HP OpenView Performance Insight

Frame Relay Report Pack User Guide

Software Version: 4.0

Reporting and Network Solutions 6.0

August 2004

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Overview

This overview covers the following topics:

- OVPI and the frame relay protocol
- Folders and reports
- Integration with Network Node Manager
- Ways to customize reports
- Sources for additional information

OVPI and the Frame Relay Protocol

Frame relay networks eliminate error checking at the link layer by assigning responsibility for packet retransmission to higher level protocols. To avoid congestion, and the discards that result from congestion, the nodes in a frame relay network forward flow-control alerts to neighboring nodes. When flow-control alerts are inadequate, the discard-eligibility status of individual packets can be altered.

Although statistics for a frame relay network cannot prevent the frame format errors and the discards that result from such errors, statistics will put network operators in a position to respond to troublesome conditions faster than is possible without this information. A faster response to congestion means fewer discards, fewer discards means fewer retransmissions, and fewer retransmissions means that the committed information rate (CIR) is relatively safe and reliable.

The reports in the Frame Relay Report Pack display performance data for frame relay interfaces and permanent virtual circuits (PVCs). Reports about frame relay interfaces, also known as ports, provide the following statistics:

- Number of frames sent/received
- Number of octets sent/received
- Number of frames discarded
- Number of frames discarded due to errors
- Utilization

Reports about PVCs provide the following statistics:

- Number of committed-burst frames

- Number of excess-burst frames
- Number of ODE frames
- Number of frames indicating forward congestion (FECN)
- Number of frames indicating backward congestion (BECN)

New Objects in the Object Model

Any item that appears in a report accompanied by performance data or property information is an object. Devices, customers, and locations are objects, and all of these object categories belong to OVPI's default object model. When you select an object in the object model, the right side of the Object/Property Management window refreshes, showing a list of forms under **General Tasks**, a list of forms under **Object Specific Tasks**, and a list of reports under **Object Specific Reports**.

The object tree changes each time you install a new report pack. For example, installing Interface Reporting adds interfaces as objects under devices. In addition to adding new objects, some report packs add an entirely new class of objects or services. When this happens, the report pack provides a new view. To open the new view, select **View > Change View**.

Installing Frame Relay 4.0 adds the following object categories to the object model:

- Frame Relay Interfaces (interfaces that support frame relay circuits)
- Frame Relay PVC Endpoints

Version History

Version 3.0 of the Frame Relay Report Pack added support for the OVPI Object Manager. Version 3.0 also added several change forms that make updates to property data easier and faster. Version 4.0 of the Frame Relay Report Pack, released April 2004, added:

- Oracle support
- 3.0-to-4.0 upgrade package

There are no new forms or new reports in version 4.0, and there are no new datapipes to use with version 4.0. The following datapipes, available to use with Frame Relay 3.0, are available to use with Frame Relay 4.0:

- Frame Relay CPE Datapipe (for MIBs compliant with RFC2115)
- Ascend Frame Relay Datapipe (Lucent)
- Newbridge Frame Relay Datapipe (Alcatel)
- Stratacom Frame Relay Datapipe (Cisco WAN)

Folders and Reports

When you install Frame Relay 4.0, Package Manager creates the FrameRelay_Service directory. This directory has two child directories: Port and PVC. Reports in the Port folder relate to the logical port on the device, often equating to an entry in the ifTable of MIB-II.

Reports in the PVC folder are one level more granular and show information about PVC endpoints or pairs of endpoints. An alphabetical list of reports follows, with a brief purpose statement for each.

Availability. Highlights ports and PVCs reporting low availability for yesterday. The selection table is followed by hourly analysis of availability for a selected port or PVC.

Capacity Planning. Highlights Ports and PVCs that are expected to be either underutilized or overutilized 30 days from now.

Executive Summary/Executive Summary by Region. A comparison of baseline performance to F30 for all ports or all PVCs, followed by monthly, daily, and hourly analysis of aggregated volume and aggregated errors. The report begins with either a list of customers or a list of regions.

Forecast. Highlights ports and PVCs that are expected to have the highest utilization levels 30 days into the future. Rate of growth is calculated by dividing the F30 value by the baseline average. The baseline average is an average of daily busy hour values. Busy hour is defined in the Special Terms section of this chapter.

Hot Spots. Highlights ports and PVCs with high exceptions. The PVC version looks at utilization, congestion, and GOS exceptions; the port version looks at utilization, error, and discard exceptions.

PVC Configuration Problems. A list of PVCs that have missing or incorrect CIR values. Any PVC with a CIR value of NULL or 0 will appear in this report.

QuickView: Near Real Time, Daily, Monthly. A list of overutilized ports and PVCs, followed by analysis of average and peak utilization for a specific port or PVC. The NRT version provides a list of the most utilized ports and PVCs based on data collected (and averaged) over the last six hours. The selection table is followed by (1) analysis of peak and average utilization, (2) analysis of errors and discards, and (3) Grade of Service.

Round Trip Delay. One version only of this report, for PVCs. Provides a list of PVCs experiencing the longest round trip delay. Not all datapipes collect this metric. See the release statement for the datapipe for details.

Snapshot: Near Real Time, Daily, Monthly. Same as the QuickView, but limited in scope to specific ports or PVCs that you select in advance before the report opens.

Top Ten. Identifies PVC endpoints and ports experiencing high utilization. Consists of two tables. The top table looks at yesterday's performance; the bottom table looks at performance for the previous 30 days.

Integration with NNM

If your OVPI server is already integrated with your NNM server, the trending analysis produced by Frame Relay 4.0 will blend smoothly with the fault management capabilities of Network Node Manager. Two situations will bring the NNM operator into contact with reports in Frame Relay 4.0:

Scenario 1. The thresholds sub-package (FrameRelay_Service_Thresholds) sends a threshold trap to NNM. The NNM operator will see an alarm in the NMM alarm browser. The NNM operator can respond to the alarm by launching a Near Real Time report.

Scenario 2. The NNM operator wants to investigate interfaces that Frame Relay 4.0 is monitoring. The operator will find a list of Frame Relay reports in the Report Launchpad window. This window can be opened from:

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

If you install FrameRelay_Service_Thresholds, Package Manager will install the Thresholds Module for you. The Thresholds Module monitors the database for threshold conditions, while the thresholds sub-package responds to a threshold condition by taking an action. The default action is to send a threshold trap to your NNM server.

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

Metric	Threshold	Severity
DE_In_Ratio_Exceeded	Dynamic value - N% above yesterday's average DE In ratio. N defaults to 10 if not set by the user (DE In Deviance).	Medium
DE_Out_Ratio_Exceeded	Dynamic value - N% above yesterdays average DE Out ratio. N defaults to 10 if not set by the user (DE Out Deviance).	Medium
FECN_In_Ratio_Exceeded	The ratio of inbound packets marked FECN to the total number of packets has exceeded the allowable threshold during this poll cycle (FECN Percent).	Medium
FECN_Out_Ratio_Exceeded	The ratio of outbound packets marked FECN to the total number of packets has exceeded the allowable threshold during this poll cycle (FECN Percent).	Medium
BECN_In_Ratio_Exceeded	The ratio of inbound packets marked BECN to the total number of packets has exceeded the allowable threshold during this poll cycle (BECN Percent).	Medium
BECN_Out_Ratio_Exceeded	The ratio of outbound packets marked BECN to the total number of packets has exceeded the allowable threshold during this poll cycle (BECN Percent).	Medium

No intervention on your part is necessary to enable the exception threshold values in the preceding table. 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 explained in the *Thresholds Module 5.0 User Guide*.

Ways to Customize Reports

You can customize reports by applying group filters, by updating property data, and by editing parameters, tables, and graphs. Group filters appeal to service providers, or to any organization that wants to produce customer-specific reports. Editing a parameter, table, or graph is a temporary change to a report that anyone can make. For more information about view options for tables and graphs, see Chapter 13, Editing Tables and Graphs.

Group Filters

If you intend to share your reports with customers, or let divisions within your enterprise see division-specific performance data, the reports your customers see must be filtered. Creating customer-specific reports involves the following tasks:

* Using Common Property Tables to add customers and locations
* 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 Administration Guide.*

Editing Parameters

If you edit a parameter, you apply a constraint to the report that eliminates data you are not interested in seeing. If you edit the Customer Name parameter, data for all customers except the customer you typed in the Customer Name field will drop from the report. If you edit the Device Name parameterm, data for all devices except the device you typed in the Device Name field will drop from the report.

You can apply multiple constraints at once. Frame Relay 4.0 supports the following parameters:

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

If you are using the Web Access Server to view reports remotely, 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 Frame Relay 4.0. The demo package that comes with Frame Relay 4.0 contains 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:

- *Frame Relay CPE Datapipe 4.0 User Guide*

- *Interface Discovery Datapipe 2.0 User Guide*

- *Thresholds Module 5.0 User Guide*

- *NNM / Performance Insight Integration Module 2.0 User Guide*

- *Newbridge Preprocessor 3.0 User Guide*

- *Stratacom Preprocessor 3.0 User Guide*

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

http://www.hp.com/managementsoftware

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 OVPI report packs and value-add components for NNM, including SPIs, are listed under **Reporting and Network Solutions**.

Each manual listed under **Reporting and Network Solutions** indicates the month and year of publication. If a manual is revised and reposted, the date of publication will change even if the software version number does not change. Since revised manuals are posted to this site on a regular basis, you should check this site for updates before using on older PDF that may not be the latest PDF available.

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The Upgrade Install

This chapter covers the following topics:

- Guidelines for a smooth upgrade
- Upgrading to Frame Relay 4.0
- Removing Frame Relay 4.0

Guidelines for a Smooth Upgrade

When you insert the RNS 6.0 CD, launch the package extraction interface, and select OVPI components for extraction, the install script extracts every OVPI package from the RNS 6.0 CD and copies the results to the Packages directory on your system. After the extraction process finishes, the install script prompts you to launch Performance Insight and start Package Manager. Before running Package Manager, review the following guidelines.

Software Prerequisites

Frame Relay 4.0 requires OVPI 5.0 and all available service packs for OVPI 5.0. Following is a list of the package-level prerequisites:

- Common Property Tables 3.0 or higher
- Interface Reporting Report Pack 4.0
- Frame Relay Report Pack 3.0
- At least one of the following datapipes:
    - Frame Relay CPE Datapipe (FRSCPE_Datapipe)
    - Ascend Frame Relay Datapipe
    - Newbridge Frame Relay Datapipe
    - Stratacom Frame Relay Datapipe

Common Property Tables

The Frame Relay Report Pack 4.0 requires Common Property Tables version 3.0 or higher. If you are running version 2.2, upgrade to version 3.0; if you are running version 3.0, you have the option of upgrading to version 3.5. Perform the upgrade *before* upgrading the Frame Relay Report Pack.

Installing either upgrade package for Common Property Tables is easy, however, do not install other packages at the same time. Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables.

If you need help installing the upgrade, or if you want to know more about how this package operates, refer to the *Common Property Tables 3.5 User Guide*.

Distributed Environments

Package installation in a distributed environment is more complicated than package installation on a stand-alone server. Keep these guidelines in mind:

- Make sure every server is running OVPI 5.0 and all available service packs.
- Disable trendcopy on the central server.
- Upgrade the report pack on the central server.
- At each satellite server:
  — Remove the old datapipe (or datapipes)
  — Install the upgrade package for the report pack
  — Install the new datapipe (or datapipes)
- Re-enable trendcopy of the central server.

When you installed Frame Relay 3.0, you had to configure the servers. You did this by running DS EDIT to set up connections with satellite server databases, configuring trendcopy pull commands, and switching off aggregations on each satellite server. If you recently upgraded from OVPI 4.6 to OVPI 5.0, you must repeat the following configuration tasks:

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

You have to redo this steps because the technique for setting up connections with satellite server databases changed in OVPI 5.0. For details, see Chapter 5, Distributed Systems.

Upgrading to Frame Relay 4.0

Perform the following tasks to upgrade to Frame Relay 4.0:

- Task 1: Stop OVPI Timer and extract packages from the RNS 6.0 CD
- Task 2: Upgrade to Common Property Tables 3.0 or higher
- Task 3: Remove the existing datapipe (or datapipes)
- Task 4: Upgrade to Frame Relay 4.0
- Task 5: Install one or more datapipes; restart OVPI Timer

Task 1:   Stop OVPI Timer and extract packages from the RNS 6.0 CD

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 RNS 6.0 CD.

Windows: The Main Menu automatically displays.

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**. The install script displays a percentage complete bar. When the copy is complete, the install script starts Package Manager. The Package Manager welcome window opens.

