HP OpenView Performance Insight

Report Pack for IP QoS Statistics
User Guide

Software Version: 3.0

Reporting and Network Solutions

May 2004

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The eCare support site includes:

- Downloadable documentation
- Troubleshooting information
- Patches and updates
- Problem reporting
- Training information
- Support program information

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Overview

This chapter covers the following topics:

- QoS Reporting and HP OpenView
- Enhancements in Version 3.0
- Ways to Customize QoS Reports
- Additional Sources of Information

QoS Reporting and HP OpenView

End-to-End Quality of Service (QoS) is the ability of every node in the network to process high priority traffic before low priority traffic. QoS includes the following:

- Dedicated bandwidth to particular traffic types
- Controlled jitter and latency (required by some real-time and interactive traffic)
- Improved loss characteristics
- Ensured that providing priority for one or more flows does not adversely affect other flows

To set up End-to-End QoS, you can use a router configuration interface that controls the second byte in the header of the IP packet. The first three bits of this byte indicate the level of precedence.

Traffic Priority	Value or Level
lowest	0
highest	7

Providers and enterprise customers can use the OVPI QoS reporting solutions of Cisco IOS for information on interface traffic. These reports provide information on interface utilization, discards, errors, and exception counts. This Report Pack also provides information on the amount of traffic associated with each precedence level.

The IP QoS Statistics Report Pack collects data using the Cisco IPQoSStat Datapipe. The datapipe does the following actions:

- polls the CISCO-IP-STAT MIB for the bidirectional byte and packet counters.
- reports the amount of traffic handled by each interface of a Cisco IOS device. The interface could be a Router or a Catalyst switch running IOS (instead of CatOS).

You can use IP QoS Statistic Report (CAR) to classify packets and set the IP precedence value, so that the packets for preferential queuing can be weighed differentially. When operating in a differential-services (DiffServ) environment, the amount of traffic transiting the network over each class-of-service (CoS) can help you evaluate the architecture QoS design.

The Report Pack provides three reports on the different classes of traffic.

- Near Real Time Interface Activity
- Historical Interface Activity
- Inventory

The **Near Real Time** report contains rate data for the previous 24 hours and provides totals for bytes and packets, for each precedence level, in each direction, for every poll cycle during the previous six hours.

The **Historical** report provides details about yesterday's traffic volume per IP precedence level and displays hourly aggregations, daily aggregations, and monthly aggregations for any interface that has had traffic during the previous six hours.

The **Inventory** report provides a list of all the ToS-enabled interfaces in your network. This report is refreshed after every poll cycle; the list of customers is updated once a day.

Enhancements in Version 3.0

IP QoS Statistics Report Pack Version 3.0 is designed for OVPI 5.0 and provides support for Oracle as well as Sybase database software.

Ways to Customize QoS Reports

You can change the contents of the reports in this package by applying group filters and by editing parameters, tables, and graphs. If you apply a group filter, you are changing how the entire package appears to a subset of users, and usually this means the users affiliated with one of your customers or a division within your own organization. If you edit a parameter, table, or graph, you are making a temporary change to one report.

Adding customers and locations is another way to customize reports. However, unlike other reporting solutions you may be familiar with, there is no separate property import for IP QoS Statistics and there are no property update forms for IP Qos Statistics. The property information associated with an interface—interface speed, customer, location, and device name—is inherited from the Interface Reporting Report Pack.

Group Filters

If you have customers, and you want each customer to see the reports in this package, you will need to set up multiple filters, one per customer, and thereby create customer-specific reports. Creating customer-specific reports involves the following steps:

- Importing customer names using Common Property Tables 3.0
- Creating a group account for all of the users affiliated with a particular customer
- Creating a group filter for the group account

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

Report Parameters

When you edit a parameter, you apply a constraint that eliminates data you do not want to see. For example, 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; similarly, if you edit the Source Location, data for all locations except the location you typed in the Source Location field will drop from the report.

Constraining the contents of a report by editing parameters is optional and you may apply multiple constraints at once. The IP QoS Statistics package supports the following parameters:

* Customer Name

* Customer ID

* Device Name

* Interface Name

* Admin Status

To edit parameters, click the **Edit Parameters** icon at the bottom right-hand corner of the report. When the **Edit Parameters** window opens, type the constraint in the appropriate field and click **Submit**.

Tables and Graphs

In addition to modifying an entire report by editing parameters, you can change the look of individual tables and graphs. Changing the look may be necessary when a table or graph is crowded and the data is not easy to read. To change the default view, click the **Edit Table** or **Edit Graph** icon, or right-click the object if you are using the Report Viewer application. For details about view options for tables and graphs, see Chapter 4, Editing Tables and Graphs.

Additional Sources of Information

For information about recent enhancements and known problems, refer to:

* *IP QoS Statistics Report Pack 3.0 Release Statement*

For information about the Interface Reporting package and property data, refer to:

* *Interface Reporting 4.0 User Guide*

* *Interface Reporting ifEntry Datapipe 2.0 User Guide*

* *Interface Discovery Datapipe 2.0 User Guide*

The following documents are good sources for information about HP OpenView Performance Insight, or OVPI:

* *HP OpenView Performance Insight 5.0 Administration Guide*

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

- *HP OpenView Performance Insight 5.0 Installation Guide*

Manuals for OVPI and manuals for the reporting solutions that run on OVPI are posted to the following web site:

http://support.openview.hp.com

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

Every title listed under **Reporting and Network Solutions** indicates the manual's date of publication. Since updated user guides are posted to this site on a regular basis, you should check this site for updates before using an older PDF that may not longer be current.

