

Frame Relay Report Pack

Software Version: 4.0

HP OpenView Performance Insight

User Guide

May 2006



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The following table provides a list of changes made to this document since the last update in December 2005.

Chapter	Changes
Chapter 1	Minor editorial changes and updates.
Chapter 2	Minor editorial changes and updates.
Chapter 3	Minor editorial changes and updates.

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1 Overview

This chapter introduces the following topics:

- OVPI and frame relay interfaces
- Brief overview of the generic reports
- Data collection
- Integration with NNM
- Ways to customize reports
- Package version history
- Sources for additional information

OVPI and Frame Relay Interfaces

Frame relay networks eliminate link-layer error checking by assigning responsibility for packet retransmission to higher level protocols. To avoid congestion, the nodes in a frame relay network forward flow-control alerts to neighboring nodes. If flow-control alerts do not prevent congestion, nodes can alter the discard-eligibility (DE) status of individual frames.

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

The Frame Relay Report Pack installs on OVPI. When you install the Frame Relay Report Pack, Package Manager creates one parent directory and two child directories. The parent directory is `FrameRelay_Service`. The child directories are:

- Port
- PVC

Reports in the port folder display data for the logical port on the device, which usually equates to an entry in the MIB-II `ifTable`. Reports in the port folder track the following statistics:

- In utilization/out utilization
- Number of frames sent/number of frames received
- Number of octets sent/number of octets received
- Number of frames discarded
- Number of frames discarded due to errors

Reports in the PVC folder reach a lower level of detail, showing information for PVC endpoints. Reports in the PVC folder track the following statistics:

- Ingress utilization/egress utilization
- Number of committed-burst frames
- Number of excess-burst frames
- Number of Discard Eligible (DE) frames
- Number of frames indicating forward congestion (FECN)
- Number of frames indicating backward congestion (BECN)

Interface Reporting as a Prerequisites for Frame Relay 4.0

The Interface Reporting Report Pack is a prerequisite for Frame Relay 4.0. If you are not already using Interface Reporting, you must install Interface Reporting when you install Frame Relay 4.0. When you install Interface Reporting, you are not required to install the IR ifEntry Datapipe. However, if you want to collect raw data, and use the reports in Interface Reporting, then you must install the IR ifEntry Datapipe.

The dependency on Interface Reporting is related to a property table created by Interface Reporting. The property table is KIRDevPorts. This table is populated by collections associated with Interface Reporting and collections associated with the Frame Relay Report Pack. The data in this table can be modified by importing properties or by working with change forms.



Frame Relay 4.0 does not require OVPI 5.1. You can install Frame Relay 4.0 on OVPI 5.0. However, the most recent version of Interface Reporting, version 5.1, requires OVPI 5.1.

Double-Polling Port Statistics

If your OVPI server is already running raw collections for the Interface Reporting Report Pack (because you installed the IR ifEntry Datapipe along with the Interface Reporting Report Pack), and you install Frame Relay, you could be directing OVPI to collect port statistics twice, once for Interface Reporting and once for Frame Relay. If you install the Frame Relay CPE Datapipe, OVPI will collect port statistics twice; if you do not install the Frame Relay CPE datapipe (because you are using one of the vendor-specific datapipes instead), OVPI will collect port statistics once.

If you are using the IR ifEntry Datapipe and the Frame Relay CPE Datapipe, you can avoid double-polling by using Polling Policy Manager to disable the collections for frame relay ports. If you disable the collections for frame relay ports, consider undeploying the reports in the ports folder as well, since these reports will always be empty anyway. Redeploying port reports later is easy, if you change your mind.

The Generic Reports

The Frame Relay Report Pack contains the following types of reports:

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.

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 invalid (missing or incorrect) CIR values or invalid PVC Id 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.

Data Collection

Installing at least one datapipe for Frame Relay 4.0 is mandatory. You may install any of the following datapipes:

- 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)

The datapipe for Newbridge and the datapipe for Stratacom require pre-processing. If you intend to poll Newbridge devices, installing the Newbridge Preprocessor is mandatory. If you intend to poll Stratacom devices, installing the Stratacom Preprocessor is mandatory.

The Frame Relay CPE Datapipe polls the following MIBs:

- RFC 1315
- Cisco Frame Relay MIB
- Nortel/Bay FRSW MIB
- Nortel/Bay WAN780 MIB

The Frame Relay CPE Datapipe can be configured. For details about options for data filtering, property provisioning, logging, and polling policies, refer to the *Frame Relay CPE Datapipe 4.1 User Guide*.

Integration with NNM

If your OVPI server and your NNM server are integrated, the NNM operator can open Frame Relay reports directly from NNM. Frame Relay reports will be listed in the Report Launchpad window. This window can be opened from multiple NNM interfaces, including NNM map (ovw), Home Base Dynamic Views, and the NNM alarm browser.

You can derive additional benefits from NNM/OVPI integration by installing the thresholds sub-package that comes with Frame Relay. The file name is *FrameRelay_Service_Thresholds*. Installing this package configures OVPI to:

- Monitor the database for breach and clear conditions
- Send threshold traps (breach and clear) to NNM

Threshold traps delivered to NNM become alarms in the NNM alarm browser. By selecting the alarm, the NNM operator can launch a Near Real Time report. Installing the thresholds sub-package enables the following default thresholds

Exception	Default Value	An Exception Occurs When	Severity
DE in Deviation	10% above the average for yesterday	The percentage of packets marked DE is 10% above yesterday's average DE ratio.	Medium
DE out Deviation	10% above the average for yesterday	The percentage of packets marked Discard Eligible (DE) is 10% above yesterday's average DE ratio.	Medium
FECN% Inbound	10%	The ratio of inbound packets marked FECN to the total number of packets is equal to or greater than 10%.	Medium
FECN% Outbound	10%	The ratio of outbound packets marked FECN to the total number of packets is equal to or greater than 10%.	Medium
BECN% Inbound	10%	The ratio of inbound packets marked BECN to the total number of packets is equal to or greater than 10%.	Medium
BECN% Outbound	10%	The ratio of outbound packets marked BECN to the total number of packets is equal to or greater than 10%.	Medium

The threshold values in the preceding table can be modified. To modify values, open the PVC Endpoint Configuration form. For details, see [Chapter 5, Updating Property Values](#).

Ways to Customize Reports

You can customize reports by doing the following:

- Adding property values to PVCs
- Applying group filters to the database
- Applying constraints to reports
- Changing view options for tables and graphs

For details about adding property values, and modifying property values by using a change form or the property import file, see [Chapter 5, Updating Property Values](#). For details about view options for tables and graphs, see [Appendix A, Editing Tables and Graphs](#).

Group Filters

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

- Use Common Property Tables to add customers and locations
- Create a group account for all of the users affiliated with each customer
- Create a group filter for each group account

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

Applying Constraints

When you edit a parameter, you apply a constraint. The constraint 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 parameter, 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, 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**.

Package Version History

The following table outlines recent enhancements to the Frame Relay Report Pack.

Version	Release Date	Features/Enhancements
1.0	January 2002	Sybase support <i>datapipes:</i> <ul style="list-style-type: none"> • Frame Relay CPE Datapipe 1.0 • Ascend Frame Relay Datapipe 1.0 • Newbridge Frame Relay Datapipe 1.0 • Stratacom FR Datapipe 1.0 (Cisco WAN)
2.0	January 2003	<i>new upgrade package:</i> UPGRADE_FRS_1.0_to_2.0
2.0	May 2003	No changes
3.0	October 2003	OVPI Object Manager support <i>new upgrade package:</i> UPGRADE_FRS_2.x_to_3.0 <i>new change forms:</i> <ul style="list-style-type: none"> • Change PVC Endpoint Customer • Change PVC Endpoint Location • Change PVC Endpoint Description • Change PVC Endpoint Configuration
4.0	April 2004	Oracle support <i>new upgrade package:</i> UPGRADE_FRS_3.0_to_4.0
4.0	August 2004	No changes
4.0	November 2004	No changes
4.0	June 2005	No changes
4.0	March 2006	No changes
4.0	May 2006	No changes

Sources for Additional Information

This manual includes 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 4.1 User Guide*
- *Interface Discovery Datapipe 2.3 User Guide*
- *Newbridge Preprocessor 3.0 User Guide*
- *NNM/OVPI Integration Module 2.0 User Guide*
- *Stratacom Preprocessor 3.0 User Guide*
- *Thresholds Module 5.0 User Guide*
- *OVPI Report Packs, Release Notes, May 2006*

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.managementsoftware.hp.com>

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

The manuals listed under **Performance Insight Reporting Solutions** indicate the month and year of publication. If a manual is revised and reposted, the date will change. Since we post revised manuals on a regular basis, we recommend searching this site for updates before using any of the manuals that were copied to the Docs directory on the report pack CD-ROM.

