Interface Reporting Report Pack

For the Windows®, HP-UX, Solaris, and Linux operating systems

Software Version 5.54

HP Performance Insight 5.41

User Guide

May 2010

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This guide's title page contains the following identifying information:

- Software Version number, which indicates the software version.
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Contents

1 Overview

HP Performance Insight

Performance Insight is a performance management application that collects data from many sources, performs in-depth trend analysis, maintains performance baselines, and provides users with convenient, web-based reporting. Following is a partial list of product features:

- Distributed architecture
- Easy to scale (supports data collection from thousands of agents)
- CODA/PA agent support
- Multi-company security model
- Data Warehousing
- Near Real Time reporting
- Forecasting
- Extensive aggregation options (by day, week, month; by location, by customer)
- Thresholding and alerting
- Easy identification of bottlenecks
- Easy assessment of capacity trends
- Accurate and timely documentation for management
- Integration with NNM
- Integration with HP Operations Manager

The reporting solutions created for Performance Insight cover many areas of business technology optimization. For a list of reporting solutions organized by technology, see Appendix A, PI Report Packs.

Data Collection for Interface Reporting

The following datapipes can be used with Interface Reporting:

Interface Discovery Datapipe 2.60 (required)

The Interface Discovery Datapipe discovers interfaces on SNMP-manageable devices and maintains configuration data for each discovered interface. To ensure continuity of data when the value of *ifIndex* changes, the Interface Discovery Datapipe supports the use of an alternate, persistent attribute, namely:

- *ifDescr*
- *ifName*
- *ifAlias*

The Interface Discovery Datapipe does not poll interfaces for metrics. It only discovers them. This datapipe is a prerequisite for other datapipes, including the IR ifEntry Datapipe.

Interface Reporting ifEntry Datapipe 2.53 (required)

Collects data from the MIB-II ifTable in accordance with the polling rule you implement. If desired, you can configure this datapipe to perform directed-instance polling. Also known as *flagged interface polling*, directed-instance polling allows you to specify which interfaces you want to poll. If your network includes hundreds or possibly thousands of ports feeding desktop users, and your initial goal is to collect data from a few LAN switch interfaces (the server ports or the uplink ports), you can use directed-instance polling to restrict data collection to a smaller subset of interfaces, thereby enhancing performance and scalability.

Interface Reporting Duplex Datapipe 2.00 (optional)

Polls the RFC2665 MIB for OID 1.3.6.1.2.1.10.7.2.1.19, which indicates the status, full or half duplex, of an interface. The value pulled from the MIB overrides the default for that protocol type.

Cisco VLAN Datapipe 5.30 (optional)

Collects VLAN configuration information for the VLAN reports in the IR VLAN package.

Interface Reporting OPNET Export Datapipe 2.11 (optional)

Exports MIB-II ifTable data in a format compatible with OPNET.

Folders, Reports, and Enhancements in Version 5.54

The Interface Reporting Report Pack includes the following report folders:

- Admin
- Device
- EtherChannel
- Interface
- Location
- Protocol
- VLAN

Reports in the Device, Location, Protocol, and Vendor folders have a customer orientation. Your first step is to select a customer. Selecting a customer displays a list of devices, locations, protocols, or vendors that belong to the customer.

The only data in a customer-oriented report is aggregated data. The Device folder aggregates data by device, which means that data for all enabled interfaces (*administratively up interfaces*) has been rolled up to the device level. Similarly, the reports in the Location folder roll up data for enabled interfaces by location, while reports in the Protocol folder roll up data for enabled interfaces by protocol.

Reports in the Interface folder have an interface orientation. Each report begins with a table containing a list of devices in column 1 and a list of interfaces in column 2.

The following table lists the reports in each folder.

Folder	Folder Contents
Admin	- Configuration & Logging - Inventory - System Performance - Top Level Inventory
Interface	- Availability Detail - Capacity Planning - Discard Exceptions - Error Exceptions - Exception Hot Spots - Grade of Service - Utilization and Volume - Near Real Time - Near Real Time Snapshot - Service Level Management - Simple NRT - Top Ten - Unreachable - Utilization Exceptions

Folder	Folder Contents
Device	• Capacity Planning • Exception Hot Spots • Priority Customer • Service Level Management • Top Ten
VLAN	• Exception Hot Spots • Near Real Time • Top Ten • Traffic Utilization
Etherchannel	• Exception Hot Spots • Near Real Time
Location	• Capacity Planning • Executive Summary • Priority Customer • Service Level Management • Top Ten
Protocol	• Capacity Planning • Executive Summary • Service Level Management • Top Ten • Priority Customer
Vendor	• Capacity Planning • Executive Summary • Make and Model Top Ten • Priority Customer • Service Level Management • Top Ten

The reports listed above will help you maintain service levels, assess capacity constraints, and spot problem areas before they become serious. Interface Reporting does the following chores for you, automatically:

- Monitor exceptions (discard exceptions, error exceptions, utilization exceptions)
- Ranking (spot the extremes — trunks, locations, protocols that rank in the top ten)
- Sort interfaces by rate of growth over the rolling baseline period
- Highlight devices that are expected to exceed utilization thresholds in the near future
- Estimate future utilization based on behavior during the baseline period
- Correlate future performance by day-of-week
- Show performance for a device, trunk, or EtherChannel in near real time
- Compare today's activity to yesterday

- Compare today's activity to last week and last month
- Compare last month's activity to previous months

▶ Interface Reporting Report Pack enables you to delete Devices or Interface Types or Interfaces using the PI Delete Managed Object wizard. Note that this wizard will not delete any other type of objects.

For more information on PI Delete Managed Object wizard, see *HP Performance Insight Administration Guide*.

Enhancements in Version 5.54

Version 5.54 includes the following upgrade packages:

- Interface_Reporting_Upgrade_to_554
- Interface_Reporting_Device_Upgrade_50_to_531
- Interface_Reporting_Location_Upgrade_50_to_531
- Interface_Reporting_Protocol_Upgrade_50_to_531
- Interface_Reporting_Vlan_Upgrade_to_53
- Interface_Reporting_ifEntry_Datapipe_Upgrade_to_253
- IR_OPNET_Export_Datapipe_Upgrade_to_211
- IRifEntry_Duplex_Datapipe_Upgrade_10_to_20
- IFEntry_Disc_Datapipe_Upgrade_to_260

Types of Reports

See below for a brief description of each type of report.

- **Availability Detail.** Displays a list of interfaces that were unavailable for at least part of the previous day.
- **Capacity Planning**. Forecasts busy-hour utilization and sorts interfaces, devices, locations, protocols, or vendors by rate of growth.
- **Configuration and Logging.** Displays configuration settings that determine how collections are performed; displays an entry for each transfer from the datapipe to the report pack, indicating when the transfer took place and the number of rows that were mapped to the report pack.
- **Exceptions.** Identifies the interfaces with the highest number of discard exceptions, error exceptions, or utilization exceptions.
- **Exception Hot Spots.** Identifies the trunks, interfaces, VLAN interfaces, and devices with the highest number of exceptions.
- **Executive Summary. Aggregates volume, exception counts, and utilization by protocol, location, or vendor.**
- **Grade of Service.** Identifies the ten worst performing interfaces and assigns a grade to each interface based on utilization, error, and discard exceptions.

- **Inventory.** Shows which devices are provisioned and property data associated with devices and interfaces. Top Level Inventory shows the total number of devices for each customer, the total number of interfaces for each customer, and a breakdown by make and model.

- **Near Real Time.** Provides utilization, error, and discard data for active interfaces, trunks, and EtherChannels; the time period begins with the most recent poll and goes back six hours; drill-down to daily and monthly data.

- **NRT Snapshot.** Provides utilization, error, and discard data for one device, multiple devices, or specific interfaces on one device; same time period as Near Real Time.

- **Priority Customer.** These reports provide availability, exception and volume metrics for selected high priority customers and their managed elements. They are suitable for wall board displays with an hourly refresh, allowing management and staff to see the current state of their network from a customer perspective at a high level. No data will appear in these reports unless you assign *Priority* to the customer/device, customer/location, customer/protocol or customer/vendor combinations using the Assign Priority forms under **General Tasks** in the Property/Object Manager window.

- **Service Level Management.** Identifies interfaces, devices, locations, protocols, and vendors with lowest availability and highest response time.

- **Simple Near Real Time.** A subset of Near Real Time; provides statistics for the previous six hours and an hourly view of utilization, discards, and errors. Intended for easy integration with the NMS.

- **System Performance.** Measures duration, in seconds, for groups of related tasks performed by the report pack.

- **Top Ten.** Identifies interfaces, VLAN interfaces, trunks, devices, locations, protocols, and vendors with the highest volume and the lowest volume.

- **Unreachable.** Provides a list interfaces for which no data has been received for 35 minutes; excludes interfaces for which no data has been received for more than six hours.

    Unreachable reports do not support the LIR feature. You can open and view the Unreachable reports *only* on a standalone server and not in a distributed setup.

Rules and Actions for Thresholds

You can enhance fault isolation and problem diagnosis by integrating NNM and PI. If NNM and PI are integrated, the NNM operator will have access to the Report Launchpad window. From the Report Launchpad window, the NNM operator can launch any report in Interface Reporting.

If NNM and PI are integrated, be sure to install the optional thresholds sub-package that comes with Interface Reporting. The optional thresholds sub-package contains a thresholds policy. The thresholds policy defines:

• Threshold conditions specific to Interface Reporting

• An action for PI to take when a threshold is breached

• An action for PI to take when a breach condition returns to normal

Configuring the Thresholds Module is not necessary. You do not need to configure thresholds, define actions, or specify a destination for threshold traps. However, you may modify category, severity, and destination parameters at any time. For details about these options, refer to the *Thresholds Module User Guide*.

The following table provides details about the thresholds policy contained in the optional thresholds sub-package.

Threshold	Data Type	Description	Severity
InDiscards	NRT	In Discard percentage exceeds discard exception level.	Warning
OutDiscards	NRT	Out Discard percentage exceeds discard exception level.	Warning
InErrors	NRT	In Error percentage exceeds error exception level.	Minor
OutErrors	NRT	Out Error percentage exceeds error exception level.	Minor
InUtilization	NRT	In Utilization percentage exceeds utilization exception level.	Warning
OutUtilization	NRT	Out Utilization percentage exceeds utilization exception level.	Warning
Availability	NRT	Availability less than exception level.	Warning
UtilException	Hourly	Utilization exceeds threshold in more than 45% of samples.	Warning
DiscardsException	Hourly	Discards exceed threshold in more than 45% of samples.	Warning
ErrorsException	Hourly	Errors exceed threshold in more than 45% of samples.	Minor

Threshold	Data Type	Description	Severity
InUtilForecast	Daily	30 day forecast In Utilization exceeds utilization exception level.	Warning
OutUtilForecast	Daily	30 day forecast Out Utilization exceeds utilization exception level.	Warning

The thresholds in the preceding table are defaults. You can easily modify any default on a per-interface basis by using the Change Interface Properties form. For details about this form, see Chapter 7, Change Forms.

Sources for Additional Information

This guide includes samples of some reports. The demo package that comes with Interface Reporting contains a sample of every report in the package. If you have access to the demo package, and you want to know what fully-populated reports look like, install the demo package. Demo reports are interactive, but unlike real reports, the data in a demo report is static.

For information regarding the latest enhancements to Interface Reporting and any known issues, refer to the *Interface Reporting Report Pack Release Notes, September 2009*. You may also be interested in the following documents:

- *Cisco VLAN Datapipe Release Notes*
- *Common Property Tables User Guide*
- *Executive Summaries Report Pack User Guide*
- *Interface Discovery Datapipe User Guide*
- *Interface Reporting ifEntry Datapipe User Guide*
- *NNM/PI Integration User Guide*
- *PI Report Packs Release Notes*
- *Thresholds Module User Guide*

The user guides for the core product, Performance Insight, and the user guides for the reporting solutions that run on Performance Insight, can be downloaded from this site:

> **http://h20230.www2.hp.com/selfsolve/manuals**

The user guides for the core product are listed under **Performance Insight**. The user guides for report packs and datapipes are listed under **Performance Insight Report Packs**. Each guide indicates a date. If a guide is revised and reposted, the date will change. Since we post revised manuals on a regular basis, you should check the web for updates.

2 Upgrade or Install

Guidelines for Upgrade

The report pack CD contains report packs, datapipes, and several shared packages. To extract these packages from the CD to the Packages directory on your system, insert the report pack CD in the CD-ROM drive and launch the package extraction program. When the extract finishes, the install script will prompt you to launch PI and start Package Manager.

