Device Resource Report Pack

Software Version: 3.1

HP OpenView Performance Insight

User Guide

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Contents

1 Overview

This chapter covers the following topics:

- OVPI and device resources
- New features in version 3.1
- Reports and datapipes
- Integration with Network Node Manager (NNM)
- Ways to customize reports
- Sources for additional information

OVPI and Device Resources

HP OpenView Performance Insight (OVPI) is a performance management and reporting application. Long-term data collection, in-depth analysis, and automated web-based reporting are this application's primary strengths. If desired, OVPI can be integrated with network management and system management applications, including NNM and OVO. Integration enhances fault isolation, problem diagnosis, and capacity planning.

The Device Resource Report Pack installs on OVPI. The reports in this package monitor CPU, memory, and buffer resources in switches, routers, the switch backplane, and cards installed on devices. Resources function independently. If a buffer is overutilized, the CPU that moves data in and out of the buffer could be underutilized; if the CPU is overutilized, buffer and memory could be underutilized. The Device Resource Report Pack does not monitor server resources. Use the System Resource Report Pack to monitor server resources.

You have synergies to exploit by running Device Resource with the Interface Reporting Report Pack. If Interface Reporting is showing high discards or high errors, Device Resource will tell you whether or not overutilization of a resource could be contributing to the problem. You can also move in the reverse direction. If Device Resource indicates that network response time is spiking, Interface Reporting will tell you whether interface utilization levels are contributing to the problem.

New Features in Version 3.1

Device Resource 3.1 is one of three enhanced report packs. The other two are Interface Reporting 5.0 and System Resource 4.1. The enhanced report packs offer the following improvements:

- Report linking
- Launch Point

- Ad hoc selector reports
- Color-coded graphics in selection tables
- One-step upgrade packages

The links in reports allow you to move quickly from one report to another without having to close the report you are viewing, return to a directory, and then select another report. Navigating reports is now more like navigating a website—you have numerous links to work with and investigating a specific area of interest is easier and more efficient. In addition to moving from one report to another report within the same report pack, you can also link to reports in a different report pack. For example, from a report in Device Resource you can link to a report in the Interface Reporting Report Pack.

The Launch Point page provides an overview of package contents by grouping reports into logical categories, for example, Near Real Time reports, forecasting reports, and ad hoc selector reports. The ad hoc selector option opens an abbreviated report that lets you select specific elements from a set of drop-down menus. The drop-down menus make it easy to pin-point an item of interest. In addition, response time is especially good. Since this report launches just a few queries against the database, you won't wait long for data to appear.

Device Resource 3.1 has upgrade packages that eliminate the need for a version-by-version upgrade. Starting and stopping Package Manager multiple times is no longer necessary. Instead, you can now upgrade an existing package to the latest version by installing a single upgrade package. Note also that the main package and the backplane sub-package have matching version numbers. The main package is 3.1 and the backplane sub-package is 3.1.

The following table provides details about recent enhancements to Device Resource.

Version	Release Date	Features/Enhancements
1.0	January 2003	15 reports; Sybase support
1.0	May 2003	No changes
2.0	October 2003	OVPI Object Manager support *change form:* • Update Thresholds *backplane utilization reports:* • Historical Summary • QuickView • Snapshot • Near Real Time QuickView • Near Real Time Snapshot
3.0	April 2004	Oracle support *new datapipe:* • Dev Res Cabletron Datapipe *upgrade packages:* UPGRADE_DeviceResource_to_3 UPGRADE_DeviceResourceBackplane_to_3
3.0	August 2004	No changes
3.0	November 2004	*new datapipe:* • Dev Res Juniper Router Datapipe 1.0

Version	Release Date	Features/Enhancements
3.1	June 2005	Report linking Launch Point page Ad hoc selector reports Color-coded graphics in selection tables *upgrade packages:* UPGRADE_DeviceResource_to_31 UPGRADE_DeviceResourceBackplane_to_31
3.1	December 2005	No changes

Reports and Datapipes

Device Resource contains 20 reports. The report folders are:

- Customer (3 reports)
- Device (9 reports)
- Location (3 reports)
- Backplane (5 reports)

The following table indicates the contents of each folder.

Report Type	Customer	Device	Location	Backplane
Exceptions Summary		X		
Card Historical Summary		X		
Historical Summary		X		X
Historical Summary Snapshot		X		
QuickView				X
Snapshot				X
NRT QuickView		X		X
NRT Snapshot		X		X
Forecast	X	X	X	
Service Level Management		X		
Summary	X		X	
Top Ten	X	X	X	

The following vendor-specific datapipes collect data for Device Resource:

1 Dev Res 3COM Router Datapipe

2 Dev Res Alcatel Xylan Switch Datapipe

3   Dev Res Cabletron Datapipe

4   Dev Res Cisco Switch Datapipe

5   Dev Res Cisco Router Datapipe

6   Dev Res Enterasys Router Datapipe

7   Dev Res Enterasys Switch Datapipe

8   Dev Res Extreme Devices Datapipe

9   Dev Res Foundry Datapipe

10 Dev Res HP ProCurve Datapipe

11 Dev Res Juniper Router Datapipe

12 Dev Res Nortel Bay Datapipe

In addition to performance data, reports contain the following kinds of property information:

• IP addresses

• Host names

• Customers

• Locations

Property information is stored in tables maintained by Common Property Tables. If you are about to install Common Property Tables for the first time, you will not see customers or locations in reports until you import this information. You can import customers and locations in batch mode by creating a file and importing the contents, or you can import customers and locations using the "create new" forms bundled with Common Property Tables. For details about importing properties, refer to the *Common Property Tables 3.5 User Guide*.

Integration with Network Node Manager (NNM)

If you use NNM as well as OVPI, you have the option of improving your ability to isolate faults and diagnose problems by integrating OVPI with NNM. To integrate OVPI and NNM, install the Integration Module. The Integration Module contains a set of packages for NNM and a set of packages for OVPI.

If NNM and OVPI are integrated, you should install the optional thresholds sub-package that comes with Device Resource. Installing the optional thresholds sub-package configures the Thresholds Module to detect threshold conditions related to CPU, buffer, and memory utilization. The Thresholds Module responds to a threshold condition by taking an action, and the default action is to send a breach trap to NNM. The breach trap received by NNM becomes an alarm in the NNM alarm browser, which the NNM operator can respond to by launching a Near Real Time report.

Configuring the Thresholds Module is not necessary. You do not need to define an action or specify a destination for breach traps. However, you are free to modify category, severity, and destination parameters at any time. For details about these options, refer to the *Thresholds Module 5.0 User Guide*.

Ways to Customize Reports

You can customize reports by applying group filters, by applying constraints, by editing tables and graphs, and by importing property information (node names, host names, customers, and locations). Service providers, or any organization that wants to share reports with customers, will need group filters to create customer-specific reports. However, any user viewing a report can apply a constraint, edit tables, and edit graphs.

Group Filters

If you want to share reports with your customers, you must configure OVPI to produce customer-specific reports. Here is an overview of the steps involved:

*   Use Common Property Tables to import customer names and device locations
*   Create a group account for all the users affiliated with each customer
*   Create a group filter for each group account

For more information about creating filters, refer to the *OVPI 5.1 Administration Guide.*

Applying Constraints

Editing a parameter applies a constraint to the report. The constraint eliminates the data you are not interested in. For example, if you edit the Customer Name parameter, data for every customer except the customer you typed in the Customer Name field drops from the report. Device Resource supports the following parameters:

*   Customer Name
*   Customer ID
*   Location Name
*   Location ID
*   Device Name
*   Make
*   Model

If you are using a web browser to view reports, edit parameters by clicking the Edit Parameters icon at the bottom right-hand corner of the report. When the Edit Parameters window opens, enter the constraint in the field and click **Submit.** If you are using Report Viewer, select **Edit > Parameter Values** from the menu bar. When the Modify Parameter Values window opens, click the **Current Value** field. Type a new value and click **OK**.

Sources for Additional Information

This user guide provides samples of some of the reports in Device Resource. The demo package that comes with Device Resource is complete, containing a sample of every report in the package. If you have access to the demo package and you want to know what fully-populated reports look like, install the demo package. Like real reports, demo reports are interactive. Unlike real reports, demo reports are static.

The following documents are related to this manual:

- *Executive Summaries Report Pack 1.0 User Guide*

- *Common Property Tables 3.5 User Guide*

- *NNM/OVPI Integration Module 2.0 User Guide*

- *Thresholds Module 5.0 User Guide*

- *OVPI Report Packs, Version 8.0: Release Notes, June 2005*

Information about bug fixes and recent changes to datapipes can be found in the following release statements:

- *Device Resource Report Pack 3.1 Release Statement*

- *Dev Res 3COM Router Datapipe Release Statement*

- *Dev Res Alcatel Xylan Switch Datapipe Release Statement*

- *Dev Res Cabletron Datapipe Release Statement*

- *Dev Res Cisco Switch Datapipe Release Statement*

- *Dev Res Cisco Router Datapipe Release Statement*

- *Dev Res Extreme Devices Datapipe Release Statement*

- *Dev Res Foundry Datapipe Release Statement*

- *Dev Res HP ProCurve Datapipe Release Statement*

- *Dev Res Juniper Datapipe Router Release Statement*

- *Dev Res Nortel Bay Datapipe Release Statement*

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

http://www.managementsoftware.hp.com

Select **Support** > **Product Manuals** to reach the **Product Manuals Search** page. The user guides for OVPI are listed under **Performance Insight**. The user guides for report packs and datapipes are listed under **Performance Insight Reporting Solutions**.

The manuals listed under **Performance Insight Reporting Solutions** indicate the month and year of publication. If a manual is revised and reposted, the date of publication will change. Since we post revised manuals on a regular basis, we recommend searching this site for updates before using an older manual that might not be the latest version available.

2 The Upgrade Install

This chapter covers the following topics:

- Guidelines for a smooth upgrade
- Upgrading from version 2.0 to version 3.1
- Post-Installation steps
- Removing Device Resource 3.1

Guidelines for a Smooth Upgrade

If you ran the package extraction program, the upgrade packages for Device Resource, as well as the latest version of the datapipes used by Device Resource, are already in the Packages direction on your system awaiting installation. Start Package Manager and follow the familiar on-screen instructions for upgrading a report pack.

If the extraction step has not taken place yet, insert the December 2005 report pack CD in the CD-ROM drive and use the package extraction program to copy packages from the CD to the Packages directory on your system. After the extract finishes, the install script prompts you to start Package Manager. Before using Package Manager, review the following guidelines:

- Software prerequistes for Device Resource
- Datapipes and remote pollers
- Custom table views
- Upgrading Device Resource in a distributed environment

Software Prerequisites for Device Resource

Version 3.1 of Device Resource has the following prerequisites:

- OVPI 5.1
- All service packs available for OVPI 5.1
- Common Property Tables 3.5

Upgrading in a Distributed Environment

If you installed Device Resource 2.0 on multiple servers running OVPI 4.6, you created a distributed environment by using DS EDIT to set up connections with satellite server databases. You also configured trendcopy pull commands from the central server and switched off hourly aggregations at each satellite server. If you recently upgraded to OVPI 5.0 or OVPI 5.1, the following changes must be repeated once the report pack is upgraded:

- Setting up connections with satellite databases (using the Add Database Wizard)
- Configuring trendcopy pull commands

For details, see Chapter 4, Distributed Systems.

Datapipes and Remote Pollers

If you uninstall an existing datapipe, you will lose the following information:

- Single polling policy for a remote poller
- Cloned polling policies for multiple remote pollers
- Customized polling groups

To prevent this information from being lost, you can export existing polling policy configurations and customized polling groups by using the following commands:

- collection_manager
- group_manager

Exporting Polling Policy Configurations

If your environment contains polling policies for remote pollers, use the collection_manager command to export existing policy configurations to a file.

UNIX: As user trendadm, run the following command:

```
cd $DPIPE_HOME

./bin/collection_manager -export -file /tmp/savePollingPolicy.lst
```

Windows: As Administrator, launch a command window. Navigate to the OVPI install directory and execute the following command:

```
bin\collection_manager -export -file \temp\savePollingPolicy.lst
```

Exporting Polling Group Configurations

If your environment contains customized polling groups, use the group_manager command to export groups to individual .xml files.

UNIX: As user trendadm, execute the following command:

```
cd $DPIPE_HOME

./bin/group_manager -export_all -outfile /tmp/savePollingGroups
```

Windows: As Administrator, launch a command window, then navigate to the OVPI install directory and execute the following command:

```
bin\group_manager -export_all -outfile \temp\savePollingGroups
```

Custom Table Views

If you created one or more custom views for tables, the views you created may interfere with the report pack upgrade process, causing the process to fail. Whether your views interfere with the upgrade process depends on how you created them. If you created them using SQL, the upgrade will succeed, however, your views will not be available once the upgrade is

complete. If you created them using Datapipe Manager, the upgrade is likely to fail. To prevent the upgrade from failing, delete custom table views before you upgrade the report pack, then recreate the views after the report pack is upgraded.

Upgrading to Device Resource 3.1

To upgrade Device Resource on a stand-alone system, perform the following tasks:

Task 1: If necessary, save configuration data related to polling policies and polling groups

Task 2: If necessary, upgrade to Common Property Tables 3.5.

Task 3: Uninstall the datapipes you installed when you installed Device Resource 2.0.

▶ If you are upgrading Device Resource from 3.0 to 3.1, Task 3 may be unnecessary. Task 3 is definitely unnecessary if you do not intend to upgrade one or more datapipes. However, if the Packages directory contains *new versions* of the datapipes you are currently using, be sure to uninstall the old versions of those datapipes before you install the new versions.

Following is complete list of datapipes available for Device Resource:

1 Dev Res 3COM Datapipe 2.0
2 Dev Res Alcatel Datapipe 2.0
3 Dev Res Cisco Router Datapipe 3.0
4 Dev Res Cisco Switch Datapipe 3.0
5 Dev Res Enterasys Router Datapipe 1.0
6 Dev Res Enterasys Switch Datapipe 1.0
7 Dev Res Extreme Devices Datapipe 2.0
8 Dev Res Foundry Datapipe 2.0
9 Dev Res HP ProCurve Datapipe 3.0
10 Dev Res Juniper Router Datapipe 1.0
11 Dev Res Nortel Bay Datapipe 3.0
12 Dev Res Nortel Bay PP1X8X Router Datapipe 1.0
13 Dev Res Nortel Bay PP Access Datapipe 1.0

Task 4: Install the upgrade package for Device Resource 3.1; deploy reports.

