)	<p>The Group Worst Status rule displays the worst status of the child CIs. No value is shown for the KPI.</p> <p>This rule is used for Business Process Insight and TransactionVision CIs, when performing an arithmetical operation on the KPI values for the child CIs yields a meaningless result.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p> <p>"Hide objective panel" on page 638</p>

Rule (Rule #)	Description	Parameters
<p>Group Weighted Average Value (305)</p>	<p>Calculates an average value, based on the dynamic weights and values of the child CIs.</p> <p>If the child CIs are monitor CIs, then the dynamic weight for each child CI is calculated based on a sample field, according to the monitor rule for the child. If a child CI does not have a dynamic weight, then it is given a default weight of 1.</p> <p>For each group CI using this rule, the weight for that CI is the sum of the weights of its child CIs. Once this rule is assigned to a KPI for a group CI, all other CIs in the hierarchy (parent, child, and sibling CIs) must also be assigned this rule, or assigned a monitor rule working with dynamic weights.</p> <p>Note: Business Service Management does not validate the usage of this rule.</p> <p>The link weight (defined within a Service Level Management SLA) is also taken into consideration for the calculation, as in the Group Average Value rule.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>Example:</p> <p>A group weighted average value is required for the Availability KPI for a Web service CI. The Web service CI contains two child CIs for Web service operations, and each operation contains two monitor CIs.</p> <p>The monitor CIs are using the SOA Synthetic Availability rule, and for each calculation the rule applies a weight to each CI based on the number of samples received during the calculation interval (15 minutes).</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p>

Rule (Rule #)	Description	Parameters
Group Weighted Average Value Continued	<p>CI 1: Value 60, weight 15 CI 2: Value 90, weight 20</p> <p>Parent operation CI A: Value = $(60 \cdot 15 + 90 \cdot 20) / (15 + 20) = 77$ Weight = $15 + 20 = 35$</p> <p>-----</p> <p>CI 3: Value 40, weight 10 CI 4: Value 50, weight 25</p> <p>Parent operation CI B: Value = $(40 \cdot 10 + 50 \cdot 25) / (10 + 25) = 47$ Weight = $10 + 25 = 35$</p> <p>-----</p> <p>Web service CI: Value = $(77 \cdot 35 + 47 \cdot 35) / (35 + 35) = 62$ Weight = 70</p>	

Rule (Rule #)	Description	Parameters
HI Availability (445)	<p>The HI Availability rule uses samples sent by EMS monitors to calculate CI availability.</p> <p>EMS monitors send hi_status_change type samples which include a severity value. If the severity is equal or higher than the value of the rule's Lowest severity failure value parameter, the CI is not available; if the severity is lower than the parameter value the CI is available.</p> <p>The rule calculation is as follows: total time the CI is available / total calculation time. The rule is time-based.</p> <p>For a detailed example of the rule, see "Example of the HI Availability Rule" on page 631.</p> <p>No data timeout. The rule does not have a No data timeout setting.</p> <p>Downtime. The health indicator continues to update its status during downtime based on received samples. The time of the downtime is not included in the rule calculation.</p> <p>Note: The sample values are translated to severity levels as follows: 2 = Warning; 3 = Minor; 4 = Major; 5 = Critical.</p>	"Lowest severity failure value" on page 638

Rule (Rule #)	Description	Parameters
Incidents Group Rule (3603)	<p>The Incidents Group Rule assigns status at the group level for KPIs that handle HP Service Manager incidents (the MTTR, MTBF, and MTBSI KPIs). The rule copies KPI status for the child CI to the parent CI.</p> <p>Note:</p> <ul style="list-style-type: none"> ➤ If there is more than one child CI, the rule randomly assigns the status of one of the children to the parent. If you want the KPI to show meaningful results you must manually change the group rule for these KPIs to the Worst Child (Min.) rule. ➤ Change the rule in the Add/Edit KPIs page of the appropriate SLA wizard. See "New SLA/Edit SLA Wizard" on page 136. <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p>	No parameters
MTBF (Mean Time Between Failures) (3601)	<p>Calculates the average time period between incidents for a service CI (period when there are no open incidents), and assigns status by comparing the result with the objective targets.</p> <p>For example, if there are no incidents through the whole tracking period of a day, then the entire day is between failures, and the MTBF on the day is 24 hours.</p> <p>For more information and use case examples, see "Integration with HP Service Manager" on page 325.</p>	<p>"Initial state" on page 638</p> <p>"Final state" on page 637</p> <p>"Severity" on page 641</p>

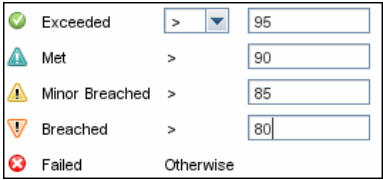
Rule (Rule #)	Description	Parameters
MTBSI (Mean Time Between System Incidents) (3602)	<p>Calculates the average time period between the opening timestamp of each incident for a service CI, and assigns status by comparing the result with the objective targets.</p> <p>There must be at least two incidents during a tracking period in order to have any results for that period.</p> <p>For more information and use case examples, see "Integration with HP Service Manager" on page 325.</p>	<p>"Initial state" on page 638</p> <p>"Severity" on page 641</p>
MTTR (Mean Time to Recover) (3600)	<p>For a service CI, calculates the percentage of incidents (during the time period, for example, one day) that are within the time limit defined by the Percentile Condition parameter, and assigns status by comparing the result (the calculated percentage) with the objective targets.</p> <p>For more information and use case examples, see "Integration with HP Service Manager" on page 325.</p>	<p>"Initial state" on page 638</p> <p>"Final state" on page 637</p> <p>"Percentile condition" on page 640</p> <p>"Severity" on page 641</p>

Rule (Rule #)	Description	Parameters
Network Quality (441)	<p>The Network Quality rule calculates status for a Network KPI attached to an EMS Monitor CI (monitoring an HP Operations Manager system).</p> <p>SiteScope monitors for the HP Operations Manager system (corresponding to EMS Monitor CIs) send status change event data to Service Level Management. The samples include a severity value for Network status in the monitored Operations Manager application. If this value is less than the value defined in the rule's Severity failure value parameter, then Network severity is considered acceptable.</p> <p>The Network Quality rule calculates the percentage of samples with acceptable severity level during each calculation period, and compares the percentage with SLA objective targets to determine status for the Network KPI.</p> <p>Example: Service Level Management checks the severity levels for the Network field, contained in the incoming samples for an EMS Monitor CI, Server1. The values received are 1, 3, 2, 3, 2.</p> <p>The values are compared with the value defined in the Severity failure value, which is set as 3. Network severity is therefore considered to be acceptable in 60% of the samples.</p> <p>Server1 is attached to SLA_factory, where the objective threshold for the Network KPI is set as Exceeded > 90%, else Failed. Network severity for Server1 is below this percentage, so status for the KPI is defined as Failed (red).</p>	<p>Note: The parameters for this rule can be modified only in the Service Level Management Business Rule repository; they cannot be modified for an individual KPI defined within an SLA.</p> <p>"Dimension name" on page 637</p> <p>"Severity failure value" on page 641</p>

Rule (Rule #)	Description	Parameters
Number of Outages (330)	<p>Service Level Management calculates how many outages occurred during the tracking period for a specific calendar.</p> <p>This rule uses the results (for the relevant calendar) of the Outage rule, which determines the number of outages for the CI. The appropriate Outage rule is assigned to each CI as part of the SLA definition, as described in "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120.</p> <p>Service Level Management calculates the number of outages on a daily basis (24 hours), and takes into account only the outages that occur in the specific calendar. For example, if the calendar is Business Hours (that is, 9:00 AM to 5:00 PM), outages that occur at 3:00 AM are not considered.</p> <p>Note: Outages that start before but end within the tracking period and outages that start within the tracking period but end after the tracking period are also included in the calculation.</p> <p>This is a KPI calculation rule that uses results of sibling KPIs. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p>	No parameters
Outage Based on Availability (310)	<p>Service Level Management uses this rule when calculating outages for Business Process Monitor and Real User Monitor CIs.</p> <p>If a CI's availability is less than the availability objective for more than the minimum duration, Service Level Management records the downtime as an outage.</p> <p>This is an outage rule.</p>	<p>"Availability threshold" on page 635</p> <p>"Max duration" on page 638</p> <p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p>

Rule (Rule #)	Description	Parameters
Outage Based on Legacy System (3313)	<p>Service Level Management uses this rule when calculating outages for SiteScope CIs.</p> <p>Service Level Management creates an outage if a CI's Legacy System KPI availability is less than the objective for more than the minimum duration.</p> <p>This is an outage rule.</p>	<p>"Availability threshold" on page 635</p> <p>"Max duration" on page 638</p> <p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p>
Outage Based on System Availability (313)	<p>Service Level Management uses this rule when calculating outages for SiteScope CIs.</p> <p>Service Level Management creates an outage if a CI's System Availability KPI is less than the objective for more than the minimum duration.</p> <p>This is an outage rule.</p>	<p>"Availability threshold" on page 635</p> <p>"Max duration" on page 638</p> <p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p> <p>"Max duration" on page 638</p>

Rule (Rule #)	Description	Parameters
Outage Duration (331)	<p>Service Level Management calculates the length of the outages that occurred during the tracking period (day, week, month, year, and so on).</p> <p>This rule performs calculations by taking the results (for the relevant calendar) of the Outage rule, which determines the number of outages for the CI. The appropriate Outage rule is defined for the Outages KPI during SLA definition, as described in "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120.</p> <p>Note: Outages that start before but end within the tracking period and outages that start within the tracking period but end after the tracking period are also included in the calculation.</p> <p>This is a KPI calculation rule that uses results of sibling KPIs. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>Example: During a selected calendar, Service Level Management records one outage of 1:30 hours and one outage of 0:30 hours. Therefore the outage duration = 1:30 + 0:30 = 2 hours.</p>	No parameters
PNR (Internal) (350)	<p>Note: This rule is for internal HP use only, and should not be modified.</p> <p>The Point Of No Return (PNR) rule calculates how much more time a CI can be unavailable before an SLA is in breach of contract.</p>	<p>The parameter SOURCE_KPI_ID is internal, and should not be modified.</p>

Rule (Rule #)	Description	Parameters															
Response Time Success Ratio (298)	<p>This rule enables you to compare, in the same report, CIs that measure different types of activity. Service Level Management calculates the status of each CI (as a percentage) and compares this status to a value defined during KPI creation.</p> <p>The Response Time Success Ratio rule calculates the status of each child CI, and provides a value for the success of the status.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, during SLA creation, you set objectives for a Performance KPI as follows:</p> <div data-bbox="486 701 865 880">A screenshot of a KPI configuration interface. It shows a list of status thresholds with corresponding icons and numerical values. The statuses are: Exceeded (green checkmark), Met (blue exclamation mark), Minor Breached (yellow exclamation mark), Breached (orange exclamation mark), and Failed (red X). Each status has a comparison operator (all are '>') and a numerical value in a text box. The values are: Exceeded (95), Met (90), Minor Breached (85), Breached (80), and Failed (Otherwise).<table><tr><td>Exceeded</td><td>></td><td>95</td></tr><tr><td>Met</td><td>></td><td>90</td></tr><tr><td>Minor Breached</td><td>></td><td>85</td></tr><tr><td>Breached</td><td>></td><td>80</td></tr><tr><td>Failed</td><td>Otherwise</td><td></td></tr></table></div> <p>The Success status parameter is defined as Met. That is, any child CI is considered successful if its status is greater than, or equal to, Met (in the above case, 95%).</p> <p>A Group CI with attached Performance KPI has three children, CI1, CI2, and CI3: CI1, CI2, and CI3. At report generation time, CI1 receives a status of Exceeded (considered successful), CI2 receives a status of Breached (considered to have failed), and CI3 receives a status of Met (considered successful). Two child CIs out of 3 are successful.</p> <p>The KPI result, therefore, is 66.67%. This gives the CI a Failed status (the status color is red).</p>	Exceeded	>	95	Met	>	90	Minor Breached	>	85	Breached	>	80	Failed	Otherwise		<p>"Success status" on page 641</p> <p>"Use weighting" on page 642</p>
Exceeded	>	95															
Met	>	90															
Minor Breached	>	85															
Breached	>	80															
Failed	Otherwise																
RUM Connections Availability (3825)	<p>Calculates the availability of Real User Monitor connections. Service Level Management takes the success condition (that is, the connection is available or is not available) from Real User Monitor.</p>	No parameters															

Rule (Rule #)	Description	Parameters
RUM Page Availability (380)	Note: This rule is deprecated in BSM 9.x. Calculates the availability of Real User Monitor CIs that belong to the RUM Page Monitor configuration item type (CIT), by comparison with SLA objectives.	No parameters
RUM Page Average Response Time (381)	Note: This rule is deprecated in BSM 9.x. Calculates the average response time of Real User Monitor CIs that belong to the RUM Page Monitor configuration item type (CIT).	"Calculation field" on page 636
RUM Page Percentile (382)	Note: This rule is deprecated in BSM 9.x. This rule calculates status for a Performance KPI attached to a RUM Page Monitor CI, based on the percentage of acceptable performance results. Performance can be based on either Total time (= page time in End User Management Administration) or Server time , according to the value defined for the Calculation field parameter. Acceptable performance means that the page time or server time measurement for the RUM page did not exceed the threshold set in End User Management Administration. The comparison with the threshold is performed by the Real User Monitor engine, which sends out the aggregated result (exceeded threshold/did not exceed threshold). Service Level Management receives the results as part of the input for each sample. The RUM Page Percentile rule calculates the percentage of samples with acceptable performance results during each calculation period, and compares the percentage with SLA objective targets to determine status for the Performance KPI.	"Calculation field" on page 636
RUM Page Six Sigma Availability (383)	Note: This rule is deprecated in BSM 9.x. Calculates the Six Sigma availability of CIs for a Real User Monitor page and compares the Six Sigma values to the SLA objectives.	No parameters

Rule (Rule #)	Description	Parameters
RUM Page Six Sigma Performance (384)	Note: This rule is deprecated in BSM 9.x. Calculates the Six Sigma performance value for Real User Monitor CIs that belong to the RUM Page Monitor configuration item type (CIT). Service Level Management takes the percentile calculation from Real User Monitor.	"Calculation field" on page 636
RUM Session User Availability (390)	Calculates the availability of Real User Monitor sessions. Service Level Management takes the success condition (that is, the session is available or is not available) from Real User Monitor.	No parameters
RUM Session User Performance (391)	Calculates in which percentile the user session performed successfully as defined in Real User Monitor. Service Level Management takes the success condition calculation from Real User Monitor.	No parameters
RUM Transaction Availability (370)	Calculates the availability percentages of CIs for a Real User Monitor transaction, by comparison with SLA objectives.	No parameters
RUM Transaction Average Response Time (371)	Calculates the average response time of Real User Monitor CIs that belong to the RUM Transactions Monitor configuration item type (CIT).	"Calculation field" on page 636
RUM Transaction Max. Response Time (372)	Calculates the maximum response time of Real User Monitor CIs that belong to the RUM Transactions Monitor configuration item type (CIT).	"Calculation field" on page 636
RUM Transaction Min. Response Time (373)	Calculates the minimum response time of Real User Monitor CIs that belong to the RUM Transactions Monitor configuration item type (CIT).	"Calculation field" on page 636

Rule (Rule #)	Description	Parameters
RUM Transaction Percentile (374)	<p>Calculates the percentage of successful performance results for a Business Transactions CI during each calculation period.</p> <p>The success value is taken from the sample field defined by the Calculation field parameter for the rule. The value given in that sample field is calculated by the Real User Monitor engine, by comparing the average result for the transaction (from the aggregated data) with the relevant threshold value set in the RUM transaction Threshold Settings in End User Management. If the threshold is not exceeded, the sample field contains a success result.</p> <p>For example, if average net time for the transaction is 38 seconds, and the threshold set for Net time in the transaction threshold settings is 40 seconds, then the transaction time did not exceed the threshold and the Net time field in the sample contains a success result.</p>	"Calculation field" on page 636
RUM Transaction Six Sigma Availability (375)	<p>Calculates the Six Sigma availability of CIs for a Real User Monitor transaction and compares the Six Sigma values to the SLA objectives.</p>	No parameters

Rule (Rule #)	Description	Parameters
RUM Transaction Six Sigma Performance (376)	<p>Calculates the six sigma performance value for a Business Transactions CI, based on the number of failed measurements out of the total number of measurements, during each calculation period.</p> <p>The failure value is taken from the sample field defined by the Calculation field parameter for the rule. The value given in that sample field is calculated by the Real User Monitor engine, by comparing the average result for the transaction (from the aggregated data) with the relevant threshold value set in the RUM transaction Threshold Settings in End User Management. If the threshold is exceeded, the sample field contains a failure result.</p> <p>For example, if average net time for the transaction is 42 seconds, and the threshold set for Net time in the transaction threshold settings is 40 seconds, then the transaction time exceeded the threshold and the Net time field in the sample contains a failure result.</p>	"Calculation field" on page 636

Rule (Rule #)	Description	Parameters
Security Quality (442)	<p>The Security Quality rule calculates status for a Security KPI attached to an EMS Monitor CI (monitoring an HP Operations Manager system).</p> <p>SiteScope monitors for the HP Operations Manager system (corresponding to EMS Monitor CIs) send status change event data to Service Level Management. The samples include a severity value for Security status in the monitored Operations Manager application. If this value is less than the value defined in the rule's Severity failure value parameter, then Security severity is considered acceptable.</p> <p>The Security Quality rule calculates the percentage of samples with acceptable severity level during each calculation period, and compares the percentage with SLA objective targets to determine status for the Security KPI.</p> <p>Example: Service Level Management checks the severity levels for the Security field, contained in the incoming samples for an EMS Monitor CI, Server1. The values received are 1, 3, 2, 3, 2.</p> <p>The values are compared with the value defined in the Severity failure value, which is set as 3. Security severity is therefore considered to be acceptable in 60% of the samples.</p> <p>Server1 is attached to SLA_factory, where the objective threshold for the Security KPI is set as Exceeded > 90%, else Failed. Security severity for Server1 is below this percentage, so status for the KPI is defined as Failed (red).</p>	<p>Note: The parameters for this rule can be modified only in the Service Level Management Business Rule repository; they cannot be modified for an individual KPI defined within an SLA.</p> <p>"Dimension name" on page 637</p> <p>"Severity failure value" on page 641</p>