Task 2:   Upgrade to Common Property Tables 3.0

The Frame Relay Report Pack requires Common Property Tables 3.0. Upgrade to Common Property Tables 3.0 by starting Package Manager and installing the 2.2-to-3.0 upgrade package. When the install finishes, click **Done** to return to the Management Console.

> If you are not currently running any version of Common Property Tables, skip this task.

Task 3:   Remove the existing datapipe(s)

1   Start Package Manager. The Package Manager Welcome window opens.

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

3   Click **Uninstall.**

4   Click **Next**. The Report Undeployment window opens.

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

6   Click the check box next to each datapipe that you want to remove.

7   Click **Next**. The Selection Summary window opens.

8   Click **Uninstall**. The Progress window opens. When removal is complete, a package removal complete message appears.

9   Click **Done** to return to the Management Console.

Task 4: **Upgrade to Frame Relay 4.0**

1 Start Package Manager. The Package Manager Welcome window opens.

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

3 Click **Install**. Approve the default installation directory or select a different directory if necessary.

4 Click **Next**. The Report Deployment window opens. Type your username and password for the OVPI Application Server.

5 Click **Next**. The Package Selection window opens. Click the check box for the upgrade package you require. Your options are:

Existing Installation	Upgrade Package To Use	Finished Installation
Frame Relay 2.0	UPGRADE_FRS_2.x_to_3.0	Frame Relay 3.0
Frame Relay 2.5	UPGRADE_FRS_2.x_to_3.0	Frame Relay 3.0
Frame Relay 3.0	UPGRADE_FRS_3.x_to_4.0	Frame Relay 4.0

If you are currently running version 2.0 or 2.5, you must perform the upgrade procedure twice: once to upgrade to version 3.0, and a second time to upgrade to version 4.0.

6 Click **Next**. The Type Discovery window opens. Accept the default and click **Next**. The Selection Summary window opens.

7 Click **Install**. The Installation Progress window opens. When installation finishes, a package install complete message appears.

8 Click **Done** to return to the Management Console.

Task 5: **Install one or more new datapipes and restart OVPI Timer**

1 Start Package Manager. The Package Manager welcome window opens.

2 Click **Install**. Approve the default installation directory or select a different directory if necessary.

3 Click **Next**. The Report Deployment window opens. Type your username and password for the OVPI Application Server.

4 Click **Next**. The Package Selection window opens. Click the check box next to the name of each datapipe that you want to install.

5 Click **Next**. The Type Discovery window opens. Disable the default and click **Next**. The Selection Summary window opens.

6 Click **Install**. The Installation Progress window opens. When installation finishes, a package install complete message appears.

7 Click **Done** to return to the Management Console.

8 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`

Removing Frame Relay 4.0

If you remove a report pack, the associated tables and all the data in those tables will be deleted. If you want to preserve the data in those tables, archive the data before removing the package. Follow these steps to uninstall Frame Relay 4.0 and any datapipe that depends on Frame Relay 4.0:

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   Open the Management Console and start Package Manager. The Package Manager welcome window opens.

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

5   Click **Uninstall.**

6   Click **Next**. The Report Undeployment window opens.

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

8   Click the check box next to:

    • *FrameRelay_Service*

    Any package for which Frame Relay 4.0 is a prerequisite will be selected automatically.

9   Click **Next**. The Selection Summary window opens.

10   Click **Uninstall**. The Progress window opens. When removal is complete, a package removal complete message appears.

11   Click **Done** to return to the Management Console.

12   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**

The New Install

This chapter covers the following topics:

- Guidelines for a smooth installation
- Installing Frame Relay 4.0
- Removing Frame Relay 4.0

Guidelines for a Smooth Installation

Each reporting solution that runs on OVPI consists of a report pack and one datapipe, or a report pack and multiple datapipes. By installing the datapipe you configure OVPI to collect a specific type of performance data at a specific polling interval. By installing the report pack you configure OVPI to summarize and aggregate performance data in a specific way.

When you insert the RNS 6.0 CD, launch the package extraction interface, and select OVPI components for extraction, the install script extracts every OVPI package from the CD and copies the results to the Packages directory on your system. After the extraction process finishes, the install script prompts you to launch Performance Insight and run Package Manager. Before running Package Manager, review the following guidelines.

Software Prerequisites

The Frame Relay Report Pack has the following prerequisites:

- OVPI 5.0 and any Service Pack available for OVPI 5.0
- Common Property Tables 3.0 or higher
- Interface Reporting Report Pack 4.0
- At least one of the following datapipes:
    — Frame Relay CPE Datapipe (FRSCPE_Datapipe)
    — Ascend Frame Relay Datapipe
    — Newbridge Frame Relay Datapipe
    — Stratacom Frame Relay Datapipe

Common Property Tables

Version 4.0 of the Frame Relay Report Pack requires Common Property Tables version 3.0 or higher. If you are not currently running any version of Common Property Tables, let Package Manager install the correct version for you. If you are running Common Property Tables 2.2, upgrade to 3.0. If you are currently running Common Property Tables 3.0, you have the option of upgrading to version 3.5. Do this *before* installing the Frame Relay Report Pack.

FrameRelay_Service_Thresholds

If your OVPI server is integrated with your NNM server, you will probably want to install the optional thresholds sub-package. The thresholds sub-package contains customized threshold settings. When a threshold is breached, the thresholds sub-package responds by taking an action. The default action is to send a threshold trap to your NNM server.

You have the option of setting thresholds for rate data only, for rate data and aggregated data, or just for aggregated data. If Frame Relay 4.0 will be operating in a distributed environment, and you are setting thresholds for rate data only, then each satellite server needs the thresholds sub-package. If you want to set thresholds on aggregated data (for example, a forecast), then you need to install the thresholds sub-package on the central server, too.

If you select the thresholds sub-package for installation, Package Manager will automatically select and install a prerequisite package, the Thresholds Module. The Thresholds Module controls the actions that can be taken in response to a threshold condition. For information about configuring additional actions, refer to the *Thresholds Module 5.0 User Guide*.

Distributed Environments

Package installation in a distributed environment is more complicated than package installation on a stand-alone system. Following is an overview of the procedure for installing Frame Rely 4.0 in a distributed environment:

• Make sure OVPI 5.0 is installed on the central server and on every satellite server.

• Disable trendcopy on the central server.

• Install the report pack on the central server; deploy reports.

• Install the following packages on each satellite server:

— Frame Relay 4.0

— FrameRelay_Service_Thresholds (a sub-package that comes with Frame Relay)

— At least one datapipe

• Re-enable trendcopy of the central server.

After you finish the installation, you need to set up connections between the central server and each satellite server database, and you need to configure trendcopy pull commands. For details, see Chapter 5, Distributed Systems.

Installing Frame Relay 4.0

Perform these tasks to install the Frame Relay Report Pack:

- Task 1: Stop OVPI Timer and extract packages from the RNS 6.0 CD.
- Task 2: If necessary, upgrade to Common Property Tables 3.0 or higher
- Task 3: Install the report pack and at least one datapipe
- Task 4: Restart OVPI Timer

Task 1:   Stop OVPI Timer and extract packages from the RNS 6.0 CD

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 RNS 6.0 CD.

Windows: The Main Menu automatically displays.

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**.

The install script displays a percentage complete bar. When the copy is complete, the install script starts Package Manager. The Package Manager welcome window opens.

Task 2:   Upgrade to Common Property Tables 3.0 or higher

The Frame Relay Report Pack requires Common Property Tables 3.0 or higher. If you are running an earlier release of Common Property Tables, you must upgrade to version 3.0. When you upgrade to version 3.0, do not install any other packages. Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables.

If you need help with the upgrade, refer to the *Common Property Tables 3.5 User Guide*. If you are not running any version of Common Property Tables, skip this task and let Package Manager install Common Property Tables for you.

Task 3:   Install Frame Relay 4.0 and at least one datapipe

1   Start Package Manager. The Package Manager Welcome window opens.

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

3   Click **Install**. Approve the default installation directory or select a different directory if necessary.

4   Click **Next**. The Report Deployment window opens. Type your username and password for the OVPI Application Server.

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

6   Click the check box for the following packages:

- *FrameRelay_Service 4.0*

- At least one of the following datapipes:

    — *Ascend_FR_Datapipe*

    — *FRSCPE_Datapipe*

    — *Newbridge_FR_Datapipe*

    — *Stratacom_FR_Datapipe*

- *FrameRelay_Service_Thresholds* (optional)

7   Click **Next**. The Type Discovery window opens. To run Type Discovery immediately after package installation, accept the default.

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

9   Click **Install**. The Installation Progress window opens. When installation is complete, a package install complete message appears.

10   Click **Done** to return to the Management Console.

Task 4:   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**

Access to Reports

Before reports can be viewed using a web browser, they must be deployed. When you installed the Frame Relay Report Pack, you enabled the Deploy Reports option. As a result, Frame Relay reports and forms are deployed to the Application Server and are available for viewing on the web.

If the client component of OVPI is installed on the user's system, the user has access to Report Viewer, Report Builder, and the Management Console. If the client component is not installed on the user's system, web access to reports is the only way the user can access a report. You can find more information about the client component of OVPI in the *Performance Insight 5.0 Installation Guide*.

Seeing Data in Reports

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 several weeks.

Removing Frame Relay 4.0

If you remove a report pack, the associated tables and all the data in those tables will be deleted. If you want to preserve the data in those tables, archive the data before removing the package. Follow these steps to uninstall the Frame Relay Report Pack and any datapipe that depends on the report pack:

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   Open the Management Console; from the Tools menu, select **Package Manager**. The Package Manager welcome window opens.

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

5   Click **Uninstall.**

6   Click **Next**. The Report Undeployment window opens. Keep the defaults.

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

8   Click the check box next to *FrameRelay_Service*. Any dependent packages will be selected automatically.

9   Click **Next**. The Selection Summary window opens.

10   Click **Uninstall**. The Progress window opens. When removal is complete, a package removal complete message appears.

11   Click **Done** to return to the Management Console.

12   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**

Forms and Property Files

When you install Frame Relay 4.0 and deploy reports, you also deploy the following forms:

- Change PVC Endpoint Customer
- Change PVC Endpoint Location
- Change PVC Endpoint Description
- Change PVC Endpoint Configuration

Forms are context-sensitive. Which PVCs will be updated by a form depends on where you are in the object model. This means you have to use forms carefully. Assigning the same property value to multiple PVCs is easy to do, but are you sure that is what you want to do?

> To create new nodes, locations, or customers, or to modify existing nodes, locations, or customers, use the forms that come with the Common Property Tables package. For details, see the *Common Property Tables 3.5 User Guide.*

Launching Forms

Forms modify properties for PVCs that already exist in the database. To launch a form, click the **Objects** icon on the left side of the Management Console. The Object/Property Management view opens. Object Model opens. 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.

When the type of object you want to update appears, select the particular object you would like to update. When you select the object, **Object Specific Tasks** appears in the window on the right. Double-click the task to open the form.

Change PVC Customer

Use the Change PVC Customer form to update the customer assigned to a PVC Endpoint. The selection list will include PVC endpoints for the object you have chosen to modify. Highlight only the endpoints you wish to make the change to. Use the drop down menu to choose a customer.

Click **Apply** to save your changes. Note that if you assign a customer to an interface, it will trickle down to the PVC endpoints on that interface after a short time, if those PVC endpoints do not already have a customer assigned to them.

Change PVC Location

Use the Change PVC Location form to update the location assigned to a PVC Endpoint. The selection list will include PVC endpoints for the object you have chosen to modify. Highlight only the endpoints you wish to make the change to. Use the drop down menu to choose a location.

Click **Apply** to save your changes. If you assign a location to an interface, the location will trickle down to the PVC endpoints on that interface after a short time, if those endpoints do not already have a location assigned to them.

Change PVC Description

Use the Change PVC Description form to update the description of a PVC Endpoint. The description is often used to display connectivity or customer-related textual information. The selection list will include PVC endpoints for the object you have chosen to modify.

Highlight only the endpoints you wish to make the change to. Use the text entry box to enter a new description. To save your changes, click **Apply**.

Change PVC Configuration

Use the Change PVC Configuration form to update all of the properties relating to a single PVC endpoint. Endpoints with no CIR set will be highlighted in red. Descriptions of each of the attributes is shown on the form. Modify each of the properties for the selected endpoint - to save your changes, click **Apply**.

FrameRelay Service

Change PVC Configuration

Use this form to update the properties for a PVC.

PVC Id : The unique identifier used to associate PVC endpoints of a PVC. Assign the same value to each endpoint. This value must be set for end to end reports to populate, but is not essential. A value of -2 means is it not currently set.

CIR : The Comitted Information Rate for the PVC. Used to calculate utilization in reports. Sometimes provided by the network if the appropriate MIBs are supported by the device. This value must be set for fundamental PVC reporting to function correctly.