The Package Installation

This chapter explains in detail the steps involved in installing IP QoS Statistics. This chapter covers the following topics:

- Guidelines for a Smooth Installation

- Installing IP QoS Statistics 3.0

- Options for Viewing Reports

- Configuring Distributed Systems

- Package Removal

Guidelines for a Smooth Installation

The RNS 5.0 CD contains components for NNM and OVPI. When you select OVPI report packs for installation, the install script on the CD will automatically extract every OVPI package from the CD and copy them to the Packages directory on your system. When the extract and copy process is done, the install script will prompt you to run an install wizard known as Package Manager. Before getting to that step, become familiar with the following guidelines.

Prerequisites for Installation

IP Qos Statistics has a combination of core-product requirements and package level requirements. The following software must be installed before installing IP QoS Statistics Reporting 3.0:

- OVPI 5.0

- Any OVPI 5.0 Service Pack available for installation

If you need help installing a Service Pack, refer to the release notes for the Service Pack. The package-level prerequisites are as follows:

- Common Property Tables 3.0

- Interface Reporting Report Pack 4.0

Upgrading Common Property Tables

If you are running an older version of Common Property Tables, you must first upgrade to Common Property Tables 3.0. Installing this particular upgrade package is no different from installing other upgrade packages; however, keep in mind that you cannot install the upgrade for Common Property Tables *and* other packages at the same time. Finish the upgrade for Common Property Tables first, then run the install wizard a second time to install the other packages.

Distributed Environments

If you are running IP QoS Statistic Report Reporting as a distributed system, the central server, every satellite server, and every remote poller must be running OVPI 5.0 and any available Service Packs. Deploy reports once, from the central server only.

Installing IP QoS Statistics 3.0

Perform the following tasks to install IP QoS Statistics 3.0:

- Task 1: Extract packages from the RNS 5.0 CD
- Task 2: If necessary, upgrade Common Property Tables 3.0
- Task 3: Install the following packages:
    - *IP_QoSStat 3.0*
    - *Cisco_IPQoSStat_Datapipe 3.0*
- If desired, install the optional sub-packages when you install the report pack.

Task 1: Extract packages from the RNS 5.0 CD

Follow these steps to extract OVPI packages from the RNS 5.0 CD to the Packages directory on your system:

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

2 Stop OVPI timer and wait for processes to terminate.

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

UNIX: As root, do one of the following:

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

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

3 Insert the RNS 5.0 CD. On Windows, a Main Menu displays automatically. On UNIX, the CD may or may not mount automatically; if it does not mount automatically, navigate to the top level directory on the CD, and run the **./setup** command.

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 install wizard opens.

When the copy to the Packages directory is complete, you have the option of navigating to the Packages directory to see the results. The Packages directory contains separate folders for IP QoS Statistic Report and the Cisco IPQoSStat Datapipe. The following folders appear under IP QoS Statistic Report:

- *IP_QoS_Statistics.ap*
- *IP_QoS_Statistics_Demo.ap*

The following folder appears under Cisco_IPQoSStat_Datapipe:

- *Cisco_IPQoSStat_Datapipe.ap*

Installing the demo package is optional. You may install the demo package by itself, with no other packages, or you may install the demo package along with the other packages. Reports in the demo package are interactive, tables are linked to graphs, and you may experiment with editing parameters, tables, and graphs.

Task 2: Upgrade to Common Property Tables

IP QoS Statistics 3.0 requires Common Property Tables 3.0. If you have not already upgraded to Common Property Tables 3.0, do this now, *before* moving on to Task 3. If you need help with the upgrade, refer to the *Common Property Tables 3.0 User Guide*.

Task 3: Install the IP QoS Statistic Report Pack, Datapipe and Optional Sub-Packages

Follow these steps to install IP QoS Statistic Report 3.0:

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

2 If your system is distributed, disable trendcopy.

3 Start **Package Manager**. The Package Manager install wizard opens.

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

5 Click the **Install** radio button.

6 Approve the default installation directory or select a different directory, if necessary.

7 Click **Next**. The Report Deployment window opens.

8 Accept the default for Deploy Reports; accept the defaults for application server name and port.

9 Type your user name and password for the OVPI Application Server.

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

11 Click the check box next to the following packages:

IP_QoS_Statistics

IP_QoS_Statistics_Demo

Cisco_IPQoSStat_Datapipe

12 Click **Next**. The Type Discover window opens. Keep the default and click **Next**.

13 The Selection Summary window opens; verify if the contents of this window are correct.

14 Click **Install** to begin the installation process. The Install Progress window opens. When installation finishes, an install complete message appears.

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

Options for Viewing Reports

Before reports can be viewed using a Web browser, they must be deployed. During the preceding installation step, you enabled the Deploy Reports option. As a result, IP QoS Statistics reports are deployed and available for remote viewing.

The method of report viewing available to you depends on how OVPI was installed. If the client component was installed on your system, you have access to Report Viewer, Report Builder, and the Management Console. If the client component was not installed on your system, viewing reports remotely is the only way you can view reports.

