HP OpenView Performance Insight

NetFlow Interface Report Pack

Software Version: 3.0

Reporting and Network Solutions 7.0

December 2004

© Copyright 2004 Hewlett-Packard Development Company, L.P.

Legal Notices

Warranty

Hewlett-Packard makes no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

A copy of the specific warranty terms applicable to your Hewlett-Packard product can be obtained from your local Sales and Service Office.

Restricted Rights Legend

Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause in DFARS 252.227-7013.

Hewlett-Packard Company
United States of America

Rights for non-DOD U.S. Government Departments and Agencies are as set forth in FAR 52.227-19(c)(1,2).

Copyright Notices

© Copyright 2002–2004 Hewlett-Packard Development Company, L.P., all rights reserved.

No part of this document may be copied, reproduced, or translated into another language without the prior written consent of Hewlett-Packard Company. The information contained in this material is subject to change without notice.

Trademark Notices

OpenView is a U.S. registered trademark of Hewlett-Packard Development Company, L.P.

Java™ is a U.S. trademark of Sun Microsystems, Inc.

Oracle® is a registered U.S. trademark of Oracle Corporation, Redwood City, California.

UNIX® is a registered trademark of The Open Group.

Windows® and Windows NT® are U.S. registered trademarks of Microsoft Corporation.

Support

Please visit the HP OpenView web site at:

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

This site provides contact information and details about the products, services, and support that HP OpenView offers. To reach the Support site, click **Support**. The Support site provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valuable support customer, you can benefit by using the support site to:

- Search for documents of interest
- Submit and track progress on support cases
- Manage a support contract
- Look up HP support contacts
- Review information about available services
- Join online discussions with other software customers
- Research and register for software training

Most of the support areas require you to register as an HP Passport user and log in. You may also require a support contract.

To find more information about access levels, go to the following URL:

http://support.openview.hp.com/access_level.jsp

To register for an HP Passport ID, go to:

https://passport.hp.com/hpp2/newuser.do

contents

1

Overview

This overview covers the following topics:

- OVPI and network flow data
- The role of the NetFlow Preprocessor
- The role of the NetFlow Datapipe
- Folders and reports
- Ways to customize reports
- Sources for additional information

OVPI and Network Flow Data

A flow is a sequence of packets moving in the same direction between two devices. Routers and switches that are configured to track flow data can also be configured to send data about flows to a flow collector application. The flow collector application aggregates data from multiple devices and produces an output file containing a wealth of information about IP traffic. This file is available for filtering and further processing.

The reports in the NetFlow Interface Report Pack analyze network flow data collected by flow collector applications. We recommend that you run the NetFlow Interface Report Pack with the Interface Reporting Report Pack. Interface Reporting is designed to flag instances of high utilization. If you are running NetFlow Interface concurrently, in addition to seeing high utilization, you will know precisely which clients, servers, applications, or TOS values are contributing to high utilization.

The devices in your network must be configured to produce network flow data. If this step has not taken place, the NetFlow Interface package will have no data to analyze.

The output file produced by the flow collector application is not compatible with OVPI. Making the output compatible with OVPI is the responsibility of the NetFlow Preprocessor. Once pre-processing produces a compatible file, the NetFlow Datapipe reads the file and imports the contents. See below for additional information about the NetFlow Preprocessor and the NetFlow Datapipe.

Role of the NetFlow Preprocessor

The NetFlow Preprocessor performs the following tasks:

- Identifies well-known applications
- Allows you to specify non-standard or custom applications
- Identifies the client and server for each flow
- Groups multiple IP addresses into a single domain
- Filters out unwanted data produced by the flow collection application
- Aggregates data produced by the flow collection application
- Creates bi-directional records by matching flows from clients to flows from servers
- Reformats data for the NetFlow Interface Datapipe

Filtering is crucial. Filtering reduces the processing load on the OVPI server and eliminates a vast quantity of unnecessary data pertaining to flows you do not care about. The NetFlow Preprocessor **must** be configured for filtering. As explained in more detail in the *NetFlow Preprocessor User Guide*, the filtering you implement can take place before aggregation, after aggregation, or before and after aggregation. The following types of filtering take place before aggregation:

- Client/server filtering
- Application filtering

The following types of filtering take place after aggregation:

- Top x flows
- Inclusion percentile
- Minimum bytes per second

The NetFlow Interface Datapipe and the NetFlow Interface Report Pack can function only if the data produced by the flow collection application is in Cisco DetailCallRecord format. *No other format is acceptable.*

Role of the NetFlow Interface Datapipe

The NetFlow Interface Datapipe is a separate package, and installing it is mandatory. The NetFlow Interface Datapipe performs three tasks:

- Calls the OVPI import process (ee_collect)
- Normalizes data into an internal database format required by the report pack
- Populates report pack base tables every 15 minutes (the default)

The NetFlow Interface Datapipe includes an optional translation utility. By default, the translation utility is disabled. The purpose of this utility is to map IP addresses to node names and thereby prevent data from being lost when a device changes its IP address. If you enable the translation utility, you must make sure that the SourceDirectory directive for the NetFlow Interface Datapipe matches the output directory for the translation utility. For more information about modifying path directives, see Chapter 6, Package Configuration.

Version History

See below for details about recent enhancements to the NetFlow Interface Report Pack.

Version	RNS Version and Date	Enhancements
1.0	RNS 3.0 - May 2003	39 reports
2.0	RNS 4.0 - October 2003	OVPI Object Manager support *new change forms:* • Update Interface Customer • Update Interface Location • Update Interface Speed • Update Interface Description 1.0-to-2.0 upgrade package
2.0	RNS 5.0 - April 2004	No changes
3.0	RNS 6.0 - August 2004	Oracle support 2.0-to-3.0 upgrade package
3.0	RNS 7.0 - November 2004	No changes

Folders and Reports

NetFlow Interface contains five folders. The table below lists the contents of each folder.

Folder	Folder Contents
Top Ten	• Hourly Summary • Daily Summary • Monthly Summary
Server	• Hourly Server Summary • Daily Server Summary • Monthly Server Summary • Hourly Server Detail • Daily Server Detail • Monthly Server Detail • Hourly Server Detail w/0 Graphs • Daily Server Detail w/o Graphs • Monthly Server Detail w/o Graphs

Folder	Folder Contents
Client	• Hourly Client Summary • Daily Client Summary • Monthly Client Summary • Hourly Client Detail • Daily Client Detail • Monthly Client Detail • Hourly Client Detail w/0 Graphs • Daily Client Detail w/o Graphs • Monthly Client Detail w/o Graphs
Application	• Hourly Application Summary • Daily Application Summary • Monthly Application Summary • Hourly Application Detail • Daily Application Detail • Monthly Application Detail • Hourly Application Detail w/o Graphs • Daily Application Detail w/o Graphs • Monthly Application Detail w/o Graphs
TOS	• Hourly TOS Summary • Daily TOS Summary • Monthly TOS Summary • Hourly TOS Detail • Daily TOS Detail • Monthly TOS Detail • Hourly TOS Detail w/o Graphs • Daily TOS Detail w/o Graphs • Monthly TOS Detail w/o Graphs

Generic Reports

The generic reports in NetFlow Interface are Top Ten, Summary, Detail, and Detail without Graphics. The following table outlines the purpose of each generic report.

Report	Purpose
Top Ten	• Ranks clients, servers, applications, and TOS values by constituent utilization. • Compares current activity to historic trends.

Report	Purpose
Summary	• Ranks elements according to constituent utilization. • Monitors the following statistics over time: — Constituent utilization — Percentage of traffic — Bytes per hour — Packets per hour
Detail	• Investigates congestion in detail by analyzing performance at the flow level. • Ranks server/application pairs associated with each client. • Ranks client/application pairs associated with each server. • Ranks client/server pairs associated with each application. • Monitors the following statistics over time: — Constituent utilization — Percentage of traffic — Bytes per hour — Packets per hour
Detail w/o Graphics	• Same as Detail reports, without graphics. • Designed for rapid launching.

Integration with NNM

If you use NNM as well as OVPI, you have the option of improving your problem diagnostic abilities by integrating OVPI with NNM. Integration takes place by installing the NNM/Performance Insight Integration Module 2.0. This module includes packages that get installed on NNM and packages that get installed on OVPI. For details, refer to the *NNM / Performance Insight Integration Module 2.0 User Guide*.

If NNM and OVPI are integrated, you can access all of the reports in NetFlow Interface from the Report Launchpad window, a window you can reach from NNM map (ovw), Home Base Dynamic Views, and the NNM alarm browser. If launching a report as quickly as possible matters, the NNM operator can select the “without graphics” version of the report.

Unlike other report packs you may be familiar with, NetFlow Interface does not include a thresholds sub-package. So even if NNM and OVPI are integrated, OVPI will not detect threshold breaches pertaining to NetFlow data, or send threshold traps to NNM.

Ways to Customize Reports

The contents of a report can be customized by applying group filters, importing interface properties, editing parameters, and editing tables and graphs. While group filters are used by service providers, or any organizations that wants to share reports with customers, any user can apply a constraint to a report or edit tables and graphs. For details about view options for tables and graphs, see Chapter 10, Editing Tables and Graphs.

Group Filters

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

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

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

Importing Property Data

The reports in NetFlow Interface will display node-level property data as well as interface-level property data. Node-level properties are inherited from Common Property Tables. Interface-level properties are inherited from Interface Reporting. If you want to update node-level properties, use the update forms that come with Common Property Tables. If you want to update interface-level properties, you can either import a file that contains your updates or use the property update forms that come with Interface Reporting.

Applying Constraints

A constraint filters out data you are not interested in. If you edit the Customer Name parameter, data for every customer except the customer you typed in the Customer Name field drops from the report. If you edit the Location Name, data for all locations except the location you typed in the Location Name field drops from the report.

NetFlow Interface 3.0 supports the following parameters:

- Customer ID
- Customer Name
- Device
- Location Name
- Interface
- Start-Time
- End-Time
- Client Name
- Server Name
- Application Name

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

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

Sources for Additional Information

This user guide includes samples of some of the reports in the package. The demo package that comes with NetFlow Interface 3.0 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 it. Like real reports, demo reports are interactive. Unlike real reports, demo reports are static.

For information regarding the latest enhancements to NetFlow Interface and any known issues affecting this package, refer to the *NetFlow Interface Report Pack 3.0 Release Statement*. You may also be interested in the following documents:

- *NetFlow Interface Datapipe 3.0 Release Statement*
- *NetFlow Preprocessor 3.0 User Guide*
- *Interface Reporting Report Pack 4.6 User Guide*
- *Interface Discovery Datapipe 2.1 User Guide*
- *Interface Reporting ifEntry Datapipe 2.1 User Guide*
- *Thresholds Module 5.0 User Guide*
- *NNM/Performance Insight Integration Module 2.0 User Guide*
- *RNS 7.0 Release Notes, November 2004*

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 **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, NNM SPIs, and NNM correlators are listed under **Reporting and Network Solutions**.

The manuals listed under **Reporting and Network Solutions** indicate the month and year of publication. If a user guide is revised and reposted, the date of publication will change even if the software version number does not change. Since we post revised user guides on a regular basis, search this site for an update before using an older manual that may be out of date.

2

The Upgrade Install

This chapter covers the following topics:

- Guidelines for a smooth upgrade
- Using Package Manager to install upgrade packages
- Package removal

Guidelines for a Smooth Upgrade

The RNS 7.0 CD includes components for NNM as well as report packs for OVPI. When you select OVPI report packs for installation, the install script on the RNS CD extracts every OVPI package from the CD and copies the results to the Packages directory on your system. After the extraction process finishes, the install script prompts you to launch Performance Insight and start Package Manager.

If you have already extracted OVPI packages from the RNS 7.0 CD, you can upgrade to NetFlow Interface 3.0 by starting Package Manager and following the familiar on-screen instructions. Before running Package Manager, review the following guidelines.

Prerequisites

Verify that the following software is already installed:

- OVPI 5.0
- Any OVPI 5.0 service pack available for installation
- NetFlow Interface Report Pack 2.0
- NetFlow Interface Datapipe 2.0

If you need help installing a service pack, refer to the release notes for the service pack.

Upgrading Common Property Tables

If you are running Common Property Tables 2.2, you must upgrade to version 3.0. If you are running version 3.0, you have the option of upgrading to version 3.5. Do not attempt to install one of the upgrade packages for Common Property Tables and other packages at the same time.

Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables.

Dependencies

The NetFlow Interface Datapipe cannot be upgraded. You must uninstall the old datapipe and then install the new datapipe. Also, you must upgrade the report pack before installing the new datapipe. Here is one approach that works:

1. Upgrade the report pack.
2. Uninstall the old datapipe.
3. Install the new datapipe.

Distributed Environments

If you are currently running NetFlow Interface 2.0 in a distributed environment, upgrading is more complicated. Keep the following rules in mind:

- The central server and every satellite server must be running OVPI 5.0 and all available service packs for OVPI 5.0.
- The NetFlow Interface Datapipe must be installed on any server that receives data from a NetFlow Preprocessor. This includes the central server, if the central server receives data from a NetFlow Preprocessor.

Here is an overview of the installation process for distributed environments:

1. Central server:
   a. Disable trendcopy.
   b. Start Package Manager; install the upgrade package for the report pack; deploy reports.
   c. Exit Package Manager.
2. Satellite servers:
   - Start Package Manager; uninstall NetFlow Interface Datapipe 2.0.
   - Exit Package Manager.
   - Start Package Manager; install the upgrade package for the report pack
   - Exit Package Manager.
   - Start Package Manager; install NetFlow Interface Datapipe 3.0.
   - Exit Package Manager.
3. Enable trendcopy on the central server.

If you installed NetFlow Interface 2.0 on multiple servers running OVPI 4.6, you used DS EDIT to set up connections with satellite server databases. You also configured trendcopy pull commands. If you recently upgraded from OVPI 4.6 to 5.0, you have to repeat these tasks, this time using the Add Database Wizard. For details, see Chapter 5, Distributed Systems.

If you installed NetFlow Interface 2.0 as a distributed system on servers running OVPI 5.0, you do not have to repeat anything. The changes you made will still be in effect after the upgrade from NetFlow Interface 2.0 to NetFlow Interface 3.0 is complete.

Upgrading Version 2.0 to Version 3.0

Perform the following tasks to upgrade version 2.0 to version 3.0:

- Task 1: Stop OVPI Timer and extract packages from the RNS CD
- Task 2: Upgrade to Common Property Tables 3.0 or higher
- Task 3: Install the NetFlow Interface 2.0 to 3.0 upgrade package
- Task 4: Uninstall NetFlow Interface Datapipe 2.0
- Task 5: Install NetFlow Interface Datapipe 3.0 and restart OVPI Timer.

Task 1: Stop OVPI Timer and extract packages from the RNS 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 **Settings > Control Panel** > **Administrative Tools > Services**.

   UNIX: As root, type one of the following:

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

   Solaris: **`sh /etc/init.d/ovpi_timer stop`**
3. Insert the RNS CD. On Windows, a Main Menu displays automatically; on UNIX, mount the CD if the CD 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 welcome window opens.

When the copy to the Package directory is complete, you can navigate to the Packages directory to see the results. The Packages directory contains a folder for NetFlow Interface and a separate folder for NetFlow Interface Datapipe. These folders are under the NetFlow Interface folder:

- NetFlow_Interface.ap
- NetFlow_Interface_Demo.ap
- UPGRADE_NetFlow_Interface_2_to_3.ap

Under NetFlow Interface Datapipe, you will see the following folder:

- NetFlow_Interface_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 everything else.

Task 2: Upgrade Common Property Tables to version 3.0 or higher

NetFlow Interface 2.0 required Common Property Tables 2.2. NetFlow Interface 3.0 requires Common Property Tables 3.0 or higher. If you have not already upgraded Common Property Tables, do it now. 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. When Package Manager indicates that installation of the upgrade package is complete, click **Done** to return to the Management Console.

Task 3: Install the NetFlow Interface 2.0 to 3.0 upgrade package

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. Accept the default for Deploy Reports; accept the defaults for application server name and port; type your user name and password for the OVPI Application Server.
5. Click **Next.** The Package Selection window opens.
6. Click the check box next to:

   UPGRADE_NetFlow_Interface_2_to_3
7. Click **Next.** The Type Discovery window opens. Disable the default.
8. Click **Next.** The Selection Summary window opens.
9. Click **Install**. The Installation Progress window opens. When the install finishes, a package install complete message appears.
10. Click **Done**.

> Do not be surprised if the upgrade package you just installed disappears from view. Package Manager will display what you just installed as *NetFlow Interface 3.0*. This is not an error.

Task 4: Remove NetFlow Interface Datapipe 2.0

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 the check box next to:

   NetFlow_Interface_Datapipe 2.0
6. Click **Next.** The Uninstall Packages window opens.
7. Click **Uninstall.** The Progress window opens. When the uninstall finishes, a package removal complete message appears.
8. Click **Done**.