If the package extraction step has already taken place, all of the packages associated with Interface Reporting, including the latest upgrade packages, are in the Packages directory on your system awaiting installation. To upgrade Interface Reporting, start Package Manager and follow the on-screen instructions. Before beginning the upgrade, be familiar with the following topics:

* Prerequisites for Interface Reporting 5.54
* Datapipes and remote pollers
* Custom table views
* Upgrading Interface Reporting in a distributed environment

Prerequisites for Interface Reporting 5.54

Make sure the following software is already installed before upgrading Interface Reporting:

* PI 5.41, with all available service packs for PI 5.41
* Interface Reporting 5.50
* Common Property Tables 3.92

You may have some or all of the following datapipes installed:

* IRifEntry Duplex Datapipe 2.00
* CiscoVLAN_Datapipe 2.20
* Interface Discovery Datapipe 2.60
* IRifEntry Datapipe 2.53
* IR OPNET Export Datapipe 2.11

Datapipes and Remote Pollers

When you uninstall an existing datapipe, the following information is lost:

* Single polling policy for a remote poller
* Cloned polling policies for multiple remote pollers

- Customized polling groups

To prevent this information from being lost, export existing polling policy configurations and customized polling groups by using the following commands:

- collection_manager
- group_manager

Exporting Polling Policy Configurations

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

UNIX: As user trendadm, run the following command:

```
cd $DPIPE_HOME

./bin/collection_manager -export -file /tmp/savePollingPolicy.lst
```

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

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

Exporting Polling Group Configurations

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

UNIX: As user trendadm, execute the following command:

```
cd $DPIPE_HOME

./bin/group_manager -export_all -outfile /tmp/savePollingGroups
```

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

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

Custom Table Views

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

Distributed Environments

If you are running PI as a distributed system, every server must be running PI 5.41 and all the Service Packs available for PI 5.41. Here is an overview of the installation procedure for distributed environments:

1   Disable trendcopy on the central server.

2   For the central server:

- Upgrade to Interface Reporting 5.54; deploy reports.

- Re-edit the process files containing trendcopy directives for Device, Location and Protocol; these files were overwritten during the upgrade process.

3 For each satellite server, upgrade to version 5.54 and deploy reports.

4 Re-enable trendcopy on the central server.

5 Reconfigure the central server and each satellite server. For details, see Chapter 4, Setting Up a Distributed System.

Upgrading to Version 5.54

Perform the following tasks to upgrade to Interface Reporting 5.54:

- Task 1: Stop OVPI Timer and extract packages from the report pack CD

- Task 2: Install the Interface Reporting "UPGRADE_Interface_Reporting_to_554" upgrade package

- Task 3: Restart OVPI Timer

▶ If you are using the "Poll Flagged Interfaces Only" polling rule, you must re-provision the poll flag after this upgrade. Refer to the *Interface Reporting ifEntry Datapipe User Guide* for details.

Task 1: Stop OVPI Timer and extract packages from the report pack CD

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

2 Stop OVPI Timer and wait for processes to terminate.

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

UNIX: As root, type one of the following:

HP-UX: **sh /sbin/init.d/ovpi_timer stop**

Solaris: **sh /etc/init.d/ovpi_timer stop**

3 Insert the report pack 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.

Once the extract is finished, the Interface Reporting folder under the Packages directory on your system will contain the following folders:

- Docs

- Interface_Reporting.ap

- Interface_Reporting_Demo.ap

- Interface_Reporting_Device.ap

- Interface_Reporting_Location.ap

- Interface_Reporting_Protocol.ap

- Interface_Reporting_Thresholds.ap
- Interface_Reporting_Vlan.ap
- UPGRADE_Interface_Reporting_to_554.ap

Task 2:   Install UPGRADE_Interface_Reporting_to_554

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 PI Application Server.

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

6   Click the check box next to the following package:

   UPGRADE_Interface_Reporting_to_554

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

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

   ▶   The UPGRADE package you installed might sometimes disappear from view. This is not an error. The Package Manager will display what you just installed as *Interface Reporting 5.54*.

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

Task 3:   Restart OVPI Timer.

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

UNIX: As root, type one of the following:

   HP-UX: `sh /sbin/init.d/ovpi_timer start`

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

Package Removal

If you uninstall the Interface Reporting package, the IR ifEntry Datapipe will be removed automatically. Uninstalling the Interface Reporting package does not affect the Interface Discovery Datapipe. Follow these steps to uninstall Interface Reporting:

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/init.d/ovpi_timer stop`

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

3   Launch Performance Insight and start Package Manager. The Package Manager welcome window opens.

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

5   Click **Uninstall**.

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

7   If you deployed the reports in Interface Reporting from this server, accept the defaults for Undeploy Reports, Application Server Name, and Port. Otherwise, clear the check box and skip to step 9.

8   Type the username and password for the PI Application Server.

9   Click **Next.** The Package Selection window opens. Click the check box next to the following packages:

   a   *Interface Reporting*

   b   *Interface Reporting Device*

   c   *Interface Reporting Location*

   d   *Interface Reporting Protocol*

   e   *Interface Reporting Thresholds*

   f   *Interface Reporting Vlan*

   g   *Interface Reporting Demo*

10 Click **OK.**

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

12 Click **Uninstall.** The Progress window opens and the removal process begins. When the uninstall process is complete, a package removal complete message appears.

13 Click **Done**.

14 Restart OVPI Timer.

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

   UNIX: As root, type one of the following:

   HP-UX: `sh /sbin/init.d/ovpi_timer start`

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

3 The New Install

Guidelines for Installation

An PI reporting solution has two ingredients, a report pack and a datapipe. Some reporting solutions include multiple datapipes. When you install a datapipe, you configure PI to collect a specific type of performance data at a specific interval. When you install a report pack, you configure PI to summarize and aggregate the data collected by the datapipe.

If the packages on the report pack CD-ROM were extracted to the Packages directory on your system, Interface Reporting is available for installation. If packages were not extracted from the report pack CD, follow the extract procedure in this chapter. Once the extract is done, you can install Interface Reporting by starting Package Manager and following the on-screen instructions. Before using Package Manager, review the following guidelines related to prerequisites, Common Property Tables, and distributed environments.

Prerequisites Related to PI

Follow these steps before proceeding further:

1 Make sure the following software is already installed:

- PI 5.41

- All available Service Packs for PI 5.41

This chapter does not discuss database configuration, sizing, or tuning. For help with those tasks, see the *HP PI Installation Guide*. If you need help installing a Service Pack, refer to the release notes that were issued with the Service Pack.

2 Turn off OVPI Timer. If OVPI Timer is not turned off, the system will begin doing things before you finish tuning the report pack.

3 Using one of the following techniques, populate your node list:

- Do it manually

- Run PI SNMP discovery

- Import a list of nodes exported from another application (for example, NNM)

- Add the nodes to a file and use node_manager.exe to import the file

Prerequisites Related to SNMP Polling

1 Open the SNMP Edit Profile window (**Polling Policy Management > Edit > SNMP Profiles**) and edit the following fields:

a Increase the default for OIDs-per-PDU.

The default for the number of OIDs-per-PDU is 20. IR's raw collection polls 28 OIDs. Unless the OIDs-per-PDU is adjusted, PI will send two PDUs to the polled device. Changing the default to 30 will cut in half the number of packets sent to each device.

▶ Not all SNMP agents permit large request packets. If the agent does not allow 28 OIDs, you may see a message indicating that your request packet is too large. Your options are to send more packets that are smaller, or create a separate SNMP profile that reduces the OID count, and assign that policy to the nodes that cannot sustain the 30-OID policy.

▶ The default for OIDs-per-PDU is set by PI. Upcoming releases of PI may use a different default. If the default is correct, no changes are necessary.

b Reduce the default for the SNMP timeout.

If you have a reliable, high-speed network, reduce the timeout default. Reducing the default will shorten the polling window.

c Lower the default for SNMP retries.

If you have a reliable, high-speed network, do not keep retrying a non-responsive device. The default, 5 retries, is usually overkill. Drop this down to 1 or even 0. It is better to lose a poll for a device than to keep retrying an unavailable device.

2 Increase the default for the number of child pollers.

The SNMP poller is mw_collect. Mw_collect spawns one child poller for each polled device. The default is 5 child pollers, which is analogous to a process window that sustains 5 active child pollers at any one time, initiating a new child poller as soon as the preceding child poller completes.

The number of child pollers is controlled by the "-c" argument. To make polling more efficient, increase the number of child pollers (to 25, 35, or even 50) by editing the following file:

<DPIPE_HOME>/lib/trendtimer.sched

Edit the file by adding "-c *n*" to the mw_collect entries for 5, 10, 15, 20, 60, 1440-minute invocations.

3 Activate SNMPv2 GETBULK retrieval.

PI provides GETBULK retrieval for SNMPv2 (snmpv2c) collections. Using GETBULK can significantly reduce the number of SNMP PDUs that PI sends to target nodes. Reducing the number of SNMP PDUs makes polling more efficient and may, depending on how the vendor's SNMP agent was implemented, reduce the load on polled devices.

To activate SNMPv2 GETBULK, add the "-e" argument to mw_collect. For example:

```
5 – {DPIPE_HOME}/bin/mw_collect –m –i 5 –K 1 –c 250 –e

10 – {DPIPE_HOME}/bin/mw_collect –m –i 10 –K 1 –c 250 –e

15 – {DPIPE_HOME}/bin/mw_collect –m –i 15 –K 1 –c 250 –e

20 – {DPIPE_HOME}/bin/mw_collect –m –i 20 –K 1 –c 250 –e

60 – {DPIPE_HOME}/bin/mw_collect –m –i 60 –K 1 –c 250 –e
```

Common Property Tables

If you are running an older version of Common Property Tables, version 3.90 or earlier, upgrade to version 3.92 by installing the upgrade package UPGRADE_CommonPropertyTables_to_392. If you are not running any version of Common Property Tables, let Package Manager install the latest version of Common Property Tables for you. Do not install the upgrade for Common Property Tables and other packages at the same time. Install the upgrade for Common Property Tables and *only* the upgrade for Common Property Tables. For details about this package, refer to the *Common Property Tables User Guide*.

Distributed Environments

If you intend to run Interface Reporting as a distributed system, every server must be running the same version of PI as well as all available Service Packs for that version. An outline of the installation procedure follows.

Central Server

Install the following packages on the central server:

- Interface Reporting
- Device sub-package
- Location sub-package
- Protocol sub-package
- VLAN sub-package

When installing these packages on the central server, deploy reports.

Satellite Servers

Some packages are mandatory, some are optional. These are the mandatory packages:

- Interface Reporting
- Device sub-package
- Interface Discovery Datapipe 2.60
- Interface Reporting ifEntry Datapipe 2.53

This packages are optional:

- Location sub-package
- Protocol sub-package
- VLAN sub-package
- Interface Reporting Thresholds
- Cisco VLAN Datapipe 2.2
- OPNET Export Datapipe 2.11

When package installation is complete, your next step is to set up connections with satellite server databases, configure trendcopy pull commands, and switch off daily and monthly aggregations at each satellite server. These steps are covered in Chapter 4, Setting Up a Distributed System.

Installing and Tuning Interface Reporting

This section covers the following tasks:

- Task 1: Extract packages from the report pack CD
- Task 2: If necessary, upgrade to Common Property Tables 3.92
- Task 3: Install Interface Reporting and both datapipes
- Task 4: Turn off polling policies for the IR ifEntry Datapipe
- Task 5: Use the IR_Configure utility to check and adjust polling rules

> One of the polling rule options you can implement using the IR_Config.pl utility is **Poll Flagged Interfaces Only**. If your network includes hundreds or possibly thousands of ports feeding desktop users, you can enhance performance by using the flagged interfaces only option to restrict data collection to a smaller subset of interfaces. For details, refer to the *IR ifEntry Datapipe User Guide*.

- Task 6: Use the Administration form to set the provisioning mode
- Task 7: Restart OVPI Timer
- Task 8: De-activate unwanted ifTypes (protocols) and adjust default thresholds
- Task 9: Turn back on the polling policies you turned off in Task 4
- Task 10: Provision customers and locations
- Task 11: Export provisioning data from PI for safekeeping

Task 1:   Stop OVPI Timer and extract packages from the report pack CD

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

2   If OVPI Timer process is running, stop it and wait for processes to terminate.

   Windows:

   a   From the Control Panel, select **Administrative Tools > Services**

   b   Select OVPI Timer from the list of services.

   c   From the Action menu, select **Stop**.

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

   UNIX: As root, type one of the following:

   HP-UX: `sh /sbin/init.d/ovpi_timer stop`

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

3   Insert the report pack CD in the CD-ROM drive. On Windows, a Main Menu displays automatically; on UNIX, mount the CD manually if the CD does not mount automatically, then run the setup command.

4   Select PI report packs by typing **1** in the choice field and pressing Enter. The install script displays a percentage complete bar. When extraction is complete, the install script starts Package Manager. The Package Manager welcome window opens.

Once the extract is finished, you can navigate to the Interface Reporting folder, under the Packages directory, to see the packages that are available for installation. The Interface Reporting contains the following sub-folders:

*   Docs
*   Interface_Reporting.ap
*   Interface_Reporting_Demo.ap
*   Interface_Reporting_Device.ap
*   Interface_Reporting_Location.ap
*   Interface_Reporting_Protocol.ap
*   Interface_Reporting_Thresholds.ap
*   Interface_Reporting_Vlan.ap
*   UPGRADE_Interface_Reporting_to_554.ap

You can ignore the upgrade package. Installing the demo package is optional.

Task 2:   Upgrade Common Property Tables

This task is necessary only if you are currently running an older version of Common Property Tables. Upgrade to version 3.92 by installing the upgrade package. Observe these rules:

*   Install the upgrade by itself; install no other packages.
*   When the Report Deployment window opens, accept the default to Deploy Reports. By deploying reports, you will also deploy the forms that come with Common Property Tables.
*   When the install finishes, click **Done** to return to the Management Console.

If you need help with the upgrade, refer to the *Common Property Tables User Guide*.

Task 3:   Install Interface Reporting and all mandatory datapipes

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 use the browse feature to select a different directory if necessary.