The Management Console provides access to Object Manager, and Object Manager provides access to tasks and reports specific to groups of objects. For more information about Object Manager and launching reports specific to selected objects, refer to the *Performance Insight Administration Guide*. For more information about the client component, refer to the *Performance Insight Installation Guide*.

Configuring Distributed Systems

If OVPI is running on a distributed system, you installed IP Qos Statistics at least twice, once on the central server and once on a satellite server, and you installed the Cisco IPQoSStat Datapipe on each satellite server. (If the central server is polling—most central servers do not poll—you also installed the datapipe on the central server.) In addition, during report pack installation, you deployed reports once, from the central server. You must make a few changes to files on the central server and each satellite server.

Configuring the Central Server

Follow these steps to configure the central server:

1   If the central server will not be polling, do not install the Cisco IPQoSStat Datapipe on the central server.

2   Add `Oracle` **and/or** `Sybase` connectivity information for each satellite server to the central server configuration.

3   Open the following file:

    `$DPIPE_HOME/scripts/IPStat_Hourly_Process.pro`

    Comment out block1 by adding the comment sign ("#") before the word **begin** and the word **end**.

4   Configure trendcopy pull commands from the central server for each satellite server. Open the following file:

    `$DPIPE_HOME/scripts/ IPStat_Hourly_Process.pro`

    Modify block2 as follows:

    • Remove "#" before the word **begin** and before the word **end**

    • 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 a copy of block2 for each satellite server and repeat step 4 for each copy of block2.

6   If you want to copy rate data from satellite servers to the central server, configure trendcopy pull commands from the central server for each satellite server. Open the following file:

`$DPIPE_HOME/scripts/IPStat_Hourly_Process.pro`

Modify block3 as follows:

• Remove "#" before the word **begin** and before the word **end**.

• Replace the *SATELLITE_SERVER_1_DATABASE* with the satellite server name.

• Replace *THIS_MACHINE_DATABASE* with the central server name.

7   If there is more than one satellite server, create one copy of block3 for each satellite server and repeat step 6 for each copy of block3.

8   Make sure that all system clocks are synchronized.

Step 8 is extremely important. In distributed environments, linked processes must execute in exact sequences across independent machines.

Configuring a Satellite Server

Follow these steps to configure a satellite server.

1   Switch off daily aggregations by commenting out the lines referencing *IPStat_DMF_Process.pro* in the *$DPIPE_HOME/lib/trendtimer.sched* file.

2   Modify the *IPStat_Hourly_Process.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 Cisco IPQoSStat Datapipe, making sure that each Interface is polled by one satellite server only.

4   Make sure that all system clocks are synchronized.

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

Package Removal

If you remove a report pack, the associated tables and all the data in those tables will be deleted. If you want to preserve the data in those tables, archive the data before uninstalling the package. Follow the steps below to uninstall the IP QoS Statistics Report Pack. Removing the report pack automatically removes the datapipe.

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

2   Stop OVPI timer and wait for processes to terminate.

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

UNIX: As root, do one of the following:

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

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

3 Start **Package Manager**. The Package Manager window opens.

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

5 Click the **Uninstall** radio button.

6 Keep the defaults and click **Next**. The Package Selection window opens.

7 Click the check box next to the following packages:

   IP_QoS_Statistics

   IP_QoS_Statistics_Demo

   Cisco_IPQoSStat_Datapipe

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

9 Click **Uninstall.** The Progress window opens. When the removal finishes, a removal complete message appears.

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

11 Restart OVPI timer.

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

   UNIX: As root, do one of the following:

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

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

3

The Reports

This chapter provides brief descriptions and screen shots of the reports. This chapter covers the following topics:

- Inventory Report
- Near Real Time Interface Activity
- Historical Interface Activity

Some reports populate with data sooner than others. The first report to populate with data is the **Near Real Time** report. Data begins to appear in this report after three polling cycles. Other reports, including any report that begins with an analysis of yesterday's performance, will need at least one full day's worth of data before any results are viewable. Until data has been collected for several days, daily charts will be sparsely populated; until data has been collected for several months, monthly charts will be sparsely populated.

Inventory Report

The **Inventory** report provides a list of all the interfaces in the network enabled for IP QoS Statistics. Use this report to keep track of interfaces on a customer-by-customer basis and to compare interfaces on different devices. The interface details are updated after every poll cycle, while the list of customers is refreshed once a day. The data in this report is inherited from the Interface Reporting Report Pack.

