

HP OpenView Performance Insight

Report Pack for System Resources User Guide

Version: 4.0

Reporting and Network Solutions



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Overview

This chapter covers the following topics:

- OVPI and system resources
- Package contents
- Data collection
- Integration with Network Node Manager (NNM)
- Ways to customize reports
- Sources for additional information

OVPI and System Resources

The 17 interactive reports in System Resources 4.0 are designed to provide the information you need to anticipate resource issues before they become serious. Use this package to find rapid answers to the following questions:

- Are system resources in plentiful supply, limited supply, or somewhere in between?
- How does yesterday's utilization compare to historic trends?
- In how many days will a resource reach a performance threshold?

SR 4.0 installs on HP OpenView Performance Insight, or OVPI. OVPI is the core operating environment. Like the other reporting solutions created for OVPI, System Resources consists of a report pack and datapipe. While the datapipe configures OVPI for data collection, the report pack configures OVPI for data aggregation and reporting.

Version History: SR 3.0 and SR 4.0

System Resources 3.0 was released June 2003. SR 3.0 installed on OVPI 4.6, supported Sybase database software only, and provided the following enhancements:

- Integration with NNM ovw, Home Base Dynamic Views, and the NNM alarm browser
- SR_OVPA (a new datapipe)
- Two update forms:
 - Update System

- Update Filesystem

System Resources 4.0, released April 2004, requires OVPI 5.0. System Resources 4.0 includes the following enhancements:

- Improvements to existing reports in the main package
- Six new reports in the main package
- Five new optional sub-packages:
 - CPU metrics
 - Disk metrics
 - Network interface metrics
 - Logical volume metrics
 - Process metrics
- A migration tool for moving data from Reporter to OVPI
- Support for Oracle database software
- SR 3.0-to-SR 4.0 upgrade package (applies to users on Sybase only)

Improvements to Existing Reports

The following reports have been changed:

- Service Level Management — Executive Summary Report
 - Customer selection table: added Total Exceptions
 - Location selection table: removed Total Volume and Average Daily Volume
 - Total Exceptions graph: added Daily tab and Monthly tab
 - Total Exceptions graph: removed references to volume
- System Volume and CPU Utilization Top Ten Report
 - Highest CPU table: added Queue Length
 - Highest Volume table: added Total Network Utilization
- Memory Resource Optimization
 - Overutilized System Memory table: added Average Page Outs per Second
- CPU Forecast
 - DTT selection table: added 30 and 60 day forecast
- Memory Forecast
 - DTT selection table: added 30 and 60 day forecast
- Filesystem Forecast
 - DTT selection table: added 30 and 60 day forecast

New Reports in the Main Package

In the main package, the following reports are new:

- CPU Resource Utilization Forecast
- System Availability (downtime/uptime metrics)
- System Inventory
- Systems Performing Each Application - Snapshot
- Top Ten Transactions
- Transactions per System Snapshot

SR Data Migration Tool [SysRes_MigrateReporter]

The Migration Tool is a sub-package that comes with System Resources. This sub-package is responsible for moving data from a Reporter database to the OVPI database. Moving data from a Reporter database to the OVPI database is a one-time activity. Installing the Migration Tool invokes two graphical interfaces:

- Source Database Information
- Source and Destination Database Information

These interfaces accommodate the following scenarios:

- The Reporter database and the OVPI database are both on Windows
- The Reporter database and the OVPI database are both on UNIX
- The Reporter database is on UNIX, the OVPI database is on Windows
- The Reporter database is on Windows, the OVPI database is on UNIX

For details about the steps involved in handling the scenario that applies to you, see the *System Resources Migration Tool User Guide*.

Reports and Sub-Packages

System Resources 4.0 contains a main package and five optional sub-packages. Following is an alphabetical list of reports in the main package:

- 1 CPU Utilization Resource Forecast
- 2 Filesystem Utilization Resource Forecast
- 3 Filesystem Resource Optimization
- 4 Memory Utilization Resource Forecast
- 5 Memory Resource Optimization
- 6 System CPU, Memory, and Swap Utilization Exception Hot Spots
- 7 System CPU, Memory, and Swap Utilization QuickView
- 8 System CPU, Memory, and Swap Utilization QuickView - Snapshot
- 9 System CPU, Memory, and Swap Utilization QuickView - Near Real Time
- 10 System CPU, Memory, and Swap Utilization QuickView - Near Real Time - Snapshot
- 11 Service Level Management Executive Summary

- 12 System Availability
- 13 System Inventory
- 14 Systems Performing Each Application - Snapshot
- 15 System Volume and CPU Utilization Top Ten
- 16 Top Ten Transaction
- 17 Transactions per System Snapshot

SR 4.0 contains the following sub-packages:

- Disk metrics
- CPU metrics
- Network Interface metrics
- Process metrics
- Logical Volume metrics

The following table shows the contents of each sub-package.

Sub-Package	Reports
Disk	Disk Performance per System QuickView
CPU	CPU Details per System QuickView
Network Interface	Network Interface Details per System QuickView
Process	Process Details per System QuickView
Logical Volume	Logical Volume Details per System QuickView

Generic Reports

System Resources 4.0 includes the following generic report types:

- Top Ten
- Hot Spots
- QuickView
- Near Real Time
- Executive Summary
- Forecast

If you want to find out where volume and utilization are the heaviest, open the **Top Ten** report. This report sorts systems by volume (highest to lowest), by CPU utilization (highest to lowest), and by filesystem utilization (highest to lowest), allowing you to see which systems, if any, are experiencing unusual activity.

When you see a system in the Top Ten report that needs further investigation, open the **Snapshot** version of the **QuickView** and select the system or systems you are interested in. This report provides utilization averages for yesterday, it shows you what the exception thresholds are, and it provides graphs that track utilization levels on an hourly basis.

If you want to see recent performance data that has not been aggregated into hourly averages, open the **Near Real Time** version of the QuickView. By looking at actual sample data collected over the previous six hours, you can find out whether a bad condition is improving, getting worse, or staying the same. If the QuickView is showing over utilization, use the **Optimization** reports to see whether simple load balancing might be the easiest way to improve service quality.

If you suspect that utilization levels are high and may be getting worse, use the **Forecast** reports to pinpoint systems that may be headed toward high utilization. Forecast reports provide the following details:

- Days to Threshold (DTT)
- Estimated utilization 30, 60, and 90 days from now
- Grade of Service scores for the previous 24 hours
- CPU, memory, swap, and filesystem utilization trends over the previous 24 hours

Data Collection

There are two datapipe available for System Resources:

- RFC1514 Datapipe
- SR_OVPA Datapipe

The RFC1514 Datapipe collects data from the Host Resources MIB. The SR_OVPA Datapipe collects data from two agents:

- HP OpenView Performance Agent
- HP OpenView Operation Agent [Embedded Performance Component]

The RFC1514 Datapipe collects the following metrics every 15 minutes:

- CPU utilization
- Memory utilization
- Number of pageouts
- Run queue length
- Swap utilization

The following table provides a list of the metric classes collected by the OVPA Datapipe and the default polling frequency.

Metric Class	Polling Frequency
Global [includes uptime & downtime]	Hourly
Filesystem	Hourly
Configuration	Daily
Application	Hourly
Transaction	Hourly

Integration with Network Node Manager

If you have already integrated OVPI with Network Node Manager, the reports in the System Resources package will blend smoothly with the fault management capabilities of NNM. The NNM operator will see a list of System Resource reports in the Report Launchpad window. The Report Launchpad window can be accessed from:

- NNM ovw
- Home Base Dynamic Views
- NNM alarms browser

The NNM operator will not see alarms generated by the System Resources package in the NNM alarm browser unless you install the optional thresholds sub-package on the OVPI server. The thresholds sub-package is bundled with System Resources 4.0 and appears as an installable option in the Package Manager install wizard.

The thresholds sub-package requires the Thresholds Module. If you select the optional thresholds sub-package for installation, Package Manager will install the Thresholds Module for you, automatically. The Threshold Module monitors the OVPI database for threshold breaches and directs the thresholds sub-package to take an action in response to a breach. The default action is to send a threshold trap to the NNM server. For information about configuring the Thresholds Module, refer to the *Thresholds Module 5.0 User Guide*.

Ways to Customize Reports

The reports in System Resources 4.0 can be customized by applying group filters, by editing parameters, by modifying the way tables and graphs display, and by importing property information such as host names, customers, and locations. If you apply a group filter, you are changing how the entire package appears to a group of users, whereas editing parameters, tables, or graphs makes a temporary change to one report.

Group Filters

If you intend to share your reports with customers, you will need to filter the database so that only data that pertains to each customer reaches each customer. Creating customer-specific reports is an administrator task that involves the following steps:

- Importing custom property information (customers, locations, IP addresses for nodes, and host names for nodes) using Common Property Tables
- Creating a group account for all of the users affiliated with a particular customer
- Creating a group filter for the group account

For more information about creating filters for group accounts, refer to the *OpenView Performance Insight 5.0 Administration Guide*.

Report Parameters

When you edit a parameter, you are applying a constraint to the report with the intention of eliminating data you do not want to see. For example, if you edit the `Customer_Name` parameter, data for every customer except the customer you typed in the `Customer_Name` field will drop from the report; similarly, if you edit the `Location_Name` parameter, data for all locations except the location you typed in the `Location_Name` field will be dropped.

Constraining the contents of a report by editing parameters is completely optional and you may apply multiple constraints at once. System Resources supports the following parameters:

- `Customer_Name`
- `Location_Name`
- `Device`

Some reports support every parameter in this list, while most reports support a subset of parameters. To edit parameters, click the **Edit Parameters** icon at the bottom right-hand corner of the report. When the **Edit Parameters** window opens, type the constraint in the field and then click **Submit**.

Editing Tables and Graphs

In addition to modifying a report by editing parameters, you can modify individual tables and graphs within a report by clicking the **Edit Table** and **Edit Graph** icons. For more information about these options, see Chapter 9, *Editing Tables and Graphs*.

Adding Customized Property Data

The reports in System Resources 4.0 can be populated with the following properties:

- IP address for the device
- Host name for the device
- Name of the customer associated with the device
- Location associated with the device

When this information appears in a report, the report is reading database tables maintained by the Common Property Tables package. If you are about to install Common Property Tables for the first time, use the batch-mode property import utility that comes with Common Property Tables and import your data in batch mode.

Once you have imported property data in batch mode, you have two ways to modify existing data:

- Use the batch-mode property import utility
- Use the forms (create and update) that come with Common Property Tables

For details, refer to the *Common Property Tables 3.0 User Guide*.

Sources for Additional Information

The following documents are related to this manual:

- *System Resource Report Pack 4.0 Release Statement*
- *Thresholds Module 5.0 User Guide*
- *RFC1514 Datapipe Release Statement*
- *SR_OVPA Datapipe Release Statement*
- *Understanding the OVPA Datapipe, June 2003*
- *SR/OV Reporter Migration Tool 1.0 User Guide*

The following manuals are distributed with the core product, OVPI 5.0:

- *HP OpenView Performance Insight 5.0 Administration Guide*
- *HP OpenView Performance Insight 5.0 Guide to Building and Viewing Reports*
- *HP OpenView Performance Insight 5.0 Installation Guide*

Manuals for the core product and manuals for the reporting solutions that run on OVPI, can be downloaded from the following web site:

<http://support.openview.hp.com>

Select **Technical Support > Product Manuals** to reach the **Product Manuals Search** page. The user guides for OVPI are listed under **Performance Insight**. The user guides for the reporting solutions are listed under **Reporting and Network Solutions**.

The manuals listed under **Reporting and Network Solutions** show the month and year of publication. Since updated manuals are posted to this site on a regular basis, you should check for updates on this site before using an older PDF that may no longer be current.

Package Installation

This chapter covers the following topics:

- Guidelines for a smooth installation
- Using Package Manager to install SR 4.0
- Package removal

Guidelines for a Smooth Installation

The RNS 5.0 product distribution CD contains NNM components as well as OVPI report packs. If you insert the CD and select OVPI report packs for installation, the install script will extract every OVPI package from the CD and copy the results to the Packages directory on your system.

If you have already performed the package extraction step, the System Resources package and both of the datapipes used by System Resources are already in the Packages directory awaiting installation. To install the package and the datapipes, launch the Package Manager install wizard and follow the familiar on-screen directions. Before doing that, review the following guidelines.

Upgrading SR 3.0 to SR 4.0

If you are running an older version of any package, you have two choices:

- Remove the older package, then install the new version; or
- Install the upgrade package

The RNS 5.0 product distribution CD includes upgrade packages for Common Property Tables 2.2 and System Resources 3.0. You cannot upgrade datapipes. Delete existing datapipes, then install new datapipes. If you chose to remove an older version of System Resources, instead of upgrading it, any datapipe that depends on System Resources will be removed automatically.

To upgrade from System Resources 3.0 to System Resources 4.0, perform these tasks:

- Task 1: Upgrade Common Property Tables. When installing the upgrade package, deploy reports (forms in this context).
- Task 2: Remove any datapipe that depended on System Resources 3.0

- Task 3: Install the SR 3.0 to SR 4.0 upgrade package.
- Task 3: Install one or more new datapipes for SR 4.0.

Software Prerequisites

System Resources 4.0 has the following prerequisites:

- OVPI 5.0
- Common Property Tables 3.0

If you are not currently running any version of Common Property Tables, let Package Manager install Common Property Tables for you. If you are running Common Property Tables 2.2, install the upgrade package for Common Property Tables. *Do this first, before upgrading to SR 4.0 or before installing System Resources for the first time.* Accept the default to deploy reports. In this context, reports are forms.

Datapipes

The datapipes that collect data for System Resources are not prerequisites. You may install the datapipes when you install SR 4.0 or you may install the datapipes after you install SR 4.0. Two datapipes are available:

- RFC1514 Datapipe
- SR_OVPA Datapipe

Installation of at least one datapipe is mandatory. If you are currently running an older version of either datapipe listed above, remove the older version before installing the new version. When you remove the older datapipes does not matter; just make sure you do this before installing new datapipes.

Thresholding and Integration with NNM

If you want to implement thresholding for this package, install `SystemResource_Thresholds`, a sub-package that comes with System Resources. The thresholds sub-package contains customized thresholds. When a threshold is breached, the thresholds sub-package responds by taking an action. If you have integrated OVPI with NNM, the sub-package will take the default action, which is to send a threshold trap to your NNM server.

If you select the thresholds sub-package for installation, Package Manager will automatically install Thresholds Module 5.0, a package required by the thresholds sub-package. The Threshold Module controls the action or actions taken in response to a threshold breach. For details about modifying actions, or taking advantage of the other configuration options available for this package, refer to the *Thresholds Module 5.0 User Guide*.

Distributed Environments

Central server software requirements are different from satellite server software requirements. The following table highlights these differences.

Central Server	Each Satellite Server
OVPI 5.0	OVPI 5.0
Common Property Tables 3.0	Common Property Tables 3.0
System Resource Report Pack 4.0	System Resource Report Pack 4.0
System Resource Thresholds [optional]	At least one datapipe
Thresholds Module 5.0 [optional]	

Deploy reports to the Application Server once, when you install System Resources on the central server. When you install System Resources on a satellite server, do not deploy reports to the Application Server.

