

# **HP OpenView Performance Insight**

## **IP QoS Statistics Report Pack User Guide**

**Software Version: 3.0**

*Reporting and Network Solutions 6.0*



**August 2004**

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There you will find contact information and details about the products, services, and support that HP OpenView offers.

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The support site provides access to:

- Product manuals
- Troubleshooting information
- Patches and updates
- Problem reporting
- Training information
- Support program information



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## Overview

This chapter covers the following topics:

- [OVPI and End-to-End QoS](#)
- [Ways to Customize QoS Reports](#)
- [Sources for Additional Information](#)

## OVPI and End-to-End QoS

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

- Dedicated bandwidth to particular traffic types
- Controlled jitter and latency (required by some real-time and interactive traffic)
- Improved loss characteristics

Setting up end-to-end QoS involves using a router configuration interface to control the second byte in the header of the IP packet. The first three bits of this byte indicate the level of precedence.

<b>Precedence</b>	<b>Value or Level</b>
lowest	0
highest	7

The IP QoS Statistics Report Pack 3.0 displays statistics for router interfaces and Catalyst switch interfaces. Use the reports in this package to see trends for the following metrics:

- Interface utilization
- Discards
- Errors
- Exception counts
- Amount of traffic associated with each precedence level

IP QoS Statistics 3.0 contains the following reports:

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

The **Near Real Time** report contains rate data for the previous 24 hours. Use this report to see byte and packet totals for each precedence level, in each direction, for every poll cycle during the previous six hours.

The **Historical Interface Activity** report provides details about yesterday’s traffic volume per IP precedence level and displays hourly, daily, 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.

The following table provides details about recent enhancements to IP QoS Statistics.

Version	Release Date/RNS Version	Features/Enhancements
1.0	May 2003 / RNS 3.0	3 reports Sybase support Cisco IPQoSStat Datapipe 1.0
2.0	October 2003 / RNS 4.0	OVPI Object Manager support
3.0	April 2004 / RNS 5.0	OVPI 5.0 support Oracle support Cisco IPQoSStat Datapipe 2.0
3.0	August 2004 / RNS 6.0	Upgrade package (to_3.0)

## Ways to Customize QoS Reports

You can change the contents of these reports by applying group filters, by editing parameters, and by changing view options for tables and graphs. Group filters are designed for service providers, or anyone needing customer-specific (or possibly department- or division-specific) reports. Editing parameters, tables, and graphs causes a temporary change that anyone can make. For details about view options, see Chapter 4, *Editing Tables and Graphs*.

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 this package. All of 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 want each of your customer to see customer-specific reports, you have to set up multiple filters, one per customer. Creating customer-specific reports involves these steps:

- Import customer names using Common Property Tables 3.0



- Create a group account for all of the users affiliated with a particular customer
- Create a group filter for the group account

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

## Editing Parameters

When you edit a parameter, you apply a constraint that eliminates the 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 drops from the report. If you edit the Source Location, data for all locations except the location you typed in the Source Location field drops from the report.

You can apply multiple constraints at once. IP QoS Statistics supports these parameters:

- Customer Name
- Customer ID
- Device Name
- Interface Name
- Admin Status

If you are viewing the report on the web, edit parameters by clicking the edit parameters icon at the bottom right-hand corner of the report. When the Edit Parameters window opens, enter the constraint in the field and click **Submit**.

If you are using Report Viewer, select **Edit > Parameter Values** from the menu bar. When the Modify Parameter Values window opens, click the **Current Value** field. Type a new value and click **OK**.

## Sources for Additional Information

The demo package that comes with IP QoS Statistics 3.0 contains a sample of each 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. Demo reports are interactive and you can use them to experiment with parameters and view options. For information about recent enhancements to this package, refer to:

- *IP QoS Statistics Report Pack 3.0 Release Statement*

For information about the Interface Reporting package and RNS 6.0, refer to:

- *Interface Reporting 4.0 User Guide*
- *Interface Reporting ifEntry Datapipe 2.0 User Guide*
- *Interface Discovery Datapipe 2.0 User Guide*
- *RNS 6.0 Release Notes, August 2004*

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

<http://www.hp.com/managementsoftware>

Select **Technical Support > Product Manuals** to reach the **Product Manuals Search** page. The user guides for the core product are listed under **Performance Insight**. The user guides for OVPI report packs, NNM correlators, and value-add components for NNM are listed under **Reporting and Network Solutions**.