Task 5: Install NetFlow Interface Datapipe 3.0 and restart OVPI TImer

1. Start Package Manager. The Package Manager welcome window opens.
2. Click **Next.** The Package Location window opens.
3. Click **Install**.
4. Click **Next.** The Report Deployment window opens. Disable the default for Deploy Reports.
5. Click **Next.** The Package Selection window opens.
6. Click the check box next to:

NetFlow_Interface_Datapipe 3.0

7 Click **Next.** The Type Discovery window opens. Keep the default.

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

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

10 Click **Done**.

11 Restart OVPI Timer.

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

UNIX: As root, type one of the following:

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

Solaris: **`sh /etc/init.d/ovpi_timer start`**

Package Removal

If you select the NetFlow Interface package for removal, Package Manager will automatically remove the NetFlow Interface Datapipe. To uninstall NetFlow Interface 3.0:

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 **Settings > Control Panel > Administrative Tools > Services**.

UNIX: As root, type one of the following:

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

Solaris: **`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 **Uninstall**.

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

7 Click the check box next to the following packages:

NetFlow_Interface

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

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

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

11 Restart OVPI Timer.

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

UNIX: As root, type one of the following:

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

Solaris: **`sh /etc/init.d/ovpi_timer start`**

3

The New Install

This chapter covers the following topics:

- Guidelines for a smooth installation
- Using Package Manager to install NetFlow Interface 3.0
- Accessing deployed reports
- Package removal

Guidelines for a Smooth Installation

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

The RNS 7.0 CD includes components for NNM as well as OVPI report packs. When you insert the RNS CD and launch the package extraction interface, the install script extracts every OVPI package from the CD and copies the results to the Packages directory on your system. After the extraction process finishes, the install script prompts you to launch Performance Insight and start Package Manager.

If the report packs on the RNS CD have been extracted from the CD, and if you are familiar with Package Manager, you can install NetFlow Interface 3.0 by starting Package Manager and following the familiar on-screen instructions. Before running Package Manager, review the following guidelines.

Prerequisites

Make sure the following software is already installed:

- 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 that were distributed with the service pack.

Upgrading Common Property Tables

If you are running an older version of Common Property Tables, you must upgrade to version 3.0 or higher. If you are *not* running any version of Common Property Tables, let Package Manager install Common Property Tables 3.5 for you, automatically.

Do not install one of the upgrade packages for Common Property Tables and other packages at the same time. Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables. For more information about installing and using Common Property Tables, refer to the *Common Property Tables 3.5 User Guide*.

Common Property Tables includes forms, which deploy in the same manner that reports deploy. If you install an upgrade package for Common Property Tables, accept the Deploy Reports option.

Resolving Directory Issues

Resolve the following directory issues before proceeding with installation:

1. Select a directory where NetFlow Preprocessor will deposit data. (This information will also be needed for proper configuration of the NetFlow Preprocessor.) If this directory does not already exist, create it.
2. Decide whether you will use the optional IP-address-to-node-name conversion utility. If you are going to use it, you must select or create a second directory.
3. Decide whether you will archive output from the NetFlow Preprocessor. If you are going to archive this data, you must select or create a third directory.

None of these directories should be used for any other purpose. For details about how to accomplish steps 1 through 3, see Chapter 6, Package Configuration.

Distributed Environments

If you will be running NetFlow Interface as a distributed system across multiple servers, installation is more complex. Keep these rules in mind:

- The central server and every satellite server must be running OVPI 5.0 and all available service packs for OVPI 5.0.
- The NetFlow Interface Datapipe belongs on any server that receives data from a NetFlow Preprocessor. This includes the central server, if the central server receives data from a NetFlow Preprocessor.

Here is an overview of the installation procedure:

1. Disable trendcopy on the central server.
2. Install the NetFlow Interface 3.0 on the central server; deploy reports.
3. For each satellite server, install:
   - NetFlow Interface 3.0
   - NetFlow Interface Datapipe 3.0
4. Enable trendcopy on the central server.

After completing the installation, you must set up connections between the central server and satellite server databases and you must configure trendcopy pull commands. For details, see Chapter 5, Distributed Systems.

Installing NetFlow Interface 3.0

Perform the following tasks to install NetFlow Interface 3.0:

- Task 1: Extract packages from the RNS CD.
- Task 2: If necessary, upgrade to Common Property Tables 3.0 or higher.
- Task 3: Install NetFlow Interface and NetFlow Interface Datapipe.

Task 1: Extract packages from the RNS 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 **Settings > 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 appears automatically; on UNIX, mount the CD if the CD 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 the Package Manager install wizard. The Package Manager welcome window opens.

When the extraction of packages to the Package directory finishes, you can navigate to the Packages directory to see the results. The Packages directory will include a folder for NetFlow Interface and a separate folder for NetFlow Interface Datapipe. The following folders appear under NetFlow Interface:

- NetFlow_Interface.ap
- NetFlow_Interface_Demo.ap

The following folder appears under the NetFlow Interface Datapipe folder:

- NetFlow_Interface_Datapipe.ap

Installing the demo package is optional. You can install the demo package by itself, with no other packages, or you can install the demo package along with everything else.

Task 2: Upgrade to Common Property Tables 3.0 or higher

Upgrading is necessary only if you are currently running an older version of Common Property Tables. Upgrade to version 3.0 by installing the version 2.2-to-3.0 upgrade package; upgrade to version 3.5 by installing the 3.0-to-3.5 upgrade package. Make sure the Deploy Reports option is enabled. (If the Deploy Reports option is not enabled, the forms will not deploy.) When the install finishes, click **Done** to return to the Management Console.

Task 3: Install NetFlow Interface and NetFlow Interface Datapipe

1. From the Management Console, select **Tools > 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. Accept the default for Deploy Reports; accept the defaults for application server name and port; type your user name and password for the OVPI Application Server.
5. Click **Next.** The Package Selection window opens.
6. Click the check box next to the following packages:

   NetFlow_Interface 3.0

   NetFlow_Interface_Datapipe 3.0
7. Click **Next.** The Type Discovery window opens. Disable the default.
8. Click **Next**. The Selection Summary window opens.
9. Click **Install**. The Installation Progress window opens and the install begins. When the install finishes, a package install complete message appears.
10. Click **Done**.
11. Restart OVPI Timer.

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

    UNIX: As root, type one of the following:

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

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

Accessing Deployed Reports

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

- OVPI clients
- Web browser

If the client components are installed on the user's system, the user has access to Report Viewer, Report Builder, and the Management Console. If the client components are not installed on the user's system, using a web browser to view reports is the only way the user can view reports.

For more information about the client components, refer to the *Performance Insight 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 *Performance Insight Administration Guide*.

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 removing the package.

If you remove the NetFlow Interface package, Package Manager will automatically remove the NetFlow Interface Datapipe. Follow these steps to uninstall NetFlow Interface:

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 **Settings > Control Panel** > **Administrative Tools > Services**.

   UNIX: As root, type 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 **Uninstall**.
6. Click **Next.** The Report Undeployment window opens.
   a. If NetFlow Interface reports were deployed from this server, accept the defaults for Undeploy Reports, Application Server Name, and Port. If NetFlow Interface reports were **not** deployed from this server, clear the check box and skip to step 9.
   b. Type the username and password for the OVPI Application Server.
7. Click **Next.** The Package Selection window opens.
8. Click the check box next to the following packages:

   NetFlow Interface

   NetFlow Interface Demo (if installed)
9. Click **Next.** The Selection Summary window opens.
10. Click **Uninstall.** The Progress window opens and the removal process begins. When removal finishes, a package removal complete message appears.
11. Click **Done**.
12. Restart OVPI Timer.

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

    UNIX: As root, type one of the following:

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

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

4

Crucial Performance Considerations

A single interface can generate a staggering quantity of network flow data. So consider the amount of network flow data generated by a thousand interfaces. Such a quantity of network flow data would be more than enough to overwhelm your OVPI server. But what if only a small subset of interfaces is producing network flow data—and filtering is not implemented? Your OVPI server will be overwhelmed, no doubt about it.

This chapter explains why monitoring a limited number of interfaces is important. It also explains how the NetFlow Preprocessor can filter and aggregate network flow data.

Monitoring a Limited Number of Interfaces

Under normal circumstances, most of the interfaces in a network have light to moderate loading, while just a few interfaces are congested. If the goal of analyzing network flow data is to help troubleshoot network problems, then generating, collecting, and reporting a lot of information about interfaces that are not congested might be unwise.

Since Interface Reporting focuses on interface utilization levels, you could let Interface Reporting monitor interface performance, initiate network flow data for a particular interface or router only when problems arise, and then turn to the NetFlow Interface Report Pack to analyze those flows in detail. This approach is efficient, but not especially proactive.

If certain interfaces are critical and if they deserve constant monitoring, you could configure those interfaces to generate network flow data continuously. However, if you are continuously generating flow data from a limited number of interfaces, you still need to take advantage of the filtering and aggregation performed by the NetFlow Preprocessor.

Preprocessor Filtering and Aggregation

If you intend to collect network flow data from a subset of interfaces, you must do something about insignificant flows; otherwise, insignificant flows will cripple performance. To prevent that from happening, configure the NetFlow Preprocessor to apply one or more of the filtering and aggregation techniques described below. (For additional details about each technique, refer to the *NetFlow Preprocessor User Guide*.)

Client/Server Filtering

The preprocessor can filter and aggregate based on the IP addresses of the clients and servers. For example, you could configure the preprocessor to limit output to flows that originate or terminate at one IP address within a specified set of IP addresses. The other flows would be discarded or grouped into a DEFAULT flow.

In addition, you can group multiple IP addresses and/or address ranges together and treat them as if they were a single device. For example, the flows from all devices in a single location or sub-net could be grouped together and reported on as if they originated from a single device. This would allow you to look at capacity between sites or sub-nets at a higher level, without getting lost in all the individual clients and servers.

Application Filtering

The NetFlow Preprocessor determines the application associated with a flow by looking up the protocol and port number from a list of "well-known" and registered applications. This list can be expanded to include additional applications, and shortened so that it includes only the applications that interest you. Flows for unknown applications can be discarded or grouped together as a DEFAULT application. Although doing so is **not** recommended, the preprocessor can also create arbitrary applications based on the protocol and port numbers for flows with unknown applications. Create such applications only when absolutely necessary.

Top X Flows

The NetFlow Preprocessor can restrict the number of rows of output generated for each reporting period for each router. If you configure this restriction, the preprocessor will order the flows from largest to smallest and output only the number of rows specified. The remaining flows are discarded. Since the majority of traffic through a router is generated by a relatively small number of flows, this feature allows you to retain high-impact flows and discard low-impact flows.

Include Percentile

This filter allows you to specify the percentage of the traffic to report on. Typically, the traffic in a network consists of a small number of flows that account for a high percentage of traffic and a large number of flows that constitute a small percentage of traffic. When this feature is enabled, the preprocessor will output flows, starting with the largest and descending, until the percentage of total traffic you specified has been reached. The remaining flows are discarded.

Minimum Bps

This filter eliminates all flows that do not generate a minimum amount of traffic (bytes per second) during the reporting period.

5

Distributed Systems

This chapter covers the following topics:

- Distributed processing or multiple stand-alone systems?
- Using the Add Database Wizard to set up connections with satellite databases
- Enabling pull commands for hourly data and daily data
- Synchronizing system clocks

Distributed Processing or Stand-Alone Systems?

If the amount of data generated is more than one OVPI server can handle (even though you limited the number of monitored interfaces and followed our advice regarding the need to apply one more filtering techniques), then your only option is to spread the data out over two or more OVPI servers. If you decide that multiple OVPI servers are necessary, you have two options:

- Configure one server to function as a central server
- Let stand-alone servers display reports covering a subset of interfaces.

To configure one server to function as the central server, follow these steps:

- Use the Add Database Wizard to set up connections with satellite server databases
- Enable the central server to pull hourly data from each satellite server
- Enable the central server to pull daily data from each satellite server

If you have experience configuring other OVPI report packs to operate in distributed environments, you are accustomed to switching off daily aggregations at each satellite server. NetFlow Interface is different. When NetFlow Interface is running in a distributed environment, you want aggregations to be spread out, not centralized. Therefore, do not switch off daily aggregations at each satellite server.

Using the Add Database Wizard

Follow these steps to connect the central server to satellite server databases.

1 Start the 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.

Enabling Pull Commands for Hourly Data

Follow these steps to configure the central server to pull hourly data from a satellite:

1. Open the following file:

   `$DPIPE_HOME/scripts/NetFlowIF_Hourly.pro`

2. If the central server is a non-collecting central server, comment-out blocks 1 through 4 by adding the comment sign (“#”) before the word **begin** and the word **end**.
3. To configure trendcopy pull commands from the central server to the satellite server, modify trendcopyblock in:

   `$DPIPE_HOME/scripts/NetFlowIF_Hourly.pro`

   as follows:

   a. Remove “#” before each line in trendcopyblock, including the **begin** and **end** lines.

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

   c. Replace *THIS_MACHINE_DATABASE* with the central server name.

4. If there is more than one satellite server, create one copy of trendcopyblock for each satellite server and repeat step 3 for each trendcopyblock.
5. Save and close:

   `$DPIPE_HOME/scripts/NetFlowIF_Hourly.pro`

Configuring Pull Commands for Daily Data

Follow these steps to configure the central server to pull daily data from a satellite:

1. Open the following file:

   `$DPIPE_HOME/scripts/NetFlowIF_Daily.pro`

2. Comment-out blocks 1 and 2 by adding the comment sign (“#”) before the word **begin** and the word **end**.
3. To configure trendcopy pull commands from the central server to the satellite server, modify trendcopyblock in the following file:

   `$DPIPE_HOME/scripts/NetFlowIF_Daily.pro`

   a. Remove “#” before each line in trendcopyblock, including the **begin** and **end** lines.

b Replace *SATELLITE_SERVER_1_DATABASE* with the satellite server name.

c Replace *THIS_MACHINE_DATABASE* with the central server name.

4 If there is more than one satellite server, create a copy of trendcopyblock for each satellite server and repeat step 3 for each trendcopyblock.

Synchronizing System Clocks

If you are configuring one server to function as the central server, make sure that the system clock on each satellite server is synchronized with the system clock on the central server.

6

Package Configuration

This chapter will help you with the following tasks:

- Supplying SourceDirectory information to the NetFlow Interface Datapipe
- Supplying SourceDisposition information to the NetFlow Interface Datapipe
- Activating IP address-to-node name mapping
- Adding property information to reports
- Using change forms to update properties

Specifying a Source Directory and Source Disposition

Before it can begin to collect data, the NetFlow Interface Datapipe must know:

- Where the NetFlow Preprocessor is storing its output
- What to do with the output after data collection is complete

This information is contained in the `NetFlowIFDP.teel` file. The SourceDirectory directive in this file indicates where the data files are located, while the SourceDisposition in this file indicates what to do with the data files after they have been imported. The default for SourceDirectory is not valid, you *must* change it. The default for SourceDisposition is to delete source data files once they have been collected. This default is valid. If desired, instead of deleting source data files, you can archive the files by moving them to another directory.

The scope of this task, changing directives, is affected by when you are doing it. If you are changing directives before you install the NetFlow Interface package, you have less to do, since the `NetFlowIFDP.teel` file is located in one place only:

```
{DPIPE_HOME}/packages/NetFlow_Interface_Datapipe/
NetFlow_Interface_Datapipe.ap
```

If you are performing this task after you install the NetFlow Interface package, you have more to do, since the TEEL file is now in two places:

```
NetFlow_Interface_Datapipe.ap
```

```
{DPIPE_HOME}/lib
```

If you are changing directives after installation, make sure that you modify both instances of the TEEL file.

Specifying a Valid Source Directory

Follow these steps to change the SourceDirectory directive:

1. Navigate to the appropriate directory and open the directory.
2. Locate the `NetFlowIFDP.teel` file.
3. Locate the SourceDirectory default path; look for the line beginning with `SourceDirectory =`
4. Change the path; replace the existing path with the complete path name to the new directory; begin the new path name just after the equals sign (=). For example:

   Windows

   ```
   SourceDirectory=C:\PreProcessorOutputDir\NETFLOW-PP*
   ```

   UNIX

   ```
   SourceDirectory=/home/OVPI/PreProcessorOutputDir/NETFLOW-PP*.
   ```

   - Leave the file filter as specified in the original SourceDirectory.
   - If you enable the optional IP address-to-node name translation utility, the SourceDisposition *must* point to the output directory for the translation utility.