4   Click **Next.** The Report Deployment window opens. Accept the default for Deploy Reports; accept the default for application server name and port; type the username and password for the PI Application Server.

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

6   Click the check box next to the following packages:

a   *Interface Discovery Datapipe*

b   *Interface Reporting ifEntry Datapipe*

c   *Interface Reporting Duplex Datapipe*

d   *Cisco VLAN Datapipe* (optional)

e   *OPNET Export Datapipe* (optional)

f   *Interface Reporting*

g   *Interface Reporting Device*

h   *Interface Reporting Location* (optional)

i   *Interface Reporting Protocol* (optional)

j   *Interface Reporting Thresholds* (optional)

k   *Interface Reporting Vlan* (optional)

l   *Interface Reporting Demo*

▶   If you do not want protocol and location statistics, do not install the protocol and location sub-packages. Installing these sub-packages forces the database server to allot resources to additional summarizations.

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

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

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

10   Click **Done**.

Task 4:   Turn off polling policies for the IR ifEntry Datapipe

You do not want raw collections to begin until you have configured the report pack for ifType monitoring. From the Management Console, open Polling Policy Management and turn off the following polling policies for IR collections:

*   ifName_Collection

*   ifIndex_Collection

*   ifDescr_Collection

*   ifAlias_Collection

Task 5:   Use the IR_Config.pl utility to check and adjust polling rules

The IR ifEntry Datapipe includes a configuration tool. Use the configuration tool to adjust the polling rule. These are your polling rule options:

*   Poll all active interfaces

*   Poll all interfaces

*   Poll all active interfaces with monitored protocols (default)

*   Poll all interfaces with monitored protocols

*   Poll flagged interfaces only

If you want to adjust the default, launch the configuration tool (IR_Config.pl) and change it. For details about polling flagged interfaces only (also known as directed-instance polling), refer to the *Interface Reporting ifEntry Datapipe User Guide*.

Task 6: If necessary, use the Administration form to change the default provisioning mode

The provisioning mode determines whether values sourced from the network override the user, or whether the user overrides values sourced from the network. The default is that values set by the user for ifIndex, ifName, and ifDescr will not be over-written by values sourced from the network.

However, if your network is dynamic and if you want to be able to adapt to changes, then the default may not be appropriate. To change the default, open the Object Management view and select the **Administer Interface Reporting** form. When the form opens, set the provisioning mode to **1**.

Task 7: Restart OVPI Timer

Windows:

a   From the Control Panel, select **Administrative Tools > Services**

b   Select OVPI Timer from the list of services.

c   From the Action menu, select **Start**.

UNIX: As root, type one of the following:

HP-UX: `sh /sbin/init.d/ovpi_timer start`

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

Task 8: Deactivate ifTypes (protocols) you do not want and adjust default thresholds

1   Open the Change Protocol Defaults form.

2   Deactivate any ifTypes you do not want included in reports by toggling the status from monitored to not monitored. If desired, operate in lock-down mode by deactivating *all* ifTypes. If you deactivate all ifTypes, you must enable certain ifTypes later.

> If you are polling flagged interfaces only, the ifTypes you do not want included in reports have already been deactivated.

3   Adjust default thresholds on a per-ifType basis. When Interface Reporting discovers new interfaces on a device, it will add a new row to the KIRDevPorts property table. This new row will include the threshold values established by this form.

Task 9: Turn on the polling policies you turned off in Task 4.

Your implementation is properly configured. You are retrieving ifEntry data from the desired interfaces, timeouts are not wasting time, SNMP retry requests are not wasting time, and you are transmitting the least number of SNMP datagrams required to retrieve the OIDs. It is now safe to turn on the polling policies you turned off in Task 4.

Task 10: Provision customers and locations

There is no need to assign a customer and a location to an interface. The interface will inherit customer and location from the parent node. If you want to override the inherited values, then you must assign a customer and location to the interface.

To assign a parent node to a customer and location, navigate the Object/Property Management view, select a node, and open the Update Node Information form under **Object Specific Tasks**.

Export property information from PI. If for any reason you need to uninstall and reinstall the report pack, you can use the export file to immediately re-import property information.

Accessing Deployed Reports

When you installed Interface Reporting, you enabled the Deploy Reports option. As a result, the reports in this package (as well as any forms that come with reports) were deployed to the PI Application Server. Once reports reside on the PI Application Server, you can view the reports using the PI client applications or you can view reports on the Web.

If the client applications are installed on your system, you have access to Report Viewer, Report Builder, and the Management Console. If you do not have the client applications, then you must use the web interface to view reports.

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

New Object Categories in the PI Object Model

The PI object model allows you to navigate to an object, perform tasks that pertain to the object, or open reports that pertain to the object. Installing a new report pack modifies the object model, adding one or more object categories. Installing Interface Reporting adds one object category to the object model: *interface*.

Selecting any object in the object model, including an interface, causes the right side of the Object/Property Management window to refresh. Look for the forms that pertain to the object under **General Tasks** and **Object Specific Tasks.** Look for the reports that pertain to the object under **Object Specific Reports**.

Seeing Performance Data in Reports

Some reports populate with data sooner than others. The first report to populate with data is the Near Real Time report. Data begins to appear in this report after three polling cycles. Other reports, including any report that begins with an analysis of yesterday's performance, will need at least one full day's worth of data before results are viewable.

Until data has been collected for several days, the daily charts will be sparsely populated; likewise, monthly charts will not have much to offer until data has been collected for several months. Because the Capacity Planning report cannot function without maximum busy-hour averages derived from data in the baseline period (42 days long), you will have to wait about six weeks for reliable forecasting data.

Package Removal

If you uninstall the Interface Reporting package, the Interface Reporting ifEntry Datapipe will be removed automatically. Uninstalling the Interface Reporting package will not affect the Interface Discovery Datapipe.

Follow these steps to uninstall Interface Reporting 5.54:

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

2   Stop OVPI Timer and wait for processes to terminate.

    Windows:

    a   From the Control Panel, select **Administrative Tools > Services**

    b   Select OVPI Timer from the list of services.

    c   From the Action menu, select **Stop**.

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

    UNIX: As root, type one of the following:

        HP-UX: **sh /sbin/init.d/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. If the reports in Interface Reporting were deployed from this server, accept the defaults for Undeploy Reports, Application Server Name, and Port. Otherwise, clear the check box and skip to step 8.

7   Type your username and password for the PI Application Server.

8   Click **Next.** The Package Selection window opens. Click the check box next to the following packages:

    a   *Interface Reporting*

    b   *Interface Reporting Device*

    c   *Interface Reporting Location*

    d   *Interface Reporting Protocol*

    e   *Interface Reporting Thresholds*

    f   *Interface Reporting Vlan*

    g   *Interface Reporting Demo*

9   Click **OK.**

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

11 Click **Uninstall.** The Progress window opens and the removal process begins. When the uninstall process is complete, a package removal complete message appears.

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

13 Restart OVPI Timer.

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

UNIX: As root, type one of the following:

HP-UX: **sh /sbin/init.d/ovpi_timer start**

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

4 Setting Up a Distributed System

Follow these steps when setting up a distributed system:

1. Decide whether you want local reporting or central reporting.

2. Install the right set of packages on each server (a central server that is not polling will not need datapipes; the satellite servers will need datapipes).

3. Verify that the system clocks in your environment are synchronized.

4. Register your satellite servers.

5. If you are not copying rate data to the central server, enable LIR on the central server.

6. If you enable LIR, add LIR mapping with the time type set to *rate*.

7. Verify that you have all the copy policies you need.

8. Configure the central server (manual edits to `trendtimer.sched` and `.pro` files).

9. Configure each satellite server (manual edits to `trendtimer.sched` and `.pro` files).

If you want local reporting, you need to deploy reports when you install the report pack on each satellite server, and you also need to allow summarizations to run on each satellite server. If you do not want local reporting, then you do not need to deploy reports when you install a report pack on a satellite server, and you can disable the scripts that run summarizations on each satellite server.

Before Location Independent Reporting (LIR) was available, our recommendation to anyone setting up a distributed system was to deploy reports on satellite servers, keep rate data on satellite servers, copy hourly data to the central server, and disable summarizations above the hourly level on satellite servers. This approach had two benefits. It kept a lot of rate data off the network, and it decreased the processing load on the central server. The problem with this approach is that the central server could not display a Near Real Time (NRT) report. The only NRT report was a local NRT report, on a satellite server.

LIR fixes this problem. If you enable LIR, you can open an NRT report on the central server and drill-down on table selections. The selections you make cause the central server to query a satellite server for locally aggregated data. Of course, if you would rather copy rate data to the central server, you can. If you do, then enabling LIR is not necessary.

Interface Reporting now comes with a copy policy import file. When you install Interface Reporting, PI uses this file to generate copy policies. Creating these policies yourself, using the Management Console, is no longer necessary. Your only task is to verify that you have the copy policies you need. (For this report pack, you will verify that you have a copy policy for one table only: SHIRDevPorts.)

Because you are likely to have multiple satellite servers, we designed the hourly process files to be satellite-server friendly. This means that most of the time, most of the defaults are correct. But some defaults will be incorrect, or less than optimal, and to improve performance, you should change them. These manual edits, as well as the other steps listed above, are spelled out in detail in this chapter.

Checking for Proper Package Installation

In a distributed system, you want the following packages on the central server:

- Interface Reporting 5.54
- Interface_Reporting_Device 5.31
- Interface_Reporting_Location 5.31
- Interface_Reporting_Protocol 5.31
- Interface_Reporting_Vlan (optional) 5.30

In a distributed system, you want the following packages on satellite servers:

- Interface Reporting 5.54
- Interface_Reporting_Device 5.31
- Interface_Reporting_Location (optional) 5.31
- Interface_Reporting_Protocol (optional) 5.31
- Interface_Reporting_Vlan (optional) 5.30
- Thresholds sub-package (optional)

In a distributed system, you want the following datapipes on satellite servers:

- Interface Discovery Datapipe 2.60
- Interface Reporting ifEntry Datapipe 2.53
- Cisco VLAN Datapipe 5.30 (optional)
- OPNET Export Datapipe 2.11 (optional)

Split Polling and Avoid Duplicate Polling

You must decide how polling will take place and then split the device groups accordingly. These are your options for splitting device groups:

- Split polling between the central server, satellite servers, and remote pollers

- Split polling between satellite servers and remote pollers

- Split polling between multiple remote pollers

The situation you must avoid is *duplicate polling*, which arises when the device groups assigned to one server happen to be the same device groups assigned to a different server, or to a remote poller. To avoid this problem, split the polling function properly. The polling function is split properly when:

- No two servers have the same polling policies and device group lists

- No two remote pollers have the same polling policies and device group lists

- Servers and remote pollers do not share polling policies and device group lists

For more information about polling policies and how to create them, refer to the *Interface Reporting ifEntry Datapipe User Guide*.

Configuring the Central Server

To configure the central server, perform the following tasks:

- Task 1: Register the satellite server by setting the database role
- Task 2: Enable LIR
- Task 3: Add LIR Mapping
- Task 4: Verify that you have a copy policy for the SHIRDevPorts table
- Task 5: Modify the `trendtimer.sched` file

Task 1:   Register the satellite server by setting the database role

1   Start the Management Console (log on with Administrator privileges).

2   Click the **Systems** icon in the navigation pane.

3   Navigate to the PI Databases folder and select the database system.

4   Click **Database Properties**.

5   From the Database Role list, select the Satellite Server role.

6   Enter any information necessary to configure the Satellite Server role.

▶ To add a new database reference, you can use the Add Database Reference Wizard in the System and Network Administration application.

Task 2:   Enable LIR

Enable LIR by following these steps:

1   Start the Management Console (log on with Administrator privileges).

2   Click the **Systems** icon in the navigation pane.

3   Navigate to the PI Databases folder and select the central server.

4   Click **LIR Configuration**.

5   Select the **LIR enabled** check box.

Task 3:   Add LIR Mapping

1   Start the Management Console (log on with Administrator privileges).

2   Click the **Systems** icon in the navigation pane.

3   Navigate to the PI Databases folder and select the central server.

4   Click **LIR Configuration**.

5   Click **Add Mapping**.

6   Select a satellite server to which you need to add a mapping from the Select Satellite Server list.

7   Select the **Category** data table option.

8   Select **Interface Reporting** from the drop down list.

9   Select the **rate** data type.

10 Click **Add to List**.

11 Ensure that the LIR mapping has not missed mapping the tables.

12 If you want to add additional LIR mappings, click **Add Mapping** and repeat step 6 through step 1.

13 Click **OK**.

14 Click **Apply**.

A copy policy is automatically generated for the hourly data and for each LIR mapping that you add. The data type selected when adding an LIR mapping (in step 10 above) determines the type of data copied (defined in the generated copy policy). The type of data copied is one summarization level greater than the data type selected in the LIR mapping. For example, if you select an hourly data type, you will generate a daily data copy policy.

Task 4: Verify that you have a copy policy for the SHIRDevPorts table

Verify that a copy policy was generated for the SHIRDevPorts table and that the copy type is set correctly:

1 Start the Management Console (log on with Administrator privileges).

2 Click the **Copy Policy** icon in the navigation pane to start the Copy Policy Manager.

3 Find the SHIRDevPorts table and verify the copy type is set to **Property and Data**.

If a copy policy has not been generated for a table, do the following:

1 Click the **New Copy Policy** icon or select **File > New Copy Policy** from the Copy Policy Manager. The Copy Policy Wizard displays.