Rule (Rule #)	Description	Parameters
SiteScope Availability Rule (3920)	<p>This rule calculates the average availability of a SiteScope CI, based on all of the measurements sent to the HI.</p> <p>SiteScope sends samples which include a severity value. If the severity is equal or higher than the value of the rule's Lowest severity failure value parameter, the CI is not available; if the severity is lower than the parameter value the CI is available.</p> <p>The rule calculation is as follows: total time the CI is available / total calculation time.</p>	<p>"Calculation method" on page 636</p> <p>"Lowest severity failure value" on page 638</p>
SiteScope Average Availability (210)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>In BSM 8.x, this rule calculated the average availability of SiteScope CIs that belong to the SiteScope Measurement configuration item type (CIT).</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p>
SiteScope Average Value (211)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>In BSM 8.x, this rule calculated the average value of SiteScope CIs that belong to the SiteScope Measurement configuration item type (CIT).</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Trimming condition" on page 642</p>
SiteScope Max. Value (212)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>In BSM 8.x, this rule calculated the maximum value of SiteScope CIs that belong to the SiteScope Measurement CIT.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Trimming condition" on page 642</p>

Rule (Rule #)	Description	Parameters
SiteScope Min. Value (213)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>In BSM 8.x, this rule calculated the minimum value of SiteScope CIs that belong to the SiteScope Measurement CIT.</p>	<p>"Calculation method" on page 636</p> <p>"No data timeout" on page 639</p> <p>"Trimming condition" on page 642</p>
SiteScope Average Value (220)	<p>Service Level Management calculates the average value of the SiteScope measurements specified in the Measurement Type rule parameter.</p> <p>For details on using this rule, see "How to Enable SiteScope Measurement Type Filtering" on page 554.</p>	<p>"Calculation method" on page 636</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p> <p>"Measurement type" on page 638</p> <p>"No data timeout" on page 639</p> <p>"Trimming condition" on page 642</p>
SiteScope Max. Value (221)	<p>Service Level Management calculates the maximum value of the SiteScope measurements specified in the Measurement Type rule parameter.</p> <p>For details on using this rule, see "How to Enable SiteScope Measurement Type Filtering" on page 554.</p>	<p>"Calculation method" on page 636</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p> <p>"Measurement type" on page 638</p> <p>"No data timeout" on page 639</p> <p>"Trimming condition" on page 642</p>

Rule (Rule #)	Description	Parameters
SiteScope Min. Value (222)	<p>Service Level Management calculates the minimum value of the SiteScope measurements specified in the Measurement Type rule parameter.</p> <p>For details on using this rule, see "How to Enable SiteScope Measurement Type Filtering" on page 554.</p>	<p>"Calculation method" on page 636</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p> <p>"Measurement type" on page 638</p> <p>"No data timeout" on page 639</p> <p>"Trimming condition" on page 642</p>
SiteScope Monitor Outage (314)	<p>Service Level Management determines that an outage has occurred if there are more than the minimum number of failures for more than the minimum duration, for SiteScope Monitor CIs.</p> <p>Example: Service Level Management checks the severity level to determine if an outage has occurred, by comparing the value to that set during outage creation.</p> <p>Severity failure value defines which severity value is considered a failure (that is, the sample is unavailable). For example, if the value is 4, samples with a severity value of 1, 2, or 3 are considered available, and samples with a severity value of 4 or 5 are considered unavailable.</p> <p>This is an outage rule.</p>	<p>"Minimum number of failures" on page 639</p> <p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p> <p>"Max duration" on page 638</p> <p>"Severity failure value (for SiteScope Monitor Outage rule)" on page 641</p> <p>"requires selector" on page 640</p>

Rule (Rule #)	Description	Parameters
SiteScope Monitor Rule (218)	<p>A health indicator for a CI can receive multiple measurements from multiple SiteScope monitors. This rule calculates average availability for the health indicator, based on all of the measurements sent to the health indicator.</p> <p>If multiple measurements are received for the same duration, the calculation uses the worst measurement received.</p> <p>For a detailed example of the rule, see "Examples of the SiteScope Monitor Rule" on page 632.</p> <p>Example:</p> <p>Suppose availability is calculated for 10:00-11:00 based on two measurements: one measurement showing 0% availability from 10:00-10:30, and the other showing 100% availability from 10:00-11:00.</p> <p>The rule is calculated based on 30 minutes of 0% availability (taking the worst measurement from 10:00-10:30), and 30 minutes of 100% availability (from 10:30-11:00), giving an average availability of 50%.</p>	<p>"No data timeout" on page 639</p> <p>"Severity failure value" on page 641</p> <p>"Measurement type" on page 638</p> <p>"Is PNR feeder" on page 638</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p>
SiteScope Monitor Six Sigma (219)	<p>Service Level Management calculates the Six Sigma availability value for SiteScope monitors, by comparing the number of samples (number of opportunities) with the number of unavailable samples (defects).</p> <p>The Measurement Type rule parameter is not enabled by default. For details on using this rule parameter, see "How to Enable SiteScope Measurement Type Filtering" on page 554.</p>	<p>"Measurement type" on page 638</p> <p>"No data timeout" on page 639</p> <p>"Severity failure value" on page 641</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p>

Rule (Rule #)	Description	Parameters
SiteScope Six Sigma Performance (224)	<p>Service Level Management calculates the Six Sigma performance value of SiteScope Monitor CIs, by comparing the number of opportunities (number of samples) with the number of defects (unavailable samples).</p> <p>This rule is not enabled by default. For details on using this rule, see "How to Enable SiteScope Measurement Type Filtering" on page 554.</p> <p>Example: If you set a sigma of 3, you are expecting that for every million opportunities (CIs), less than 66,800 do not meet the target performance goal.</p>	<p>"Measurement type" on page 638</p> <p>"Six Sigma condition" on page 641</p> <p>"Trimming condition" on page 642</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p>

Rule (Rule #)	Description	Parameters
SiteScope Outage Rule (3921)	<p>A health indicator for a CI can receive multiple measurements from multiple SiteScope monitors. This rule calculates an outage for a health indicator, if a measurement has more than the minimum number of consecutive failures, and they last longer than the minimum duration. An outage ends when all measurements are available.</p> <p>SiteScope sends samples which include a severity value. If the severity is equal or higher than the value of the rule's Lowest severity failure value parameter, the CI is not available; if the severity is lower than the parameter value the CI is available.</p> <p>Example:</p> <p>Suppose the minimum number of failures is set to two, and the minimum duration is set to 10 minutes. This means an outage starts when a measurement has two consecutive failures, lasting for at least ten minutes.</p> <p>Between 10:00-11:00 the following samples are received (M1 and M2 are two measurements):</p> <p>10:00 - M1 is not available 10:12 - M1 is not available 10:15 - M2 is not available 10:20 - M2 is available 10:30 - M1 is available</p> <p>At 10:12, the rule conditions are met (2 failures are received from M1, lasting at least 10 minutes), and an outage begins retroactively, from the first failure. The outage ends at 10:30 when all the measurements are available; the total outage time is 10:00-10:30.</p>	<p>"Minimum number of failures" on page 639</p> <p>"Lowest severity failure value" on page 638</p> <p>"Max duration" on page 638</p> <p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p> <p>"Severity failure value" on page 641</p> <p>"requires selector" on page 640</p>

Rule (Rule #)	Description	Parameters
SiteScope Outages (Deprecated) (312)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>In BSM 8.x, this rule calculated an outage for SiteScope CIs that belong to the SiteScope Measurement CIT, if there is more than the minimum number of failures for more than the minimum duration.</p>	<p>"Minimum number of failures" on page 639</p> <p>"Max duration" on page 638</p> <p>"Minimum duration" on page 639</p> <p>"Default category" on page 636</p>
SiteScope Percentile (223)	<p>Service Level Management calculates in which percentile the SiteScope measurements specified in the Measurement Type rule parameter falls, as defined by the Percentile condition operator and threshold.</p> <p>For details on using this rule, see "How to Enable SiteScope Measurement Type Filtering" on page 554.</p> <p>Example: During SLA creation, you set objectives for a Performance KPI with a Percentile condition of < 8 seconds:</p> <p>The System Performance KPI has four samples, S1, S2, S3, and S4 with the following values: 7.2, 7.3, 7.1 and 7.1 seconds. At report generation time, the rule calculates that 4 out of the 4 samples fulfill the percentile condition (that is, the result falls in the 100th percentile), and gives the SLA an Exceeded status (the status color is green).</p>	<p>"Calculation method" on page 636</p> <p>"Measurement type" on page 638</p> <p>"Percentile condition" on page 640</p> <p>"Trimming condition" on page 642</p> <p>"HIDE_MEASUREMENT_TYPE_ID" on page 637</p>
SiteScope Percentile (Deprecated) (214)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>In BSM 8.x, this rule calculated in which percentile the SiteScope CI performance times fall, as defined by the Percentile condition operator and threshold, for SiteScope CIs that belong to the SiteScope Measurement configuration item type (CIT).</p>	<p>"Calculation method" on page 636</p> <p>"Percentile condition" on page 640</p> <p>"Trimming condition" on page 642</p>

Rule (Rule #)	Description	Parameters
SiteScope Six Sigma Availability (216)	Service Level Management calculates the Six Sigma availability value of SiteScope CIs by comparing the number of opportunities (number of samples) with the number of defects (unavailable samples). Example: If you set a sigma of 4, you are expecting that for every million opportunities (CIs), not more than 6,210 fail.	"No data timeout" on page 639
SiteScope Six Sigma Performance (217)	Service Level Management calculates the Six Sigma performance value of SiteScope CIs by comparing the number of opportunities (number of samples) with the number of defects (unavailable samples). Example: If you set a sigma of 3, you are expecting that for every million opportunities (CIs), less than 66,800 do not meet the target performance goal.	"Six Sigma condition" on page 641 "Trimming condition" on page 642
Six Sigma Group (295)	Service Level Management calculates the number of failures per child CI (total number of defects and opportunities) that occurred on average in all child CIs. Note: For Service Level Management to calculate the number of failures, all child CIs must include a Six Sigma rule. This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i> .	"calc_method" on page 636 "hi_list" on page 637 "Use weighting" on page 642
SOA Real Availability (400)	Calculates the availability of Web service operation CIs monitored by Diagnostics, by comparison with SLA objectives.	"Consumer" on page 636
SOA Real Average Response Time (402)	Calculates the average response time of Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Real Average Throughput (405)	Calculates the average throughput of Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636

Rule (Rule #)	Description	Parameters
SOA Real Max. Response Time (403)	Calculates the maximum response time of Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Real Max. Throughput (406)	Calculates the maximum throughput of Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Real Min. Response Time (404)	Calculates the minimum response time of Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Real Min. Throughput (407)	Calculates the minimum throughput of Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Real Performance Percentile (401)	Calculates in which percentile the CI performance times fall, as defined by the Percentile condition parameter, for Web service operation CIs monitored by Diagnostics. Service Level Management takes the percentile value from Diagnostics.	"Consumer" on page 636
SOA Real Six Sigma on Availability (408)	Calculates the Six Sigma availability value on Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Real Six Sigma on Performance (409)	Calculates the Six Sigma performance value on Web service operation CIs monitored by Diagnostics.	"Consumer" on page 636
SOA Synthetic Availability (420)	Calculates the average availability of Web service operation CIs monitored by BPM or SiteScope.	"Calculation method" on page 636 "No data timeout" on page 639 "Consumer" on page 636

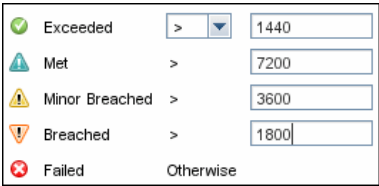
Rule (Rule #)	Description	Parameters
SOA Synthetic Average Response Time (422)	Calculates the average performance of Web service operation CIs monitored by BPM or SiteScope.	"Trimming condition" on page 642 "Calculation method" on page 636 "No data timeout" on page 639 "Consumer" on page 636
SOA Synthetic Max. Total Time (423)	Calculates the Six Sigma performance value on Web service operation CIs monitored by BPM or SiteScope.	"Trimming condition" on page 642 "Calculation method" on page 636 "No data timeout" on page 639 "Consumer" on page 636
SOA Synthetic Min. Total Time (424)	Calculates the Six Sigma performance value on Web service operation CIs monitored by BPM or SiteScope.	"Trimming condition" on page 642 "Calculation method" on page 636 "No data timeout" on page 639 "Consumer" on page 636

Rule (Rule #)	Description	Parameters
SOA Synthetic Performance (421)	Calculates the average response time for Web service operation CIs monitored by BPM or SiteScope.	" Calculation method " on page 636 "No data timeout" on page 639 "Consumer" on page 636
SOA Synthetic Six Sigma on Availability (425)	Calculates the Six Sigma performance value on Web service operation CIs monitored by BPM or SiteScope.	"Consumer" on page 636
SOA Synthetic Six Sigma on Performance (426)	Calculates the Six Sigma performance value on Web service operation CIs monitored by BPM or SiteScope.	"Consumer" on page 636
Synthetic WS Outage (316)	Calculates an outage for Real User Monitor CIs that belong to the RUM Transactions Monitor configuration item type (CIT). This is an outage rule.	"Minimum number of failures" on page 639 "Minimum duration" on page 639 "Default category" on page 636 "Max duration" on page 638 "requires selector" on page 640

Rule (Rule #)	Description	Parameters																				
System Performance Success Ratio (299)	<p>Service Level Management calculates the system performance of each child CI (as a percentage). A child CI is considered successful if its status is greater than, or equal to, the Success Status parameter defined in this rule.</p> <p>The System Performance Success Ration rule enables you to compare, in the same report, CIs that measure different types of activity. For example, an SLA that monitors an application server can include a CI to measure the server CPU (in MBs) and another CI to monitor the server memory (in percentages).</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, During SLA creation, you set objectives for a Performance KPI as follows:</p> <div><table><tr><td></td><td>Exceeded</td><td>></td><td>95</td></tr><tr><td></td><td>Met</td><td>></td><td>90</td></tr><tr><td></td><td>Minor Breached</td><td>></td><td>85</td></tr><tr><td></td><td>Breached</td><td>></td><td>80</td></tr><tr><td></td><td>Failed</td><td>Otherwise</td><td></td></tr></table></div> <p>The Success status parameter is defined as Met. That is, any child CI is considered successful if its status is greater than, or equal to, Met (in the above case, 90%).</p> <p>A Group CI with attached System Performance KPI has three children: CI1 (measures CPU), CI2 (measures memory), and CI3 (measures ping time). At report generation time, CI1 receives a status of Exceeded (considered successful), CI2 receives a status of Met (considered successful), and CI3 receives a status of Met (considered successful). Three child CIs out of 3 are successful.</p> <p>The KPI result, therefore, is 100%. This gives the SLA an Exceeded status (the status color is green).</p>		Exceeded	>	95		Met	>	90		Minor Breached	>	85		Breached	>	80		Failed	Otherwise		"Success status" on page 641 "Use weighting" on page 642
	Exceeded	>	95																			
	Met	>	90																			
	Minor Breached	>	85																			
	Breached	>	80																			
	Failed	Otherwise																				

Rule (Rule #)	Description	Parameters
System Quality (440)	<p>The System Quality rule calculates status for a Legacy System KPI attached to an EMS Monitor CI (monitoring an HP Operations Manager system).</p> <p>SiteScope monitors for the HP Operations Manager system (corresponding to EMS Monitor CIs) send status change event data to Service Level Management. The samples include a severity value for System status in the monitored Operations Manager application. If this value is less than the value defined in the rule's EMS Severity failure value parameter, then System severity is considered acceptable.</p> <p>The System Quality rule calculates the percentage of samples with acceptable severity level during each calculation period, and compares the percentage with SLA objective targets to determine status for the Legacy System KPI.</p> <p>Example: Service Level Management checks the severity levels for the System field, contained in the incoming samples for an EMS Monitor CI, Server1. The values received are 1, 3, 2, 3, 2.</p> <p>The values are compared with the value defined in the EMS Severity failure value, which is set as 3. System severity is therefore considered to be acceptable in 60% of the samples.</p> <p>Server1 is attached to SLA_factory, where the objective threshold for the Legacy System KPI is set as Exceeded > 90%, else Failed. System severity for Server1 is below this percentage, so status for the KPI is defined as Failed (red).</p>	<p>Note: The parameters for this rule can be modified only in the Service Level Management Business Rule repository; they cannot be modified for an individual KPI defined within an SLA.</p> <p>"Dimension name" on page 637</p> <p>"EMS Severity failure value" on page 637</p>

Rule (Rule #)	Description	Parameters
Time Between Outages - Alternate (334)	<p>The rule calculates the total uptime divided by the number of outages. The total uptime is the tracking period minus the total outage duration.</p> <p>This rule performs calculations by taking the results (for the relevant calendar) of an Outage rule, which determines the number of outages for the CI. The appropriate Outage rule is defined for the Outages KPI that is assigned to each CI as part of the SLA definition, as described in "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120.</p> <p>Service Level Management calculates the time between outages on a daily basis (24 hours), and takes into account only the outages that occur in the specific calendar. For example, if the calendar is Business Hours (that is, 9:00 AM to 5:00 PM), then outages that occur at 3:00 AM are not considered.</p> <p>This is a KPI calculation rule that uses results of sibling KPIs. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, suppose the Outage Summary report shows that three outages occurred during the Business Hours calendar, with a total duration of four hours.</p> <p>At report generation time, Service Level Management makes the following calculation:</p> <p>Total uptime = tracking period (9 hours) - total outage duration (4 hours) = 5 hours.</p> <p>Time Between Outages Alternate = total uptime / number of outages $= 5/3 = 1.666 \text{ hours} = 6000 \text{ seconds}$.</p> <p>The CI receives a status based on the thresholds set for the KPI at SLA creation.</p>	No parameters

Rule (Rule #)	Description	Parameters
Time Between Outages (333)	<p>Service Level Management calculates the mean time between outages, that is, the tracking period divided by the number of outages.</p> <p>This rule performs calculations by taking the results (for the relevant calendar) of an Outage rule, which determines the number of outages for the CI. The appropriate Outage rule is defined for the Outages KPI that is assigned to each CI as part of the SLA definition, as described in "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120.</p> <p>Service Level Management calculates the time between outages on a daily basis (24 hours), and takes into account only the outages that occur in the specific calendar. For example, if the calendar is Business Hours (that is, 9:00 AM to 5:00 PM), then outages that occur at 3:00 AM are not considered.</p> <p>This is a KPI calculation rule that uses results of sibling KPIs. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>For example, during SLA creation you set objectives for a Time Between Outages KPI as follows:</p> <div data-bbox="488 961 863 1147"></div> <p>During the Business Hours calendar, three outages occur. At report generation time, Service Level Management calculates the time between outages as the tracking period divided by the number of outages, that is, $24/3 = 8 \text{ hours} = 28800 \text{ seconds}$. The CI receives a status of Exceeded (the status color is green).</p>	No parameters