Task 5: If the Packages directory contains new versions of the datapipes you were running with the previous version of Device Resource, install the new versions.

Post-Installation Steps

Once Device Resource has been upgraded, your first step is to reconfigure any polling policies and customized group definitions that need to be restored. Do not re-import the configurations you exported. Because the old datapipe may be incompatible with the new datapipe you just installed, re-importing a configuration you exported could lead to data corruption. In addition, if you deleted any custom table views, you can recreate those custom views now.

Removing Device Resource 3.1

Removing Device Resource automatically removes any datapipe that depends on Device Resource. Follow these steps to uninstall the Device Resource package.

1 Log in to the system. On UNIX systems, log in as root.

2 Stop OVPI Timer and wait for processes to terminate.

    On Windows, do the following:

    a Select **Control Panel > Administrative Tools > Services**.

    b Select OVPI Timer from the list of services.

    c From the Action menu, select **Stop**.

    On UNIX, as root, do one of the following:

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

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

3 Start Package Manager and follow the on-screen directions for uninstalling packages; when prompted, select Device Resource for removal. When the uninstall process finishes, a package removal complete message appears.

4 Click **Done**.

5 Restart OVPI Timer.

    On Windows, do the following:

    a Select **Control Panel > Administrative Tools > Services**.

    b Select OVPI Timer from the list of services.

    c From the Action menu, select **Start**.

    On UNIX, as root, do one of the following:

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

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

3 The New Install

This chapter covers the following topics:

- Guidelines for a smooth install
- Installing Device Resource 3.1
- Removing Device Resource 3.1

Guidelines for a Smooth Install

An OVPI reporting solution has at least two ingredients, a report pack and a datapipe. Some reporting solutions offer multiple datapipes. Installing a datapipe configures OVPI to collect a specific type of performance data at a specific interval. Installing a report pack configures OVPI to summarize and aggregate the data collected by the datapipe.

When you insert the December 2005 report pack CD in the CD-ROM drive and launch the package extraction program, the install script copies packages from the CD to the Packages directory on your system. After the extract finishes, the install script prompts you to start Package Manager and follow the on-screen instructions. Before running Package Manager, review the following guidelines.

Software Prerequisites

Device Resource 3.1 has the following prerequisites:

- OVPI 5.1
- All service packs available for OVPI 5.1
- Common Property Tables 3.5

If you are not currently running any version of Common Property Tables, let Package Manager install version 3.5 for you. If you are running an earlier version of Common Property Tables, upgrade to version 3.5. Installing the upgrade packages for Common Property Tables is easy. However, if you need assistance or if you want to know more about how this package operates, refer to the *Common Property Tables 3.5 User Guide*.

Datapipes

The datapipes that collect data for this report pack are not prerequisites. You may install the datapipes when you install the report pack or you may install the datapipes after you install the report pack. The following datapipes are available for installation:

1 Dev Res 3COM Datapipe 2.0
2 Dev Res Alcatel Datapipe 2.0

3 Dev Res Cisco Router Datapipe 3.0

4 Dev Res Cisco Switch Datapipe 3.0

5 Dev Res Enterasys Router Datapipe 1.0

6 Dev Res Enterasys Switch Datapipe 1.0

7 Dev Res Extreme Devices Datapipe 2.0

8 Dev Res Foundry Datapipe 2.0

9 Dev Res HP ProCurve Datapipe 3.0

10 Dev Res Juniper Router Datapipe 1.0

11 Dev Res Nortel Bay Datapipe 3.0

12 Dev Res Nortel Bay PP1X8X Router Datapipe 1.0

13 Dev Res Nortel Bay PP Access Datapipe 1.0

Thresholding and Alarms

If your OVPI and NNM servers are integrated, you will probably want to install the thresholds sub-package, Device_Resource_Thresholds, on your OVPI server. This optional package contains customized thresholds. If you install it, the threshold traps generated by OVPI will display as alarms in the NNM alarm browser.

If you install the thresholds sub-package, Package Manager will install the Thresholds Module for you, automatically. The Thresholds Module controls the actions that OVPI takes in response to a threshold breach. For details about configuring new actions, refer to the *Thresholds Module 5.0 User Guide*.

Distributed Environments

If you intend to run Device Resource in a distributed environment, the installation procedure is more complex. Here is an overview of the steps:

1 Make sure that every server is running the same version of OVPI.

2 Make sure that every server is running all available service packs for OVPI.

3 Disable trendcopy on the central server.

4 Install the following packages on the central server:

- Device Resource; deploy reports
- Device_Resource_Thresholds
- Common Property Tables 3.5; deploy reports (forms in this context)

5 Install the following packages on each satellite server:

- Device Resource; deploy reports
- Common Property Tables 3.5
- Device_Resource_Thresholds
- At least one datapipe

6 Re-enable trendcopy on the central server.

After installing Device Resource on OVPI servers in a distributed environment, you have to configure the environment by setting up connections with satellite server databases, configuring the central server with trendcopy pull commands, and switching off aggregations at each satellite server. These tasks are covered in Chapter 4, Distributed Systems.

Installing Device Resource 3.1

Follow these steps to install Device Resource 3.1:

1 Log in to the system. On UNIX® systems, log in as root.

2 Stop OVPI Timer and wait for processes to terminate.

   On Windows, do the following:

   a Select **Control Panel > Administrative Tools > Services**.

   b Select OVPI Timer from the list of services.

   c From the Action menu, select **Stop**.

   On UNIX, as root, do one of the following:

   HP-UX: **sh /sbin/ovpi_timer stop**

   Sun: **sh /etc/init.d/ovpi_timer stop**

3 Insert the report pack CD in the CD-ROM drive.

   Windows: The Main Menu opens automatically.

   UNIX:

   a Mount the CD (if the CD does not mount automatically).

   b Navigate to the top level directory on the CD.

   c Run **./setup**

4 Type **1** in the choice field and press **Enter**.

   After the install script has copied every package to the Packages directory on your system, follow the prompts to launch Performance Insight and start Package Manager. The Package Manager welcome window opens.

5 Click **Next.** The Package Location window opens.

6 Click **Install.**

7 Approve the default destination directory or browse to a different directory, if necessary, and click **Next**. The Report Deployment window opens. Type your username and password for the OVPI Application Server

8 Click **Next**. The Package Selection window opens.

9 Click the check box for the following packages:

   Device Resource 3.0

   Device Resource Thresholds [optional]

   Device Resource Demo Package [optional]

10 Click the check box for at least one datapipe.

11 Click **Next**. The Type Discovery window opens.

12 To run Type Discovery immediately after package installation, accept the default and click **Next**. The Selection Summary window opens.

13 Click **Install**. The Installation Progress window opens and the install begins. When the install finishes, a package installation complete message appears.

14 Click **Done**.

15 Restart OVPI Timer.

On Windows, do the following:

a Select **Control Panel > Administrative Tools > Services**.

b Select OVPI Timer from the list of services.

c From the Action menu, select **Start**.

On UNIX, as root, do one of the following:

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

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

Options for Viewing Reports

When you installed Device Resource, you enabled the Deploy Reports option. As a result, the reports in this package (as well as any associated forms) were deployed to the OVPI Application Server. Once reports reside on the OVPI Application Server, you have two ways to view them:

• OVPI client applications

• Web browser

If the client applications are installed on your system, you have access to Report Viewer, Report Builder, and the Management Console. If the clients are not installed on your system, using a web browser is the only way you can view reports.

For more information about the clientapplications, refer to the *OVPI 5.1 Installation Guide*. For more information about the Management Console, including how to use the Object/ Property Management view to launch reports specific to a selected object, refer to the *OVPI 5.1 Administration 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 for about six weeks, when the rolling baseline is complete.

Removing Device Resource 3.1

Removing Device Resource automatically removes any datapipe that depends on Device Resource. Follow these steps to uninstall the Device Resource package.

1   Log in to the system. On UNIX systems, log in as root.

2   Stop OVPI Timer and wait for processes to terminate.

    On Windows, do the following:

    a   Select **Control Panel > Administrative Tools > Services**.

    b   Select OVPI Timer from the list of services.

    c   From the Action menu, select **Stop**.

    On UNIX, as root, do one of the following:

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

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

3   Start Package Manager and follow the on-screen directions for uninstalling packages; when prompted, select Device Resource for removal. When the uninstall process finishes, a package removal complete message appears.

4   Click **Done**.

5   Restart OVPI Timer.

    On Windows, do the following:

    a   Select **Control Panel > Administrative Tools > Services**.

    b   Select OVPI Timer from the list of services.

    c   From the Action menu, select **Start**.

    On UNIX, as root, do one of the following:

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

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

4 Distributed Systems

This chapter covers the following topics:

- Installing Device Resource on multiple servers
- Configuring the central sever
- Configuring satellite servers
- System clocks

Installing Device Resource on Multiple Servers

If you intend to run Device Resource as a distributed system, each server in the system must be configured. Before configuring the servers, verify that package installation was done correctly. Here are the guidelines for package installation in a distributed environment:

- Install Device Resource 3.1 on every server.
- Install at least one datapipe on each satellite server.
- If you want to enable thresholding for *aggregated data only*, install the thresholds sub-package and the Thresholds Module on the central server.
- If you want to enable thresholding for *hourly data or rate data*, install the thresholds sub-package and the Thresholds Module on satellite servers.

Configuring the Central Server

Perform these tasks to configure the central server:

- Task 1: Set up connections with satellite server databases
- Task 2: Configure trendcopy pull commands for hourly data
- Task 3: Configure trendcopy pull commands for rate data (optional)

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   When you finish adding databases, click **Finish**.

Task 2:Configure trendcopy pull commands for hourly data

1   Open the following file:

`$DPIPE_HOME/scripts/DeviceResourceReporting_hourly.pro`

2   Uncomment the copy commands in block2.

3   Modify the copy commands in the hourly_copy block as follows:

  • Replace *SATELLITE_SERVER_1_DATABASE* with the name of the satellite server configured in Task 1.

  • Replace *THIS_MACHINE_DATABASE* with the name of the central server.

4   If you have two or more satellite servers, create and configure hourly copy commands for each satellite server.

5   If you are not running collections on the central server, comment out the block1 section.

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   If it is not already open, open the following file:

`$DPIPE_HOME/scripts/DeviceResourceReporting_hourly.pro`

2   Make the following modifications to replicated trendcopy commands in block2:

  • Change *SHDevRes_Device* to *SRDevRes_Device*

  • Change *SHDevRes_DeviceMem* to *SRDevRes_DeviceMem*

  • Change *SHDevRes_DeviceCard* to *SRDevRes_DeviceCard*

3   Cut the block1 trendsums and paste them below the block2 trendcopies.

   ▶   Copying rate data from satellite servers every hour has side-effects: more traffic between servers and a higher load on the central server.

Configuring Satellite Servers

Follow these steps to configure a satellite server:

1   If you disable the higher aggregations on a satellite server, you disable local reporting. So don't disable the higher aggregations if you need local reporting. If you do not need local reporting, follow these steps to disable daily aggregations:

  • Open this file: `$DPIPE_HOME/lib/trendtimer.sched`

  • Comment out lines referencing `DeviceResourceReporting_Daily.pro.`

2   Change the default that determines when hourly processing begins; make hourly processing begin sooner:

- Open this file: `$DPIPE_HOME/lib/trendtimer.sched`

- Locate the trendtimer entry in the `DeviceResourceReporting_Hourly.pro` file. By default, hourly processing begins at 40 minutes after the hour.

- To make sure the satellite server completes hourly summarizations before the central server begins to copy data from the satellite server, change the start time from 1:00+40 to 1:00+25.

3 Configure datapipe polling policies; make sure that each network device is polled by one satellite server only.

4 If you are using remote pollers, avoid duplicate polling between remote pollers and duplicate polling between a satellite and a remote poller.

5 If a satellite server has two or more remote pollers, create separate polling policies for each remote poller and use views and types to separate the devices.

System Clocks

Verify that the system clock on each satellite server is synchronized with the system clock on the central server.

5 Exception Thresholds

This chapter covers the following topics:

- Default thresholds for exceptions
- Using the change form to modify thresholds

Default Thresholds for Exceptions

The Device_Resource_Thresholds sub-package imposes an exception threshold on CPU utilization, memory utilization, and buffer utilization. When performance reaches one of these defaults, the thresholds sub-package sends a trap to the network management system. If your OVPI and NNM servers are integrated, the thresholds sub-package sends the trap to NNM. The trap becomes an alarm in the NNM alarm browser.

The following table describes the condition behind each threshold breach and the severity of the alarm sent in response to the breach.

Metric	Threshold	Severity
CPU	85%	Medium
Memory	85%	Medium
Buffer	85%	Medium

You do not have to do anything to enable these thresholds. However, if you want to enable multiple types of traps, or set up multiple trap destinations, you must configure the Thresholds Module. For details, refer to the *Thresholds Module 5.0 User Guide*.

Using the Change Form

Device Resource 3.1 includes a change form for modifying default thresholds. Follow these steps to access the Update Thresholds form:

1   Click the **Objects** icon in the panel on the left side of the Management Console window. The Object/Property Management view opens.

Object Manager shows a list of objects. The type of object presented depends on which Object Manager View is open:

- The Device view (the default) shows a list of devices
- The Customer view shows a list of customers

- The Location view shows a list of locations

2 To change the view, select **View** > **Change View** and use the pop-up window to select a different view.

3 When you see the type of object you are interested in updating, select the particular object you would like to update. **Object Specific Tasks** appears in the window on the right.

4 Double-click the task to open the Update Thresholds form, shown below.

6 Top Ten Reports

Device Resource contains three Top Ten reports:

- Customer Top Ten
- Device Top Ten
- Location Top Ten

Use these reports to identify which customers, locations, and devices rank worst in terms of CPU, memory, and buffer utilization. The customer report aggregates statistics for groups of devices belonging to one customer, while the location report aggregates statistics for groups of devices at various locations belonging to one customer. The device report does not aggregate data. It displays statistics for the individual devices belonging to one customer.

In addition to ranking customers, locations, or devices, each Top Ten report also sorts items by highest F90 value, the utilization level that OVPI predicts will be in effect 90 days from today. Note that left and right tables are independent and that an item appearing in the worst performing table on the left may not appear in the forecast table on the right. If the same item appears in both tables, you can assume that yesterday's performance is part of a longer-term trend that may call for corrective action.