2 Click **Next**. The Satellite Server and Copy Policy Selection Page opens.

3 Select a satellite server from the pull down list. This is the satellite server from which data is copied to the central server.

4 Select **Single Table** and select SHIRDevPorts from the pull down list.

5 Click **Next**. The Copy Type Selection Page displays.

6 Select **Property and Data**.

7 Click **Next**. The Summary page displays.

8 Verify the information in the summary window. If the information is not correct, you can modify it by clicking **Back**.

9 Click **Finish**.

If the copy type is not set to **Property and Data**, do the following:

1 Double-click the copy policy.

2 Select the **Property and Data** copy type.

3 Click **OK**.

Task 5: Modify the trendtimer.sched file

The `trendtimer.sched` file is located here:

> `<DPIPE_HOME>`/lib/

where `<DPIPE_HOME>` is the directory in which PI is installed. The `trendtimer.sched` file runs executables in the bin directory.

1 Open the file and find this line:

```
24:00+4:00 - - {DPIPE_HOME}/bin/trend_proc -f
{DPIPE_HOME}/scripts/IR_DevPort_DMF_Process.pro
```

2   Modify the daily processing time; make the executable start 20 minutes sooner:

   24:00+**3:00+40**

3   Find this line:

```
1:00+20 - - {DPIPE_HOME}/bin/trend_proc -f
{DPIPE_HOME}/scripts/IR_DevPort_Hourly_Process.pro
```

4   If the central server is not polling, comment out this line.

Configuring a Satellite Server

Follow these steps to configure a satellite server.

1   Modify the `trendtimer.sched` file. Navigate to:

   <DPIPE_HOME>`/lib/`

   where *<DPIPE_HOME>* is the directory in which PI is installed.

   a   Open the file and find the following line:

```
24:00+4:00 - - {DPIPE_HOME}/bin/trend_proc -f
{DPIPE_HOME}/scripts/IR_DevPort_DMF_Process.pro
```

   b   Make the process start sooner by modifying the processing time:

```
24:00+3:00+40- - {DPIPE_HOME}/bin/trend_proc -f
{DPIPE_HOME}/scripts/IR_DevPort_DMF_Process.pro
```

2   Disable the daily, monthly, and forecast summarizations by editing the
     `IR_DevPort_DMF_Process.pro` file. Navigate to:

   <DPIPE_HOME>`/scripts/`

   where *<DPIPE_HOME>* is the directory in which PI is installed.

   Open the file, locate the `IR_DMF1` block, make these edits:

   • Comment out the `begin:IR_DMF1 wait` line

   • Comment out the `end:IR_DMF1` line

   The lines in the `IR_DMF0` block are okay, do not edit them.

3   Use Table Manager to reduce the retention period of the SHIRDevPorts table from 4 days
     to 2 days. (Keeping data for 4 days is no longer necessary.)

4   Configure any protocols that should not be monitored to *unmonitored*.

5   Verify proper configuration of polling policies. Verify that each node is polled from one
     system only. Follow these guidelines:

   • If you are using remote pollers, avoid duplicate polling by remote pollers, and
     duplicate polling by the satellite server and remote pollers.

   • If a satellite server has two or more remote pollers, create separate polling policies for
     each poller and use view groups to separate the devices.

   • Each poller must have 13 polling policies associated with it:

— 1 for the RIRRouterSystem table

— 8 for the Interface Discovery Datapipe

— 4 for the Interface Reporting ifEntry Datapipe

Polling policy configuration is automatic. Unless you have remote pollers, no additional configuration is necessary. If you need help configuring polling policies, refer to the *Interface Reporting ifEntry Datapipe User Guide*. See Chapter 3, Datapipe Configuration.

Synchronizing System Clocks

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

Synchronizing Property Data Between Central Server and Satellite Servers

To synchronize the property data between the central server and satellite server, the Interface Reporting report pack uses `.pro` files that export and import property data. Follow these steps to synchonize the data:

1   Run `IR_exportdata.pro` on the source server (central or satellite) to generate the `IR_Property.dat` file.

    The source server is the server from which the data needs to be synchronized.

2   Copy the `IR_Property.dat` file to the destination server (central or satellite) server. Copy the file in a directory from where `ee_collect` can pick it.

3   Run the `IR_import.pl` script. This script updates the IR interface customer/location reference based on node's customer/location reference. To run the script, type

    perl IR_import.pl -o *<value>*

    The *<value>* can be:

    1   If you use this option, `IR_import.pl` overwrites the existing relation and updates all the interfaces with the customer and location information of the nodes irrespective of assigned, unassigned, or imported interfaces.

    2   If you use this option, `IR_import.pl` updates the interfaces that are not assigned with a customer and location to reflect the customer and location of the node.

    3   If you use this option, `IR_import.pl` updates all the imported interfaces with customer and location reference of the node.

5 Importing Properties

Static Property Information

Interface Reporting has the ability to store and process static property information as well as rapidly changing performance data. Following is an alphabetical list of the properties that may appear in reports:

- Country
- Customer
- Description
- Device Name
- Device Type
- Discard Threshold
- Error Threshold
- Full or Half Duplex
- Group ID
- Group Name
- ifAlias
- ifAdminStatus
- Interface Description
- Interface Speed
- Interface Speed In
- Interface Speed Out
- Interface Type
- Location ID
- Location Name
- Model Details
- Model Number
- Protocol
- Utilization Threshold
- Vendor Details
- Vendor Name

Property information comes from the following sources:

- Protocol Configuration Table (update this using a form)

- Automatic feed from the network

- Common Property Tables batch-mode property import

- Common Property Tables "add new" and "update" forms

- Interface Reporting batch-mode property import

- Interface Reporting change forms:

  — Change Protocol Defaults

  — Update Interface

  — Change Interface Customer

  — Change Interface Description

  — Administer Interface Poll Flag

  — Administration (Logging, Data Filtering, Provisioning)

Node-level properties and interface-level properties have different sources. Common Property Tables is the source for node-level properties. The change forms that come with Interface Reporting, and the batch-mode import that comes with Interface Reporting, are sources for interface-level properties.

If there is a customer and a location associated with a device, use Common Property Tables to assign the device to that customer and location. Once that step is done, interface-level properties will be inherited from the node level. For example, if you use Common Property Tables to assign a device to a customer, and then you import additional properties using the batch-mode property import that comes with Interface Reporting, any "unassigned interfaces" (interfaces not explicitly assigned to a customer) in your import file will automatically inherit the node-level customer.

When an interface is discovered, various attributes associated with that interface (speed, type and description) are sourced from the network. However, attributes sourced from the network are not always correct. The following properties may be incorrect:

- ifType

- ifSpeed

- ifDescr

To correct a property that is incorrect, you can either update a property import file, then import the file, or you can open a form, modify the contents of the form, and save your changes.

▶ If you set the Provisioning Mode to option 1, the property import file will not overwrite values for ifType, ifSpeed, and ifDescr that were sourced from the network. For details, see the section about Provisioning Mode options in Chapter 7, Change Forms.

Protocol-Specific Monitoring

The monitoring status parameter allows you to enable or disable interface monitoring based on the protocol. By default, all active (administratively up) interfaces with monitored protocols are polled, and all the polled data is stored, summarized, and reported. You can configure PI to disable collection for certain protocols. For example, if a device has ATM ports and frame relay ports and you are not interested in the frame relay ports, you can disable collection for the frame relay ports.

Switching off monitoring of a previously monitored protocol does not remove data from the database, but switching off monitoring will prevent new data for that protocol from being collected or inserted. If you switch off monitoring of a previously monitored protocol, previously collected data will eventually age out. To find out whether any interface data is being deliberately ignored as the result of marking a protocol *unmonitored*, look at the Configuration and Logging report in the Admin folder.

For information about polling rules and how to stop the system from collecting data for ports with unmonitored protocols, refer to the *Interface Reporting ifEntry Datapipe User Guide*.

Batch-Mode Property Import

The purpose of the property data interface is to import property data into PI as a batch process and export property data from PI as a batch process. Batch mode would typically be used instead of forms when large numbers of interfaces need to be updated.

When PI imports property data, the file that gets imported needs to adhere to a particular format; when PI exports property data, the file it produces is already in the proper format for you to modify and re-import. You can create an import file by:

* Building it from scratch using a spreadsheet application

* Exporting the required data, in the required format, from your provisioning database

* Letting PI collect property data, then exporting this data from PI

Since building a property import file from scratch is not easy, we recommend that you follow these steps:

1 Add devices to the system.

2 Allow the system to discover the interfaces on those devices.

3 Export existing property data from PI by typing this command:

   trend_proc -f IR_exportdata.pro

4 Use the results as a starting point for your own modified property import file.

5 Store your modified file in the correct directory (where PI expects to find it) and import the file by typing this command:

   *<DPIPE_HOME>***/bin/perl** *<DPIPE_HOME>***/bin/IR_import.pl -o** *<value>*

   For information on *<value>*, see Synchronizing Property Data Between Central Server and Satellite Servers on page 43.

   ➤   IR_importdata.pro has been replaced with IR_import.pl in the IR Report Pack version 5.54.

The import command will import data from—and the export command will export data to—the following directory:

   <DPIPE_HOME>/data/PropertyData

   where *<DPIPE_HOME>* is the directory in which PI is installed.

➤   When the number of interfaces is high, the export procedure might take longer to run.

Property Import File

The following table describes the format of the property file. If you are creating this file yourself, make sure that your file adhere to this format. Your sequence of fields left to right must follow this sequence of attributes top to bottom and your attributes must be delimited by tabs, not spaces. If you are exporting this file from PI, the format will be correct.

Attribute	Type	Default	Description
Device	char_string, 64	N/A	Name of the device. A value for this attribute is required.
Interface	char_string, 128	N/A	A unique identifier for the interface. A value for this attribute is required.
full_half	integer	2	Denotes half duplex or full duplex: 1 =half duplex 2 = full duplex Automatically populated from the Protocol Configuration Table if the value is NULL. Not automatically overwritten unless set to NULL.
ifAdminStatus	integer	N/A	Denotes the state of the controller in the software configuration; whether it is up or down Valid values are : 1 = up 2 = down 3 = testing
ifAlias	char_string, 255	N/A	Refers to an administrator-assigned name for an interface on a network device such as a switch or router.
ifType	integer	N/A	The ifType as given by the ifTable on the managed device. Used as a cross-reference into the Protocol Configuration Table to determine the protocol and its properties.
ifSpeed	gauge	N/A	The ifSpeed as given by the ifTable on the managed device.
ifSpeedIn	gauge	N/A	The ifSpeed as given by the ifTable on the managed device. Can be changed to reflect the inbound speed on a dual speed interface. Used only for full-duplex interfaces.

Attribute	Type	Default	Description
ifSpeedOut	gauge	N/A	The ifSpeed as given by the ifTable on the managed device. Can be changed to reflect the outbound speed on a dual speed interface. Used only for full-duplex interfaces.
ifDescr	char_string, 255	N/A	The ifDescr as reported in the ifTable.
cust_id	seq_key	-2	The customer identifier used to group interfaces by associated customer.
customer_name	char_string, 128	"Unknown Customer"	The customer name used to group interfaces by associated customer.
group_id	seq_key	-2	The group identifier for this interface. Not used explicitly.
group_name	char_string, 128	"Unknown Group"	The group name for this interface. Not used explicitly.
location_id	seq_key	-2	The location identifier used to group interfaces by physical location.
location_name	char_string, 128	"Unknown Location"	The location name used to group interfaces by physical location.
country_code	seq_key	-2	The country code for this interface. Not used explicitly.
country_name	char_string,128	"Unknown Country"	The country name for this interface. Not used explicitly.
UtilThreshold	integer	10000	Utilization threshold. A percentage of available bandwidth, calculated as an average over the polling interval. Will auto-update from the Protocol Configuration Table only when this value is defaulted to 10000 and the KIR_protocol_config value is > 0.

Attribute	Type	Default	Description
ErrorThreshold	integer	10000	Error threshold. Percentage of traffic with errors, calculated as an average over the polling interval. Will auto-update from the Protocol Configuration Table when the value is defaulted to 10000 and the KIR_protocol_config value is > 0.
DiscardThreshold	integer	10000	Discard threshold. Percentage of traffic with discards, calculated as an average over the polling interval, at which an exception is counted. Will auto-update from the Protocol Configuration Table only when this value is at the default of 10000 and the KIR_protocol_config value is > 0.
AvailabilityThreshold	integer	98	Availability threshold. A percentage of availability, calculated as an average over the polling interval, at which an exception is counted. Will auto-update from the Protocol Configuration Table only when this value is at the default of 10000 and the KIR_protocol_config value is > 0.

Changing the Default Directory for PropertyData

The default directory for data property files, the location where the import utility will look for your edited files, is specified by the SourceDirectory path. This path appears in the following TEEL file:

```
IR_Property.teel
```

If you change the default directory before you install the Interface Reporting package, your task is easier, since you only have to change the path once, by finding the TEEL files in the Interface_Reporting.ap directory. If you want to change the default directory after installing Interface Reporting, you must make the path change in two places, namely:

• `Interface_Reporting.ap`

• *<DPIPE_HOME>*`/lib`

Changing the location of the PropertyData directory is **not** recommended. However, if you needed to change the directory location, follow these steps:

1   Create the new source directory.

2   Navigate to the appropriate directory (see the discussion above regarding which directories are involved) and open the directory.