2 The Upgrade Install

This chapter covers the following topics:

- [Guidelines for a smooth upgrade](#)
- [Upgrading to Frame Relay 4.0](#)
- [Post-Upgrade Steps](#)

Guidelines for a Smooth Upgrade

The report pack CD has the latest report packs and datapipes. When you insert the report pack CD and launch the package extraction program, the install script extracts every package from the CD and copies the results to the Packages directory on your system. After the extract process finishes, the install script prompts you to start Package Manager. Before using Package Manager, review the following guidelines.

Software Prerequisites

Frame Relay 4.0 requires the following software:

- OVPI 5.0 or later
- All available service packs for the version of OVPI (5.0 or 5.1) you are running
- Common Property Tables 3.5
- Interface Reporting Report Pack 4.0 or higher
- 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

If you are running an earlier version of Common Property Tables, version 2.2 or version 3.0, upgrade to version 3.5 *before* you upgrade the Frame Relay Report Pack. Installing the “to_3.5” 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*.

Datapipes and Remote Pollers

Datapipes cannot be upgraded. You must remove the existing datapipe, then re-install the latest version of the datapipe after the upgrade is complete. When you uninstall an existing datapipe, the following information will be lost:

- The polling policy for a single remote poller
- Cloned polling policies for multiple remote pollers
- Polling groups you created yourself

To export existing polling policy configurations and customized polling group, use the `collection_manager` and `group_manager` commands.

Exporting Polling Policy Configurations

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

UNIX: As user `trendadm`, run the following command:

```
cd $DPIPE_HOME  
./bin/collection_manager -export -file /tmp/savePollingPolicy.lst
```

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

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

Exporting Customized Polling Groups

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

UNIX: As user `trendadm`, execute the following command:

```
cd $DPIPE_HOME  
./bin/group_manager -export_all -outfile /tmp/savePollingGroups
```

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

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

Custom Table Views

If you created custom table views, the views you created may interfere with the report pack upgrade process, causing the upgrade to fail. Whether or not your custom table views interfere with the upgrade depends on how you created them. If you created them using SQL, the upgrade will succeed but your custom views will not be available once the upgrade is complete. If you created them using Datapipe Manager, the upgrade is likely to fail. To prevent the upgrade from failing, delete your custom table views before upgrading the report pack, then recreate them after the upgrade is complete.

Distributed Environments

Package installation in a distributed environment is more complicated than package installation on a stand-alone server. Follow these steps:

- Verify that every server is using the same version of OVPI and all available service packs.
- Disable trendcopy on the central server.
- Upgrade the report pack on the central server.
- At each satellite server:
 - Remove existing datapipes
 - Install the upgrade package for the report pack
 - Install new datapipes
- Re-enable trendcopy of the central server.

When you installed Frame Relay 3.0, you used DS EDIT to set up connections with satellite server databases. If you recently upgraded from OVPI 4.6 to OVPI 5.0 or OVPI 5.1, you must repeat the following tasks:

- Set up connections with satellite server databases
- Configure trendcopy pull commands

You have to repeat these steps because the technique for setting up connections with satellite server databases changed in OVPI 5.0. For details, see [Chapter 4, 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 report pack CD
- Task 2: If necessary, upgrade to Common Property Tables 3.5
- Task 3: Remove existing datapipes
- Task 4: Install UPGRADE_FRS_3.0_to_4.0
- Task 5: Install one or more datapipes; restart OVPI Timer

Task 1: Stop OVPI Timer and extract packages from the report pack 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 report pack CD in the CD-ROM drive.
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: [If necessary, upgrade to Common Property Tables 3.5](#)

The Frame Relay Report Pack requires Common Property Tables. If you are already running the latest version, version 3.5, skip this task. If you are running an earlier version of Common Property Tables, upgrade to the latest version by installing the “to_3.5” upgrade package. When Package Manager confirms that the install is complete, click **Done** to return to the Management Console.

Task 3: [Remove existing datapipes](#)

- 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.

- 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_3.0_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

- Click **Next**. The Type Discovery window opens. Accept the default and click **Next**. The Selection Summary window opens.
- Click **Install**. The Installation Progress window opens. When installation finishes, a package install complete message appears.
- Click **Done** to return to the Management Console.

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

- Start Package Manager. The Package Manager welcome window opens.
- Click **Install**.
- Click **Next**. The Report Deployment window opens. Type your username and password for the OVPI Application Server.
- Click **Next**. The Package Selection window opens. Click the check box next to the name of each datapipe that you want to install.
- Click **Next**. The Type Discovery window opens. Disable the default and click **Next**. The Selection Summary window opens.
- Click **Install**. The Installation Progress window opens. When installation finishes, a package install complete message appears.
- Click **Done** to return to the Management Console.
- Restart OVPI Timer.

On Windows, do the following:

- Select **Control Panel > Administrative Tools > Services**
- Select OVPI Timer from the list of services.
- 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`

Post-Upgrade Steps

Restore any polling policies and customized group definitions that you exported before upgrading the report pack. Do not re-import the configurations you exported. Doing so could lead to data corruption, since the old datapipe may be incompatible with the new datapipe you just installed. In addition, if you deleted any custom table views before you upgraded the report pack, you can recreate those custom views now.

3 The New Install

This chapter covers the following topics:

- [Guidelines for a smooth installation](#)
- [Installing and Tuning Frame Relay 4.0](#)
- [Removing Frame Relay 4.0](#)

Guidelines for a Smooth Installation

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

When you insert the report pack CD in the CD-ROM drive and launch the package extraction program, the install script extracts every package from the CD and copies the results to the Packages directory on your system. After the extract finishes, the install script prompts you to launch OVPI and start Package Manager. Before using Package Manager, review the following guidelines.

Software Prerequisites

The Frame Relay Report Pack has the following prerequisites:

- OVPI 5.0 or higher
- All the Service Pack available for the version of OVPI (5.0 or 5.1) you are running
- Common Property Tables
- Interface Reporting Report Pack
- 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

Interface Reporting Report Pack

Although Interface Reporting is a prerequisite for the Frame Relay Report Pack, you are not required to collect raw data for Interface Reporting. If you want to collect raw data for Interface Reporting, install the IR ifEntry Datapipe when you install Interface Reporting. In

addition to installing the IR ifEntry Datapipe, you will need to configure Interface Reporting for optimal SNMP polling and tune the report pack by deactivating any ifTypes you are not interested in. Both steps are covered in the latest edition of the *Interface Reporting Report Pack 5.1 User Guide*.

Preprocessors for Vendor-Specific Datapipes

If you are polling Newbridge devices, you must install the Newbridge Preprocessor in addition to the packages listed above. If you are polling Stratacom devices, you must install the Stratacom Preprocessor in addition to the packages listed above. Each preprocessor has its own user guide.

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 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, you must upgrade to version 3.5. If you are running Common Property Tables 3.0, upgrading to version 3.5 is optional. Upgrade Common Property Tables *before* installing the Frame Relay Report Pack.

FrameRelay_Service_Thresholds

If your OVPI server is integrated with NNM, you should install the optional thresholds sub-package. The thresholds sub-package configures OVPI to monitor the database for threshold conditions. When a threshold is breached, OVPI will respond 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, you must install the thresholds sub-package on each satellite server. If you want to set thresholds on aggregated data (for example, a forecast), you must install the thresholds sub-package on the central server as well as the satellite servers.

If you select the thresholds sub-package for installation, Package Manager will automatically select and install the Thresholds Module. The Thresholds Module controls the actions that OVPI can take in response to a threshold condition. For information about modifying category, severity, and destination parameters, 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 following packages on the central server:
 - Common Property Tables; deploy forms
 - Interface Reporting; deploy reports

- Frame Relay; deploy reports
- Install the following packages on each satellite server:
 - Common Property Tables
 - Interface Reporting
 - Frame Relay
 - FrameRelay_Service_Thresholds (sub-package that comes with Frame Relay)
 - At least one datapipe
- Re-enable trendcopy of the central server.

When 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 4, Distributed Systems](#).

Installing and Tuning Frame Relay 4.0

Perform these tasks to install the Frame Relay Report Pack on a stand-alone server:

- Task 1: Stop OVPI Timer and extract packages from the report pack CD.
- Task 2: If necessary, upgrade to Common Property Tables 3.5
- Task 3: Install the report pack and at least one datapipe
- Task 4: If desired, de-activate port polling policies
- Task 5: If desired, adjust the polling interval to verify collections
- Task 6: Restart OVPI Timer and start polling
- Task 7: Provision CIRs
- Task 8: If necessary, override the customer and location inherited from the interface
- Task 9: Export property data from OVPI for safekeeping

Task 1: Stop OVPI Timer and extract packages from the report pack 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 report pack CD in the CD-ROM drive.

Windows: The Main Menu opens automatically.

UNIX:

- a Mount the CD (if the CD does not mount automatically).
 - b Navigate to the top level directory on the CD.
 - c Run **./setup**
- 4 Type **1** in the choice field and press **Enter**.

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 3.5

The Frame Relay Report Pack requires Common Property Tables. If you are running an earlier release of Common Property Tables, upgrade to the latest release by installing the “to_3.5” upgrade package. When you install the “to_3.5” upgrade package, do not install other packages at the same time. 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. Package Manager will install Common Property Tables for you, automatically.