Source Disposition

Follow these steps to change the SourceDisposition directive:

1. Navigate to the appropriate directory and open the directory.
2. Locate the `NetFlowIFDP.teel` file.
3. Locate the SourceDisposition directive; look for the line beginning with `SourceDisposition = delete`
4. Change this line to `SourceDisposition = move,[archive path]`

   where *archive path* is the full path to the archive directory.

Activating IP Address to Node Name Mapping

Network flow data uses IP addresses to identify clients and servers. If an IP address for a particular device changes, what happens? Unless some means of IP address-to-node-name translation is available, the link between old performance data (linked to the old IP address) and new performance data (linked to the new IP address) will be lost.

The NetFlow Interface Datapipe includes a mapping utility that translates IP addresses to node names. Translation is accomplished by looking up the IP address in the HOSTS file (or a mapping file you produce yourself) and replacing the IP address with the corresponding node name, assuming the IP address is found.

By default, the mapping utility is disabled. Follow these steps to enable it:

1. Navigate to the `{DPIPE_HOME}/scripts` directory.

2 Open the `NetFlowIFDP_addr2name.pro` file. Locate this line:

```
{DPIPE_HOME}/bin/perl {DPIPE_HOME}/bin/addr2name.pl -m "" -i [Input
Directory] -o [Output Directory]
```

3 Change *Input Directory* to the full path of the directory where the NetFlow Preprocessor writes its output.

4 Change *Output Directory* to the full path to the SourceDirectory directive specified in the preceding section.

5 *Optional.* If you are using a mapping file other than the HOSTS file, replace the `""` after the **`-m`** with the full path to the file to be used.

> Your mapping file must adhere to the format of a standard HOSTS file.

6 Navigate to the `{DPIPE_HOME}/lib` directory. Locate the following line in the trendtimer file:

```
#15 - - {DPIPE_HOME}/bin/trend_proc -f {DPIPE_HOME}/scripts/
NetFlowIFDP_addr2name.pro
```

7 Remove the # from the beginning of the line.

> The addr2name translation utility supports a 1-to-1 mapping between IP addresses and node names. If a node has more than one IP address, you must (1) aggregate the IP addresses (using the IP domain feature of the NetFlow Preprocessor) or (2) map each IP address to a different node name, for example: SameNode1, SameNode 2. For more information about the IP domain feature, refer to the *NetFlow Preprocessor User Guide*.

Adding Property Information to Reports

NetFlow Interface can calculate performance statistics only if it has access to special information about monitored interfaces. This special information includes interface type (full-/half-duplex) and speed. If the Interface Reporting package is installed, and if the devices monitored by Interface Reporting are also producing network flow data, NetFlow Interface will inherit this special information from Interface Reporting.

If Interface Reporting is not installed, or if the package is installed but the devices producing network flow data are not being monitored by Interface Reporting, you will have to import the missing information. *If you do not provision the missing information by importing it, reports will not display utilization and all interfaces will display as full duplex*.

Before getting to this procedure, it is important to mention that NetFlow Interface reports display owners and locations for clients and servers. Assigning owners and locations to clients and servers is handled through the Common Property Tables package, not the procedure described below. For information about the property import utility packaged with Common Property Tables, refer to the *Common Property Tables User Guide*.

Creating the Property Data File

The first step is to generate a property file that contains the interface information you want to import. There are three ways to generate this file:

1. Export data from a provisioning or network management system.
2. Create a tab-delimited property file yourself, using a text editor or a spreadsheet application such as Excel.
3. Use the NetFlowIF_exportIFdata.pro process to export existing property data from OVPI.

Method 1

The data you export must be formatted in accordance with the file format described below under Property File Format. Use all the columns shown, and make sure that the sequence of columns matches the sequence shown in the table. Do not use quotation marks. Name the file `Interface_Property.dat` and place the file here:

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

Method 2

Create the file in accordance with the file format described below in the Property File Format section. Use all the columns shown in the table, and make sure that the sequence of columns is correct. Do not use quotation marks. Name the file `Interface_Property.dat` and place the file in the PropertyData directory. The full path is:

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

Method 3

To generate property files using the NetFlowIF_exportIFdata.pro process, run the following command from the `{DPIPE_HOME}/scripts` directory:

```
trend_proc -f NetFlowIF_exportIFdata.pro
```

This command generates a tab-delimited property file, places the file in a directory, and appends the file names with a timestamp. The appended file name is:

`Interface_Property.dat.<timestamp>`.

and the directory is:

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

The file you just generated can be edited by hand in a text editor or loaded into a spreadsheet application such as Excel. If you use Excel, export the data into a tab-delimited file when you finish.

The property data columns for node name and interface name must match the corresponding values in the database, and each node name/interface combination should be listed only once in the data file. If new values, that is, values not currently in the database, are introduced into these columns, a new element will be created in the database.

Property File Format

The following table describes the format of the property file. If you are creating this file yourself, your file must adhere to this format. The sequence of fields left to right in your file must follow this sequence of attributes top to bottom, and your attributes must be delimited by tabs, not spaces. (If you export this information from OVPI, the contents of the file will be correctly formatted.)

Column Name	Comments
Node Name	A text string equal to either the node name or, if no name has been assigned, the node's IP address. This string should not be changed if it has been exported from the database. If a row is being added to the interface property file to pre-provision a new interface in the database, this string should be equal to the node name (if available) or the node IP address and, when combined with interface name, must be unique. If the node/interface name combination is the same as an existing combination, the property data for the existing record will be overwritten. The node name and interface name should form a unique combination and should appear only once in the property data file.
Interface Name	A text string equal to the MIB II ifIndex value for the interface. NOTE: If Interface reporting is installed, *interface name* may be set to something other than ifIndex. However, if Interface Reporting is installed, interface provisioning should be handled by the Interface Reporting Report Pack and this procedure should not be used.
Full/Half Duplex	An integer indicating whether the interface is full or half duplex: 1 - Half duplex 2 - Full duplex
Interface Type	Interface type as defined in the MIB II ifType field. Not used in the NetFlow Interface Report Pack.
Interface Speed	Interface speed for a half-duplex interface in bits per second (bps).
Interface Speed In	Interface receive speed for a full-duplex interface (bps).
Interface Speed Out	Interface transmit speed for a full-duplex interface (bps).
Customer ID	Reference number of the assigned customer. (Default = -2)
Customer Name	Name of the assigned owner of the interface. (Default = “Unassigned Customer”)
Location ID	Reference number of the interface location. (Default = -2)
Location Name	Name of the interface location. (Default = “Unassigned Location”)

Importing the Property File

OVPI is configured to import property data every night at midnight. If desired, you can run the import manually at any time. To run the import manually, type the following command from the `{DPIPE_HOME}/scripts` directory:

```
trend_proc -f NetFlowIF_importIFdata.pro
```

Changing the Defaults for Property Information

The NetFlow Interface Report Pack is configured to import interface property from, and export interface property to, the following directory:

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

By default, the import takes place at midnight. In some situations, it may be wise to create a new import directory, create a new export directory, or change the run time. To modify the import directory, change the SourceDirectory directive; to modify the export directory, change the export statement; to modify the run time, change the offset that determines when the NetFlowIF_importIFdata.pro command runs.

Changing the Default Source Directory

The OVPI import utility uses the `NetFlowIF_Property.teel` file to locate the directory where the property import file resides. The TEEL file includes a SourceDirectory directive that specifies the full path to the property import file.

Before the NetFlow Interface package is installed, the `NetFlowIF_Property.teel` file is located in one place only:

```
{DPIPE_HOME}/packages/NetFlow_Interface/NetFlow_Interface.ap
```

After you install the NetFlow Interface package, the `NetFlowIF_Property.teel` file is located in two places:

```
{DPIPE_HOME}/packages/NetFlow_Interface/NetFlow_Interface.ap
```

```
{DPIPE_HOME}/lib
```

If you are modifying the SourceDirectory after package installation, make sure you modify both instances of this TEEL file.

Follow these steps to modify the SourceDirectory:

1. Navigate to the directory and open it.
2. Locate the `NetFlowIF_Property.teel` file.
3. Locate the SourceDirectory default path; look for the line beginning with `SourceDirectory =`
4. Change the path, replacing the existing path with the complete path name to the new directory; begin the new path name just after the equals sign (=).

Leave the file filter as specified in the original SourceDirectory. The SourceDisposition directive can be changed at this time as well. The default is to keep the data file by leaving it in the source directory. To delete the file, change the disposition to **`delete`**; to archive the file, change the disposition to **`move`**.

Changing the Default Export Directory

The default export directory is specified in the `NetFlowIF_exportIFdata.pro` file. Before installation, this file exists in one place:

```
{DPIPE_HOME}/packages/NetFlow_Interface/NetFlow_Interface.ap
```

Following installation, this file is located in two places:

```
{DPIPE_HOME}/packages/NetFlow_Interface/NetFlow_Interface.ap
```

```
{DPIPE_HOME}/scripts
```

If you are modify the default after installation, make sure that you make the change to both instances of the file.

Follow these steps to change the default export directory:

1. Navigate to the directory and open it.
2. Locate the `NetFlowIF_exportIFdata.pro` file.
3. Locate the trend_export statement; replace the existing path after the `-o` with the complete path to the new directory.

Changing the Default Run Time

The default run time for the automatic import process is 12:00 midnight. To change the default setting, do the following:

1. In the `{DPIPE_HOME}/lib` directory, double-click the `trendtimer.sched` file.
2. Scroll down the file and locate the line that defines the interval and offset for the trend_proc that executes the NetFlowIF_importIFdata.pro command. It should look like this:

   ```
   24:00+24:00 - {DPIPE_HOME}/bin/trend_proc -f {DPIPE_HOME}/scripts/
   NetFlowIF_importIFdata.pro
   ```

3. Modify the offset indicator, the number immediately after the plus (+) sign. For example, if you change 24:00 to 18:00, the import utility will run at 18 hours after midnight, or 6:00 p.m.

Using Change Forms to Modify Properties

NetFlow Interface 3.0 provides several forms for updating interface properties. Exporting existing property data from OVPI, modifying that file, and then importing your modifications is no longer necessary. Use the forms to:

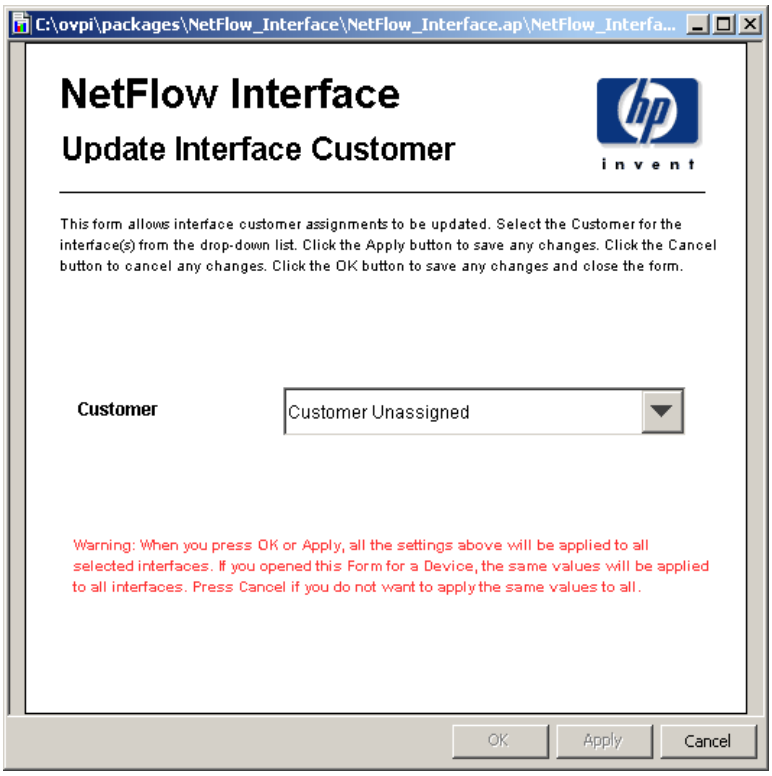
- Update the customer assigned to an interface
- Update the location assigned to an interface
- Update the description of an interface
- Update the speed of an interface

Customers and locations are imported for the first time by using the forms or the batch-mode property import that come with the Common Property Tables package. For details, refer to the *Common Property Tables 3.5 User Guide*.

Update Interface Customer

Follow these steps to open the form and update the customer assigned to the interface:

1. Select **HP OpenView > Performance Insight > Management Console**.
2. Click **Objects**, navigate to the interface you want to update, and select it. (If you want to update all of the interfaces on a device, navigate to a device and select it.) The Update Interface Customer form appears in a list under **Object Specific Tasks**.
3. Double-click **Update Interface Customer**. The form opens.



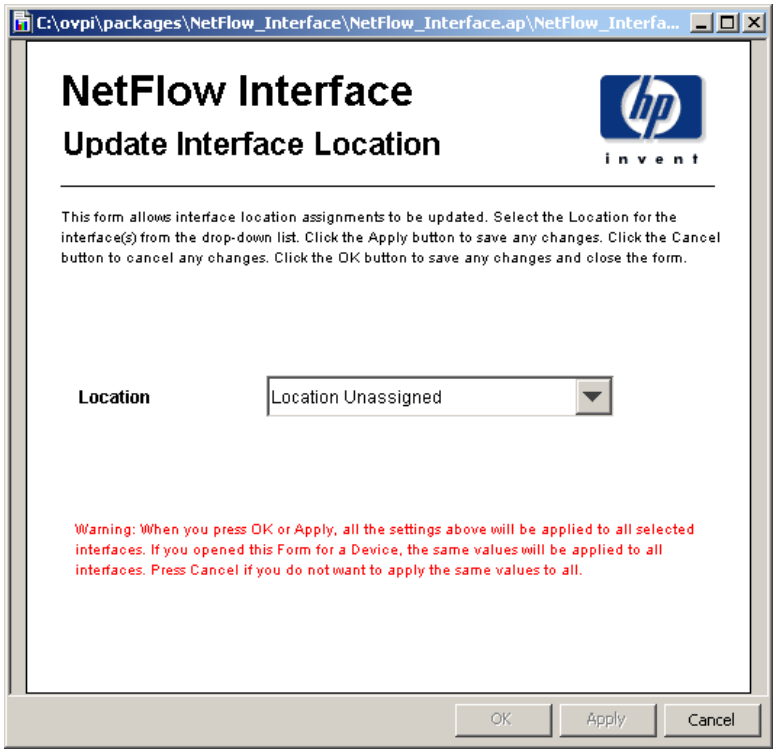
4. Update the customer assignment.
5. Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

Update Interface Location

Follow these steps to open the form and update the location assignment:

1. Select **HP OpenView > Performance Insight > Management Console**.
2. Click **Objects**, navigate to the interface you want to update, and select the interface. (If you want to update all of the interfaces on a device, navigate to the device and select it.) The Update Interface Location form appears in a list under **Object Specific Tasks**.

3 Double-click **Update Interface Location**. The form opens.



4 Update the location assignment using the selection list.

5 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

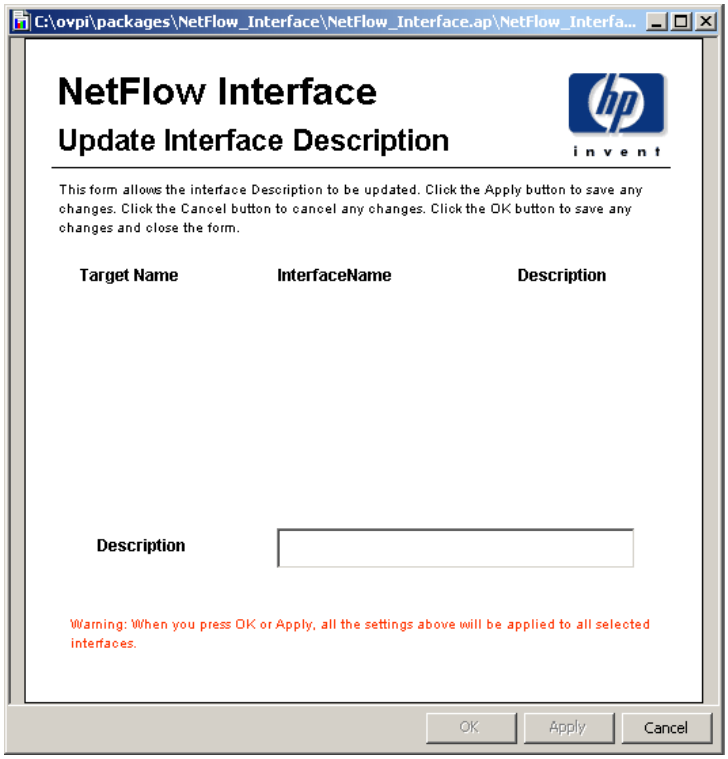
Update Interface Description

Follow these steps to open the form and update the description:

1 Select **HP OpenView > Performance Insight > Management Console**.

2 Click **Objects**, navigate to the interface you want to update, and select the interface. The Update Interface Description form is listed under **Object Specific Tasks**.