Every title listed under **Reporting and Network Solutions** indicates the manual's month and year of publication. If a manual is revised and reposted, the date of publication will change even if the software version number does not change. Since 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 no longer be the latest PDF available.

# Package Installation

This chapter covers the following topics:

- Guidelines for a Smooth Install
- Installing IP QoS Statistics 3.0
- Configuring Distributed Systems
- Package Removal

## Guidelines for a Smooth Install

The RNS 6.0 CD contains report packs for OVPI as well as components for NNM. When you select OVPI report packs for installation, the install script on the CD extracts every OVPI package from the CD and copies the results to the Packages directory on your system. When the extract and copy process finishes, the install script prompts you to launch Performance Insight and start Package Manager. Before running Package Manager, review the following guidelines.

### Prerequisites for Installation

IP QoS Statistics has a combination of core-product requirements and package level requirements. The core-product requirements are:

- OVPI 5.0
- Any OVPI 5.0 service pack available for installation

For details about service pack installation, see the release notes for the service pack. The package-level prerequisites are:

- Common Property Tables 3.0 or higher
- Interface Reporting Report Pack 4.0

## Upgrading Common Property Tables

If you are running an earlier version of Common Property Tables, you must upgrade to Common Property Tables 3.0 or higher. Installing this upgrade package is no different from installing other upgrade packages; however, you cannot install other packages when you install the upgrade package for Common Property Tables. Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables.

## Upgrading to IP QoS Statistics 3.0 from Version 2.0

If you are currently running IP QoS Statistics 2.0, you can upgrade to version 3.0 by installing the “to\_3.0” upgrade package. Because datapipes cannot be upgraded, you have to delete the existing datapipe before installing the new datapipe. Here is the recommended sequence of events:

- 1 Delete IP QoSStat Datapipe 2.0
- 2 Install UGRADE\_IP\_QoS\_Statistics\_to\_3.0 (by itself, no other packages)
- 3 Install IP QoSStat Datapipe 3.0

## Distributed Environments

If you are running IP QoS Statistic as a distributed system across multiple servers, the central server, every satellite server, and every remote poller must be running OVPI 5.0 and all the service packs, if any, available for OVPI 5.0. When you install IP QoS Statistics on the central server, deploy reports. When you are done installing packages, you must configure each server by following the steps under [Configuring Distributed Systems](#).

## Installing IP QoS Statistics 3.0

Perform the following tasks to install IP QoS Statistics 3.0:

- Task 1: Stop OVPI Timer and extract packages from the RNS 6.0 CD
- Task 2: If necessary, upgrade to Common Property Tables 3.0
- Task 3: Install the following packages:
  - *IP\_QoSStat 3.0*
  - *Cisco\_IPQoSStat\_Datapipe 3.0*

### Task 1: Extract packages from the RNS 6.0 CD

- 1 Log in to the system. On UNIX systems, log in as root.
- 2 Stop OVPI Timer and wait for processes to terminate.

*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 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.

You have the option of navigating to the Packages directory to see the results. The Packages directory contains separate folders for IP QoS Statistics and the Cisco IPQoSStat Datapipe. The following folders appear under the IP QoS Statistic folder:

- *IP\_QoS\_Statistics.ap*
- *IP\_QoS\_Statistics\_Demo.ap*
- *UPGRADE\_IP\_QoS\_Statistics\_to\_3.0.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 other packages.

### Task 2: Upgrade to Common Property Tables

IP QoS Statistics 3.0 requires Common Property Tables 3.0 or higher. If you have not already upgraded to Common Property Tables 3.0, do this now. (If you need help with the upgrade, refer to the *Common Property Tables 3.0 User Guide*.) When the install finishes, click **Done** to return to the Management Console.

### Task 3: Install IP QoS Statistics and the IP QoSStat Datapipe

- 1 Log in to the system. On UNIX systems log in as root.
- 2 Start Package Manager. The Package Manager welcome window opens.
- 3 Click **Next**. The Package Location window opens.
- 4 Click the **Install** radio button.
- 5 Approve the default installation directory or select a different directory, if necessary.
- 6 Click **Next**. The Report Deployment window opens.
- 7 Accept the default for Deploy Reports; accept the defaults for application server name and port; and type your user name and password for the OVPI Application Server.
- 8 Click **Next**. The Package Selection window opens.
- 9 Click the check box next to the following packages:
  - IP\_QoS\_Statistics*
  - IP\_QoS\_Statistics\_Demo*
  - Cisco\_IPQoSStat\_Datapipe*
- 10 Click **Next**. The Type Discovery window opens. Keep the default and click **Next**. The Selection Summary window opens.
- 11 Click **Install**. The Install Progress window opens. When installation finishes, an install complete message appears.