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: If desired, de-activate port polling policies

If your OVPI server is running raw collections for the Interface Reporting Report Pack (you installed the IR ifEntry Datapipe when you installed Interface Reporting), you will poll port statistics twice, once for Interface Reporting and once for Frame Relay. To avoid polling port collections twice, use Polling Policy Manager to disable the collections for frame relay ports. If you disable the collections for frame relay ports, consider undeploying the reports in the ports folder, since these reports will be empty anyway.

Task 5: To verify collections, adjust the polling interval

To see polling results as soon as possible, use Polling Policy Manager to temporarily drop the polling interval. Verify that data is being collected by viewing the *last key* tables (which you may want to truncate first) or the datapipe rate tables. After confirming that collections are working as expected, reset polling to the recommended interval.

Task 6: Restart OVPI Timer and start polling

On Windows:

- 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**

After one or two polls you will see entries in the DLCI property table, `K_frswitch_pvc`.

Task 7: Provision CIRs into the DLCIs

Bandwidth utilization cannot be calculated without a value for committed information rate (CIR). Unfortunately, many routers do not provide a CIR value. This means that you have to set CIR values yourself. There are several ways to do this:

- From the Management Console, open the Change PVC Configuration form and use the form to set CIR values manually. (Be sure to set the console “view” to the Frame Relay PVC Endpoints view. If you don’t set the view this way, you will not see the form in the Object Specific Tasks frame.) The form works one DLCI at a time, and one device at a time. You cannot apply the same CIR to multiple DLCIs or multiple devices.
- Use property import. Export a list of all DLCIs from OVPI, set CIR values in the file, then let OVPI import the file.
- Use an SQL query to mass-provision all DLCIs to a single value. For example:

```
K_frswitch_pvc set CIR = 256000 where dsi_key_id > 0
```

- Create a custom form to perform mass-provisioning.



There are service providers who do not use CIRs, in which case the CIR will always be zero. If this happens, you should set the CIR equal to the physical port speed. You can do this using a form or an SQL query

Task 8: If necessary, override the customer and location inherited from the interface

DLCIs inherit customer and location from the parent interface. If you wish to override these values on a per-DLCI basis, you may do so using the normal provisioning methods.

Task 9: Export property data from OVPI for safekeeping

Now is a good time to export property information from OVPI. If for any reason you need to uninstall and reinstall the Frame Relay Report Pack, you can use the export file to immediately re-import property information.

Accessing Deployed Reports

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

- OVPI client applications
- Web browser

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

For more information about the clients, refer to the *OVPI Installation Guide*. For more information about the Management Console, including how to use the Object/Property Management view to launch reports specific to a selected object, refer to the *OVPI Administration Guide*.

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 that 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. 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 creates 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

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. Although you will begin to see forecast data soon, within a few days, reliable forecast data will not be available for about six weeks, when the initial baseline is complete.

Removing Frame Relay 4.0

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**

4 Distributed Systems

This chapter covers the following topics:

- Package installation requirements for a distributed system
- How to configure the central server
- How to configure a satellite server
- System clocks

Package Installation

Before configuring servers, verify that the central server and satellite servers are running the correct packages. You want the following packages installed on the central server:

- Common Property Tables
- Interface Reporting
- Frame Relay

You want the following packages installed on each satellite server:

- Common Property Tables
- Interface Reporting
- Frame Relay
- At least one datapipe
- Frame_Relay_Thresholds (the thresholds sub-package)

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

Task 1: Set up connections with satellite server databases

- 1 Select **HP OpenView > Performance Insight > Management Console**.
- 2 Click the **Systems** icon on the lower left.

The **System/Network Administration** pane opens.

- 3 Right-click the Databases folder. When prompted, select **Add OVPI Database**. The Add Database Wizard opens.
- 4 Click **Next**.
- 5 Type the hostname and port number for the database you want to add; click **Next**.
- 6 Review the Summary. Repeat Steps 4 and 5 for each additional database.
- 7 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.

 Switching off the higher aggregations disables the server's ability to perform local reporting. Near Real Time reports are available, but nothing else. If you need local access to all reports, do not switch off the higher aggregations.

- 1 Switch off daily aggregations by commenting out the lines referencing `FrameRelay-Switch_Daily.pro` in the `$DPIPE_HOME/lib/trendtimer.sched` file.
- 2 Modify the `FrameRelay-Switch_Hourly.pro` `trendtimer` entry in the `$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.

System Clocks

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

5 Updating Property Values

This chapter covers the following topics:

- Using forms to update properties (including thresholds) for PVCs
- Using a property import file to update properties (including thresholds) for PVCs

Forms are context-sensitive. Your location in the object model determines which PVCs will be updated by the form. Depending on where you are in the object model, the form may apply to one specific PVC, or to a long list of PVCs. No matter which form you are using, the form will display a list of the PVCs you are able to update. To modify one PVC, highlight one PVC in the list; to modify multiple PVCs at once, highlight multiple PVCs in the list.

If you have lots of properties to update, using the batch-mode approach (the property import file) is probably faster and easier. If you have just a few changes to make, use the forms.

Using Forms to Update Property Values

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

To launch a form, click the **Objects** icon on the left side of the Management Console. The Object/Property Management view opens. The type of object presented depends on which Object Manager View is open:

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

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

When the type of object you want to update appears, select the *specific object* you want to update. Under **Object Specific Tasks** you will see a list of forms. To open a form, double-click the name of the form.

Change PVC Customer

Use the Change PVC Customer form to update the customer assigned to one or multiple PVC Endpoints. Use the drop down menu to choose a customer. Click **Apply** to save your changes.

If you assigned a customer to an interface (using one of the change forms that come with the Interface Reporting Report Pack), the PVC endpoints on that interface will inherit the customer assigned to the interface. However, if some PVC endpoints already have a different customer assigned to them, the customer you assigned to the interface will not be inherited by those PVC endpoints.

Device	Port	Dlci
Device_51	Serial4/1/3:0	200
Device_51	Serial4/1/3:1	201
Device_51	Serial4/1/3:2	202
Device_51	Serial4/1/3:3	203

Customer:

OK Apply Cancel


Change PVC Location

Use the Change PVC Location form to update the location assigned to one or multiple PVC Endpoints. Use the drop down menu to choose a location. Click **Apply** to save your changes.

If you assigned a location to an interface (using one of the change forms that come with the Interface Reporting Report Pack), the PVC endpoints on that interface will inherit the location assigned to the interface. However, if some PVC endpoints already have a different location assigned to them, the location you assigned to the interface will not be inherited by those PVC endpoints.

Frame Relay

Change PVC Location



i n v e n t

This form assigns the selected location to the list of highlighted PVC endpoints shown below. Be careful not to apply it to too many.

Device	Port	Dlci
Device_51	Serial4/1/3:0	200
Device_51	Serial4/1/3:1	201
Device_51	Serial4/1/3:2	202
Device_51	Serial4/1/3:3	203


Location Location Unassigned ▼

Change PVC Description

Use the Change PVC Description form to update the description of one or multiple PVC Endpoints. When the form opens, type your new description in the text entry box. To save your changes, click **Apply**.

Frame Relay

Change PVC Description



invent

This form assigns the selected description to the list of selected PVC endpoints shown below. Be careful not to apply it to too many.

Device	Port	Dlci
Device_51	Serial4/1/3:0	200
Device_51	Serial4/1/3:1	201
Device_51	Serial4/1/3:2	202
Device_51	Serial4/1/3:3	203

Description

Change PVC Configuration

Use the Change PVC Configuration form to update the following property settings for a single PVC endpoint:

- Description
- CIR
- PVC Id
- Customer
- Location
- Allowable DE In Deviation (deviation from yesterday's average)
- Allowable DE Out Deviation (deviation from yesterday's average)
- FECN% Threshold
- BECN% Threshold

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 Committed 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	<input type="text" value="Description not set"/>		
CIR	<input type="text" value="0.00"/>	Allowable DE In Deviation %	<input type="text" value="10.00"/>
PVC Id	<input type="text" value="-2"/>	Allowable DE Out Deviation %	<input type="text" value="10.00"/>
Customer Name	<input type="text" value="Customer Unassigned"/> ▼	FECN % Threshold	<input type="text" value="2.00"/>
Location Name	<input type="text" value="Location Unassigned"/> ▼	BECN % Threshold	<input type="text" value="2.00"/>

OK

Apply

Cancel

Using an Import File to Update Property Values

The same properties you can modify using one of the change forms described in this chapter can also be modified using a property import file. You can create this file from scratch, or you can export existing property data from OVPI. If you export existing property values from OVPI, the file exported from OVPI will be properly formatted.