3   Edit this file: `IR_Property.teel`

  • Locate the SourceDirectory default path; look for the line beginning with
    SourceDirectory =

  • Change the path, replacing the existing path with the complete path name to the new
    directory; begin the new path name just after the equal sign (=).

▶   Leave the file filter as specified in the original SourceDirectory.

Adding Details about Vendors and Models

The Devices sub-package can recognize vendors and models based on the sysObjectId. You can
add or modify the list using an import procedure that is similar to interface provisioning.
Vendor details are stored in the following files inside the
`Interface_Reporting_Device.ap` directory:

• `vendor.txt`

• `vendor_model.txt`

Add rows, or modify existing rows, and then call this process:

    trend_proc -f IR_Import_Vendor.pro

Vendor Properties

The following table provides a list of the available fields.

Column	Type	Default	Comments
Vendor Name	char_string,128	Required Field	The name of the vendor. Example: "Cisco"
Vendor Details	char_string,128	Required Field	Additional details about all equipment from this vendor. Example: "Cisco Inventory"
Vendor sysObjectId	char_string,128	Required Field	The SNMP sysObjectId from the system group on the device.

Model Properties

The following table provides a list of the available fields.

| Column	Type	Default	Comments
Vendor Name	char_string,128	Required Field	The vendor name.
Model Details	char_string,128	Required Field	Additional details about this model.
Model sysObjectId	char_string,128	Required Field	The SNMP sysObjectId from the system group on the device.

6 Archiving Data

Data Archiving

The data archiving feature allows you to store large amounts of data in archive tables without affecting the summarization and reporting performance of PI.

By default, archiving is disabled. When archiving is enabled, a data table becomes an active data table. Data is retained in the active table for a specified amount of time (defined in the retention profile) before it is moved to an archive table. An active table can archive data to one and only one archive table.
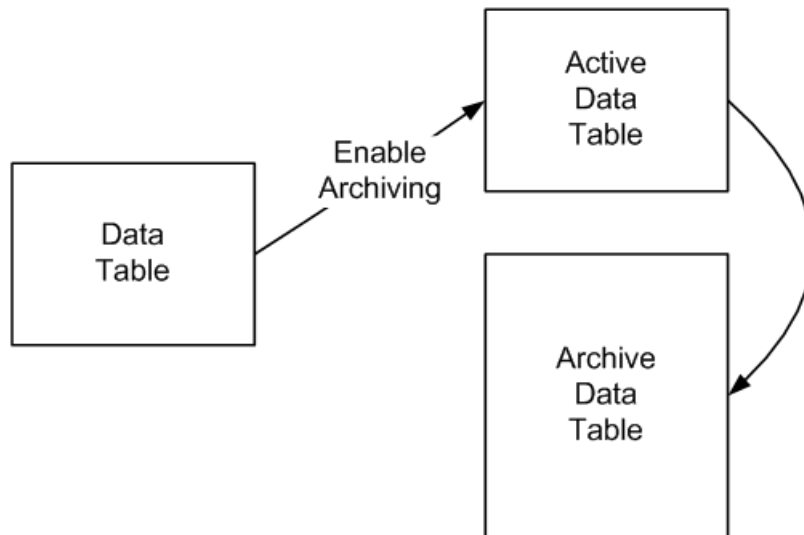
▶ Data from an active table and data from an archive table cannot be displayed in the same report.

When you installed the report pack, a retention profile was created for each data table (using information from the TEEL file). The retention profile defines the name and description of the retention profile, how long (in days) data remains in the active data table, how long (in days) data remains in the archive table, and if archiving is enabled. You enable archiving of a data table by modifying its retention profile. A retention profile can be assigned to more than one data table, but a data table can only have one retention profile assigned to it.

For more detailed information about data archiving, refer to the *HP Software Performance Insight Administration Guide*.

View Current Retention Profiles List

To view all retention profiles:

1   Start the Management Console (log on with Administrator privileges).

2   Click the **Tables** icon in the navigation pane to display the Table Manager navigation pane.

3   Select **File->Retention Profiles->Manage Retention Profiles**. The Manage Retention Profiles dialog displays the current retention profiles list. You can create, modify, and remove retention profiles from the Manage Retention Profiles dialog.

▶   You cannot modify the default profiles created during the product installation, remove a default profile, nor remove a profile that is in use.

Enable Archiving

To enable archiving, either select a data table to modify its retention profile or modify a retention profile. A table has archiving enabled if the `Archive On` check box is selected in the Table Manager navigation pane.

Selecting a Data Table to Modify

To modify the retention profile of a selected table, do the following:

1   From the Management Console, click the **Tables** icon in the navigation pane to display the Table Manager navigation pane.

2   In the Table Manager navigation pane, double-click a table. The Data Table Details dialog displays.

3   Select the **Retention Profile** tab.

4   Modify any of the fields in the dialog.

5   Select the **Archive On** check box.

6   Click **OK**.

Modifying the Retention Profile

To modify a retention table, do the following:

▶   You cannot modify the default retention profiles created during the report pack installation.

1   From the Management Console, click the **Tables** icon in the navigation pane.

2   Select **File->Retention Profiles->Manage Retention Profiles**. The Manage Retention Profiles dialog displays.

3   Select the retention profile to modify and click **Edit**.

4   Modify any of the fields in the dialog.

5   Select **Yes** in the Enable Archiving field and then click **OK**.

Create a Custom Retention Profile

To create a custom retention profile and assign it to a active data table, do the following:

1   From the Management Console, click the **Tables** icon in the navigation pane.

2   Select **File->Retention Profiles->Manage Retention Profiles**. The Manage Retention Profiles dialog displays.

3   Click **Create**. The Create Retention Profile dialog displays.

4   Enter the following information:

Field	Description
Profile Name	The name of the retention profile. Maximum length is 64 characters.
Retention Days	The number of days to retain data in the active data table before moving the data to the archive data table. Select Yes for the permanently field if you want to retain all data in the active data table (do not move any data to the archive data table).
Archive Retention Days	The number of days to retain data in the archive data table before the data is removed. Select Yes for the permanently field if you want to retain all data in the archive data table (do not remove any data from the archive data table).
Description	A description of the retention profile. Maximum length is 255 characters.
Enable Archiving?	Default: No. Select Yes to enable archiving and create the active and archive data tables.

5   Click **OK**.

6   Assign the custom retention profile to a table:

    a   From the Management Console, click the **Tables** icon in the navigation pane.

    b   To filter the tables listed, you can select a specific category (such as Interface_Reporting) and/or a specific type (such as Rate) from the pull down lists above the list of tables.

    c   Select the table(s) to which you want to assign the retention profile

    d   Select **File->Retention Profiles->Assign Retention Profile**. The View Retention Profiles dialog displays.

    e   Select the retention profile you created.

    f   Click **Assign Retention Profile**.

View Archive Data Reports

Archive data reports are viewable anywhere active data reports are viewable (archiving must be enabled and there must be data in the archive data tables before you can view archive data reports). From the Web Access Server, the reports are available in the Archive folder.

▶ Data from an active table and data from an archive table cannot be displayed in the same report.

7 Change Forms

Interface Reporting includes multiple change forms. Use these forms to modify:

- Protocol defaults
- Interface speed and associated thresholds
- Customer, location, and interface description
- Directed-instance polling
- Logging level
- Data filtering
- Provisioning mode

Keep in mind that you cannot assign interfaces to customers or locations that are not already recognized by Common Property Tables. To add customers and locations to Common Property Tables, use the **Create New Customer** or **Create New Location** forms, or use the batch-mode property import that comes with Common Property Tables. For details, refer to the *Common Property Tables User Guide*.

Changing Protocol Defaults

If you have not pre-provisioned new interfaces to configure specific thresholds and indicate whether they are full or half duplex, values for those variables will be pulled from the protocol configuration file as new interfaces are discovered and added to the system. You can add a new protocol to this file or you can modify the characteristics of an existing protocol.

Follow these steps to change the monitoring status or the default protocol thresholds:

1 Select **Start > HP Software > Performance Insight > Management Console**.

2 Click **Objects** and select any managed object. Forms appear under General Tasks.

3 Double-click **Change Protocol Defaults**. The form opens.

4 Select the protocol you want to change, then update Protocol Name, Monitor status, or Threshold percentage values as required.

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

The system will use defaults from the protocol table when:

- A just-discovered interface is inserted into the interface property table
- An existing interface has NULL values for protocol-related properties

- An existing interface has NULL values for protocol-related properties

Interface Reporting
Change Protocol Defaults

Use this form to change the default settings for Protocols (interface types) for the Interface Reporting report pack. You can change the names for Unknown protocols, and modify the default duplex and threshold settings for each protoocol. The system can be configured to not poll interface types that have the Monitor flag set to Off (0). Select the Protocol you want to change the settings for, and then enter the new settings below. Click the Apply button to save any changes. Click the Cancel button to cancel any changes. Click the OK button to save changes and close the form.

ifType	Protocol Name	Duplex	Monitor	Default Utilization Threshold	Default Discard Threshold	Del Er Thre
1	other	2	1	90.00	1.00	
2	regular1822	2	1	90.00	2.00	
3	hdh1822	2	1	90.00	2.00	
4	ddn-x25	2	1	90.00	2.00	
5	rfc877-x25	2	1	90.00	2.00	
6	ethernet-csmacd	1	1	30.00	1.00	
7	iso88023-csmacd	1	1	90.00	2.00	
8	iso-88024-tokenBus	1	1	50.00	2.00	
9	iso-88025-tokenRing	1	1	50.00	2.00	
10	iso88026-man	2	1	90.00	2.00	
11	ctarl ap	2	1	90.00	2.00	

Protocol Name   ethernet-csmacd   **Monitor**   Monitor

Thresholds

Utilization Threshold	Error Threshold	Discard Threshold
30.00	1.00	1.00

OK   Apply   Cancel

Changing Interface Properties

You can use the Change Interface Properties form to modify the following properties:

- Customer assignment
- Location assignment
- Utilization threshold
- Error thresholds
- Discard threshold
- Availability threshold
- Speed [In/Out]

This form is especially helpful when you want to change multiple properties for a single interface, or when you want to update multiple interfaces on a single device. If desired, you may use the Change Interface Properties form to update *all* the interfaces on one device in one operation; however, don't forget that *every* interface will be updated to the same set of values, including speed and threshold settings. To access the form:

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

2. Click **Objects**, then navigate to and select the interface you want to update. Or, to update all the interfaces on a device, select the device. You will see Change Interface Properties listed under **Object Specific Tasks**.

3. Double-click **Change Interface Properties**. The form opens.

4. Select an interface, then update assignments, thresholds, speeds, or duplex values as required.

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

/admin/Interface_Reporting_Forms/change_interface.frep

Interface Reporting

Update Interface

invent

This form allows interface information to be updated. Select the interface(s) you want to change, and update the property values. Click the Apply button to save any changes. Click the Cancel button to cancel any changes. Click the OK button to save any changes and close the form.

Device	Interface	ifIndex	Description	Speed	Protocol	Cus
router2	BRI0	2.00	BRI0	In: 16.0 Kb/s Out: 16.0 Kb/s	lapd	
router2	BRI0-Physical	8.00	BRI0-Physical	In: 144.0 Kb/s Out: 144.0 Kb/s	isdnu	
router2	BRI0-Signaling	9.00	BRI0-Signaling	In: 16.0 Kb/s Out: 16.0 Kb/s	isdn	
router2	BRI0:1	3.00	BRI0:1	In: 64.0 Kb/s Out: 64.0 Kb/s	ppp	
router2	BRI0:1-Bearer Channel	10.00	BRI0:1-Bearer Channel	In: 64.0 Kb/s Out: 64.0 Kb/s	ds0	
router2	BRI0:2	4.00	BRI0:2	In: 64.0 Kb/s Out: 64.0 Kb/s	ppp	
router2	BRI0:2-Bearer Channel	11.00	BRI0:2-Bearer Channel	In: 64.0 Kb/s Out: 64.0 Kb/s	ds0	
router2	FastEthernet0	5.00	FastEthernet0	100.0 Mb/s	ethernet-csmacd	
router2	Null0	6.00	Null0	In: 4.3 Gb/s Out: 4.3 Gb/s	other	
router2	Serial0	1.00	Serial0	In: 1.5 Mb/s Out: 1.5 Mb/s	frameRelay	
router2	Serial0.1	7.00	Serial0.1	In: 1.5 Mb/s Out: 1.5 Mb/s	frameRelay	

Description Serial0

Customer HP   **Location** Washington

Thresholds

Thresholds define the levels where Exceptions are

	Utilization %	Error %	Discard %	Availability %
	70.00	1.00	1.00	98.00

Speed

Interface speed initially set from network.

	Speed (bps)	Speed In (bps)	Speed Out (bps)		Duplex
	1,544,000	1,544,000	1,544,000		Full

Warning: When you press OK or Apply, all the settings above will be applied to all selected interfaces.

OK   Apply   Cancel

Changing Customer and Location

The Change Interface Customer and Change Interface Location forms allow you to assign interfaces to a customer or a location. These forms can be used to update a single interface, or to assign all the interfaces on a device to single customer or location.