Near Real Time Interface Activity

The **Near Real Time Interface Activity** report for IP QoS Statistics provides a pick-list of interfaces that have had IP QoS accounting traffic anytime during the previous six hours. When the user selects an interface from the list the two bar graphs and one table below update to show information for that interface over the previous 24 hours.
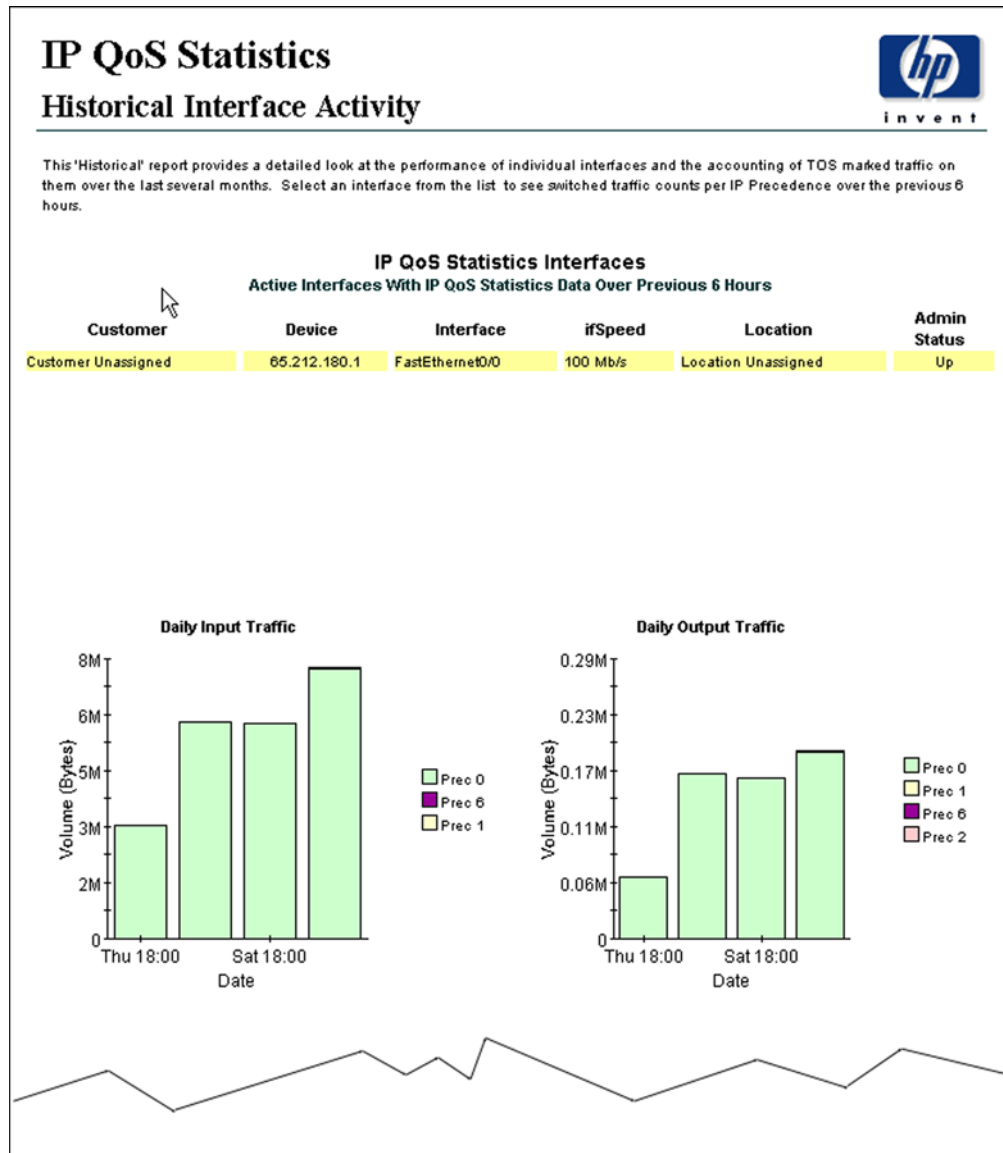