Rule (Rule #)	Description	Parameters
TransactionVision Average Backlog Count (453)	<p>Calculates the Backlog KPI status for a CI monitored by TV. The rule calculates the average number (over time) of backlogged instances for a business transaction, based on samples received from TransactionVision, using the sample field curr_tx_count. The calculation is time-based (for details, see "Sample-Based and Time-Based Sampling" in <i>Using Service Health</i>).</p> <p>This is the default rule for the Backlog KPI, when the KPI is assigned to a TV CI.</p> <p>Example 1:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business transaction:</p> <p>Sample 1 at 10:00 - 100 backlogged instances Sample 2 at 10:15 - 50 backlogged instances Sample 3 at 10:40 - 100 backlogged instances Sample 4 at 10:50 - 0 backlogged instances</p> <p>Calculation</p> <p>The result received in a sample is considered the value for the time period until the next sample arrives:</p> $(100*15 + 50*25 + 100*10 + 0*10) / (15+25+10+10) = 62.5$ <p>Example 2:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business process:</p> <p>(10:00–10:15 - no data) Sample 1 at 10:15 - 100 backlogged instances Sample 2 at 10:30 - 50 backlogged instances Sample 3 at 10:45 - 100 backlogged instances</p> <p>Calculation</p> <p>The no data period is excluded from the calculation:</p> $(100*15 + 50*15 + 100*15) / (15+15+15) = 83.333333$	"No data timeout" on page 639

Rule (Rule #)	Description	Parameters
TransactionVision Average Backlog Value (454)	<p>Calculates the Backlog KPI status for a CI monitored by TV. The rule calculates the average monetary value (over time) for backlogged instances of a business transaction, based on values received in the samples from TransactionVision, using the sample field curr_tot_tx_value. The calculation is time-based (for details, see "Sample-Based and Time-Based Sampling" in <i>Using Service Health</i>).</p> <p>Note: By default, the Backlog KPI uses a count-based rule when the KPI is assigned to a TV CI. If you want results for the KPI to be value-based, you must define a unit for the KPI and change the rule used.</p> <p>Example 1:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business transaction:</p> <p>Sample 1 at 10:00 - Value of backlogged instances = \$100</p> <p>Sample 2 at 10:15 - Value of backlogged instances = \$50</p> <p>Sample 3 at 10:40 - Value of backlogged instances = \$100</p> <p>Sample 4 at 10:50 - Value of backlogged instances = \$0</p> <p>Calculation</p> <p>The result received in a sample is considered the value for the time period until the next sample arrives:</p> <p>$(100*15 + 50*25 + 100*10 + 0*10) / (15+25+10+10) = \\62.5</p>	"No data timeout" on page 639

Rule (Rule #)	Description	Parameters
TransactionVision Average Backlog Value Continued	<p>Example 2:</p> <p>Between 10:00 and 10:59:59, the following samples were received for a business transaction:</p> <p>(10:00–10:15 - no data)</p> <p>Sample 1 at 10:15 - Value of backlogged instances = \$100</p> <p>Sample 2 at 10:30 - Value of backlogged instances = \$50</p> <p>Sample 3 at 10:45: Value of backlogged instances = \$100</p> <p>Calculation</p> <p>The no data period is excluded from the calculation:</p> $(100*15 + 50*15 + 100*15) / (15+15+15) = \83.333333	No parameters
TransactionVision Average Delays Rate (%) (455)	<p>Calculates the Delays KPI status for a CI monitored by TV, based on the average percentage of late completed transactions out of the total completed transactions. The values are taken from the samples received from TransactionVision, using the sample fields late_tx_count/tx_count.</p> <p>Transactions are defined as "late" in TransactionVision when their response time exceeded the defined threshold in TransactionVision.</p> <p>This is the default rule for the Delays KPI, when the KPI is assigned to a TV CI.</p>	No parameters

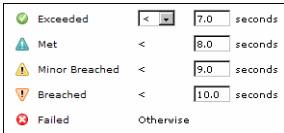
Rule (Rule #)	Description	Parameters
TransactionVision Average Delays Value (%) (456)	<p>Calculates the Delays KPI status for a CI monitored by TV, based on the average monetary value percentage of late completed transactions out of the total completed transactions value. The values are taken from the samples received from TransactionVision, using the sample fields tot_late_tx_value/tot_tx_value.</p> <p>Transactions are defined as "late" in TransactionVision when their response time exceeded the defined threshold in TransactionVision.</p>	No parameters
TransactionVision Average Duration (450)	<p>Calculates the Duration KPI status for a CI monitored by TV, based on the average response time (in seconds) for successful, completed instances of the business transaction. The values are taken from the samples received from TransactionVision, using the sample fields sum_response_time/(tx_count - failed_tx_count).</p> <p>This is the default rule for the Duration KPI, when the KPI is assigned to a TV CI.</p>	No parameters
TransactionVision Average Exceptions Rate (%) (457)	<p>Calculates the Exceptions KPI status for a CI monitored by TV, based on the average percentage of completed transactions marked as exceptions, out of the total completed transactions. The values are taken from the samples received from TransactionVision, using the sample fields exp_tx_count/tx_count.</p> <p>Transactions are defined as "exceptions" by TransactionVision when they did not follow the expected flow path on the target machine.</p> <p>This is the default rule for the Exceptions KPI, when the KPI is assigned to a TV CI.</p>	No parameters
















Rule (Rule #)	Description	Parameters
TransactionVision Average Exceptions Value (%) (458)	<p>Calculates the Exceptions KPI status for a CI monitored by TV, based on the average monetary value percentage for the completed transactions marked as exceptions, out of the total completed transactions value. The values are taken from the samples received from TransactionVision, using the sample fields tot_exp_tx_value/tot_tx_value.</p> <p>Transactions are defined as "exceptions" by TransactionVision when they did not follow the expected flow path on the target machine.</p>	No parameters
TransactionVision Average Failures Rate (%) (459)	<p>Calculates the Failures KPI status for a CI monitored by TV, based on the average percentage of failed, completed transactions out of the total completed transactions. The values are taken from the samples received from TransactionVision, using the sample fields failed_tx_count/tx_count.</p> <p>Transactions are classified as "failed" when they match the attribute or pattern defined as failure in TransactionVision.</p> <p>This is the default rule for the Failures KPI, when the KPI is assigned to a TV CI.</p>	No parameters
TransactionVision Average Failures Value (%) (460)	<p>Calculates the Failures KPI status for a CI monitored by TV, based on the average monetary value percentage for the failed, completed transactions out of the total completed transactions value. The values are taken from the samples received from TransactionVision, using the sample fields tot_failed_tx_value/tot_tx_value.</p> <p>Transactions are classified as "failed" when they match the attribute or pattern defined as failure in TransactionVision.</p>	No parameters

Rule (Rule #)	Description	Parameters
TransactionVision Average Value (461)	<p>Calculates the Value KPI status for a CI monitored by TV, based on the average monetary value for completed instances of the business transaction.</p> <p>The calculation uses the values received in the samples from TransactionVision, using the sample fields <code>tot_tx_value/tx_count</code>.</p> <p>This is the default rule for the Value KPI when the KPI is assigned to a TV CI.</p>	No parameters
TransactionVision Maximum Duration (451)	<p>Assigns Duration KPI status to a CI monitored by TV, based on the highest response time for the completed instances of a business transaction. The values are received in the samples from TransactionVision, using the sample field <code>max_response_time</code>. Results are given in seconds.</p>	No parameters
TransactionVision Minimum Duration (452)	<p>Assigns Duration KPI status to a CI monitored by TV, based on the lowest response time for the completed instances of a business transaction. The values are received in the samples from TransactionVision, using the sample field <code>min_response_time</code>. Results are given in seconds.</p>	No parameters

Rule (Rule #)	Description	Parameters
TransactionVision Throughput (462)	<p>Calculates the Throughput KPI status for a CI monitored by TV. The rule calculates the average hourly volume for completed instances of the business transaction, based on the completed count received in the samples from TransactionVision, using the sample field tx_count. The total count for each hour over the time frame is divided by the time to give an average hourly throughput.</p> <p>This is the default rule for the Throughput KPI when the KPI is assigned to a TV CI.</p> <p>For a three hour period:</p> <ul style="list-style-type: none"> ➤ Between 09:00:00 and 09:59:59, four samples were received from TransactionVision, with the following values: 09:00 completed_count = 1000 09:15 completed_count = 100 09:30 completed_count = 700 09:45 completed_count = 200 Total completed count is 2000, calculation time is 1 hour. ➤ Between 10:00:00 and 10:59:59, no samples were received. Result for the hour is NO DATA, calculation time is 1 hour. ➤ Between 11:00:00 and 11:59:59, four samples were received: 11:00 completed_count = 0 11:15 completed_count = 0 11:30 completed_count = 0 11:45 completed_count = 100 Total completed count is 100, calculation time is 1 hour. <p>Average throughput over period=2100/3 hours=700</p>	No parameters

Rule (Rule #)	Description	Parameters
Value Chain (302)	<p>The Value Chain rule takes the value for the weakest child in each calculation cycle, and then calculates the average of these values over the report period. The calculation cycle is set by default to five minutes.</p> <p>This rule is useful when the failure of any of the child elements in a value chain implies the failure of the parent element. By taking the worst KPI result from the child values in each calculation cycle, the final average produced by this rule takes into account any failure that occurred during the report period (as opposed to a value that represents the failures of a single child, as is the case when using the Worst Child rule).</p> <p>Where the parent element can continue to function even when one or more elements are unavailable, you can allow for this by defining the number of children to be ignored in each calculation cycle. The rule then ignores the worst KPI results in each calculation cycle up to the number defined, and takes the next-worst result as the calculation cycle value.</p> <p>Note: This rule can be used only when all child (leaf) CIs use the time-based calculation method for the KPI (this is the default calculation method for monitor rules).</p> <p>For a detailed example of the rule, see "Example of the Value Chain Rule" on page 629.</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p> <p>"Number of ignored children" on page 639</p>

Rule (Rule #)	Description	Parameters
Volume Average Value (300)	<p>Note: This rule is deprecated in BSM 9.x.</p> <p>This rule measures the number of hits on a Real User Monitor page and calculates a page's availability. Volume Average Value takes into account the number of samples that are attributed to each of a CI's children. The more samples attributed to a child, the more the child influences the results. By comparison, RUM Page Availability calculates average availability for a CI, without taking into account the number of samples per child.</p> <p>Note: Although this rule can be used for any sample type, it is usually assigned to Real User Monitor. This is because the number of samples attributed to each child in Business Process Monitor and SiteScope is equal (unless configured otherwise).</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p>
Worst Child (Max.) (294)	<p>Service Level Management returns the highest value held by any of the child CIs. For example, when calculating the worst child result for the Response Time KPI, the child with the longest response time is worst.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>Example: During SLA creation, you set objectives for a Response Time KPI:</p>  <p>A Group CI with attached Response Time KPI has 3 children, CI1, CI2, and CI3, with the following values: 8.5 seconds, 10 seconds, and 12 seconds. At report generation time, the rule returns the highest value (12 seconds), and gives the SLA a Failed status (the color is red).</p>	<p>"calc_method" on page 636</p> <p>"hi_list" on page 637</p>

Rule (Rule #)	Description	Parameters																				
Worst Child (Min.) (293)	<p>Service Level Management returns the lowest value held by any of the child CIs. For example, when calculating the worst child result for the System Availability KPI, the child with the lowest percentage availability is the worst.</p> <p>This is a KPI calculation rule. For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p> <p>Example: During SLA creation, you set objectives for a System Availability KPI:</p> <div data-bbox="372 593 619 720"><table><tr><td> Exceeded</td><td>></td><td>99.0</td><td>%</td></tr><tr><td> Met</td><td>></td><td>98.5</td><td>%</td></tr><tr><td> Minor Breached</td><td>></td><td>90.0</td><td>%</td></tr><tr><td> Breached</td><td>></td><td>75.0</td><td>%</td></tr><tr><td> Failed</td><td>Otherwise</td><td></td><td></td></tr></table></div> <p>A Group CI with attached System Availability KPI has 3 children, CI1, CI2, and CI3, with the following values: 99%, 98.6%, 92%. At report generation time, the rule returns the lowest value (92%), and gives the SLA a Minor Breached status (the color is yellow).</p>	 Exceeded	>	99.0	%	 Met	>	98.5	%	 Minor Breached	>	90.0	%	 Breached	>	75.0	%	 Failed	Otherwise			"calc_method" on page 636 "hi_list" on page 637
 Exceeded	>	99.0	%																			
 Met	>	98.5	%																			
 Minor Breached	>	90.0	%																			
 Breached	>	75.0	%																			
 Failed	Otherwise																					

 **Additional Examples of Business Rule Usage**

This section provides examples of some of the more complex Service Level Management business rules. The following examples are described:

- "Example of the Value Chain Rule" on page 629
- "Examples of the EMS Events Availability Rule" on page 629
- "Example of the HI Availability Rule" on page 631
- "Examples of the SiteScope Monitor Rule" on page 632

Example of the Value Chain Rule

For details about the rule, see "Value Chain" on page 626.

You have a value chain service where a database is running on four servers. The database continues to run at full availability even when one of the three servers is down; however, at least three of the servers must be up for the database to be available.

In the SLA, you want the CI representing the database to use the Value Chain rule for the Availability KPI. (The Availability KPI rule used by the child CIs for the database, representing the servers, is irrelevant.) To achieve this, you do the following:

- You ensure that the leaf CIs in the hierarchy for the value chain service are all using the time-based calculation method for the Availability KPI.
- You edit the Availability KPI definition for the database CI, so that **Value Chain** is selected as the business rule, and the **Number of ignored children** is set as **1**.

For each calculation cycle, the worst availability value from the four child CIs is ignored, and the worst result from the remaining three CIs is taken as the value for the calculation cycle. This means that if one server fails in a calculation cycle, it does not affect the overall availability value for the database.

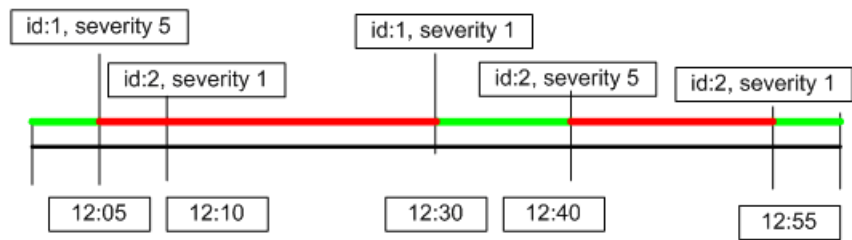
If more than one server fails during a calculation cycle, this does affect the overall availability. For example, in the sixth calculation cycle for the period, one child CI has a value of 80% availability, and a second has a value of 85% availability. The other two CIs have 100% availability. The value used for that calculation cycle is 85%.

Examples of the EMS Events Availability Rule

For details about the rule, see "EMS Events Availability" on page 585.

The EMS Events Availability rule calculates status for the System Availability KPI, assigned to an EMS Monitor CI. The following examples illustrate how this rule is calculated.

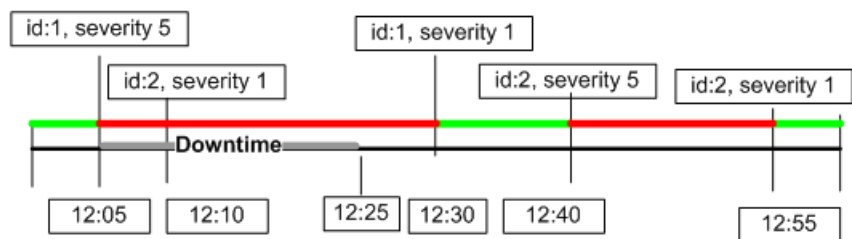
In this example, the Lowest severity failure value has been set to 3; higher values indicate not available and lower values indicate available.



At 12:05 a sample (id:1) arrives with severity 5, indicating the EMS monitor is not available. This status changes when a sample with this ID arrives with severity 1, at 12:30. At 12:40 a sample (id:2) arrives with severity 5, indicating the EMS monitor is not available. This status changes when a sample with this ID arrives with severity 1, at 12:55.

The total Available time is 20 minutes, out of a total calculation time of 60 minutes. The rule calculation result is 33.33% Available.

The following example illustrates the same samples, with a downtime calculation:



A Downtime is configured between 12:05 and 12:25.

The total Available time is 20 minutes, out of a total calculation time of 40 minutes. The rule calculation result is 50% Available.

Example of the HI Availability Rule

For details about the rule, see "HI Availability" on page 591.

The HI Availability rule uses health indicator samples sent by EMS monitors to calculate CI availability. In the following example, the **Lowest severity failure value** has been set to **Critical**; lower severity values indicate available.

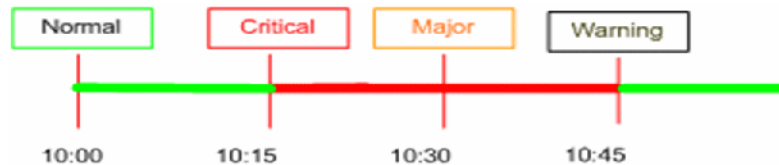
Between 00:00-1:00, four samples are received, as follows:



The total available time is 20 minutes, out of a total calculation time of 60 minutes. The rule calculation result is 33.33% available.

In the following example, the **Lowest severity failure value** has been set to **Major**; lower severity values indicate available.

Between 10:00-11:00, four samples are received, as follows:



The total available time is 30 minutes, out of a total calculation time of 60 minutes. The rule calculation result is 50% available.

Examples of the SiteScope Monitor Rule

A health indicator for a CI can receive multiple measurements from multiple SiteScope monitors. The SiteScope Monitor rule calculates average availability for the health indicator, based on all of the measurements sent to the health indicator. For more details see "SiteScope Monitor Rule" on page 607.

When a few samples arrive with the same timestamp, the worst sample's value is used in calculations. The rule calculates a sample's duration until the next sample arrives, or until the end of the calculation cycle.