FECN % : The percentage of frames which are marked with Forward Error Congestion Notification above which a threshold alarm will be generated.

BECN % : The percentage of frames which are marked with Backward Error Congestion Notification above which a threshold alarm will be generated.

DE In Deviation % : The allowable percentage of inbound frames marked DE (above the average), above which a threshold alarm will be generated.

DE Out Deviation % : The allowable percentage of outbound frames marked DE (above the average), above which a threshold alarm will be generated.

Current PVC Property Settings

Device	Port	Dlci	CIR	PVC Id	FECN %	BECN %	DE In Dev. %	DE Out Dev. %	Avg DE In %	Avg DE Out %
Device_51	Serial4/1/3:0	200	0	Not set	2	2	10	10	0	0
Device_51	Serial4/1/3:1	201	0	Not set	2	2	10	10	0	0
Device_51	Serial4/1/3:2	202	0	Not set	2	2	10	10	0	0
Device_51	Serial4/1/3:3	203	0	Not set	2	2	10	10	0	0

Description	Description not set		
CIR	0.00	Allowable DE In Deviation %	10.00
PVC Id	-2	Allowable DE Out Deviation %	10.00
Customer Name	Customer Unassigned	FECN % Threshold	2.00
Location Name	Location Unassigned	BECN % Threshold	2.00

OK   Apply   Cancel

Using Files to Import Property Data

The Frame Relay Report Pack allows you to store details about the PVCs you are managing. There are two ways to modify the properties of a PVC endpoint. One is to use a form. The other method is to use the supplied property import interface. You can use this interface to add the following information to managed PVC endpoints:

- Committed Information Rate (CIR)
- PVC endpoint pairs
- Customers and customer IDs
- Locations and location IDs
- PVC threshold percentage values for FECN, BECN and Discard Eligible frame counts.

CIR values are needed to calculate utilization for PVC endpoints, while ifSpeed is needed to calculate port utilization. If you are already collecting these values from all your network elements, and they are correct, you may skip this section. Use the PVC Configuration Problems report to verify if CIR and PVC Id have been set for all of your pvc endpoints.

Exporting Property Data from OVPI

To add the preceding list of properties to reports, or to correct incorrect properties, you can either use the guidelines provided later in this chapter to create your own property import file, then import the file, or you can export existing data from the K_frswitch_pvc property table, modify it, and then import the new file.

If you choose to export data from OVPI, follow these steps:

1   Navigate to the DPIPE_HOME/scripts directory.

2   Type: **trend_proc -f FrameRelay-Switch_exportdata.pro**

    This command calls an OVPI process that generates a tab-delimited flat file and, if the default SourceDirectory has not been changed, stores it in the PropertyData directory under FrameRelay_Switch.ap. The tab-delimited flat file has the following name:

    FrameRelay_Switch_PVC_Property.dat.*<timestamp>*

3   Edit the tab-delimited file, adding new values or correcting incorrect values.

4   Import the file you just edited.

The export step can take place whenever you want and as often as you want.

Importing Property Data into OVPI

The import step is actually a scheduled process that operates automatically every hour, and it operates the same way whether you are working with a file you created yourself or a file that was exported from OVPI and then edited.

To run the import process automatically, just make sure that your property import file is stored where OVPI expects to find it. If the default has not been changed, the following SourceDirectory path will be used:

    {DPIPE_HOME}/data/PropertyData/

OVPI uses a .teel file in the DPIPE_HOME/lib directory to locate the property import file. The name of the TEEL file is `FrameRelay_Switch_PVC_Property.teel`.

The TEEL file must provide the correct SourceDirectory path. The SourceDirectory path may have been changed after the Frame Relay Report Pack was installed.

To run the import process manually, ahead of the scheduled automatic import process, do the following:

1   Navigate to the `DPIPE_HOME/scripts directory`.

2   Type: **trend_proc -f FrameRelay-Switch_importdata.pro**

Add a New Row or Modify an Existing Row?

If you intend to modify an existing entry in a property table, the first three columns in the import file—Node name, Port and Dlci—must match the values of a row in the property table. For example, if you have a Node Name of router1 with a Port value of 1 and a Dlci of 23 in your PVC property file, there needs to be a matching Node name of router1 with a Port value of 1 and a Dlci of 23 in the KV_frswitch_pvc property table view. If there is no match, a new row will be added to the property table.

File Format Guidelines

If you create your own file, you have to either generate the file automatically from a network provisioning database, or build the file from scratch using a spreadsheet program. If you create your own tab-delimited file, obey these rules:

• Use the formats described below.

• Use all the columns shown in the file format tables.

• Use the columns in the same order.

• Do not use quotation marks.

• If a cust_id value is already in use for a different customer_name, the existing customer_name will not be modified to that which is included in the import file. cust_id is the unique field that binds elements to customers.

• If a location_id value is already in use for a different location_name, the existing location_name will not be modified to that which is included in the import file. location_id is the unique field that binds elements to locations.

• node_name, port, and Dlci columns are the unique identifiers of the property table and must contain the same values that exist on the polled PVC.

• If you use a spreadsheet application, export the data from the spreadsheet back into a tab-delimited file when you finish.

• If you have a previously generated PVC import file from a Frame Relay version 2.0 installation, you may use it for your current report pack; the import mechanism will convert it to the new format and add the extra columns required.

The following table describes the format of the PVC property import file.

Node Name	Description
Node name	The device name for the PVC. Example: 'router1'
Port	The port name for the PVC. Often the ifIndex value, or the unique name of the interface. Example: '101' or 'Serial0/1'. You may refer to an interface by the ifIndex during import if you do not know the unique identifier being used by the application for re-indexing purposes; however, the system will always use the unique name for the export procedure.
Dlci	The numerical Dlci for this PVC endpoint. Example: '123'
CIR	The Committed Information Rate in bits/second Note: The report pack requires this value. Some devices provide it directly from the network. Check the PVC Configuration Problems report to see if any are not set. Example '64000'
RevCIR	Reverse Committed Information Rate in bits/second. Example '64000' Not used in default reports.
cust_id	Unique integer value for each customer name. Reserved values include -2 and -1. Value should always be greater than 0. Example: '30'
pvc_id	Unique integer value for a pair of PVC endpoints. Used to associate PVC endpoints together. Check the PVC Configuration Problems report to see if any are not set. The default value of -2 indicates it has not been set. Example: '55'
location_name	Location name associated with location_id value. Example "North London". If the associated location_id already exists with a different location_name then this value will be discarded. Use the Common Properties package to update location_name / location_id value pairs.

Node Name	Description
customer_name	Customer name associated with cust_id value. Example "Large Corp 1". If associated cust_id already exists with a different customer_name then this value will be discarded. Use the Common Properties package to update customer_name / cust_id value pairs.
dsi_descr	A description for the PVC endpoint Example: "Service Level 1" or "Failover PVC"
FECN Percent	The percentage of packets which can be marked FECN; if this percentage is exceeded, a threshold event will be generated.
BECN Percent	The percentage of packets which can be marked BECN; if this percentage is exceeded, a threshold event will be generated.
DE In Deviance	The percentage deviation of packets above yesterdays average DE In packet ratio which is considered within normal limits. A ratio of in packets marked DE above (the average value yesterday + this percentage) will result in a threshold event being generated.
DE Out Deviance	The percentage deviation of packets above yesterdays average DE Out packet ratio which is considered within normal limits. A ratio of out packets marked DE above (the average value yesterday + this percentage) will result in a threshold event being generated.

Distributed Systems

If you followed the installation guidelines in this user guide, your central server is running Frame Relay 4.0 and the prerequisite packages for Frame Relay 4.0, while each satellite server is running Frame Relay 4.0 and at least one datapipe. Now that package installation is complete, you must configure the central server and each satellite server.

Configuring the Central Server

To configure the central server, perform the following tasks:

* Task 1: Set up connections with satellite server databases
* Task 2: Configure trendcopy pull commands four hourly data
* Task 3: Configure trendocpy 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   Click **Finish** when you finish adding databases.

Task 2:   Configure trendcopy pull commands for hourly data

1   Open the following file:

`$DPIPE_HOME/scripts/FrameRelay-Switch_trendsum_hourly.pro`

2   Comment out the pvc and port summaries by adding the comment sign ("#") before the **begin** and **end** `statements`.

3   Uncomment the copy commands in the hourly_copy block.

4 Modify the copy commands as follows:

- Replace *SATELLITE_SERVER_1_DATABASE* with the satellite server name

- Replace *THIS_MACHINE_DATABASE* with the central server name

5 If there is more than one satellite server, create and configure new hourly copy commands for each additional machine.

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

Copying polled rate data from each satellite server every hour has two side-effects:

- The amount of traffic between satellite servers and the central server increases

- The load on the central server increases

Follow these steps to configure trendcopy pull commands for rate data:

1 Open the following file:

`$DPIPE_HOME/scripts/FrameRelay-Switch_trendsum_hourly.pro`

2 Uncomment the copy commands in the rate_copy block

3 Modify the copy commands as follows:

- Replace *SATELLITE_SERVER_1_DATABASE* with the satellite server name

- Replace *THIS_MACHINE_DATABASE* with the central server name

4 If you have more than one satellite server, create and configure new hourly copy commands for each additional machine.

Configuring a Satellite Server

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 `FrameRelay-Switch_Daily.pro` in the `$DPIPE_HOME/lib/trendtimer.sched` file.

2 Modify the `FameRelay-Switch_Hourly.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 polling policies for the Frame Relay CPE Datapipe, making sure that each network device is polled by one satellite server only.

4 Make sure that the system clock is synchronized with the system clock on the central server.

> Step 4 is extremely important. In distributed environments, linked processes must execute in exact sequence across independent machines.

6

PVC EndPoint: QuickView and Snapshot

PVC Endpoint QuickView and Snapshot reports are available in three time ranges:

- Daily — showing hourly statistics for the previous day
- Monthly — showing daily statistics for the previous month
- Near Real Time — showing averages compiled over the previous six hours.

This type of report focuses on utilization in the selection table. The graphs below focus on Grade of Service, frame type, and utilization frequency measurements for the selected element. The selection table at the top drives the contents of the report.

The data in the selection table shows averages for yesterday as a whole while the graphs and charts show hourly data for yesterday through to the most recently summarized hour today. The selection table includes average, peak, and busy hour utilization values. We define these metrics as follows:

- Average — the average utilization for the entire day
- Peak — the maximum utilization value recorded for a poll cycle during the entire day
- Busy Hour — the hour of day during which the highest hourly average was recorded.

When you select the QuickView version, the report displays immediately. The contents are limited only by the parameters you have applied, or by the object model. When you open a Snapshot report, you will be prompted to designate a subset of elements for viewing. In a very large network, using the Snapshot report will reduce the amount of data in the report and allow you to focus on the devices that interest you.

Frame Relay Service
PVC Endpoint Daily QuickView

This report gives you a detailed look at the performance of a single PVC endpoint when just the facts are needed. Drilldowns show utilization, GOS, percentage of congestion, and percentage of frame types. Use the parameters to filter the report contents.