3 Double-click **Update Interface Description**. The form opens.



4 If you selected a device, all the interfaces on the device will appear in the table. To update the descriptions for multiple interfaces, select each interface, update the description, click **Apply**, and then repeat these steps for each interface.

5 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

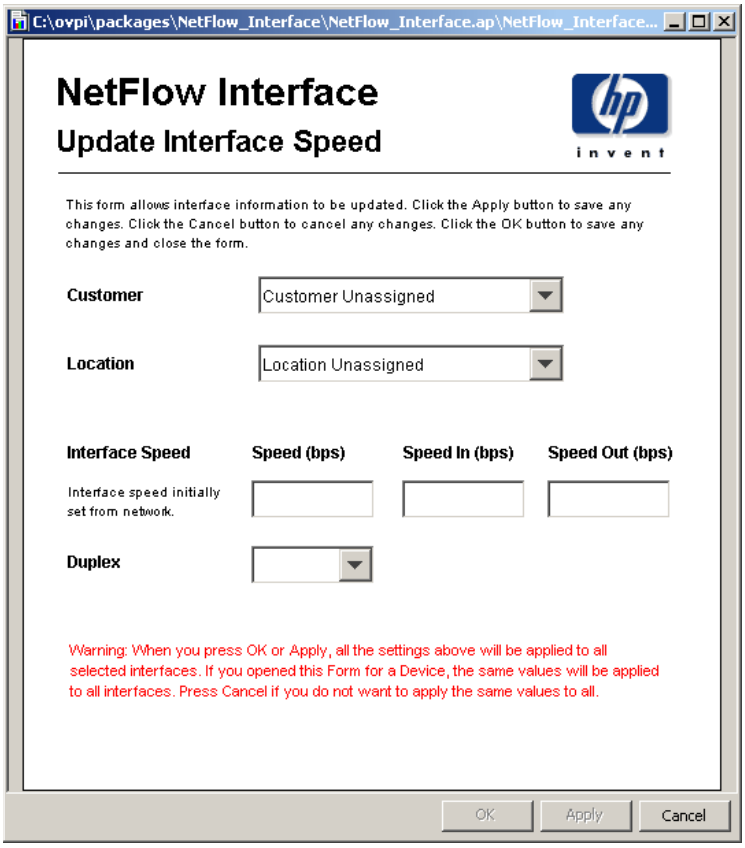
Update Interface Speed

Follow these steps to open the form and update the speed of the interface:

1 Select **HP OpenView > Performance Insight > Management Console**.

2 Click **Objects**, navigate to the interface you want to update, and select the interface. (Or navigate to a device and select the device if you want to update all interfaces on the device.) The Update Interface Speed form is listed under **Object Specific Tasks**.

3 Double-click **Update Interface Speed**. The form opens.



4 Update the speed of the interface.

5 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

7

Summary Reports

NetFlow Interface includes 12 summary reports:

- Client Summary Report (Hourly / Daily / Monthly)
- Server Summary Report (Hourly / Daily / Monthly)
- Application Summary Report (Hourly / Daily / Monthly)
- TOS Summary Report (Hourly / Daily / Monthly)

Summary reports add depth to Top Ten Reports. They focus on a particular element type and plot statistical changes over time. Use these reports to find out whether recent activity appearing in a Top Ten report is a temporary condition, with no history behind it, or a longer term trend that may require further investigation.

Select an interface and a time period to display a list of elements. Select an element to display the following graphs:

- Utilization
- Percentage of traffic
- Bytes per hour
- Packets per hour

Summary Reports are useful initially in determining which element within a particular element type (which client, server, application, or TOS value) is causing excess traffic on the selected interface. After you select an element, the graphs will tell you whether the traffic generated by the element represents a solitary spike, a sudden but persistent increase in traffic, or steady growth over time.

See below for samples of the following reports:

- Hourly Server Summary
- Daily Application Summary
- Monthly Client Summary

NetFlow Interface

Hourly Server Summary

The Server Summary Report presents a breakdown of the server devices which contribute to the total traffic on an interface. Select an interface and a time period to see a list of servers that had the most impact on the interface utilization for the time period selected. Select a server device to see graphs of its historical traffic patterns. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

Router	Interface	Duplex	Utilization
Router01	7	Full	6.28 / 3.22
Router01	4	Half	1.55
Router01	0	Half	0.98

Hourly Utilization

Hour	Utilization
9:00 AM, August 8, 2003	6.28 / 3.22
8:00 AM, August 8, 2003	7.14 / 4.40
7:00 AM, August 8, 2003	4.31 / 2.21
6:00 AM, August 8, 2003	4.36 / 2.41
5:00 AM, August 8, 2003	4.40 / 2.70
4:00 AM, August 8, 2003	4.65 / 2.83
3:00 AM, August 8, 2003	4.34 / 2.75
2:00 AM, August 8, 2003	3.95 / 2.63
1:00 AM, August 8, 2003	4.05 / 2.50

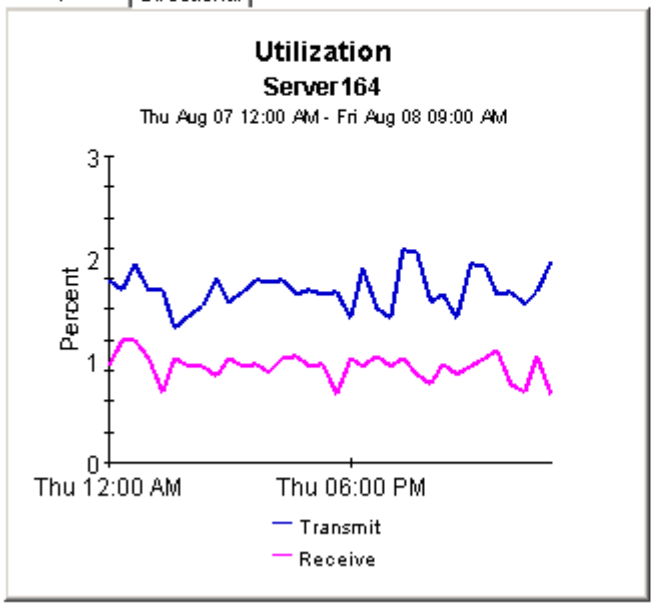
Top Talking Servers

Server	Utilization	% of Traffic	Bytes	Average Bytes per Packet	Number of Flows
Server164	1.96 / 0.67	31.27 / 20.75	4523.28 k / 2312.88 k	302.40 / 289.62	24 / 17
Client14	0.92 / 0.60	14.69 / 18.61	2125.28 k / 2073.82 k	836.72 / 814.54	74 / 72
Client144	0.40 / 0.08	6.41 / 2.47	926.42 k / 275.72 k	1200.02 / 480.36	5 / 6
Server588	0.37 / 0.21	5.94 / 6.61	859.15 k / 737.13 k	340.53 / 338.44	21 / 19
Client155	0.28 / 0.04	4.44 / 1.09	641.88 k / 121.11 k	1154.47 / 283.64	15 / 14
Server356	0.23 / 0.14	3.67 / 4.32	530.81 k / 481.82 k	394.95 / 395.26	9 / 9
Client130	0.17 / 0.17	2.70 / 5.22	389.93 k / 582.18 k	217.71 / 299.01	12 / 12
Client94	0.11 / 0.16	1.75 / 4.94	252.73 k / 550.42 k	433.51 / 638.54	40 / 54
Server187	0.15 / 0.08	2.41 / 2.40	348.13 k / 267.89 k	281.20 / 288.68	19 / 14
Server352	0.15 / 0.02	2.35 / 0.65	339.34 k / 72.47 k	395.50 / 377.45	26 / 4

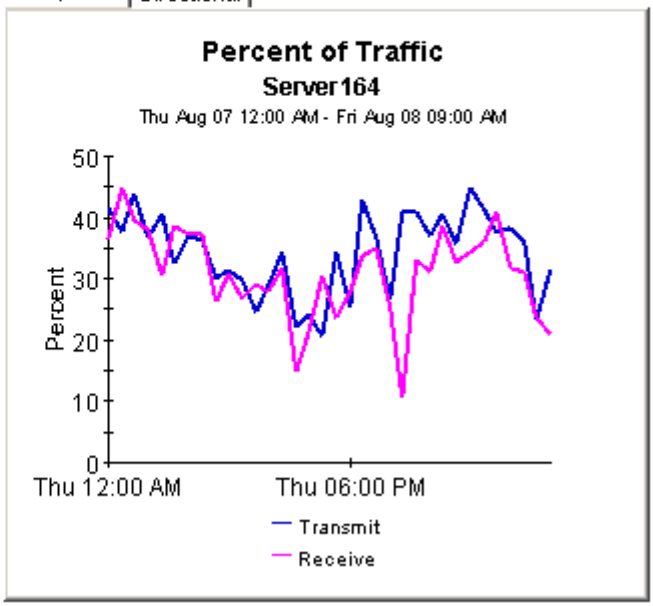
Server Owner
ACME

Server Location
London

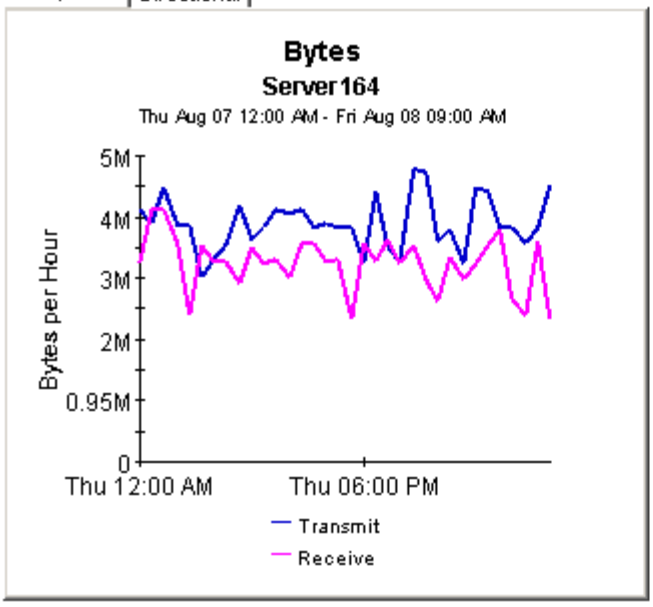
Composite | Directional



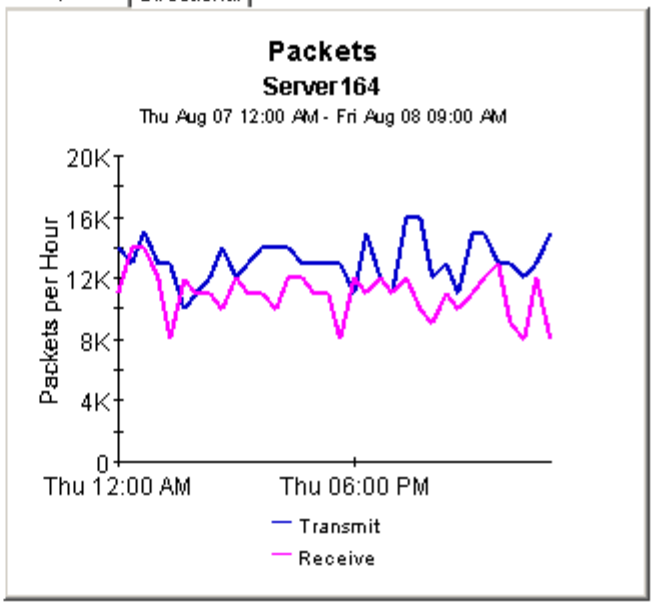
Composite | Directional



Composite | Directional



Composite | Directional



NetFlow Interface

Daily Application Summary

The Application Summary Report presents a breakdown of the applications which contribute to the total traffic on an interface. Select an interface and a time period to see a list of applications that had the most impact on the interface utilization for the time period selected. Select an application to see graphs of its historical traffic patterns. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

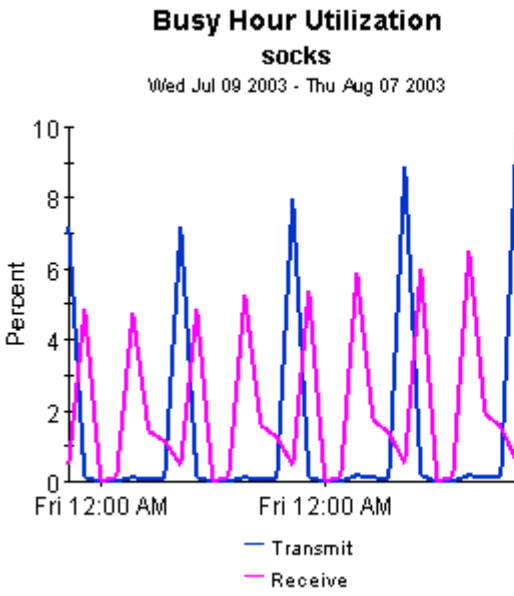
Router	Interface	Duplex	Busy Hour Utilization
Router01	7	Full	8.06 / 9.65
Router01	4	Half	7.42
Router01	0	Half	6.99

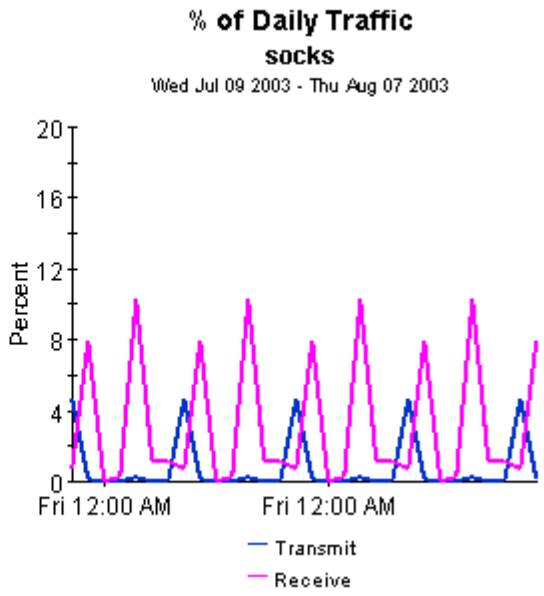
Peak Hourly Utilization

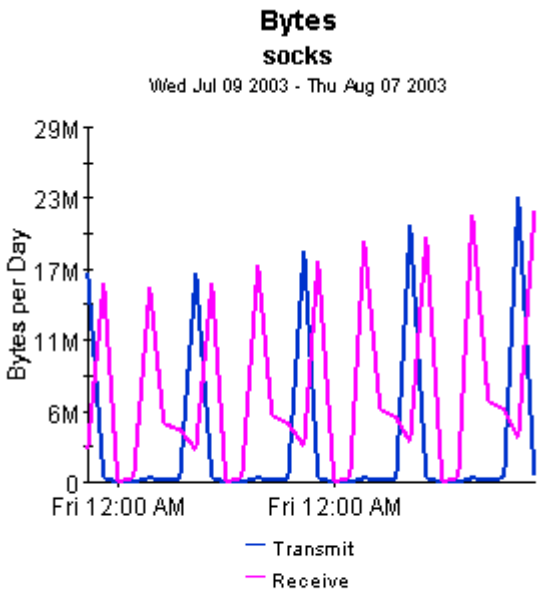
Day	Busy Hour Utilization
August 7, 2003	8.06 / 9.65
August 6, 2003	29.28 / 25.56
August 5, 2003	60.38 / 35.16
August 4, 2003	106.22 / 36.79
August 3, 2003	4.59 / 8.77
August 2, 2003	3.71 / 2.46
August 1, 2003	33.06 / 29.06
July 31, 2003	7.25 / 8.69
July 30, 2003	26.35 / 23.01