The following examples illustrate how this rule is calculated.

Example of a single collection cycle

During a collection cycle, 5 samples are received:

sample 1 (10:00:00) - sample value: 1
sample 2 (10:00:00) - sample value: 3
sample 3 (10:00:00) - sample value: 0
sample 4 (10:02:00) - sample value: 1
sample 5 (10:02:00) - sample value: 0

In this example, samples with a value of zero (0) are filtered out; only samples with values of 1 (available) or 3 (not available) are included in calculations.

Durations and values are calculated as follows:

- sample 1 - duration 0 minutes; sample value: 1
- sample 2 - duration 2 minutes (10:00:00-10:02:00); sample value: 3
- sample 4 - duration 3 minutes (to the end of calculation cycle) - sample value: 1

Note that since samples 1 and 2 have the same timestamp, the worst value is used, and the duration is 2 minutes (until the next valid sample arrives).

Example of one hour calculation

The following samples are received:

14:00:00: 1

14:00:01: 0

14:00:02: 1

14:00:05: 0

(These four samples are considered a single value of 1, starting from 14:00:00)

14:04:00: 3

14:04:04: 0

(This is a single value of 3, from 14:04:00)

14:10:00: 0

14:10:00: 1

14:10:05: 1

(This is a single value of 1, from 14:10:00)

14:20:00: 1

14:20:00: 0

14:20:00: 0

(This is a single value of 1, from 14:20:00)

14:30:00: 3

14:30:00: 3

14:30:00: 3

(This is a single value of 3, from 14:30:00)

14:40:00: 0

14:40:00: 0

14:40:00: 0

14:40 - 15:00: no data

The three samples from 14:40 are filtered out.

The last valid sample (from 14:30) has a duration of 10 minutes. The last 20 minutes are out of calculation.

The rule logic is as follows:

- 14:00 - 14:04: 100%
- 14:04 - 14:10: 0%
- 14:10 - 14:30: 100%
- 14:30 - 14:40: 0%
- 14:40 - 15:00: no data, out of calculation

The rule result is 24 minutes of 100% availability, out of a total of 40 minutes = 60% available.

List of Service Level Management Business Rule Parameters

The rule parameters are as follows (in alphabetical order):

Parameter	Description
Aggregated Calculation Script	For API rules, defines the calculateAggregatedKPI method implementation. Default/Mandatory: (no default)/Yes
Availability field	The name of the availability field in the external source sample. Default/Mandatory: (no default)/Yes
Availability threshold	The availability threshold is used to define if a cluster is available. A cluster is available when a defined, minimum number of child CIs reaches this threshold. Default/Mandatory: 90/Yes
Available value	The availability value as it appears in the external source sample. If the availability value matches this value, the sample is considered available. For any other value, the sample is considered unavailable. Examples of values: yes/no, true/false, 0/1. Default/Mandatory: (no default)/Yes
Breached weight	The weight assigned to Breached status. Any positive number can be assigned (negative numbers and are 0 calculated as 1). Default/Mandatory: 1/Yes

Parameter	Description
calc_method	For KPI rules, defines which indicators are used to calculate the KPI: 0 - HIs and child KPIs 1 - HIs only 2 - Child KPIs 3 - HIs; if none exist, use child KPIs Default/Mandatory: 0/No
Calculation field	Select one of the following values: Total time which corresponds to the total page download time. Server time which corresponds to the total time the page remains on the server. Default/Mandatory: Total time/Yes
Calculation method	Select one of the following values: sample-based when you want the rule to calculate results per sample time-based when you want the rule to calculate results by sample duration. Default/Mandatory: Time Based/Yes
Consumer	Defines the consumer data that is relevant for the KPI, for SOA Web service data monitored by HP Diagnostics. Default/Mandatory: Undefined/No
Default category	The default probable outage cause for use in Outage Summary reports. Default/Mandatory: Undefined/No
Denomination	For an API Simplified Average rule, the number or value you enter in this area is used to divide the Enumerator result. Default/Mandatory: (no default)/Yes

Parameter	Description
Dimension name	Internal. Do not modify. The name of the required field in the HP Operations Manager sample. Default/Mandatory: <according to context>/Yes
EMS Severity failure value	At this value, or any higher severity value, the severity level is considered as a failure. Default/Mandatory: 3/Yes
Enumerator	For an API Simplified Average rule, enter the name of the sample field you want to use in the rule calculation in the following format: sample.<field name>. Default/Mandatory: (no default)/Yes
Exceeded weight	The weight assigned to Exceeded status. Any positive number can be assigned (negative numbers and are 0 calculated as 1). Default/Mandatory: 1/Yes
Failed weight	The weight assigned to Failed status. Any positive number can be assigned (negative numbers and are 0 calculated as 1). Default/Mandatory: 1/Yes
Final state	The state at which the lifecycle of the incident ends. Default/Mandatory: Close/Yes
hi_list	For KPI rules, this is the list of HIs used to calculate the KPI. Default/Mandatory: (empty list)/No
HIDE_MEASUREMENT_TYPE_ID	Internal; do not modify.

Parameter	Description
Hide objective panel	Internal. Hides the Objectives panel in the KPI Definition dialog box, when objectives are not relevant for the KPI. Default/Mandatory: True/Yes
Ignore timed out trimming	Exclude samples that are timed out. Default/Mandatory: false/Yes
Initial state	The state at which the lifecycle of the incident starts. Default/Mandatory: Open/Yes
isGroovyRuleType	Internal for API rules; do not modify.
Is PNR feeder	Enables Service Level Management to send PNR data to Service Health. Default/Mandatory: true/Yes
KPI Calculation Script	For API rules, defines the calculateKPI method implementation. Default/Mandatory: (no default)/Yes
Lowest severity failure value	At this value (or higher severity), the severity indicates failure. Default/Mandatory: (default depends on the rule)/Yes
Max duration	(For advanced users only.) The maximum duration in hours that can be considered a single outage. If exceeded, a new outage begins. Default/Mandatory: (no default)/No
Measurement type	Type of measurement to be monitored by the rule. For details, see "How to Enable SiteScope Measurement Type Filtering" on page 554. Default/Mandatory: (no default)/Yes

Parameter	Description
Met weight	The weight assigned to Met status. Any positive number can be assigned (negative numbers and are 0 calculated as 1). Default/Mandatory: 1/Yes
Minimum duration	The minimum duration in seconds that can be considered an outage. Default/Mandatory: 0/Yes
Minimum number of children	The minimum number of child CIs that must be available for the cluster to be considered available (see also Availability Threshold definition). Default/Mandatory: Exceeded/Yes
Minimum number of failures	The minimum number of failures that must consecutively occur to be considered an outage. Default/Mandatory: 2/Yes
Minor breached weight	The weight assigned to Minor Breached status. Any positive number can be assigned (negative numbers and are 0 calculated as 1). Default/Mandatory: 1/Yes
No data timeout	(For advanced users only). The number of seconds from the time of the latest sample until the status changes to NO DATA. Relevant only when Time Based is chosen for the Calculation method parameter. Default/Mandatory: 3600/Yes
Number of ignored children	The number of child CIs with the worst KPI results that are ignored in each calculation cycle. Default/Mandatory: 0/Yes
Outage Calculation Script	For API Outage rules, calculateOutage method implementation. Default/Mandatory: (no default)/Yes

Parameter	Description
Passed status	Defines the minimum status level for results received in a sample, based on a duration threshold used in Business Process Insight. Only results with that status or higher are included in the rule calculations. Default/Mandatory: ok_status/Yes
Passed status	Defines the minimum status level for results received in a sample, based on a health status used in Business Process Insight. Only results with that status or higher are included in the rule calculations. Default/Mandatory: healthy_status/Yes
Percentile condition	Defines a successful result by setting the value that should be compared to the objective and which operator should be used. Default/Mandatory: <8/No
Performance field	The name of the performance field in the external source sample. Default/Mandatory: (no default)/Yes
requires selector	Internal parameter for rules that require selector; do not modify.
Rule Template Setting Key	Internal for API rules; do not modify.
Sample and Duration Filter Script	For API rules, defines the isSampleAndDurationValid method implementation. Default/Mandatory: (no default)/No
Sample Fields	For API rules, defines the list of sample fields whose values can be included in the calculation. Default/Mandatory: (no default)/No

Parameter	Description
Sample Filter Script	For API rules, defines the isSampleValid method implementation. Default/Mandatory: (no default)/No
Severity	The lowest severity value for calculations. Only incidents of this severity value and higher in severity are calculated. The value is an integer, as defined in the conversion method in the SiteScope ticket.config file. For details, see "HP Service Manager Monitor Settings" in <i>Monitor Reference</i> in the SiteScope Help. Default/Mandatory: 3/Yes
Severity failure value (for SiteScope Monitor Outage rule)	The severity value, for status changes, at which an SLA is considered unavailable. Default/Mandatory: 5/Yes
Severity failure value	At this value, or any higher severity value, the severity level is considered as a failure. Default/Mandatory: 3/Yes
Six Sigma condition	Defines whether to calculate the Six Sigma performance larger than or smaller than the objective value, and which operator should be used. Default/Mandatory: <8/Yes
Success status	The status to which all child CIs are compared: if the child CI's status is greater than, or equal to, this value, the child CI is considered successful. Default/Mandatory: Exceeded/Yes
Time stamp field	The name of the time stamp field in the external source sample. Default/Mandatory: time_stamp/Yes

Parameter	Description
Trimming condition	Default condition that specifies when the sample is trimmed. Default/Mandatory: (no default)/No
Use weighting	Select one of the following values: true: include weighting values false: do not include weighting values Default/Mandatory: false/Yes
Value	For an API Simplified Duration-Based Average rule, enter the name of the sample field you want to use in the rule calculation in the following format: sample.<field name>. Default/Mandatory: (no default)/Yes



Business Rules User Interface

This section includes:

- Business Rules Repository Page on page 643
- New Rule/Edit Rule Dialog Box on page 645
- New/Edit Rule Parameter Dialog Box on page 648
- Restore Defaults Dialog Box on page 649




Business Rules Repository Page








This page displays the list of predefined and customized rules. These rules are available throughout HP Business Service Management to determine how source data is imported. The repository enables an advanced user to modify existing repository rules and create new ones.

Note: For details on each of the rules, see "List of Service Level Management Business Rules" on page 557.

To access	Select Admin > Service Level Management > Repositories > Business Rules
Important information	To modify a rule, select the rule and click the Edit button, or right-click the rule and access the Edit menu command. For details, see "New Rule/Edit Rule Dialog Box" on page 645.
Relevant tasks	"How to Customize a Business Rule Template" on page 554

User interface elements are described below:

UI Element (A-Z)	Description
	New Rule. Click to create a new rule.
	Edit Rule. Click to edit the details of a selected rule.
	Clone Rule. Select a rule and click the Clone Rule button to create a new rule, using the selected rule as a template. Select multiple rules by holding down the CTRL key.

UI Element (A-Z)	Description
	Delete Rule. Deletes one or more selected custom rules. If you delete a Predefined (Customized) Rule, it is restored to its Predefined settings. Predefined rules cannot be deleted.
	Restore to Default. Select an edited rule whose Type is Predefined (Customized), and click to restore it to its original settings.
	Refresh. Click to refresh the page.
	Help. Click to display help on predefined rules.
	Export to Excel. Click to export the table to an Excel file.
	Export to PDF. Click to export the table to a PDF file.
	Change visible columns. Opens the Choose Columns to Display dialog box, where you select the columns you want to display in the table. By default, the ID column which contains internal KPI ID numbers is not displayed.
Description	The description of the rule.
Name	The name of the rule.
Type	Indicates one of the following rule types: <ul style="list-style-type: none">➤ Custom. New or cloned rules.➤ Predefined. Out-of-the-box rules.➤ Predefined (Customized). Out-of-the-box rules that have been edited. You can restore such a rule to its original settings using the Restore to Default button.

New Rule/Edit Rule Dialog Box

This dialog box enables you to create or modify rule properties.

To access	In the Business Rule Repository page, click the New Rule button, or select a rule and click the Edit Rule button.
Important information	For a list of Service Level Management rules and their details, see "List of Service Level Management Business Rules" on page 557.
Relevant tasks	"How to Customize a Business Rule Template" on page 554

General Rule Settings Area





User interface elements are described below:

UI Element (A-Z)	Description
Class Name	The name of the class the rule belongs to. If you create a new rule using a new class, edit this field to include the full qualified name of the Java class that implements the rule, with the full path to the root.
Description	The description of the rule.
Name	The name of the rule.

Advanced Rule Settings Area

This area enables you to select the CI types and KPIs for which a rule can be applied, and define rule units.

User interface elements are described below:

UI Element (A-Z)	Description
	Click this button to move all KPIs or CITs to the Selected KPIs or Selected CITs list.
	Select a KPI or CIT and click this button to add it to the Selected KPIs or Selected CITs list. Select multiple KPIs or CITs by holding down the CTRL key.
	To remove a KPI or CIT from the list of applicable KPIs or CITs, select it from the Selected KPIs or Selected CITs list and click this button.
	Click this button to remove all KPIs or CITs from the Selected KPIs or Selected CITs list.
Applicable for CI Types	<p>Define the CI types for which the rule is applicable, using the two lists:</p> <ul style="list-style-type: none">➤ CI Types. The CIT hierarchy.➤ Selected CITs. The CITs for which the rule is applicable. <p>Use the arrow buttons to move CITs from one list to the other.</p> <p>Note: In addition to typical CITs, the CI Types pane also contains the following elements unique to SLM: Service Level Agreement, and breakdown CIs (such as BPM Application from Location). You can select these from the SLM Element list in order to make the rule applicable to the selected element. For details on breakdown CIs, see "Breakdown by Location for BPM CIs" on page 48.</p>






UI Element (A-Z)	Description
Rule Type	<p>Select one of the following options:</p> <ul style="list-style-type: none"> ➤ Health Indicator. The rule can be used to calculate health indicators. ➤ KPI. The rule can be used to calculate KPIs. ➤ Sibling. The rule can be used to calculate both KPIs and health indicators. <p>For details, see "Health Indicator and KPI Calculation Rules" in <i>Using Service Health</i>.</p>
Units	<p>Enter the type of unit applicable to the rule results. For details, see "Units of Measurement for Thresholds" in <i>Using Service Health</i>.</p>

Rule Parameters Area

This area enables you to modify existing information or enter new information about a rule's parameters.

To modify a parameter, select the parameter and click the **Edit** button. For details, see "New/Edit Rule Parameter Dialog Box" on page 648.

User interface elements are described below:

UI Element (A-Z)	Description
	New Rule Parameter. Click to create a new rule parameter.
	Delete Rule Parameter. Deletes one or more selected rule parameters.
	Edit Rule Parameter. Click to edit the details of a selected rule parameter.
	Select all. Selects all the rule parameters.
	Clear Selection. Clears the selection of rule parameters.

UI Element (A-Z)	Description
Configurable	If true, the parameter is visible and open for editing in the Assignments tabs, and in the SLA Wizard when editing an KPI or HI instance. If false, the parameter can only be edited in the repository.
Default value	The default value of the parameter.
Description	The parameter description.
Name	The name of the parameter.



New/Edit Rule Parameter Dialog Box

This dialog box enables you to modify existing information or enter new information about a rule's parameters.

To access	In the New Rule or Edit Rule dialog box, in the Rule Parameters area; click the New button to enter new parameters or click the Edit button to modify a parameter.
Important information	<ul style="list-style-type: none">➤ For a list of rule parameters and their default values, see each rule description in "List of Service Level Management Business Rules" on page 557.➤ If the CalculationGranularity parameter is not changed when there is a heavy calculation load, this does not cause wrong results, but note that calculations are done on a longer time scale (for example, calculation may be done on a history size of three hours instead of one hour).
Relevant tasks	"How to Customize a Business Rule Template" on page 554

User interface elements are described below:

UI Element (A-Z)	Description
Default value	The default value of the parameter in Service Level Management. Note that for some of the rules, the default values can be: sampleBased or timeBased and indicates if the calculation performed by the rule is based on the sample values or is calculated.
Description	The parameter description.
Name	The name of the parameter.
Parameter value is configurable	If the check box is checked, the parameter is visible and open for editing in the Assignments tabs, and in the SLA Wizard when editing an KPI or HI instance. If it is unchecked, the parameter can only be edited in the repository.
Presentation class	The name of the presentation class. For future use.
Type	The type of parameter; possible values are: Boolean (can be false or true), Integer , Long , Double (can be a decimal number), or String .
Units	The type of unit applicable to the rule parameter (for example, milliseconds for performance time data).

Restore Defaults Dialog Box

This dialog box enables you to restore predefined business rule settings, for rules whose type is Predefined (Customized).

To access	In the Edit Rule dialog box, click the Restore Default button.
Relevant tasks	"How to Customize a Business Rule Template" on page 554

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

UI Element (A-Z)	Description
<Modified fields>	<p>The rule definition fields that have been modified are displayed.</p> <p>Select the fields which you want to restore to default, and click Save.</p>

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SLM Rules API

This chapter includes:

Concepts

- SLM Rules API Overview on page 653
- API Simplified Average Rules on page 655
- API Group and Sibling Rule on page 656
- Sample Rule Calculation Mechanism - Overview on page 660
- Sample Rules: Calculating the KPI Based on Samples on page 660
- Sample Rules: Calculating the KPI's Aggregated Results on page 662
- When to Use Sample or Duration-Based Sample Rules on page 663
- API Sample Rule on page 664
- API Duration-Based Sample Rule on page 667
- Duration-Based Sample Continuity on page 670
- Filtering with the Duration-Based Sample Rule on page 672
- API Outage by Samples Rule on page 673
- Creating Rules with the Rules API on page 676

Tasks

- How to Define an API Rule for a Specific KPI or Outage on page 678
- How to Create a Text File-Based API Rule on page 679
- How to Define an API Rule Within the Rule Repository on page 683
- How to Work with Tooltip Entries on page 684
- How to Write to Log Files From the Rules API Code on page 685

- How to Include a CI Property in Rules API Calculations on page 687

Reference

- Examples - API Group and Sibling Rule on page 688
- Examples - API Sample Rule on page 688
- Examples - API Duration-Based Sample Rule on page 695
- Examples - API Outage by Samples Rule on page 705

Concepts

SLM Rules API Overview

Note: In BSM versions 9.00 and later, the rules that calculate indicator statuses and values based on samples ("API Sample Rule" on page 664 and "API Duration-Based Sample Rule" on page 667) are used to calculate metric-based health indicators (HIs).