After you install System Resource in a distributed environment, you will need to set up connections with satellite server databases and edit various files that control how the central server pulls data from the satellite servers. These tasks are explained in Chapter 3, Package Configuration.

Using Package Manager to Install SR 4.0

Insert the RNS 5.0 product distribution CD and follow the on-screen instructions for extracting OVPI solution components. On Windows, these instructions display automatically; on UNIX, mount the CD, navigate to the top level directory for the CD, and type the `./setup` command.

When the extraction process finishes, the install script prompts you to start Performance Insight and open the Package Manager install wizard. If you just extracted packages and the Package Manager install wizard is running, begin the following procedure at step 5.

- 1 Log in to the system. On UNIX systems, log in as root.
- 2 Stop OVPI Timer and wait for processes to terminate.
 - Windows NT:* Select **Settings > Control Panel > Administrative Tools > Services**
 - UNIX:* As root, type one of the following:
 - HP-UX: `sh /sbin/ovpi_timer stop`
 - Sun: `sh /etc/init.d/ovpi_timer stop`
- 3 Select **HP OpenView > Performance Insight > Management Console**.
- 4 Select **Tools > Package Manager**. The Package Manager welcome window opens.
- 5 Click **Next**. The Package Location window opens.
- 6 Click the **Install** radio button. Approve the default destination directory or browse to a different directory if necessary.

- 7 Click **Next**. The Report Deployment window opens.
- 8 Type your OVPI username and password.
- 9 Click **Next**. The Package Selection window opens. Click the check box for System Resource 4.0, at least one datapipe (RFC1514 or SR_OVPA), and the System Resource Thresholds sub-package.



Installing the thresholds sub-package is optional. If you install the thresholds sub-package, Package Manager will install Thresholds Module 5.0 for you, automatically.

- 10 Click **Next**. The Type Discovery window opens. To run Type Discovery immediately after package installation, accept the default and click **Next**. The Selection Summary window opens.
- 11 Click **Install**. The Installation Progress window opens and the install begins. When the install finishes, a package installation complete message appears.
- 12 Click **Done** to return to the Management Console.
- 13 Restart OVPI Timer.

Windows NT: Select **Settings > Control Panel > Administrative Tools > Services**

UNIX: As root, type one of the following:

HP-UX: `sh /sbin/ovpi_timer start`

Sun: `sh /etc/init.d/ovpi_timer start`

Most report packs include a demo package. The demo package is independent of other packages. You may install the demo package and nothing else, or you may install the demo package along with everything else. Each demo report is interactive, but the data in the report is static and will not change from day to day.

Options for Viewing Reports

Before reports can be viewed using a web browser, they must be deployed. When you installed System Resources, you enabled the Deploy Reports option. Enabling this option deploys the reports to the Application Server and makes them available for viewing on the web.

If the client component of OVPI was installed on your system, you have access to the Viewer and Builder applications. If the client component was not installed on your system, web access to reports is your only means of access. For more information about the client components, refer to the *HP OpenView Performance Insight 5.0 Installation Guide*.

Seeing Performance Data

Some reports populate with data sooner than others. The first report to populate with data is the Near Real Time report. You will begin to see data in this report immediately after the first data collection completes.

Any report that begins with an analysis of yesterday's performance will need at least one full day's worth of data before results are viewable. You will begin to see forecast data soon, within a few days. However, reliable forecast data will not be available until the baseline is complete, and this will take several weeks.

Package Removal

When you remove a report pack, you delete the tables associated with the report pack as well as all the data in those tables. If you want to preserve the data in those tables, archive the data before removing the package.

Removing System Resources automatically removes any datapipe that depends on System Resources. Follow these steps to remove System Resources from OVPI.

- 1 Log in to the system. On UNIX systems, log in as root.
- 2 Stop OVPI Timer and wait for processes to stop running.
- 3 Select **HP OpenView > Performance Insight > Package Manager**. The Package Manager welcome window opens. Follow the on-screen instructions for uninstalling packages. When the uninstall process finishes, a package removal complete message appears.
- 4 Click **Done** to return to the Management Console.
- 5 Restart OVPI Timer.

Package Configuration

This chapter covers the following topics:

- Configuring distributed systems
- Default threshold values in the thresholds sub-package
- Using the change forms to modify thresholds and property data

Skip the next section if you are running System Resources on a stand-alone system.

Configuring Distributed Systems

If you intend to run System Resources as a distributed system across multiple servers, you need to configure all of the servers in your system. Before doing that task, let's verify that you have the right packages on each server. The following table makes clear what the differences are. You want the datapipes on the satellite servers, and you want to deploy reports from the central server only, not the satellite servers.

Central Server	Satellite Server
System Resources 4.0 (deploy reports)	System Resources 4.0 (do not deploy reports)
System Resources Thresholds	System Resources Thresholds
Thresholds Module 5.0	Thresholds Module 5.0
Common Property Tables 3.0	Common Property Tables 3.0
	RFC1514 Datapipe
	SR_OVPA Datapipe

If all the packages are where they belong, you are now ready to perform the following tasks:

- Task 1: Set up connections between the central server and satellite server databases
- Task 2: Configure trendcopy pull commands on the central server for hourly data
- Task 3: Configure trendcopy pull commands on the central server for rate data (optional)
- Task 4: Configure each satellite server

In addition to performing these tasks, make sure that all system clocks are synchronized.

Task 1: Set up connections with satellite server databases

- 1 Select **HP OpenView > Performance Insight > Management Console**.
- 2 Click the **Systems** icon on the lower left. The **System/Network Administration** pane opens.
- 3 Right-click the **Databases** folder. When prompted, select **Add OVPI Database**. The Add Database Wizard opens.
- 4 Click **Next**.
- 5 Type the hostname and port number for the database you want to add; click **Next**.
- 6 Review the Summary. Repeat Steps 4 and 5 for each additional database.
- 7 Click **Finish** when you are done.

Task 2: Configure trendcopy pull commands for hourly data

- 1 Open the following file:


```
$DPIPE_HOME/scripts/SR_Hourly_Reporting.pro
```
- 2 Uncomment the copy commands in the hourly_copy block and modify them as follows:
 - Replace *SATELLITE_SERVER_1_DATABASE* with the satellite server name
 - Replace *THIS_MACHINE_DATABASE* with the central server name
- 3 If there is more than one satellite server, create and configure new hourly copy commands for each additional machine.
- 4 Comment out the hourly trends in the SystemResourceReporting_Hourly.pro file.

Task 3: Configure trendcopy pull commands for rate data (optional)

If you want to view Near Real Time reports on the central server, rate data must be available on the central server. Follow these steps to pull rate data from satellite servers:

- 1 Open the following file:


```
$DPIPE_HOME/scripts/SR_Hourly_Reporting.pro
```
- 2 Uncomment the copy commands in the rate_copy block and modify them as follows:
 - Replace *SATELLITE_SERVER_1_DATABASE* with the satellite server name
 - Replace *THIS_MACHINE_DATABASE* with the central server name
- 3 If there is more than one satellite server, create and configure new hourly copy commands for each additional machine.

 Copying polled rate data from each satellite server every hour increases traffic between satellite servers and the central server, and increases the central server's processing load.

Task 4: Configuring satellite servers

Follow these steps to configure a satellite server.



Do not perform this procedure if the satellite server is performing local reporting or if the thresholds sub-package is not installed on the satellite server.

- 1 Switch off daily aggregations by commenting out the lines referencing `SR_Server_Reporting.pro` in the `$DPIPE_HOME/lib/trendtimer.sched` file.
- 2 Modify the `SR_Hourly_Reporting.pro` trendtimer entry in the `$DPIPE_HOME/lib/trendtimer.sched` file. By default, this process starts at 40 minutes after the hour. To make sure the satellite server completes hourly summarizations before the central server begins hourly summarizations, change the start time from `1:00+40` to `1:00+25`.
- 3 Configure datapipe polling policies, making sure that each system is polled by one satellite server only.
- 4 If the satellite server has two or more pollers, create separate polling policies for each poller and use views and types to separate the devices.
- 5 If remote pollers are being used, be sure to avoid duplicate polling across the pollers and duplicate polling between the satellite and the pollers.

Default Values for Thresholds

The System Resource Thresholds sub-package imposes a sets of thresholds for systems and filesystems. When performance reaches one of these default thresholds, the thresholds sub-package sends a trap to the network management system. Exception thresholds for systems and filesystems are listed in the following table.

Metric	Threshold	Severity
<code>cpuutil_threshold</code>	80%	MEDIUM
<code>swaputil_threshold</code>	70%	MEDIUM
<code>memutil_threshold</code>	70%	MEDIUM
<code>runq_threshold</code>	3	MEDIUM
<code>pageout_threshold</code>	5	MEDIUM
<code>FSutil_threshold</code>	70%	MEDIUM

The first 5 threshold values are defined in the `K_SR_System.teel` file, while the last threshold value is defined in the `K_SR_FileSystem.teel` file. Every system that is discovered will be initialized to the default values shown here, and no intervention on your part is necessary to enable these exception threshold values. However, if you want to enable multiple types of traps, or set up multiple trap destinations, you will need to make changes to the Thresholds Module. These changes are discussed in the *Thresholds Module User Guide*.

Using the Change Forms

The system and filesystem objects maintained for System Resources 4.0 can be modified using two change forms. These forms do not allow you to create new objects, only to modify existing objects. Note that these forms are context-sensitive: they will modify every object that was selected before the form was launched. Therefore, be sure to use forms carefully. Know in advance whether you intend to change one object or multiple objects.



To create new nodes, locations or customers, or modify existing nodes, locations, or customers, use the forms in Common Property Tables 3.0.

Update System Properties

To launch the Update System Properties form, click the **Objects** icon in the panel on the left side of the Management Console window. The Object/Property Management view opens. Object Manager will present a list of objects. The type of object presented depends on which Object Manager View is open.

The default view is the Device view, showing a list of devices. The Customer view shows a list of customers, and the Location view shows a list of locations. To change the view, select **View > Change View** and use the pop-up window to select a different view.

Once the type of object you are interested in updating appears, select the particular object you would like to update. When you select the object, **Update <Object Type> Information** will appear under **Object Specific Tasks**. Double-click the update task to open Update System Properties. This form is shown below.

System Resources

Update System Properties

This form allows system property information to be modified. Click the OK or Apply button to save any changes. Click the Cancel button to cancel.

Device Name

Maximum Processes

Memory Size

Description

Customer Name

Location Name

System Threshold Limits The level where exceptions are recorded and threshold events may be generated.

CPU % **Run Queue**

Memory % **Page Outs**


Swap %

OK Apply Cancel

To update system information, type the changes in the fields provided. Note that the customer name field and the location name field are disabled. The other fields can be modified. To save your changes, click **Apply**. When you finish making changes, click **OK** to save your changes and close the form.

Update Filesystem Properties

To update filesystem properties, type the changes in the fields provided. The customer name field and the location name field are disabled. The other fields can be modified. To save your changes, click **Apply**. When you finish making changes, click **OK** to save your changes and close the form.

System Resources  **Update Filesystem Properties** invent

This form allows filesystem property information to be modified. Click the OK or Apply button to save any changes. Click the Cancel button to cancel.

Device Name	<input type="text" value="ultra"/>
Mount Point	<input type="text" value="/"/>
Remote Mount Point	<input type="text"/>
Last Full Backup	<input type="text" value="0000 0000 0001 0001 0000 0000 0000 0000"/>
Last Partial Backup	<input type="text" value="0000 0000 0001 0001 0000 0000 0000 0000"/>
Type	<input type="text" value="1.3.6.1.2.1.25.3.9.3"/>
Customer Name	<input type="text" value="Customer Unassigned"/>
Location Name	<input type="text" value="Location Unassigned"/>

Filesystem Threshold Limits The level where exceptions are recorded and threshold events may be generated.

Utilization Threshold %	<input type="text" value="70.00"/>
--------------------------------	------------------------------------

OK Apply Cancel

:

Optimizing Resources

Filesystems Resource Optimization brings into focus the most overutilized and the most underutilized filesystems. Use this report to see where load balancing, as opposed to investing in additional resources, might be the easiest way to improve service quality.

The selection table at the top of the report provides a list of systems that are expected to reach 90 percent utilization within ninety days. The grade of service bar chart beneath the selection table provides a picture of utilization over the last few days, allowing you to track recent increases and decreases and determine whether a critical situation is getting better or worse. The plot beneath the grade of service chart tracks daily ups and downs in utilization (CPU, memory, swap, filesystem, page outs, and run queue length).

Information about underutilized filesystems comes next. This time the selection table includes filesystems that are expected to be less than 30% utilized within 90 days.

Memory Resource Optimization pinpoints the most overutilized and underutilized system memory, indicating opportunities where service levels could be improved through better load balancing as opposed to investing in additional resources. Select a system from the top table to display detailed information for that system.

All aggregation for this report occurs at the daily level. The top selection table lets you see which systems will have a memory utilization greater than 90 percent in ninety days. You can also see what memory utilization is estimated to be 30, 60 and 90 days from now. The table directly below the top selection table provides provisioning details for the selected system:

- Customer
- Location
- Vendor
- Model
- Operating system
- Memory utilization threshold

A grade of service stacking bar chart details the overall health of the system, including CPU utilization, memory utilization, swap utilization and run queue length. A linked, tabbed plot pinpoints daily CPU utilization, memory utilization, swap utilization, filesystem utilization, number of page outs, and run queue length for the selected system. The top selection table and linked drill downs are repeated for systems that are projected to have a memory utilization less than 30 percent in ninety days.

System Resource

Filesystems Resource Optimization



The System Resource Filesystems Resource Optimization Report details the most over- and under-utilized filesystems, indicating opportunities for load balancing to improve service levels without additional investment. Select a system from the top table to display detailed information for that system.