The graphs display byte-traffic volume for the input and output sides of the interface separately, and indicate which IP precedence the traffic was set to. This provides a great way to see when different classes of traffic are running across the network, so that QoS schemes may be designed to most efficiently classify and pass the kinds and patterns of traffic revealed by accounting monitoring of the manner exposed here.
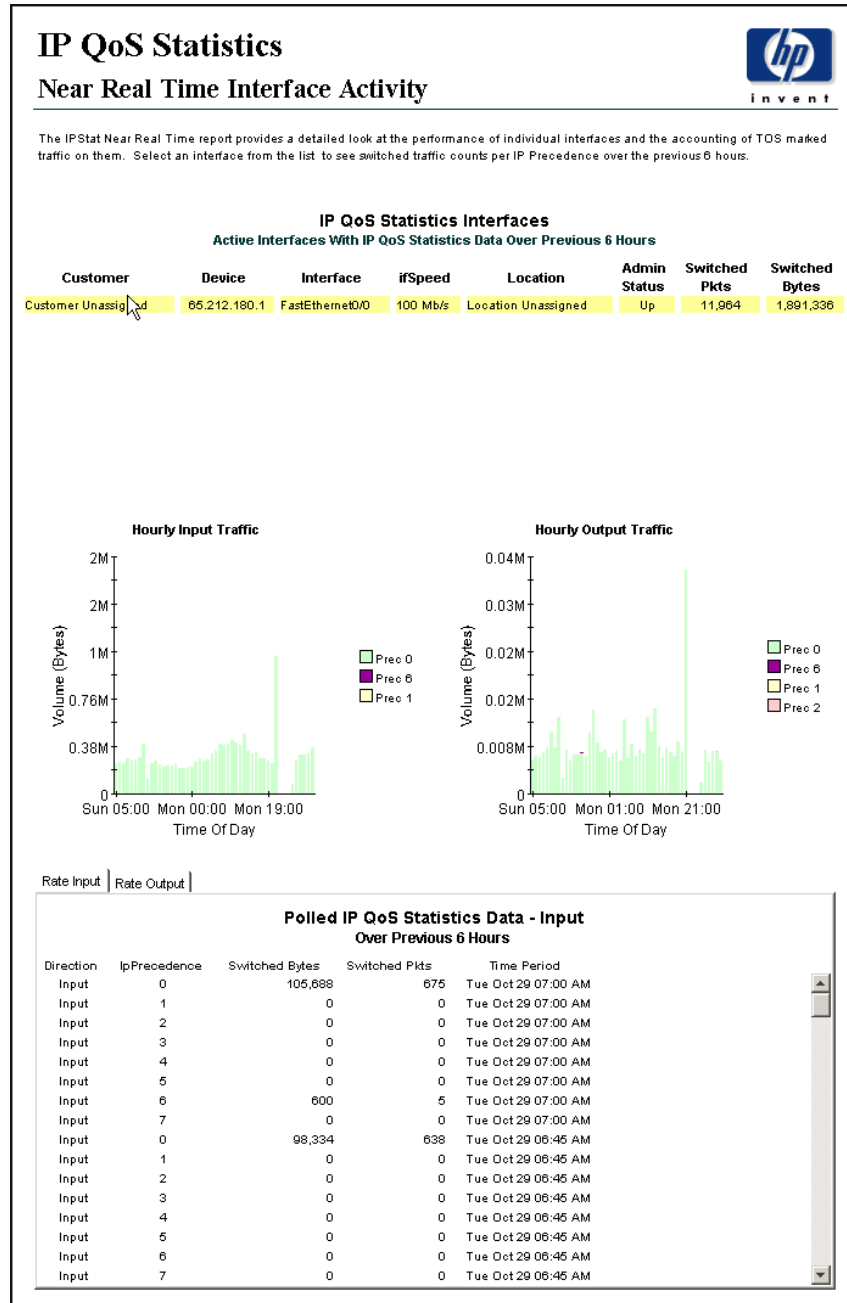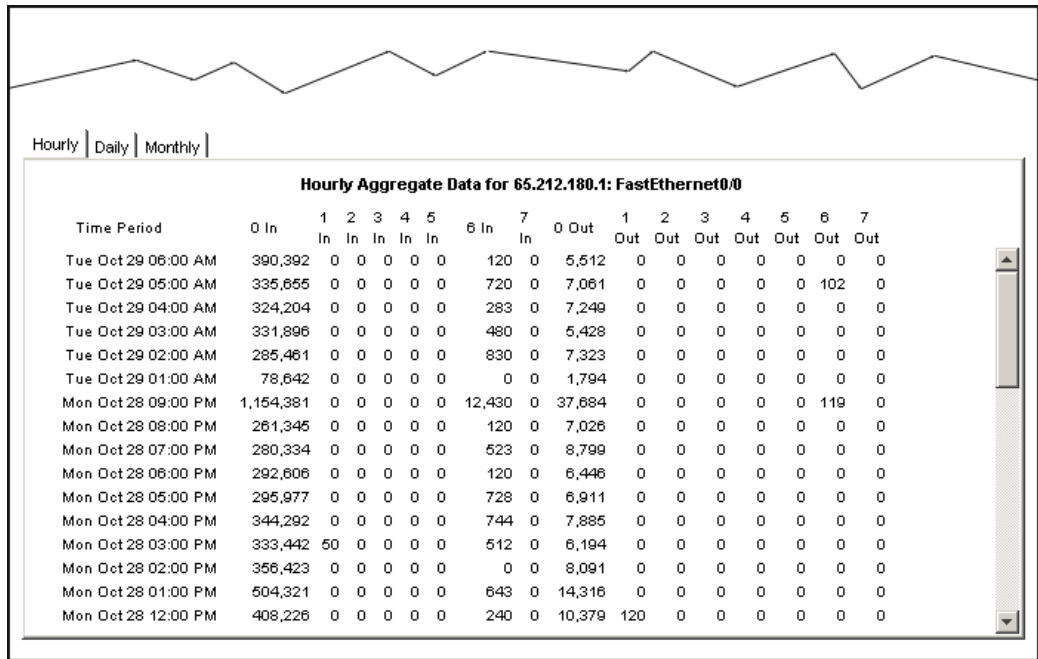
Historical Interface Activity