Throughout the Rules API documentation, you will see references to various methods used to calculate KPIs. In BSM versions 9.00 and later, when calculating sample-based values, these methods are used to calculate metric-based HIs.

This chapter describes how to use the Rules API to create business rules to calculate Key Performance Indicators (KPIs). The default Service Level Management rules appear in the section "List of Service Level Management Business Rules" on page 557.

The recommended way to create new rules is with the Rules API. The Rules API enables you to create rules using the Groovy dynamic scripting language. Users of this API should be familiar with Groovy and Java syntax, and with BSM administration and applications.

The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:

```
\\<HP Business Service Management Gateway Server root directory>\
AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules_A
PI\index.html
```

This section also includes the following topics:

- "Types of API Rules" on page 654
- "Creating API Rules" on page 655

- "Tooltips and Log Files" on page 655

Note: Extensive use of rules which use the Rules API will affect the performance of SLA calculation.

Types of API Rules

The following are the API rules in Service Level Management:

- **Simplified Average Rule and Simplified Duration-Based Average Rule.** These rules calculate health indicator average values based on data taken from sample fields, and enables you to manipulate these values. These rules are simpler to define than other API rules, and only require you to enter the sample field you want used in the calculation. For details, see "API Simplified Average Rules" on page 655.
- **Group and Sibling Rule.** This rule calculates KPIs based on aggregated values received from other KPIs, rather than from original sample data. The received data can come from the KPIs of child CIs (group), or from another KPI associated with the same CI (sibling). For details, see "API Group and Sibling Rule" on page 656.
- **Sample Rule.** This rule calculates KPIs based on data taken from sample fields. For details, see "API Sample Rule" on page 664.
- **Duration-Based Sample Rule.** This rule calculates KPIs based on data taken from sample fields, and uses both the sample's value and its duration within the rule calculation (for example, availability over time or backlog over time). For details, see "API Duration-Based Sample Rule" on page 667.

For details on how sample rules are calculated, see "Sample Rule Calculation Mechanism - Overview" on page 660.

- **Outage by Samples Rule.** This rule calculates outages based on data received from samples. For details, see "API Outage by Samples Rule" on page 673.

Creating API Rules

Rules can be created using the Rules API in three ways:

- Using the KPI Definition page to create a rule for a specific KPI.
- Using a text file to create a new rule for multiple KPIs.
- Using a clone of an API rule template in the rule repositories.

These methods are described in "Creating Rules with the Rules API" on page 676.

Tooltips and Log Files

To display KPI information in tooltips when working with the Rules API, see "How to Work with Tooltip Entries" on page 684.

You can write to log files from the Rules API code, as described in "How to Write to Log Files From the Rules API Code" on page 685.

API Simplified Average Rules

The API Simplified Average Rule and API Simplified Duration-Based Average Rule calculate health indicator average values based on data taken from sample fields, and enable you to easily manipulate these calculations.

API Simplified Average Rule

The Simplified Average Rule calculates an average of sample field values, uses two rule parameters: Enumerator, and Denomination.

- In the **Enumerator** area, enter the name of the sample field you want to use in the calculation in the following format: **sample.<field name>**.

To calculate the average value of the sample field dValue, type **sample.dValue** in the Enumerator. The rule takes the values of this field from the samples that come in during the calculation cycle, and calculates their average. This average becomes the value of the health indicator for the cycle.

You can also use mathematical expressions to manipulate these calculations. For example, suppose you have an EMS integration sending samples with two values: `attr1` representing sent text messages, and `attr2` representing failed text messages. To calculate the average number of successful messages (`attr1-attr2`), type `sample.attr1-sample.attr2` in the Enumerator.

- You can use the **Denomination** area to perform actions on the above value; the number or value you enter in this area is used to divide the Enumerator result.

For example, if you enter `sample.dValue` in the Enumerator, and 2 in the Denomination, the average of the `dValue` fields on the samples is divided by two, and the health indicator value is half the average of the sample fields.

API Simplified Duration-Based Average Rule

The Simplified Duration-Based Average Rule calculates an average of sample field values, taking the duration values from the samples themselves.

In the **Enumerator** field, enter the name of the sample field you want to use in the calculation in the following format: **Sample.<field name>**.

The rule takes the durations from the samples and calculates the average of sample field value, divided by their durations.

For example, if the value of the specified field was 10 for 40 minutes and 5 for 20 minutes, the rule calculates $(10 \times 40) + (5 \times 2) / 60 = 8.33$. The health indicator's average value for this hour will be 8.33.

API Group and Sibling Rule

An API Group and Sibling Rule calculates KPIs based on data received from other KPIs, rather than from original sample data. The received data can come from the KPIs of child CIs, or from other KPIs or HIs associated with the same CI.

The KPI is calculated based on the aggregated values of the group or sibling KPIs or HIs. The calculated KPI results represent the aggregated results.

Note: If you are creating a sibling rule, make sure that the KPI is calculated after its sibling KPIs, as defined by the KPI's Calculation Order field. For details, see "KPIs Repository page" on page 666.

This section also includes the following topics:

- "Group and Sibling Rule Methods and Fields" on page 657
- "Defining a Group and Sibling Rule in the KPI Definition Page or Rule Repository" on page 659
- "Defining a Group and Sibling Rule Using a Text File" on page 659

Group and Sibling Rule Methods and Fields

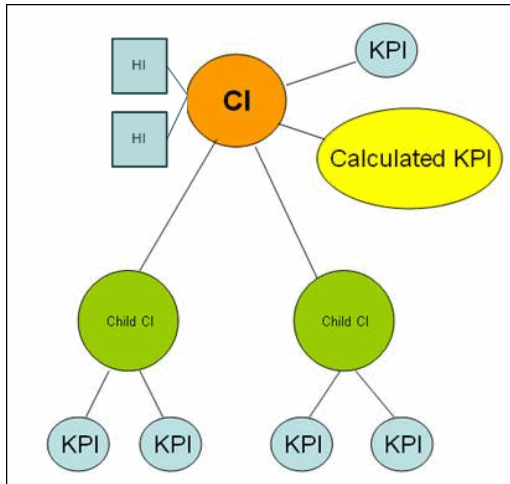
The Group and Sibling rule implements the Rules API Interface **GroupAndSiblingCalculator**, using the following guidelines:

- In this interface, the only method is **calculateKPI**. The method signature is:

```
public void calculateKPI(CI ci, KPI kpi)
```
- The **calculateKPI** method includes the parameters **ci** and **kpi**, which represent the current CI, and the KPI or HI whose value the API rule calculates.
- The **ci** parameter type is **CI**, and is used as an accessor to KPIs of child CIs or sibling KPIs, or HIs on the CI. The **KPI** objects returned by **CI** are used to get the aggregated values of these KPIs or HIs.
- The **kpi** parameter type is **KPI**, and is used to set calculation results.

In the following illustration, the Calculated KPI is calculated based on the sibling or child KPIs, and it is represented by the **kpi** parameter.

The CI to which the Calculated KPI is assigned, is represented by the **ci** parameter, and it is an accessor to the other KPIs and HIs.



The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:
\\<HP Business Service Management Gateway Server root directory>\AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules_API\index.html

For examples of Group and Sibling rules, see "Examples - API Group and Sibling Rule" on page 688.

API rules can be defined within the KPI Definition page or Rule Repository, or using a text file template, as described in "Creating Rules with the Rules API" on page 676.

Defining a Group and Sibling Rule in the KPI Definition Page or Rule Repository

To define a Group and Sibling rule using the KPI Definition page or within the Rule Repository, enter the **calculateKPI** method implementation in the **KPI Calculation Script** area.

The parameters **ci** and **kpi** of the **calculateKPI** method are available for use in this script.

For detailed instructions, see "How to Define an API Rule for a Specific KPI or Outage" on page 678 or "How to Define an API Rule Within the Rule Repository" on page 683.

Accessing a Specific Child KPI in the KPI Definition Page

When creating a Group rule for a specific KPI in the KPI Definition page, to access a specific child KPI, the API includes a mechanism to simplify the code. When defining your KPI Calculation Script, you can enter the format "**<CI name>**". "**<KPI name>**".

For an example of this, see "Examples - API Group and Sibling Rule" on page 688.

Defining a Group and Sibling Rule Using a Text File

To define a Group and Sibling rule using a text file, use the **SImGroupAndSiblingTemplate.groovy** template as described in "How to Create a Text File-Based API Rule" on page 679.

Within the text file, enter the **calculateKPI** method body.

Sample Rule Calculation Mechanism - Overview

The API Sample rule and Duration-Based Sample rule calculate KPIs based on sample values, for each combination of calendar and tracking period. This calculation process is divided into calculation cycles.

Each calculation cycle, the following steps occur:

- 1** The samples that are in the Profile database for the calculation cycle time are retrieved. For example, if a KPI is calculated for 10:00-11:00 and the cycle duration is 5 minutes, the samples that are in the database with the timestamp 10:00-10:05 are used in the first cycle's calculation.
- 2** The samples go through a filtering mechanism which determines which samples are included in the calculation.
- 3** The KPI is calculated for the cycle based on the samples that passed through the filtering mechanism. For details, see "Sample Rules: Calculating the KPI Based on Samples" on page 660.
- 4** Aggregated KPI results are calculated based on the results for the cycle, and the previous aggregated results for the full calculation period. These aggregated KPI results are displayed in the Service Level Management reports. For details, see "Sample Rules: Calculating the KPI's Aggregated Results" on page 662.

Sample Rules: Calculating the KPI Based on Samples

KPI results are calculated for each calculation cycle by the **calculateKPI** method, based on the **samples** parameter. The **samples** parameter is a **List** of **Sample** objects, which hold sample field values.

The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:

```
\\<HP Business Service Management Gateway Server root directory>\
AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules_A
PI\index.html
```

The **calculateKPI** method can be used to set KPI value, keys, and tooltips.

The value, keys, and tooltips set by the **calculateKPI** method are available to the **calculateAggregatedKPI** method, as described in "Sample Rules: Calculating the KPI's Aggregated Results" on page 662.

This section also includes the following topics:

- "Setting KPI Value" on page 661
- "Setting KPI Calculation Keys" on page 661
- "Setting KPI Tooltips" on page 661

Setting KPI Value

KPI value should be used when calculating KPI value directly from the sample fields. For details on setting the value, refer to the **setValue** method documentation.

For an example which uses KPI value, see "Example - Sample-Based Maximum Response Time Rule" on page 693.

Setting KPI Calculation Keys

Each KPI can hold keys which are used as helpers to calculate value or tooltips. For example, when calculating average response time (total response time / total number of samples), the **setKey** method is used to set two keys for the current cycle: total response time, and total number of samples. These keys are aggregated and used to calculate the aggregated value of the KPI.

For an example which uses KPI calculation keys, see "Example - Sample-Based Average Response Time Rule" on page 689.

Setting KPI Tooltips

KPI tooltips should be used when calculating KPI tooltips directly from the sample fields. For details on setting the tooltips, refer to the **setTooltip** method documentation.

Sample Rules: Calculating the KPI's Aggregated Results

Using the values, tooltips, and keys set by the **calculateKPI** method, the **calculateAggregatedKPI** method calculates aggregated values, keys, and tooltips.

The aggregated results are based on the KPI calculation results for the cycle, and the aggregated calculation results from the previous cycles.

The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:

```
\\<HP Business Service Management Gateway Server root directory>\
AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules_A
PI\index.html
```

The **calculateAggregatedKPI** method can be used to set KPI aggregated value, keys, and tooltips.

This section also includes the following topics:

- "Setting KPI Aggregated Value" on page 662
- "Setting KPI Aggregated Calculation Keys" on page 663
- "Setting KPI Status" on page 663
- "Setting KPI Aggregated Tooltips" on page 663

Setting KPI Aggregated Value

The KPI aggregated value can be calculated based on KPI value (for example, minimum calculation), or based on aggregated keys (for example, average response time). The KPI aggregated value is displayed in the Service Level Management report. For details on setting the aggregated value, refer to the **setAggregatedValue** method documentation.

For an example which calculates KPI aggregated value based on KPI value, see "Example - Sample-Based Maximum Response Time Rule" on page 693.

For an example which calculates KPI aggregated value based on KPI aggregated keys, see "Example - Sample-Based Average Response Time Rule" on page 689.

Setting KPI Aggregated Calculation Keys

The aggregated keys are used as helpers to calculate aggregated value or aggregated tooltips. The aggregated keys are calculated based on aggregated keys and keys from the current cycle.

For example, when calculating average response time (total response time / total number of samples), the **setAggregatedKey** method is used to set two aggregated keys: total response time, and total number of samples. These value are then used to calculate the aggregated KPI value.

For details on setting the aggregated keys, refer to the **setAggregatedKey** method documentation.

For an example which uses KPI aggregated calculation keys, see "Example - Sample-Based Average Response Time Rule" on page 689.

Setting KPI Status

If your rule sets KPI status, use the **setStatus** method within the **calculateAggregatedKPI** method.

Setting KPI Aggregated Tooltips

The KPI aggregated tooltips can be calculated based on KPI tooltips, or aggregated keys. The KPI aggregated tooltips are displayed in the Service Level Management report.

For details on setting the aggregated tooltips, refer to the **setAggregatedTooltip** method documentation.



When to Use Sample or Duration-Based Sample Rules

Use a Sample rule to calculate KPIs based on sample values and number of samples (when needed), without using sample duration in the calculation.

Use a Duration-based Sample rule to calculate KPIs based on sample values and sample duration, without using the number of samples in the calculation.

Example of Average Response Time Calculation

Average response time can be calculated using a Sample rule or a Duration-Based Sample rule.

At 10:00 a sample is received with 100 seconds as response time, and at 10:55 a sample is received with 50 seconds as response time. The rule calculation is for 10:00-11:00.

The API Sample rule calculates average response time (total response time / number of samples) = 75 seconds.

The API Duration-Based Sample rule calculates weighted response time based on the value of the samples, and on their durations. The duration of the first sample is 55 minutes and the duration of the second sample is 5 minutes. The weighted average response time for the period is $(55 \times 100 + 5 \times 50) / 60 = 95.83$ seconds.

API Sample Rule

A Sample rule calculates KPIs based on aggregated data taken from sample fields. For details on when to use the Sample rule, see "When to Use Sample or Duration-Based Sample Rules" on page 663.

For details on how the rule is calculated, see "Sample Rule Calculation Mechanism - Overview" on page 660.

This section includes the following topics:

- "Sample Rule Methods and Fields" on page 665
- "Defining a Sample Rule in the KPI Definition Page or Rule Repository" on page 666
- "Defining a Sample Rule Using a Text File" on page 666

Sample Rule Methods and Fields

The Sample rule implements the Rules API Interface

SlmSamplesAggregatedCalculator, which contains the following methods:

```
public void calculateKPI(CI ci, SlmKPI kpi, List<Sample> samples)
```

```
public void calculateAggregatedKPI(CI ci, SlmKPI kpi)
```

```
public boolean isSampleValid(CI ci, SlmKPI kpi, Sample sample)
```

- The **calculateKPI** method calculates the KPI for each calculation cycle. This method includes the parameters **ci**, **kpi**, and **samples**. These represent the current CI, the KPI whose value the rule calculates, and the samples to be used in the rule calculation.
- The **kpi** parameter type is **SlmKPI**, and is used to set calculation results.
- The **samples** parameter is a **List** of **Sample** objects, which hold sample field values.
- The **calculateAggregatedKPI** method calculates the aggregated KPI. This method includes the parameters **ci** and **kpi**.
- The **isSampleValid** method is used to filter samples. If a sample is not valid, is not included in the calculation. Samples that are valid are included in the **samples** parameter of the **calculateKPI** method.
- The rule must also set the **sampleFields** field to define which sample fields are held by the **Sample** object. These values are the values used by the rule.

The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:

```
\\<HP Business Service Management Gateway Server root directory>\
AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules_A
PI\index.html
```

For detailed examples of Sample rules, see "Examples - API Sample Rule" on page 688.

API rules can be defined within the KPI Definition page or the Rule Repository, or using a text file template, as described in "Creating Rules with the Rules API" on page 676.

Defining a Sample Rule in the KPI Definition Page or Rule Repository

To define a Sample rule using the KPI Definition page or within the Rule Repository, fill in the fields as follows:

- **Sample Fields.** List the sample fields whose values can be included in the calculation; separate between the sample names with a comma (for example: "u_iStatus", "dResponseTime").
- **KPI Calculation Script.** Enter the **calculateKPI** method implementation; do not enter the method signature. The parameters **ci**, **kpi**, and **samples** of the **calculateKPI** method are available for use in this script.
- **Aggregated Calculation Script.** Enter the **calculateAggregatedKPI** method implementation; do not enter the method signature. The parameters **ci** and **kpi** of the **calculateAggregatedKPI** method are available for use in this script.
- **Sample Filter Script.** This field contains the default implementation of the **isSampleValid** method (by default, all samples are included in the calculation). You can edit this field to exclude samples from the calculation.

For detailed instructions, see "How to Define an API Rule for a Specific KPI or Outage" on page 678 or "How to Define an API Rule Within the Rule Repository" on page 683.

Defining a Sample Rule Using a Text File

To define a Sample rule using a text file template, use the **SlmSampleRuleTemplate.groovy** template file as described in "How to Create a Text File-Based API Rule" on page 679.

Within the text file, define the **sampleFields** field, the **calculateKPI** method body, and the **calculateAggregatedKPI** method body.

The **isSampleValid** method has a default implementation of return true (all samples are included in the calculation). To override, uncomment the method and enter your implementation.

API Duration-Based Sample Rule

A Duration-Based Sample rule calculates KPIs based on aggregated data taken from sample fields. The duration-based rule uses each sample's duration within the rule calculation (for example, availability over time or backlog over time).

For details on when to use the Duration-Based Sample rule, see "When to Use Sample or Duration-Based Sample Rules" on page 663. For details on how the rule is calculated, see "Sample Rule Calculation Mechanism - Overview" on page 660.