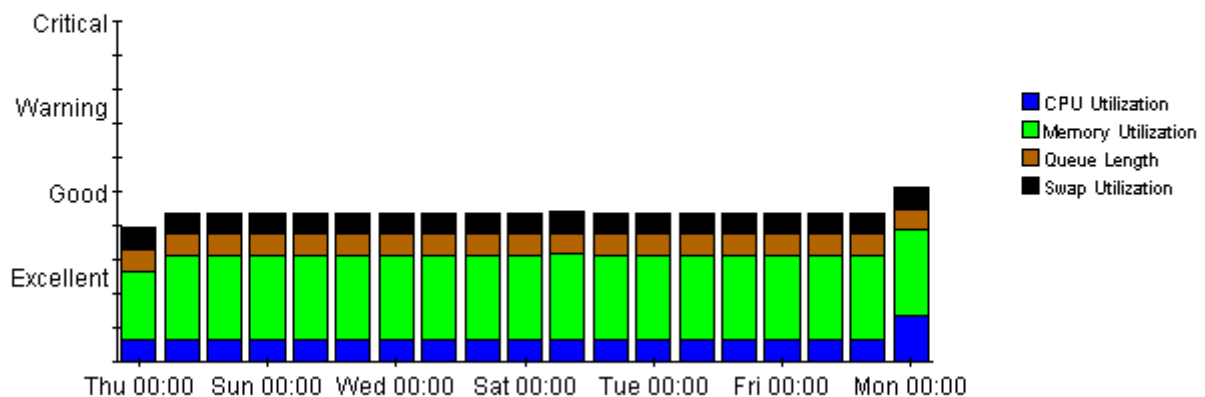
Overutilized Filesystems Projected to Exceed 90% Utilization within 90 Days

System	Filesystem	Current Utilization	Projected Utilization 30	Projected Utilization 60	Projected Utilization 90
System4	/usr	94.62	94.62	94.63	94.63
System24	/	94.23	103.90	111.17	118.44
System1	/export/home3	90.62	92.45	93.70	94.96
System1	/export/home4	89.30	97.03	102.21	107.40
System4	/var	50.86	151.83	220.29	288.75
System25	/opt	42.31	111.83	164.06	216.29

Vendor	Model	O/S	Customer	Location	Filesystem Utilization Threshold
Unassigned	i686	Linux 2.4.2-2 #1 Sun Apr	Customer Unassigned	Location Unassigned	70.00

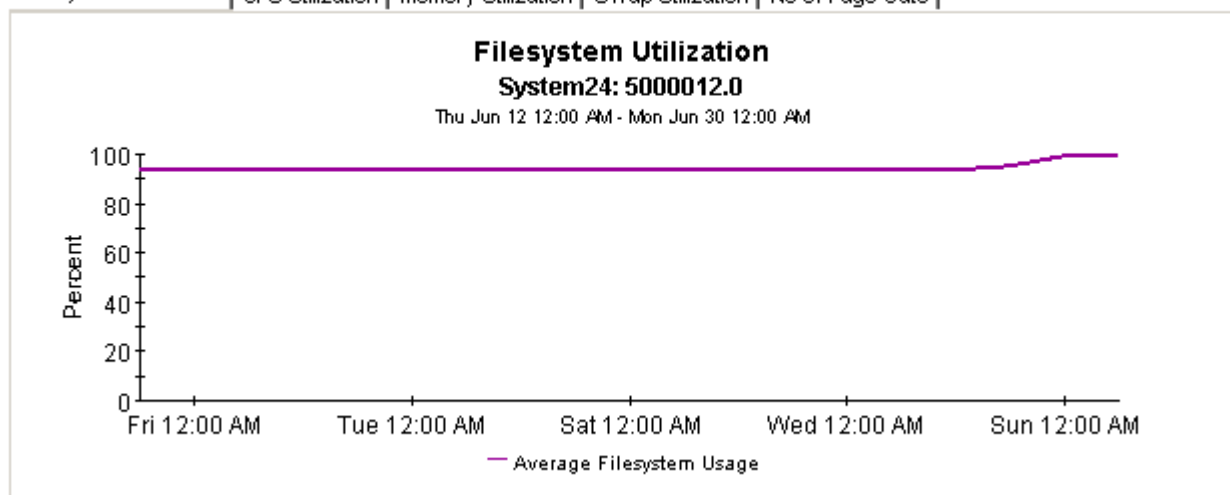
Grade of Service (GOS) System24

Thu Jun 12 2003 - Mon Jun 30 2003



continues on next page

[Filesystem Utilization](#) |
 [CPU Utilization](#) |
 [Memory Utilization](#) |
 [Swap Utilization](#) |
 [No of Page Outs](#)



Underutilized Filesystems
Projected to be Utilized Less than 30% within 90 Days

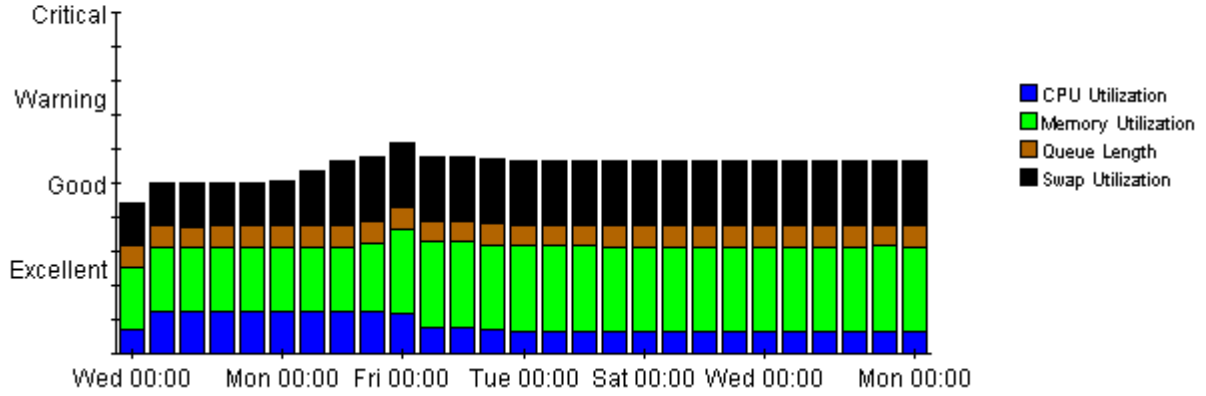
System	File System	Current Utilization	Projected Utilization	Projected Utilization	Projected Utilization
			30	60	90
System23	/home	12.76	12.76	12.76	12.76
System7	/stand	13.72	13.96	14.11	14.27
System7	/	16.13	6.30	0.00	0.00
System8	/	17.97	17.97	17.97	17.97
System23	/	17.97	17.97	17.97	17.97
System4	/stand	18.53	18.51	18.50	18.49
System27	/boot	19.87	19.87	19.87	19.87
	C:\	20.34	19.48	18.84	18.21
System11	C:\Label: Serial Number 58ae8b0d	22.54	22.54	22.54	22.54
System13	C:\Label: Serial Number 58ae8b0d	22.54	22.54	22.54	22.54

Vendor	Model	O/S	Customer	Location	Filesystem Threshold
Hewlett Packard	9000/893	HP-UX B.11.11 U	Customer Unassigned	Location Unassigned	70.00

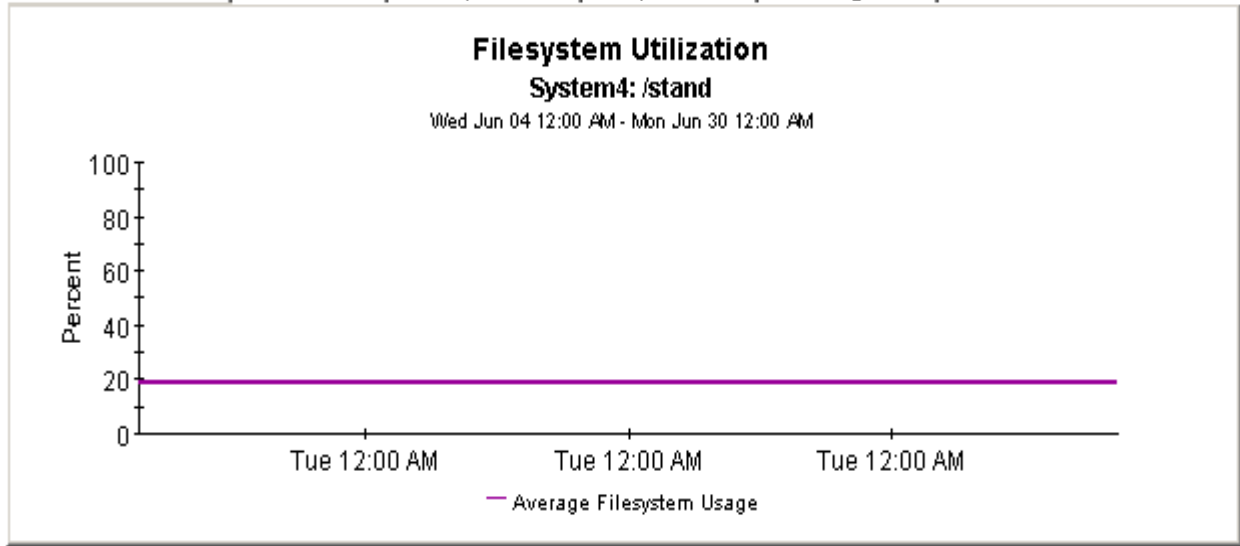
continues on next page

Grade of Service (GOS)
System4

Wed Jun 04 2003 - Mon Jun 30 2003

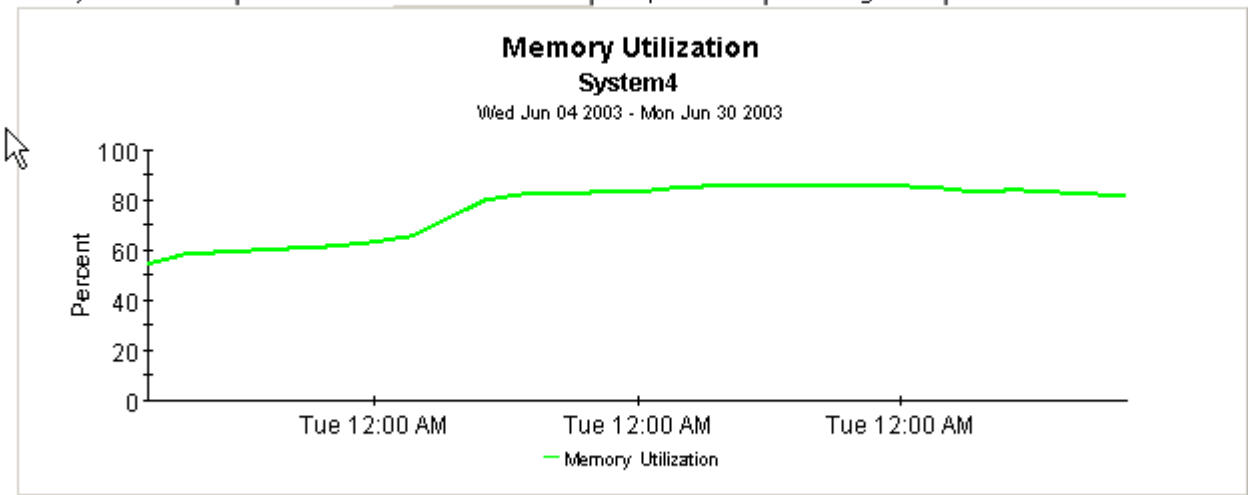


Filesystem Utilization | CPU Utilization | Memory Utilization | Swap Utilization | No of Page Outs

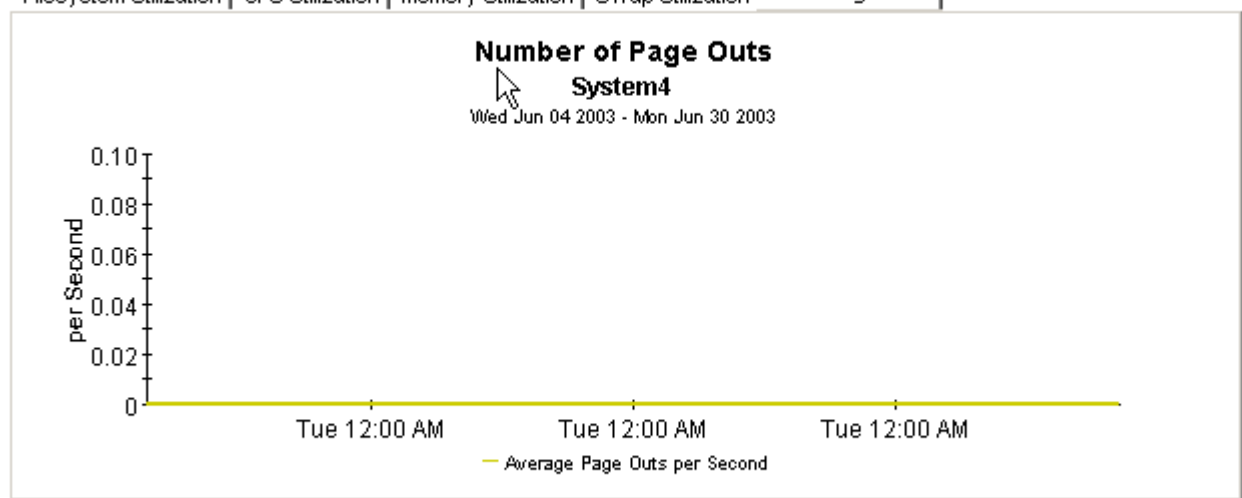


continues on next page

Filesystem Utilization | CPU Utilization | Memory Utilization | Swap Utilization | No of Page Outs



Filesystem Utilization | CPU Utilization | Memory Utilization | Swap Utilization | No of Page Outs



System Resource



Memory Resource Optimization

The System Resource Memory Resource Optimization Report details the most over- and under-utilized filesystems, indicating opportunities for load balancing to improve service levels without additional investment. Select a system from the top table to display detailed information for that system.

Overutilized System Memory Projected to Exceed 90% Utilization within 90 Days

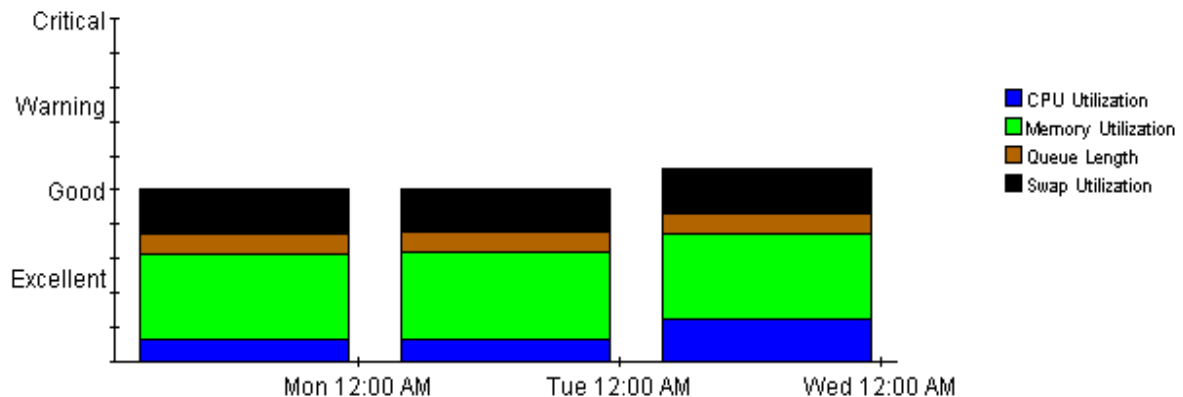
Current Utilization	Average Page Outs per Second	Projected Utilization 30	Projected Utilization 60	Projected Utilization 90
96.28	0.10	111.31	125.86	140.41

Vendor	Model	O/S	Location	Customer	Memory Utilization Threshold
Hewlett Packard	9000/800	HP-UX B.11.00 A	Location Unassigned	Customer Unassigned	70.00

Grade of Service (GOS)