Utilization for PVC endpoints cannot be calculated unless CIR values are known. Likewise, port utilization cannot be calculated unless ifSpeed is known. If you are collecting these values from network elements, and if the values you are collecting are correct, you do not need to import correct values. If you are not collecting these values, or if the values you are collecting are incorrect, you must import correct values. Use the PVC Configuration Problems report to verify whether CIR and PVC Id have been set for all PVC endpoints.

Exporting Property Data from OVPI

If you want to export existing property values 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 executes automatically. It works the same way whether you are working with a file you created yourself, or a file that was exported from OVPI and then edited.

If you want to let the import process run 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 path to the SourceDirectory is:

```
{DPIPE_HOME}/data/PropertyData/
```

OVPI uses a TEEL file in the DPIPE_HOME/lib directory to locate the property import file. The file name 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 import, do the following:

- 1 Navigate to the DPIPE_HOME/scripts directory.
- 2 Type: **trend_proc -f FrameRelay-Switch_importdata.pro**

Adding a New Row or Modifying 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 your PVC property file includes Node Name = router1; Port value = 1; DlcI = 23, then there must be an exact match with those values in the KV_frswitch_pvc property table. Whenever there is no match between a row in your file and a row in the property table, your property import file will add a new row to the property table.

Formatting the PVC Property Import File

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 table.
- Use the columns in the order they appear in the table.
- 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.

Column	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

Column	Description
CIR	The Committed Information Rate in bits/second 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
location_id	Unique integer value for each location 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 that 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.
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 A: Service Level 1 Example B: Failover PVC
FECN Percent	The percentage of packets which can be marked FECN; if this percentage is exceeded, a threshold event is generated.
BECN Percent	The percentage of packets which can be marked BECN; if this percentage is exceeded, a threshold event is generated.

Column	Description
DE In Deviance	The percentage deviation of packets above yesterday's 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 generate a threshold event.
DE Out Deviance	The percentage deviation of packets above yesterday's 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 generate a threshold event.

6 PVC Endpoint QuickView

The PVC Endpoint QuickView, and the Snapshot version of the same report, identifies PVCs with high utilization. Use this report to spot PVCs with high utilization and to find out whether utilization is primarily egress or primarily ingress. In addition, this report shows how utilization relates to congestion notification and frame types.

There are NRT, daily, and monthly versions of this report. See below for a sample of the Daily PVC Endpoint QuickView. The selection table ranks PVCs by utilization and provides values for:

- Ingress utilization
- Egress utilization
- Peak ingress utilization
- Peak egress utilization
- Busiest ingress hour
- Busiest egress hour

The hourly graph below the selection table compares:

- Average ingress utilization to peak ingress utilization
- Average egress utilization to peak egress utilization

The next hourly graph looks at congestion and frame types. Use this graph to compare:

- Average percent of ingress FECN frames to peak percent of FECN frames
- Average percent of ingress BECN frames to peak percent of BECN frames
- Average percent of egress FECN frames to peak percent of FECN frames
- Average percent of egress BECN frames to peak percent of BECN frames
- Average percent of ingress DE frames to peak percent of ingress DE frames
- Average percent of egress DE frames to peak percent of egress DE frames

The Grade of Service bar chart provides an overall score for each hour of the day. The overall score combines utilization, frame types, and congestion. The frequency distribution pie charts indicate how yesterday's activity breaks down in terms of the percentage of samples that fall into various ranges of utilization.

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

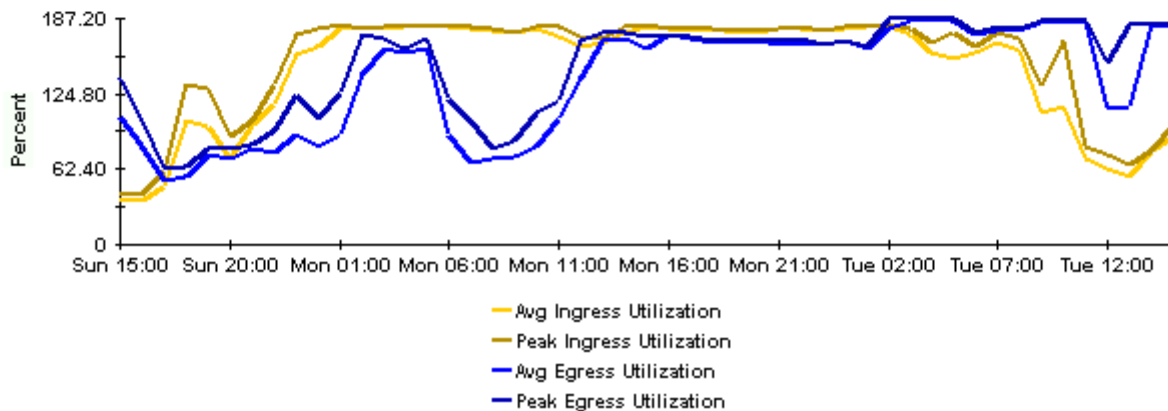
Device Name	Port	DLCI	CIR	Ingress Utilization	Egress Utilization	Peak Ingress Utilization	Peak Egress Utilization	Busiest Ingress Hour	Busiest Egress Hour	Hou
Device_185	2	36	10.0 Kb/s	925.10	275.21	1268.75	1027.73	1262.83	880.12	Mon
Device_185	2	37	10.0 Kb/s	450.69	499.39	981.96	1059.57	737.30	877.08	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

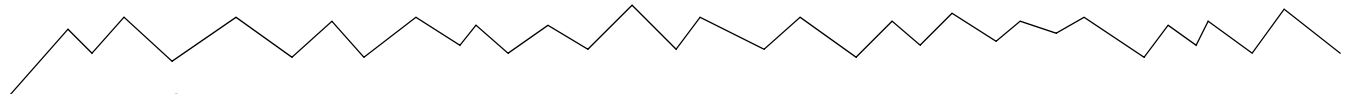
Device Make	Model	Description	PVC Customer Name	Location	ifSpeed
Cisco	7600		Customer Unassigned	Location Unassigned	2048000

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

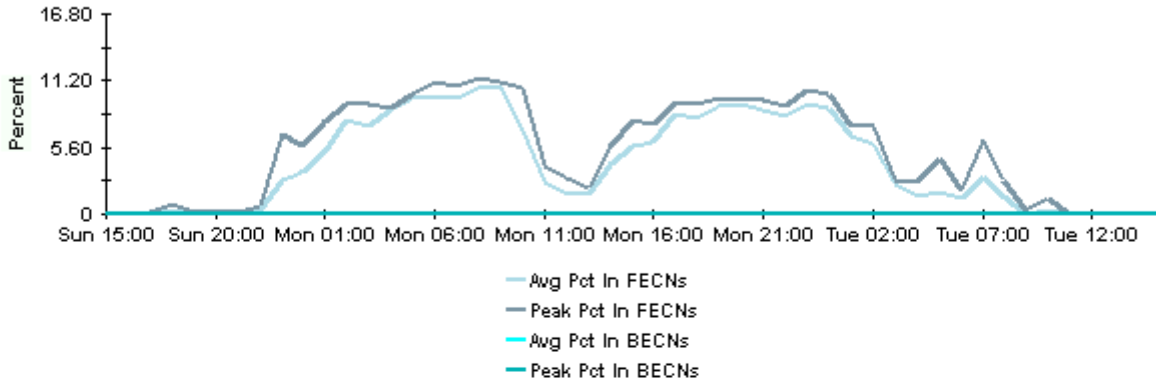




Ingress Congestion | Egress Congestion | Ingress Frame Types | Egress Frame Types

Device_156: 2_16

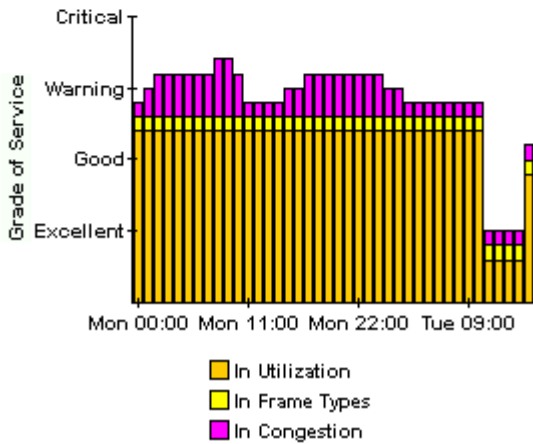
Sun Mar 16 03:00 PM - Tue Mar 18 03:00 PM



Ingress PVC Endpoint Grade of Service

Device_156: 2_16

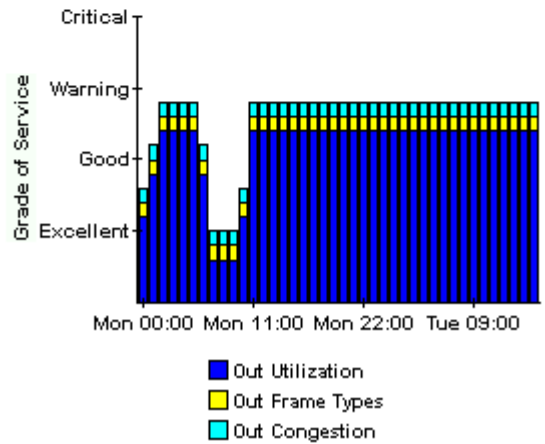
Mon Mar 17 12:00 AM - Tue Mar 18 03:00 PM