The tables on the left provide statistics for yesterday's average utilization and yesterday's busy hour. Table entries sort according to average utilization, highest to lowest. The tables on the right provide statistics for baseline, F30, F60, and F90; table entries sort by F90 value, highest to lowest. Baseline here means *average busy hour*.

The Device Top Ten begins with a customer summary table that sorts customers by resource utilization, highest to lowest. The Customer Top Ten and the Location Top Ten begin with a customer exception count table that sorts customers by yesterday's total exception count, highest to lowest.

See below for samples of all three Top Ten reports.

Device Resource
Customer Top Ten

The Customer Top Ten Report provides the network manager and other members of the network management staff a list of the top ten customers based on various criteria.

Highest Average CPU Utilization
Wed Apr 02 2003

Customer	Average CPU Util	Busy Hour CPU Util
NetRadix	60.94	71.38
Trinagy	59.49	74.75

CPU Utilization Forecast
Sorted by Highest 90 Day Forecasted Value

Customer	Baseline	30th Day	60th Day	90th Day
Trinagy	85.00	67.42	59.59	51.75
NetRadix	84.25	67.49	58.78	50.08

Highest Average Memory Utilization
Wed Apr 02 2003

Customer	Average Memory Util	Busy Hour Memory Util
NetRadix	52.38	81.47
Trinagy	44.37	66.70

Memory Utilization Forecast
Sorted by Highest 90 Day Forecasted Value

Customer	Baseline	30th Day	60th Day	90th Day
NetRadix	89.16	97.16	113.20	129.23
Trinagy	89.42	72.44	67.36	62.28

Highest Average Buffer Utilization
Wed Apr 02 2003

Customer	Average Buffer Util	Busy Hour Buffer Util
NetRadix	96.53	97.47
Trinagy	96.12	96.46

Buffer Utilization Forecast
Sorted by Highest 90 Day Forecasted Value

Customer	Baseline	30th Day	60th Day	90th Day
NetRadix	97.58	97.38	97.56	97.74
Trinagy	98.00	95.96	94.91	93.86

Device Resource
Top Ten

The Device Resource Top Ten Report provides the network manager and other members of the network management staff a list of the top ten devices based on various criteria.

Customer Summary
Wed Apr 02 2003

Customer	Average CPU Util	Average Memory Util	Average Buffer Util
Trinagy	59.49	44.37	96.12
NetRadix	60.94	52.38	96.53

Highest Average CPU Utilization
Wed Apr 02 2003

Device	Average CPU Util	Busy Hour CPU Util
Cisco_01	62.28	74.75
Cisco_02	56.70	75.50

CPU Utilization Forecast
Sorted by Highest 90 Day Forecasted Value

Device	Baseline	30th Day	60th Day	90th Day
Cisco_02	90.00	79.33	76.60	73.87
Cisco_01	90.25	70.61	62.01	53.42

Highest Average Memory Utilization
Wed Apr 02 2003

Device	Average Memory Util	Busy Hour Memory Util
Cisco_01	55.16	90.34
Cisco_02	33.57	62.22

Memory Utilization Forecast
Sorted by Highest 90 Day Forecasted Value

Device	Baseline	30th Day	60th Day	90th Day
Cisco_01	98.41	99.02	106.80	114.58
Cisco_02	98.35	76.41	67.16	57.90
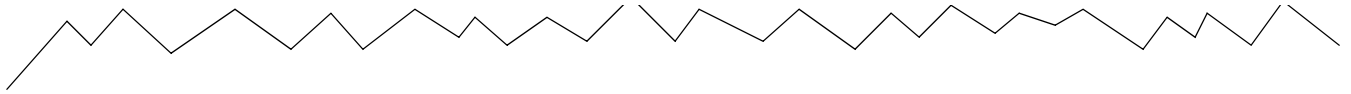
Highest Average Buffer Utilization
Wed Apr 02 2003

Device	Average Buffer Util	Busy Hour Buffer Util
Cisco_01	96.26	97.07
Cisco_02	95.97	96.50

Buffer Utilization Forecast
Sorted by Highest 90 Day Forecasted Value

Device	Baseline	30th Day	60th Day	90th Day
Cisco_01	97.95	96.99	96.54	96.09
Cisco_02	98.22	95.80	94.38	92.95

7 Summary Reports

Summary reports focus on groups of devices rather than individual devices. If a graph monitors utilization for all the devices belonging to one customer, or all the devices in one location, you are looking at a summary report. If a graph provides hourly and daily data, and the samples that constitute the hourly value and the daily value are based on averages, again you are looking at a summary report.

The **customer summary** report focuses initially on the threshold exception count for specific customers. Customers sort by the number of exceptions, highest to lowest. The graphs below track CPU, memory, and buffer utilization. A bar chart displays the exception count hour-by-hour and day-by-day, while the Grade of Service chart provides an overall score for the customer, hour-by-hour and day-by-day. Use the Customer Summary to look at resource utilization customer by customer.

The **location summary** is exactly the same as the customer summary, except for the location selection table providing an exception count for all the locations belonging to one customer. The graphs look at resource utilization for all the devices in one specific location. A bar chart displays the exception count hour-by-hour and day-by-day for this location, while the Grade of Service chart provides an overall score for this location on an hourly and daily basis.

The **historical summary** reports focus initially on busy hour and then provide detailed analysis, in the form of hourly and daily aggregations, for individual devices or individual cards on one device. The first table sorts customers by aggregated busy hour, highest to lowest, allowing you to easily compare one customer to another. Select a customer to populate a table of devices belonging to that customer, sorted by resource utilization, highest to lowest. Select a device to populate a frequency distribution pie chart and graphs that track average and maximum utilization for CPU, memory, and buffer. Here, maximum utilization is a single sample, specifically, the highest sample for the hour or for the day, not an average of multiple samples.

Like the historical summaries, the **exception summary** is device-specific. This report focuses initially on exception counts per customer. Select a customer to populate a table showing which devices were responsible for those exception counts. Use the hourly graphs to find out exactly when those exceptions took place. Compare the hourly graph to the daily graph to find out whether yesterday's exception count is an isolated incident or part of a longer-term trend.

See below for samples of all six summary reports, including the **backplane historical summary**.

Device Resource
Customer Summary

The Customer Summary Report provides CFOs, CIOs, and managers, an overview of the performance of corporate devices in the critical areas of CPU, Memory, and Buffer utilization. Each chart shows key metrics aggregated for all devices for a given customer.
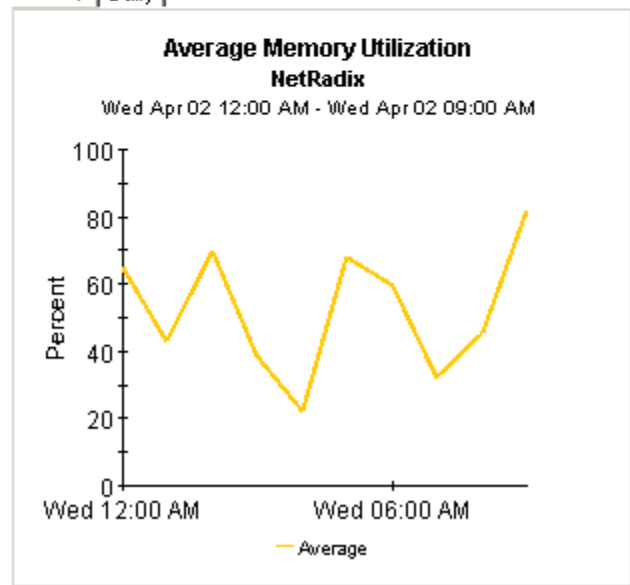
Customer Exception Counts
Wed Apr 02 2003

Customer	Total Exceptions	CPU Util Exceptions	Memory Util Exceptions	Buffer Util Exceptions
NetRadix	46	4	4	38
Trinagy	44	2	4	38

Hourly | Daily

Average CPU Utilization
NetRadix
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Hourly | Daily

Average Memory Utilization
NetRadix
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Hourly | Daily

Average Buffer Utilization
NetRadix
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Hourly | Daily

CPU, Memory, and Buffer Exceptions
NetRadix
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Hourly | Daily

Grade of Service
NetRadix
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM
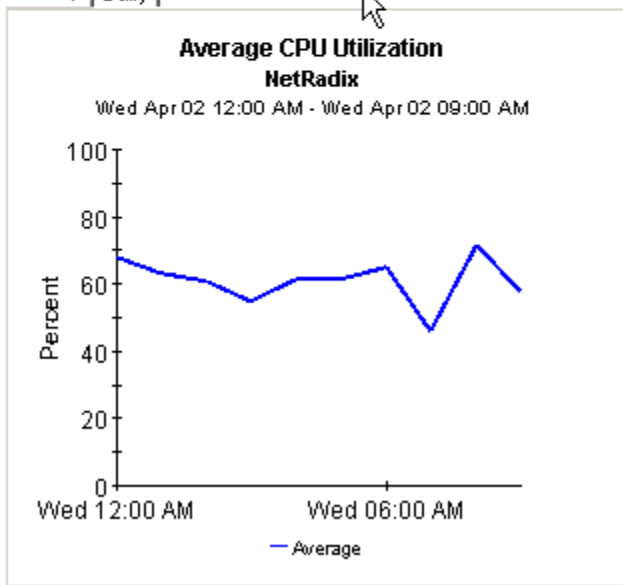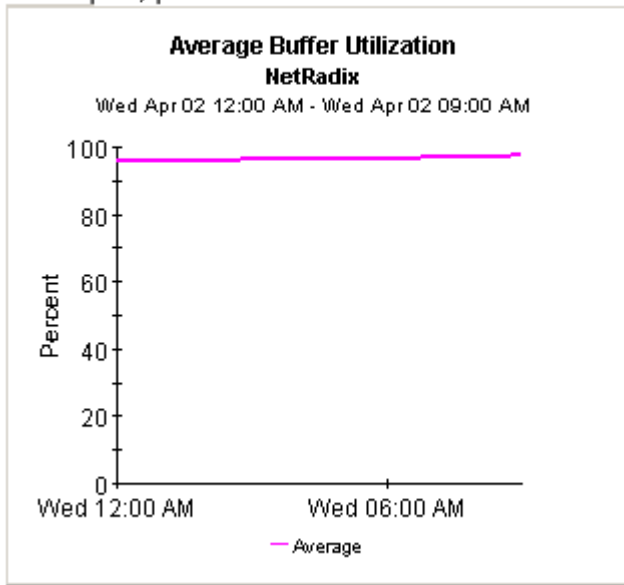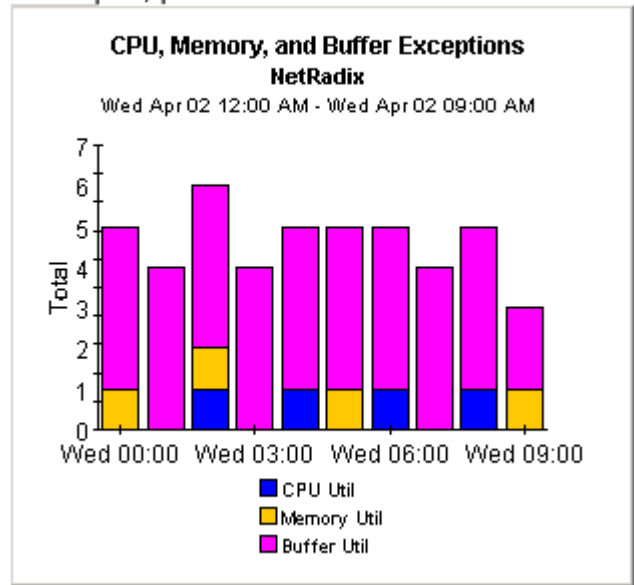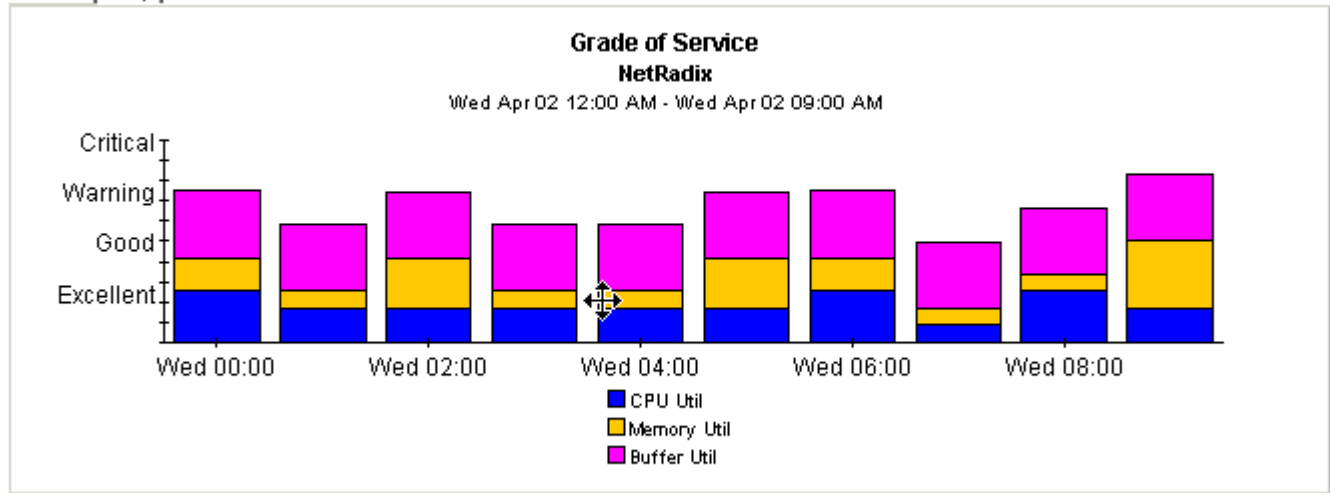
Device Resource Location Summary

The Location Summary Report provides CFOs, CIOs, and managers an overview of the performance of corporate devices in the critical areas of CPU, Memory, and Buffer utilization by location.