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

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 the user depends on how OVPI was installed. If the client component is installed on the user's system, then Report Viewer, Report Builder, and the Management Console are available. If the client component is not installed on the user's system, then viewing reports on the web is the only way the user 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 5.0 Administration Guide*. For more information about the client component, refer to the *Performance Insight Installation Guide*.

## Configuring Distributed Systems

If you are running OVPI in a distributed environment, you installed IP QoS Statistics at least twice, once on the central server and once on each satellite server. You also installed the Cisco IPQoSStat Datapipe on each server that polls. When you finish the installation, you must configure the servers in your system by setting up connections with satellite server databases, configuring trendcopy pull commands, and switching off aggregations at each satellite server.

### Task 1: Set up connections with satellite server databases

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

### Task 2: Configure trendcopy pull commands for hourly data

- 1 Open the following file:
 

```
$DPIPE_HOME/scripts/IPStat_Hourly_Process.pro
```

 Comment out block1 by adding the comment sign ("#") before the word **begin** and the word **end**.
- 2 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
- 3 If there is more than one satellite server, create a copy of block2 for each satellite server and repeat step 2 for each copy of block2.
  - 4 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.
  - 5 If there is more than one satellite server, create one copy of block3 for each satellite server and repeat step 4 for each copy of block3.

### Task 3: Switch off daily aggregations at each satellite server

- 1 Comment 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 the system clocks on each satellite server are synchronized with the system clock on the central server.

## 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. 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 welcome 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*
- 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**



## Sample Reports from the Demo Package

This chapter contains:

- Reports from the demo package
- Brief descriptions of each 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. Interface details are updated after every poll cycle, 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** provides a pick-list of interfaces that have had IP QoS accounting traffic during the previous six hours. (This report will populate with data before the other two reports. Data will begin to appear in this report after three polling cycles.) When you select an interface from the list, the two bar graphs and the table below update to show information for that interface over the previous 24 hours. The graphs show byte-traffic volume and indicate which IP precedence the traffic is set to. You can see when different classes of traffic are running across the network and you have the information you need to design efficient QoS schemes.

**Historical Interface Activity** 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 tab displays data for the last few months.

# IP QoS Statistics Inventory



The IP QoS Statistics Inventory report provides a list of all interfaces on the network with IP QoS Statistics accounting enabled. Use the report to examine the configurations for entire customers or to compare individual interfaces on different devices. The interface details are updated after every poll cycle while the Customer list is refreshed every evening.



Customer	Customer Id
Customer Unassigned	-2

## Rate Limiting Interfaces

Device	Interface	ifSpeed	Admin Status	Protocol
65.212.180.1	FastEthernet0/0	100 Mb/s	Up	ethernet-csmacd

# IP QoS Statistics

## Near Real Time Interface Activity



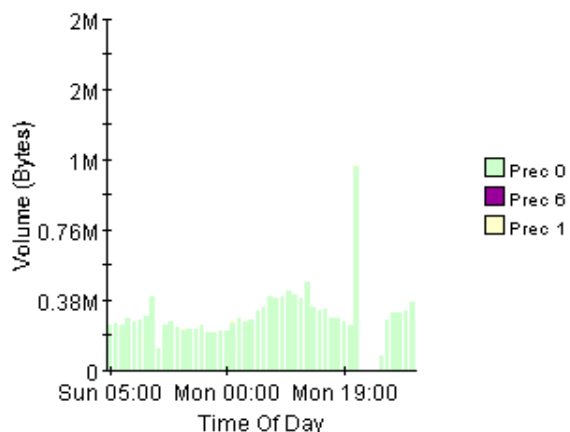
The IPStat Near Real Time report provides a detailed look at the performance of individual interfaces and the accounting of TOS marked traffic on them. Select an interface from the list to see switched traffic counts per IP Precedence over the previous 6 hours.