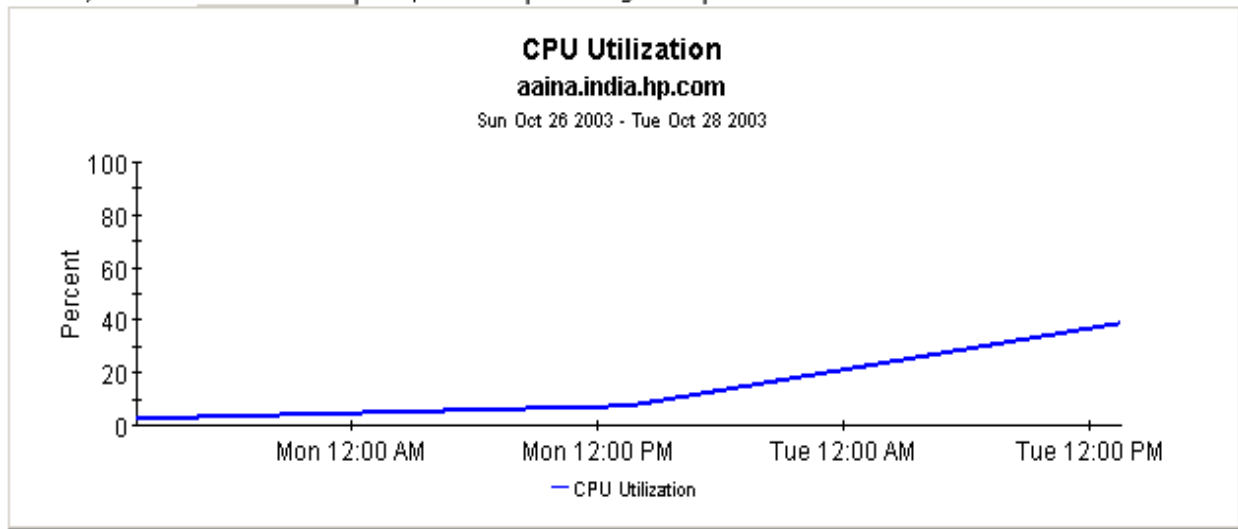
aaina.india.hp.com

Sun Oct 26 2003 - Tue Oct 28 2003

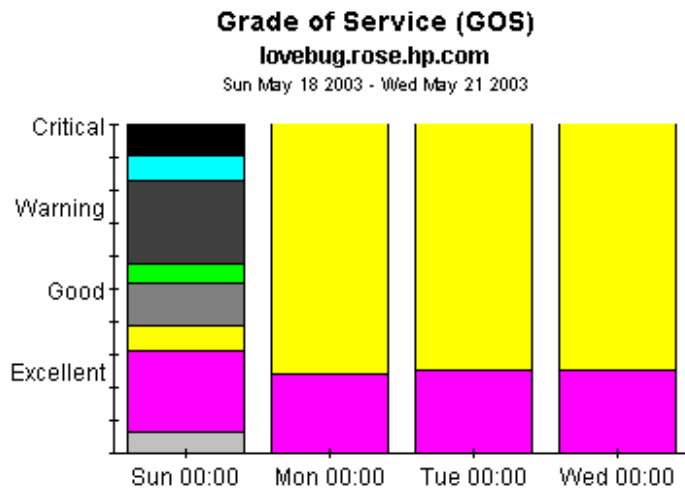


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Memory Utilization | CPU Utilization | Swap Utilization | No of Page Outs



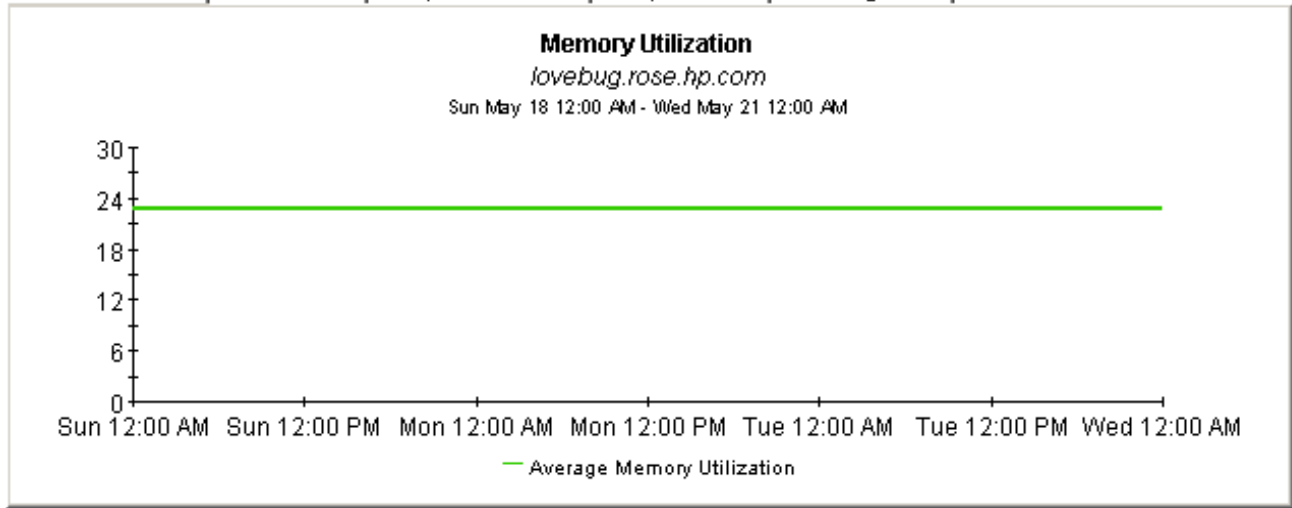
Vendor	Model	O/S	Location	Customer	Memory Utilization Threshold
Hewlett-Packard	Unassigned		Location Unassigned	Customer Unassigned	70.00



- CPU Utilization: 15.70.186.76: All
- Memory Utilization: 15.70.186.76: All
- Queue Length: 15.70.186.76: All
- Swap Utilization: 15.70.186.76: All
- CPU Utilization: tthp166.end.hp.com: All
- Memory Utilization: tthp166.end.hp.com: All
- Queue Length: tthp166.end.hp.com: All
- Swap Utilization: tthp166.end.hp.com: All
- CPU Utilization: 15.2.114.242: All
- Memory Utilization: 15.2.114.242: All
- Queue Length: 15.2.114.242: All
- Swap Utilization: 15.2.114.242: All
- CPU Utilization: 15.2.115.172: All
- Memory Utilization: 15.2.115.172: All
- Queue Length: 15.2.115.172: All
- Swap Utilization: 15.2.115.172: All
- CPU Utilization: 15.2.125.15: All
- Memory Utilization: 15.2.125.15: All
- Queue Length: 15.2.125.15: All

continues on next page

Memory Utilization | CPU Utilization | Filesystem Utilization | Swap Utilization | No of Page Outs



Service Level Management

The **Service Level Management - Executive Summary** looks at yesterday's Grade of Service and yesterday's exception counts. This report analyzes performance data for multiple systems, aggregated by customer and location, hence the term *summary*.

Use the SLM report to verify whether service quality is meeting expectations. The top selection table provides a list of customers ranked by number of exceptions, highest to lowest. The data for each customer provides exceptions statistics all of the systems owned by that customer. The second selection table provides a list of locations ranked by number of exceptions, highest to lowest. The location selection table is linked to the top selection table, and separates out the total exceptions for each location.

This report allows you to drill down from information about yesterday's distribution of exceptions to a stacked bar chart showing hourly, daily, and monthly views of exceptions and how they are distributed. The stacked bar chart shows total exceptions for all systems at the location selected above. At the end of the report, a grade of service chart provides an hourly assessment of health. This chart is aggregating data from all of the systems at the location highlighted in the location table.

System Resource

Executive Service Level Management Summary



The Executive Service Level Management Summary Report provides an overview of system performance. Each chart details key metrics aggregated for all systems. Key indicators of performance are shown individually and combined into a Grade of Service chart to reveal system health at a glance.

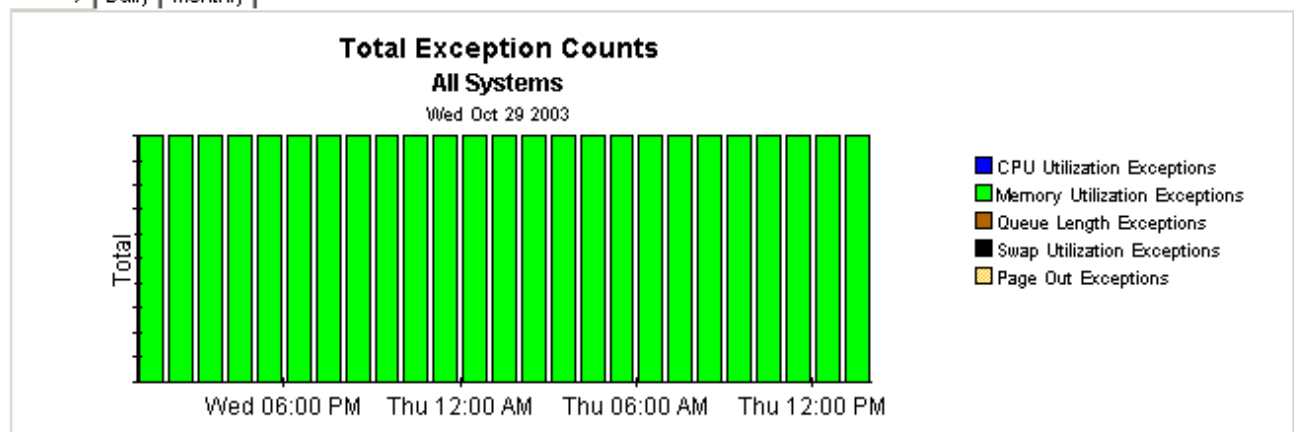
Customers Wed Oct 29 2003

Customer Name	Total Exceptions	Queue Length Exceptions	CPU Utilization Exceptions	Memory Utilization Exceptions	Swap Utilization Exceptions	Page Out Exceptions
All Customers	24.00	0.00	0.00	24.00	0.00	0.00
Customer Unassigned	24.00	0.00	0.00	24.00	0.00	0.00

Locations Wed Oct 29 2003

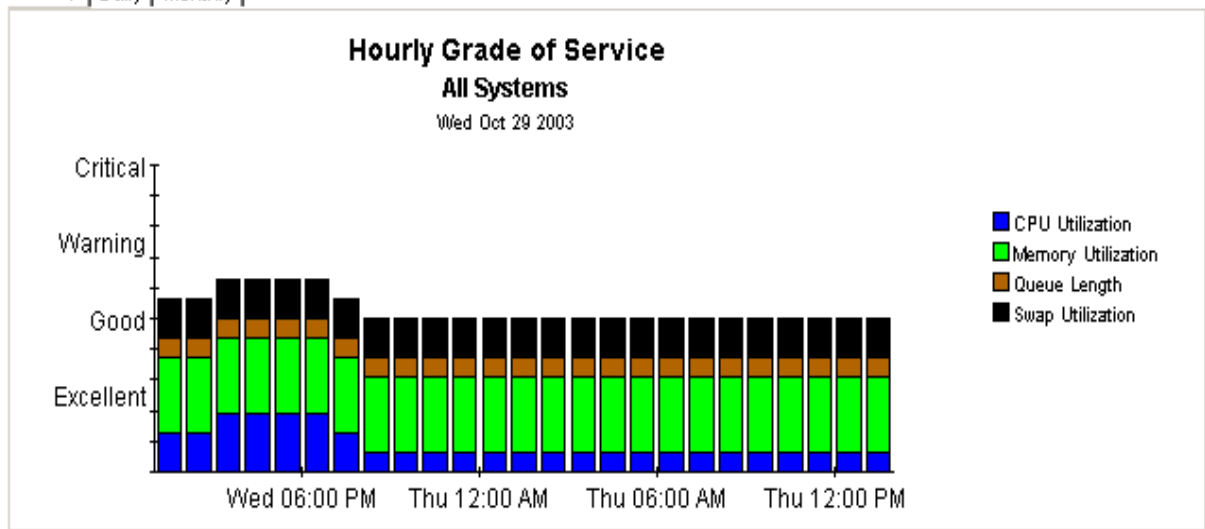
location_name	Total Exceptions	Queue Length Exceptions	CPU Utilization Exceptions	Memory Utilization Exceptions	Swap Utilization Exceptions	Page Out Exceptions
All Locations	24.00	0.00	0.00	24.00	0.00	0.00
Location Unassigned	24.00	0.00	0.00	24.00	0.00	0.00

Hourly | Daily | Monthly



continues on next page

Hourly | Daily | Monthly



Resource Forecasting

You have two reports in the resource forecasting area:

- Filesystem Forecast
- Memory Forecast

Both reports have very similar formats. The **Filesystem Forecast** begins with a selection table that provides a list of all the filesystems that are headed towards 100 percent utilization and are expected to reach this level within 90 days. The entries in the table sort by Days to Threshold (DTT), lowest number to highest number. Putting this another way, the sort order is nearest to threshold at the top, furthest from threshold at the bottom.

In addition to indicating the value for DTT, the selection table shows:

- Current utilization (the rolling baseline average)
- Projected utilization 90 days from today

Select an entry in the table to display the following provisioning details:

- Vendor
- Model
- O/S
- Customer
- Location
- Filesystem utilization threshold level

From the selection table you may drill down to a daily Grade of Service chart that shows increases and decreases in a composite score derived from individual scores for utilization (CPU, memory, and swap) and queue length. The series of tabbed line graphs below the GOS chart track utilization levels and the number of pageouts. These graphs track utilization for the following resources:

- Filesystem
- CPU
- Memory
- Swap

The **Memory Forecast** begins with a selection table that provides a list of all the systems headed towards 100 percent utilization and projected to reach this level within the next 90 days. The entries in the table sort by DDT, lowest number to highest number, or nearest to threshold at the top, furthest from threshold at the bottom. In addition to indicating DDT, the selection table shows:

- Current utilization (the rolling baseline average)
- Projected utilization 90 days from today

Select an entry in the table to display the following details for the system:

- Vendor
- Model
- Operating system
- Customer
- Location
- Memory utilization threshold

From the selection table you may drill down to a daily Grade of Service chart that shows increases and decreases in an overall score throughout the baseline period. The overall score is a composite based on individual scores for CPU utilization, memory utilization, swap utilization, and run queue length.

The tabbed charts below the GOS chart provide daily analysis of trends. These charts show how the following variables have behaved over the baseline period:

- Memory utilization
- CPU utilization
- Swap utilization
- Number of page outs

See below for a sample of the Filesystem Forecast followed by a sample of the Memory Forecast.

System Resource

Filesystem Forecast



The System Resource Filesystem Forecast report lists all filesystems within 90 days of a utilization threshold, those closest to a threshold listed first. The report arms the system manager with the information required to assess performance and take preventive action. Select a system from the top table to display detailed information for that system.