Customer Exception Count
Select a Customer for a List of Locations
Wed Apr 02 2003

Customer	Total Exceptions	CPU Util Exceptions	Memory Util Exceptions	Buffer Util Exceptions
NetRadix	46	4	4	38
Trinagy	44	2	4	38

Location Exceptions Report
NetRadix
Wed Apr 02 2003

Location	Total Exceptions	CPU Util Exceptions	Memory Util Exceptions	Buffer Util Exceptions
All Locations	46	4	4	38
Bethesda	24	3	2	19
Alexandria	22	1	2	19

Hourly | Daily |

Average CPU Utilization
All Locations
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Hourly | Daily |

Average Memory Utilization
All Locations
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Hourly | Daily |

Average Buffer Utilization
All Locations
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Percent

100
80
60
40
20
0

Wed 12:00 AM   Wed 06:00 AM

— Average

Hourly | Daily |

CPU, Memory, and Buffer Exceptions
All Locations
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Total

7
6
5
4
3
2
1
0

Wed 00:00   Wed 03:00   Wed 06:00   Wed 09:00

■ CPU Util
■ Memory Util
■ Buffer Util

Hourly | Daily |

Grade of Service
All Locations
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Critical
Warning
Good
Excellent

Wed 00:00   Wed 02:00   Wed 04:00   Wed 06:00   Wed 08:00

Time of Day

■ CPU Util
■ Memory Util
■ Buffer Util

Device Resource Historical Summary

The Device Resource Historical Summary Report provides the network management staff with detailed information on key metrics for individual devices with the highest CPU, Buffer, and Memory Utilization.

Customer Summary
Wed Apr 02 2003

Customer	Busy Hour CPU Util	Busy Hour Memory Util	Busy Hour Buffer Util
NetRadix	71.38	81.47	97.47
Trinagy	74.75	66.70	96.46

NetRadix Device Summary
Wed Apr 02 2003

Device	Busy Hour CPU Util	Busy Hour Buffer Util	Busy Hour Memory Util
Cisco_04	72.00	98.12	78.45
Cisco_03	81.25	97.17	89.64

CPU | Memory | Buffer
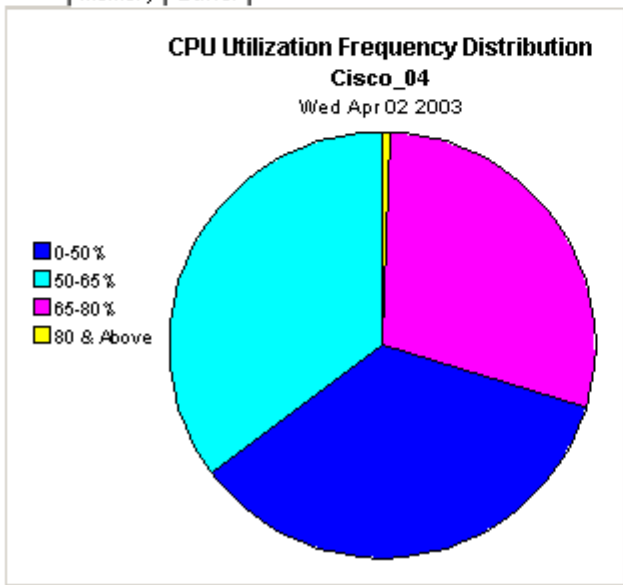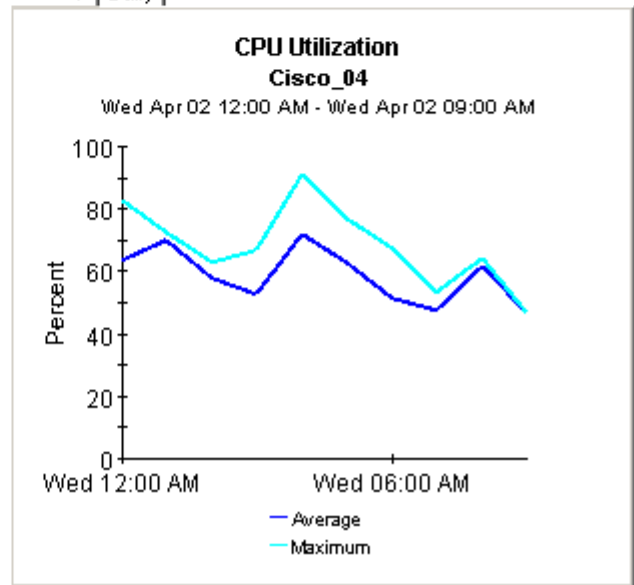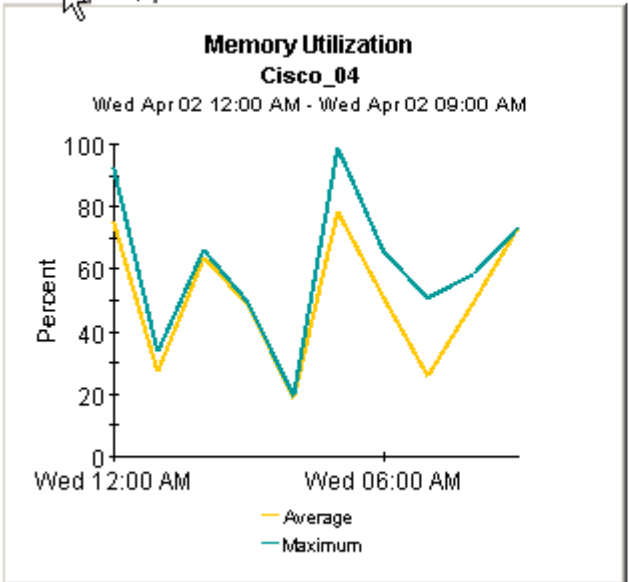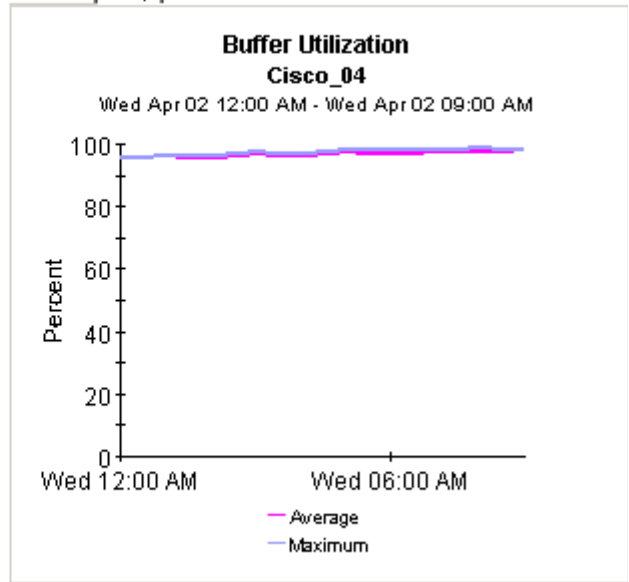
CPU Utilization Frequency Distribution
Cisco_04
Wed Apr 02 2003

- 0-50%
- 50-65%
- 65-80%
- 80 & Above

Hourly | Daily

CPU Utilization
Cisco_04
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

- Average
- Maximum

Hourly | Daily |

Memory Utilization
Cisco_04
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Percent

— Average
— Maximum

Wed 12:00 AM   Wed 06:00 AM

Hourly | Daily |

Buffer Utilization
Cisco_04
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Percent

— Average
— Maximum

Wed 12:00 AM   Wed 06:00 AM

Device Resource
Card Historical Summary

The Device Resource Card Historical Summary Report provides the network management staff with detailed information on key metrics for individual devices by card or slot with the highest of CPU, Buffer, and Memory Utilization.

Customer Summary
Wed Apr 02 2003

Customer	Busy Hour CPU Util	Busy Hour Memory Util	Busy Hour Buffer Util
NetRadix	71.38	81.47	97.47
Trinagy	74.75	66.70	96.46

Device Summary
Wed Apr 02 12:00 AM

Device	Busy Hour CPU Util	Busy Hour Memory Util	Busy Hour Buffer Util
Cisco_04	72.00	78.45	98.12
Cisco_03	81.25	89.64	97.17

Card Summary
Wed Apr 02 2003

Card	Busy Hour CPU Util	Busy Hour Memory Util	Busy Hour Buffer Util
0	72.00	78.45	98.12

CPU | Memory | Buffer

CPU Utilization Frequency Distribution
Card 0
Wed Apr 02 2003

- 0-50%
- 50-65%
- 65-80%
- 80 & above

CPU Utilization
Cisco_04
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

— Average
— Maximum

Memory Utilization
Cisco_04
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

— Average
— Maximum

Buffer Utilization
Cisco_04
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

— Average
— Maximum
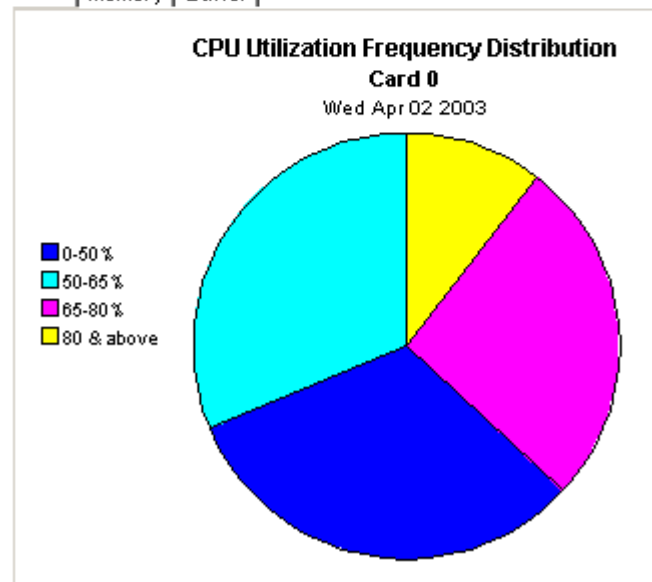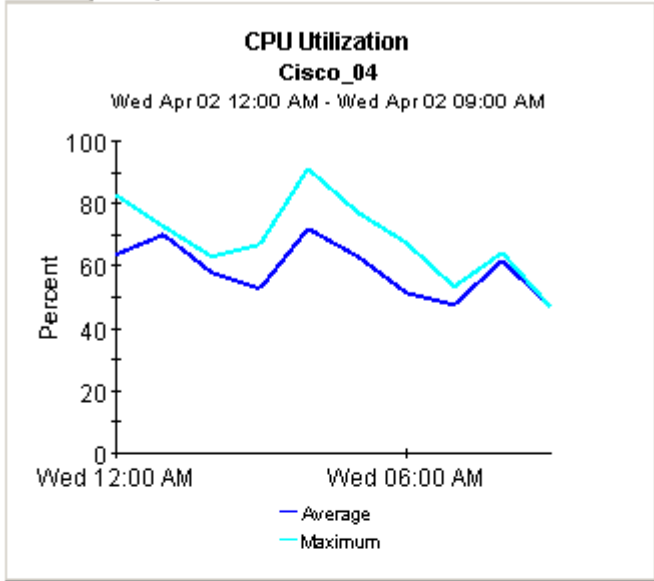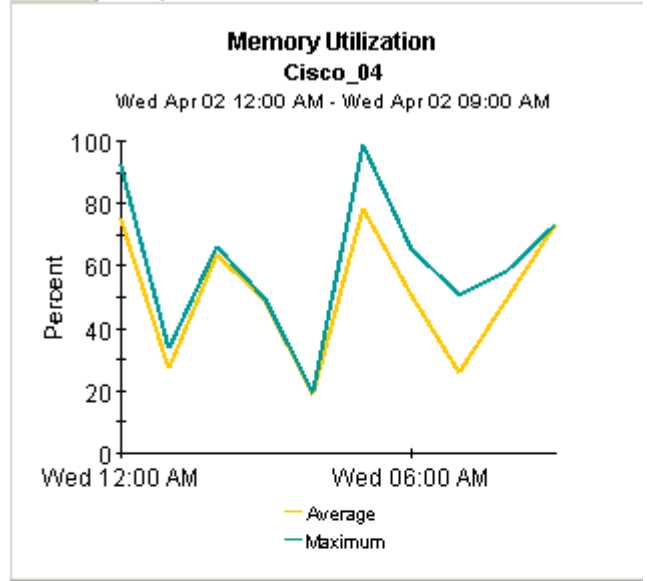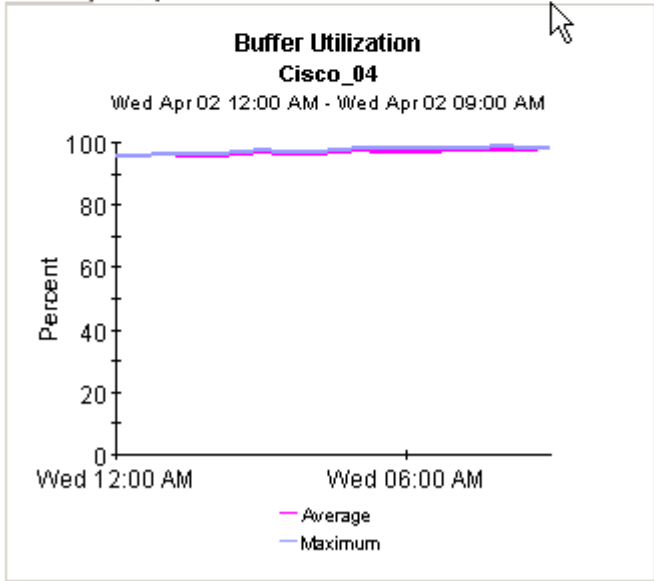
Device Resource Exceptions Summary

The Device Resource Exceptions Report provides the network manager and other members of the network management staff a list of devices that have exceeded threshold conditions.