Daily Top Ten PVC Endpoints Based on Utilization
Mon Mar 17 2003

Device Name	Port	DLCI	CIR	Ingress Utilization	Egress Utilization	Peak Ingress Utilization	Peak Egress Utilization	Busiest Ingress Hour	Busiest Egress Hour	Hou
Device_185	2	36	10.0 Kb/s	925.10	275.21	1268.75	1027.73	1262.83	880.12	Mon
Device_185	2	37	10.0 Kb/s	450.69	499.39	981.96	1059.57	737.30	877.08	Mon
Device_185	2	33	10.0 Kb/s	9.42	356.39	181.30	6832.72	148.68	5899.61	Mon
Device_185	2	41	10.0 Kb/s	312.82	84.50	1221.55	1793.23	769.88	821.54	Mon
Device_156	2	16	768.0 Kb/s	176.46	136.34	182.33	176.08	180.73	173.48	Mon
Device_157	2	16	768.0 Kb/s	176.46	136.34	182.37	176.22	180.71	173.47	Mon
Device_164	2	16	768.0 Kb/s	176.46	136.34	182.26	176.06	180.70	173.46	Mon
Device_173	2	16	768.0 Kb/s	176.46	136.34	182.33	176.05	180.74	173.49	Mon
Device_163	2	16	768.0 Kb/s	176.46	136.34	182.27	176.08	180.71	173.51	Mon
Device_161	2	16	768.0 Kb/s	176.46	136.34	182.24	176.12	180.71	173.51	Mon

Device Make	Model	Description	PVC Customer Name	Location	ifSpeed
Cisco	7600		Customer Unassigned	Location Unassigned	2048000

Hourly PVC Endpoint Average and Peak Ingress and Egress Utilization
Device_156: 2_16
Sun Mar 16 03:00 PM - Tue Mar 18 03:00 PM

— Avg Ingress Utilization
— Peak Ingress Utilization
— Avg Egress Utilization
— Peak Egress Utilization
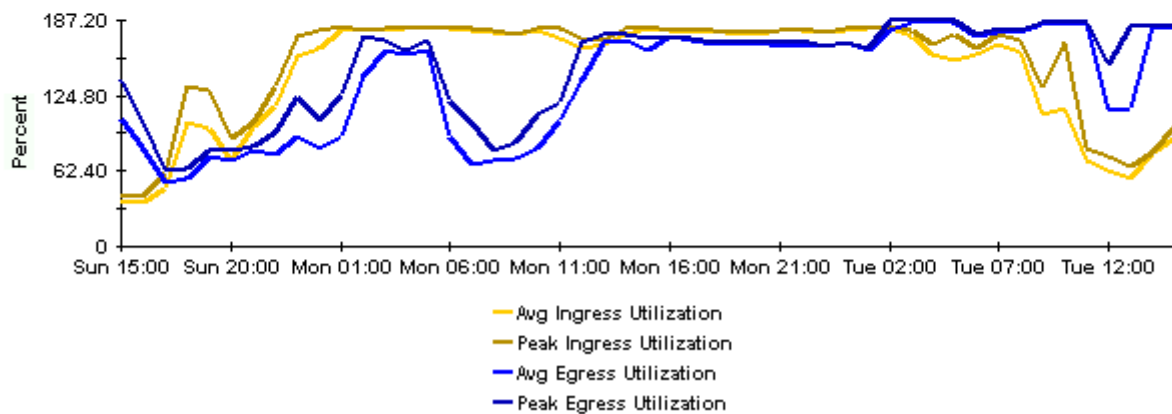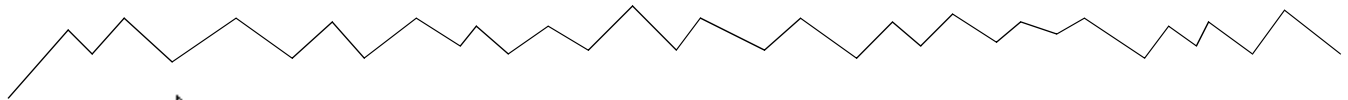
Ingress Congestion | Egress Congestion | Ingress Frame Types | Egress Frame Types

Device_156: 2_16
Sun Mar 16 03:00 PM - Tue Mar 18 03:00 PM
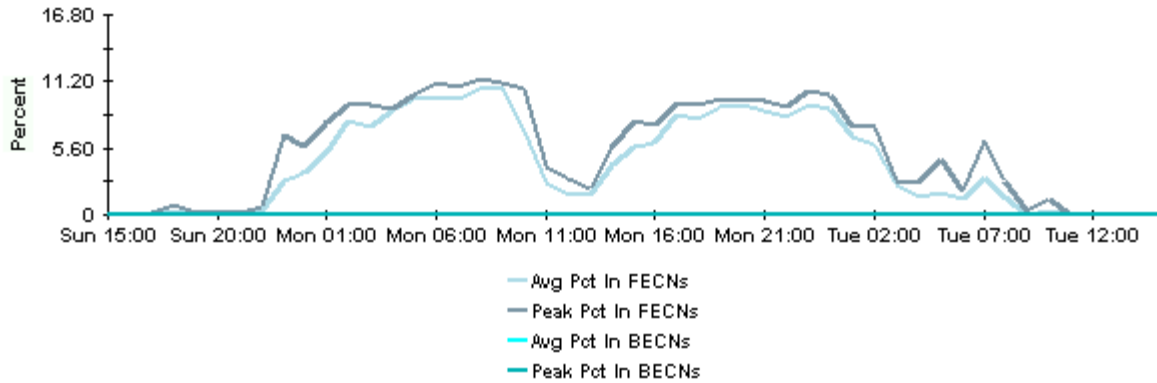
— Avg Pct In FECNs
— Peak Pct In FECNs
— Avg Pct In BECNs
— Peak Pct In BECNs

Ingress PVC Endpoint Grade of Service
Device_156: 2_16
Mon Mar 17 12:00 AM - Tue Mar 18 03:00 PM

In Utilization
In Frame Types
In Congestion

Egress PVC Endpoint Grade of Service
Device_156: 2_16
Mon Mar 17 12:00 AM - Tue Mar 18 03:00 PM

Out Utilization
Out Frame Types
Out Congestion

Ingress Frequency Distribution
Device_156: 2_16
Mon Mar 17 2003 - Mon Mar 17 2003

- Ingress Utilization > 100
- Ingress Utilization 90-100
- Ingress Utilization 80-90
- Ingress Utilization 0-80
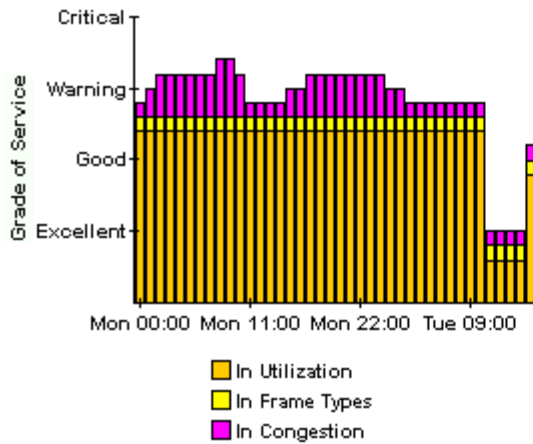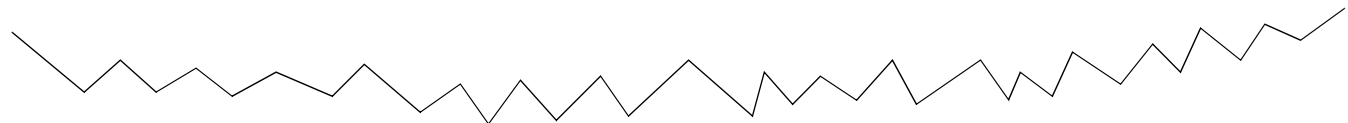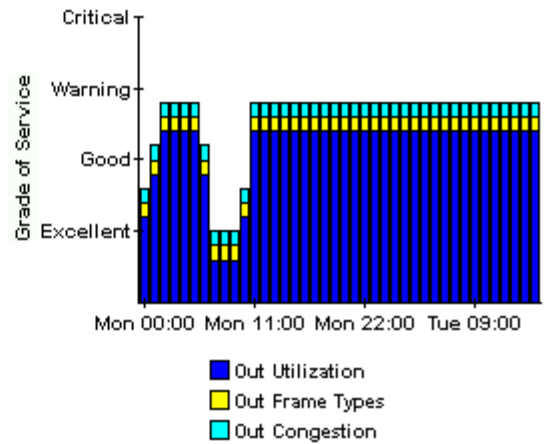
Egress Frequency Distribution
Device_156: 2_16
Mon Mar 17 2003 - Mon Mar 17 2003

- Egress Utilization > 100
- Egress Utilization 90-100
- Egress Utilization 80-90
- Egress Utilization 0-80

7
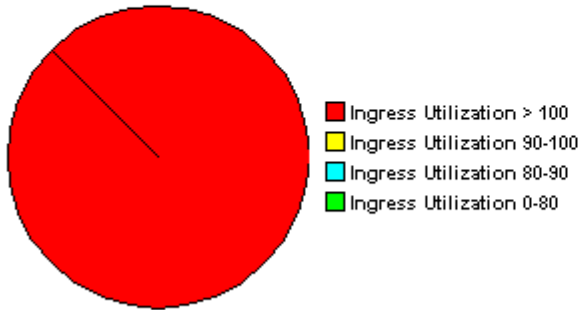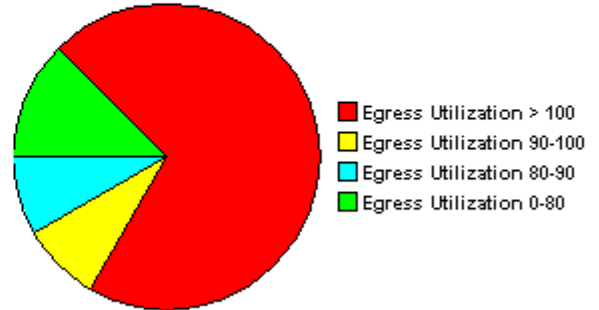
Port QuickView and Port Snapshot

Port QuickView and Port Snapshot reports are available in three time ranges:

- Daily — showing hourly statistics for the previous day
- Monthly — showing daily statistics for the previous month
- Near Real Time — showing averages compiled over the previous six hours.

In the NRT version of the report, the top selection table provides an aggregate of all the poll cycle values for the previous 6 hours.

These reports focus on utilization, discards and errors. The selection table at the top drives the contents of the report. The graphs and charts below the selection table allow you to view granular collections of data, and contain the most amount detail.

If you are using the Frame Relay CPE Datapipe, the Port reports in the Frame Relay Report Pack use MIB-II ifTable collections for interfaces of type Frame Relay. As such, they represent the same data that is collected in the Interface Reporting Report Pack, part of the OVPI MIB-II reporting suite. You may be interested in examining the reports in the Interface Reporting Report Pack when looking for port/interface information.

When you select the QuickView version of these reports, the report displays immediately. The contents are limited only by the parameters you have applied, or by the object model. When you open the Snapshot version, you will be prompted to designate a subset of elements for viewing. In a very large network, using the Snapshot report will reduce the amount of data in the report and allow you to focus on the devices that interest you.

Frame Relay Service
Port NRT QuickView

This report gives network managers and members of the NOC team a listing of Frame Relay Service port statistics in near real time. Statistics shown in the "Port Selection List" chart are averages over the last 6 hours. Drilldowns show utilization, errors and, discards for the previous 12 hours worth of polled data.

Port Selection List
Ports are Sorted by Highest Utilized Direction
Tue Mar 18 04:45 PM - Tue Mar 18 05:00 PM

Device Name	Port	Port Speed	In Utilization	Out Utilization	Pct In Errors	Pct Out Errors	Pct In Discards	Pct Out Discards
65.83.60.1	6	1.5 Mb/s	45.10	101.70	0.00	0.00	0.00	0.00
65.83.60.1	2	1.5 Mb/s	47.11	93.72	0.06	0.00	0.00	6.43
80.48.115.1	2	2.0 Mb/s	32.12	93.42	0.00	0.00	0.00	4.68
80.48.115.1	3	2.0 Mb/s	18.27	93.39	0.00	0.00	0.00	4.66
65.240.80.1	4	1.5 Mb/s	8.09	90.36	0.00	0.00	0.00	0.00
65.240.80.1	1	1.5 Mb/s	8.09	90.36	0.00	0.00	0.00	0.00
67.115.222.1	1	1.5 Mb/s	17.35	56.48	0.00	0.00	0.00	0.02
67.115.222.1	4	1.5 Mb/s	17.35	56.47	0.00	0.00	0.00	0.00
67.115.223.1	1	1.5 Mb/s	17.35	56.47	0.00	0.00	0.00	0.02
67.115.223.1	4	1.5 Mb/s	17.35	56.47	0.00	0.00	0.00	0.00
65.240.51.1	2	1.5 Mb/s	46.45	19.14	0.00	0.00	0.00	0.00
65.240.56.1	2	1.5 Mb/s	46.45	19.14	0.00	0.00	0.00	0.00
65.240.51.1	8	1.5 Mb/s	46.44	19.14	0.00	0.00	0.00	0.00
65.240.56.1	8	1.5 Mb/s	46.44	19.14	0.00	0.00	0.00	0.00
65.166.122.1	2	1.5 Mb/s	17.53	45.89	0.00	0.00	0.00	0.29
65.240.51.1	1	1.5 Mb/s	45.51	22.31	0.00	0.00	0.00	0.00
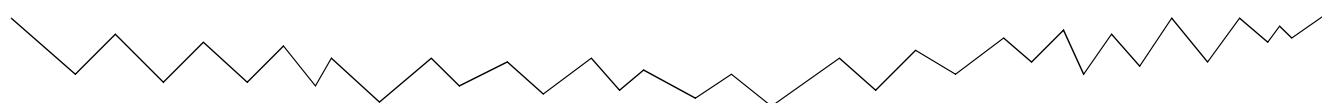
Make **Model** **Description** **Customer Name** **Location Name**