Estimated Days To Threshold (DTT) Filesystems Projected to be within 90 Days of 100% Utilization

System	Filesystem	DTT Utilization	Current Utilization	Projected Utilization 30	Projected Utilization 60	Projected Utilization 90
dollar.india.hp.com	/home	0	90.60	120.61	149.87	179.14

Vendor	Model	O/S	Customer	Location	Filesystem Utilization Threshold
Hewlett Packard	9000/879	HP-UX B.11.00 A	Customer Unassigned	Location Unassigned	70.00

Grade of Service (GOS)

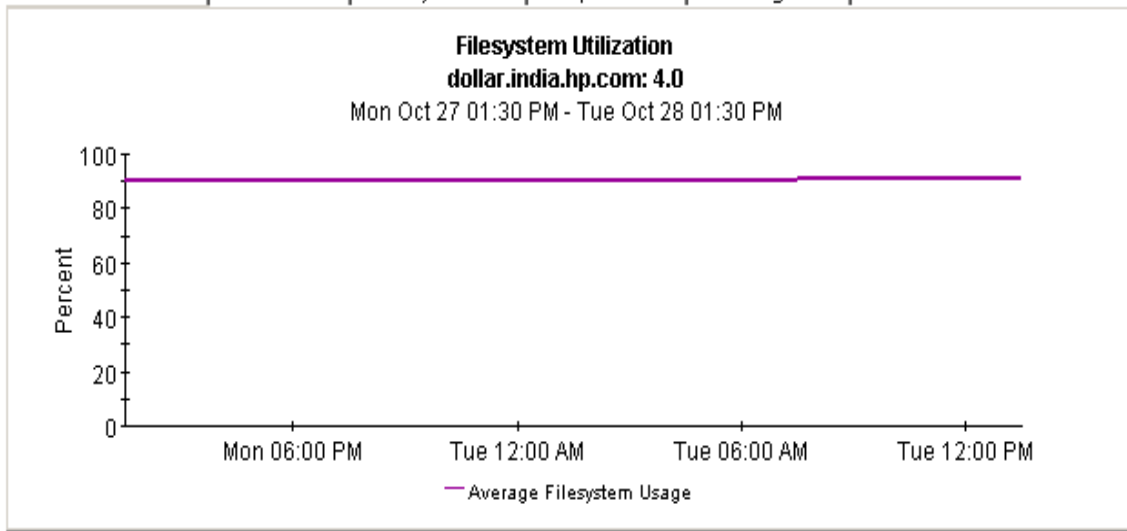
dollar.india.hp.com

Tue Oct 28 2003 - Tue Oct 28 2003



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Filesystem Utilization | CPU Utilization | Memory Utilization | Swap Utilization | No of Page Outs



System Resource

Memory Forecast



The System Resource System Memory Forecast report lists all systems within 90 days of a memory utilization threshold, those closest to a threshold listed first. The report arms the system manager with the information required to assess performance and take preventive action. Select a system from the top table to display detailed information for that system.

Estimated Days to Threshold (DTT) Systems Projected to be within 90 Days of 100% Utilization

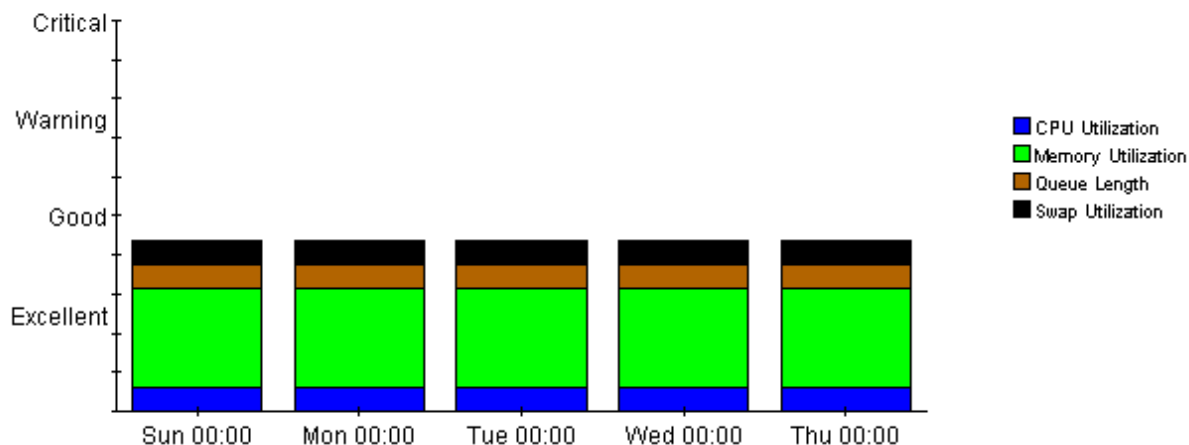
System	DTT Utilization	Current Utilization	Projected Utilization 90
15.2.125.15	12.00	90.32	156.74
biotite.cnd.hp.com	60.00	74.22	113.05
hpcb.rose.hp.com	57.00	65.38	119.65
tshp39.cnd.hp.com	32.00	79.49	135.06
gorilla.cnd.hp.com	6.00	50.83	650.40
hpfcljm.cnd.hp.com	29.00	54.17	194.47
solcent	53.00	82.79	112.10

Vendor	Model	O/S	Location	Customer	Memory Utilization Threshold
Sun	sun4u	SunOS 5.8 Generic_108528-16	Location Unassigned	Customer Unassigned	70.00

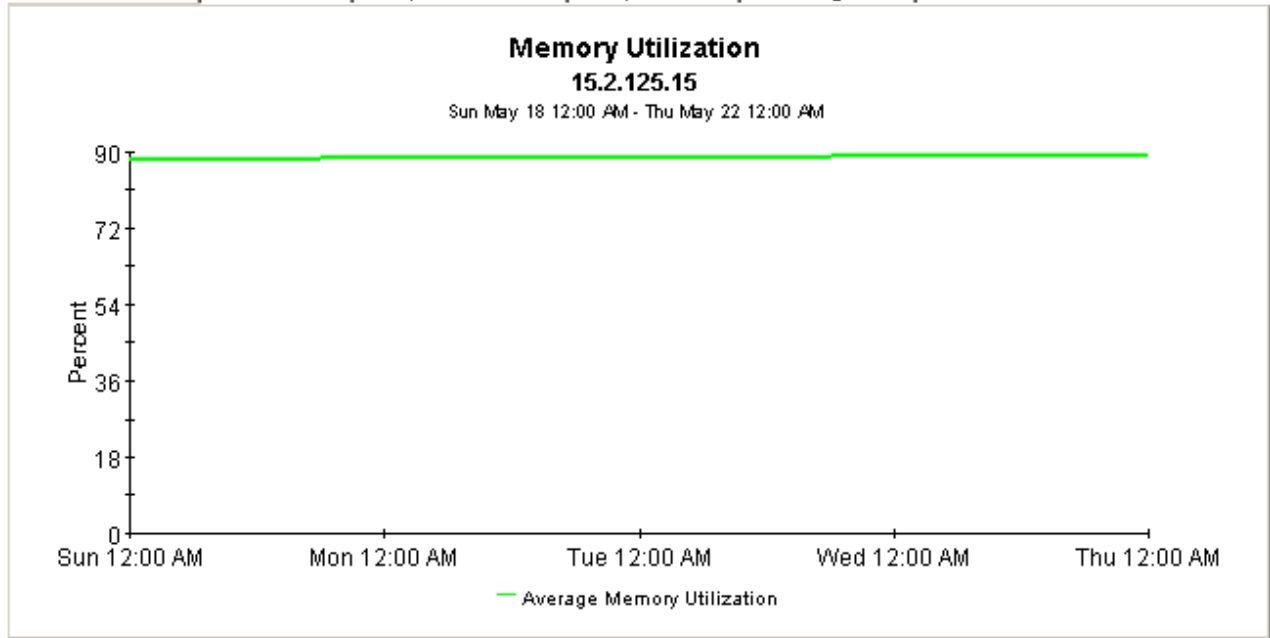
Grade Of Service (GOS)

15.2.125.15

Sun May 18 2003 - Thu May 22 2003



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Exception Hot Spots and QuickViews

This chapter covers the following reports:

- Exception Hot Spots
- QuickView
- Near Real Time

Exception Hot Spots

The Hot Spots report provides a list of the systems that exceeded at least one threshold condition at some time yesterday. Systems that did not exceed any thresholds will not appear in this report. This report is particularly useful for identifying systems with the most exceptions and looking at exceptions in more detail. The selection table indicates which exceptions took place, and how many of each type took place during the 24-hour period that ended last night at midnight. Select an entry to display the following data:

- System-level provisioning details (vendor, model, customer, location, and o/s)
- Exception thresholds for each resource

Beneath the selection table is a series of charts that track yesterday's resource utilization levels on an hour-by-hour basis, allowing you to see exactly when exceptions took place. Near the bottom of the report you have an Exception Details chart and a Grade of Service chart. The first chart shows the data that was captured by each poll, throughout the day. The second chart provides an overall grade of service score for each poll. The overall score is a composite based on CPU utilization, memory utilization, and queue length.

QuickView

The QuickView has a broader scope than Hot Spots. This report includes every system, whether or not the system recorded exceptions yesterday. (By default, the selection table is limited to 50 rows.) The selection table provides utilization averages for yesterday, covering run queue, CPU, memory, swap, and pageouts per second. The default sort order is CPU utilization. Select an entry in the table to display the following data:

- System-level provisioning details (vendor, model, customer, location, and o/s)
- The exception threshold for each resource

The line graphs below the exception threshold information provide hourly data for each resource, allowing you to track increases and decreases throughout the day.

QuickView - Near Real Time

The format of the QuickView - Near Real Time is exactly the same as the QuickView:

- Selection table that sorts all systems by CPU utilization
- System-level provisioning details
- Exception thresholds for each resource
- Line graphs for each resource

In the QuickView, you are looking at data for yesterday. In the Near Real Time, you are looking at data for the previous six hours. Use the Near Real Time version of the QuickView to spot problem areas before the condition begins to affect your users.

QuickView - Near Real Time - Snapshot

The format of the QuickView - Near Real Time - Snapshot is exactly the same as the QuickView - Near Real Time:

- Selection table that sorts entries by CPU utilization over the last six hours
- System-level provisioning details
- Exception thresholds for each resource
- Line graphs for each resource covering the last six hours

In the QuickView - Near Real Time, you are looking at data for the last six hours. In the Snapshot version of the Near Real Time, you are looking at the same data, but only for the specific systems you specify when you open the report. Use the Snapshot version of the Near Real Time report whenever you know in advance exactly which system or systems you are interested in.

System Resource



Hot Spots

The System Resource Hot Spots Report provides a listing of systems that have exceeded threshold conditions during the previous day. Offending systems are ranked by total number of exceptions. Select a system from the top table to display detailed information for that system.

Problem Summary for the Day Systems with Most Exceptions for the Day

Thu May 22 2003

System	Total Exceptions	Queue Length Exception	CPU Utilization Exceptions	Memory Utilization Exceptions	Swap Utilization Exceptions	Page Out Exceptions
solcent	96	0	0	96	0	0
ultra	94	0	11	83	0	0
15.2.118.118	72	24	24	24	0	0
15.70.186.76	44	22	0	22	0	0
15.2.114.242	24	0	0	24	0	0
15.2.125.15	24	0	0	24	0	0
biotite.cnd.hp.com	24	0	0	24	0	0
tshp18.cnd.hp.com	24	0	0	24	0	0
tshp39.cnd.hp.com	24	0	0	24	0	0

Vendor

Cisco

Model

Unassigned

O/S**Location**

Location Unassigned

Customer

Customer Unassigned

CPU Utilization Threshold

80.00

Memory Utilization Threshold

70.00

Swap Utilization Threshold

70.00

Run Queue Threshold

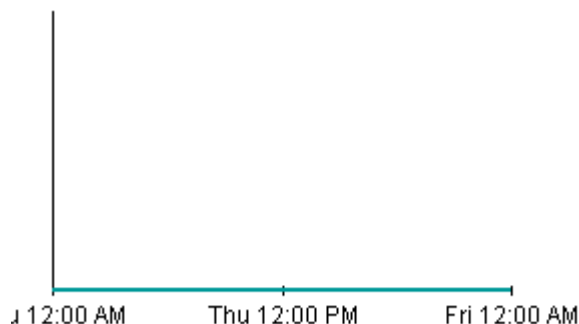
3.00

Pageout Threshold

5.00

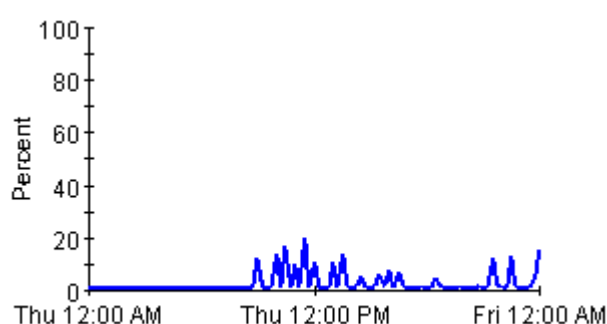
Run Queue solcent

Thu May 22 12:00 AM - Fri May 23 12:00 AM



CPU Utilization solcent

Thu May 22 12:00 AM - Fri May 23 12:00 AM

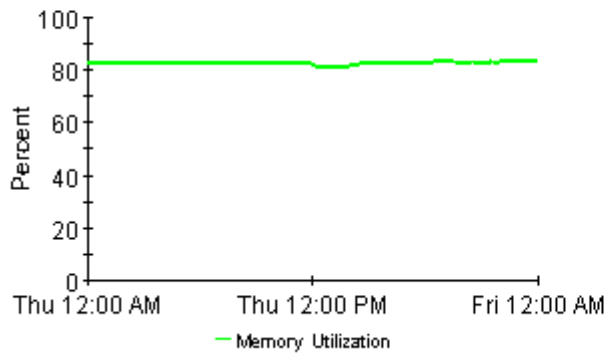


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Memory Utilization

solcent

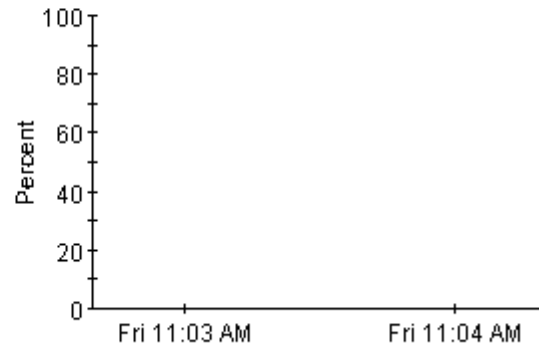
Thu May 22 12:00 AM - Fri May 23 12:00 AM



Swap Utilization

solcent

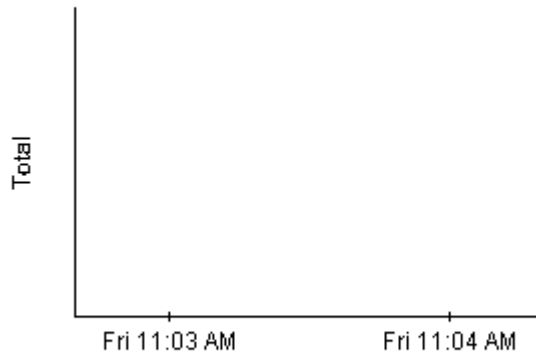
Thu May 22 12:00 AM - Thu May 22 12:15 PM



Page Outs per Second

solcent

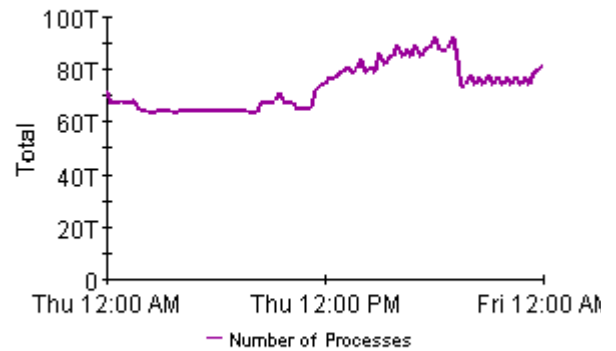
Thu May 22 12:00 AM - Thu May 22 12:15 PM