Customer Exception Counts
Wed Apr 02 2003

Customer	Total Exceptions	CPU Util Exceptions	Memory Util Exceptions	Buffer Util Exceptions
NetRadix	46	4	4	38
Trinagy	44	2	4	38

Device Exception Counts
NetRadix
Wed Apr 02 2003

Device	Total Exceptions	CPU Util Exceptions	Memory Util Exceptions	Buffer Util Exceptions
Cisco_03	24	3	2	19
Cisco_04	22	1	2	19

Average Memory Utilization
Cisco_03
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

Average Buffer Utilization
Cisco_03
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM

CPU, Memory, and Buffer Exceptions
Cisco_03
Wed Apr 02 12:00 AM - Wed Apr 02 09:00 AM
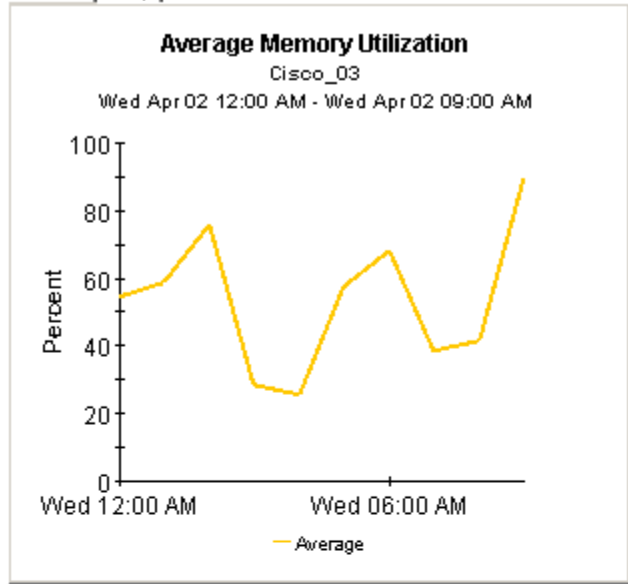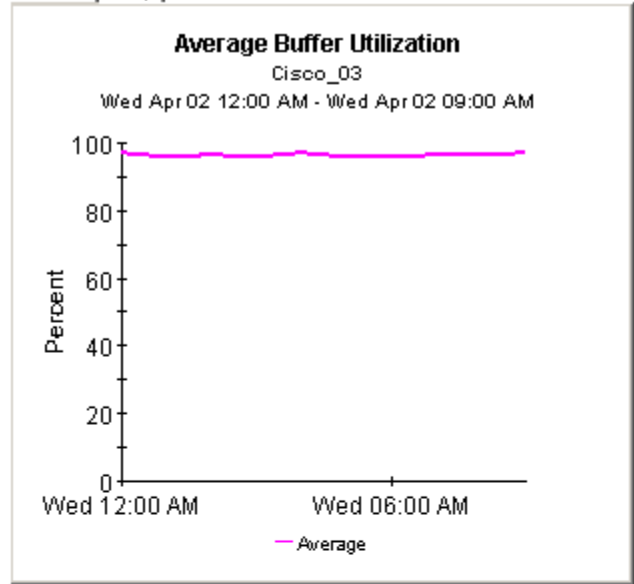
- CPU Util
- Memory Util
- Buffer Util
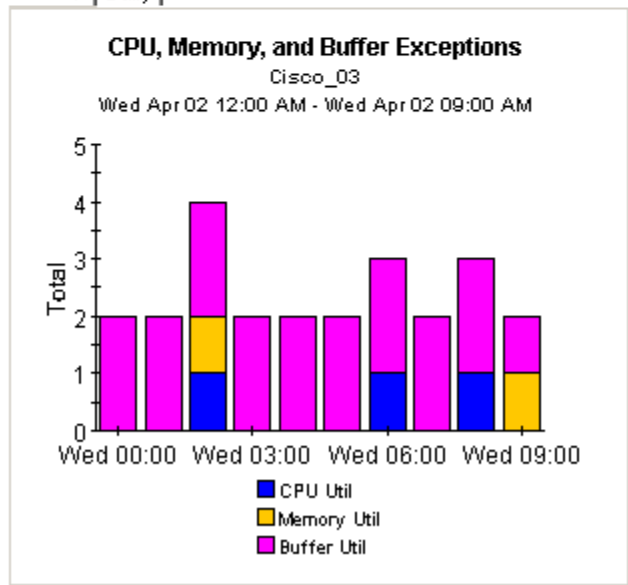
Exception Detail Table Sorted by Time Period
Cisco_03
Wed Apr 02 2003

Time Period	CPU Util	Memory Util	Buffer Util
Wed Apr 02 12:00 AM	72.25	54.59	96.96*
Wed Apr 02 01:00 AM	56.5	58.68	95.97*
Wed Apr 02 02:00 AM	64.25	75.94	96.45*
Wed Apr 02 03:00 AM	57.75	28.14	95.91*
Wed Apr 02 04:00 AM	50.5	25.30	97.17*
Wed Apr 02 05:00 AM	59.25	57.47	95.88*
Wed Apr 02 06:00 AM	78.75	67.97	95.82*
Wed Apr 02 07:00 AM	43.75	38.33	96.23*
Wed Apr 02 08:00 AM	81.25	41.41	96.39*
Wed Apr 02 09:00 AM	69.0	89.64*	96.82*

Device Resource Reporting - Backplane

Historical Summary

The Device Resource Backplane Historical Summary Report provides the network management staff with detailed information on key metrics for individual devices with the highest Backplane, CPU, Buffer, and Memory Utilization.

Switch Summary
Tue May 20 2003

Device	Avg Bkpl Util
15.1.53.129	24.27
15.13.104.6	0.07
15.3.208.119	0.04
15.2.144.2	0.04
15.9.72.23	0.01
15.9.72.28	0.01
15.9.72.6	0.01
15.129.22.187	0.00
15.25.40.19	0.00
15.25.40.21	0.00
15.25.40.23	0.00
15.25.40.25	0.00
15.25.40.27	0.00

CPU, Buffer, and Memory Utilization
Tue May 20 2003

Device	Busy Hour CPU Util	Busy Hour Buffer Util	Busy Hour Memory Util
15.13.104.6	10.25		71.44

Device	Make	Model	Bkpl Type	Customer	Location
15.13.104.6	Cisco	WS-C6506	16 Gigabit Switch	Customer Unassigned	Location Unassigned

Hourly | Daily |

Backplane Utilization
15.13.104.6
Tue May 20 12:00 AM - Wed May 21 12:00 AM

— Average
— Maximum
— Minimum

Hourly Daily |

Average and Busy Hour CPU Utilization
15.13.104.6
Wed May 14 2003 - Tue May 20 2003

— Average
— Busy Hour

Hourly Daily |

Average and Busy Hour Utilization
15.13.104.6
Wed May 14 2003 - Tue May 20 2003

— Average
— Busy Hour

Hourly Daily |

Average and Busy Hour Buffer Utilization
15.13.104.6
Wed May 14 2003 - Tue May 20 2003
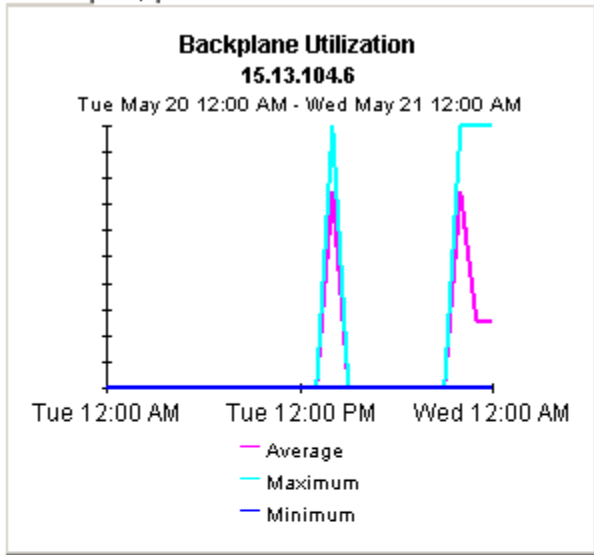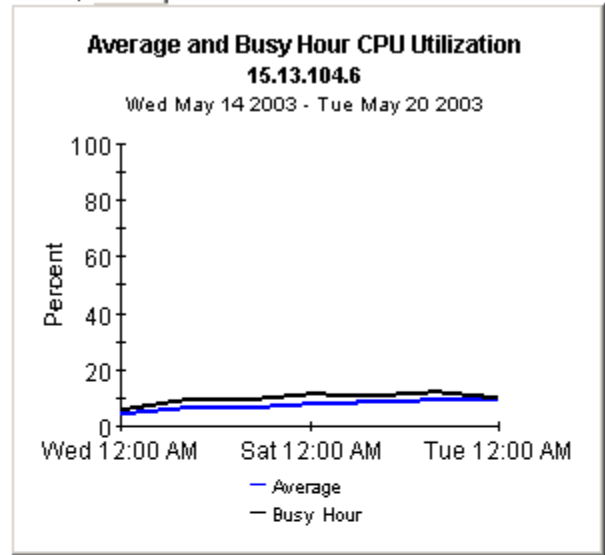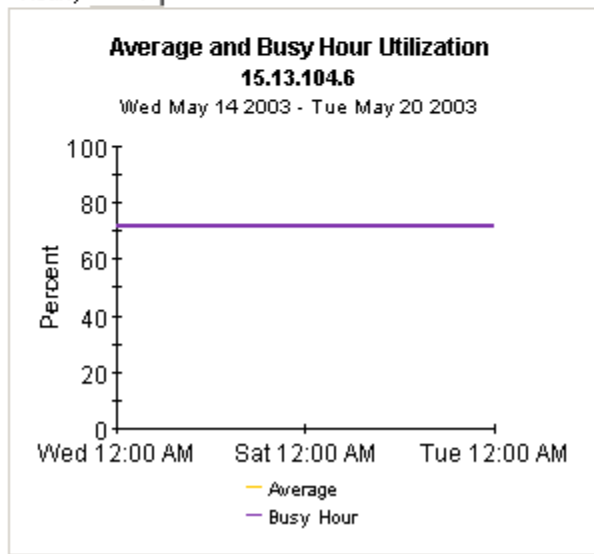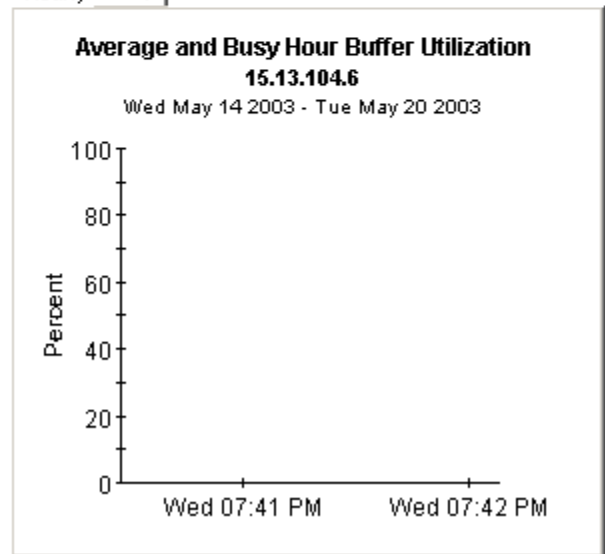
8 Forecast Reports

The three forecast reports in Device Resource focus on Days to Threshold (DTT) and provide estimates for future utilization. The threshold is 90% utilization, and the value for DTT indicates how close the device is to reaching 90% utilization.

The customer and location reports are actually summary reports, aggregating data by customer or by location. The DTT values in these reports are actually *averages* across all devices for that customer, or all devices in that location. For example, if the memory utilization DTT is 17 for a customer, many devices could be closer to that threshold while many devices could be further away from it.

If you want to see which customer is closest to a threshold, or which location is closest to a threshold, start with the summary reports. If a customer or device looks suspicious, use the device report to pinpoint the devices that appear to be causing the problem. The device report provides DTT and forecasts for specific devices; the data is not aggregated.

All three reports use the same criterion for inclusion: a customer, location, or device appears in the report if CPU, buffer, or memory utilization is expected to exceed the exception threshold sometime within the next 90 days. The three graphs under the DTT data allow you to find out which resource is contributing to the problem. Each graph has three tabs:

- Standard
- Day of Week
- History

Use the standard graph to compare the baseline (*average busy hour* during the baseline period) to F30, F60, and F90. Use the day of week graph to compare the baseline to F30, F60, and F90 on a day of week basis and to find out whether resource usage is correlating with a particular day of the week. Use the history graph to compare average utilization to busy hour utilization over the baseline period. In the hourly graph, *average utilization* is based on four samples. In the daily graph *average utilization* is based on 96 samples (4 samples per hour, 24 hours per day).

The F30, F60, and F90 values are produced by applying linear regression to busy hour values recorded over the baseline period. Busy hour is the highest average utilization for the day. During that hour, actual utilization may have been considerably higher for at least a portion of the hour. Busy hour reflects a persistent event, not a momentary spike. When busy hour is high, you want average utilization to be low. If average utilization is high, you know that resource utilization has been high for an extended period of time.

Device Resource
Customer Forecast

The Customer Forecast Report lists customers that are forecasted to reach CPU, memory, or buffer utilizations greater than 90% within the next 90 days based on all reported devices for the selected customer.

Customer CPU, Buffer, and Memory Utilization
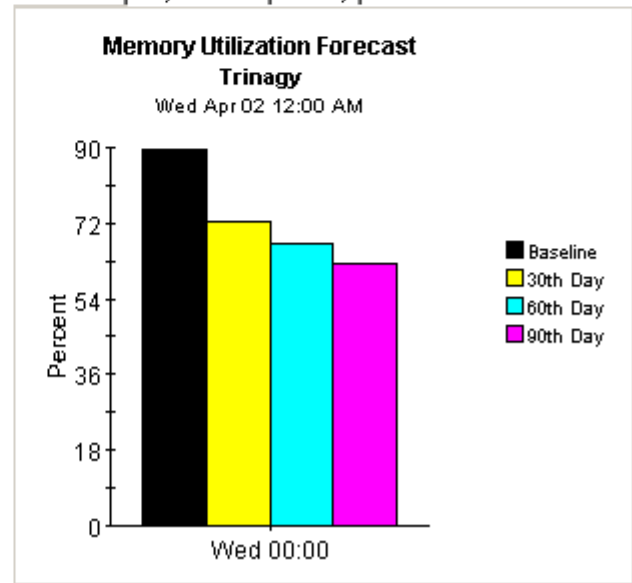### Projected to Exceed 90% Utilization within 90 Days
Wed Apr 02 12:00 AM

Customer	CPU Util DTT	Memory Util DTT	Buffer Util DTT
Trinagy			
NetRadix		17	0

Standard | Day of Week | History

CPU Utilization Forecast
Trinagy
Wed Apr 02 12:00 AM

Baseline
30th Day
60th Day
90th Day

Standard | Day of Week | History

Memory Utilization Forecast
Trinagy
Wed Apr 02 12:00 AM

Baseline
30th Day
60th Day
90th Day

Standard | Day of Week | History |

Buffer Utilization Forecast
Trinagy
Wed Apr 02 12:00 AM

Legend:
- Baseline
- 30th Day
- 60th Day
- 90th Day

Wed 00:00
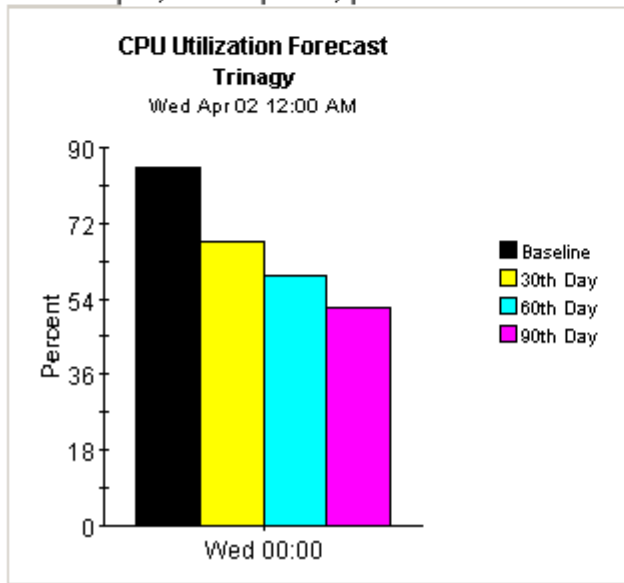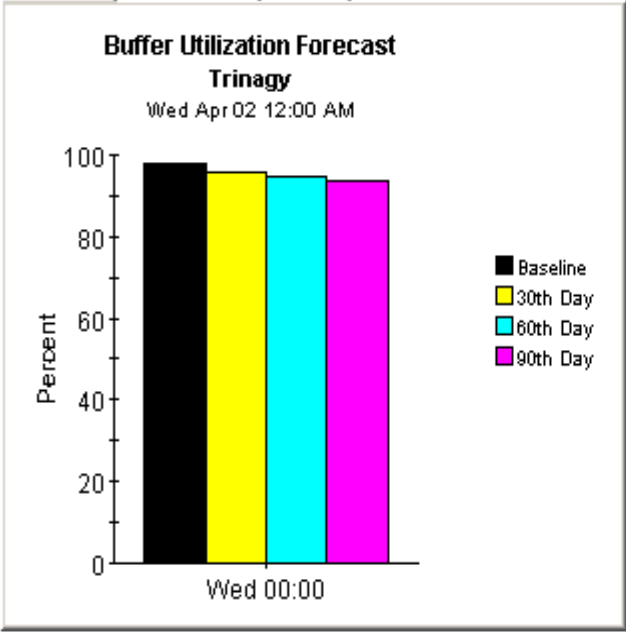
Device Resource Forecast

The Device Resource Forecast Report lists devices that are reaching CPU, memory, or buffer utilization thresholds within the next 90 days indicating where near-term correction can prevent service degradation.