Egress PVC Endpoint Grade of Service

Device_156: 2_16

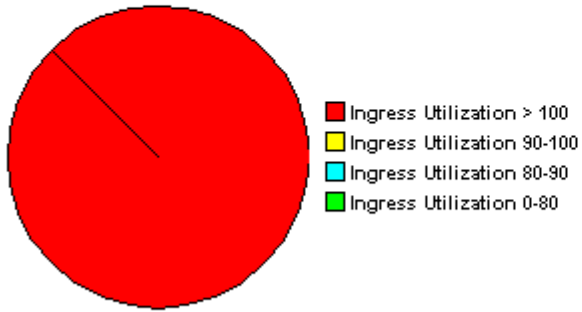
Mon Mar 17 12:00 AM - Tue Mar 18 03:00 PM



Ingress Frequency Distribution

Device_156: 2_16

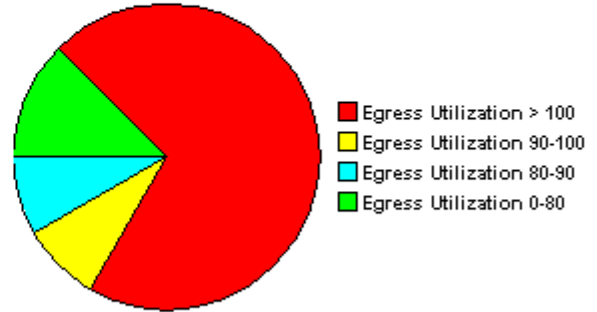
Mon Mar 17 2003 - Mon Mar 17 2003



Egress Frequency Distribution

Device_156: 2_16

Mon Mar 17 2003 - Mon Mar 17 2003



7 Port NRT QuickView

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.

Port QuickView and Snapshot reports focus on utilization, discards and errors. The selection table at the top performs a ranking function, sorting ports by utilization, highest to lowest. In the NRT version of the report (see below), the top selection table provides averages for sample data collected during the previous 6 hours. For each port in the table, you can see:

- In utilization
- Out utilization
- Percentage of in errors
- Percentage of out errors
- Percentage of in discards
- Percentage of out discards

The first graph below the selection table compares in utilization to out utilization. The next graph to the right looks at errors and discards. Use the graph on the right to compare in errors to out errors, in discards to out discards.

The bottom graph provides an hourly grade of service score for ingress and egress. The score combines:

- Utilization
- Errors
- Discards

Use this graph to see when service moved from the good range into the warning range.

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

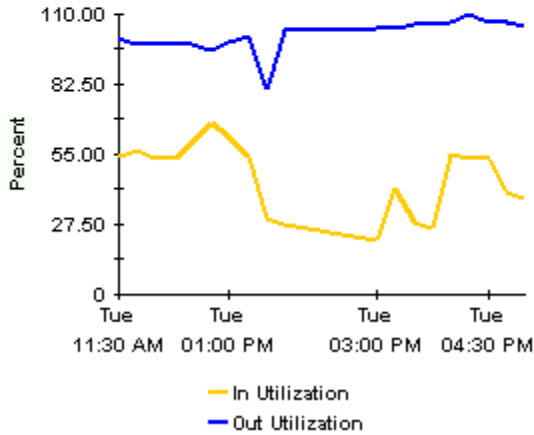
Tue Mar 18 04:45 PM - Tue Mar 18 05:00 PM

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

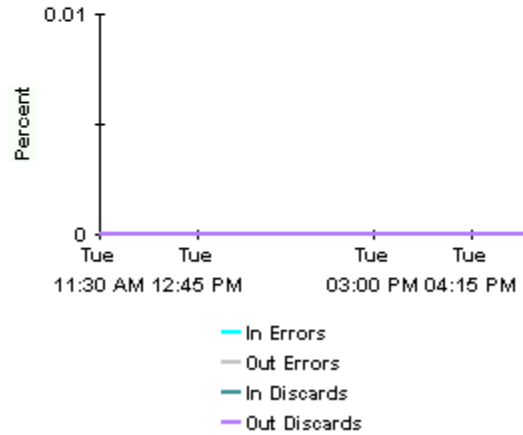
Port Avg and Peak Utilization
65.83.60.1: Serial0/1.1

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

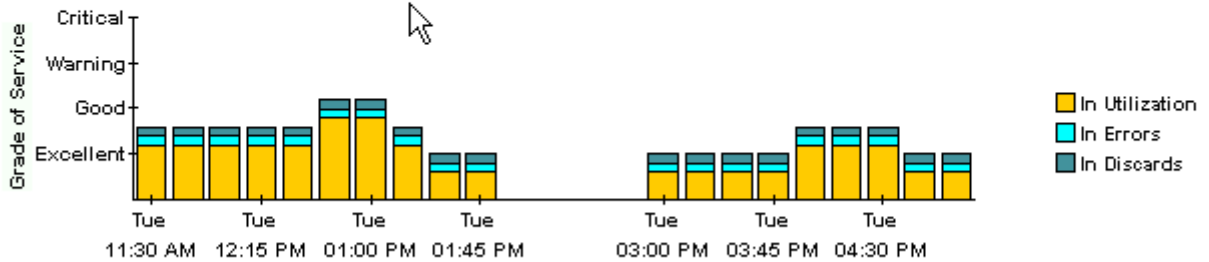
Tue Mar 18 11:30 AM - Tue Mar 18 05:00 PM



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



8 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 will 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



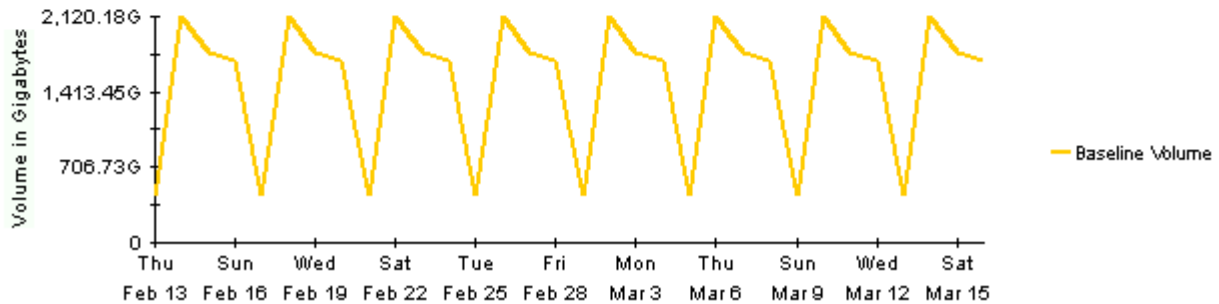
This report provides an overview of the performance of your frame relay ports. Each chart shows key metrics aggregated for all ports. Indicators of performance are shown, including total volume with in and out errors and discards.

Customers Mon Mar 17 2003

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

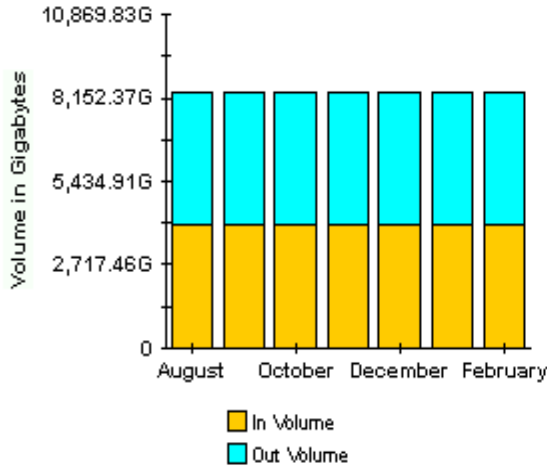
Day of Week Baseline and Forecast For All Ports