This section also includes the following topics:

- "Duration-Based Sample Rule Methods and Fields" on page 667
- "Defining a Duration-Based Sample Rule in the KPI Definition Page or Rule Repository" on page 669
- "Defining a Duration-Based Sample Rule Using a Text File" on page 670

Duration-Based Sample Rule Methods and Fields

The Duration-Based Sample rule implements the Rules API Interface **SlmSamplesTimeBasedAggregatedCalculator**, which contains the following methods:

```
public void calculateKPI(CI ci, SlmKPI kpi, List<Sample> samples)
public void calculateAggregatedKPI(CI ci, SlmKPI kpi)
public boolean isSampleValid(CI ci, SlmKPI kpi, Sample sample)
public boolean isSampleAndDurationValid(CI ci, SlmKPI kpi, Sample sample)
```

- The **calculateKPI** method calculates the KPI for each calculation cycle. This method includes the parameters **ci**, **kpi**, and **samples**. These represent the current CI, the KPI whose value the rule calculates, and the samples to be used in the rule calculation.
 - The **kpi** parameter type is **SlmKPI**, and is used to set calculation results.
 - The **samples** parameter is a **List** of **Sample** objects, which hold sample field values and sample durations. The **samples** parameter contains the samples that passed through a filter mechanism, as described in "Filtering with the Duration-Based Sample Rule" on page 672. The last sample used in the previous calculation cycles can also be included, as described in "Duration-Based Sample Continuity" on page 670.
- A sample's duration is defined as the interval from the sample timestamp to one of the following (whichever event occurs first):
 - The timestamp of the next sample, if the next sample is filtered using the **isSampleAndDurationValid** method.
 - The timestamp of the next sample within the cycle.
 - The end of the cycle.
- The **calculateAggregatedKPI** method calculates the aggregated KPI. This method includes the parameters **ci** and **kpi**.
- The **isSampleValid** and **isSampleAndDurationValid** method are used for filtering, as described in "Filtering with the Duration-Based Sample Rule" on page 672.

The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:

```
\\<HP Business Service Management Gateway Server root directory>\
AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules
_API\index.html
```

- The rule must also set the **sampleFields** field to define which sample fields are held by the **Sample** object. These values are the values used by the rule.

For detailed examples of Duration-Based Sample rules, see "Examples - API Duration-Based Sample Rule" on page 695.

API rules can be defined using the KPI Definition page or the Rule Repository, or using a text file template, as described in "Creating Rules with the Rules API" on page 676.

Defining a Duration-Based Sample Rule in the KPI Definition Page or Rule Repository

To define a Duration-Based Sample rule using the KPI Definition page or within the Rule Repository, fill in the fields as follows:

- **Sample Fields.** List the sample fields whose values can be included in the calculation; separate between the sample names with a comma (for example: "u_iStatus", "dResponseTime").
- **KPI Calculation Script.** Enter the **calculateKPI** method implementation; do not enter the method signature. The parameters **ci**, **kpi**, and **samples** of the **calculateKPI** method are available for use in this script.
- **Aggregated Calculation Script.** Enter the **calculateAggregatedKPI** method implementation; do not enter the method signature. The parameters **ci** and **kpi** of the **calculateAggregatedKPI** method are available for use in this script.
- **Sample Filter Script** and **Sample and Duration Filter Script.** These fields contain the default implementation of the **isSampleValid** and **isSampleAndDurationValid** methods (by default, all samples are included in the calculation). You can edit these fields to exclude samples from the calculation.

For detailed instructions, see "How to Define an API Rule for a Specific KPI or Outage" on page 678 or "How to Define an API Rule Within the Rule Repository" on page 683.

Defining a Duration-Based Sample Rule Using a Text File

To define a Duration-Based Sample rule using a text file template, use the **SlmDurationBasedSampleRuleTemplate.groovy** template file as described in "How to Create a Text File-Based API Rule" on page 679.

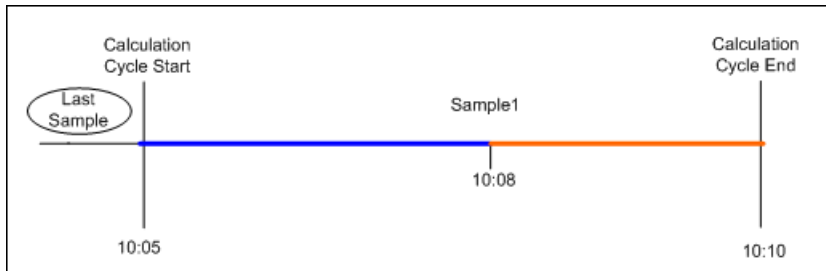
Within the text file, define the **sampleFields** field, the **calculateKPI** method body, and the **calculateAggregatedKPI** method body.

The **isSampleValid** and **isSampleAndDurationValid** methods have a default implementation of return true (all samples are included in the calculation). To override, uncomment the method and enter your implementation.

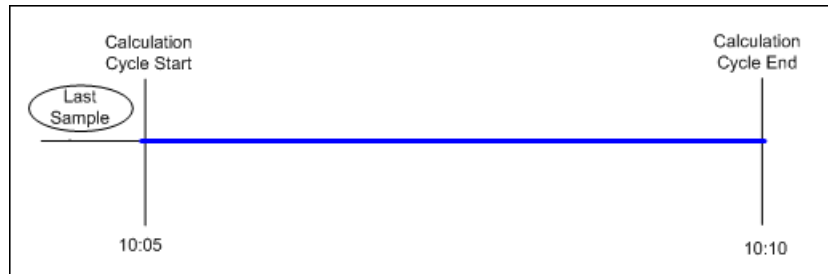
Duration-Based Sample Continuity

In the Duration-Based Sample rule, the first sample included in the **samples** parameter (for the **calculateKPI** method), is the last sample from the previous cycle's calculation. This enables a sample's value to be used over more than one calculation cycle.

For example, for the calculation cycle 10:05-10:10 there is one sample in the database (Sample1) with the timestamp 10:08. The **samples** parameter contains two samples: the last sample from the previous cycle (duration=3 minutes), and the sample from the current cycle (duration=2 minutes).



If there are no samples in the current cycle, the **samples** parameter contains the last sample from the previous cycle (duration=5 minutes).



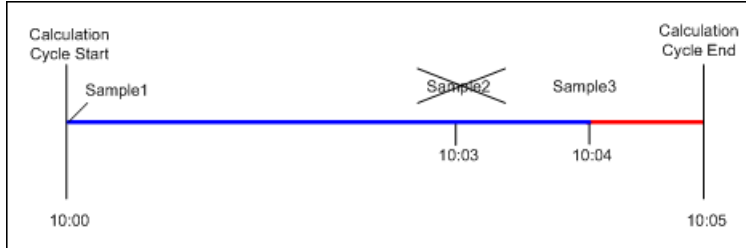
The last sample does not continue to the next calculation cycle if one of the following conditions are true:

- **No data timeout.** The last sample's timestamp has reached the no data timeout limit. For example, if the last sample's timestamp is 09:00 and the no data timeout is one hour, the sample is not included in the 10:00-10:05 calculation cycle, and all subsequent calculation cycles.
- **Downtime event.** A downtime event has occurred in the time between the last sample's timestamp and the current calculation cycle. For example, if the last sample's timestamp is 09:00 and a downtime is configured to 10:00-10:30, the sample is not part of the 10:30-10:35 calculation cycle, and all subsequent calculation cycles.

Filtering with the Duration-Based Sample Rule

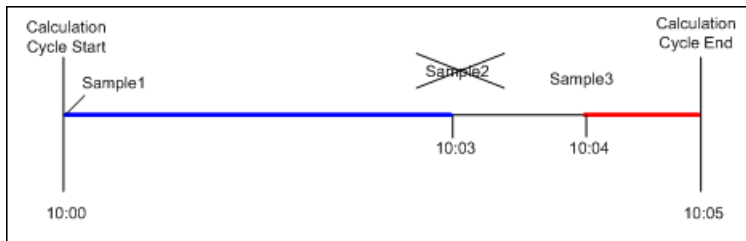
By default, the API Duration-Based Sample rule includes all samples in rule calculations. The **isSampleValid** and **isSampleAndDurationValid** methods enable filtering of samples when using this rule.

- When using the **isSampleValid** method, the duration of a filtered sample is added to the duration of the previous valid sample.



In the above example, Sample2 is filtered out using the **isSampleValid** method. The **samples** parameter contains Sample1 with 4 minutes duration and Sample3 with 1 minute duration. The total duration of all the samples in the cycle is 5 minutes.

- When using the **isSampleAndDurationValid** method, the duration of a filtered sample is not added to the duration of the previous valid sample, and it is therefore not included in the calculation.



In the above example, Sample2 is filtered out using the **isSampleAndDurationValid** method. The **samples** parameter contains Sample1 with 3 minutes duration and Sample3 with 1 minute duration. The total duration of all the samples in the cycle is 4 minutes.

API Outage by Samples Rule

An API Outage by Samples rule calculates outages based on data received from samples. An outage begins when a specific number of consecutive failures is calculated based on consecutive samples, and ends when a sample representing no failures is used in calculation.

Rule parameters (minimum number of failures, minimum duration, and maximum duration) define when an outage begins and when it ends, as described in "List of Service Level Management Business Rule Parameters" on page 635. The Outage by Samples rule parameters are demonstrated in "Examples - API Outage by Samples Rule" on page 705.

Each sample can represent a number of failures (zero or more). Using the API Outage by Samples rule, you can calculate how many failures a sample represents based on the sample values. The outage is then calculated using the outage rule parameters.

This section also includes the following topics:

- "Outage by Samples Rule Methods and Fields" on page 674
- "Defining an Outage by Samples Rule in the KPI Definition Page or Rule Repository" on page 675
- "Defining an Outage by Samples Rule Using a Text File" on page 675

Outage by Samples Rule Methods and Fields

The Outage by Samples rule implements the Rules API Interface **OutageBySamplesCalculator**, which contains the following methods:

```
public void calculateOutage(Outage outage, Sample sample)
```

```
public boolean isSampleValid(Sample sample)
```

- The **calculateOutage** method calculates the number of failures represented by a **Sample**. This method includes the parameters **outage** and **sample**.
 - The **outage** parameter type is **Outage**, and is used to set the number of failures for the given **sample**.
 - The **sample** parameter type is **Sample**, which holds sample field values.
- The **isSampleValid** method is used to filter samples. If a sample is not valid, it is not included in the **calculateOutage** method calculation.

The Rules API classes are documented in Javadoc format in the *HP Rules API Reference*. These files are located in the following folder:

```
\\<HP Business Service Management Gateway Server root directory>\
AppServer\webapps\site.war\amdocs\eng\doc_lib\Service_Health\Rules
_API\index.html
```

- The rule must also set the **sampleFields** field to define which sample fields are held by the **Sample** object. These values are the values used by the rule.

For examples of the Outage by Samples rule, see "Examples - API Outage by Samples Rule" on page 705.

API rules can be defined using the KPI Definition page or the Rule Repository, or using a text file template, as described in "Creating Rules with the Rules API" on page 676.

Defining an Outage by Samples Rule in the KPI Definition Page or Rule Repository

To define an Outage by Samples rule using the KPI Definition page or within the Rule Repository, fill in the fields as follows:

- **Sample Fields.** List the sample fields whose values can be included in the calculation; separate between the sample names with a comma (for example: "u_iStatus").
- **Outage Calculation Script.** Enter the **calculateOutage** method implementation; do not enter the method signature. The parameters **outage** and **sample** of the **calculateOutage** method are available for use in this script.
- **Sample Filter Script.** This field contains the default implementation of the **isSampleValid** method (by default, all samples are included in the calculation). You can edit this field to exclude samples from the calculation.

For detailed instructions, see "How to Define an API Rule for a Specific KPI or Outage" on page 678 or "How to Define an API Rule Within the Rule Repository" on page 683.

Defining an Outage by Samples Rule Using a Text File

To define an Outage by Samples rule using a text file template, use the **SImOutageBySampleTemplate.groovy** template file as described in "How to Create a Text File-Based API Rule" on page 679.

Within the text file, define the **sampleFields** field and the **calculateOutage** method body.

The **isSampleValid** method has a default implementation of return true (all samples are included in the calculation). To override, uncomment the method and enter your implementation.

Creating Rules with the Rules API

There are a number of ways to create rules using the Rules API, as described in the following section.

Note: The following three ways are also applicable to defining Outage calculations, using the API Outage by Samples Rule.

Define a rule for a specific KPI

Service Level Management KPIs can have the following API rules: API Group and Sibling Rule, API Sample Rule, and API Duration-Based Sample Rule.

Using the **New SLA/Edit SLA Wizard > Configure SLA Indicators** page, you can assign one of the API rules to a KPI, and enter rule details to define rule logic for that KPI.

You can then edit the rule details in the **Configure SLA Indicators** page at any time to change the rule logic for the KPI.

For details, see "How to Define an API Rule for a Specific KPI or Outage" on page 678.

Create a rule for multiple KPIs using a text file

For each of the API rules there is a corresponding template file, located in the **<Data Processing server root directory>\BLE\rules\groovy\templates** directory. You can use one of the template files to create a text file defining a new rule. You then add this rule to the Rule Repository, and it can be applied like any out-of-the-box rule.

The API code cannot be seen or changed within Service Level Management, but only within the text file. If you make changes to the code within the text file, these changes are applied to all instances where the rule has been assigned, after you restart the offline engine.

For details, see "How to Create a Text File-Based API Rule" on page 679.

Defining a rule within the rule repository

The Rule Repository contains the following API rules: API Group and Sibling Rule, API Sample Rule, and API Duration-Based Sample Rule. You can use the Rule Repository to clone an API rule and enter rule details to define the rule logic.

After the rule is applied to a KPI, you can edit rule details within the **Configure SLA Indicators** page at any time to change the rule logic for a specific KPI.

For details, see "How to Define an API Rule Within the Rule Repository" on page 683.

Tasks

How to Define an API Rule for a Specific KPI or Outage

Each KPI or Outage has applicable API rules. Using the KPI Definition page, assign one of the API rules to a KPI or Outage, and enter the rule details to define the rule logic.

This task includes the following steps:

- "Assign an API rule to a KPI or outage" on page 678
- "Define the KPI or outage rule logic" on page 679

1 Assign an API rule to a KPI or outage

- To assign an API rule for a specific KPI assigned to a CI, edit an SLA using the **Agreements Manager > New SLA/Edit SLA Wizard > Configure SLA Indicators** page. Select **Add KPI** to assign a new KPI to the CI, or modify an existing KPI. For details, see "Add KPI for CI/Edit KPI for CI Dialog Box" on page 113.

From the list of applicable business rules, select one of the API rules: API Group and Sibling Rule, API Sample Rule, or API Duration-Based Sample Rule. (API Sample Rule and API Duration-Based Sample Rule are only applicable for monitor CIs.) For a description of the rule types see "SLM Rules API Overview" on page 653.

- To assign an API Outage rule to a CI's Outage, edit an SLA using the **Agreements Manager > New SLA/Edit SLA Wizard > Configure SLA Indicators** page. For details, see "Add Outages KPI/Edit Outages KPI Dialog Box" on page 120.

Click the Edit button to edit the Outage. From the list of applicable business rules, select API Outage by Samples Rule. (This rule is only applicable for monitored CIs.)

2 Define the KPI or outage rule logic

Depending on the type of rule you are creating, define the rule methods and fields as described in:

- "API Group and Sibling Rule" on page 656
- "API Sample Rule" on page 664
- "API Duration-Based Sample Rule" on page 667
- "API Outage by Samples Rule" on page 673

How to Create a Text File-Based API Rule

There are rule template files corresponding to the API rules; each template implements the rule's interface.

Create a text file defining a new rule using one of the templates, and then add the new rule to the Business Rule Repository. The rule can then be applied like any out-of-the-box rule.

The API code cannot be seen or changed within Service Level Management, but only within the text file. If you make changes to the code within the text file, these changes are applied to all instances where the rule has been assigned, after you restart the offline engine.

This task includes the following steps:

- "Create a text file for a rule" on page 680
- "Add a rule in the rule repository (for Group and Sibling, Sample, or Duration-Based Sample rules)" on page 680
- "Add an Outage rule in the rule repository" on page 681
- "Add the rule to the list of applicable rules for a KPI or Outage" on page 682
- "Restart the offline engine after editing the text file" on page 682

1 Create a text file for a rule

Based on the type of rule you want to create, copy and rename one of the template files located in the **<Data Processing server root directory>\BLE\rules\groovy\templates** directory.

Within your copy of the template, define the rule methods and fields as described in:

- "API Group and Sibling Rule" on page 656
- "API Sample Rule" on page 664
- "API Duration-Based Sample Rule" on page 667
- "API Outage by Samples Rule" on page 673

Save the file to the **<Data Processing server root directory>\BLE\rules\groovy\rules** directory.

You must now add a rule in the Rule Repository that uses the rule logic in the text file.

- For rules other than Outage, follow the instructions in "Add a rule in the rule repository (for Group and Sibling, Sample, or Duration-Based Sample rules)" on page 680.
- For Outage rules, follow the instructions in "Add an Outage rule in the rule repository" on page 681.

2 Add a rule in the rule repository (for Group and Sibling, Sample, or Duration-Based Sample rules)

- a** Select **Admin > Service Level Management > Repositories > Business Rules > New Rule**. For details on adding rules, see "How to Customize a Business Rule Template in the Repository" on page 724.
- b** In the **Name** field, type the name of the rule you want to create (mandatory).
- c** In the **Class Name** field, type **groovy: <file name>**. Note that the file name must be identical (case sensitive) to the file name in the **<Data Processing server root directory>\BLE\rules\groovy\rules** directory.

- d** For API Duration-Based Sample rules, create the following rule parameter:
 - In the **Rule parameters** area, click **New**.
 - In the **Name** field type **No Data Timeout**. In the **Type** field, select **Long**. In the **Default Value** field, type **3600**.
- e** Click **OK** to save.

The following image shows a Duration-Based Sample rule after the rule parameter has been added:

The screenshot shows the 'New Rule' dialog box with the following details:

- General Rule Settings:**
 - Name:** Text-File Duration-Based Sample Rule
 - Domain:** Selection: Unassigned (radio button selected), Other: (empty field)
 - Class name:** groovy:MyRuleFile.groovy
 - Description:** (empty text area)
- Advanced Rule Settings:** (empty section)
- Rule Parameters:**
 - Icons: Add, Edit, Delete, Copy, Paste
 - Table:

Name	Description	Default Value
No data timeout		

Buttons at the bottom: Save, Cancel.

3 Add an Outage rule in the rule repository

- a** Within **Admin > Service Level Management > Repositories > Business Rules**, select the **Synthetic WS Outage** rule (316) and clone the rule.
- b** In the **Name** field, change the name of the rule (mandatory).