The **Historical** report tracks traffic volume by IP precedence and aggregates traffic volume by hour, day, and month. In the selection table you will see a list of every interface that has had at least some traffic during the previous six hours. For each interface, this table indicates the device, the customer, the ifSpeed, and the location of the device.

The color-coded bar charts, one for each direction, track daily ups and down in traffic volume, and show the distribution of traffic by precedence level. (To make these graphs more legible, right-click the graph, select **View in New Frame**, and resize the window.) The data tables provide hourly, daily, and monthly views of traffic volume by precedence level in each direction. The hourly tab displays data for the previous day; the daily tab displays data for the previous 90 days; the monthly table displays data for the last few months.

Hourly | Daily | Monthly |

Hourly Aggregate Data for 65.212.180.1: FastEthernet0/0

Time Period	0 In	1 In	2 In	3 In	4 In	5 In	6 In	7 In	0 Out	1 Out	2 Out	3 Out	4 Out	5 Out	6 Out	7 Out
Tue Oct 29 06:00 AM	390,392	0	0	0	0	0	120	0	5,512	0	0	0	0	0	0	0
Tue Oct 29 05:00 AM	335,655	0	0	0	0	0	720	0	7,061	0	0	0	0	0	102	0
Tue Oct 29 04:00 AM	324,204	0	0	0	0	0	283	0	7,249	0	0	0	0	0	0	0
Tue Oct 29 03:00 AM	331,896	0	0	0	0	0	480	0	5,428	0	0	0	0	0	0	0
Tue Oct 29 02:00 AM	285,461	0	0	0	0	0	830	0	7,323	0	0	0	0	0	0	0
Tue Oct 29 01:00 AM	78,642	0	0	0	0	0	0	0	1,794	0	0	0	0	0	0	0
Mon Oct 28 09:00 PM	1,154,381	0	0	0	0	0	12,430	0	37,684	0	0	0	0	0	119	0
Mon Oct 28 08:00 PM	261,345	0	0	0	0	0	120	0	7,026	0	0	0	0	0	0	0
Mon Oct 28 07:00 PM	280,334	0	0	0	0	0	523	0	8,799	0	0	0	0	0	0	0
Mon Oct 28 06:00 PM	292,606	0	0	0	0	0	120	0	6,446	0	0	0	0	0	0	0
Mon Oct 28 05:00 PM	295,977	0	0	0	0	0	728	0	6,911	0	0	0	0	0	0	0
Mon Oct 28 04:00 PM	344,292	0	0	0	0	0	744	0	7,885	0	0	0	0	0	0	0
Mon Oct 28 03:00 PM	333,442	50	0	0	0	0	512	0	6,194	0	0	0	0	0	0	0
Mon Oct 28 02:00 PM	356,423	0	0	0	0	0	0	0	8,091	0	0	0	0	0	0	0
Mon Oct 28 01:00 PM	504,321	0	0	0	0	0	643	0	14,316	0	0	0	0	0	0	0
Mon Oct 28 12:00 PM	408,226	0	0	0	0	0	240	0	10,379	120	0	0	0	0	0	0

Editing Tables and Graphs

This chapter describes the different ways to view the tables or graphs. This chapter covers the following topics:

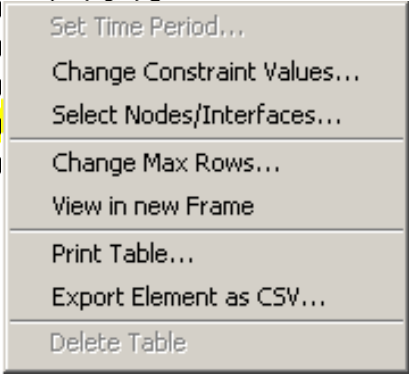- View Options for Tables
- View Options for Graphs

While the default view is usually adequate, you can easily change to a different view. If you are using the Report Viewer application, change the default view by right-clicking the object and selecting a different view. If you are viewing the report remotely using the Web Access Server, click **Edit Table** or **Edit Graph**.

View Options for Tables

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

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

Set Time Period...

Change Constraint Values...

Select Nodes/Interfaces...

Change Max Rows...

View in new Frame

Print Table...

Export Element as CSV...

Delete Table

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

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

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

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

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

View in new Frame opens the table in a Table Viewer window, shown below. If necessary, make the data in the table more legible by resizing the window.

Table Viewer

Polled IP QoS Statistics Data - Input
Over Previous 6 Hours

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

View Options for Graphs

Right-click any graph to open a list of view options.
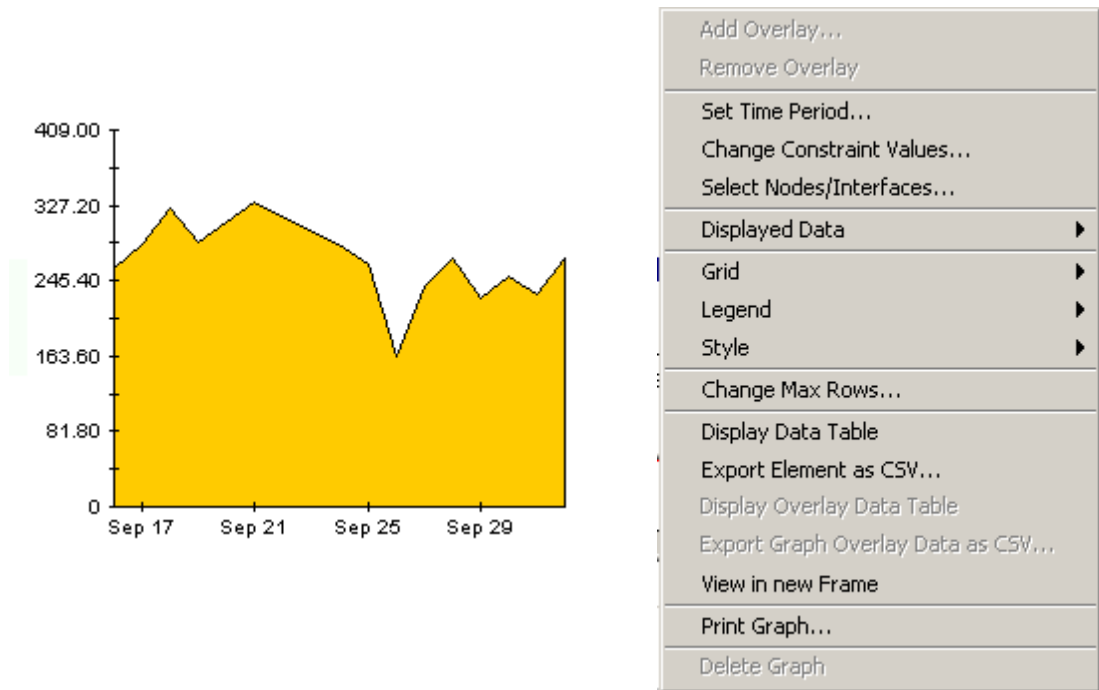
The following table provides a few details about each option.