Customer Selection List

Customer
NetRadix
Trinagy

Device Estimated Days toThreshold
Projected to Exceed 90% Utilization within 90 Days
NetRadix Devices

Device	CPU Util DTT	Memory Util DTT	Buffer Util DTT
Cisco_04			0
Cisco_03	14	0	

Standard | Day of Week | History

CPU Utilization Forecast
Cisco_04
Wed Apr 02 12:00 AM

Standard | Day of Week | History

Memory Utilization Forecast
Cisco_04
Wed Apr 02 12:00 AM

Standard | Day of Week | History |

Buffer Utilization Forecast
All Locations
Wed Apr 02 12:00 AM

Legend:
- Baseline (black)
- 30th Day (yellow)
- 60th Day (cyan)
- 90th Day (magenta)

Wed 00:00
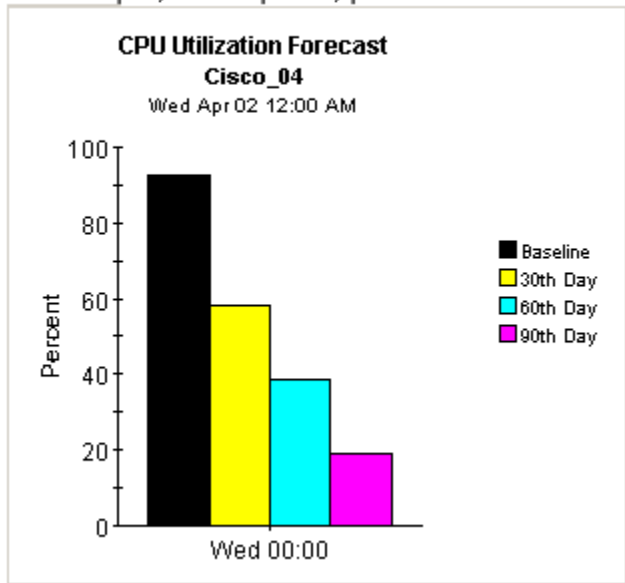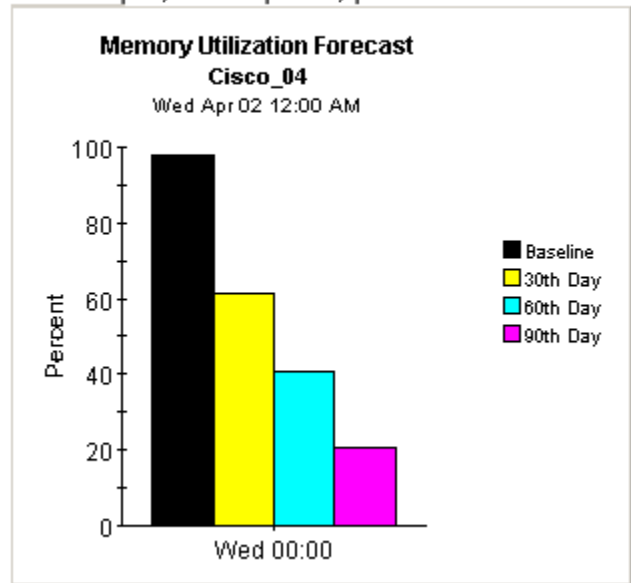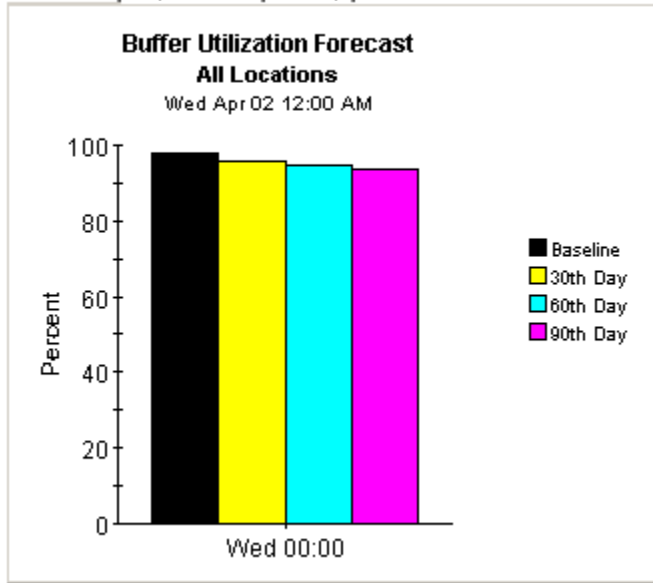
Device Resource
Location Forecast

The Location Forecast Report lists locations by customer that are forecasted to each CPU, memory, or buffer utilization greater than 90% within the next 90 days based on all reported devices for the selected location.

CPU, Buffer, and Memory Utilization by Customer
Select a Customer for a List of Locations

Customer	CPU Util DTT	Memory Util DTT	Buffer Util DTT
Trinagy			
NetRadix		17	0

CPU, Buffer and Memory Utilization by Location
Projected to Exceed 90% Utilization within 90 Days
Trinagy

Location	CPU Util DTT	Memory Util DTT	Buffer Util DTT
All Locations			
Ashburn			
Reston		0	

Standard | Day of Week | History |

CPU Utilization Forecast
All Locations
Wed Apr 02 12:00 AM

Percent

Wed 00:00

- Baseline
- 30th Day
- 60th Day
- 90th Day

Standard | Day of Week | History |

Memory Utilization Forecast
All Locations
Wed Apr 02 12:00 AM

Percent

Wed 00:00

- Baseline
- 30th Day
- 60th Day
- 90th Day

Standard | Day of Week | History |

Buffer Utilization Forecast
All Locations
Wed Apr 02 12:00 AM

Legend:
- Baseline
- 30th Day
- 60th Day
- 90th Day

Wed 00:00
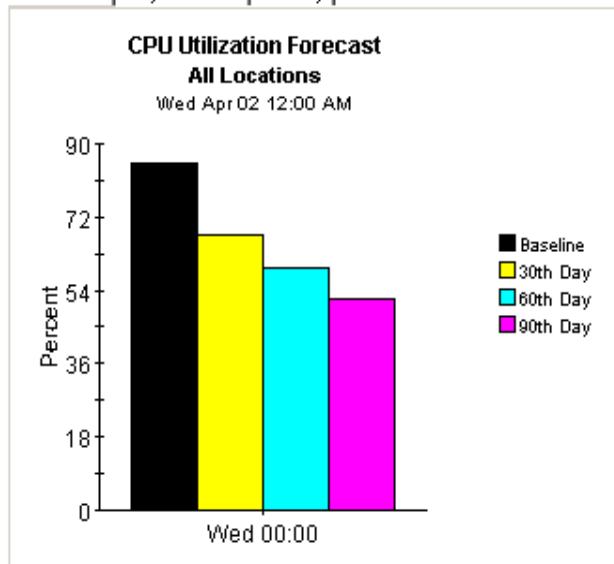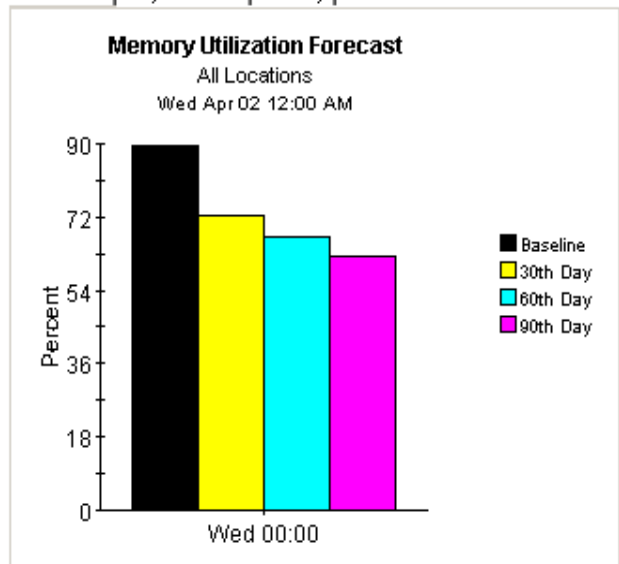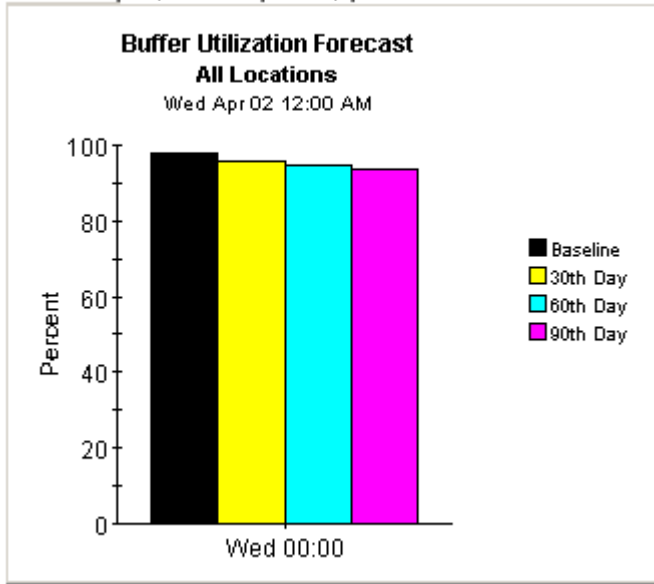
9 Service Level Management

The Service Level Management report focuses on the availability of individual devices and network response time. Use this report to see if availability and network response time are meeting levels guaranteed by service level agreements.

An available device is a device that returns a request from the polling agent. The calculation that determines availability has limitations. Although it can compensate for network issues that may prevent the device from responding to a polling request, it cannot tell the difference between a device that is down and a device that is busy and not able to respond. Given this limitation, you may want to use the availability statistics in this report as one indicator of device availability, not your only indicator of device availability.

Network response time is defined as the length of time that elapses from the moment a request is sent by the datapipe to the moment the answer is received by the datapipe. This perspective on response time is different from the user's perspective. Since the perspectives are different, you should interpret response time increases as an indicator that traffic may be congested and that the delay experienced by users may be comparable.

Selecting a customer from the customer list populates two tables:

* Devices sorted by availability
* Devices sorted by network response time

The first table sorts devices by availability, highest to lowest. The second table sorts devices by busy hour, highest to lowest.

Selecting a device populates two graphs:

* Device availability, hourly and daily
* Average network response time vs. busy hour network response time

The hourly view of device availability covers a 24-hour period, midnight to midnight. The daily view begins with yesterday and covers the previous two weeks. If you see low availability, or high response time, compare yesterday's performance with performance over the past two weeks to see whether yesterday's performance is consistent with recent history or different from recent history.

Device Resource
Service Level Management

The Device Resource Service Level Management report informs executives, network managers, end users, and customers which devices may not be meeting required availability or network response time values.