Port Avg and Peak Utilization
65.83.60.1: Serial0/1.1
Tue Mar 18 11:30 AM - Tue Mar 18 05:00 PM
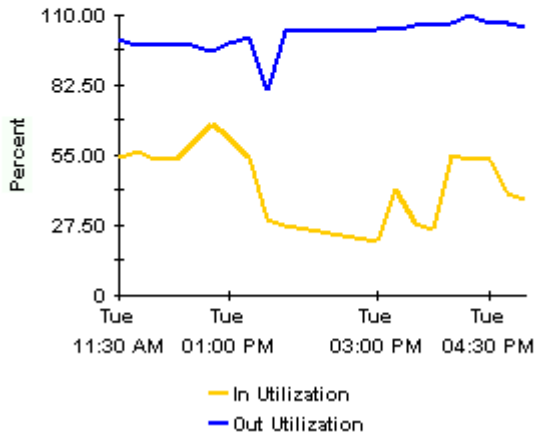
Port Avg Percent Errors and Discards
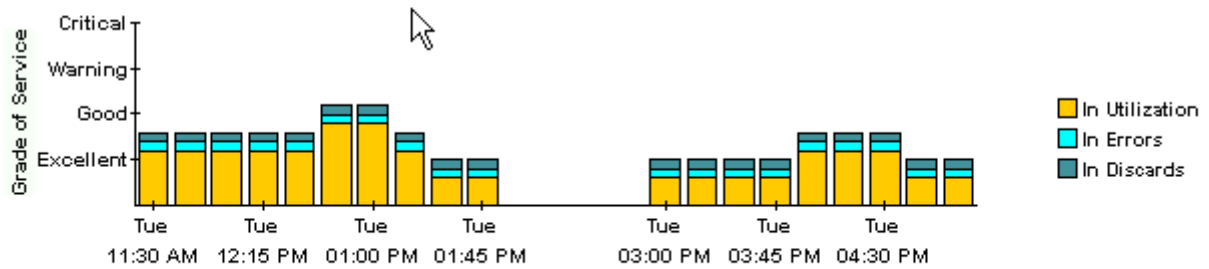**65.83.60.1: Serial0/1.1**
Tue Mar 18 11:30 AM - Tue Mar 18 05:00 PM
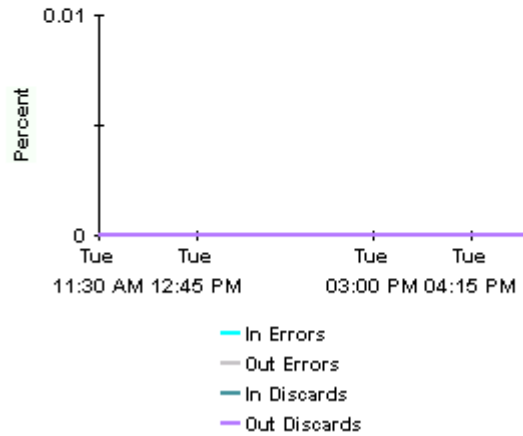
Ingress | Egress |

Ingress Port Grade of Service
65.83.60.1: Serial0/1.1
Tue Mar 18 11:30 AM - Tue Mar 18 05:00 PM

Port Executive Summary

The Port Executive Summary report conveys a clear picture of utilization on a customer-by-customer basis. This report aggregates data at the customer level, providing monthly, daily and hourly coverage of volume and error counts. What you will not find in this report are statistics for specific ports.

The Port Executive Summary contains one line graph and the following bar charts:

- Monthly volume for all ports — total volume both in and out for all ports associated with this customer aggregated for monthly periods.

- Monthly error count for all ports — total error counts both in and out for all ports associated with this customer aggregated for monthly periods.

- Daily volume for all ports — total volume both in and out for all ports associated with this customer aggregated for daily periods.

- Daily error counts for all ports — total error counts both in and out for all ports associated with this customer aggregated for daily periods.

- Hourly volume for all ports — total volume both in and out for all ports associated with this customer aggregated for hourly periods.

- Hourly error counts for all ports — total error counts both in and out for all ports associated with this customer aggregated for hourly periods.

> The total of in traffic and out traffic may reflect double counting of frames when the in and out ports are associated with the same customer.

As explained in Chapter 4, Package Configuration, you have two ways of assigning a customer to a PVC:

- By importing the customer name as property data

- By using a change form

If a customer is assigned to the parent object of a PVC, the change will trickle down to the PVC level, but only if customers have not been set yet. For example, assume a device has 10 interfaces, and each interface has 2 PVCs on it. If you assign *Customer A* to PVC 1 on Interface 1 and *Customer B* to the device itself, the results we be as follows: Every PVC on the device will belong to *Customer B* except PVC 1 on Interface 1.

# Frame Relay Service
Port Executive Summary

This report provides an overview of the performance of your frame relay ports. Each chart shows key metrics aggregated for all ports. Indicators of performance are shown, including total volume with in and out errors and discards.
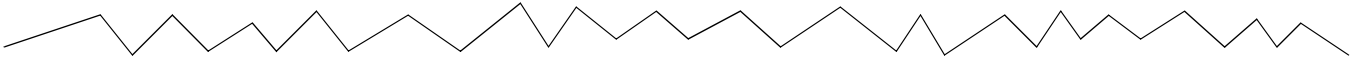
Customers
Mon Mar 17 2003

Customer Name	Customer Id
All Customers	-1
Customer Unassigned	-2
New Customer 2	2

Day of Week Baseline and Forecast
For All Ports
Thu Feb 13 2003 - Sun Mar 16 2003
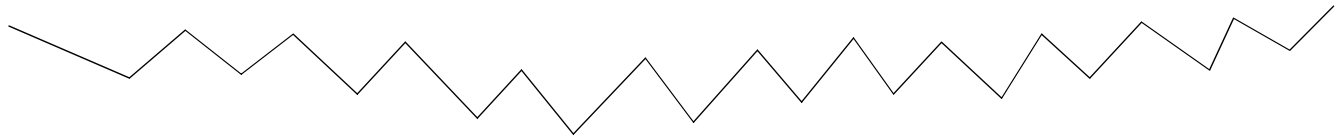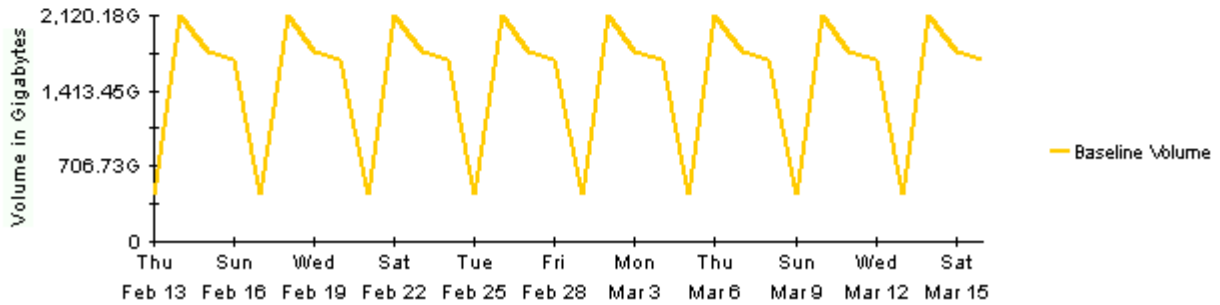
Monthly Volume for All Ports
Aug 2002 - Feb 2003
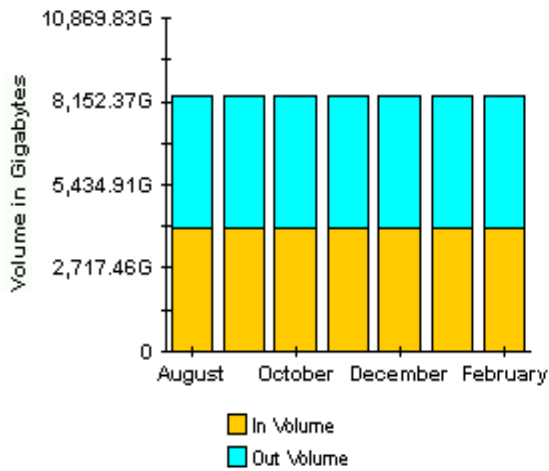
Monthly Error Counts for All Ports
Aug 2002 - Feb 2003
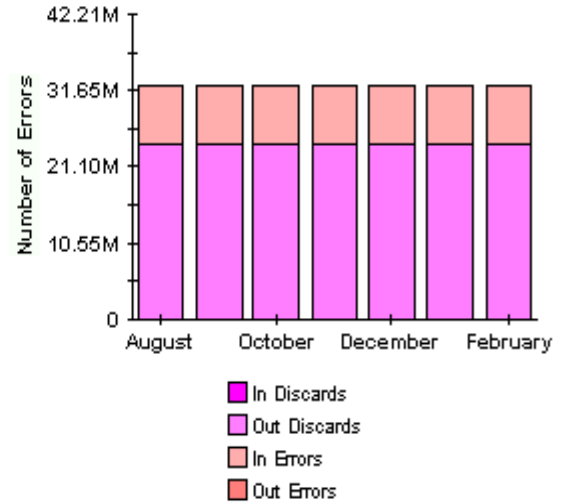
Daily Volume for All Ports
Thu Mar 13 2003 - Mon Mar 17 2003
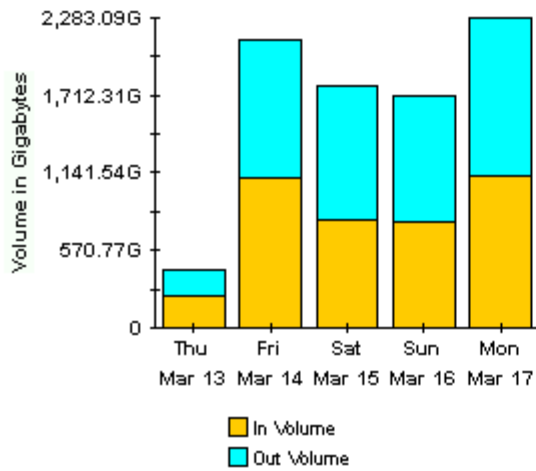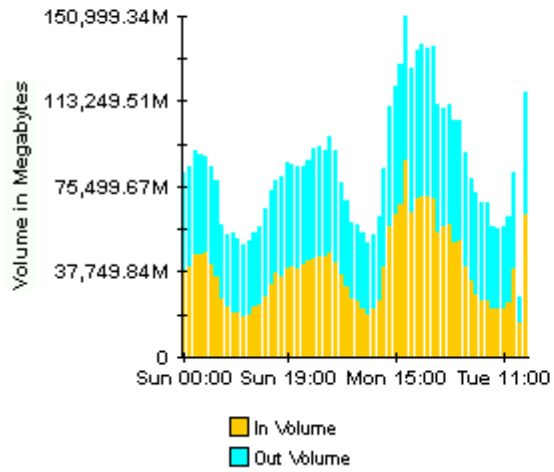

Daily Error Counts for All Ports
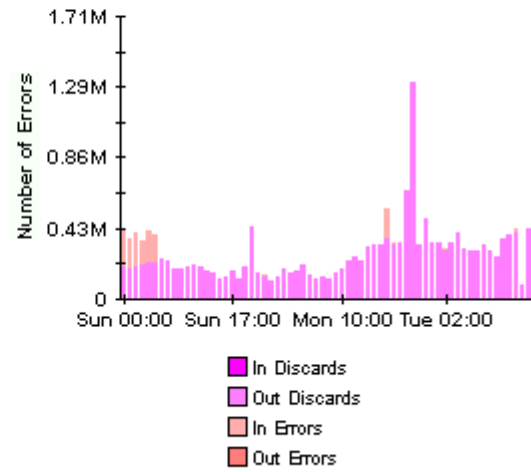Thu Mar 13 2003 - Mon Mar 17 2003
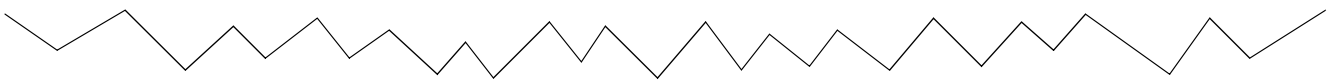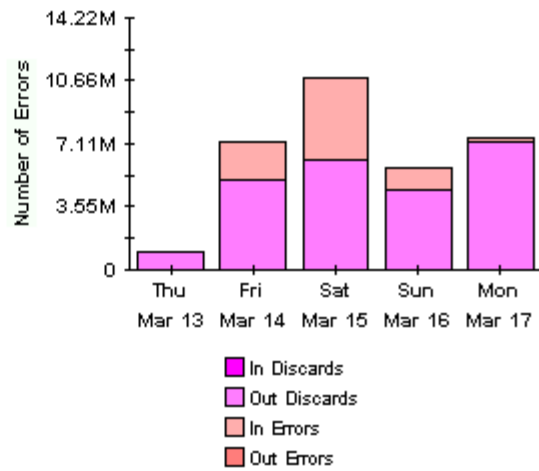
Hourly Volume for All Ports
Sun Mar 16 12:00 AM - Tue Mar 18 03:00 PM

Hourly Error Counts for All Ports
Sun Mar 16 12:00 AM - Tue Mar 18 03:00 PM

PVC Configuration Problems

The PVC Configuration Problems report is designed to highlight mis-configured PVC objects in your OVPI database. If a PVC appears in this report, that does not mean that the PVC is incorrectly configured for your network.