Number of Processes

solcent

Thu May 22 12:00 AM - Fri May 23 12:00 AM



Exception Detail | Grade of Service

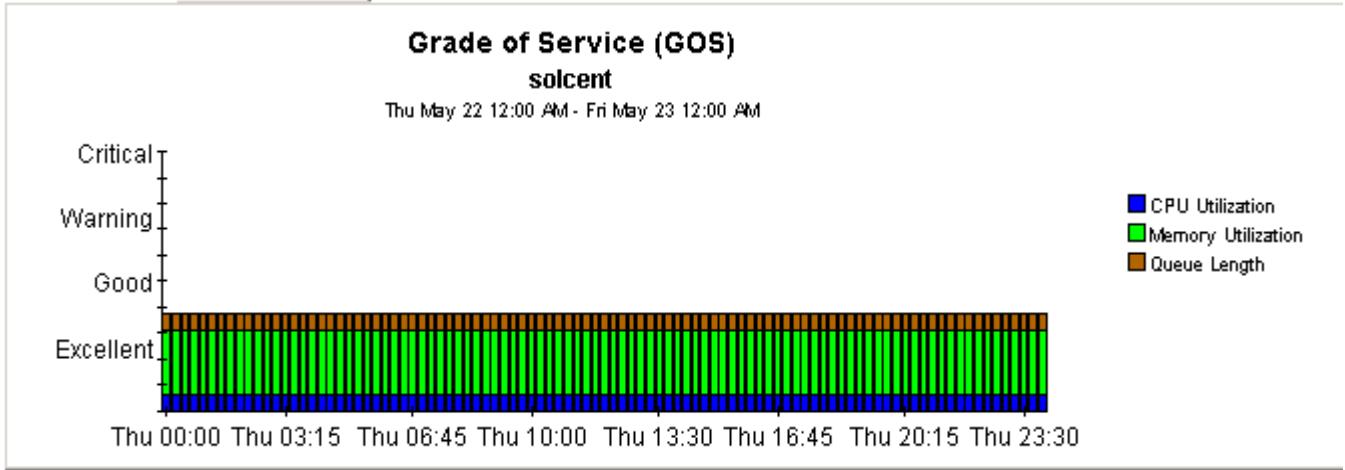
Exception Details

solcent

Time of the Exception	CPU Utilization	Memory Utilization	Queue Length	Swap Utilization
Thu May 22 12:00 AM	1.00	82.38	0.00	
Thu May 22 12:15 AM	0.75	82.34	0.00	
Thu May 22 12:30 AM	0.50	82.34	0.00	
Thu May 22 12:45 AM	1.00	82.34	0.00	
Thu May 22 01:00 AM	1.00	82.34	0.00	
Thu May 22 01:15 AM	0.75	82.34	0.00	
Thu May 22 01:30 AM	1.00	82.35	0.00	
Thu May 22 01:45 AM	0.75	82.33	0.00	

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Exception Detail | **Grade of Service**



System Resource Quickview



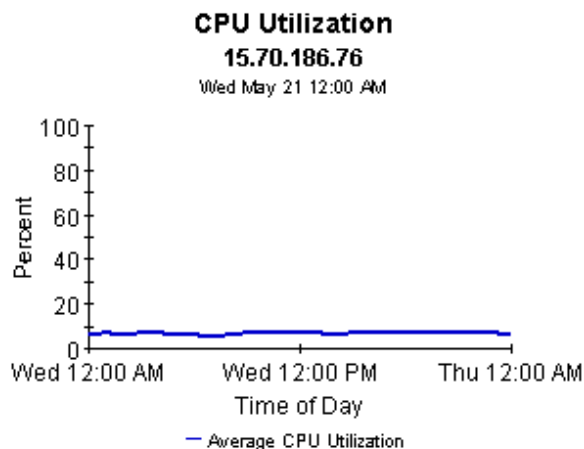
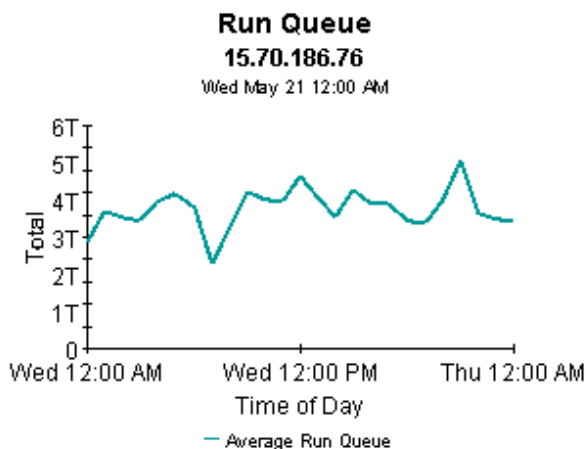
The System Resource QuickView Report gives the system management staff a detailed look at the performance of individual systems. Select a system from the top chart to display detailed information for that system.

Quickview Selection Thu May 22 2003

System	Average Run Queue	Average CPU Utilization	Average Memory Utilization	Average Swap Utilization	Number of Page Outs Per Second	Number of Processes
lovebug.rose.hp.com	0.15	10.43	22.75	6.00	0.00	1,674.00
tthp166.cnd.hp.com	1.82	9.94	87.46	61.00	0.00	3,289.00
15.70.186.76	3.77	6.59	94.46	26.10	0.20	1,974.00

Vendor Hewlett-Packard	Model Unassigned	O/S	Location Location Unassigned	Customer Customer Unassigned
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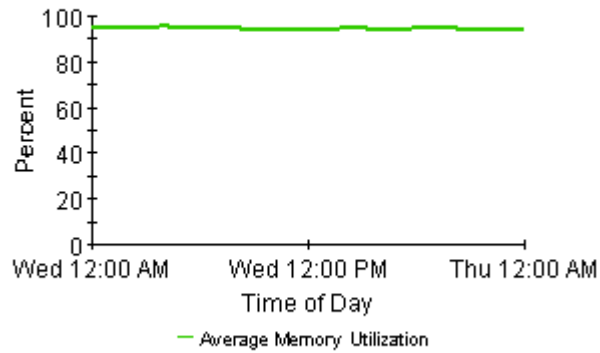
Run Queue Threshold 3.00	CPU Utilization Threshold 80.00	Memory Utilization Threshold 70.00	Swap Utilization Threshold 70.00	Pageout Threshold 5.00
------------------------------------	---	--	--	----------------------------------



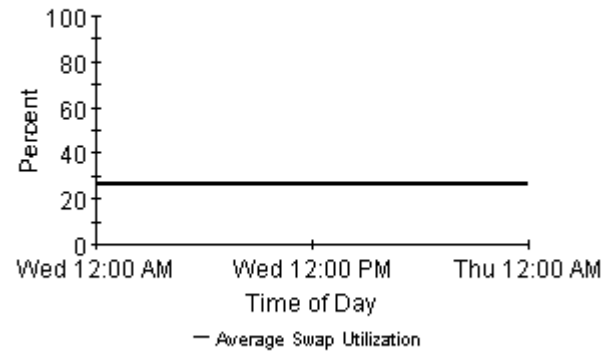
continues on next page

Memory Utilization**15.70.186.76**

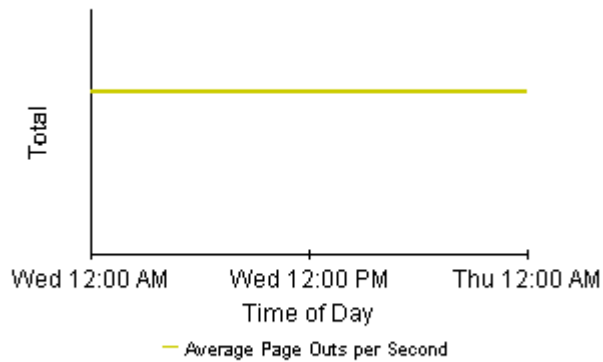
Wed May 21 12:00 AM

**Swap Utilization****15.70.186.76**

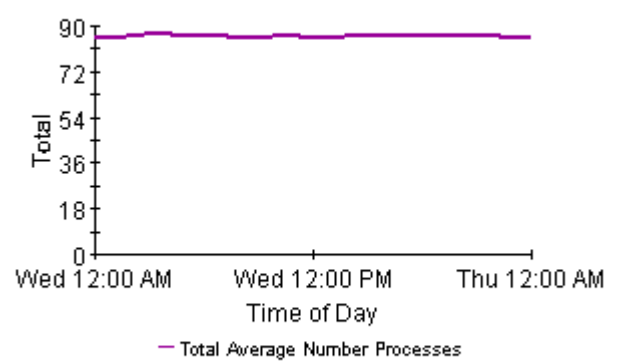
Wed May 21 12:00 AM

**Number of Page Outs****15.70.186.76**

Wed May 21 12:00 AM

**Number of Processes****15.70.186.76**

Wed May 21 12:00 AM



System Resource

Quickview - Near Real Time



The System Resource Near Real Time QuickView gives the system management staff an up to date view of the performance of individual systems. By selecting a system from the top table, current system performance (up to the most recent data collection) can be investigated in detail.

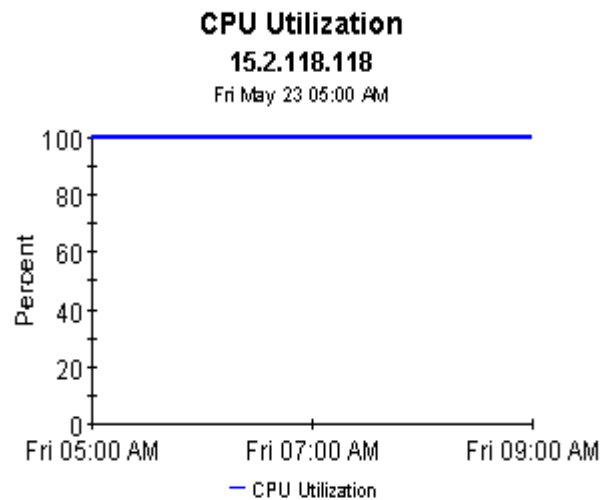
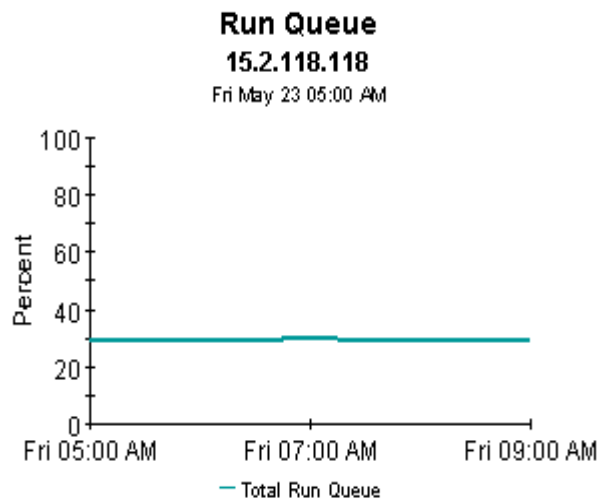
System Selection List

Select System to See Near Real Time Information

System	Total Run Queue	Total CPU Utilization	Total Memory Utilization	Total Swap Utilization	Average Page Outs per Second	Number of Processes
15.2.118.118	29.32	99.99	98.14	54.53	0.00	188.00
tthp10.cnd.hp.com	1.28	16.16	89.89	20.00	0.00	128.20
gorilla.cnd.hp.com	5.45	13.90	64.65	22.00	0.00	188.60
tshp39.cnd.hp.com	0.37	12.35	81.60	61.00	0.00	461.00
tthp25.cnd.hp.com	0.16	12.00	31.95	7.00	0.00	122.00

Vendor: Hewlett-Packard
 Model: Unassigned
 O/S:
 Location: Location Unassigned
 Customer: Customer Unassigned

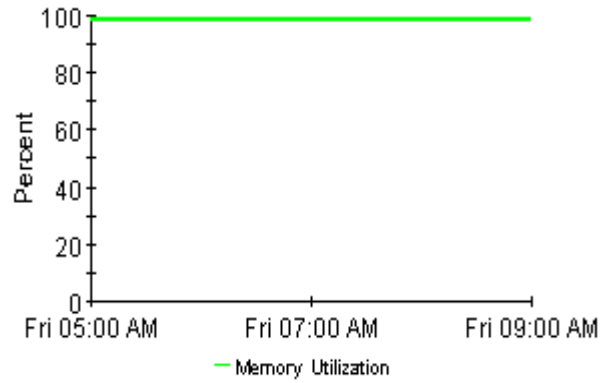
Run Queue Threshold: 3.00
 CPU Utilization Threshold: 80.00
 Memory Utilization Threshold: 70.00
 Swap Utilization Threshold: 70.00
 Pageout Threshold: 5.00



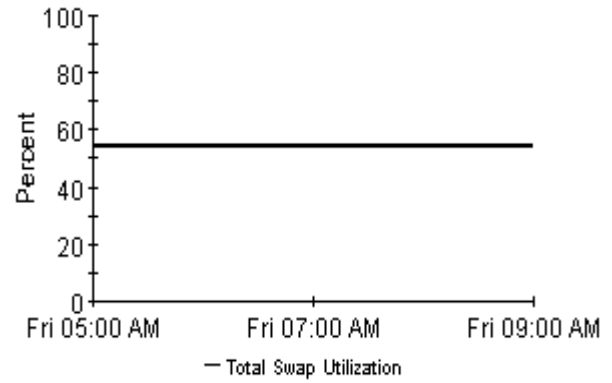
continues on next page

Memory Utilization**15.2.118.118**

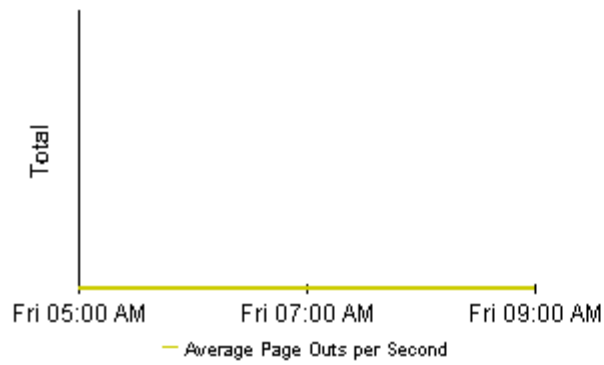
Fri May 23 05:00 AM

**Swap Utilization****15.2.118.118**

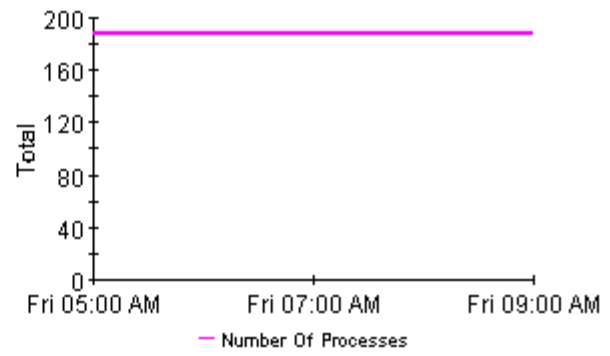
Fri May 23 05:00 AM

**Number of Page Outs****15.2.118.118**

Fri May 23 05:00 AM

**Number of Processes****15.2.118.118**

Fri May 23 05:00 AM



System Resource

Snapshot - Near Real Time



The System Resource Near Real Time Snapshot Report gives the system management staff an up to date view of the performance of individual systems. By selecting a system from the top table, current system performance (up to the most recent data collection) can be investigated in detail.