- c** In the **Class Name** field, type **groovy**: <file name>. Note that the file name must be identical (case sensitive) to the file name in the <**Data Processing server root directory**>\BLE\rules\groovy\rules directory.
- d** You can edit the **Description**, but do not change any other fields.
- e** Click OK to save.

4 Add the rule to the list of applicable rules for a KPI or Outage

Add the new rule to the list of applicable rules already attached to the relevant KPI. The relevant KPI for Outage rules is the **Outages** KPI (200).

For details, see the Main Settings Area > Applicable Rules parameter in "New KPI/Edit KPI Dialog Box" on page 540.

5 Restart the offline engine after editing the text file

If you make changes to the text file at any time after the rule is created, perform the following steps to apply the changes.

- a** In the browser, enter the following:

http://<Business Service Management Data Processing server name>:11021
- b** Select **Foundations:NannyManager**.
- c** Invoke **showServiceInfoAsHTML**, and restart the offline engine.

How to Define an API Rule Within the Rule Repository

Within the Business Rule Repository, create an API rule that can be applied to multiple KPIs or Outages. This is done by cloning one of the four API rules, and setting default rule values for specific rule parameters. After the rule is applied to a KPI or Outage, you can edit its script within the KPI Definition page at any time to change the rule logic for the specific KPI or Outage.

This task includes the following steps:

- "Clone an API rule" on page 683
- "Edit rule details" on page 683
- "Add the rule to the list of applicable rules for a KPI or Outage" on page 684

1 Clone an API rule

Select **Admin > Service Level Management > Repositories > Business Rules**. In the Business Rule Repository page, clone one of the following rules: API Group and Sibling Rule, API Sample Rule, API Duration-Based Sample Rule, or API Outage by Samples Rule.

For details on cloning a rule, see "How to Customize a Business Rule Template" on page 554.

2 Edit rule details

- a** Open the new rule for editing.
- b** In the **Name** field, rename the cloned rule.
- c** Within the **Rule Parameters**, set the **Default value** for each rule parameter defining your rule logic, as described in the following sections:
 - "API Group and Sibling Rule" on page 656
 - "API Sample Rule" on page 664
 - "API Duration-Based Sample Rule" on page 667
 - "API Outage by Samples Rule" on page 673

For example, to define the **KPI Calculation Script**, edit the **KPI Calculation Script** rule parameter. In the **Default Value** field, enter the rule calculation script. The code that you enter becomes the default code for this rule, and appears in the KPI Definition page for all KPIs assigned this rule. (Do not change any other fields.)

3 Add the rule to the list of applicable rules for a KPI or Outage

Add the new rule to the list of applicable rules already attached to the relevant KPI. The relevant KPI for Outage rules is the **Outages** KPI (200).

For details, see the Applicable Rules GUI parameter in "New KPI/Edit KPI Dialog Box" on page 540.



How to Work with Tooltip Entries

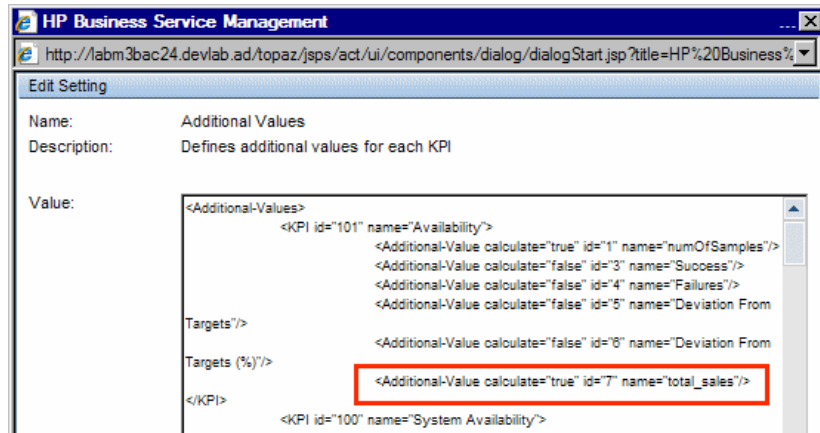
If you have used the `kpi.setTooltip` method, you must set a corresponding tooltip entry in the Infrastructure Settings.

- 1 Select **Admin > Platform > Setup and Maintenance > Infrastructure Settings > Service Level Management**.
- 2 Edit the **Additional Values** as follows:
 - a Scroll down to the KPI where you want to add the tooltip.
 - b After the last entry for the KPI, add a line in the following format:

```
<Additional-Value calculate="true" id="<id>" name="<name>"/>
```

In the above format, `<id>` is one number higher than the current highest ID (if the highest ID is 5, type 6), and `<name>` is the name of the tooltip exactly as used in the code.

For example, if your code contains the method invocation `kpi.setTooltip("total_sales", value)`, and the KPI is **Availability**, type the following:



Click **Save**.



How to Write to Log Files From the Rules API Code

Within your API rules, you can write to log files from rule methods using a **logger** object. There are five log levels: debug, info, warn, error and fatal. Each of these uses a specific logger method.

By default, only log method invocations of error and fatal severity are written to the log files. You can modify this within the log configuration files.

To write to log files using the Rules API:

- 1 Within the rule method, implement one of the following methods (listed in ascending order of severity):
 - `logger.debug("<API rule name> : log message");`
 - `logger.info("<API rule name> : log message");`
 - `logger.warn("<API rule name> : log message");`

- `logger.error("<API rule name> : log message");`
- `logger.fatal("<API rule name> : log message");`

Type the name of your API rule inside the log message to identify each log message with its source rule.

- 2 The Rules API log files are found in the **<Data Processing server root directory>\HPBSM\log\offline_engine\RulesAPI** directory.

Open one of the following files to view the log messages (depending on your rule type):

- **groupAndSiblingRule.log** (for API Group and Sibling rules)
- **sampleRule.log** (for API Sample and API Duration-Based Sample rules)
- **OutageRule.log** (for API Outage by Samples rules)

To modify the severity level written to a log file:

- 1 By default, only log method invocations of error and fatal severity are written to log files. To modify this setting, open the log configuration file located in **<Data Processing server root directory>HPBSM\conf\core\Tools\log4j\offline_engine\slm_rules.properties**.

- 2 In the line corresponding with your rule type, replace the string **`\${loglevel}** with the severity level you want logged (either DEBUG, INFO, WARN, ERROR, or FATAL). Edit one of the following lines, depending on your rule type:

- Group and Sibling rules:
`log4j.category.com.mercury.am.bac.slm.rules.group.common.SlmGroupAndSiblingRule = `${loglevel}, slm.rules.api.group.appender`
- Sample rules and Duration-Based Sample rules:
`log4j.category.com.mercury.am.bac.slm.rules.leaf.simplified.SlmSimplifiedLeafRule = `${loglevel}, slm.rules.api.sample.appender`
- Outage by Samples rules:
`log4j.category.com.mercury.am.bac.slm.rules.outages.simplified.SimplifiedOutageRule = `${loglevel}, slm.rules.api.outage.appender`



How to Include a CI Property in Rules API Calculations

Within your API rules, you can include CI properties using the CI class **getPropertyValue** method, and the KPI class **getCiProperty** method. SLM rules can only access CI properties which have with the qualifier **BLE_ATTRIBUTE**.

To add this attribute to a CI class you must export the class, edit the class definition, and import it back to the server. When you open the exported class for editing, add the following xml to the required attribute:

```
<Attribute name="<attribute-name>" type="double" display-name="<attribute-
display-name>">
  <Attribute-Qualifiers>
    <Attribute-Qualifier name="BLE_ATTRIBUTE"/>
  </Attribute-Qualifiers>
</Attribute>
```

Reference

Examples - API Group and Sibling Rule

Both Service Level Management and Service Health implement the same interface to calculate API Group and Sibling rules.

For detailed examples showing API Group and Sibling rules, see "Examples - API Group and Sibling Rule" in *Using Service Health*.

Note that the statuses used in the **Status** class are different in Service Level Management and Service Health. For example, **Status.OK** in Service Health code is equivalent to **Status.EXCEEDED** in Service Level Management code. The following table shows the parallel statuses:

Service Health Status	Service Level Management Status
OK	EXCEEDED
WARNING	MET
MINOR	MINOR_BREACHED
MAJOR	BREACHED
CRITICAL	FAILED

Examples - API Sample Rule

This section provides examples of API Sample Rules. The following examples are described:

- "Example - Sample-Based Average Response Time Rule" on page 689
- "Example - Sample-Based Average Response Time Rule with Filter" on page 692
- "Example - Sample-Based Maximum Response Time Rule" on page 693

Example - Sample-Based Average Response Time Rule

The following rule calculates average response time, based on the `dResponseTime` sample field. The rule result (aggregated value) is the average response time calculated based on all the samples that exist for the calculation period.

The rule logic is (total response time in seconds / total number of samples).

The rule uses the **SlmKPI** keys and aggregated keys to aggregate the total response time and the total number of samples, to calculate the rule result.

```
// Define the sample fields that will be used in the rule calculation.
def sampleFields = ["dResponseTime"];
```

```
/*
 * Implementation of the SlmSamplesAggregatedCalculator interface method.
 * For more information refer to the Rules API documentation.
 */

public void calculateKPI(CI ci, SlmKPI kpi, List<Sample> samples) {
    /*
     * Sum the field dResponseTime from all given samples. This represents the total
     * response time for all the samples in the current calculation cycle.
     */
    def totalTime = Utils.sumField(samples, "dResponseTime");
    /*
     * Keep the total response time, converted to seconds, on a kpi key named
     * totalResponseTime. This key is used by the calculateAggregatedKPI method.
     */
    kpi.key.totalResponseTime = Utils.divide(totalTime, 1000.0);
    /*
     * Keep the number of samples for the current calculation cycle on a kpi key named
     * totalSamples. This key is used by the calculateAggregatedKPI method.
     */
    kpi.key.totalSamples = samples.size();
}
```

```

/*
 * Implementation of the SImSamplesAggregatedCalculator interface method.
 */

public void calculateAggregatedKPI(CI ci, SImKPI kpi) {
/*
 * Keep the aggregated response time on a kpi aggregated key named
 * totalResponseTime, by adding the current aggregated totalResponseTime from the
 * kpi aggregated key, and the current calculation cycle response time taken from the
 * kpi key named totalResponseTime (calculated in the calculateKPI method).
 */
kpi.aggregatedKey.totalResponseTime = Utils.sum(kpi.key.totalResponseTime,
kpi.aggregatedKey.totalResponseTime).
/*
 * Keep the aggregated total samples on a kpi aggregated key named totalSamples,
 * by adding the current aggregated total samples from the kpi aggregated key, and
 * the current calculation cycle total samples, taken from the kpi key named
 * totalSamples (calculated in the calculateKPI method).
 */
kpi.aggregatedKey.totalSamples = Utils.sum(kpi.key.totalSamples,
kpi.aggregatedKey.totalSamples)
/*
 * Set the aggregated value of the KPI by dividing the two aggregated values.
 * This aggregated value will be displayed in the SLA reports.
 */
kpi.aggregatedValue = Utils.divide(kpi.aggregatedKey.totalResponseTime,
kpi.aggregatedKey.totalSamples)
}

```

Calculation - Sample-Based Average Response Time Rule

The following calculation illustrates the Sample-Based Average Response Time rule. Between 10:00 and 11:00, 9 samples have arrived:

```

10:00 {Sample Fields: dResponseTime = 60}
10:04 {Sample Fields: dResponseTime = 30}
10:11 {Sample Fields: dResponseTime = 30}
10:25 {Sample Fields: dResponseTime = 25}
10:27 {Sample Fields: dResponseTime = 35}
10:35 {Sample Fields: dResponseTime = 10}
10:36 {Sample Fields: dResponseTime = 20}
10:38 {Sample Fields: dResponseTime = 30}
10:52 {Sample Fields: dResponseTime = 75}

```

Each calculation cycle is 5 minutes long. The rule calculation is as follows:

Cycle	Keys set by calculateKPI		Aggregated keys and value set by calculateAggregatedKPI		
	totalResponseTime	totalSamples	totalResponseTime	totalSamples	Aggregated Value
10:00-10:05	90	2	90	2	45
10:05-10:10	Null	0	90	2	45
10:10-10:15	30	1	120	3	40
10:15-10:20	Null	0	120	3	40
10:20-10:25	Null	0	120	3	40
10:25-10:30	60	2	180	5	36
10:30-10:35	Null	0	180	5	36
10:35-10:40	60	3	240	8	30
10:40-10:45	Null	0	240	8	30
10:45-10:50	Null	0	240	8	30
10:50-10:55	75	1	315	9	35
10:55-11:00	null	0	315	9	35
					Final result: 35

**Example - Sample-Based Average Response Time Rule with Filter**

This rule is the same as the previous rule ("Example - Sample-Based Average Response Time Rule" on page 689), with the addition of a sample filter.

The code for the sample fields is as follows:

```
// This rule uses the dResponseTime sample field and u_iStatus sample field.
def sampleFields = ["dResponseTime", "u_iStatus"];
```

This rule uses an additional method, as follows:

```
/*
 * Override the default implementation of the SlmSamplesAggregatedCalculator
 * interface method.
 *
 * Filter samples that hold u_iStatus field value which is not 0 or 2.
 */

public boolean isSampleValid(Sample sample) {
    //Get the value of the sample's u_iStatus field.
    def avialFieldValueObj = sample.u_iStatus;
    return (avialFieldValueObj == 0 || avialFieldValueObj == 2)
}
```

Calculation - Sample-Based Average Response Time Rule with Filter

The following calculation illustrates the Sample-Based Average Response Time rule with filter.

For 10:00 - 11:00, 9 samples exist on the Profile Database:

```
10:00 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 {Sample Fields: dResponseTime = 30, u_iStatus = 1}
10:11 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:25 {Sample Fields: dResponseTime = 25, u_iStatus = 1}
10:27 {Sample Fields: dResponseTime = 35, u_iStatus = 0}
10:35 {Sample Fields: dResponseTime = 10, u_iStatus = 1}
10:36 {Sample Fields: dResponseTime = 20, u_iStatus = 0}
10:38 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:52 {Sample Fields: dResponseTime = 75, u_iStatus = 1}
```

The samples in bold do not pass the filter. The following 5 samples are taken into calculation:

```
10:00 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:11 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:27 {Sample Fields: dResponseTime = 35, u_iStatus = 0}
10:36 {Sample Fields: dResponseTime = 20, u_iStatus = 0}
10:38 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
```

The calculation result is $= (60+30+35+20+30)/5 = 35$



Example - Sample-Based Maximum Response Time Rule

The following rule calculates maximum response time, based on the dResponseTime sample field. The rule result (aggregated value) is the maximum response time calculated based on all the samples that exist for the calculation period. The rule uses the **SlmKPI** value to keep the maximum value for each calculation cycle.

```
// Define the sample fields that will be used in the rule calculation.
def sampleFields = ["dResponseTime"];
```

```

/**
 * Implementation of the SlmSamplesAggregatedCalculator interface method.
 * For more information refer to the Rules API documentation.
 */
public void calculateKPI(CI ci, SlmKPI kpi, List<Sample> samples) {
    /**
     * Find the maximum value of the dResponseTime field from all given samples,
     * and set it as the KPI value for the current calculation cycle.
     */
    kpi.value = Utils.getMax(samples, "dResponseTime");
}

/**
 * Implementation of the SlmSamplesAggregatedCalculator interface method.
 */
public void calculateAggregatedKPI(CI ci, SlmKPI kpi) {
    /**
     * Keep the aggregated maximum response time on the KPI aggregated value,
     * by replacing the current aggregated value with the maximum between the KPI
     * aggregated value and the KPI value (calculated in the calculateKPI method).
     * This aggregated value will be displayed in the SLA reports.
     */
    kpi.aggregatedValue = Utils.max(kpi.value, kpi.aggregatedValue)
}

```

Calculation - Sample-Based Maximum Response Time Rule

The following calculation illustrates the Sample-Based Maximum Response Time rule.

Between 10:00 and 11:00, 9 samples have arrived:

```

10:00 {Sample Fields: dResponseTime = 60}
10:04 {Sample Fields: dResponseTime = 30}
10:11 {Sample Fields: dResponseTime = 30}
10:25 {Sample Fields: dResponseTime = 25}
10:27 {Sample Fields: dResponseTime = 35}
10:35 {Sample Fields: dResponseTime = 10}
10:36 {Sample Fields: dResponseTime = 20}
10:38 {Sample Fields: dResponseTime = 30}
10:52 {Sample Fields: dResponseTime = 75}

```

The result of the rule calculation is 75.

Examples - API Duration-Based Sample Rule

This section provides examples of API Duration-Based Sample Rules. The following examples are described:

- "Example - Duration-Based Average Response Time Rule" on page 695
- "Example - Duration-Based Average Response Time Rule with isSampleValid Method Filter" on page 699
- "Example - Duration-Based Average Response Time Rule with isSampleAndDurationValid Method Filter" on page 701
- "Example - Duration-Based Average Response Time Rule with isSampleAndDurationValid and isSampleValid Method Filters" on page 703

Example - Duration-Based Average Response Time Rule

The following rule calculates the weighted average response time based on the dResponseTime sample field and sample duration, for all the samples that exist for the calculation period.

The rule logic is $\text{sum}(\text{sample response time} * \text{sample duration}) / \text{sum}(\text{samples duration})$.