This report focuses on two aspects of the PVC object:

- CIR
- PVC Id

Having a valid CIR value is essential if any type of utilization reporting or threshold alarming will be performed for the PVC endpoint. As this forms the core functionality of many of the Frame Relay reports, it is important that the CIR for every PVC endpoint is set correctly.

Frame Relay 4.0 attempts to gather CIR information from two sources on the network, RFC1315 and the Cisco Frame Relay MIB. If CIR information is not available in either MIB table, then the CIR will remain with a NULL setting.

It is possible that the network will provide a CIR of 0 bits per second. Although this value is valid (you may have provisioned a "best effort" service for the PVC), it will lead to divide-by-zero errors when utilization is calculated. Rows with this setting are typically not displayed in reports. It is better to assign the full ifSpeed of the interface the PVC terminates on, as this will be the maximum bandwidth available to the PVC.

There are three ways to update CIR values:

- By the network (RFC1315 or the Cisco Frame Relay MIB)
- By editing and importing a property provisioning file
- By using an Object Manager change form

The PVC Id is an integer value associated with the two ends of a single PVC. It is used in the End-to-End reports. Not supplying a PVC Id value for each PVC Endpoint will not affect most reports, but it will limit what data can be displayed in the End-to-End reports. Populating this field is recommended, but not mandatory.

There are two ways to update PVC Id values:

- Property provisioning file
- Object Manager change forms

See Chapter 4, Forms and Property Files, for more information about importing property information, including CIR and PVC Id.

Frame Relay Service
PVC Configuration Problems

This report provides a list of PVC endpoints in the Performance Insight system which have not been configured correctly.   A missing (NULL) or incorrect CIR (<= 0) means utilization statistics for the PVC endpoint will not be available. A missing PVC Id value means the endpoint is not associated with any other endpoint and will not be included in some end to end reports. Only endpoints which were polled yesterday will appear in this report. Use the parameters to filter the displayed endpoints.

PVC Endpoints With No CIR Setting

Device Name	Port	DLCI	CIR	Description	Make	Model	Customer
Device_256	10901201_0	603	NULL !		Cisco	7600	Customer Unassigned
Device_256	10901201_0	607	NULL !		Cisco	7600	Customer Unassigned
Device_256	10901201_0	910	NULL !		Cisco	7600	Customer Unassigned
Device_256	10901201_0	998	NULL !		Cisco	7600	Customer Unassigned
Device_267	201102_0	1023	NULL !		Cisco	7600	Customer Unassigned
Device_256	10901201_0	1023	NULL !		Cisco	7600	Customer Unassigned
Device_136	11	16	Value of 0		Cisco	7600	Customer Unassigned
Device_11	2	16	Value of 0		Cisco	7600	Customer Unassigned
Device_187	1	16	Value of 0		Cisco	7600	Customer Unassigned
Device_184	4	16	Value of 0		Cisco	7600	Customer Unassigned
Device_183	29	16	Value of 0		Cisco	7600	Customer Unassigned
Device_47	1	16	Value of 0		Cisco	7600	Customer Unassigned
Device_47	2	16	Value of 0		Cisco	7600	Customer Unassigned

PVC Endpoints Without PVC Id Setting

Device Name	Port	DLCI	PVC Id	Description	Make	Model	Customer
Device_40	2	16	Not set.		Cisco	7600	Customer Unassigned
Device_41	2	16	Not set.		Cisco	7600	Customer Unassigned
Device_42	2	16	Not set.		Cisco	7600	Customer Unassigned
Device_50	1	500	Not set.		Cisco	7600	Customer Unassigned
Device_50	2	500	Not set.		Cisco	7600	Customer Unassigned

Top Ten PVC Endpoints

There are two Top Ten reports, one for ports and one for PVCs. Each provides a list of the top ten elements sorted by average utilization over the time period. The daily section of the report looks at statistics for the previous day; the monthly section looks at statistics for the previous calendar month.

The first selection table in the PVC Endpoint report looks at average and peak utilization levels for yesterday. It provides a list, ranked in descending order, of the ten PVC endpoints that reported highest average utilization in either direction, In or Out. In addition to listing the PVC endpoint and CIR, this table indicates utilization values for:

- Average In
- Average Out
- Peak In
- Peak Out

Selecting an endpoint from the list displays additional information about the device itself and the customer and locations associated with the PVC endpoint.

Frame Relay Service
PVC Endpoint Top Ten

The Top Ten report lists the ten top utilized PVC endpoints based on highest utilized direction. These reports show in and out average and peak utilization for yesterday and last month. Use the parameters to filter the report contents.

Daily Top Ten PVC Endpoints
Based on Highest Utilized Direction
Mon Mar 17 2003

Device Name	Port	DLCI	CIR	Avg In Utilization	Avg Out Utilization	Peak In Utilization	Peak Out Utilization
Device_185	2	36	10.0 Kb/s	925.10	275.21	1268.75	1027.73
Device_185	2	37	10.0 Kb/s	450.69	499.39	981.96	1059.57
Device_185	2	33	10.0 Kb/s	9.42	356.39	181.30	6832.72
Device_185	2	41	10.0 Kb/s	312.82	84.50	1221.55	1793.23
Device_156	2	16	768.0 Kb/s	176.46	136.34	182.33	176.08
Device_157	2	16	768.0 Kb/s	176.46	136.34	182.37	176.22
Device_164	2	16	768.0 Kb/s	176.46	136.34	182.26	176.06
Device_173	2	16	768.0 Kb/s	176.46	136.34	182.33	176.05
Device_163	2	16	768.0 Kb/s	176.46	136.34	182.27	176.08
Device_161	2	16	768.0 Kb/s	176.46	136.34	182.24	176.12
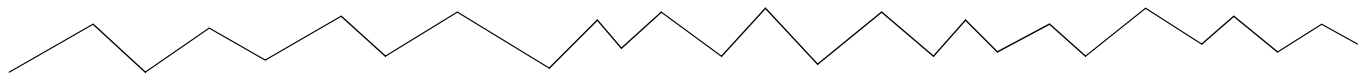
Daily - Device Details for Device_185: 2_33

Device Make	Model	PVC Description	PVC Customer Name	Location
Cisco	7600	N/A	Customer Unassigned	Location Unassigned

Monthly Top Ten PVC Endpoints
Based on Highest Utilized Direction
Feb 2003

Device Name	Port	DLCI	CIR	Avg In Utilization	Avg Out Utilization	Peak In Utilization	Peak Out Utilization
Device_185	2	36	10.0 Kb/s	815.53	719.51	1270.86	6053.81
Device_185	2	37	10.0 Kb/s	403.17	501.89	1029.72	5476.83
Device_185	2	56	10.0 Kb/s	366.92	312.28	1231.50	6825.31
Device_185	2	59	10.0 Kb/s	44.19	265.45	530.57	3473.06
Device_185	2	33	10.0 Kb/s	7.24	170.89	496.92	6832.72

Device_185	2	33	10.0 Kb/s	7.24	170.89	496.92	6832.72
Device_185	2	41	10.0 Kb/s	158.36	45.90	1221.55	1793.23
Device_185	2	38	10.0 Kb/s	22.01	143.00	236.65	6810.21
Device_156	2	16	768.0 Kb/s	105.04	109.65	182.33	177.94
Device_40	2	16	768.0 Kb/s	105.04	109.64	182.26	178.09
Device_43	2	16	768.0 Kb/s	105.04	109.64	182.35	177.94

Monthly - Device Details for Device_185: 2_41

Device Make	Model	PVC Description	PVC Customer Name	Location
Cisco	7600	N/A	Customer Unassigned	Location Unassigned

PVC Endpoint Forecast

The PVC Endpoint Forecast focuses on growth rates. The growth rate for utilization is calculated by projecting utilization 30 days into the future and dividing the increase by the current baseline average for that day of the week. The higher the difference between the current average and the projected value, the greater the rate of growth. Use this report to identify problems long before they become critical.

Each row in the selection table describes one PVC endpoint. The endpoints are sorted in descending order by rate of growth. In addition to listing endpoints in growth-rate order, this table indicates:

- Day of week
- Projected in utilization 30 days into the future
- Baseline utilization
- Projected out utilization 30 days into the future
- In ratio of growth
- Out ratio of growth

When you highlight an endpoint in the selection table, the following data appears in the tabbed area.

- Basic: Compares in and out average utilization for the day to the busy hour utilization for the day.
- In Util Standard: Compares IN utilization to median IN utilization. The tab shows the baseline, the median, baseline utilization -1 standard deviation, and baseline utilization +1 standard deviation.
- Out Util Standard: Compares OUT utilization to median OUT utilization. The tab shows the baseline, the median, baseline utilization -1 standard deviation, and baseline utilization +1 standard deviation.
- In Util Advanced: Compares baseline IN utilization to forecasted IN utilization 30, 60 and 90 day into the future. The date at the bottom of the tab represents the start date that the forecast calculation data is taken from.
- Out Util Advanced: Compares baseline OUT utilization to forecasted OUT utilization 30, 60, and 90 days into the future. The date at the bottom of the tab represents the start date that the forecast calculation data is taken from.

Frame Relay Service
PVC Endpoint Forecast

This report details the biggest ratio change between the baseline utilization and the 30 day forecast. Forecast and baseline values are based on the busiest hour of the day. Drilldowns show baseline, median, STD, and 30, 60, 90 day forecasts for utilization.

PVC Endpoints with the Greatest Ratio of Growth
Between the Baseline Utilization and the 30 Day Forecast
Tue Feb 04 2003 - Mon Feb 10 2003

Device Name	Port	DLCI	CIR	Day of Week	F30 In Util%	Baseline In Util%	In Ratio	F30 Out Util%	Baseline Out Util%	Out Ratio
Device_185	2	50	10.0 Kb/s	Sat	0.08	0.04	2.20	5.17	5.27	0.98
Device_185	2	50	10.0 Kb/s	Fri	14.98	6.92	2.16	79.67	39.69	2.01
Device_185	2	50	10.0 Kb/s	Thu	11.51	5.35	2.15	67.14	33.84	1.98
Device_185	2	48	10.0 Kb/s	Sun	93.94	43.94	2.14	8.62	7.96	1.08
Device_185	2	48	10.0 Kb/s	Tue	90.02	42.85	2.10	40.55	22.73	1.78
Device_185	2	35	64.0 Kb/s	Thu	4.21	2.11	2.00	66.76	32.15	2.08
Device_185	2	28	192.0 Kb/s	Sun	1.10	0.53	2.06	4.70	2.56	1.83
Device_185	2	59	10.0 Kb/s	Thu	297.40	149.57	1.99	2130.37	1034.83	2.06
Device_185	2	48	10.0 Kb/s	Sat	107.92	52.80	2.04	46.48	27.54	1.69
Device_137	1	24	512.0 Kb/s	Fri	4.93	2.47	2.00	21.06	10.33	2.04
Device_185	2	28	192.0 Kb/s	Tue	0.96	0.47	2.02	4.89	2.68	1.82
Device_185	2	28	192.0 Kb/s	Sat	1.14	0.58	1.97	5.81	3.04	1.91

Device Make	Model	Description	PVC Customer Name	Location
Cisco	7600		Customer Unassigned	Location Unassigned

Basic | In Util Standard | Out Util Standard | In Util Advanced | Out Util Advanced |

PVC Endpoint Baseline In Utilization and 30, 60, and 90 Day Forecast
Device_185: 2_48
Tue Feb 04 2003 - Mon Feb 10 2003

- Baseline In Util
- 30 Day Forecast
- 60 Day Forecast
- 90 Day Forecast
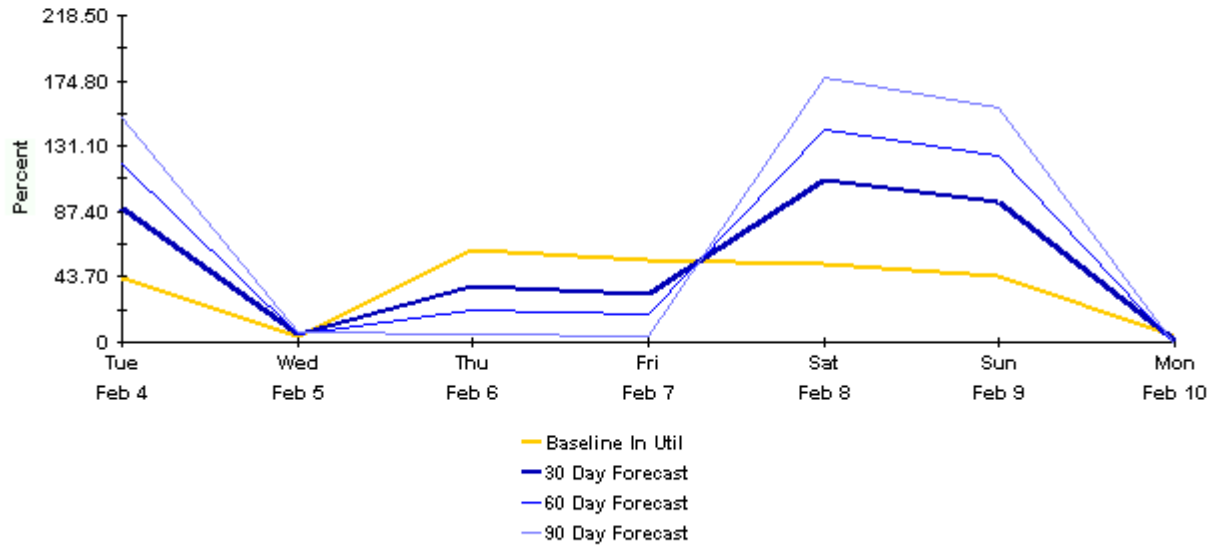
PVC Endpoint Availability

The availability report allows you to focus on PVCs and ports that have been unavailable for any reason. In this context, an unavailable PVC is a PVC that is out of operation. Scheduled maintenance as well as failures will take ports and PVCs out of operation.