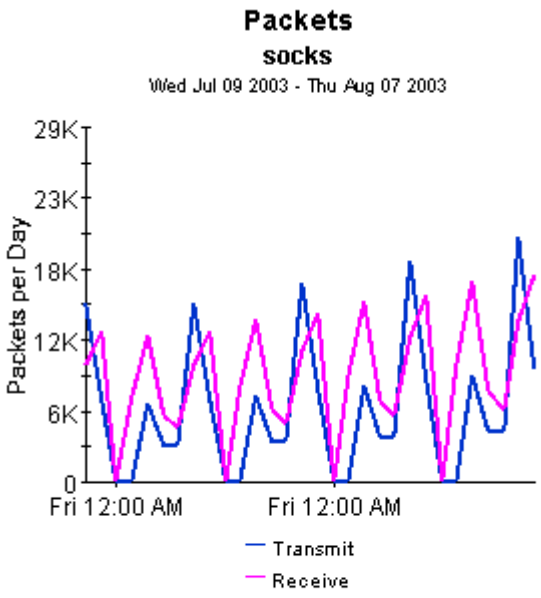
Top Talking Applications

Application	TOS	Busy Hour Utilization	% of Daily Traffic	Bytes	Average Bytes per Packet	Number of Flows
socks	0	0.17 / 6.64	0.15 / 7.94	428.59 k / 22.96 M	44.99 / 1313.75	6 / 6
snmp	0	4.39 / 2.77	72.00 / 66.22	209.57 M / 191.53 M	325.58 / 321.42	8957 / 7395
netbios-ssn	0	1.92 / 1.38	10.22 / 10.48	29.76 M / 30.32 M	436.71 / 432.12	996 / 1069
smtp	0	1.58 / 0.01	1.25 / 0.02	3642.29 k / 50.16 k	1486.65 / 40.62	2 / 2
symplex	0	1.45 / 0.01	1.15 / 0.02	3334.93 k / 45.45 k	1497.50 / 40.22	1 / 1
ff-annunc	0	1.31 / 0.05	1.04 / 0.06	3014.14 k / 176.45 k	542.89 / 32.00	1 / 1
telnet	0	1.29 / 0.04	1.83 / 0.17	5339.99 k / 484.48 k	409.07 / 43.84	36 / 32
amt-esd-prot	0	0.10 / 0.88	0.15 / 1.10	445.88 k / 3174.10 k	74.83 / 532.30	19 / 19
ansoft-lm-1	0	0.08 / 0.87	0.06 / 1.04	176.93 k / 3015.30 k	32.00 / 542.71	1 / 1
ftp-data	0	0.87 / 0.14	0.85 / 0.17	2485.12 k / 494.22 k	1348.41 / 512.15	4 / 5


Busy Hour Utilization
socks
Wed Jul 09 2003 - Thu Aug 07 2003
Percent
10
8
6
4
2
0
Fri 12:00 AM
Fri 12:00 AM
Transmit
Receive


% of Daily Traffic
socks
Wed Jul 09 2003 - Thu Aug 07 2003
Percent
20
16
12
8
4
0
Fri 12:00 AM
Fri 12:00 AM
Transmit
Receive


Bytes
socks
Wed Jul 09 2003 - Thu Aug 07 2003
Bytes per Day
29M
23M
17M
11M
6M
0
Fri 12:00 AM
Fri 12:00 AM
Transmit
Receive


Packets
socks
Wed Jul 09 2003 - Thu Aug 07 2003
Packets per Day
29K
23K
18K
12K
6K
0
Fri 12:00 AM
Fri 12:00 AM
Transmit
Receive

NetFlow Interface

Monthly Client Summary

The Client Summary Report presents a breakdown of the client devices which contribute to the total traffic on an interface. Select an interface and a time period to see a list of clients that had the most impact on the interface utilization for the time period selected. Select a client device to see graphs of its historical traffic patterns. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

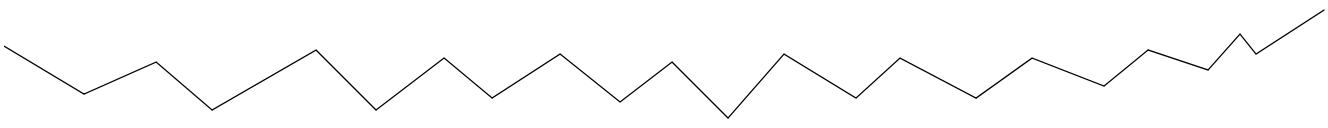
Router	Interface	Duplex	Busy Hour Utilization
Router01	7	Full	95.60 / 33.11
Router01	4	Half	30.14
Router01	0	Half	29.87

Peak Hourly Utilization

Month	Busy Hour Utilization
July, 2003	95.60 / 33.11
June, 2003	69.69 / 24.14
May, 2003	56.45 / 19.55
April, 2003	41.15 / 14.25

Top Talking Clients

Client	Busy Hour Utilization	% of Monthly Traffic	Bytes	Average Bytes per Packet	Number of Flows
Client142	84.83 / 28.13	17.96 / 10.71	1827.25 M / 987.30 M	1034.21 / 682.37	1953 / 2040
Client73	26.47 / 17.62	3.64 / 5.37	370.49 M / 494.79 M	753.41 / 941.03	432 / 451
Client84	24.25 / 0.10	1.93 / 0.01	196.66 M / 1236.67 k	1405.20 / 40.00	6 / 3
Client75	18.67 / 4.96	2.78 / 1.66	282.80 M / 153.25 M	1099.60 / 1181.89	141 / 99
Client155	18.42 / 8.20	3.68 / 2.53	374.88 M / 233.55 M	749.18 / 612.29	6878 / 7318
Client150	17.99 / 9.49	2.73 / 2.55	278.14 M / 235.05 M	319.69 / 293.81	1683 / 1090
Client146	13.87 / 9.76	1.63 / 1.56	166.13 M / 144.03 M	874.97 / 785.72	15 / 15
Client27	12.29 / 8.19	1.00 / 3.22	101.95 M / 296.93 M	635.37 / 1212.79	19 / 16
Client54	9.03 / 3.62	2.75 / 3.24	280.02 M / 298.55 M	347.69 / 365.75	2621 / 2587
Client154	8.86 / 5.98	1.55 / 2.10	157.89 M / 193.28 M	532.14 / 564.90	1656 / 1773



Client Owner

HP

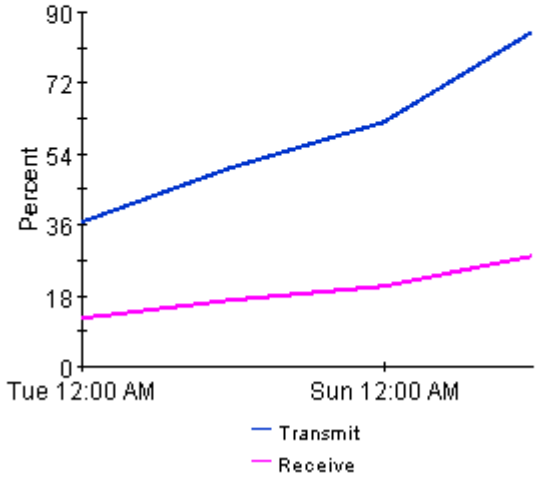
Client Location

Chicago

Busy Hour Utilization

Client142

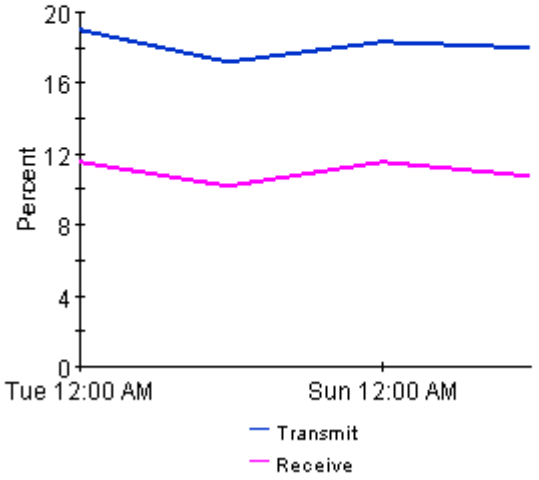
Tue Apr 01 2003 - Tue Jul 01 2003



% of Monthly Traffic

Client142

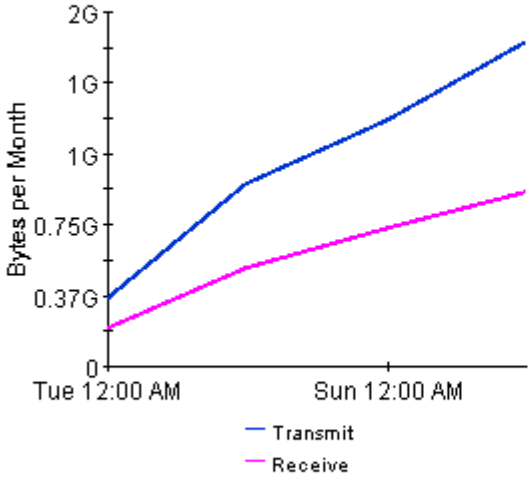
Tue Apr 01 2003 - Tue Jul 01 2003



Bytes

Client142

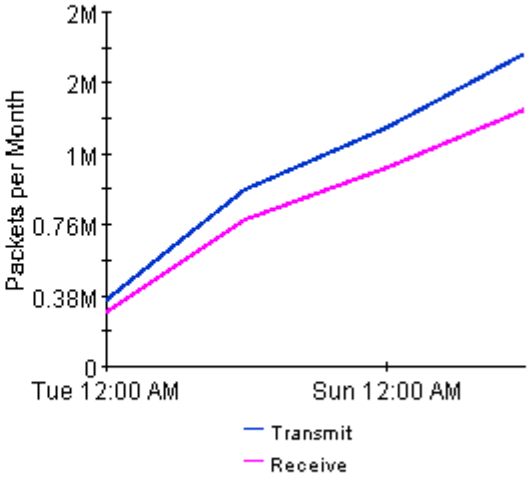
Tue Apr 01 2003 - Tue Jul 01 2003



Packets

Client142

Tue Apr 01 2003 - Tue Jul 01 2003



8

Top Ten Reports

The NetFlow Interface contains three top ten reports:

- Hourly Top Ten
- Daily Top Ten
- Monthly Top Ten

Top ten reports monitor interface traffic on an ongoing basis and provide an excellent starting point for in-depth analysis of problem interfaces. If monitoring is important to you, you will be interested in the figures for interface utilization and the breakdown of interface traffic. If you are already dealing with congested interfaces, you can use these reports to find out what might be causing the congestion.

Top ten reports allow you to select a specific time period—an hour, a day, or a month. Once the time period is selected, you can see the clients, servers, applications, and TOS values that are contributing the most to the load on an interface. Note that each time period provides some additional information:

- Hourly — average utilization for that hour
- Daily — the busy hour average for that day
- Monthly — an average of 30 busy hours for that month

The average utilization for the hour is an average of four samples. Busy hour is the highest hourly average among 24 hourly averages calculated each day. Busy hour reflects a relatively persistent event (more persistent than peak). Actual utilization during the course of the busy hour could have been far above or far below the average.

The four tables below the time period selection table look at total traffic by client, server, application, and TOS value and identify the ten elements that generated the most traffic. What you have in these tables is the “constituent usage.” For example, if interface utilization is at 10%, the list of clients will account for approximately 100% of that 10%.

If you notice that one server accounts for a large percentage of the traffic on an overutilized interface, you can probably reduce congestion by rerouting traffic from that server, as opposed to adding capacity. On the other hand, if no single element stands out as a primary source of congestion, the real problem may be a shortage of capacity, in which case the device may need to be upgraded.

Samples of all three top ten reports follow.

NetFlow Interface

Hourly Top Ten Summary

The Top Ten Summary report lists the top contributers to the total traffic on an interface. Select an interface and a time period to see the top ten clients, servers, applications and TOS values with the greatest impact on the interface utilization for the time period selected. Statistics for half-duplex interface are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

Router	Interface	Duplex	Utilization
Router01	7	Full	6.28 / 3.22
Router01	4	Half	1.55
Router01	0	Half	0.98

Hourly Utilization

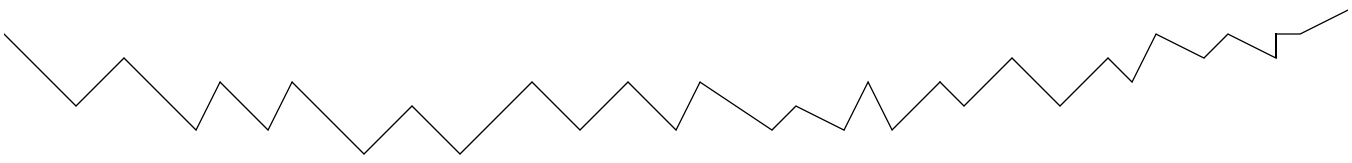
Hour	Utilization
9:00 AM, August 8, 2003	6.28 / 3.22
8:00 AM, August 8, 2003	7.14 / 4.40
7:00 AM, August 8, 2003	4.31 / 2.21
6:00 AM, August 8, 2003	4.36 / 2.41
5:00 AM, August 8, 2003	4.40 / 2.70
4:00 AM, August 8, 2003	4.65 / 2.83
3:00 AM, August 8, 2003	4.34 / 2.75
2:00 AM, August 8, 2003	3.95 / 2.63
1:00 AM, August 8, 2003	4.05 / 2.50

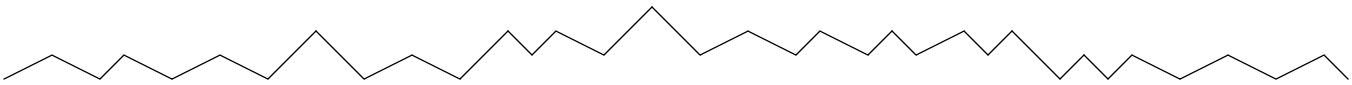
Top Ten Clients

	Client	Utilization	% of Traffic
1	Client105	0.91 / 0.62	14.42 / 19.08
2	Client64	0.73 / 0.35	11.69 / 10.96
3	Client07	0.58 / 0.37	9.17 / 11.45
4	Client132	0.55 / 0.10	8.83 / 3.05
5	Client12	0.55 / 0.22	8.70 / 6.90
6	Client06	0.54 / 0.08	8.62 / 2.54
7	Client65	0.47 / 0.28	7.44 / 8.74
8	Client03	0.44 / 0.20	7.06 / 6.12
9	Client54	0.17 / 0.17	2.70 / 5.22
10	Client78	0.16 / 0.08	2.58 / 2.43

Top Ten Servers

	Server	Utilization	% of Traffic
1	Server164	1.96 / 0.67	31.27 / 20.75
2	Client14	0.92 / 0.60	14.69 / 18.61
3	Client144	0.40 / 0.08	6.41 / 2.47
4	Server588	0.37 / 0.21	5.94 / 6.61
5	Client155	0.28 / 0.04	4.44 / 1.09
6	Server356	0.23 / 0.14	3.67 / 4.32
7	Client130	0.17 / 0.17	2.70 / 5.22
8	Client94	0.11 / 0.16	1.75 / 4.94
9	Server187	0.15 / 0.08	2.41 / 2.40
10	Server352	0.15 / 0.02	2.35 / 0.65





Top Ten Applications

	Application / TOS	Utilization	% of Traffic
1	snmp / 0	3.88 / 1.85	61.88 / 57.33
2	netbios-ssn / 0	0.30 / 0.14	4.86 / 4.36
3	hpidsagent / 0	0.20 / 0.00	3.26 / 0.08
4	availant-mgr / 0	0.11 / 0.16	1.75 / 4.94
5	tr-rsrb-p1 / 0	0.15 / 0.00	2.43 / 0.11
6	allstorcns / 0	0.13 / 0.00	2.14 / 0.06
7	winddx / 0	0.07 / 0.00	1.09 / 0.04
8	payrouter / 0	0.06 / 0.00	1.02 / 0.12
9	uma / 0	0.06 / 0.00	1.00 / 0.04
10	bullant-srap / 0	0.06 / 0.00	0.94 / 0.04

Top Ten TOS

	TOS	Utilization	% of Traffic
1	0	6.28 / 3.22	100.00 / 100.00

NetFlow Interface

Daily Top Ten Summary

The Top Ten Summary report lists the top contributers to the total traffic on an interface. Select an interface and a time period to see the top ten clients, servers, applications and TOS values with the greatest impact on the interface utilization for the time period selected. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

Router	Interface	Duplex	Busy Hour Utilization
Router01	7	Full	8.06 / 9.65
Router01	4	Half	7.42
Router01	0	Half	6.99

Peak Hourly Utilization

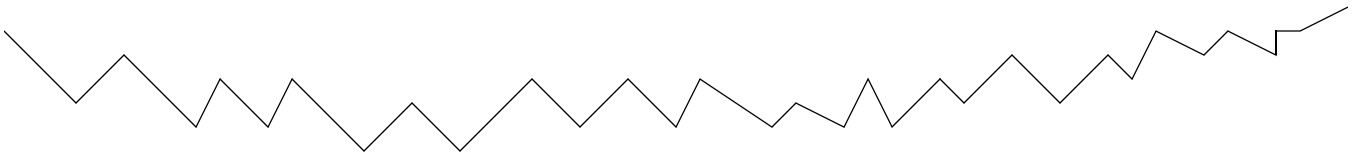
Day	Busy Hour Utilization
August 7, 2003	7.42
August 6, 2003	9.44
August 5, 2003	5.19
August 4, 2003	7.47
August 3, 2003	33.49
August 2, 2003	3.01
August 1, 2003	4.30
July 31, 2003	6.68