To change the customer or location assignments, follow these steps:

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

2 Click **Objects**, then navigate to the interface you want to update, and select it. You may also select a device, if you want to update all the interfaces on that device. The forms appear under **Object Specific Tasks**.

3 Double-click **Change Interface Customer** or **Change Interface Location**. The form opens.

4 Use the selection list to update the assignment.

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

Changing the Interface Description

If you want to change the description of an interface, follow these steps:

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

2   Click **Objects**.

3   Navigate to the interface you want to update, or the device for which you want to update one or more interfaces. The Change Interface Description form is listed under **Object Specific Tasks**.

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

5   Select the interface you want to change, then update the description as required.

6   If you selected a device and opened this form, all the interfaces on the device will appear in the table. You can update the descriptions for multiple interfaces by selecting one, updating the description and clicking **Apply**, and then repeating.

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

Configuring Directed-Instance Polling

The Interface Reporting ifEntry Datapipe supports five polling rules. One of the supported rules, *Poll Flagged Interfaces Only*, permits collection from selected interfaces only, namely, interfaces that have a poll flag set. There are several methods to set the interface poll flag. One method is to use the Administer Interface Poll Flag form.

Follow these steps to set the interface poll flag using the Administer Interface Poll Flag form:

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

2 Click **Objects**.

3 Navigate to the device you want to update and select it. The Administer Interface Poll Flag form appears under **Object Specific Tasks**.

4 Double-click **Administer Interface Poll Flag**. The form opens.

5   Select the interfaces you want to change, then update the description as required. You can select multiple interfaces by using the CTRL or SHIFT keys.

6   Select the required poll flag setting, **On** or **Off**.

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

Data Filtering, Provisioning, Logging, and Gather Stat Level

Data Filtering

Option	Impact
0	The default. Data for all collected interfaces is transferred from the datapipe to the report pack. If new devices or interfaces are discovered and polled, property rows for those devices and interfaces will be added in the report pack.
1	Only data for provisioned interfaces will be transferred to the report pack. Data collected for interfaces that are not already provisioned in the report pack will be discarded.

Provisioning Mode

Option	Impact
0	The default. Values for Interface Speed, Type, and Description collected from the network do not overwrite provisioned settings. If a new interface is discovered, and this interface is not provisioned in the report pack, these attributes are set once from collected data.
1	Values for Interface Speed, Type, and Description collected from the network overwrite provisioned settings. If you use property import to import values, ifSpeed, ifType, and ifDescr will **not** be updated.

Logging Level

Option	Impact
0	Errors only
1	The default. Standard level of logging.
2	Maximum level of logging.

Gather Stat level

Option	Impact
0	To disable Oracle's Gather Stat utility during data collection
1	To enable Oracle's Gather Stat utility during data collection

Changing Settings

To change settings for data filtering, provisioning, or logging level follow these steps:

1   Select **HP Software** → **Performance Insight** → **Management Console**.

2   Click **Objects** and select any managed object. Forms will appear in the General Tasks window.

3   Double-click **Administer Interface Reporting**. The form opens.

4   Select the administration setting you want to change, then select the new setting.

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

Interface Reporting

Administration

Use this form to update the Provisioning, Data Filtering and Logging settings for Interface Reporting. Select the Configuration setting you want to change and enter the new value in the Change setting box below. Click the Apply button to save any changes. Click the Cancel button to cancel any changes. Click the OK button to save changes and close the form.

Logging :　　The number and detail of messages sent to the
　　　　　　　Configuration and Logging Report.
　　　　　　　0 = high level only, 1 = informational, 2 = all / debug

Data Filtering : Create new interfaces in the Report Pack property tables as they are discovered during polling?
　　　　　　　0 = Yes, 1 = No

Provisioning :　Determines whether Property values for interface Speed,
　　　　　　　Type and Description will be overwritten by collected values.
　　　　　　　0 = Only overwrite if current is not set (NULL),
　　　　　　　1 = Always overwrite from collected data

Gather Stat :　Enable Oracle's Gather stats during collection
　　　　　　　0 = Disable Gather Stat, 1 = Enable Gather Stat

Configuration	Value	Meaning
Logging Level	2	Max Logging
Data Filtering	1	Do Not Add New Interfaces
Provisioning	0	Update Only If Not Set
Gather Stat	1	Gather Stat is running in IR_map_p

Change setting　　1

　0
　1
　2 - Max Logging

OK　　Apply　　Cancel

▶ The Gather Stat Configuration parameter will *not* appear in the IR_admin form if you are using Sybase.

8 Spotting High Exceptions

Interface Reporting provides five reports that help you focus on high exception counts:

- Exception Hot Spots (Exceptions sub-folder)
- Device Exception Hots Spots (Device folder)
- Trunk Exception Hot Spots (VLAN folder)
- VLAN Exception Hots Spots (VLAN folder)
- EtherChannel Exception Hot Spots (EtherChannel folder)

The Exceptions Hot Spots sorts interfaces by exception count, highest to lowest. The selection table is followed by three graphs:

- Exception counts (hourly / daily / monthly)
- For each exception type, the average, maximum, and threshold for the previous 30 days
- Daily averages for each exception type, for each traffic direction

The first graph will tell you whether the exception activity is relatively static, caused by one type of exception, or variable, caused by multiple types of exceptions. The second graph makes it easy to compare exception activity to the threshold. The third graph looks at utilization, discard, and error exceptions as a percentage of available bandwidth. When the interface is full duplex, you can view data for inbound traffic and data for outbound traffic.

The device version of the report is similar. It sorts initially by customer, then by device, and aggregates data at the device level. Use this report to identify the devices that are generating the most exceptions. The selection table is followed by three graphs:

- Exception counts (hourly / daily / monthly)
- For each exception type, the average, maximum, and threshold for the previous 30 days
- Daily averages by exception type

Samples of the following reports follow:

- Exception Hot Spots
- Device Hots Spots
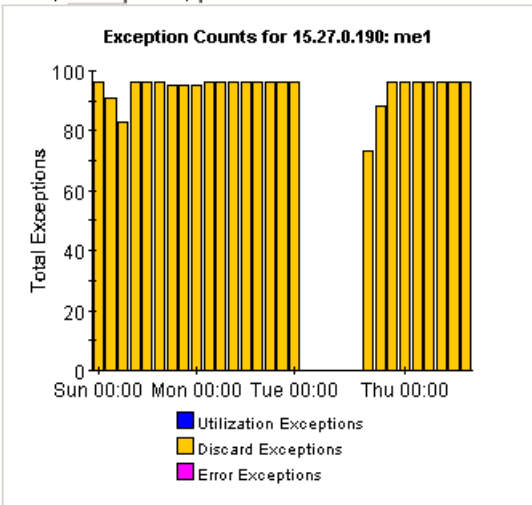- Trunk Exception Hot Spots

Interface Reporting

Exception Hot Spots

This report has one entry for each monitored interface that experienced threshold exceptions yesterday. An exception occurs when inbound or outbound utilization, % discard rate or % error rate exceeds the threshold set for that interface. U = Utilization, D = Discards, E = Errors. F/H indicates full or half Duplex.
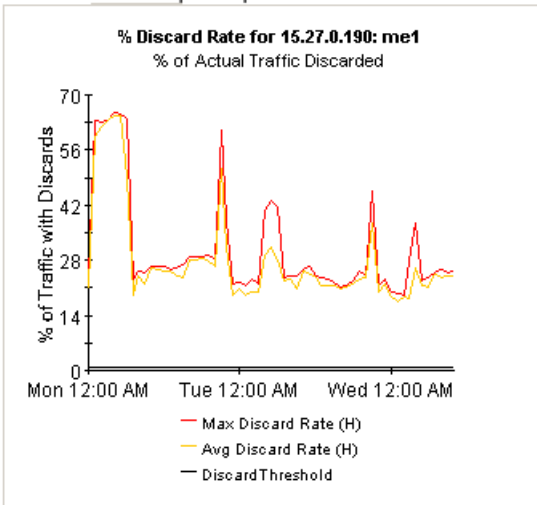
Interfaces with Exceptions Yesterday
Sorted by Exception Count

Device	Interface	F/H	Speed	Customer	Total Exceptions	Threshol %
15.140.11.216	sc0	H	10.0 Mb/s	HP	96	U:30 D:1 E
15.27.0.190	me1	H	10.0 Mb/s	Customer Unassigned	96	U:30 D:1 E
15.144.195.0	1	H	10.0 Mb/s	Customer Unassigned	96	U:30 D:1 E
15.17.191.48	16777221	H	10.0 Mb/s	Customer Unassigned	96	U:90 D:2 E
15.7.208.117	1	H	10.0 Mb/s	Customer Unassigned	96	U:30 D:1 E
15.62.32.255	1	H	10.0 Mb/s	Customer Unassigned	95	U:30 D:1 E
15.140.11.63	Serial0	F	In: 1.5 Mb/s Out: 1.5 Mb/s	Customer Unassigned	In:84 Out:84	U:70 D:1 E
15.140.11.63	Serial0.1	F	In: 1.5 Mb/s Out: 1.5 Mb/s	Customer Unassigned	In:84 Out:84	U:70 D:1 E
15.3.208.119	sc0	H	10.0 Mb/s	Customer Unassigned	56	U:30 D:1 E
15.23.227.5	24	H	10.0 Mb/s	Customer Unassigned	54	U:30 D:1 E

Hourly | **Daily** | Monthly

Exception Counts for 15.27.0.190: me1

- ■ Utilization Exceptions
- ■ Discard Exceptions
- ■ Error Exceptions

Utilization | **Discards** | Errors

% Discard Rate for 15.27.0.190: me1
% of Actual Traffic Discarded

- — Max Discard Rate (H)
- — Avg Discard Rate (H)
- — Discard Threshold

Inbound | Outbound | Both (Half Duplex Only)

Average Inbound Utilization, Discards and Errors for 15.27.0.190: me1
% of Available Bandwidth

- — Avg Utilization
- — Avg Discards
- — Avg Errors
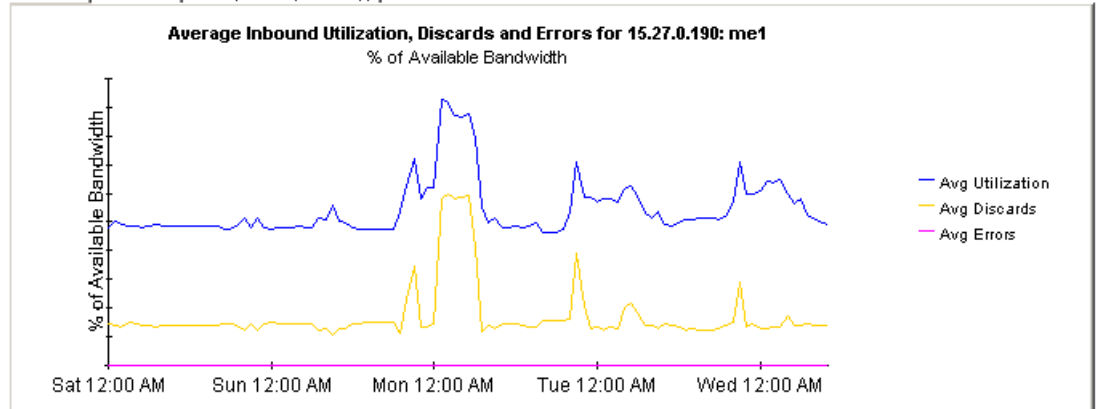
Interface Reporting

Exception Hot Spots Trunks

This report has one entry for each monitored interface that experienced threshold exceptions yesterday. An exception occurs when inbound or outbound utilization, % discard rate or % error rate exceeds the threshold set for that interface. U = Utilization, D = Discards, E = Errors. F/H indicates full or half Duplex.