Availability is measured as a percentage of time over the time period that the port or PVC was considered to be operational—based on metrics such as ifOperStatus, sysUpTime, ifLastChange, and Circuit State—on the device.

The selection tables list PVC endpoints that had less than 100% availability over the day or month, while the hourly and daily bar graphs illustrate when the problems happened and for how long. Each bar in the hourly chart represents one hour in a 24 hour period. Each bar in the daily chart represents one day in the previous month.

Frame Relay Service
PVC Endpoint Availability

This report informs you of daily and monthly PVC endpoint availability. Use the parameters to filter the PVC endpoints which are shown. Use the Availability_Pct parameter to only show PVCs with an availability abover the required level. Focus on endpoints which were partially available by setting this parameter to a value greater than 0.

Daily PVC Endpoint Availability
Select a Device to See Availability for the Previous Day
Mon Mar 17 2003

Device Name	Port	DLCI	Description	Availability	Make	Model
Device_137	1	24		58.33	Cisco	7600
Device_6	4	102		94.79	Cisco	7600
Device_6	4	104		94.79	Cisco	7600
Device_7	30	116		95.83	Cisco	7600
Device_8	30	116		95.83	Cisco	7600
Device_9	30	116		95.83	Cisco	7600
Device_37	30	116		95.83	Cisco	7600
Device_38	30	116		95.83	Cisco	7600
Device_39	30	116		95.83	Cisco	7600
Device_139	30	116		95.83	Cisco	7600
Device_6	2	100		96.88	Cisco	7600
Device_6	2	101		96.88	Cisco	7600

Hourly PVC Endpoint Availability
Device_137: 1_24
Sun Mar 16 02:00 PM - Tue Mar 18 03:00 PM

Available
Unavailable
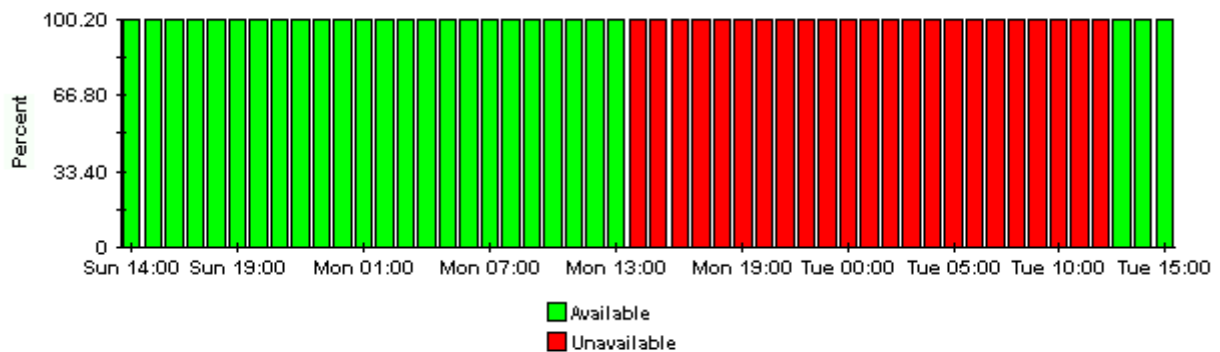
Editing Tables and Graphs

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, right-click the object to display a list of view options. If you are looking at a report 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 a Table

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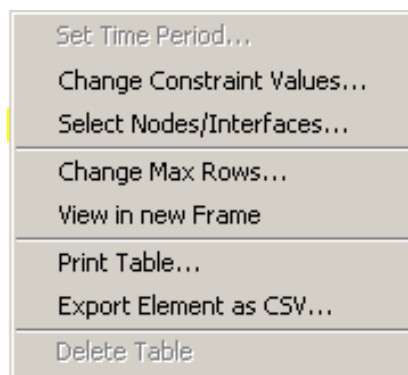
Select **Set Time Period** to alter the relative time period (relative to now) or set an absolute time period. The Set Time Period window opens.

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.

Table Viewer

Polled IP QoS Statistics Data - Input
Over Previous 6 Hours

Direction	IpPrecedence	Switched Bytes	Switched Pkts	Time Period
Input	0	105,688	675	Tue Oct 29 07:00 AM
Input	1	0	0	Tue Oct 29 07:00 AM
Input	2	0	0	Tue Oct 29 07:00 AM
Input	3	0	0	Tue Oct 29 07:00 AM
Input	4	0	0	Tue Oct 29 07:00 AM
Input	5	0	0	Tue Oct 29 07:00 AM
Input	6	600	5	Tue Oct 29 07:00 AM
Input	7	0	0	Tue Oct 29 07:00 AM
Input	0	98,334	638	Tue Oct 29 06:45 AM
Input	1	0	0	Tue Oct 29 06:45 AM
Input	2	0	0	Tue Oct 29 06:45 AM
Input	3	0	0	Tue Oct 29 06:45 AM
Input	4	0	0	Tue Oct 29 06:45 AM
Input	5	0	0	Tue Oct 29 06:45 AM
Input	6	0	0	Tue Oct 29 06:45 AM
Input	7	0	0	Tue Oct 29 06:45 AM
Input	0	97,539	648	Tue Oct 29 06:30 AM
Input	1	0	0	Tue Oct 29 06:30 AM
Input	2	0	0	Tue Oct 29 06:30 AM
Input	3	0	0	Tue Oct 29 06:30 AM
Input	4	0	0	Tue Oct 29 06:30 AM
Input	5	0	0	Tue Oct 29 06:30 AM
Input	6	120	1	Tue Oct 29 06:30 AM
Input	7	0	0	Tue Oct 29 06:30 AM
Input	0	90,744	564	Tue Oct 29 06:15 AM
Input	1	0	0	Tue Oct 29 06:15 AM
Input	2	0	0	Tue Oct 29 06:15 AM
Input	3	0	0	Tue Oct 29 06:15 AM
Input	4	0	0	Tue Oct 29 06:15 AM
Input	5	0	0	Tue Oct 29 06:15 AM
Input	6	0	0	Tue Oct 29 06:15 AM
Input	7	0	0	Tue Oct 29 06:15 AM
Input	0	103,775	656	Tue Oct 29 06:00 AM
Input	1	0	0	Tue Oct 29 06:00 AM
Input	2	0	0	Tue Oct 29 06:00 AM

View Options for a Graph

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.
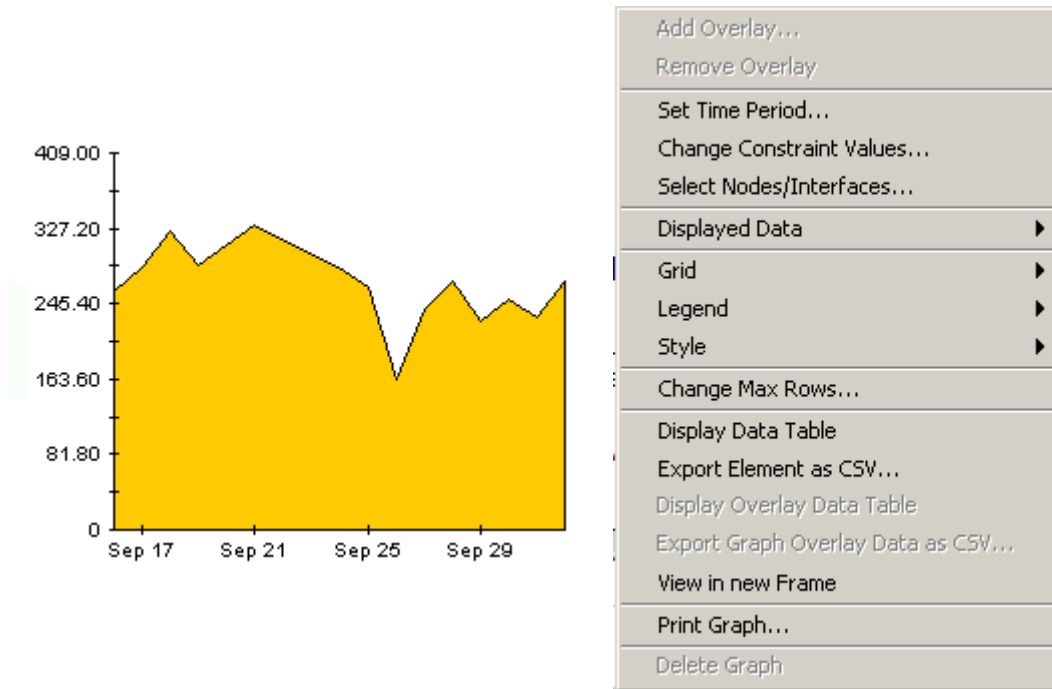

The following table provides details about each option.

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.

Option	Function
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.
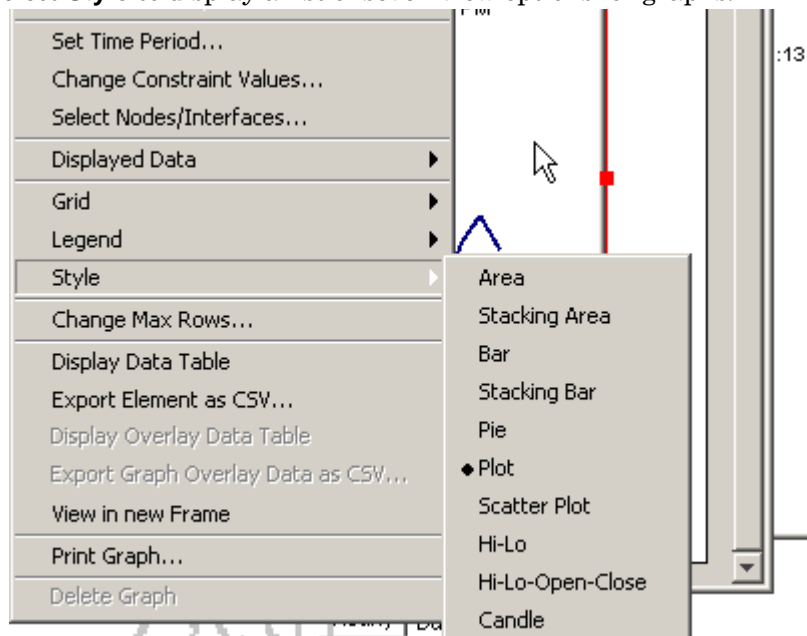
Style > Area

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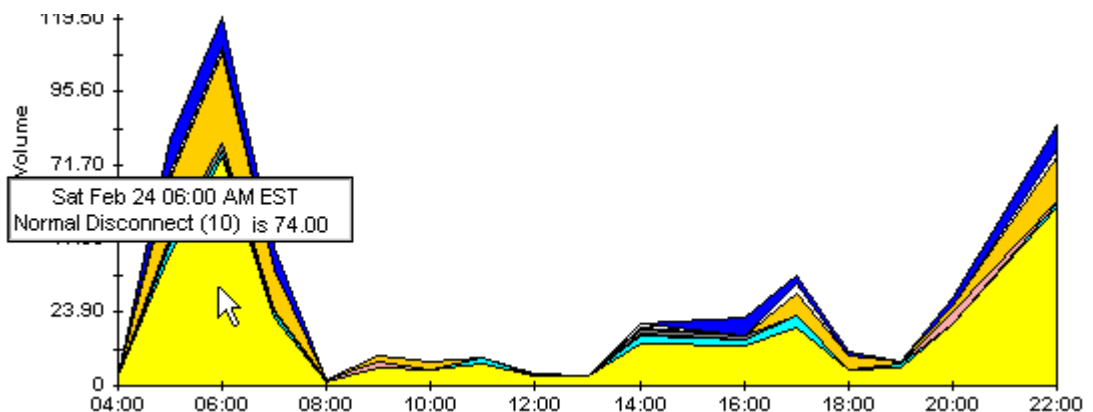
To shorten the time span of a graph, press SHIFT+ALT and use the left mouse button to highlight the time span you want to focus on. Release the mouse button to display the selected time span.