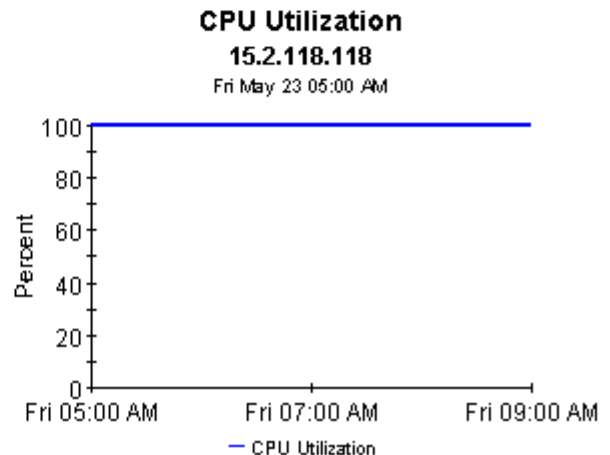
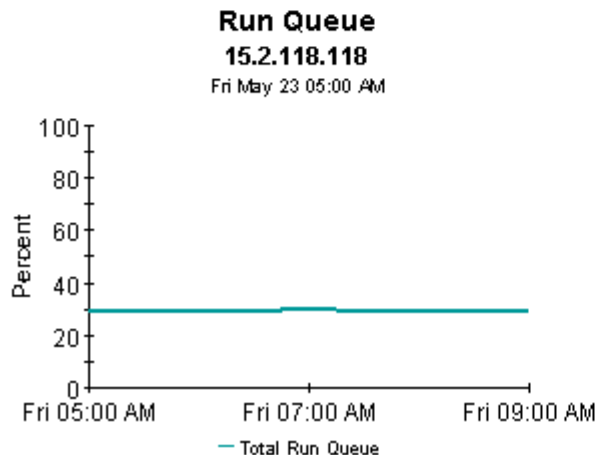
System Selection List

Select System to See Near Real Time Information

System	Total Run Queue	Total CPU Utilization	Total Swap Utilization	Total Memory Utilization	Average Page Outs per Second	Number of Processes
15.2.118.118	29.32	99.99	54.53	98.14	0.00	188.00
tthp10.cnd.hp.com	1.28	16.16	20.00	89.89	0.00	128.20
gorilla.cnd.hp.com	5.45	13.90	22.00	64.65	0.00	188.60
tshp39.cnd.hp.com	0.37	12.35	61.00	81.60	0.00	461.00
tthp25.cnd.hp.com	0.16	12.00	7.00	31.95	0.00	122.00

Vendor	Model	O/S	Location	Customer
Hewlett-Packard	Unassigned		Location Unassigned	Customer Unassigned

Run Queue Threshold	CPU Utilization Threshold	Memory Utilization Threshold	Swap Utilization Threshold	Pageout Threshold
3.00	80.00	70.00	70.00	5.00

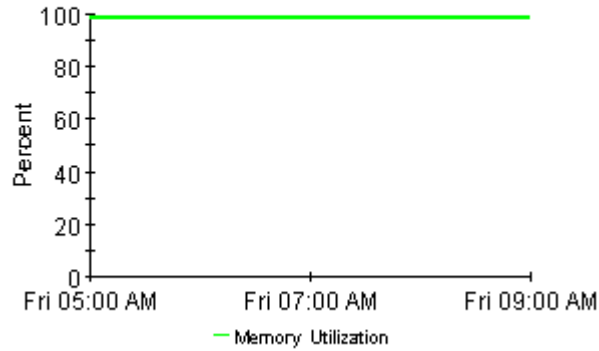


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Memory Utilization

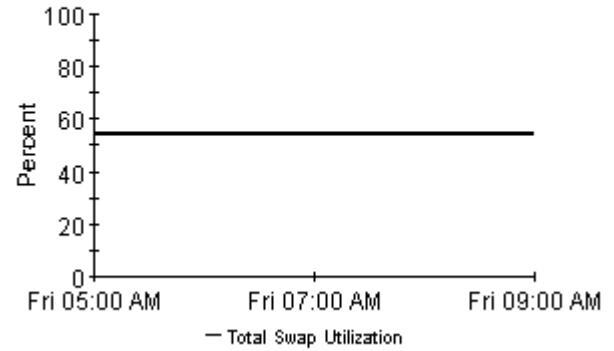
15.2.118.118

Fri May 23 05:00 AM

**Swap Utilization**

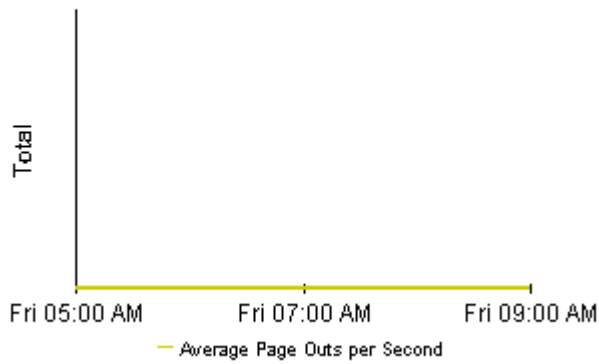
15.2.118.118

Fri May 23 05:00 AM

**Number of Page Outs**

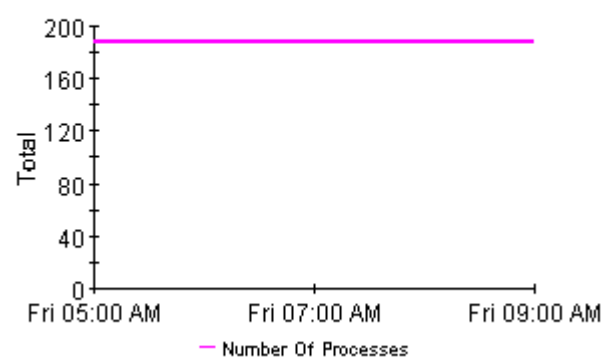
15.2.118.118

Fri May 23 05:00 AM

**Number of Processes**

15.2.118.118

Fri May 23 05:00 AM



Top Ten Reports

System Resources 4.0 contains two Top Ten reports:

- Top Ten (Exception Volume, CPU Utilization, Filesystem Utilization)
- Top Ten Transactions

Both reports perform ranking. The first one contains three tables and no graphs or charts. This report brings into sharp focus yesterday's exception volume, yesterday's CPU utilization, and yesterday's filesystem utilization. Use this report to spot systems with high exception volume, systems with high CPU utilization, and systems with high filesystem utilization.

In addition to ranking systems, each table in this report provides the following provisioning details:

- Customer
- Location
- Make
- Model
- Operating system

The systems that appear in this report may not be exceeding thresholds and generating exceptions. The volume and utilization levels that appear in this report may be over threshold levels, or they may be well under threshold levels. If you are interested in knowing which systems are producing the most exceptions, use the Hot Spots report.

System Resource

Top Ten



The System Resource Top Ten Report lists up to ten top volume contributors and ten systems exhibiting the poorest health for the day. Servers with the largest change in volume or health from the previous day are also listed, indicating unstable conditions that warrant further investigation. Select a system from the top chart to display detailed information for that system.

Systems with Highest Volume Tue Oct 28 2003

System	Total InPackets	Total OutPackets	Average Collision Rate per min	Average Error Rate per min	Customer	Location
surya.india.hp.com	22,551,950.00	22,559,202.00	2,267.71		Customer Unassigned	Location Unassigned
aaina.india.hp.com	6,442,713.00	9,018,749.00	428.95		Customer Unassigned	Location Unassigned
dollar.india.hp.com	1,131,713.00	998,315.00	1.77		Customer Unassigned	Location Unassigned



Systems with Highest CPU Utilization Tue Oct 28 2003

System	Average CPU Utilization	Average Queue Length	Customer	Location	Make	Model
aaina.india.hp.com	38.35	0.80	Customer Unassigned	Location Unassigned	Hewlett Packard	9000
surya.india.hp.com	17.79	0.28	Customer Unassigned	Location Unassigned	Hewlett Packard	9000
dollar.india.hp.com	9.75	0.35	Customer Unassigned	Location Unassigned	Hewlett Packard	9000

continues on next page

Systems with Highest Filesystem Utilization
Tue Oct 28 2003

System	Average Filesystem Utilization	Filesystem	Customer	Location	Make
dollar.india.hp.com	90.83	/home	Customer Unassigned	Location Unassigned	Hewlett Pack
dollar.india.hp.com	87.82	/	Customer Unassigned	Location Unassigned	Hewlett Pack
surya.india.hp.com	81.77	lvm swap device	Customer Unassigned	Location Unassigned	Hewlett Pack
dollar.india.hp.com	51.00	/ClearCase	Customer Unassigned	Location Unassigned	Hewlett Pack
surya.india.hp.com	44.22	/ClearCase/vobs2	Customer Unassigned	Location Unassigned	Hewlett Pack
dollar.india.hp.com	43.82	/tmp	Customer Unassigned	Location Unassigned	Hewlett Pack
surya.india.hp.com	42.30	/	Customer Unassigned	Location Unassigned	Hewlett Pack
surya.india.hp.com	31.84	/stand	Customer Unassigned	Location Unassigned	Hewlett Pack
dollar.india.hp.com	23.58	/stand	Customer Unassigned	Location Unassigned	Hewlett Pack



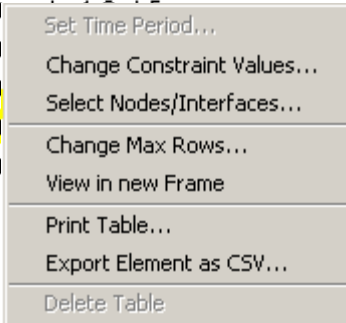
Editing Tables and Graphs

Any table or graph can be viewed in several ways. While the default view is usually adequate, you can easily change to a different view. If you are using the Report Viewer application, change the default view by right-clicking the object and selecting a different view. If you are looking at a report using the Web Access Server, click the **Edit Table** or **Edit Graph** icons.

View Options for Tables

Right-clicking a table, or selecting **Edit Table**, opens a list of table view options.

Device	Interface	F/H	Customer	Descr.	Baseline Avg.
24.13.17.1	5	F	Concert	Cable5/0	In:2 Out:5
24.13.17.1	5	F	Concert	Cable5/0	In:2 Out:5
24.13.17.1	5	F	Concert	Cable5/0	In:3 Out:5
24.13.17.1	5	F	Concert	Cable5/0	In:2 Out:5
24.13.17.1	5	F	Concert	Cable5/0	In:2 Out:4
24.13.17.1	6	F	Concert	Cable6/0	In:2 Out:5
24.13.17.1	5	F	Concert	Cable5/0	In:2 Out:5
24.13.17.1	6	F	Concert	Cable6/0	In:2 Out:5
24.13.17.1	6	F	Concert	Cable6/0	In:2 Out:5
24.13.17.1	6	F	Concert	Cable6/0	In:2 Out:5



Select **Set Time Period** to alter the relative time period (relative to now) or set an absolute time period. The Set Time Period window opens.

You may shorten the period of time covered by the table from, for example, 42 days to 30 days or to 7 days. If you are interested in a specific period of time that starts in the past and stops *before* yesterday, click **Use Absolute Time** and select a Start Time and an End Time.

Select **Change Constraint Values** to loosen or tighten a constraint, thereby raising or lowering the number of elements that conform to the constraint. The Change Constraint Values window opens. To loosen a constraint, set the value lower; to tighten a constraint, set the value higher.

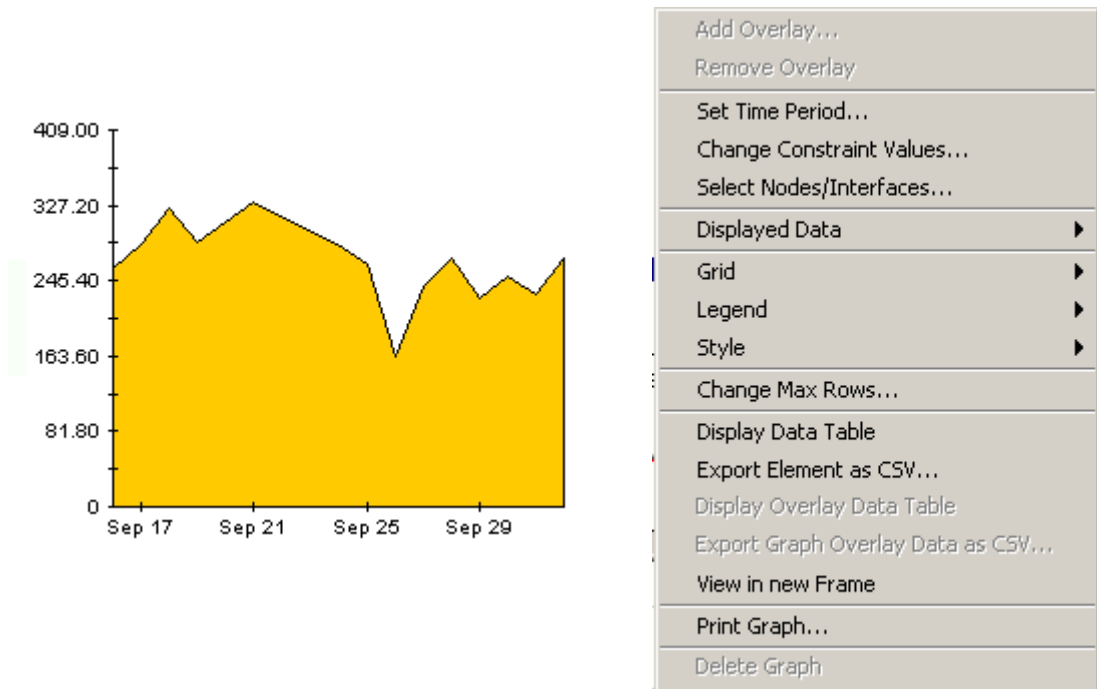
The **Select Nodes/Interfaces** allows you to change the scope of the table by limiting the table to specific nodes, specific interfaces, or a specific group of nodes or interfaces. The Select Node Selection Type window opens.

Change Max Rows increases or decreases the number of rows in a table. The default is 50. If you expand the default, the table may take more time to open. If you are trending a large network, using the default ensures that the table opens as quickly as possible.

View in new Frame opens the table in a Table Viewer window. If necessary, you can make the data easier to read by resizing the window.

View Options for Graphs

Right-click any graph to open a list of view options.