Customer Summary
Wed Apr 02 2003 - Wed Apr 02 2003

Customer
NetRadix
Trinagy

Device Availabilty
NetRadix
Wed Apr 02 2003

Device	Availability
Cisco_03	75.35
Cisco_04	75.17

Network Response Time
NetRadix
Wed Apr 02 2003

Device	Average Response Time	Busy Hour Response Time
Cisco_03	0.84	1.35
Cisco_04	0.80	1.25

Daily | Hourly

Availability
Cisco_03
Wed Mar 19 2003 - Wed Apr 02 2003

Daily | Hourly

Network Response Time
Cisco_03
Wed Mar 19 2003 - Wed Apr 02 2003
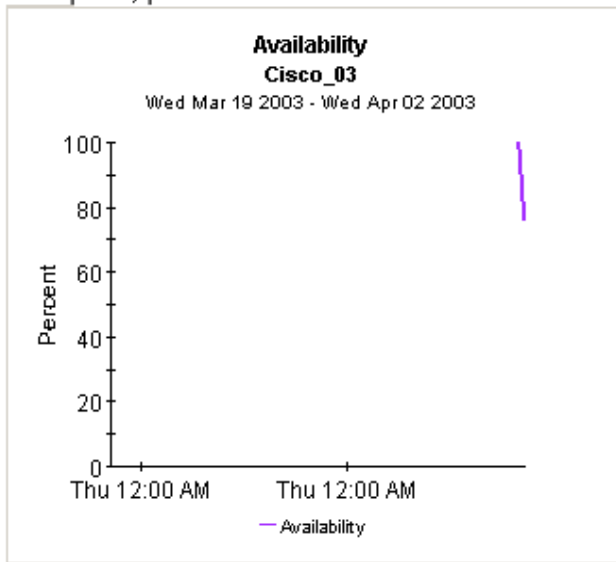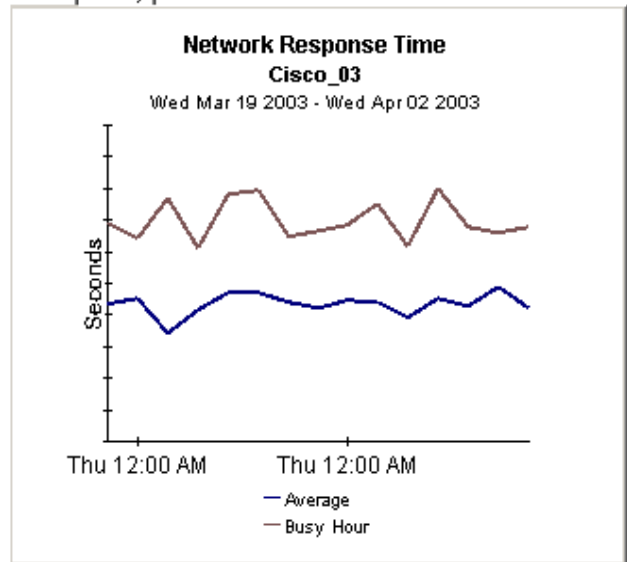
10 Near Real Time Reports

The two Near Real Reports in Device Resource—the QuickView and the Snapshot version of the QuickView—focus on resource utilization over the last six hours and the last 24 hours. The selection table at the top of the report sorts devices by resource utilization, highest to lowest. It displays average utilization for CPU, memory, and buffer, using for input all the samples taken during the last six hours, which, in practice, means approximately 24 samples. If samples are taken every 15 minutes, then the most recent sample in this average is only several minutes old.

While the table at the top of the report provides averages for the previous six hours, the CPU, memory, and buffer graphs monitor activity over the previous 24 hours. You also have a grade of service chart that ranks service quality over the last six hours. Since the Near Real Time report is recalculated after every poll, you can use this chart to find out whether a situation you are watching closely is improving or getting worse.

Because the table at the top highlights devices with the *worst* utilization, you can use the NRT QuickView to identify which devices, if any, are having trouble. In addition, if an average in the table seems abnormal, you can compare the average in the table to the previous 24 hours to see if the current average reflects an existing condition or something completely new. If a summary report for yesterday points to a situation that could become problematic, the Near Real Time report will tell you whether that condition is improving, worsening, or staying about the same. The benefit of course is that the advance warning you get from this report will let you correct the problem before it becomes a serious issue for users.

Due to space limitations, the time period in the three rate data graphs may be partially concealed. You can easily improve your view of the data by right-clicking the graph, selecting **View in New Frame**, and resizing the window. Once resized, every hour will be clearly visible.

The Snapshot version of the Near Real Time QuickView operates just like the Snapshot version of the Historical Summary. Launch the report, then respond to the prompts that ask you which device or devices you want included. If a summary, top ten, or forecast report has already alerted you to a device with resource problems, and this device is not appearing in the NRT QuickView, you can launch the Snapshot version to see where utilization levels are right now and what has happened since yesterday.

See below for samples of these reports:

- QuickView NRT
- QuickView NRT Snapshot
- Backplane NRT

Device Resource
Near Real Time QuickView

The Device Resource Near Real Time report gives the network management staff an up to date view of the performance of individual devices. By selecting a device from the selection list, current device performance up to the most recent data collection can be investigated in detail.

Device Near Real Time
Averages Over the Last Six Hours
Select a Device

Device	Average CPU Util	Average Memory Util	Average Buffer Util

CPU Utilization

Thu Apr 03 03:13 PM - Thu Apr 03 03:13 PM

Memory Utilization

Thu Apr 03 03:13 PM - Thu Apr 03 03:13 PM

No Data

No Data

Buffer Utilization

Thu Apr 03 03:13 PM - Thu Apr 03 03:13 PM

Grade of Service

Thu Apr 03 03:13 PM - Thu Apr 03 03:13 PM

Device Resource
Near Real Time Snapshot

The Device Resource Near Real Time report gives the network management staff an up to date view of the performance of individual devices. By selecting a device from the selection list, current device performance up to the most recent data collection can be investigated in detail.

Device Near Real Time
Averages over the Last Six Hours
Select a Device

Device	Average CPU Util	Average Memory Util	Average Buffer Util

CPU Utilization

Thu Apr 03 03:16 PM - Thu Apr 03 03:16 PM

No Data

Memory Utilization

Thu Apr 03 03:16 PM - Thu Apr 03 03:16 PM

No Data

Buffer Utilization

Thu Apr 03 03:16 PM - Thu Apr 03 03:16 PM

Grade of Service

Thu Apr 03 03:16 PM - Thu Apr 03 03:16 PM

Device Resource Reporting – Backplane
Near Real Time Report

The Near Real Time report provides a detailed look at the performance of individual blackplanes being utilized in the last polling cycle. Select a switch and view the bus(es) for that switch. Watch the tabbed areas for a detailed look into the performance of that switch or bus.

Switch Near Real Time
Select a Switch

Time Period	Device	Make	Model	Backplane Type	Avg Bkpl Util
Wed May 21 07:00 PM	15.1.53.129	Cisco	WS-C1400	FDDI	25.00
Wed May 21 07:00 PM	15.13.104.6	Cisco	WS-C6506	16 Gigabit Switch	0.00
Wed May 21 07:00 PM	15.129.22.187	Cisco	WS-C5509	3.6 Gigabit Switch Enhanced	0.00
Wed May 21 07:00 PM	15.25.40.19	Cisco	WS-C4003	12 Gigabit Switch	0.00
Wed May 21 07:00 PM	15.25.40.21	Cisco	WS-C4003	12 Gigabit Switch	0.00
Wed May 21 07:00 PM	15.25.40.23	Cisco	WS-C4003	12 Gigabit Switch	0.00

Switch Backplane Utilization
15.1.53.129
Tue May 20 07:00 PM - Wed May 21 07:30 AM
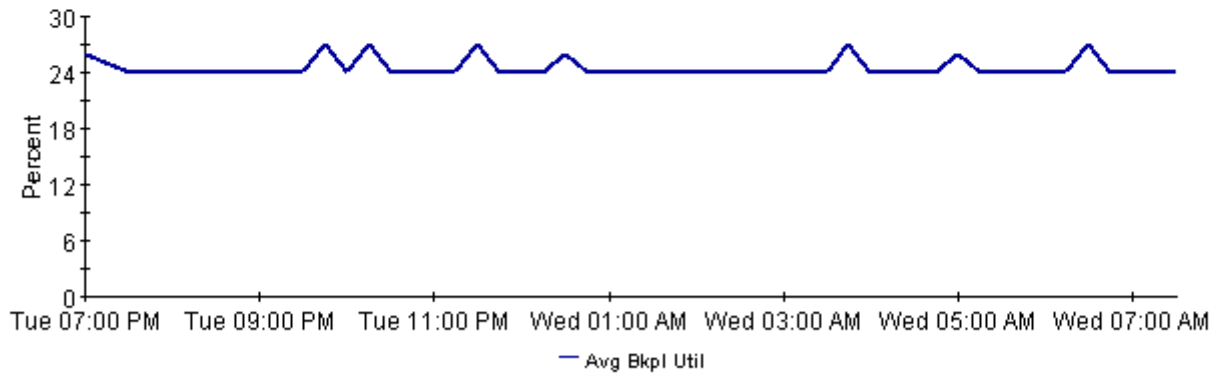
— Avg Bkpl Util

Switch Backplane Utilization per Bus Near Real Time
Select a Bus

Time Period	Device	Make	Model	Bus Type	Avg Bkpl Util

Bus Utilization

Wed May 21 07:35 PM - Wed May 21 07:35 PM

No Data

A 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 Report Viewer, right-click the object to display a list of view options. If you are using the Web Access Server, follow these steps to change the default view of a table or graph:

1　Click **Preferences** on the links bar.

2　Expand **Reports** in the navigation frame.

3　Click **Viewing**.

4　Select the **Allow element editing** box.

5　Click **Apply**.

6　Click 🐎 (the Edit icon) next to the table or graph.

View Options for Tables

Right-clicking a table, or selecting the Edit Table icon if you are using the Web Access Server, opens a list of table view options.

Set Time Period...
Change Constraint Values...
Select Nodes/Interfaces...
Change Max Rows...
View in new Frame
Print Table...
Export Element as CSV...
Delete Table
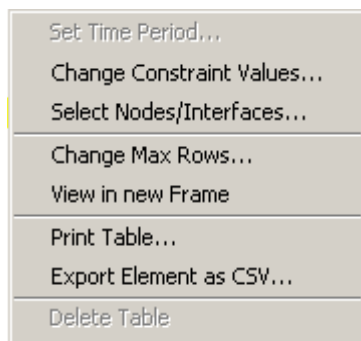
Select **Set Time Period** to alter the relative time period (relative to now) or set an absolute time period. The Set Time Period window opens.

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, shown below. If necessary, make the data in the table more legible by resizing the window.

View Options for Graphs

Right-clicking a graph, or clicking the Edit Graph icon if you are using the Web Access Server, opens the following list of view options.
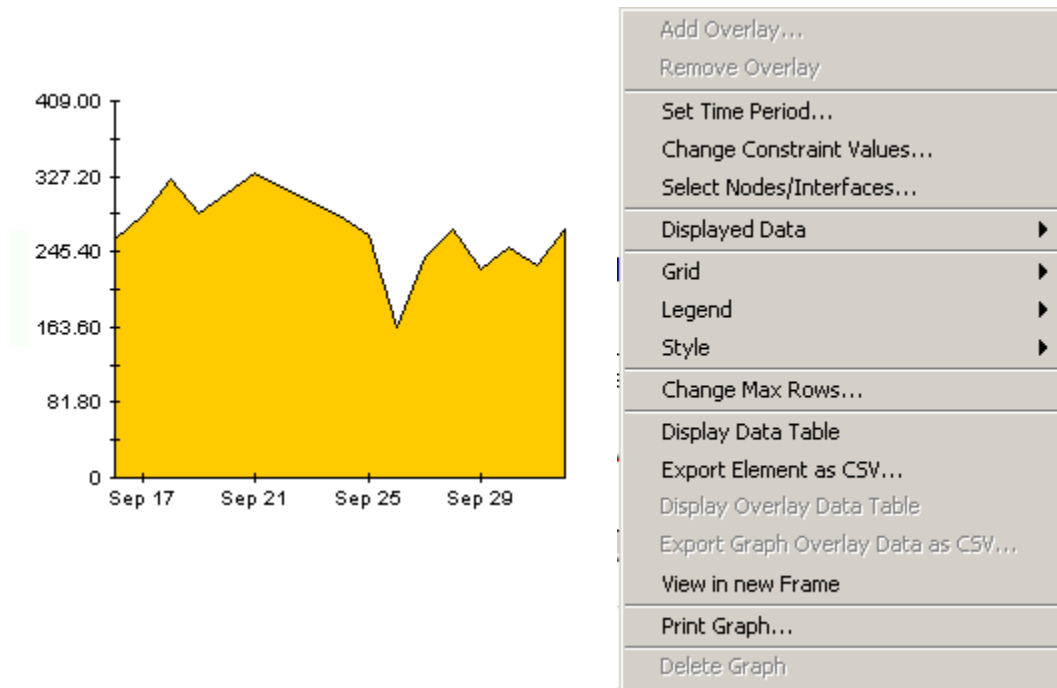
The following table provides details about each option.

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.
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.
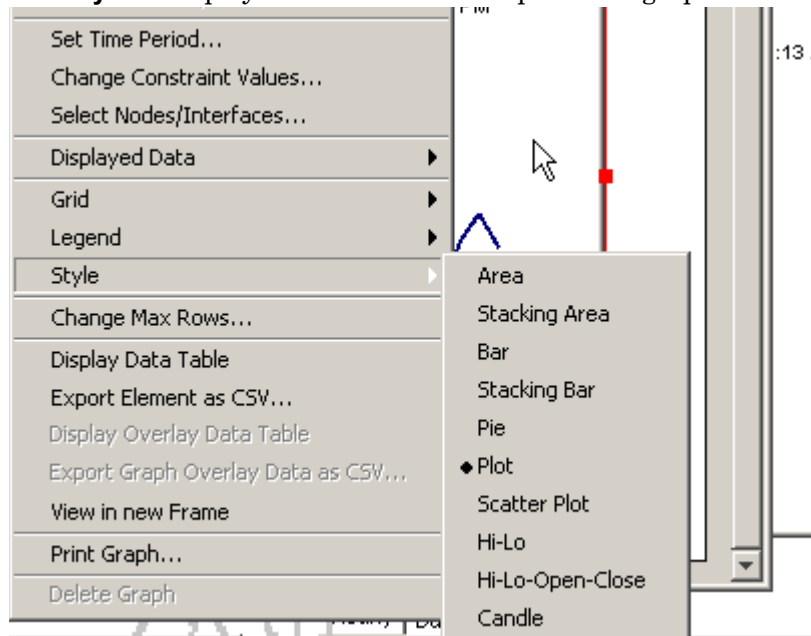
Style > Area

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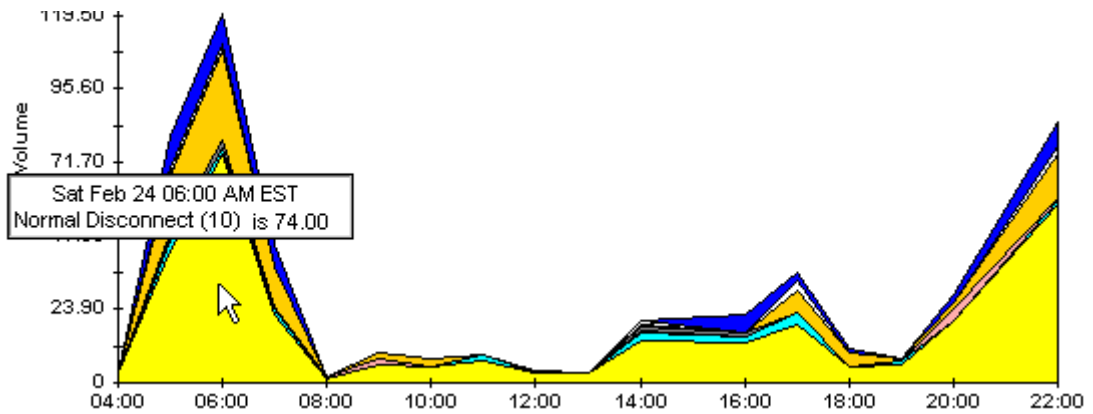
To shorten the time span of a graph, press SHIFT+ALT and use the left mouse button to highlight the time span you want to focus on. Release the mouse button to display the selected time span.