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

Option	Function
View in New Frame	Opens graph in a Graph Viewer window.
Print Graph	Same as the table option shown above.

Style Options

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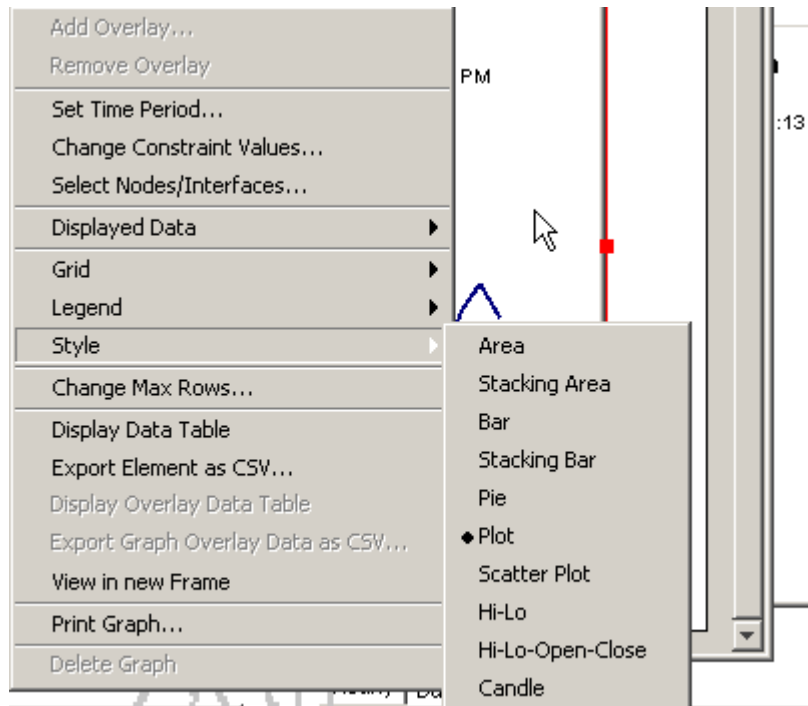
Style > Area

The plot or bar chart changes to an area graph. While relative values and total values are easy to view in this format, absolute values for smaller data types may be hard to see. Click anywhere within a band of color to display the exact value for that location
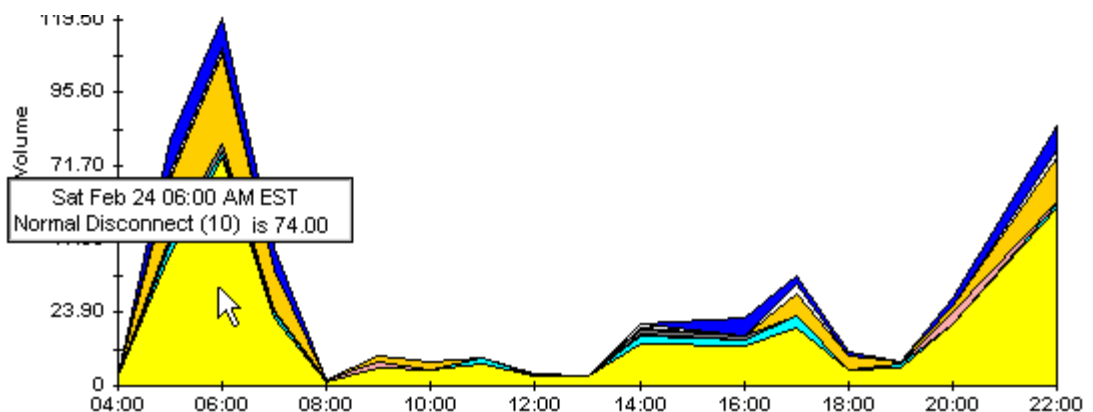
To shorten the time span of a graph, press SHIFT+ALT and use the left mouse button to highlight the time span you want to focus on. Release the mouse button to display the selected time span.