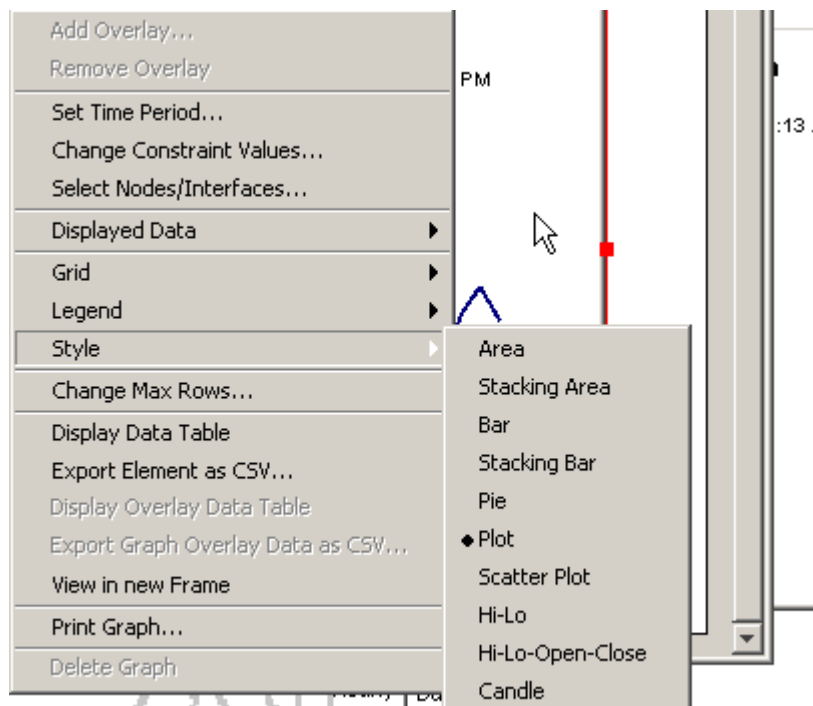
The following table provides a few details about each option.

Option	Function
Set Time Period	Same as the table option shown above.
Change Constraint Values	Same as the table option shown above.
Select Nodes/Interfaces	Same as the table option shown above.

Option	Function
Displayed Data	For every point on a graph display data in a spreadsheet.
Grid	Add these to the graph: X axis grid lines Y axis grid lines X and Y axis grid lines
Legend	Delete or reposition the legend.
Style	See the illustrations below.
Change Max Rows...	Same as the table option shown above.
Display Data Table	See below.
Export Element as CSV...	Same as the table option shown above.
View in New Frame	Opens graph in a Graph Viewer window.
Print Graph	Same as the table option shown above.

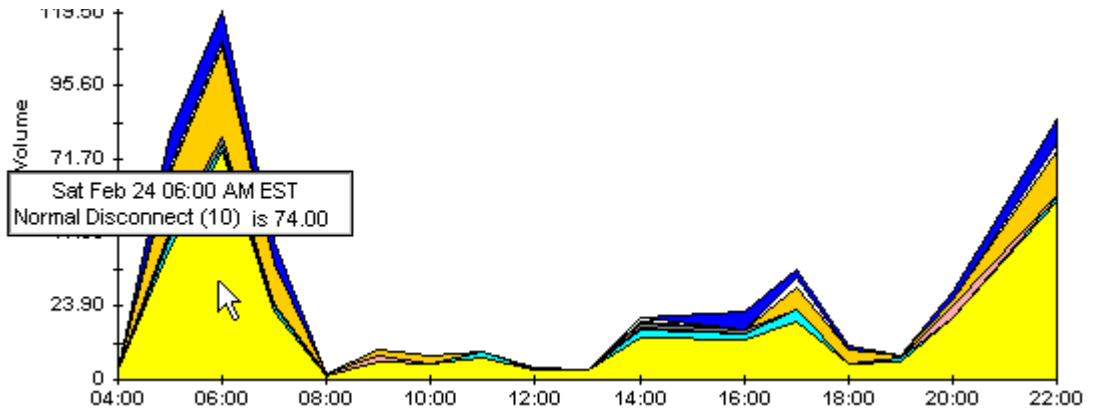
Style Options

Select **Style** to display a list of seven view options for graphs.



Style > Area

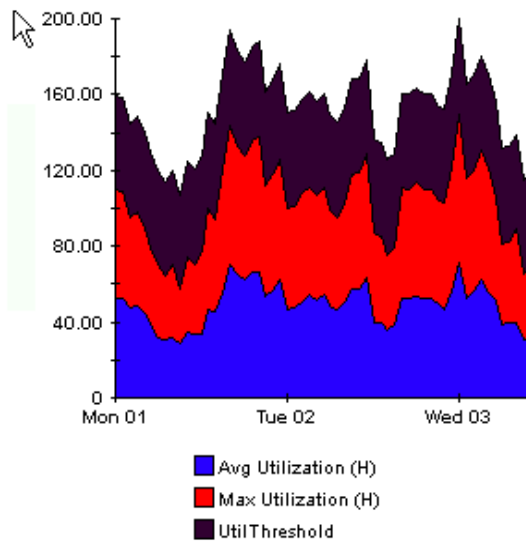
The plot or bar chart changes to an area graph. While relative values and total values are easy to view in this format, absolute values for smaller data types may be hard to see. Click anywhere within a band of color to display the exact value for that location.



To shorten the time span of a graph, press SHIFT+ALT and use the left mouse button to highlight the time span you want to focus on. Release the mouse button to display the selected time span.

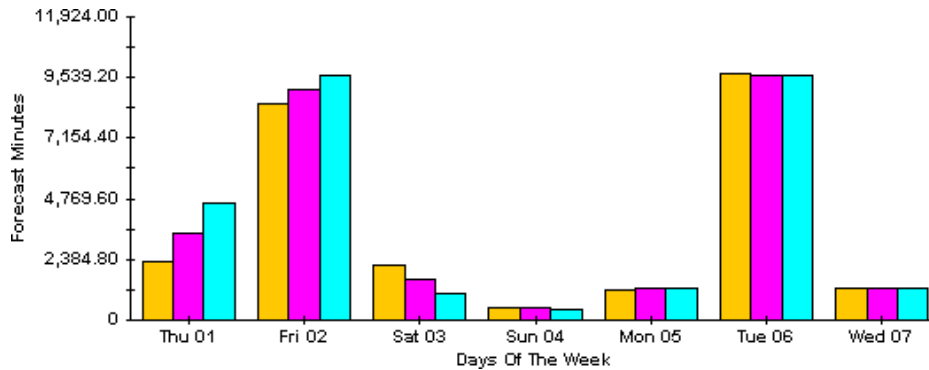
Style > Stacking Area

The area or plot graph changes to a stacking area graph. This view is suitable for displaying a small number of variables.



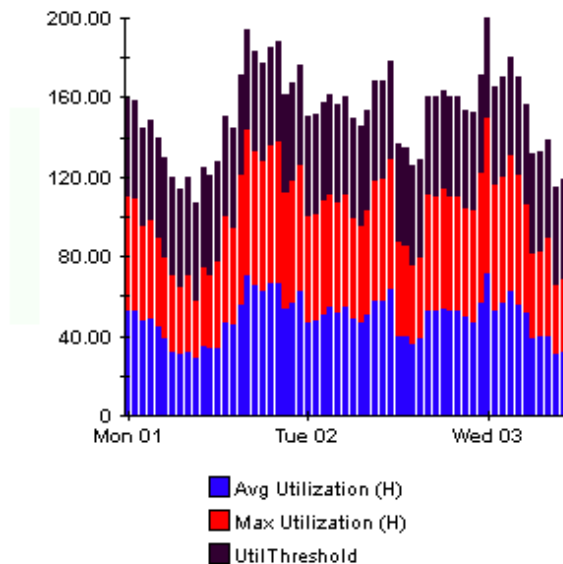
Style > Bar

The graph changes to a bar chart. This view is suitable for displaying relatively equal values for a small number of variables. There are three variables in the graph below.



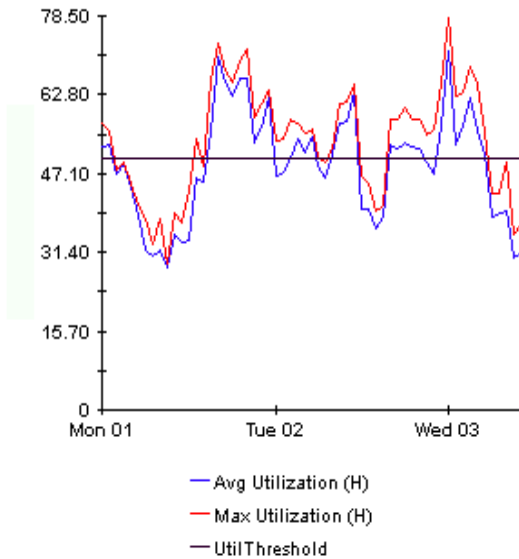
Style > Stacking Bar

The plot or area graph changes to a stacking bar chart. If you increase the width of the frame, the time scale becomes hourly. If you increase the height of the frame, the call volume shows in units of ten.



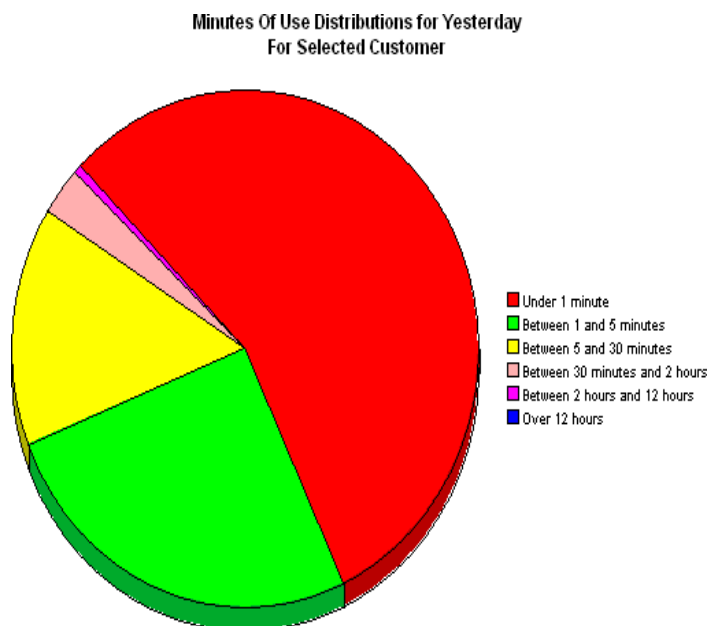
Style > Plot

Bands of color in an area graph change to lines. If you adjust the frame width, you can make the data points align with hour; if you adjust the frame height, you can turn call volume into whole numbers.



Style > Pie

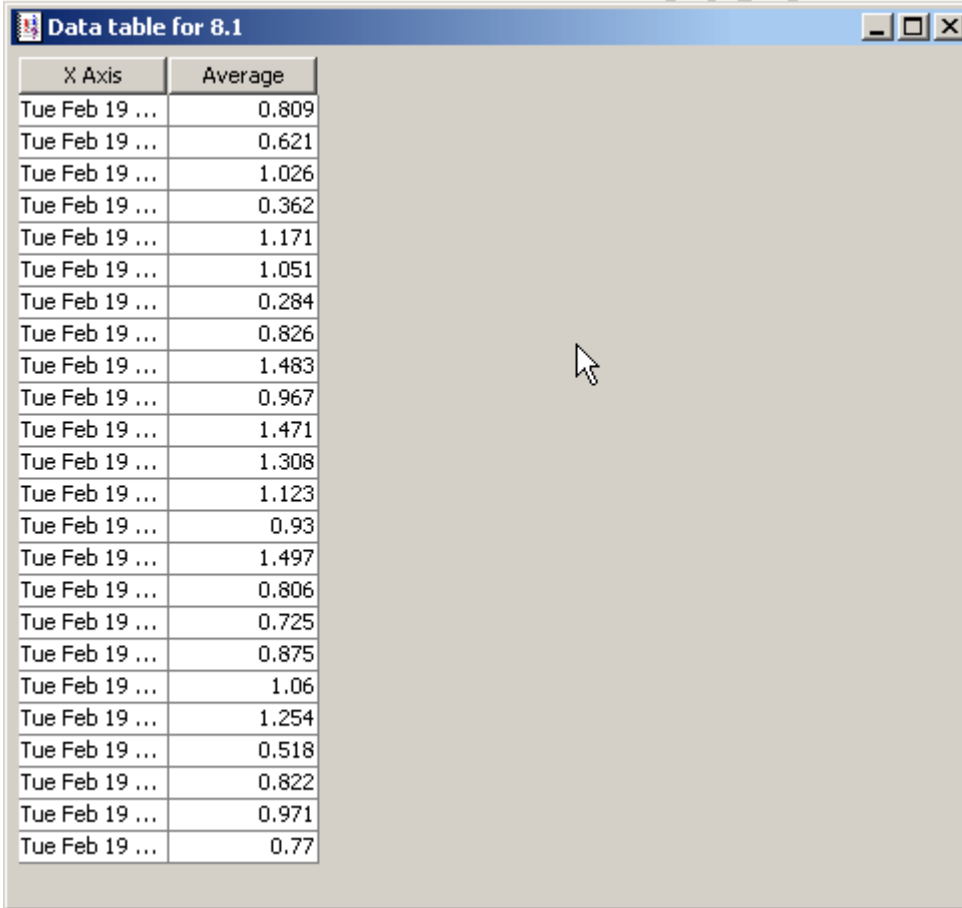
An area graph becomes a pie chart. Bands in an area graph convert to slices of a pie and the pie constitutes a 24-hour period. This view is helpful when a small number of data values are represented and you are looking at data for one day.



If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

Display Data Table

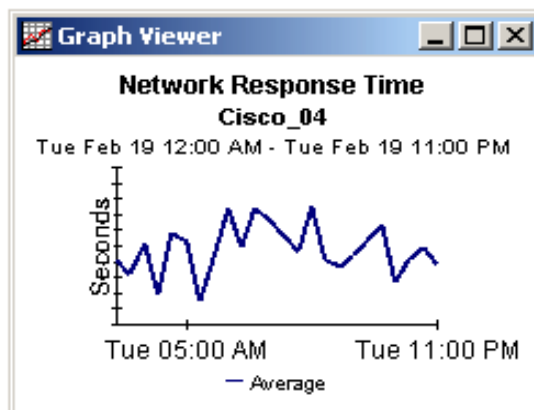
This option changes a graph into a spreadsheet.



X Axis	Average
Tue Feb 19 ...	0.809
Tue Feb 19 ...	0.621
Tue Feb 19 ...	1.026
Tue Feb 19 ...	0.362
Tue Feb 19 ...	1.171
Tue Feb 19 ...	1.051
Tue Feb 19 ...	0.284
Tue Feb 19 ...	0.826
Tue Feb 19 ...	1.483
Tue Feb 19 ...	0.967
Tue Feb 19 ...	1.471
Tue Feb 19 ...	1.308
Tue Feb 19 ...	1.123
Tue Feb 19 ...	0.93
Tue Feb 19 ...	1.497
Tue Feb 19 ...	0.806
Tue Feb 19 ...	0.725
Tue Feb 19 ...	0.875
Tue Feb 19 ...	1.06
Tue Feb 19 ...	1.254
Tue Feb 19 ...	0.518
Tue Feb 19 ...	0.822
Tue Feb 19 ...	0.971
Tue Feb 19 ...	0.77

View in New Frame

The graph opens in a Graph Viewer window. Improve legibility by resizing the window.



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