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.
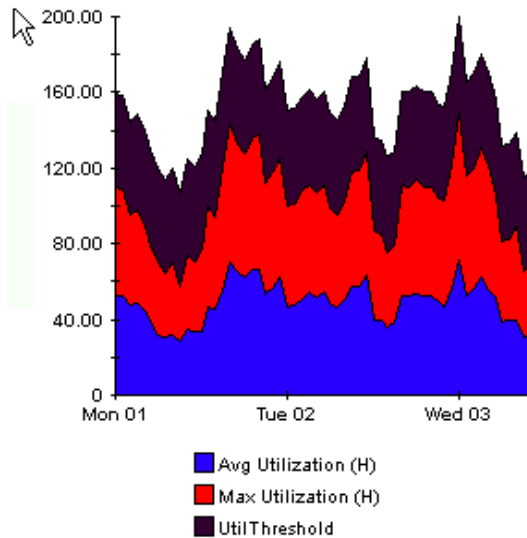
Style > Bar

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.
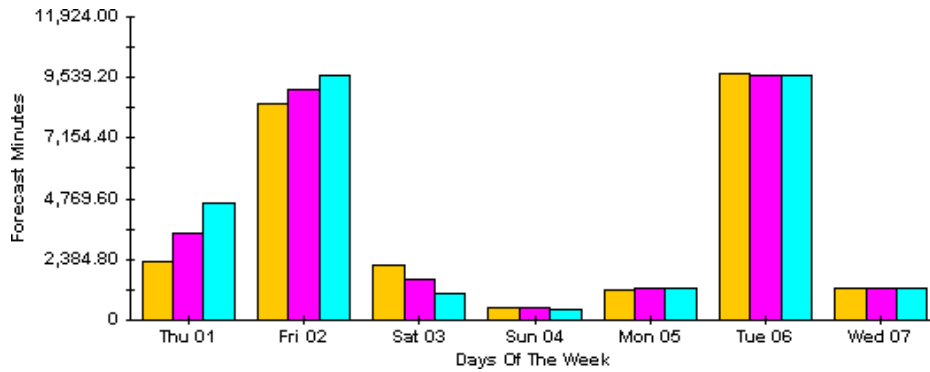
Style > Stacking Bar

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.
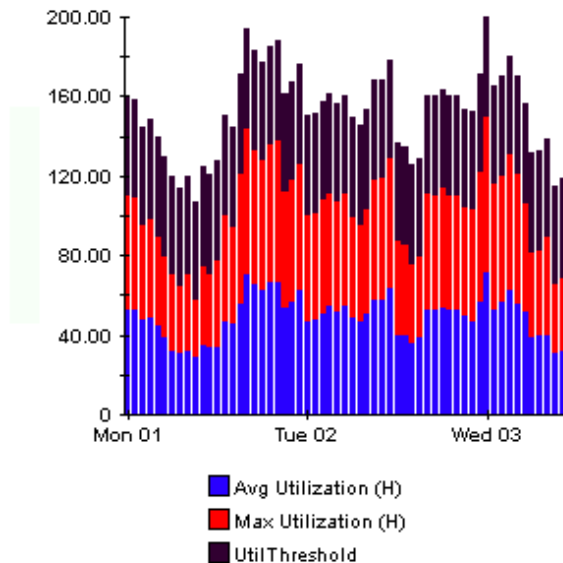
Style > Plot

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.
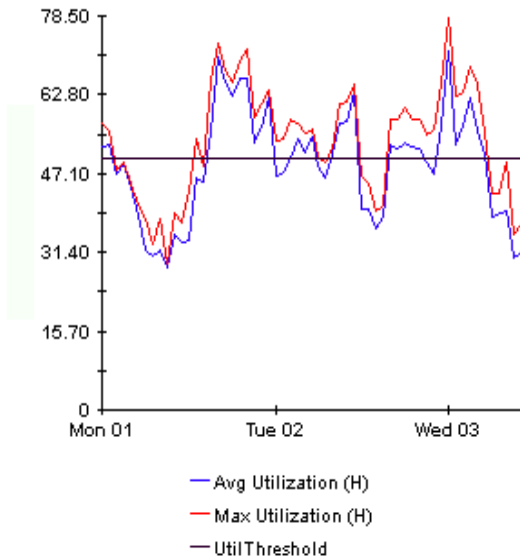
Style > Pie
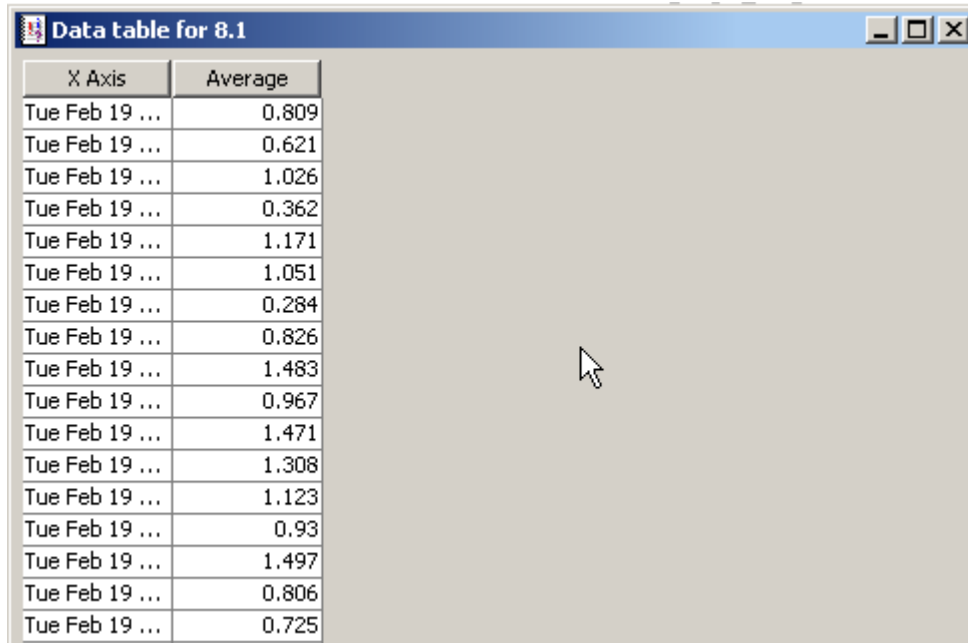
An area graph becomes a pie chart. Bands in an area graph convert to slices of a pie and the pie constitutes a 24-hour period. This view is helpful when a small number of data values are represented and you are looking at data for one day.
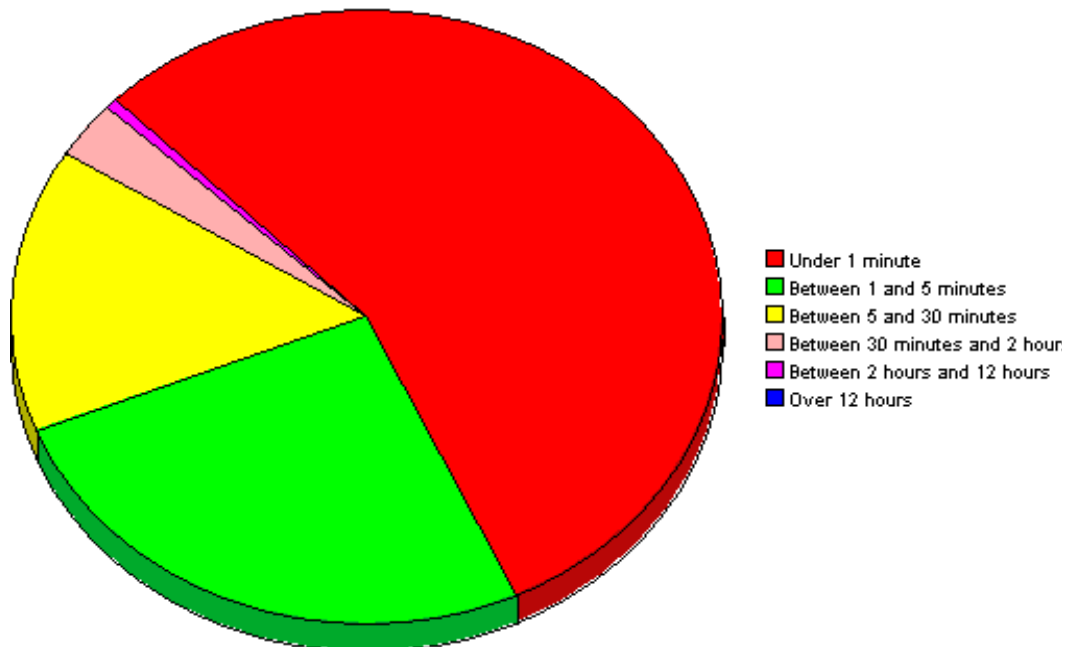
If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

Display Data Table

This option changes a graph into a spreadsheet.

View in New Frame

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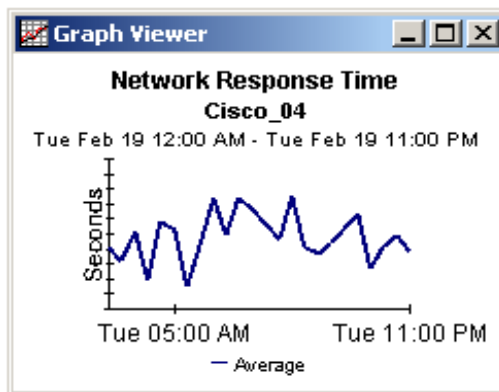
Glossary

Availability

The percentage of time the device is operational. This measurement accounts for outages indicated by the sysUpTime variable; however, it does not account for periods of time the device could not be reached by OVPI.

Average utilization

In an hourly graph, this value is an average of four samples taken over a one-hour period. In a daily graph, this value is an average of 96 samples taken over a 24-hour period.

Baseline

The average busy hour over the baseline period. Rate of growth, a statistic that appears in forecast reports, is calculated by dividing F30 by the average busy hour.

Baseline period

The previous 91 days. Forecasts for F30, F60, and F90 are based on performance during the baseline period.

Buffer utilization exception

Recorded when buffer utilization exceeds the allowable threshold.

Buffer utilization threshold

When buffer utilization is above this value, an exception is generated. The default value for the threshold is 85%.

Busy Hour

The definition varies depending on what is being measured. Busy hour is either a busy hour *total*, or a busy hour *average*. A busy hour total points to the hour of the day that recorded the highest number of events, for example, the highest number of buffer utilization exceptions or the highest number of memory utilization exceptions. In Device Resource, busy hour is the highest hourly average for the day. Busy hour, unlike peak, is a relatively persistent event with greater consequences for network users. Compared to busy hour, peak is momentary.

Since busy hour is an average, you can assume that actual utilization could have been significantly higher or lower during the course of that hour. *Busy hour average* refers to the highest hourly average among 24 hourly averages; this term is synonymous with *busy hour*. *Average busy hour* refers to an average of all busy hour values over the baseline period and is synonymous with *baseline*.

Card

Whether or not performance information at the card level is available depends on the make and model of the device. Some vendors maintain a distinction between CPU and card, and

some do not. Vendors who do maintain the distinction may not maintain it uniformly across all equipment. The card selection table in the card historical summary report may contain just one entry or it may contain multiple entries. If you see just one entry, either the device contains just one card, or the device contains multiple cards but it is not able to report multiple cards. If the device cannot report multiple cards, the statistics that display at the card level are exactly the same as the statistics that display at the device level.

Common Property Tables

Customer names can appear in reports if you import customer names using the Common Property Tables package. As explained in the *Common Property Tables User Guide*, two methods of property import are available, a batch-oriented property import utility, and a combination of online forms for creating and updating customers, locations, and nodes. If you do not import customer names, data from every customer will roll up under *All Customers*. If you do not import locations, data for all locations will roll up under *All Locations*.

CPE utilization exception

Recorded when CPU utilization exceeds the allowable threshold.

CPU utilization threshold

When CPU utilization exceeds this value, an exception is generated. The default value for the threshold is 85%.

Daily

A view of performance that compares average utilization to busy hour utilization. The number of days that you can see in this view depends on the number of days that data has been collected. The maximum number of days is the rolling baseline, 91 days. Note that daily views also include performance data from yesterday, the same data currently visible in the hourly view, rolled up as one average and one busy hour.

Days to Threshold (DTT)

The number of days that will elapse before utilization is expected to reach 90%. Device Resource calculates DTT for CPU utilization, memory utilization, and buffer utilization.

Device

A router or a switch, not a server. In selection tables, devices are listed by IP address or hostname.

Grade of Service

A total score based on a combination of contributing scores, sometimes equally weighted, sometimes not. In Device Resource the GOS is equally-weighted and it combines scores for memory, buffer, and CPU as follows:

$$\text{GOS} = \tfrac{1}{3} \text{ GOS memory} + \tfrac{1}{3} \text{ GOS buffer} + \tfrac{1}{3} \text{ GOS CPU}$$

Hourly

An average derived from four collections taken once every 15 minutes; also a graph showing yesterday's hourly increases and decreases.

Memory utilization exception

Recorded when memory utilization exceeds the allowable threshold.

Memory utilization threshold

When memory utilization exceeds this value, an exception is generated. The default value is 85%.

Near Real Time

An average for performance over the previous six hours, ending with the most recent poll. If polling takes place 4 times per hour, the NRT average is derived from 24 samples. The NRT average is a rolling average and is recalculated at the conclusion of each poll.

Network response time

The time that elapses from the moment the poller sends an SNMP request to a device to the moment the poller receives a response from the device.

RCT

Range count. The number of samples that fell above a specified minimum and below a specified maximum

STD

Standard deviation. Appears as a column in database forecast tables.

TCT

The number of samples above a specified value.

Summary

An aggregation of multiple samples. In an hourly graph, an average based on multiple samples collected during one hour; in a daily graph, an average based on multiple samples collected over the course of each day. In customer and location reports, an aggregation of multiple averages for multiple devices across the same hour, the same day, or the same month.

Utilization

Utilization for a time period, measured as a percentage; the value of the metric in use divided by the total available resources for that metric, multiplied by 100.

Index