### IP QoS Statistics Interfaces

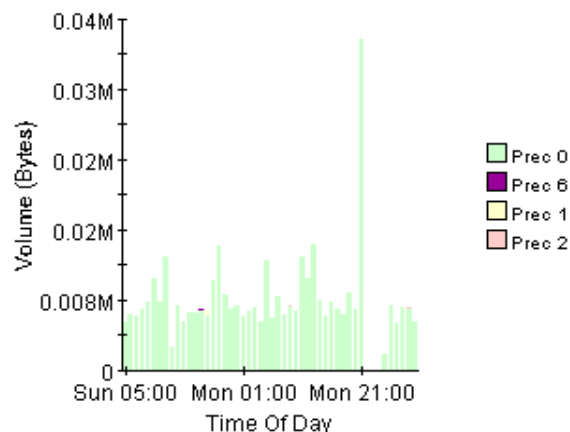
#### Active Interfaces With IP QoS Statistics Data Over Previous 6 Hours

Customer	Device	Interface	ifSpeed	Location	Admin Status	Switched Pkts	Switched Bytes
Customer Unassigned	65.212.180.1	FastEthernet0/0	100 Mb/s	Location Unassigned	Up	11,964	1,891,336

#### Hourly Input Traffic



#### Hourly Output Traffic



Rate Input | Rate Output

#### 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

# IP QoS Statistics

## Historical Interface Activity



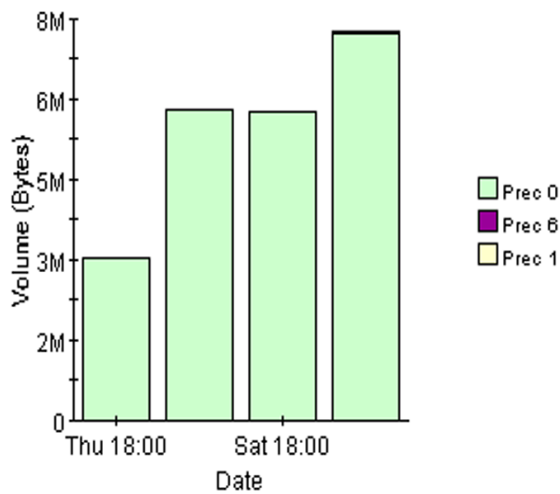
This 'Historical' report provides a detailed look at the performance of individual interfaces and the accounting of TOS marked traffic on them over the last several months. Select an interface from the list to see switched traffic counts per IP Precedence over the previous 6 hours.

### IP QoS Statistics Interfaces

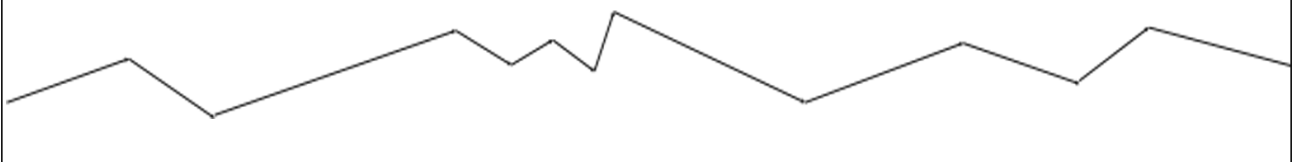
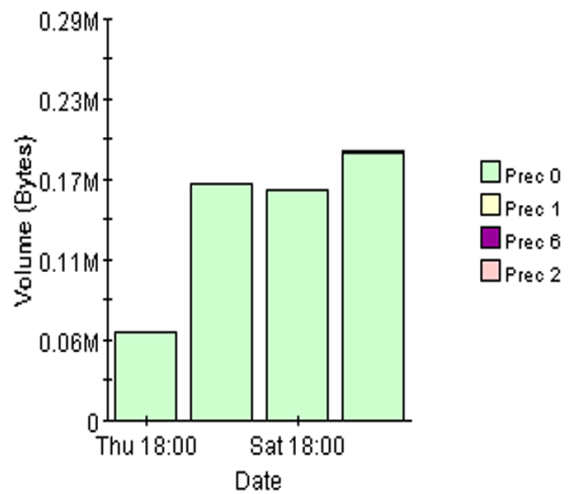
Active Interfaces With IP QoS Statistics Data Over Previous 6 Hours