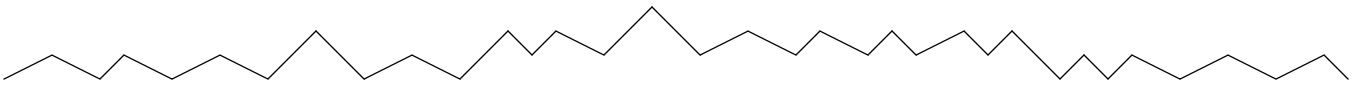
Top Ten Clients

	Client	Busy Hour Utilization	% of Daily Traffic
1	Client73	32.77	63.11
2	Client154	0.51	1.02
3	Client91	0.36	14.76
4	Client39	0.12	1.97
5	Client90	0.11	0.21
6	Client01	0.06	1.36
7	Client07	0.06	2.67
8	Client152	0.06	2.04
9	Client03	0.06	1.93
10	Client132	0.06	1.97

Top Ten Servers

	Server	Busy Hour Utilization	% of Daily Traffic
1	Client32	32.77	63.11
2	Server553	0.51	0.98
3	Server164	0.25	9.10
4	Server426	0.12	1.86
5	Server135	0.04	1.54
6	Server132	0.04	1.51
7	Server588	0.04	1.34
8	Server124	0.03	1.47
9	Server13	0.03	1.45
10	Server127	0.03	1.49





Top Ten Applications

	Application / TOS	Busy Hour Utilization	% of Daily Traffic
1	ftp-data / 0	32.77	63.10
2	snmp / 0	0.84	33.74
3	socks / 0	0.51	0.98
4	netbios-ssn / 0	0.05	1.74
5	rgtp / 0	0.02	0.04
6	http / 0	0.01	0.16
7	OTHER_APPS / 0	0.01	0.11
8	vrml-multi-use / 0	0.01	0.01
9	metagram / 0	0.00	0.08
10	v-one-spp / 0	0.00	0.00

Top Ten TOS

	TOS	Busy Hour Utilization	% of Daily Traffic
1	0	33.49	100.00

NetFlow Interface

Monthly Top Ten Summary

The Top Ten Summary report lists the top contributers to the total traffic on an interface. Select an interface and a time period to see the top ten clients, servers, applications and TOS values with the greatest impact on the interface utilization for the time period selected. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

Router	Interface	Duplex	Busy Hour Utilization
Router01	7	Full	95.60 / 33.11
Router01	4	Half	30.14
Router01	0	Half	29.87

Peak Hourly Utilization

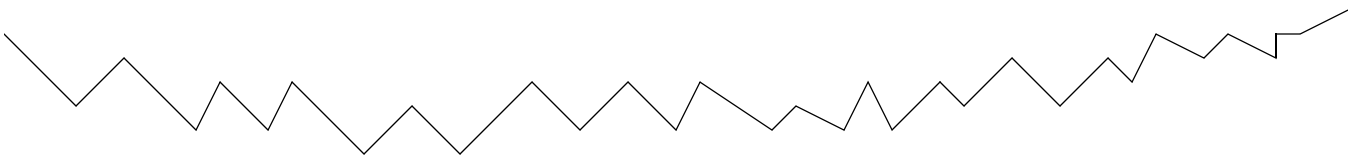
Month	Busy Hour Utilization
July, 2003	95.60 / 33.11
June, 2003	69.69 / 24.14
May, 2003	56.45 / 19.55
April, 2003	41.15 / 14.25

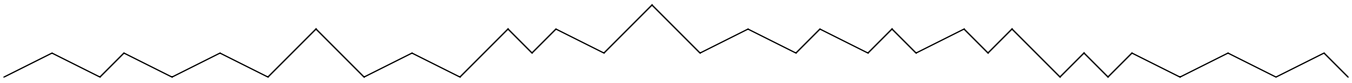
Top Ten Clients

	Client	Busy Hour Utilization	% of Monthly Traffic
1	Client142	84.83 / 28.13	17.96 / 10.71
2	Client73	26.47 / 17.62	3.64 / 5.37
3	Client84	24.25 / 0.10	1.93 / 0.01
4	Client75	18.67 / 4.96	2.78 / 1.66
5	Client155	18.42 / 8.20	3.68 / 2.53
6	Client150	17.99 / 9.49	2.73 / 2.55
7	Client146	13.87 / 9.76	1.63 / 1.56
8	Client27	12.29 / 8.19	1.00 / 3.22
9	Client54	9.03 / 3.62	2.75 / 3.24
10	Client154	8.86 / 5.98	1.55 / 2.10

Top Ten Servers

	Server	Busy Hour Utilization	% of Monthly Traffic
1	Server592	84.81 / 28.01	17.40 / 10.51
2	Server481	26.47 / 17.62	2.11 / 2.32
3	Client73	24.25 / 8.19	3.15 / 5.80
4	Client35	18.67 / 4.96	2.07 / 1.19
5	Client159	18.34 / 12.85	4.55 / 4.92
6	Server640	18.29 / 8.17	2.54 / 1.19
7	Client138	17.05 / 9.00	1.65 / 1.43
8	Client21	13.87 / 9.76	1.65 / 1.58
9	Client130	9.03 / 3.62	2.73 / 2.77
10	Server552	8.86 / 5.98	0.87 / 1.01





Top Ten Applications

	Application / TOS	Busy Hour Utilization	% of Monthly Traffic
1	netbios-ssn / 0	85.61 / 28.66	27.51 / 19.73
2	ftp-data / 0	24.25 / 8.19	3.18 / 6.15
3	OTHER_APPS / 0	18.69 / 8.68	4.92 / 4.21
4	vrtstrapserver / 0	15.97 / 0.18	1.27 / 0.02
5	optima-vnet / 0	13.87 / 9.76	1.64 / 1.71
6	slinkysearch / 0	12.11 / 0.12	0.97 / 0.02
7	visionpyramid / 0	0.25 / 10.88	0.04 / 1.44
8	socks / 0	8.86 / 5.98	0.95 / 2.38
9	interhdl_elmd / 0	0.19 / 8.13	0.02 / 1.30
10	zephyr-srv / 0	0.16 / 6.52	0.01 / 0.86

Top Ten TOS

	TOS	Busy Hour Utilization	% of Monthly Traffic
1	0	95.60 / 33.11	100.00 / 100.00

9

Detail Reports

NetFlow Interface includes 12 detail reports:

- Client Detail Report (Hourly, Daily, Monthly)
- Server Detail Report (Hourly, Daily, Monthly)
- Application Detail Report (Hourly, Daily, Monthly)
- TOS Detail Report (Hourly, Daily, Monthly)

Detail reports are available in two versions, one with graphs and one without graphs. The graphless version is faster to populate. If you are launching NetFlow reports from the Report Launchpad, and if speed matters, you may want to launch the graphless version.

Detail reports add depth to Summary Reports. Each report starts with the information in the summary report—showing which elements (servers, clients, applications) are contributing the most to interface utilization—then drills down from an individual element to the flow level, for example, from a server to the various client/application pairs that were accessing the server.

At the flow level you can view graphs that show how the following metrics have changed:

- Utilization
- Percentage of traffic
- Bytes per hour
- Packets per hour

Use the graphs to spot trends and compare current performance to past performance. In the hourly detail, “past” performance means all of yesterday and part of today; in the daily detail, past performance means the last thirty days; and in the monthly detail, past performance will show every month that you have been collecting data.

See below for samples of the following reports:

- Hourly Server Detail
- Daily Application Detail
- Monthly Client Detail

NetFlow Interface

Hourly Server Detail

The Server Detail Report presents a breakdown of the servers, clients and applications which contribute to the total traffic on an interface. Select an interface and a time period to see a list of servers that had the most impact on the interface utilization for the time period selected. Select a server device to see a list of clients / applications which accessed the server through the selected interface. Select a client / application combination to see graphs of its historical traffic patterns. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

Router	Interface	Duplex	Utilization
Router01	7	Full	6.28 / 3.22
Router01	4	Half	1.55
Router01	0	Half	0.98

Hourly Utilization

Hour	Utilization
9:00 AM, August 8, 2003	6.28 / 3.22
8:00 AM, August 8, 2003	7.14 / 4.40
7:00 AM, August 8, 2003	4.31 / 2.21
6:00 AM, August 8, 2003	4.36 / 2.41
5:00 AM, August 8, 2003	4.40 / 2.70
4:00 AM, August 8, 2003	4.65 / 2.83
3:00 AM, August 8, 2003	4.34 / 2.75
2:00 AM, August 8, 2003	3.95 / 2.63
1:00 AM, August 8, 2003	4.05 / 2.50

Top Talking Servers

Server	Utilization	% of Traffic	Bytes	Average Bytes per Packet	Number of Flows
Server164	1.96 / 0.67	31.27 / 20.75	4523.28 k / 2312.88 k	302.40 / 289.62	24 / 17
Client14	0.92 / 0.60	14.69 / 18.61	2125.28 k / 2073.82 k	836.72 / 814.54	74 / 72
Client144	0.40 / 0.08	6.41 / 2.47	926.42 k / 275.72 k	1200.02 / 480.36	5 / 6
Server588	0.37 / 0.21	5.94 / 6.61	859.15 k / 737.13 k	340.53 / 338.44	21 / 19
Client155	0.28 / 0.04	4.44 / 1.09	641.88 k / 121.11 k	1154.47 / 283.64	15 / 14
Server356	0.23 / 0.14	3.67 / 4.32	530.81 k / 481.82 k	394.95 / 395.26	9 / 9
Client130	0.17 / 0.17	2.70 / 5.22	389.93 k / 582.18 k	217.71 / 299.01	12 / 12
Client94	0.11 / 0.16	1.75 / 4.94	252.73 k / 550.42 k	433.51 / 638.54	40 / 54
Server187	0.15 / 0.08	2.41 / 2.40	348.13 k / 267.89 k	281.20 / 288.68	19 / 14
Server352	0.15 / 0.02	2.35 / 0.65	339.34 k / 72.47 k	395.50 / 377.45	26 / 4

Server Owner
ACME

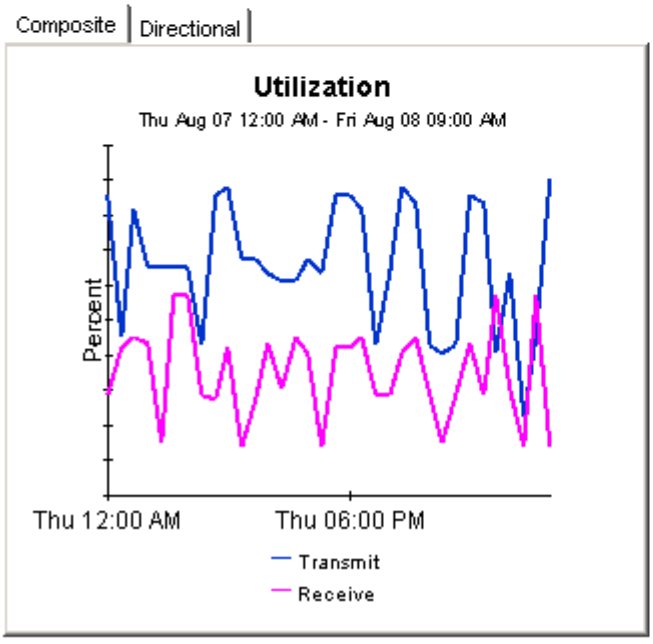
Server Location
London

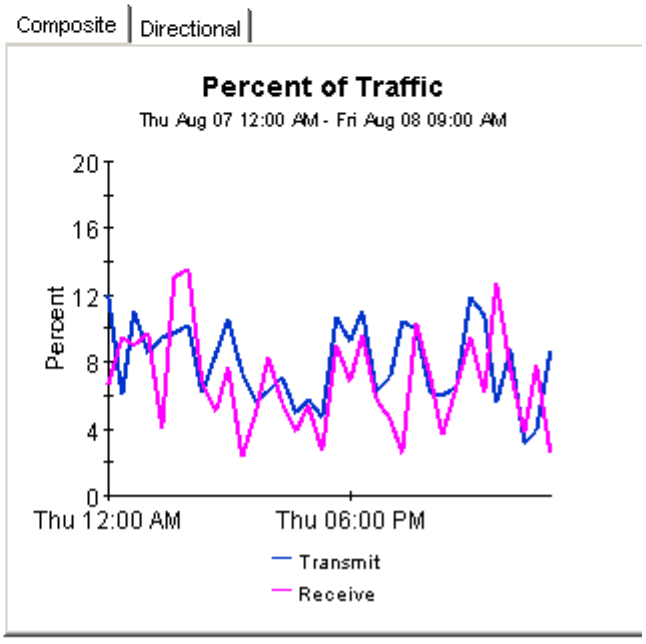
Top Talking Client / Application Pairs

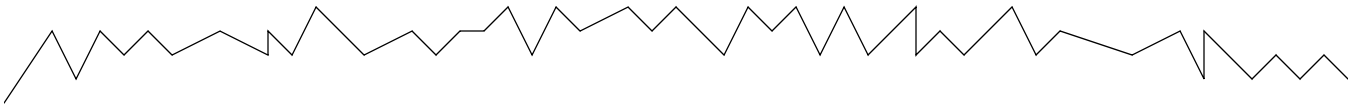
Client	Application	Utilization	% of Traffic	Bytes	Average Bytes per Packet	Number of Flows
Client06	snmp	0.54 / 0.08	8.62 / 2.54	1246.86 k / 282.56 k	312.65 / 281.44	6 / 5
Client07	snmp	0.53 / 0.33	8.40 / 10.36	1215.12 k / 1154.61 k	305.00 / 289.81	4 / 4
Client132	snmp	0.50 / 0.08	7.99 / 2.54	1156.20 k / 282.91 k	289.63 / 281.78	8 / 5
Client03	snmp	0.39 / 0.17	6.26 / 5.32	905.11 k / 592.80 k	302.31 / 297.29	6 / 3

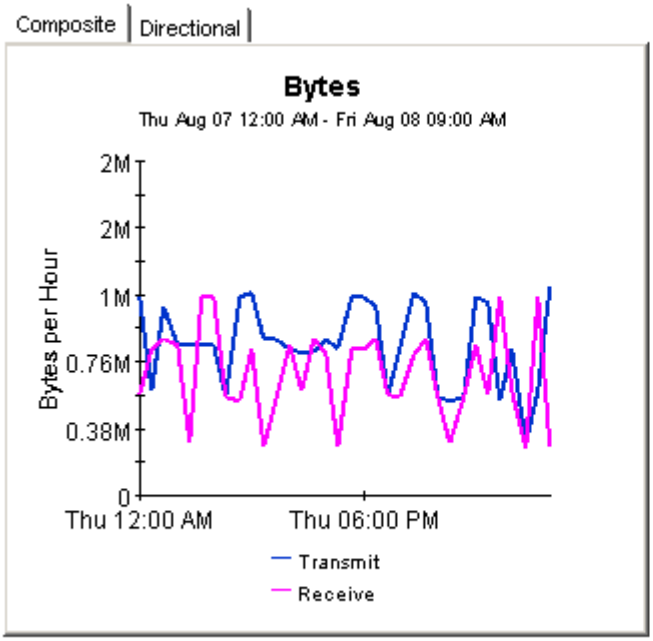
Client Owner
HP

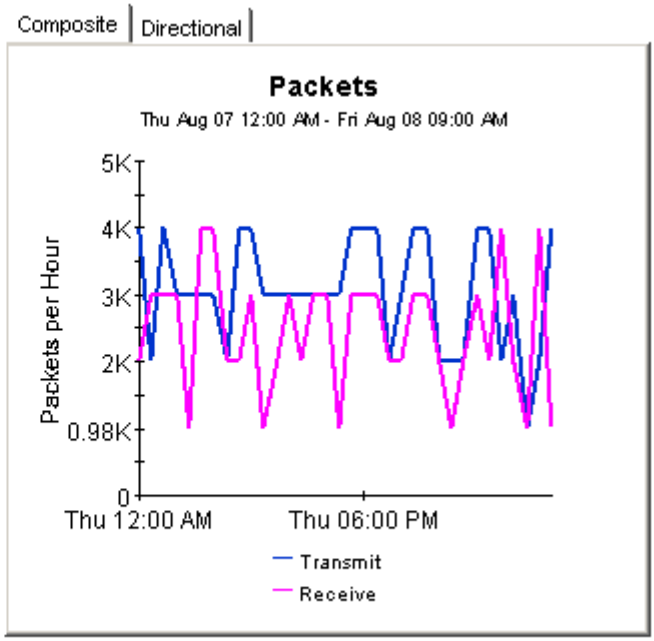
Client Location
Reston








Composite
Directional
Bytes
Thu Aug 07 12:00 AM - Fri Aug 08 09:00 AM
Bytes per Hour
2M
2M
1M
0.76M
0.38M
0
Thu 12:00 AM
Thu 06:00 PM
Transmit
Receive


Composite
Directional
Packets
Thu Aug 07 12:00 AM - Fri Aug 08 09:00 AM
Packets per Hour
5K
4K
3K
2K
0.98K
0
Thu 12:00 AM
Thu 06:00 PM
Transmit
Receive