Thu Feb 13 2003 - Sun Mar 16 2003



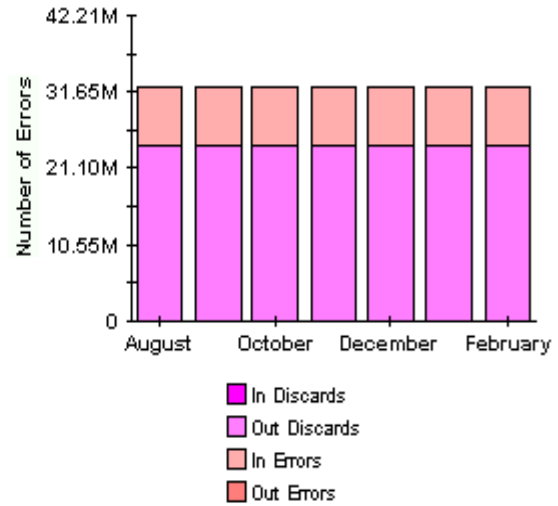
Monthly Volume for All Ports

Aug 2002 - Feb 2003



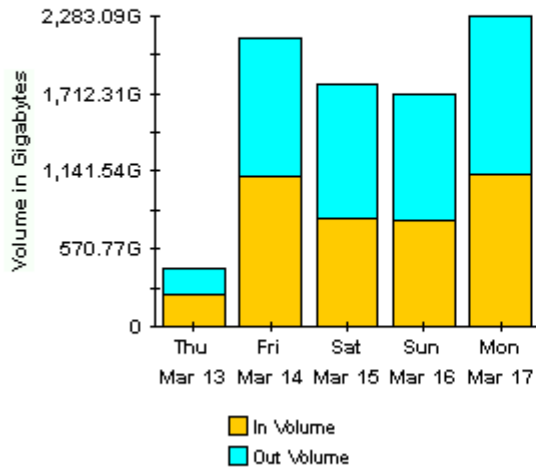
Monthly Error Counts for All Ports

Aug 2002 - Feb 2003



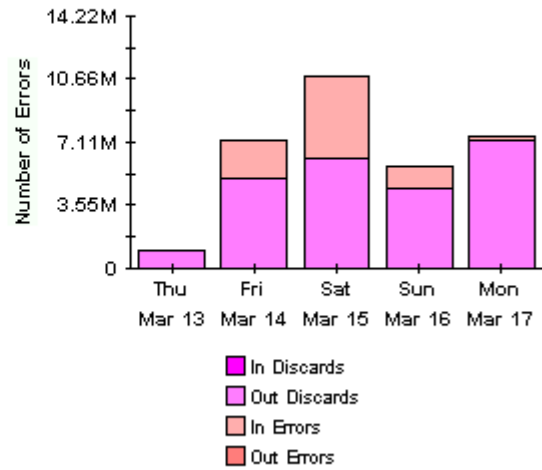
Daily Volume for All Ports

Thu Mar 13 2003 - Mon Mar 17 2003



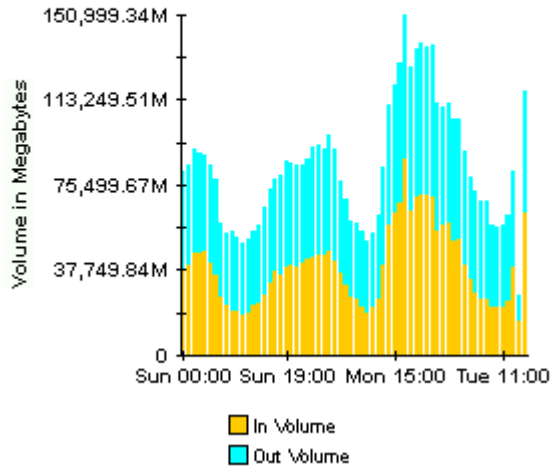
Daily Error Counts for All Ports

Thu Mar 13 2003 - Mon Mar 17 2003



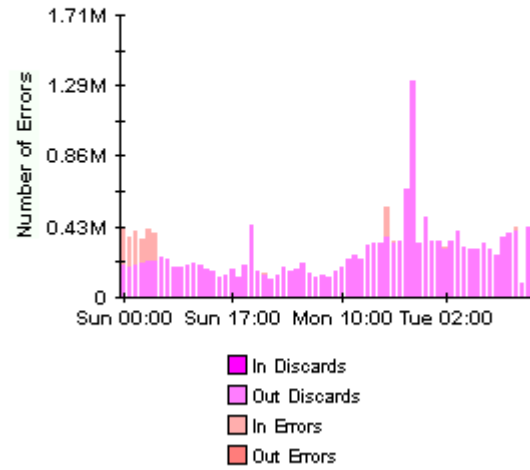
Hourly Volume for All Ports

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



9 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 above 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

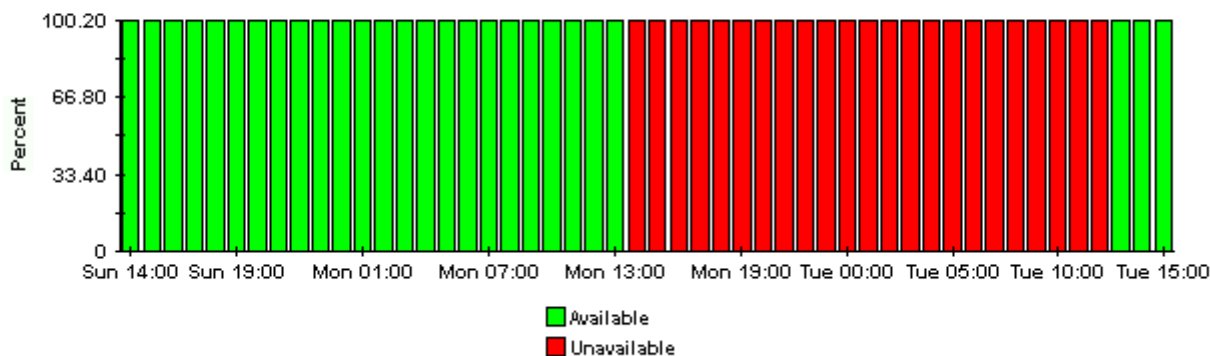
Mon Mar 17 2003

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	104		96.88	Cisco	7600

Hourly PVC Endpoint Availability

Device_137: 1_24

Sun Mar 16 02:00 PM - Tue Mar 18 03:00 PM



10 PVC Endpoint Top 10

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

11 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. Diffs 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
Cisco

Model
7600

Description

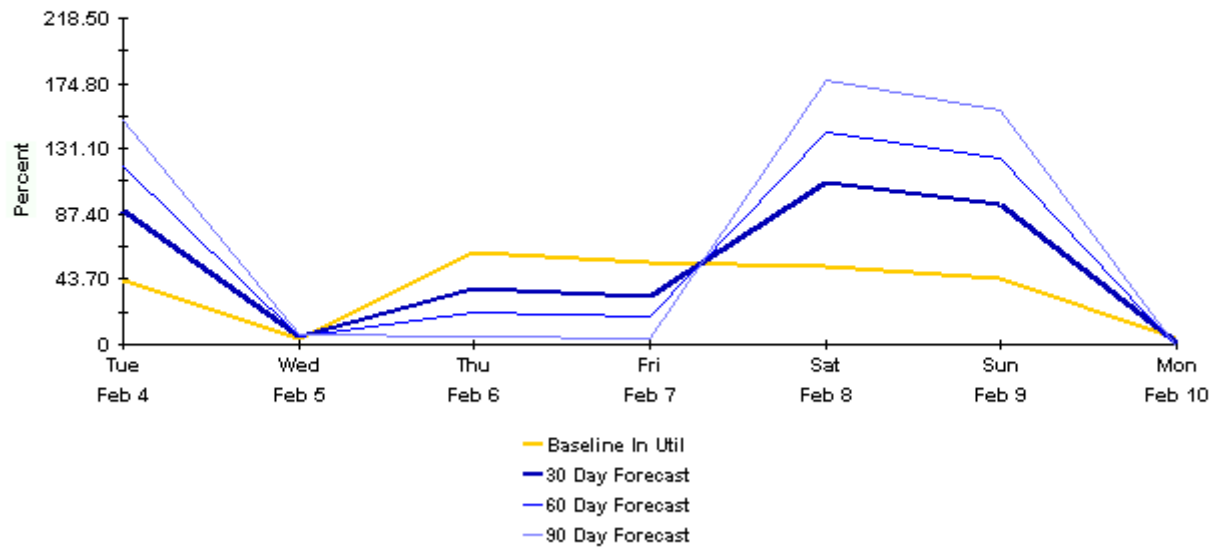
PVC Customer Name
Customer Unassigned

Location
Location Unassigned

PVC Endpoint Baseline In Utilization and 30, 60, and 90 Day Forecast

Device_185: 2_48

Tue Feb 04 2003 - Mon Feb 10 2003



12 PVC Configuration Problems

The PVC Configuration Problems report provides an inventory of:

- PVC Endpoints with no CIR setting
- PVC Endpoints with no PVC Id setting

Invalid CIR Settings

Many Frame Relay reports calculate utilization. These calculations rely on valid CIR values. If the CIR value is not valid, the calculation will fail. If the RFC1315 MIB table or the Cisco Frame Relay MIB table provides a CIR of 0 bits per second, errors will occur when OVPI attempts to calculate utilization. These errors will cause rows of data to disappear from selection tables. To avoid this problem, you must re-set the CIR. One of your options is to set the CIR equal to the full ifSpeed of the interface that the PVC terminates on. This speed is equal to the maximum bandwidth available to the PVC.

If invalid CIR values are being sourced from either the RFC1315 MIB or the Cisco Frame Relay MIB, you have two ways to set valid values:

- By editing a property import file, and letting OVPI import the file
- By using a change form

Invalid PVC Id

The PVC Id is an integer value associated with the two ends of a single PVC. When a PVC Id for each PVC Endpoint is not available, most reports are not affected, however, the End-to-End reports will be affected. Populating this field is recommended, but not mandatory.