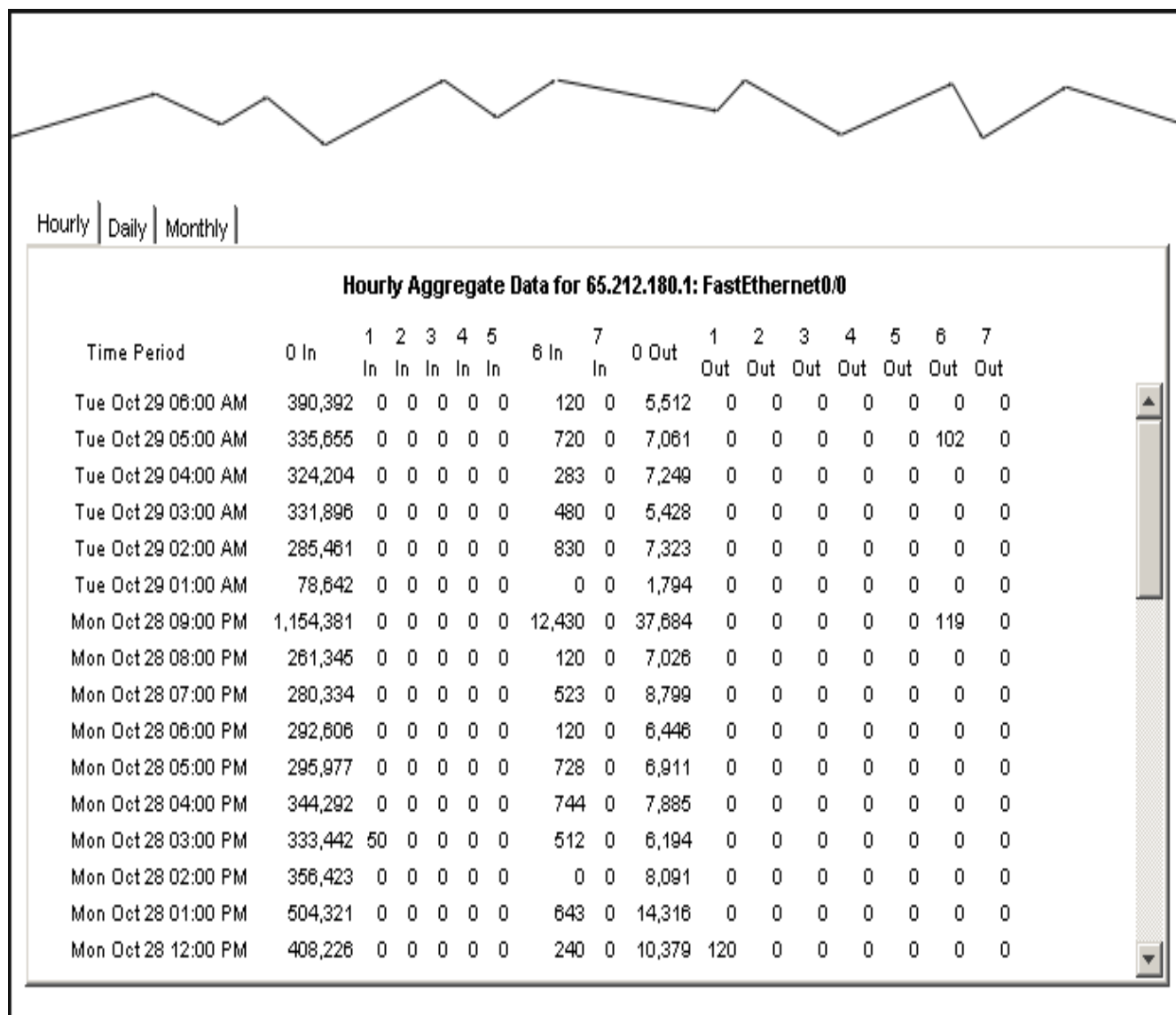
Customer	Device	Interface	ifSpeed	Location	Admin Status
Customer Unassigned	65.212.180.1	FastEthernet0/0	100 Mb/s	Location Unassigned	Up

Daily Input Traffic



Daily Output Traffic








## Editing Tables and Graphs

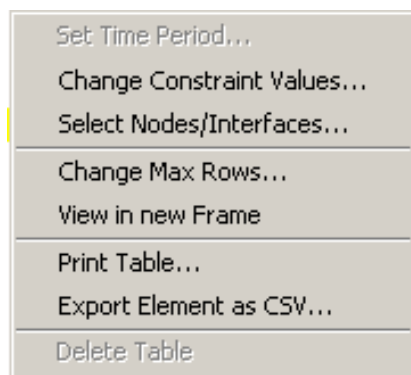
Any table or graph can be viewed in several ways. While the default view is usually adequate, you can easily change to a different view.