NetFlow Interface

Daily Application Detail

The Application Detail Report presents a breakdown of the applications, clients and servers which contribute to the total traffic on an interface. Select an interface and a time period to see a list of applications that had the most impact on the interface utilization for the time period selected. Select an application to see a list of clients / servers utilizing the application through the selected interface. Select a client / server combination to see graphs of its historical traffic patterns. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

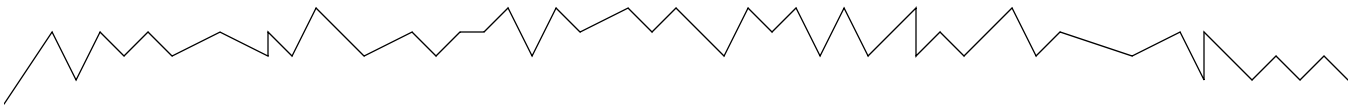
Router	Interface	Duplex	Busy Hour Utilization
Router01	7	Full	8.06 / 9.65
Router01	4	Half	7.42
Router01	0	Half	6.99

Peak Hourly Utilization

Day	Busy Hour Utilization
August 7, 2003	7.42
August 6, 2003	9.44
August 5, 2003	5.19
August 4, 2003	7.47
August 3, 2003	33.49
August 2, 2003	3.01
August 1, 2003	4.30
July 31, 2003	6.68

Top Talking Applications

Application	TOS	Busy Hour Utilization	% of Daily Traffic	Bytes	Average Bytes per Packet	Number of Flows
ftp-data	0	5.31	9.93	241.71 M	1280.34	11
snmp	0	2.05	82.53	2008.97 M	371.78	61.25 k
socks	0	0.52	0.96	23.39 M	866.13	12
netbios-ssn	0	0.20	2.47	60.08 M	434.38	2065
OTHER_APPS	0	0.08	0.42	10.18 M	176.80	620
smtp	0	0.08	0.15	3692.45 k	1002.02	4
symplex	0	0.08	0.14	3380.38 k	1006.97	2
amt-esd-prot	0	0.07	0.15	3619.99 k	303.64	38
ansoft-lm-1	0	0.07	0.13	3192.22 k	287.98	2
ff-annunc	0	0.07	0.13	3190.59 k	288.32	2



Top Talking Client / Server Pairs

Client	Server	Busy Hour Utilization	% of Daily Traffic	Bytes	Average Bytes per Packet	Number of Flows
Client39	Server426	0.37	14.93	363.34 M	367.96	38.82 k
Client69	Server128	0.10	4.37	106.35 M	391.90	273
Client69	Server159	0.10	4.21	102.45 M	391.90	263
Client69	Server127	0.10	4.26	103.62 M	391.91	266
Client69	Server165	0.10	4.31	104.87 M	391.89	270
Client69	Server161	0.10	4.33	105.31 M	391.90	271

Client Owner

HP

Client Location

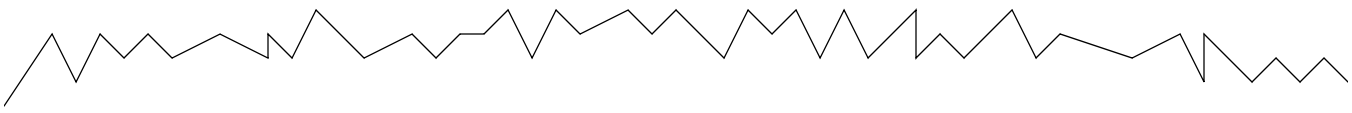
New York

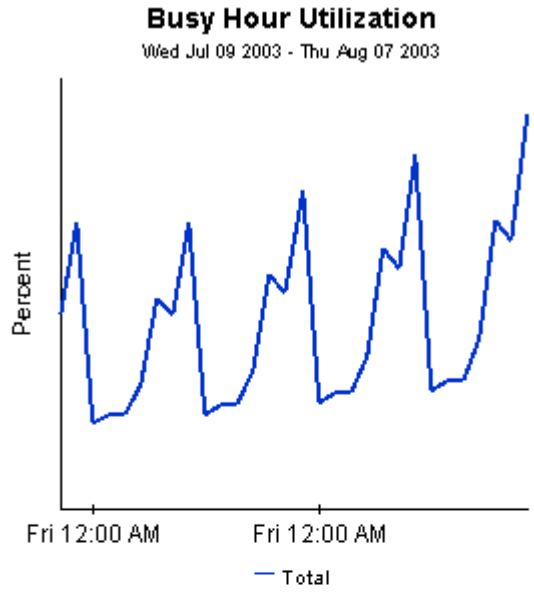
Server Owner

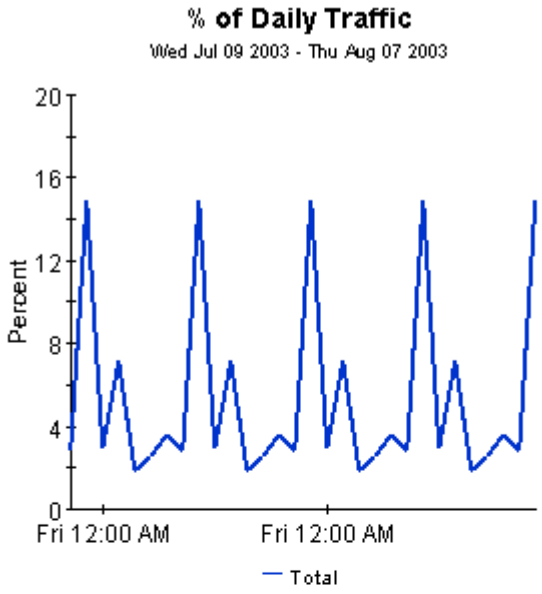
OVPI

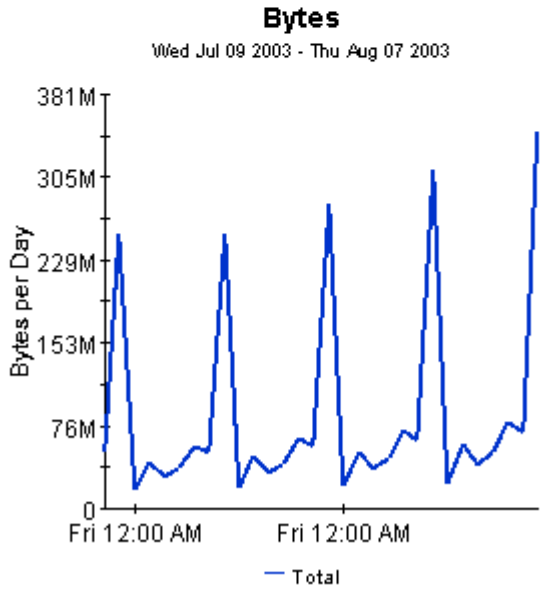
Server Location

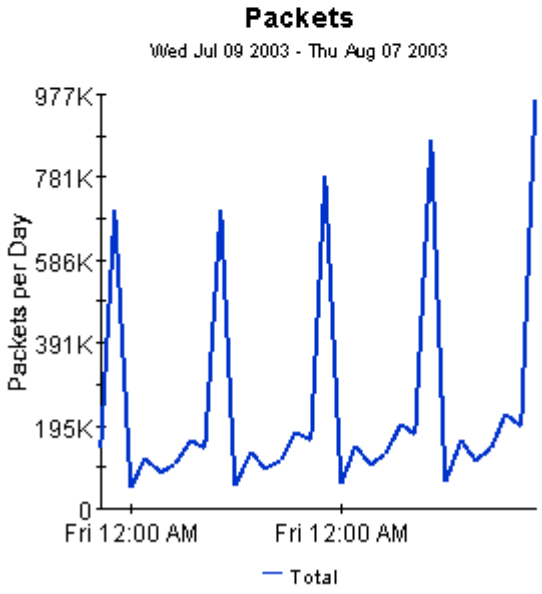
Chicago




Busy Hour Utilization
Wed Jul 09 2003 - Thu Aug 07 2003
Percent
Fri 12:00 AM
Fri 12:00 AM
Total


% of Daily Traffic
Wed Jul 09 2003 - Thu Aug 07 2003
Percent
20
16
12
8
4
0
Fri 12:00 AM
Fri 12:00 AM
Total


Bytes
Wed Jul 09 2003 - Thu Aug 07 2003
Bytes per Day
381M
305M
229M
153M
76M
0
Fri 12:00 AM
Fri 12:00 AM
Total


Packets
Wed Jul 09 2003 - Thu Aug 07 2003
Packets per Day
977K
781K
586K
391K
195K
0
Fri 12:00 AM
Fri 12:00 AM
Total

NetFlow Interface

Monthly Client Detail

The Client Detail Report presents a breakdown of the clients, servers and applications which contribute to the total traffic on an interface. Select an interface and a time period to see a list of clients that had the most impact on the interface utilization for the time period selected. Select a client device to see a list of servers / applications accessed by the client through the selected interface. Select a server / application combination to see graphs of its historical traffic patterns. Statistics for half-duplex interfaces are shown as a single value while those for full-duplex interfaces are displayed as "transmit" / "receive".

Interface List

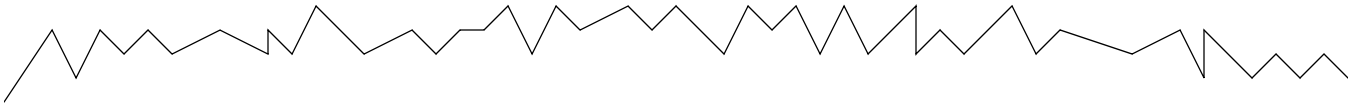
Router	Interface	Duplex	Busy Hour Utilization
Router01	7	Full	95.60 / 33.11
Router01	4	Half	30.14
Router01	0	Half	29.87

Peak Hourly Utilization

Day	Busy Hour Utilization
July 1, 2003	95.60 / 33.11
June 1, 2003	69.69 / 24.14
May 1, 2003	56.45 / 19.55
April 1, 2003	41.15 / 14.25

Top Talking Clients

Client	Busy Hour Utilization	% of Monthly Traffic	Bytes	Average Bytes per Packet	Number of Flows
Client142	61.84 / 20.50	18.34 / 11.47	1384.62 M / 779.42 M	1029.48 / 693.82	1464 / 1530
Client73	19.29 / 12.85	4.29 / 5.92	323.78 M / 401.92 M	791.02 / 936.49	300 / 313
Client84	17.68 / 0.07	2.49 / 0.02	187.76 M / 1180.70 k	1405.20 / 40.00	6 / 3
Client75	13.61 / 3.62	2.32 / 1.40	175.16 M / 94.92 M	1099.60 / 1181.89	88 / 62
Client155	13.43 / 5.98	4.16 / 2.58	313.95 M / 175.24 M	765.87 / 598.02	5133 / 5443
Client150	13.11 / 6.92	2.28 / 2.14	172.27 M / 145.58 M	319.69 / 293.81	1042 / 675
Client146	10.11 / 7.12	1.36 / 1.31	102.90 M / 89.21 M	874.97 / 785.72	9 / 9
Client27	8.96 / 5.97	1.04 / 3.63	78.51 M / 246.60 M	614.62 / 1225.33	16 / 13
Client54	6.58 / 2.64	2.30 / 2.72	173.49 M / 184.91 M	347.73 / 365.71	1626 / 1604
Client154	6.46 / 4.36	1.37 / 2.15	103.78 M / 146.31 M	495.96 / 584.13	1222 / 1307



Client Owner
HP

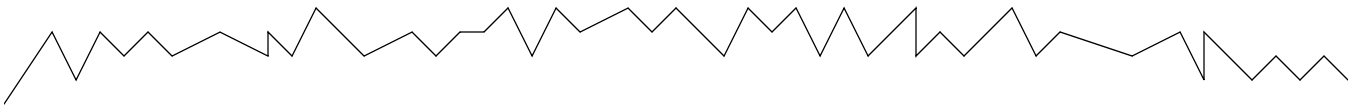
Client Location
Paris

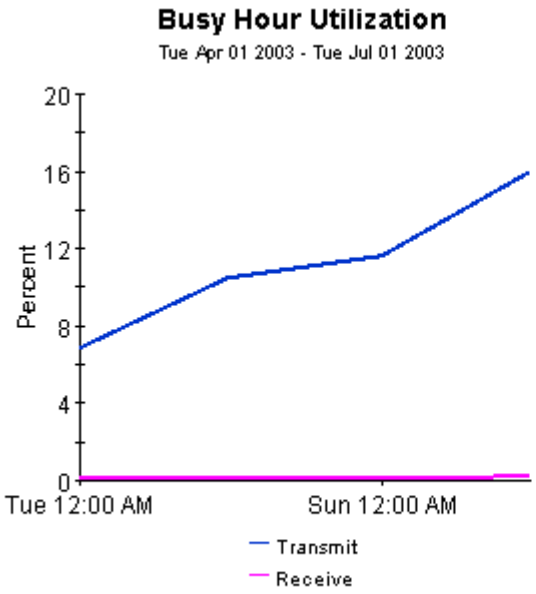
Top Talking Server / Application Pairs

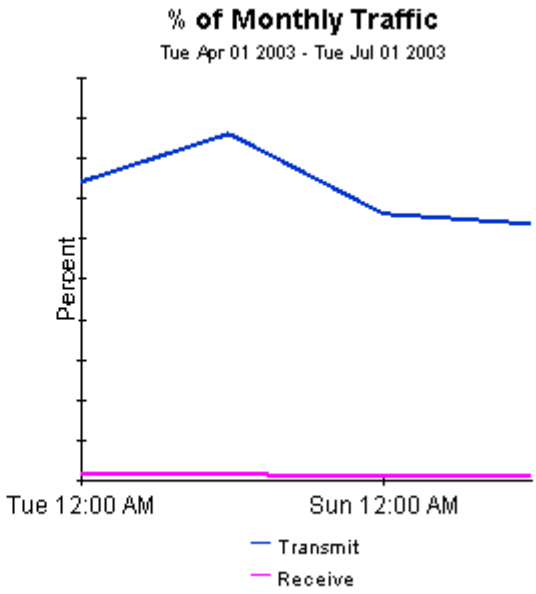
Server	Application	TOS	Busy Hour Utilization	% of Monthly Traffic	Bytes	Average Bytes per Packet	Number of Flows
Client159	vrtstrapserver	0	11.64 / 0.13	1.32 / 0.02	99.53 M / 1678.69 k	1405.29 / 40.00	2 / 2
Server481	slinkysearch	0	8.83 / 0.09	1.24 / 0.02	93.76 M / 1404.83 k	1405.20 / 40.00	3 / 3
Server481	visionpyramid	0	0.18 / 7.93	0.03 / 1.86	1915.14 k / 126.33 M	40.00 / 1405.17	3 / 3
Server430	interhdl_elmd	0	0.14 / 5.93	0.02 / 1.09	1174.24 k / 73.96 M	40.00 / 1405.80	2 / 2
Client159	zephyr-srv	0	0.12 / 4.74	0.01 / 0.90	1018.07 k / 60.82 M	40.00 / 1405.32	2 / 2

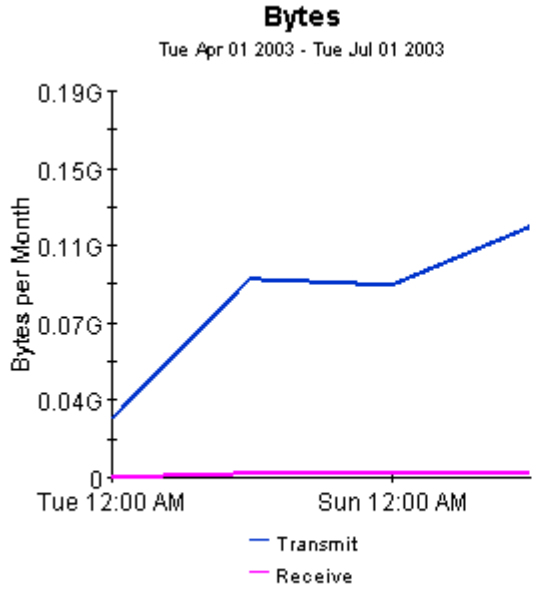
Server Owner
HP

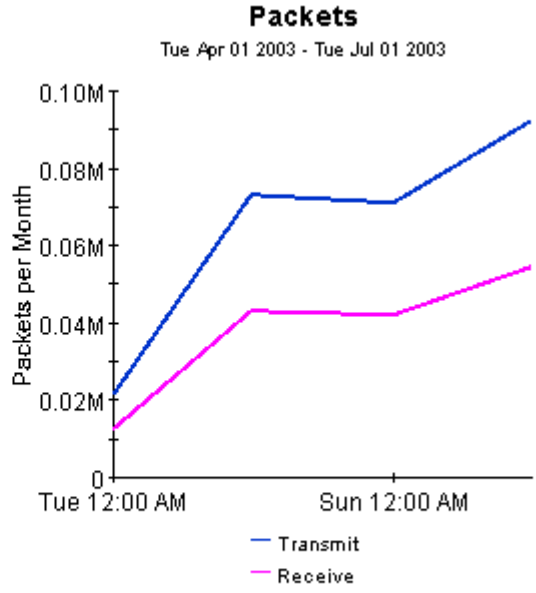
Server Location
Chicago




Busy Hour Utilization
Tue Apr 01 2003 - Tue Jul 01 2003
Percent
20
16
12
8
4
0
Tue 12:00 AM
Sun 12:00 AM
Transmit
Receive


% of Monthly Traffic
Tue Apr 01 2003 - Tue Jul 01 2003
Percent
Tue 12:00 AM
Sun 12:00 AM
Transmit
Receive


Bytes
Tue Apr 01 2003 - Tue Jul 01 2003
Bytes per Month
0.19G
0.15G
0.11G
0.07G
0.04G
0
Tue 12:00 AM
Sun 12:00 AM
Transmit
Receive


Packets
Tue Apr 01 2003 - Tue Jul 01 2003
Packets per Month
0.10M
0.08M
0.06M
0.04M
0.02M
0
Tue 12:00 AM
Sun 12:00 AM
Transmit
Receive

10

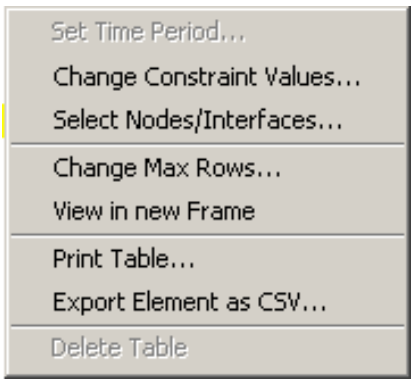
Editing Tables and Graphs

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.