Style > Stacking Area

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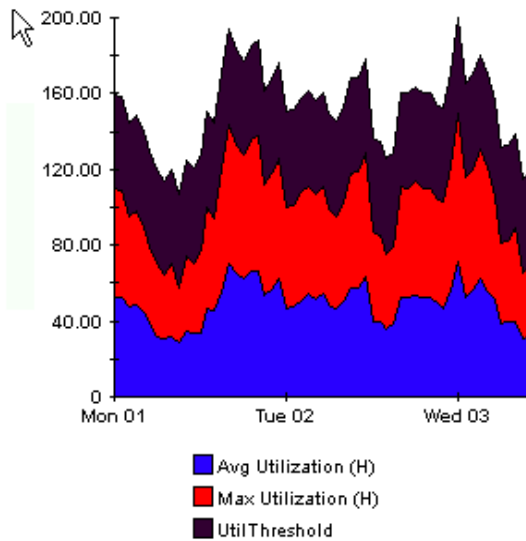
Style > Bar

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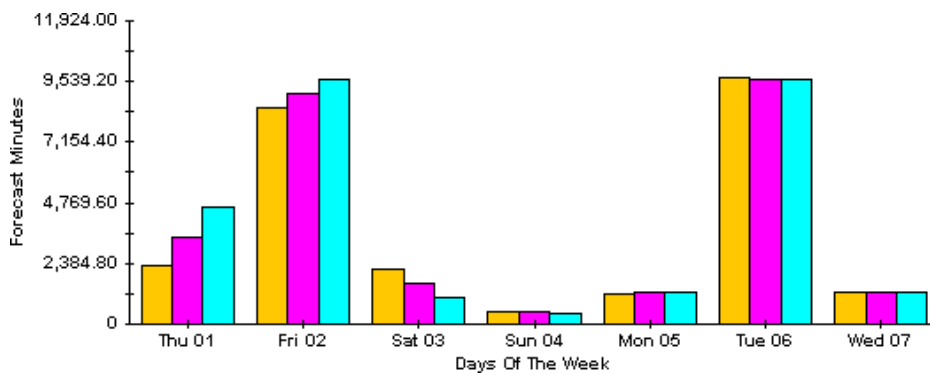
Style > Stacking Bar

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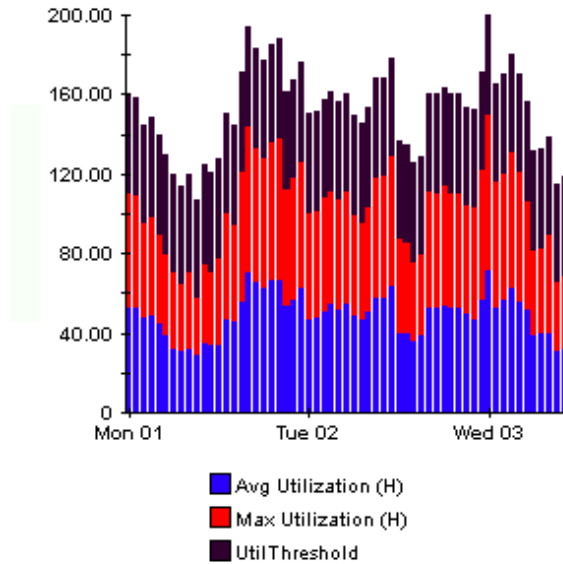
Style > Plot

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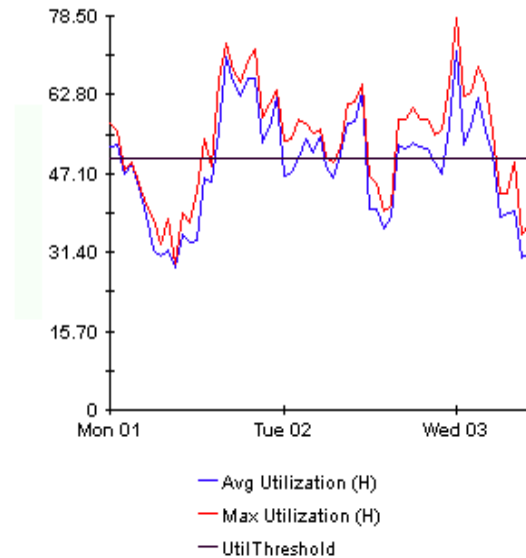
Style > Pie

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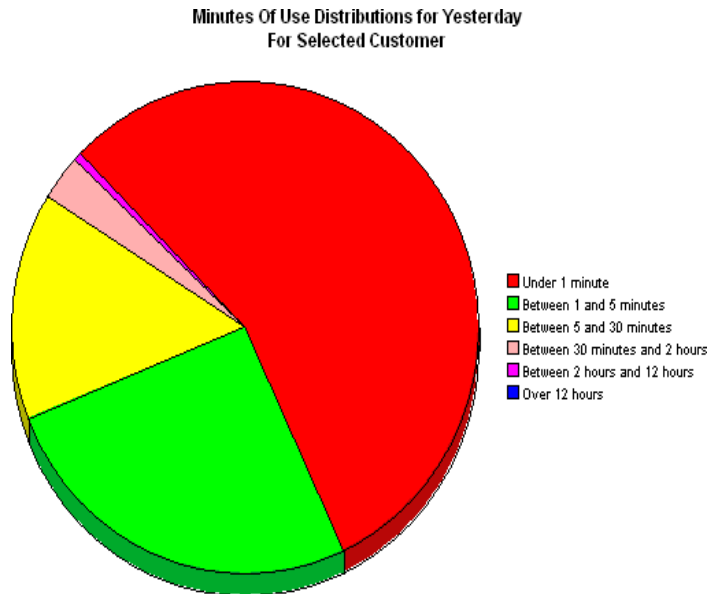
If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

Display Data Table

This option changes a graph into a spreadsheet.

View in New Frame

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

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