Interfaces with Exceptions Yesterday
Sorted by Exception Count

Device	Interface	F/H	Speed	Customer	Total Exceptions	Thresholds %	Description
15.2.144.28	1/1	H	100.0 Mb/s	Customer Unassigned	94	U:30 D:1 E:1	utp fast ethernet (cat 5)
15.2.144.27	4/12	H	100.0 Mb/s	Customer Unassigned	77	U:30 D:1 E:1	10/100 utp ethernet (cat 3/5)
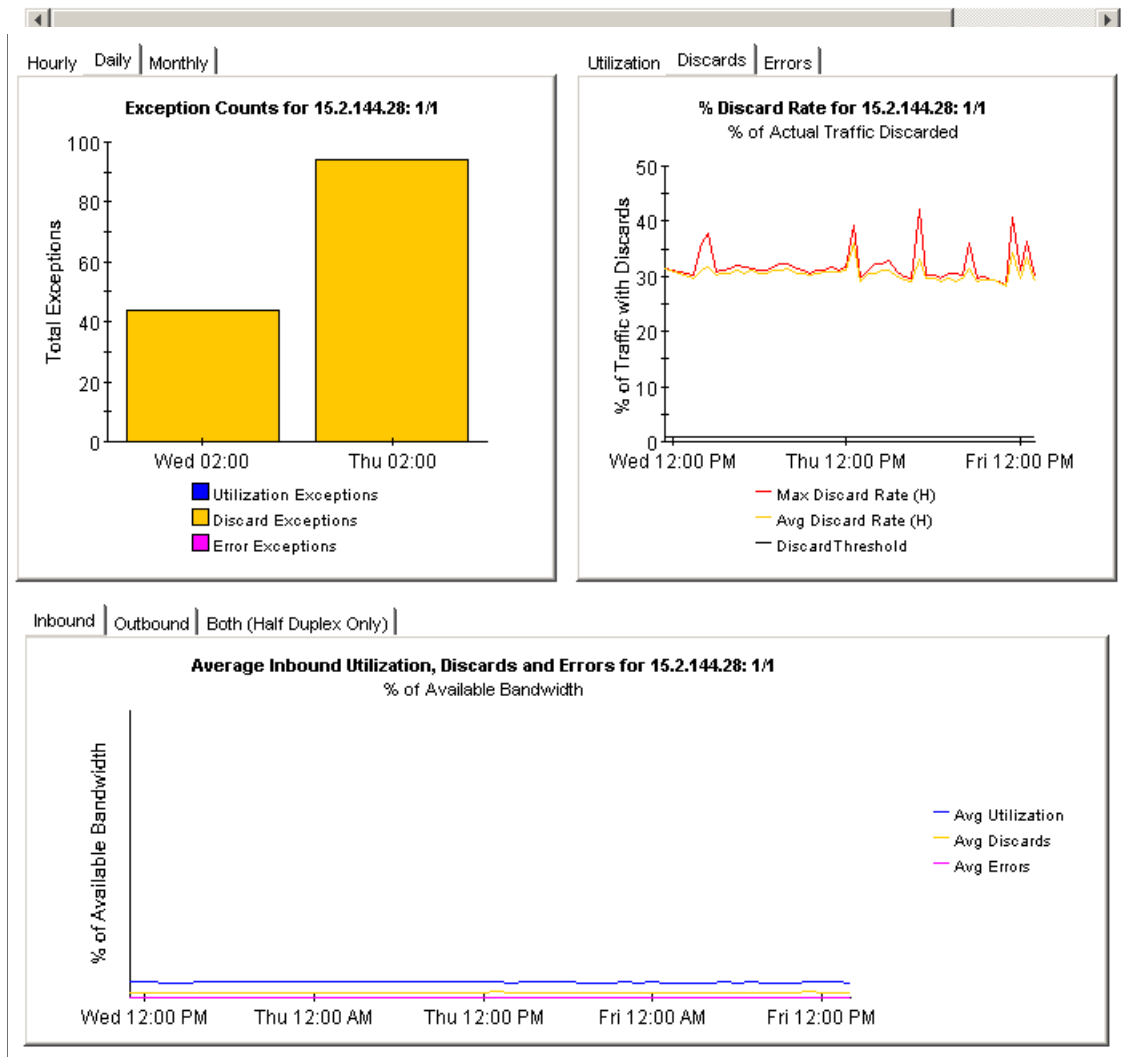
9 Exceptions by Type

Interface Reporting looks at exceptions in two ways, by count and by type. You can look for interfaces and devices with the highest exception counts for yesterday, or you can look for interfaces that produced a particular type of exception. If the exception count is what interests you, use the Hot Spots reports. If the type of exception is what interests you, you have three choices:

* Discard Exceptions

* Error Exceptions

* Utilization Exceptions

The format for all three reports is similar:

* Selection table that ranks interfaces by exception count

* Bar chart showing total exceptions (hourly/ daily/ monthly)

* Line graph comparing maximum, average, and threshold

* List of recent maximum rates, with date and time stamp

The selection table looks at yesterday's activity and shows the exception count, the speed of the interface, and threshold setting for each type of exception. (Threshold values are set to defaults; these values can be changed by modifying a form or by importing a property file that contains updated threshold values.)

The first graph tracks exception counts; the hourly graph covers the previous two days, while the daily graph covers the previous 30 days. If yesterday's exception count seems abnormal, compare it to the daily graph to get a sense of what has been normal in the past. The second graph allows you to compare average and maximum values to the threshold.

Below the graphs is a list of recent maximum rates, date stamped so that you know exactly when the maximum was recorded. Use this list to compare yesterday's total to previous totals and to see whether the maximum rate has been occurring at the same time of day.

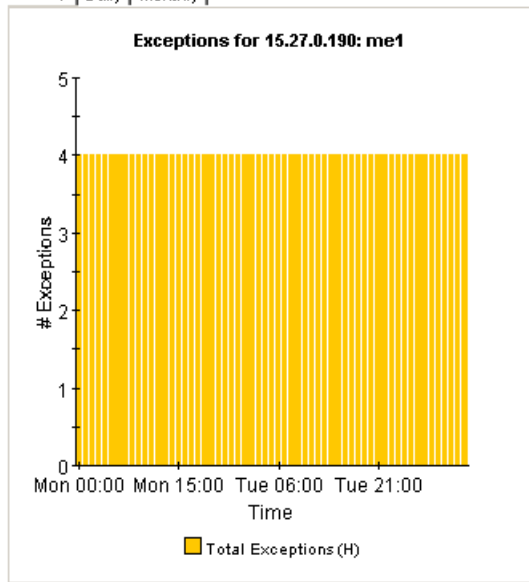# Interface Reporting

Discard Exceptions

This report has one entry for each monitored interface that experienced discard exceptions yesterday. An exception occurs when inbound or outbound discard traffic (with respect to total traffic) exceeds the threshold set for that individual interface. F/H indicates full or half Duplex.

Interfaces with Discard Exceptions Yesterday
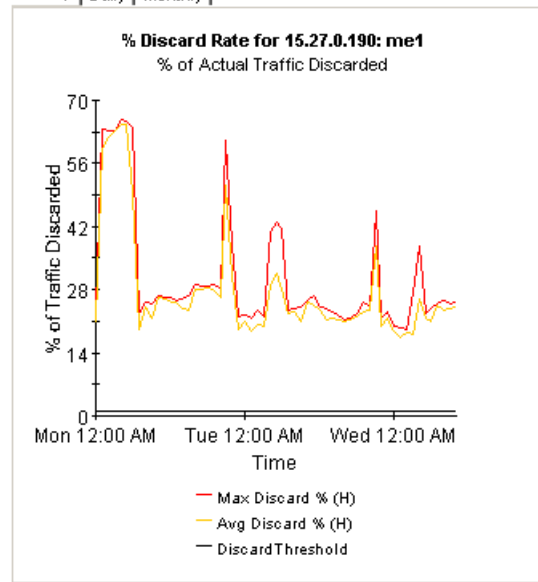#### Sorted by Exception Count

Device	Interface	F/H	Customer	Speed	# Exceptions	Threshold %	Descri
15.140.11.216	sc0	H	HP	10.0 Mb/s	96	1	sc0
15.27.0.190	me1	H	Customer Unassigned	10.0 Mb/s	96	1	me1
15.144.195.0	1	H	Customer Unassigned	10.0 Mb/s	96	1	lan
15.17.191.48	16777221	H	Customer Unassigned	10.0 Mb/s	96	2	mcp1
15.7.208.117	1	H	Customer Unassigned	10.0 Mb/s	96	1	lan
15.62.32.255	1	H	Customer Unassigned	10.0 Mb/s	95	1	se
15.3.208.119	sc0	H	Customer Unassigned	10.0 Mb/s	56	1	sc0
15.23.227.5	24	H	Customer Unassigned	10.0 Mb/s	53	1	24
15.12.151.159	1	H	Customer Unassigned	10.0 Mb/s	47	1	se

Details	Protocol	Group	Location	Country
me1	ethernet-csmacd	Unknown Group	Location Unassigned	Unknown Country

Hourly | Daily | Monthly |

Exceptions for 15.27.0.190: me1

Hourly | Daily | Monthly |

% Discard Rate for 15.27.0.190: me1
% of Actual Traffic Discarded

— Max Discard % (H)
— Avg Discard % (H)
— DiscardThreshold

Recent Daily Max Discard Rates and Times
The maximum discard rates, as measured over the polling interval, and the hour during which they occurred.

Maximum Discard Rate and Time

28 Discards per second on Jul 22 2003 9:00PM
63 Discards per second on Jul 21 2003 1:00AM
36 Discards per second on Jul 20 2003 9:00PM
 8 Discards per second on Jul 19 2003 3:00AM
66 Discards per second on Jul 18 2003 5:00AM
69 Discards per second on Jul 17 2003 9:00PM
 8 Discards per second on Jul 16 2003 9:00PM
72 Discards per second on Jul 15 2003 4:00AM
34 Discards per second on Jul 14 2003 11:00PM
58 Discards per second on Jul 8 2003 2:00AM
54 Discards per second on Jul 7 2003 5:00AM

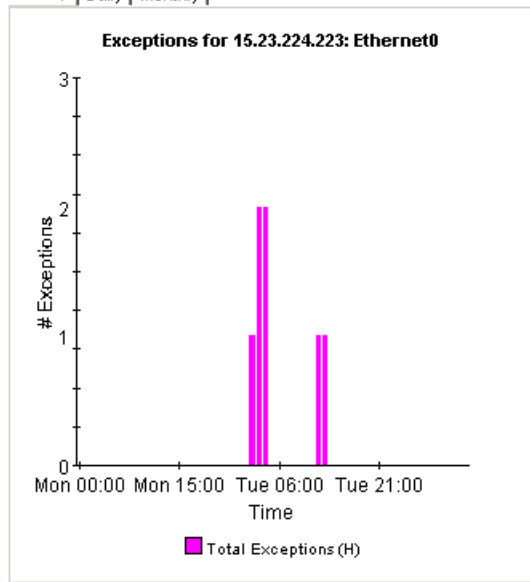# Interface Reporting

Error Exceptions

This report has one entry for each monitored interface that experienced error exceptions yesterday. An exception occurs when inbound or outbound error traffic (with respect to total traffic) exceeds the threshold set for that individual interface. F/H indicates full or half duplex.

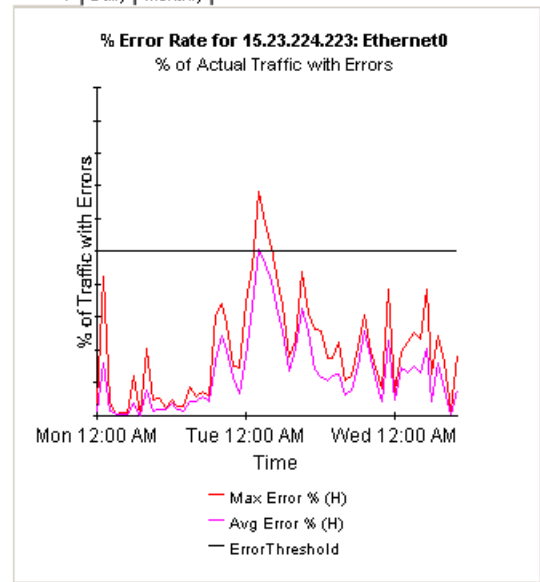### Interfaces with Error Exceptions Yesterday
Sorted by Exception Count

Device	Interface	F/H	Speed	Customer	# Exceptions	Thresho %
15.129.22.187	4/1	H	10.0 Mb/s	Customer Unassigned	11	1
15.23.224.223	Ethernet0	H	10.0 Mb/s	Customer Unassigned	7	1
15.252.8.40	2	F	In: 11.0 Mb/s Out: 11.0 Mb/s	Customer Unassigned	In:10 Out:4	2
15.128.164.163	Ethernet0	H	10.0 Mb/s	Customer Unassigned	3	1
server1	2	H	10.0 Mb/s	Customer Unassigned	3	1
15.9.72.8	3/7	H	10.0 Mb/s	Customer Unassigned	2	1
15.16.122.32	FastEthernet0/17	H	10.0 Mb/s	Customer Unassigned	1	1
15.23.227.5	25	H	10.0 Mb/s	Customer Unassigned	1	1
15.140.11.216	1/1	F	In: 100.0 Mb/s Out: 100.0 Mb/s	HP	In:1 Out:0	1

Details	Protocol	Group	Location	Country
Ethernet0	ethernet-csmacd	Unknown Group	Location Unassigned	Unknown Country

Hourly | Daily | Monthly

Exceptions for 15.23.224.223: Ethernet0

Hourly | Daily | Monthly

% Error Rate for 15.23.224.223: Ethernet0
% of Actual Traffic with Errors

- Max Error % (H)
- Avg Error % (H)
- ErrorThreshold

Recent Daily Max Error Packet Rates and Times
The maximum error packet rate, in packets per second, for each of the last 31 days

Maximum Error Rate and Time

1 Errors per second on Jul 22 2003 2:00AM
0 Errors per second on Jul 21 2003 9:00PM
1 Errors per second on Jul 20 2003 9:00PM
1 Errors per second on Jul 19 2003 9:00AM
1 Errors per second on Jul 18 2003 4:00PM
1 Errors per second on Jul 17 2003 1:00PM
1 Errors per second on Jul 16 2003 12:00AM
2 Errors per second on Jul 15 2003 11:00PM
1 Errors per second on Jul 14 2003 9:00AM
1 Errors per second on Jul 8 2003 7:00AM
0 Errors per second on Jul 7 2003 9:00PM
1 Errors per second on Jul 6 2003 9:00AM