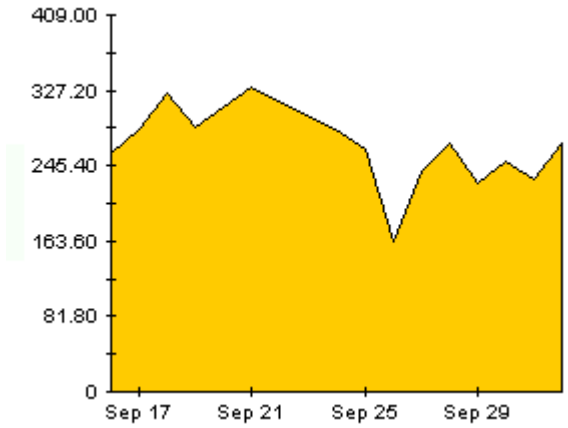
Table Viewer

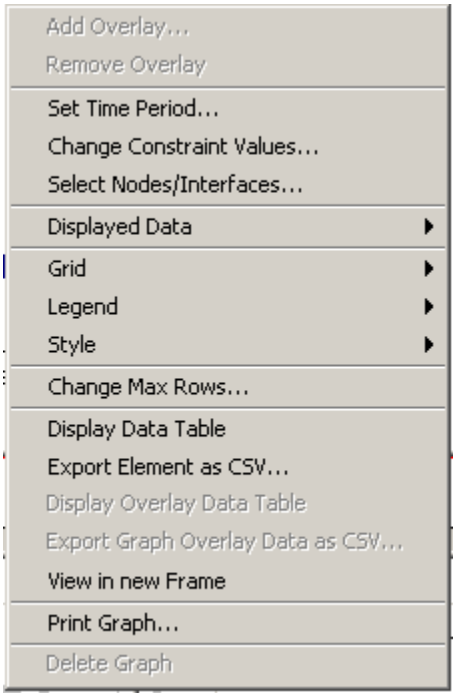
Polled IP QoS Statistics Data - Input
Over Previous 6 Hours

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

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.





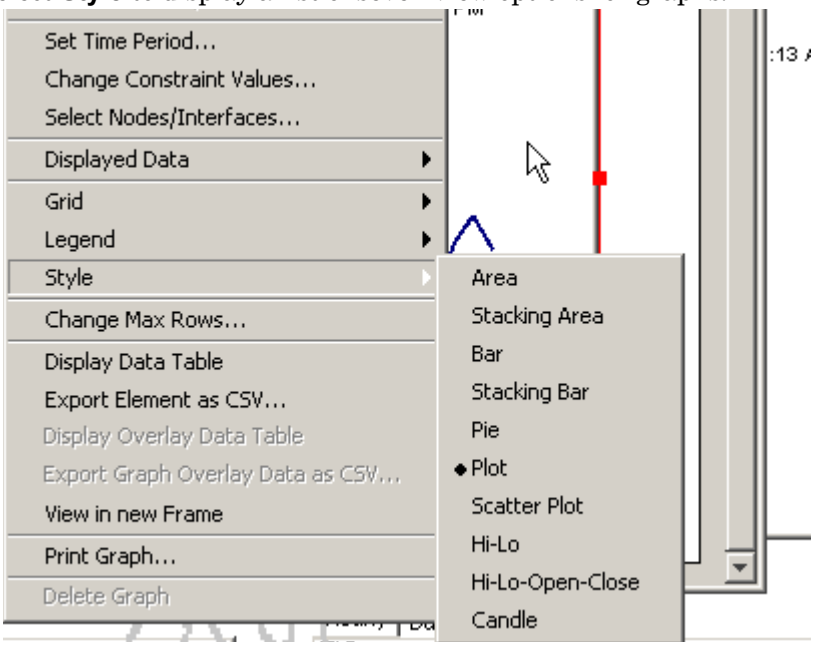
The following table provides details about each option.

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.

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

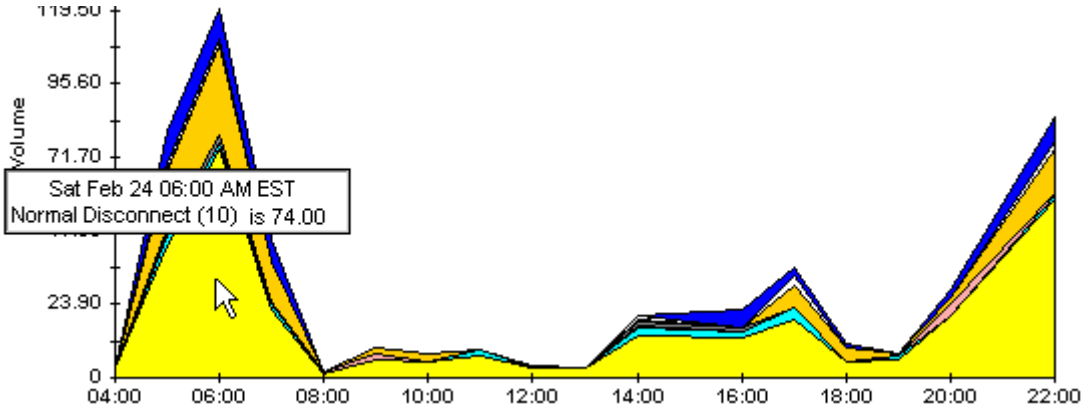
Style Options

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



Style > Area

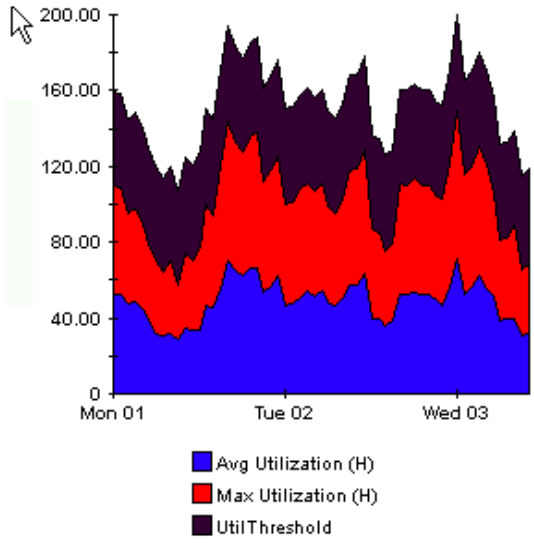
The plot or bar chart changes to an area graph. While relative values and total values are easy to view in this format, absolute values for smaller data types may be hard to see. Click anywhere within a band of color to display the exact value for that location



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

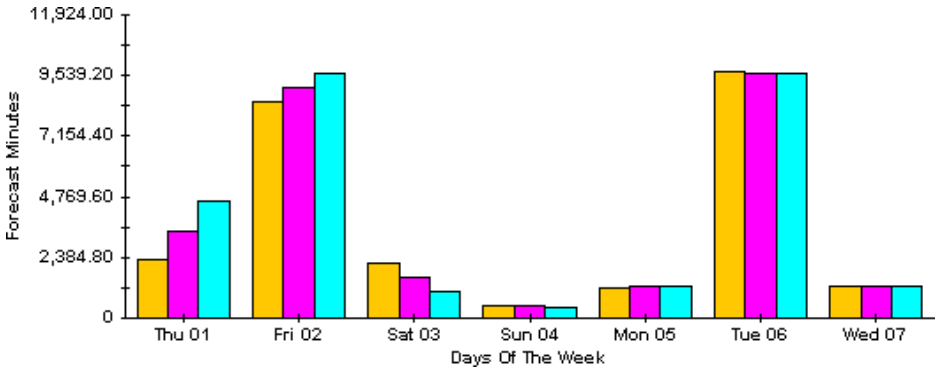
Style > Stacking Area

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



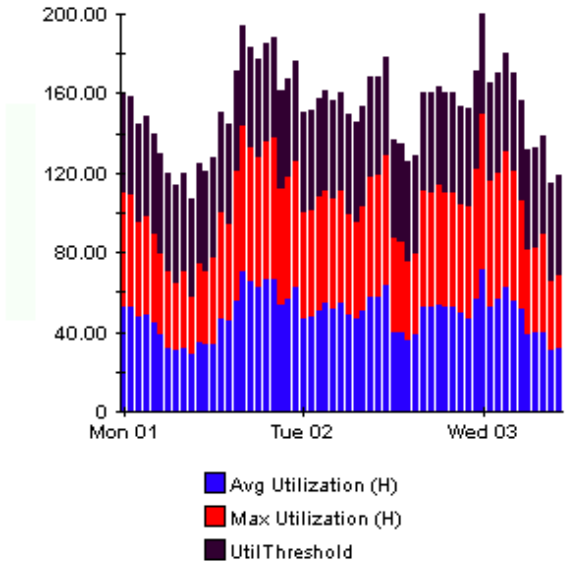
Style > Bar

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



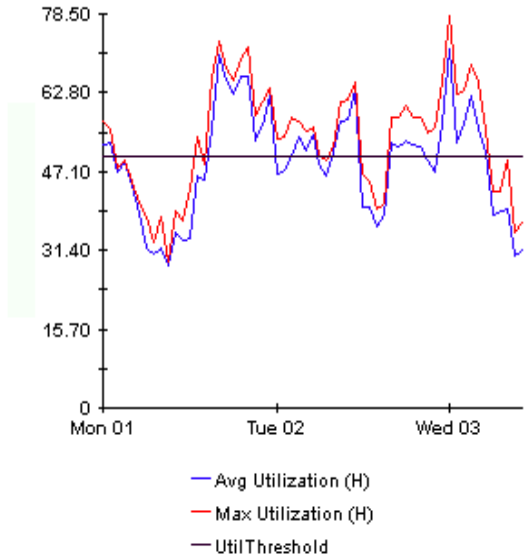
Style > Stacking Bar

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



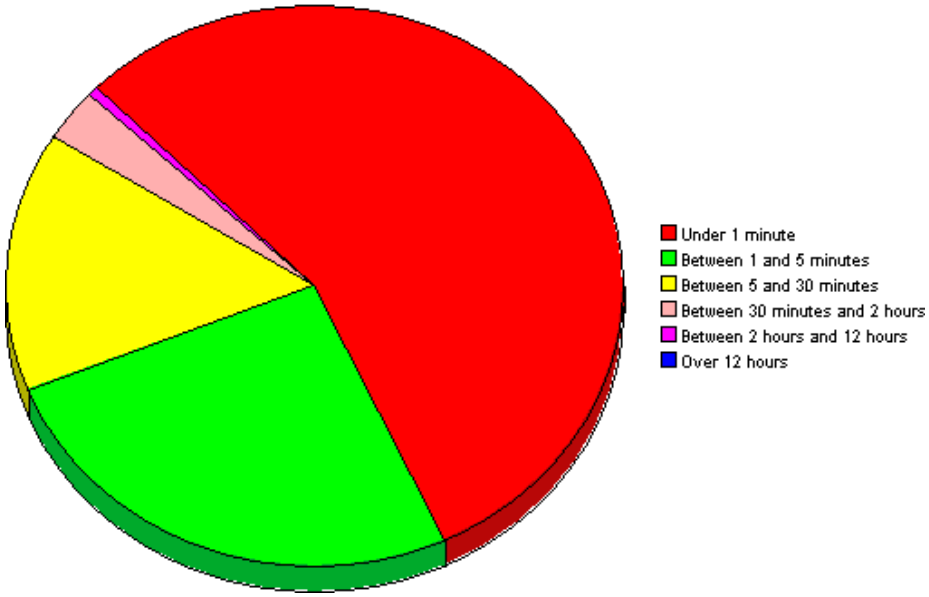
Style > Plot

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



Style > Pie

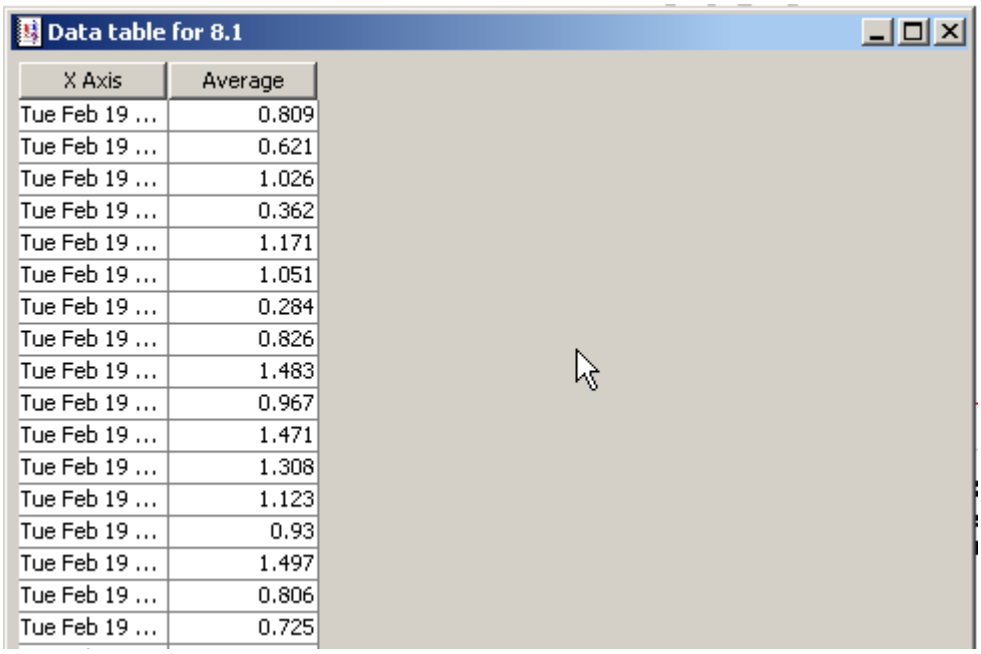
An area graph becomes a pie chart. Bands in an area graph convert to slices of a pie and the pie constitutes a 24-hour period. This view is helpful when a small number of data values are represented and you are looking at data for one day.



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

Display Data Table

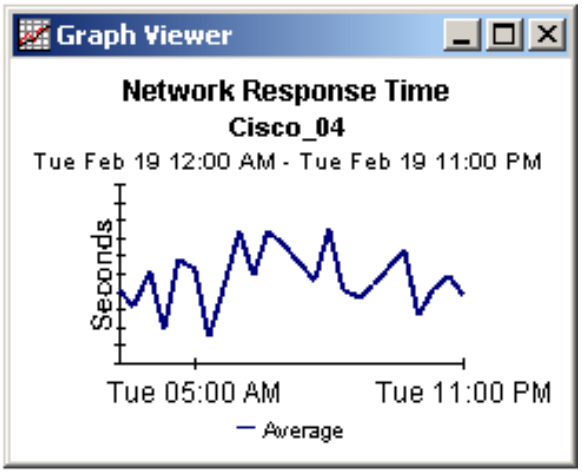
This option changes a graph into a spreadsheet.



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.



index

S

T

U

V