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

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

### View Options for a Table

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



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.

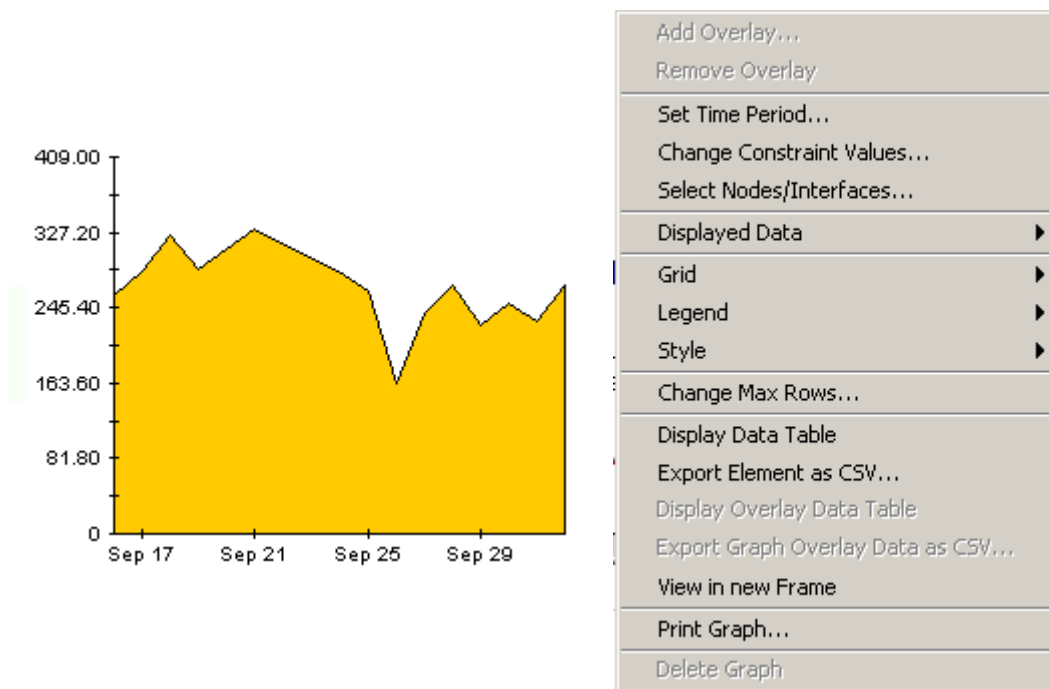
**View in new Frame** opens the table in a Table Viewer window, shown below. If necessary, make the data in the table more legible by resizing the window.

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



## View Options for a Graph

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



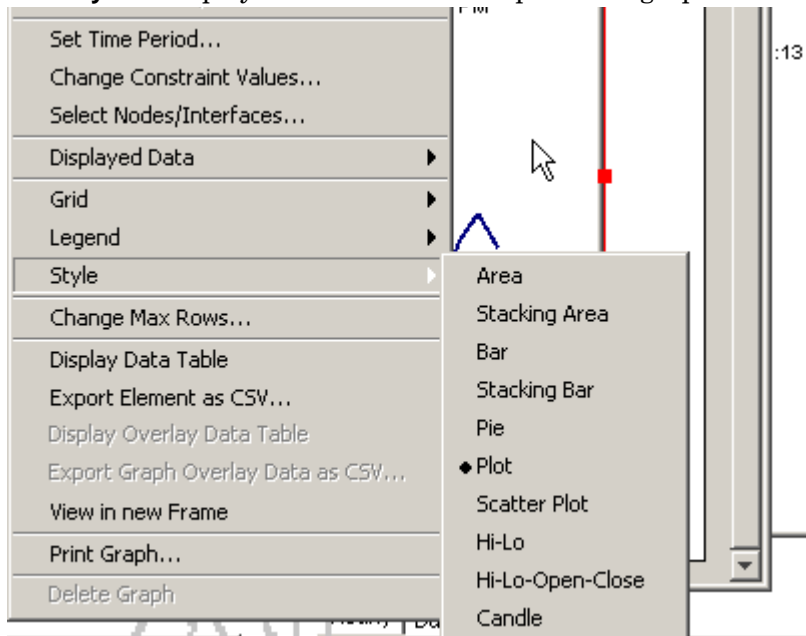
The following table provides details about each option.