There are two ways to update PVC Id values:

- By editing a property import file, and letting OVPI import the file
- By using a change form

See [Chapter 5, Updating Property Values](#), 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

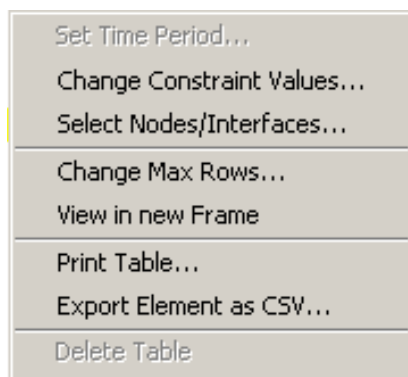
A Editing Tables and Graphs

Any table or graph can be viewed in several ways. While the default view is usually adequate, you can easily change to a different view. If you are using Report Viewer, right-click the object to open a list of view options. If you are using the Web Access Server, follow these steps to change the default view of a table or graph:

- 1 Click **Preferences** on the links bar.
- 2 Expand **Reports** in the navigation frame.
- 3 Click **Viewing**.
- 4 Select the **Allow element editing** box.
- 5 Click **Apply**.
- 6 Click the Edit icon next to the table or graph.

View Options for Tables

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



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.

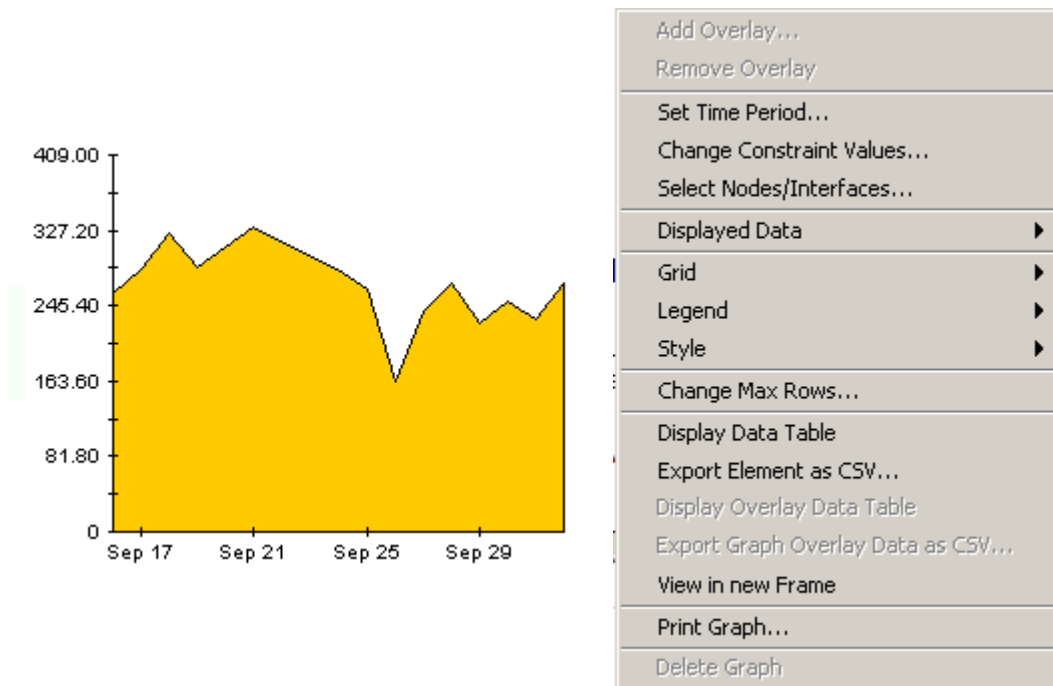
Change Max Rows increases or decreases the number of rows in a table. The default is 50. If you expand the default, the table may take more time to open. If you are trending a large network, using the default ensures that the table opens as quickly as possible.

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.

Polled IP QoS Statistics Data - Input Over Previous 6 Hours					
Direction	IpPrecedence	Switched Bytes	Switched Pkts	Time Period	
Input	0	105,888	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	

View Options for Graphs

Right-clicking a graph, or clicking the Edit Graph icon if you are using the Web Access Server, opens the following list of view options.

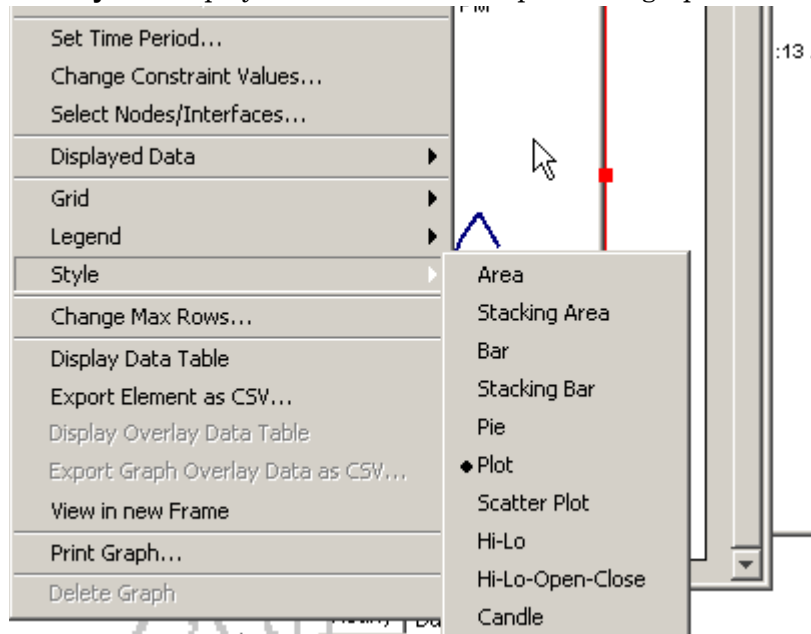


The following table provides details about each option.

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

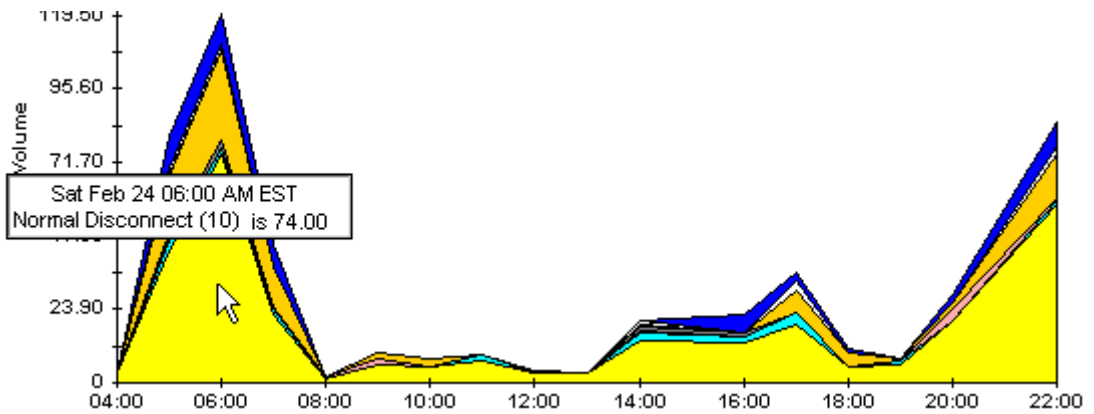
Style Options

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



Style > Area

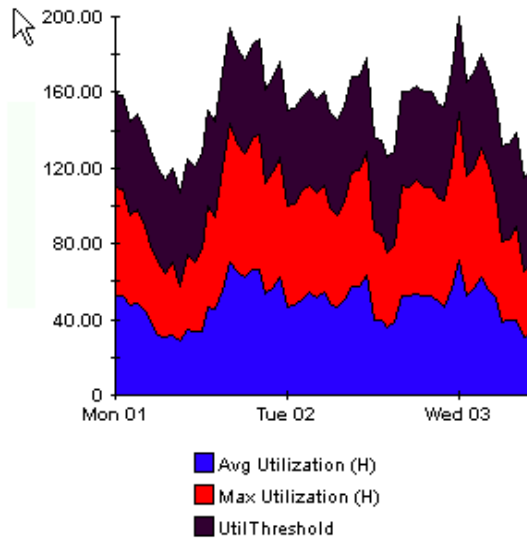
The plot or bar chart changes to an area graph. While relative values and total values are easy to view in this format, absolute values for smaller data types may be hard to see. Click anywhere within a band of color to display the exact value for that location