The rule uses **SlmKPI** keys and aggregated keys to aggregate the total weighted response time and the total duration of samples, in order to calculate rule results.

```
// Define the sample fields that will be used in the rule calculation.
def sampleFields = ["dResponseTime"];
```

```

/*
 * Implementation of the SImSamplesTimeBasedAggregatedCalculator interface
 * method.
 * For more information refer to the Rules API documentation.
 */

public void calculateKPI(CI ci, SImKPI kpi, List<Sample> samples) {
    /**
     * Set the KPI key totalDuration to sum duration of all given samples.
     * This key is used by the calculateAggregatedKPI method.
     */
    kpi.key.totalDuration = Utils.sumDuration(samples)
    // Iterate over all samples that arrived in the current calculation cycle.
    samples.each {Sample sample ->
        /**
         * Calculate weighted response time for each sample by multiplying
         * sample duration with sample dResponseTime field value.
         */
        def weightedResponseTime = Utils.multiply(sample.duration,
sample.dResponseTime);
        /**
         * Keep the total weighted response time for all given samples
         * on a KPI key named totalResponseTime.
         * This key is used by the calculateAggregatedKPI method.
         */
        kpi.key.totalResponseTime = Utils.sum(kpi.key.totalResponseTime,
weightedResponseTime)
    }
}
}

```

```

/*
 * Implementation of the SlmSamplesTimeBasedAggregatedCalculator interface
 * method.
 */

public void calculateAggregatedKPI(CI ci, SlmKPI kpi) {
    /**
     * Keep the aggregated response time on a kpi aggregated key named
     * totalResponseTime, by adding the current aggregated totalResponseTime, and
     * the
     * current calculation cycle response time taken from the totalResponseTime kpi key
     * (calculated by the calculateKPI method).
     */
    kpi.aggregatedKey.totalResponseTime = Utils.sum(kpi.key.totalResponseTime,
    kpi.aggregatedKey.totalResponseTime)
    /**
     * Keep the aggregated total duration on a kpi aggregated key named totalDuration,
     * by adding the current aggregated total duration from the kpi aggregated key,
     * and the current calculation cycle total duration.
     */
    kpi.aggregatedKey.totalDuration = Utils.sum(kpi.key.totalDuration,
    kpi.aggregatedKey.totalDuration)
    /**
     * Set the aggregated value of the KPI by dividing the two aggregated values.
     * This aggregated value will be displayed in the SLA reports.
     */
    kpi.aggregatedValue = Utils.divide(kpi.aggregatedKey.totalResponseTime,
    kpi.aggregatedKey.totalDuration)
}

```

Calculation - Duration-Based Average Response Time Rule

The following calculation illustrates the Duration-Based Average Response Time rule.

For 10:00 - 11:00, 5 samples exist on the Profile Database:

```

10:00 Sample1 {Sample Fields: dResponseTime = 60}
10:04 Sample2 {Sample Fields: dResponseTime = 30}
10:25 Sample3 {Sample Fields: dResponseTime = 25}
10:38 Sample4 {Sample Fields: dResponseTime = 30}
10:52 Sample5 {Sample Fields: dResponseTime = 75}

```

Each calculation cycle is 5 minutes long. The rule calculation is as follows:

Cycle	samples parameter		Keys set by calculateKPI		Aggregated keys and value set by calculateAggregatedKPI		
	Sample	Sample Duration	totalResponseTime	totalDuration	totalResponseTime	totalDuration	Aggregated Value
10:00-10:05	Sample1	240	16200	300			
	Sample2	60			16200	300	54.000
10:05-10:10	Sample2	300	9000	300	25200	600	42.000
10:10-10:15	Sample2	300	9000	300	34200	900	38.000
10:15-10:20	Sample2	300	9000	300	43200	1200	36.000
10:20-10:25	Sample2	300	9000	300	52200	1500	34.800
10:25-10:30	Sample3	300	7500	300	59700	1800	33.167
10:30-10:35	Sample3	300	7500	300	67200	2100	32.000
10:35-10:40	Sample3	180	8100	300			
	Sample4	120			75300	2400	31.375
10:40-10:45	Sample4	300	9000	300	84300	2700	31.222
10:45-10:50	Sample4	300	9000	300	93300	3000	31.100
10:50-10:55	Sample4	120	17100	300			
	Sample5	180			110400	3300	33.455
10:55-11:00	Sample5	300	22500	300	132900	3600	36.917
							Result: 36.917

Example - Duration-Based Average Response Time Rule with isSampleValid Method Filter

This rule is the same as "Example - Duration-Based Average Response Time Rule" on page 695, with the addition of the **isSampleValid** method filter.

The code for the sample fields is as follows:

```
// This rule uses the dResponseTime sample field and u_iStatus sample field.
def sampleFields = ["dResponseTime", "u_iStatus"];
```

This rule uses an additional method, as follows:

```
/*
 * Override default implementation of the SlmSamplesTimeBasedAggregatedCalculator
 * interface method.
 *
 * Filter samples that hold u_iStatus field with value of 6.
 */

public boolean isSampleValid(Sample sample) {
    //Get the value of the sample's u_iStatus field.
    def avialFieldValueObj = sample.u_iStatus;
    return (avialFieldValueObj != 6)
}
```

Calculation - Duration-Based Average Response Time Rule with isSampleValid Method Filter

The following calculation illustrates the Duration-Based Average Response Time rule with **isSampleValid** method filter.

For 10:00 - 11:00, 5 samples exist on the Profile Database:

```
10:00 Sample1 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 Sample2 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:25 Sample3 {Sample Fields: dResponseTime = 25, u_iStatus = 6}
10:38 Sample4 {Sample Fields: dResponseTime = 30, u_iStatus = 0}
10:52 Sample5 {Sample Fields: dResponseTime = 75, u_iStatus = 2}
```

Sample3 did not pass the **isSampleValid** method filter, so the following 4 samples are taken into calculation:

10:00 Sample1 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 Sample2 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:38 Sample4 {Sample Fields: dResponseTime = 30, u_iStatus = 0}
10:52 Sample5 {Sample Fields: dResponseTime = 75, u_iStatus = 2}

Note that after the filtering, the interval between Sample3 and Sample4 is considered part of the duration of Sample2.

The rule calculation is as follows:

Cycle	samples parameter		Keys set by calculateKPI		Aggregated keys and value set by calculateAggregatedKPI		
	Sample	Sample Duration	totalResponseTime	totalDuration	totalResponseTime	totalDuration	Aggregated Value
10:00-10:05	Sample1 Sample2	240 60	16200	300	16200	300	54.000
10:05-10:10	Sample2	300	9000	300	25200	600	42.000
10:10-10:15	Sample2	300	9000	300	34200	900	38.000
10:15-10:20	Sample2	300	9000	300	43200	1200	36.000
10:20-10:25	Sample2	300	9000	300	52200	1500	34.800
10:25-10:30	Sample2	300	9000	300	61200	1800	34
10:30-10:35	Sample2	300	9000	300	70200	2100	33.428
10:35-10:40	Sample2 Sample4	180 120	9000	300	79200	2400	33
10:40-10:45	Sample4	300	9000	300	88200	2700	32.666
10:45-10:50	Sample4	300	9000	300	97200	3000	32.4
10:50-10:55	Sample4 Sample5	120 180	17100	300	114300	3300	34.636
10:55-11:00	Sample5	300	22500	300	136800	3600	38
							Result: 38

Example - Duration-Based Average Response Time Rule with isSampleAndDurationValid Method Filter

This rule is the same as "Example - Duration-Based Average Response Time Rule" on page 695, but with the **isSampleAndDurationValid** method filter.

The code for the sample fields is as follows:

```
// This rule uses the dResponseTime sample field and u_iStatus sample field.
def sampleFields = ["dResponseTime", "u_iStatus"];
```

This rule uses an additional method, as follows:

```
/*
 * Override default implementation of the SlmSamplesTimeBasedAggregatedCalculator
 * interface method.
 *
 * Filter samples that hold u_iStatus field value which is not 0 or 2.
 */

public boolean isSampleAndDurationValid(CI ci, SlmKPI kpi, Sample sample) {
    //Get the value of the sample's u_iStatus field.
    def avialFieldValueObj = sample.u_iStatus;
    return (avialFieldValueObj == 0 || avialFieldValueObj == 2)
}
```

Calculation - Duration-Based Average Response Time Rule with isSampleAndDurationValid Method Filter

The following calculation illustrates the Duration-Based Average Response Time rule with **isSampleAndDurationValid** method filter.

For 10:00 - 11:00, 5 samples exist on the Profile Database:

```
10:00 Sample1 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 Sample2 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:25 Sample3 {Sample Fields: dResponseTime = 25, u_iStatus = 2}
10:38 Sample4 {Sample Fields: dResponseTime = 30, u_iStatus = 1}
10:52 Sample5 {Sample Fields: dResponseTime = 75, u_iStatus = 2}
```

Sample4 did not pass the **isSampleAndDurationValid** method filter, so the following 4 samples are taken into calculation:

10:00 Sample1 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 Sample2 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:25 Sample3 {Sample Fields: dResponseTime = 25, u_iStatus = 2}
10:52 Sample5 {Sample Fields: dResponseTime = 75, u_iStatus = 2}

Note that after the filtering, the interval between Sample4 and Sample5 is *not* considered part of the duration of Sample3, so the total duration for the hour is 46 minutes.

The rule calculation is as follows:

Cycle	samples parameter		Keys set by calculateKPI		Aggregated keys and value set by calculateAggregatedKPI		
	Sample	Sample Duration	totalResponseTime	totalDuration	totalResponseTime	totalDuration	Aggregated Value
10:00-10:05	Sample1	240	16200	300			
	Sample2	60			16200	300	54.000
10:05-10:10	Sample2	300	9000	300	25200	600	42.000
10:10-10:15	Sample2	300	9000	300	34200	900	38.000
10:15-10:20	Sample2	300	9000	300	43200	1200	36.000
10:20-10:25	Sample2	300	9000	300	52200	1500	34.800
10:25-10:30	Sample3	300	7500	300	59700	1800	33.167
10:30-10:35	Sample3	300	7500	300	67200	2100	32.000
10:35-10:40	Sample3	180	4500	180	71700	2280	31.477
10:40-10:45	empty			0	71700	2280	31.477
10:45-10:50	empty			0	71700	2280	31.477
10:50-10:55	Sample5	180	13500	180	85200	2460	34.634
10:55-11:00	Sample5	300	22500	300	107700	2760	36.917
							Result: 39.021

Example - Duration-Based Average Response Time Rule with isSampleAndDurationValid and isSampleValid Method Filters

This rule uses both the **isSampleAndDurationValid** and the **isSampleValid** method filters. The code is described in "Example - Duration-Based Average Response Time Rule with isSampleAndDurationValid Method Filter" on page 701 and "Example - Duration-Based Average Response Time Rule with isSampleAndDurationValid and isSampleValid Method Filters" on page 703.

For 10:00 - 11:00, 5 samples exist on the Profile Database:

```
10:00 Sample1 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 Sample2 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:25 Sample3 {Sample Fields: dResponseTime = 25, u_iStatus = 6}
10:38 Sample4 {Sample Fields: dResponseTime = 30, u_iStatus = 1}
10:52 Sample5 {Sample Fields: dResponseTime = 75, u_iStatus = 2}
```

Sample3 did not pass the **isSampleValid** method filter, and Sample4 did not pass the **isSampleAndDurationValid** method filter. The following 3 samples are taken into calculation:

```
10:00 Sample1 {Sample Fields: dResponseTime = 60, u_iStatus = 0}
10:04 Sample2 {Sample Fields: dResponseTime = 30, u_iStatus = 2}
10:52 Sample5 {Sample Fields: dResponseTime = 75, u_iStatus = 2}
```

After the filtering, the interval between Sample3 and Sample4 is considered part of the duration of Sample2, but the interval between Sample4 and Sample5 is not considered part of the duration of Sample4 (filtered by **isSampleAndDurationValid**).

The rule calculation is as follows:

Cycle	samples parameter		Keys set by calculateKPI		Aggregated keys and value set by calculateAggregatedKPI		
	Sample	Sample Duration	totalResponseTime	totalDuration	totalResponseTime	totalDuration	Aggregated Value
10:00-10:05	Sample1	240	16200	300			
	Sample2	60			16200	300	54
10:05-10:10	Sample2	300	9000	300	25200	600	42
10:10-10:15	Sample2	300	9000	300	34200	900	38
10:15-10:20	Sample2	300	9000	300	43200	1200	36
10:20-10:25	Sample2	300	9000	300	52200	1500	34.8
10:25-10:30	Sample2	300	9000	300	61200	1800	34
10:30-10:35	Sample2	300	9000	300	70200	2100	33.429
10:35-10:40	Sample2	180	5400	180	75600	2280	33.157
10:40-10:45					75600	2280	33.157
10:45-10:50					75600	2280	33.157
10:50-10:55	Sample5	180	13500	180	89100	2460	36.219
10:55-11:00	Sample5	300	22500	300	111600	2760	40.434
							Result: 40.434

Examples - API Outage by Samples Rule

This section provides examples of Outage by Samples Rules. The following examples are described:

- "Example - Outage by Samples Rule and Calculation with Default Rule Parameters" on page 706
- "Example - Outage by Sample Calculation with Minimum Duration of 900 Seconds" on page 708
- "Example - Outage by Sample Calculation with Maximum Duration of One Hour" on page 709
- "Example - Outage by Sample Calculation with a Sample Representing Two Failures" on page 710

Example - Outage by Samples Rule and Calculation with Default Rule Parameters

The following section illustrates the Outage by Samples rule, based on the default Outage rule parameters:

Minimum number of failures: 2

Minimum duration: 0

Max duration: undefined

A sample represents one failure if the sample's `u_iStatus` field value is not 0 or 2. The rule also filters out samples whose `u_iStatus` field value is 6.

```
// Define the sample fields that will be used in the rule calculation.
def sampleFields = ["u_iStatus"];
```

```
/*
 * Implementation of the OutageBySamplesCalculator interface method.
 * If the sample's u_iStatus field value is not 0 or 2, the sample represents 1 failure.
 * In any other case the sample represents no failures.
 *
 * For more information refer to the Rules API documentation.
 */

public void calculateOutage(Outage outage, Sample sample) {
    // Take the sample field's u_iStatus value.
    def statusFieldValue = sample.u_iStatus;
    if(statusFieldValue != 0 && statusFieldValue != 2){
        outage.setNumberOfFailures 1;
    }
}
```

```
/*
 * Override default implementation of the OutageBySamplesCalculator interface method.
 *
 * If the sample's u_iStatus field value is not 0 or 2, the sample represents 1 failure.
 */

public boolean isSampleValid(Sample sample) {
    def statusFieldValue = sample.u_iStatus;
    return (statusFieldValue != 6)
}
```

The following calculation illustrates the above Outage by Samples rule.

For 10:00 - 11:00, 6 samples exist on the Profile Database:

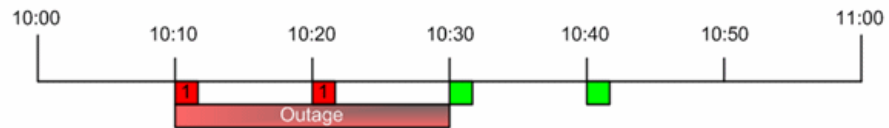
10:10 Sample1 {Sample Fields: u_iStatus = 1}
 10:20 Sample2 {Sample Fields: u_iStatus = 1}
10:25 Sample3 {Sample Fields: u_iStatus = 6}
 10:30 Sample4 {Sample Fields: u_iStatus = 0}
10:35 Sample5 {Sample Fields: u_iStatus = 6}
 10:40 Sample6 {Sample Fields: u_iStatus = 2}

Sample3 and Sample5 did not pass the **isSampleValid** method. The following samples are passed to the **calculateOutage** method:

10:10 Sample1 {Sample Fields: u_iStatus = 1}
 10:20 Sample2 {Sample Fields: u_iStatus = 1}
 10:30 Sample4 {Sample Fields: u_iStatus = 0}
 10:40 Sample6 {Sample Fields: u_iStatus = 2}

For Sample1 and Sample2, the following line is invoked inside the **calculateOutage** method: **outage.setNumberOfFailures 1;**

The result of the calculation is the following:



An outage is reported with a duration of 20 minutes, from 10:10 - 10:30.

Example - Outage by Sample Calculation with Minimum Duration of 900 Seconds

The following calculation illustrates the Outage by Samples rule, based on the following Outage rule parameters:

Minimum number of failures: 2

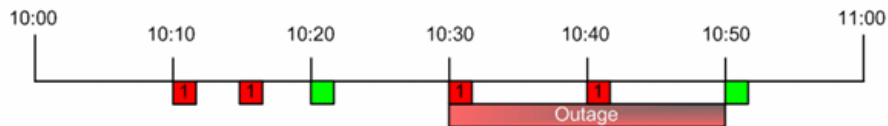
Minimum duration: 900 (seconds)

Max duration: undefined

For 10:00 - 11:00, 6 samples exist on the Profile Database:

- 10:10 - Sample representing 1 failure.
- 10:15 - Sample representing 1 failure.
- 10:20 - Sample representing no failures.
- 10:30 - Sample representing 1 failure.
- 10:40 - Sample representing 1 failure.
- 10:50 - Sample representing no failures.

The result of the calculation is the following:



An outage is reported with a duration of 20 minutes, from 10:30 - 10:50. There is no outage between 10:10 - 10:20 because the outage duration did not reach the minimum outage duration parameter.

Example - Outage by Sample Calculation with Maximum Duration of One Hour

The following calculation illustrates the Outage by Samples rule, based on the following Outage rule parameters:

Minimum number of failures: 2

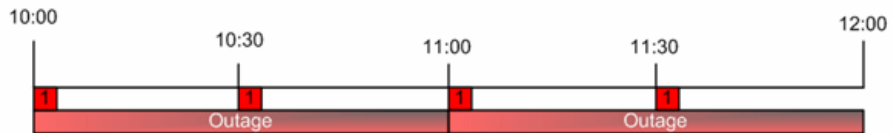
Minimum duration: 0 (default)

Max duration: 1 (hour)

For 10:00 - 12:00, 4 samples exist on the Profile Database:

- 10:00 - Sample representing 1 failure.
- 10:30 - Sample representing 1 failure.
- 11:00 - Sample representing 1 failure.
- 11:30 - Sample representing 1 failure.

The result of the calculation is the following:



Two outages are reported with a duration of 1 hour; the first outage from 10:00 - 11:00, and the second outage from 11:00 - 12:00.

Example - Outage by Sample Calculation with a Sample Representing Two Failures

The following calculation illustrates the Outage by Samples rule, based on the following Outage rule parameters:

Minimum number of failures: 2

Minimum duration: 0 (default)

Max duration: undefined

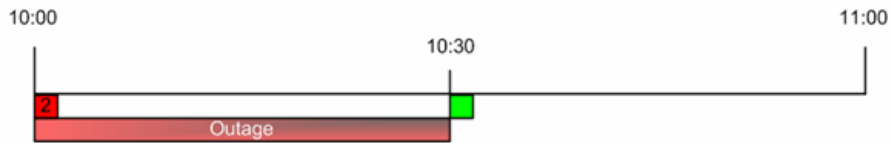
For 10:00 - 11:00, 2 samples exist on the Profile Database:

- 10:00 - Sample representing 2 failures.

The following line of code is invoked in the **outage** parameter in **calculateOutage** method: `outage.setNumberOfFailures 2;`

- 10:30 - Sample representing no failures.

The result of the calculation is the following:



An outage is reported with a duration of 30 minutes, from 10:00 - 10:30.

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