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

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

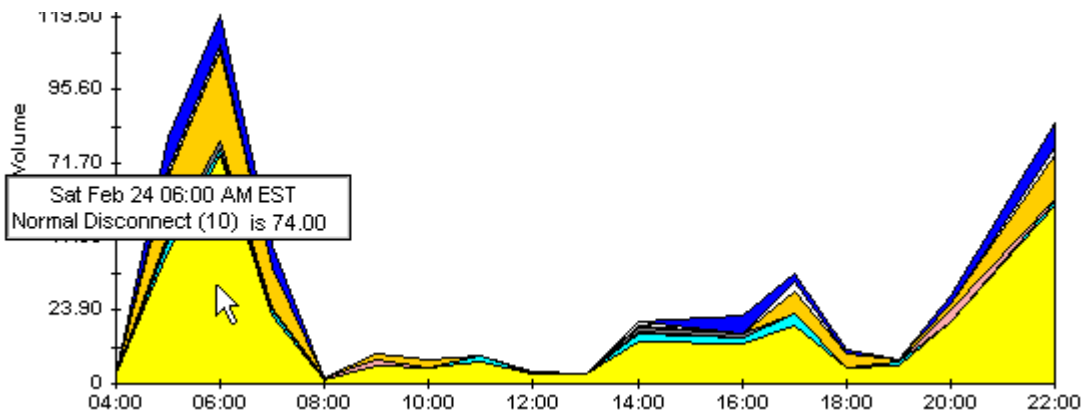
## Style Options

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



### Style > Area

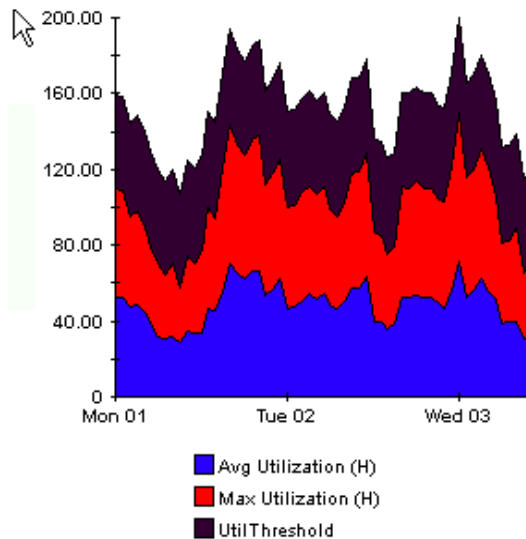
The plot or bar chart changes to an area graph. While relative values and total values are easy to view in this format, absolute values for smaller data types may be hard to see. Click anywhere within a band of color to display the exact value for that location