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.
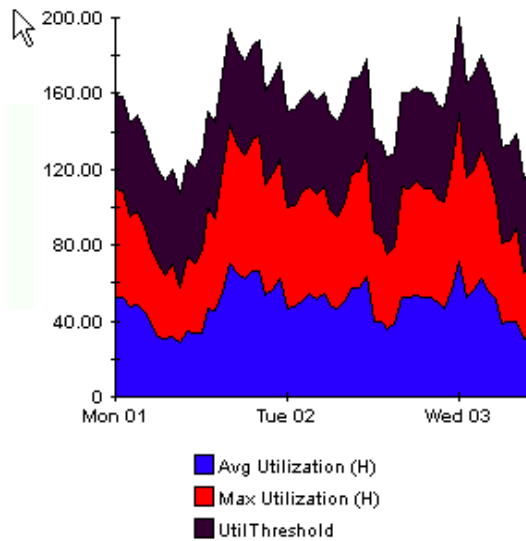
Style > Bar

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.
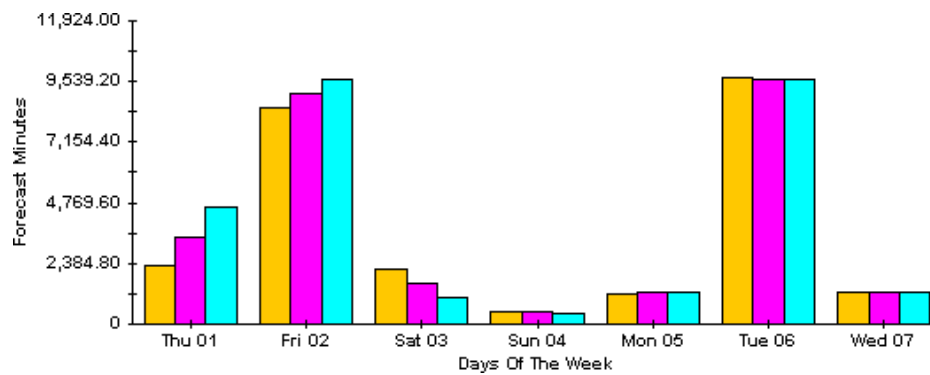
Style > Stacking Bar

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.
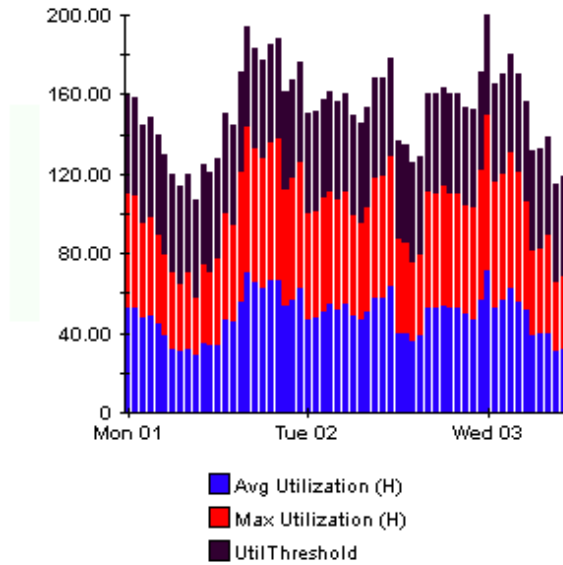
Style > Plot

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.
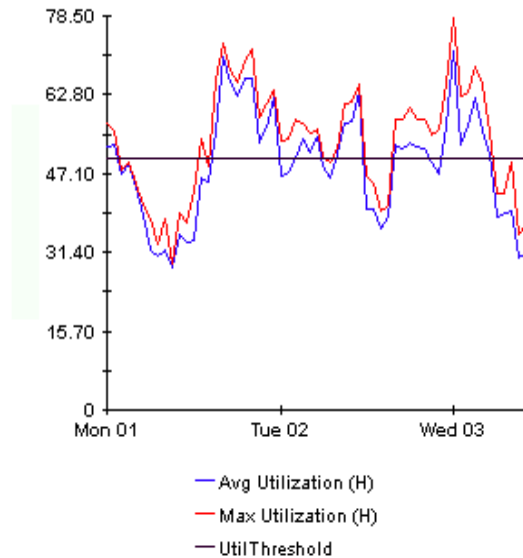
Style > Pie

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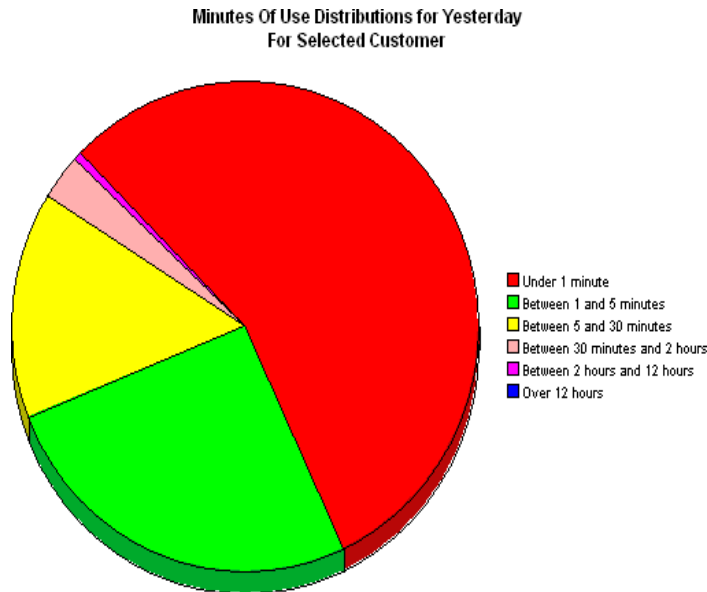
If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

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.
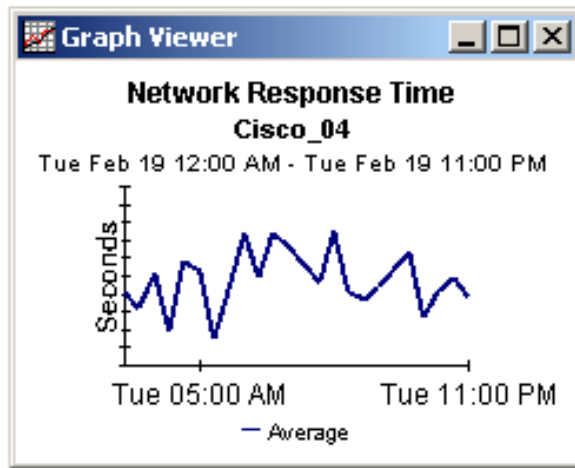
Backward Explicit Congestion Notification (BECN)

A specific bit in the header of the frame relay packet and a method for preventing a congested condition from getting worse. If a node becomes congested, changing the value of the BECN bit to 1 will signal congestion to the upstream node and attached user devices.

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 discards or the highest number of errors. A busy hour average points to the hour of the day when the average of multiple samples was highest (in the case of utilization) or lowest (in the case of throughput). Busy hour is a persistent event and should not be confused with peak, which could be very brief. If the value for busy hour seems high, keep in mind that actual utilization during the course of that hour may have been significantly higher.

Congestion

The point at which the network cannot keep up with entering traffic and begins flow control. The network reaches severe congestion when an increase in the number of retransmissions begins to lower actual effective throughput. To recover from this condition, the network notifies end devices to reduce traffic.

Committed Information Rate (CIR)

The rate at which the ingress interface and the egress interface transfers information to a destination under normal conditions.

Data Link Connection Identifier (DLCI)

A number inside the header of a frame relay packet that identifies a virtual circuit corresponding to a particular destination.

DE frames

Number of frames eligible for discard. A DE frame is created when the remote DTE sets the DE flag.

Discards

The number of frames that were discarded. Higher level protocols detect discarded frames and request a retransmission.

Discard Eligibility

A specific bit in the header of a frame relay packet and a mechanism for identifying which frames should be discarded if the network becomes overloaded. When a CPE device or a network switch sets the DE bit to 1, the frame is above the Committed Information Rate (CIR) and therefore eligible for discard if congestion arises. A frame with a DE set to 1 will be discarded before non-discard eligible frames.

Errors

The number of frames that were discarded because of errors. The following conditions are considered errors and will cause the frame to be discarded: (1) the frame was too long, (2) the frame was too short, (3) the DLCI value was invalid or unrecognized, (4) a value in the header was incorrect.

Forward Explicit Error Notification (FECN)

A specific bit in the header of the frame relay packet and a method for preventing a congested condition from getting worse. If a node becomes congested, it can set the value of the FECN bit to 1, thereby signally congestion to the downstream node and attached user devices.

Frame Types

There are three types of frames: unmarked frames, frames marked Discard Eligible (DE), and frames marked ODE. Frame types are color-coded. Unmarked frames are green; DE frames are amber, and ODE frames are red. Because most switch vendors do not mark frames ODE, your reports will not show statistics for red frames unless your switch vendor supports ODE.

Frequency Distribution

QuickView and Snapshot reports include frequency distribution pie charts that show the percentage of samples falling within a specific ingress/egress or in/out utilization range for each hour of yesterday, or each day over the course of the last thirty days. The ingress and egress ranges for PVC endpoint utilization are:

- 0 - 80%
- 80 - 90%
- 90 - 100%
- > 100%

The in and out ranges for port utilization are:

- 0 - 50%
- 50 - 60%
- 60 -70%
- 70 - 100%

Grade of Service

Quickview, Snapshot, and Hot Spots include Grade of Service charts. A Grade of Service is a ranking derived from a weighted average. The following table explains the grading behind scores for PVC endpoints. It shows the metrics the grade is based on, the weighting factor assigned to each metric, and the performance parameters for each of four possible grades.

GRADE CALCULATION	AVERAGE UTILIZATION	AVERAGE PERCENT RED AND/OR AMBER FRAMES	AVERAGE PERCENT CONGESTION
Weighting	60%	20%	20%
Excellent Range	0 - 80%	0 - 5%	0 - 5%
Good Range	80 - 90%	5 - 7%	5 - 7%
Warning Range	90 - 100%	7 - 10%	7 - 10%
Critical Range	Over 100%	Over 10%	Over 10%

The following table explains the grading behind scores for ports. It shows the metrics the score is based on, the weighting factor assigned to each metric, and the parameters for each of four possible grades.

GRADE CALCULATION	AVERAGE UTILIZATION	AVERAGE PERCENT RED AND/OR AMBER FRAMES	AVERAGE PERCENT CONGESTION
Weighting	60%	20%	20%
Excellent Range	0 - 50%	0 - 5%	0 - 5%
Good Range	50 - 60%	5 - 7%	5 - 7%
Warning Range	60 - 70%	7 - 10%	7 - 10%
Critical Range	Over 70%	Over 10%	Over 10%

Near Real Time (NRT)

A report containing a rolling average for performance over the last six hours. The most recent data in this report was collected by the most recent poll, which probably took place within the last 15 minutes.

Peak

The highest of several samples (typically, the highest of four samples if polling is taking place every 15 minutes) recorded over an hour. Each hour produces one peak.

Port

Any frame relay interface on any network device that supports MIB-II.

Permanent Virtual Circuit (PVC)

A fixed path not available on demand or on a call-by-call basis. The location of the beginning and the end of the circuit do not change, although the actual path taken through the network may vary if automatic rerouting takes place.

PVC Endpoint

The logical end point for a circuit. Typically this is defined by a combination of the device name, the MIB-II interface name and the Dlci number.

Utilization

Calculated at a PVC Endpoint by dividing the actual traffic on the circuit by the Committed Information Rate. Calculated at the Port or interface level by dividing traffic counts by the ifSpeed of the Port.

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