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

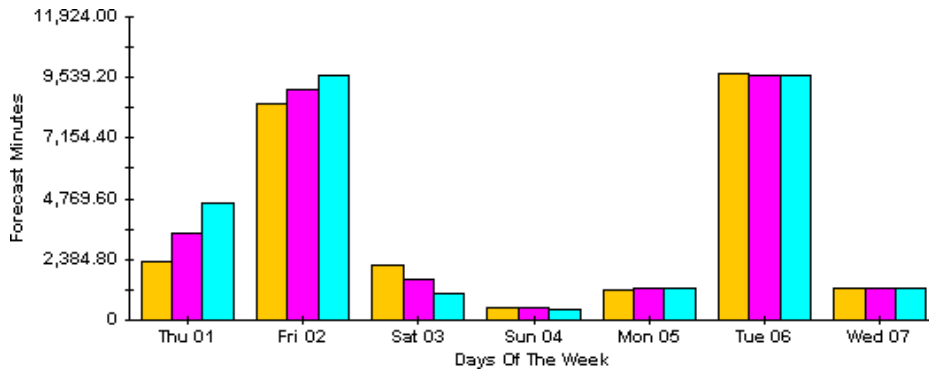
Style > Stacking Area

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



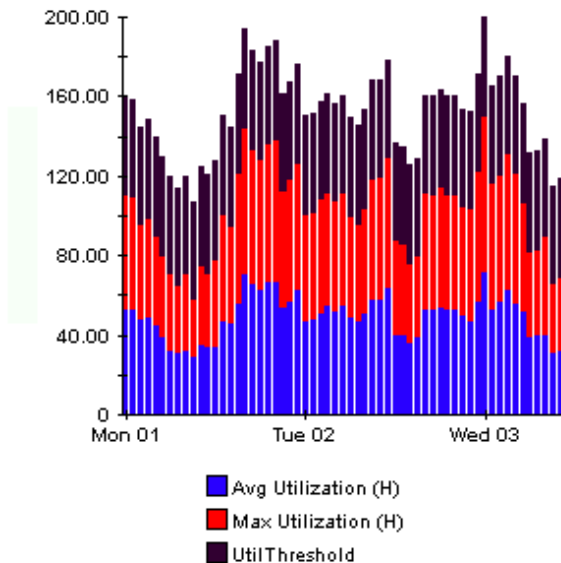
Style > Bar

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



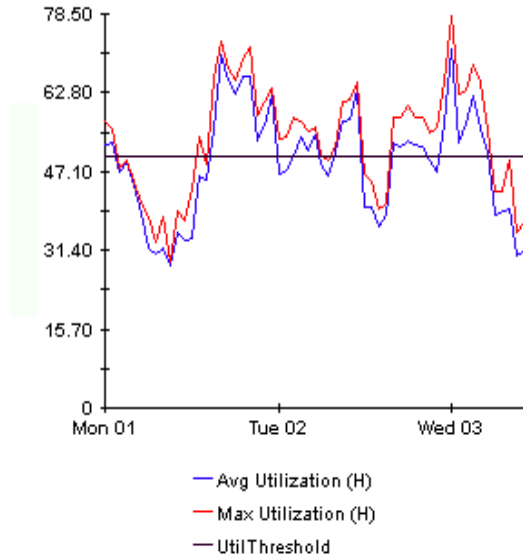
Style > Stacking Bar

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



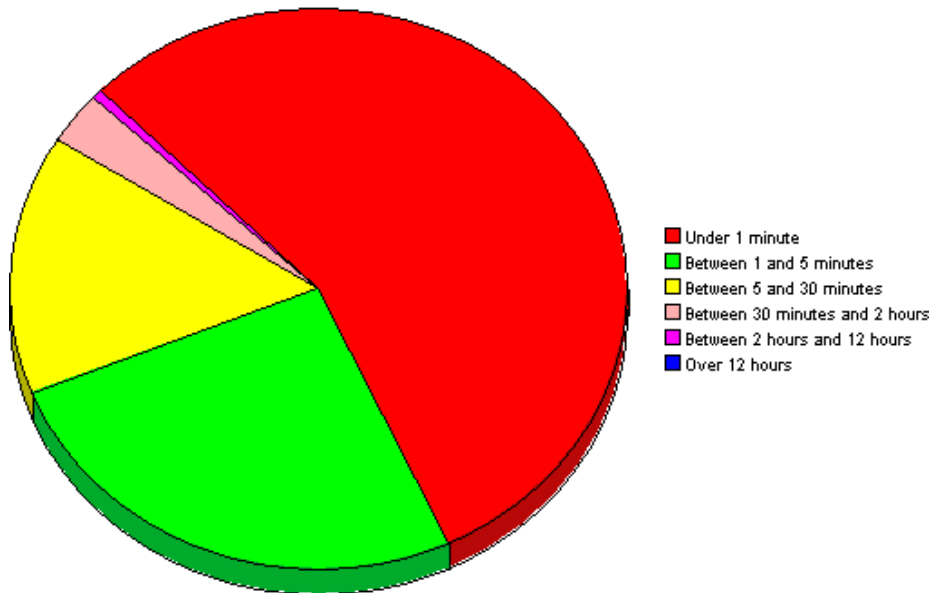
Style > Plot

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



Style > Pie

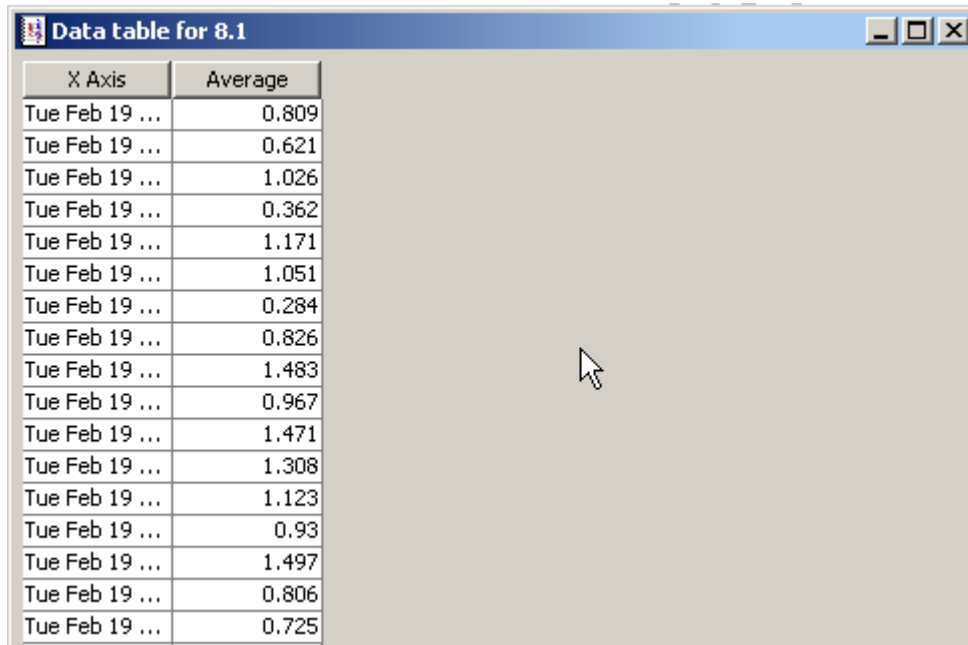
An area graph becomes a pie chart. Bands in an area graph convert to slices of a pie and the pie constitutes a 24-hour period. This view is helpful when a small number of data values are represented and you are looking at data for one day.



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

Display Data Table

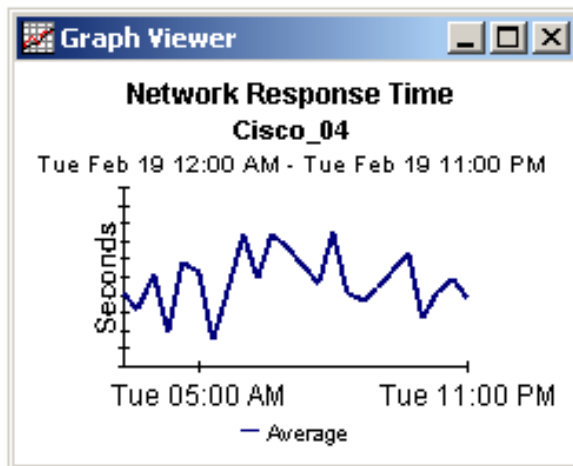
This option changes a graph into a spreadsheet.



X Axis	Average
Tue Feb 19 ...	0.809
Tue Feb 19 ...	0.621
Tue Feb 19 ...	1.026
Tue Feb 19 ...	0.362
Tue Feb 19 ...	1.171
Tue Feb 19 ...	1.051
Tue Feb 19 ...	0.284
Tue Feb 19 ...	0.826
Tue Feb 19 ...	1.483
Tue Feb 19 ...	0.967
Tue Feb 19 ...	1.471
Tue Feb 19 ...	1.308
Tue Feb 19 ...	1.123
Tue Feb 19 ...	0.93
Tue Feb 19 ...	1.497
Tue Feb 19 ...	0.806
Tue Feb 19 ...	0.725

View in New Frame

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



Glossary

Backward Explicit Congestion Notification (BECN)

A specific bit in the header of the frame relay packet; also, a method for preventing a congested condition from getting worse. If a node becomes congested, changing the value of the BECN bit to 1 signals 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; also, 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; also, 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 Dci 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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