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

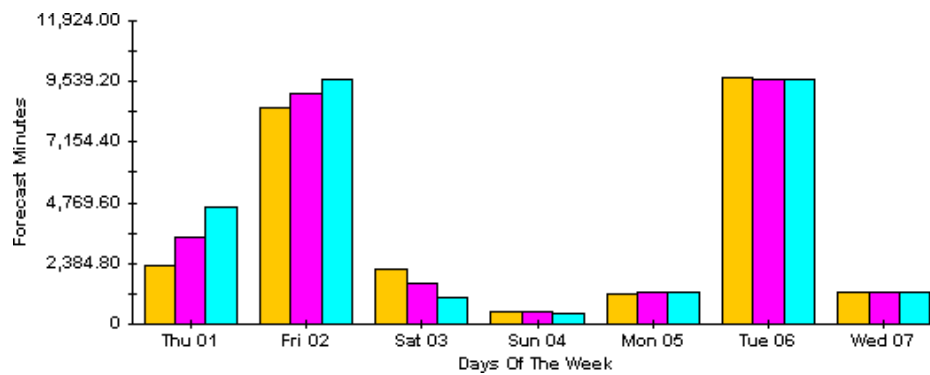
### Style > Stacking Area

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



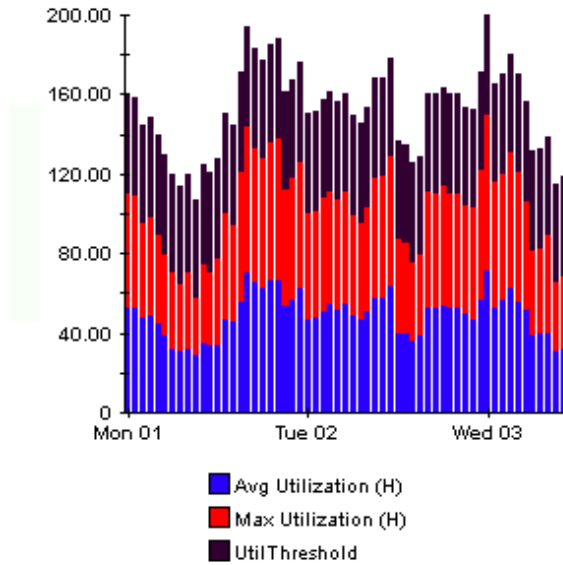
### Style > Bar

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



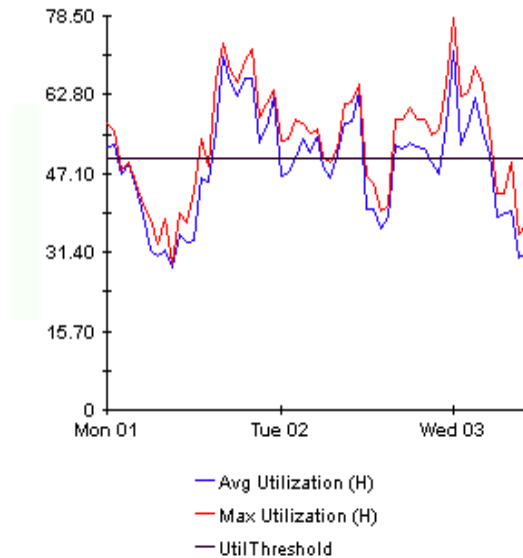
## Style > Stacking Bar

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



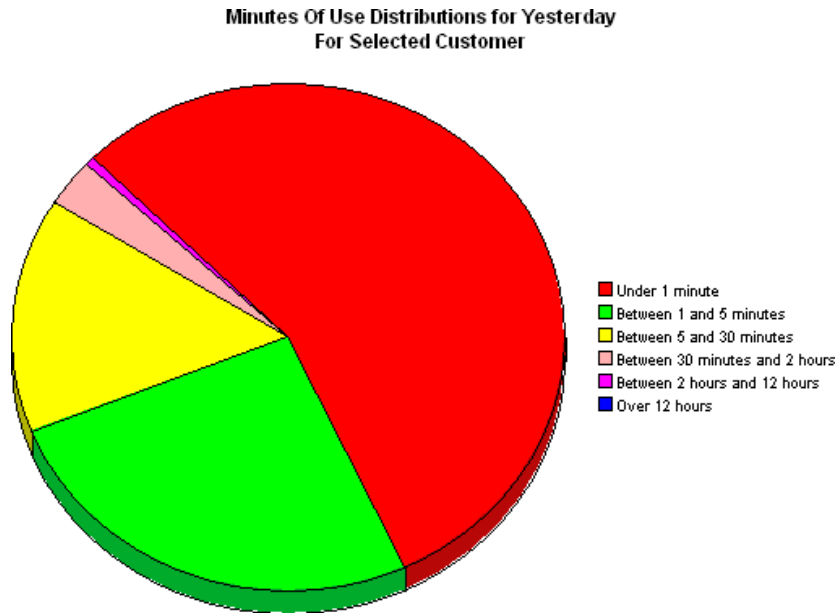
## Style > Plot

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



## Style > Pie

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



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

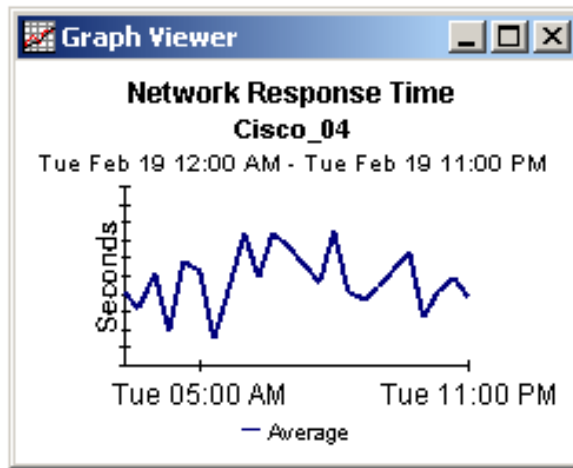
## Display Data Table

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.



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