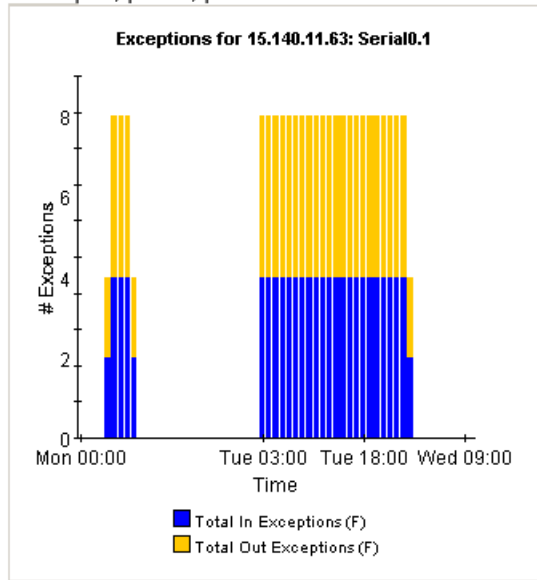# Interface Reporting

Utilization Exceptions

This report has one entry for each monitored interface on the network which experienced utilization exceptions yesterday. An exception occurs when inbound or outbound utilization exceeds the threshold set for the protocol or the threshold for the individual

Interfaces with Utilization Exceptions Yesterday
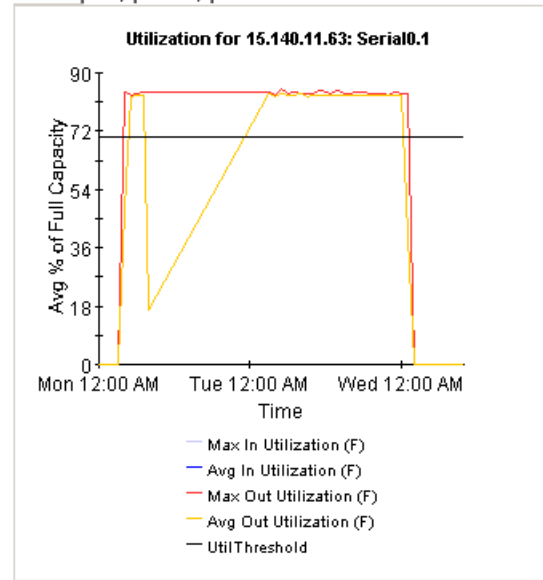#### Sorted by Exception Count

Device	Interface	Full/Half	Speed	Customer	# Exceptions	Threshold %	De
15.140.11.63	Serial0	F	In: 1.5 Mb/s Out: 1.5 Mb/s	Customer Unassigned	In:84 Out:84	70	Se
15.140.11.63	Serial0.1	F	In: 1.5 Mb/s Out: 1.5 Mb/s	Customer Unassigned	In:84 Out:84	70	Se
15.25.40.21	2/8	H	10.0 Mb/s	Customer Unassigned	10	30	10
server1	2	H	10.0 Mb/s	Customer Unassigned	8	30	hr
15.9.72.9	3/11	H	10.0 Mb/s	Customer Unassigned	3	30	10
15.9.72.9	3/18	H	10.0 Mb/s	Customer Unassigned	2	30	10
15.25.40.19	2/34	H	10.0 Mb/s	Customer Unassigned	2	30	10
15.23.227.5	1	H	10.0 Mb/s	Customer Unassigned	1	30	1
15.23.227.5	10	H	10.0 Mb/s	Customer Unassigned	1	30	10
15.23.227.5	11	H	10.0 Mb/s	Customer Unassigned	1	30	11

Details	Protocol	Group	Location	Country
Serial0.1	frameRelay	Unknown Group	Location Unassigned	Unknown Country

Hourly | Daily | Monthly |

Exceptions for 15.140.11.63: Serial0.1

Total In Exceptions (F)
Total Out Exceptions (F)

Hourly | Daily | Monthly |

Utilization for 15.140.11.63: Serial0.1

Max In Utilization (F)
Avg In Utilization (F)
Max Out Utilization (F)
Avg Out Utilization (F)
Util Threshold

Recent Daily Max Utilization and Times
The maximum percentage utilization, as measured over the polling interval, and the hour during which it occurred.

Maximum Utilization and Time

84.92% Input Util on Jul 22 2003 5:00AM	84.93% Output Util on Jul 22 2003 5:00AM
84.13% Input Util on Jul 21 2003 8:00AM	84.14% Output Util on Jul 21 2003 8:00AM
0.00% Input Util on Jul 20 2003 7:00PM	0.00% Output Util on Jul 20 2003 6:00AM
0.00% Input Util on Jul 19 2003 1:00PM	0.00% Output Util on Jul 19 2003 3:00AM
0.00% Input Util on Jul 18 2003 6:00PM	0.01% Output Util on Jul 18 2003 5:00AM
0.00% Input Util on Jul 17 2003 11:00PM	0.00% Output Util on Jul 17 2003 3:00AM
0.00% Input Util on Jul 16 2003 9:00AM	0.00% Output Util on Jul 16 2003 2:00AM
0.00% Input Util on Jul 15 2003 2:00PM	0.00% Output Util on Jul 15 2003 2:00AM
0.00% Input Util on Jul 14 2003 8:00AM	0.00% Output Util on Jul 14 2003 9:00AM
0.00% Input Util on Jul 8 2003 8:00AM	0.00% Output Util on Jul 8 2003 9:00AM
0.00% Input Util on Jul 7 2003 1:00PM	0.00% Output Util on Jul 7 2003 2:00AM
0.00% Input Util on Jul 6 2003 6:00PM	0.00% Output Util on Jul 6 2003 1:00AM

10 Locations and Protocols

Interface Reporting includes two summary reports. One offers a location perspective on performance, rolling up performance data by location, and the other offers a protocol perspective on performance, rolling up performance data by protocol. The key metrics in both reports are volume, exceptions, and utilization.

Summary reports provide aggregated data across multiple systems. The location summary report provides the following information:

- Number of active, monitored interfaces by location
- Volume for one customer by location
- Volume for all customers by location
- Hourly, daily, and monthly analysis of exception counts by location
- Hourly, daily, and monthly utilization by location

The protocol summary report provides the following information:

- Number of active, monitored interfaces by protocol
- Volume for one customer by protocol
- Volume for all customers by protocol
- Hourly, daily, and monthly analysis of exception counts by protocol
- Hourly, daily, and monthly utilization by protocol

You may investigate a location customer-by-customer, or you may investigate a location by looking at performance data for every customer at that location simultaneously. Similarly, you may look at the performance of a protocol for one customer, or for all customers.

Use summary reports to find out how the number of actively monitored interfaces compares location to location, or protocol to protocol, and to compare exception counts location to location or protocol to protocol. If a customer needs an upgrade, or if a location needs an upgrade, the summary reports should make that clear. In addition, if a recent upgrade at one location was expected to lower the exception count for that location, the location summary report should provide the evidence you need to verify that the situation has improved.

Both summary reports are reproduced below.

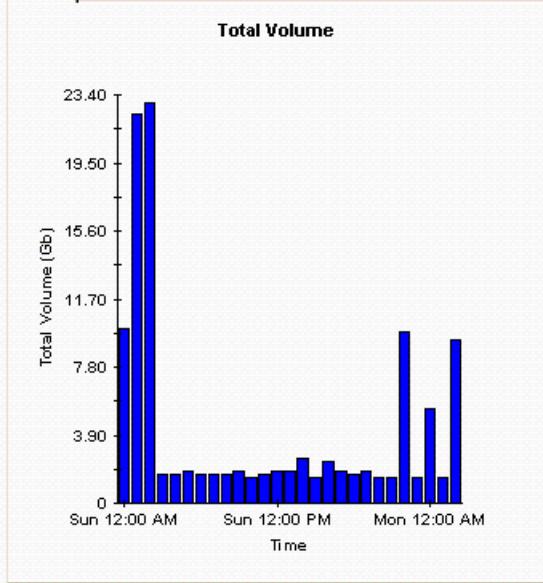# Interface Reporting

Location Executive Summary

This report has one entry for each Customer and Location combination on the network. This report only contains metrics for ports that are administratively up.
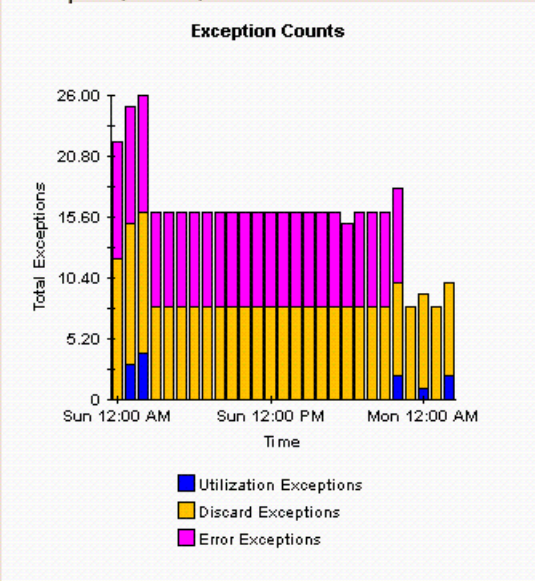
Locations with Traffic Yesterday

Location	Customer	# Int
Location Unassigned	All Customers	368
Washington	HP	116
Washington	Cust	70
Washington	Cust1	21
Washington	Cust2	18
Washington	Cust3	15
Washington	All Customers	240
New York	HP	46
New York	Cust	48
New York	Cust1	115
New York	Cust2	87
New York	Cust3	48
New York	All Customers	344
Chicago	HP	28
Chicago	Cust	87
Chicago	Cust1	39
Chicago	Cust2	38
Chicago	Cust3	36
Chicago	All Customers	228
Denver	HP	33

Hourly | Daily | Monthly

Total Volume

Hourly | Daily | Monthly

Exception Counts

- ■ Utilization Exceptions
- ■ Discard Exceptions
- ■ Error Exceptions

Hourly | Daily | Monthly
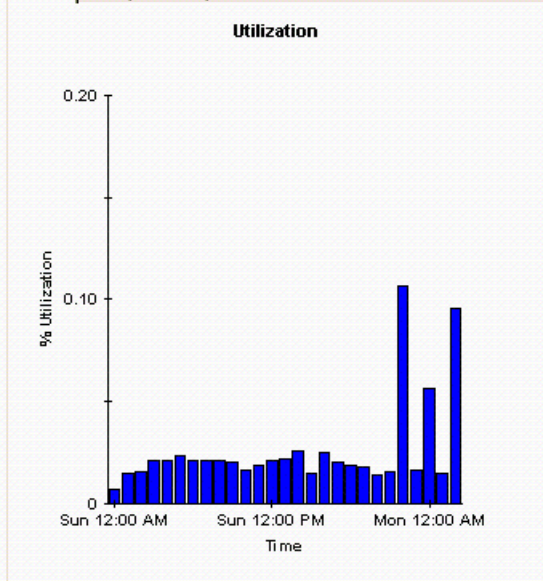
Utilization

Interface Reporting

Protocol Executive Summary

This report has one entry for each Customer and Protocol combination on the network. Utilization across a protocol is calculated using the total traffic generated by administratively up interfaces (# Int) of that protocol type, divided by the total available speed from those interfaces.

Customers with Traffic Yesterday

Customer	Protocol	# Int	Volume
All Customers	ifType=0 ?	1	N/A
HP	ifType=0 ?	1	N/A
All Customers	other	35	8.1 Gb
HP	other	7	1.6 Gb
Cust	other	6	1.6 Gb
Cust1	other	7	1.6 Gb
Cust2	other	7	1.6 Gb
Cust3	other	8	1.6 Gb
Cust	gigabitEthernet	3	0 bytes
All Customers	gigabitEthernet	3	0 bytes
Cust1	ds1	2	N/A
All Customers	ds1	2	N/A
HP	propPointToPointSerial	19	3.3 Mb
Cust	propPointToPointSerial	18	3.3 Mb
Cust1	propPointToPointSerial	24	8.3 Mb
Cust2	propPointToPointSerial	19	3.3 Mb
Cust3	propPointToPointSerial	19	3.3 Mb
All Customers	propPointToPointSerial	99	21.6 Mb
HP	softwareLoopback	4	0 bytes
Cust	softwareLoopback	3	0 bytes
Cust1	softwareLoopback	3	0 bytes

Traffic Volume

Hourly | Daily | Monthly

Exception Counts

Hourly | Daily | Monthly

Utilization Exceptions

Utilization

Hourly | Daily | Monthly
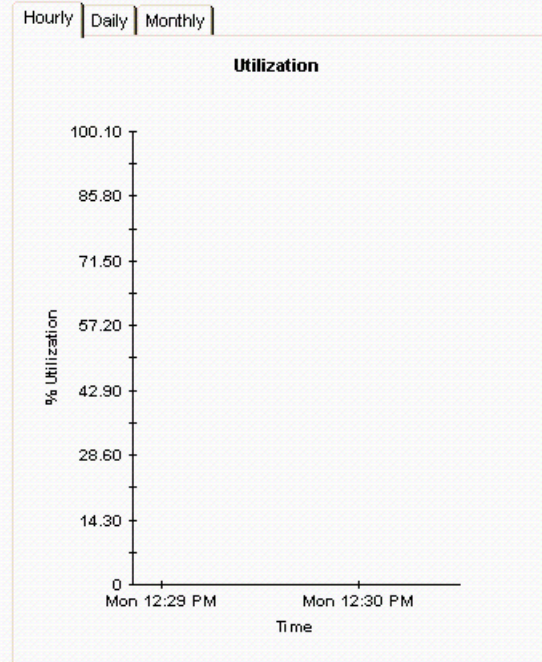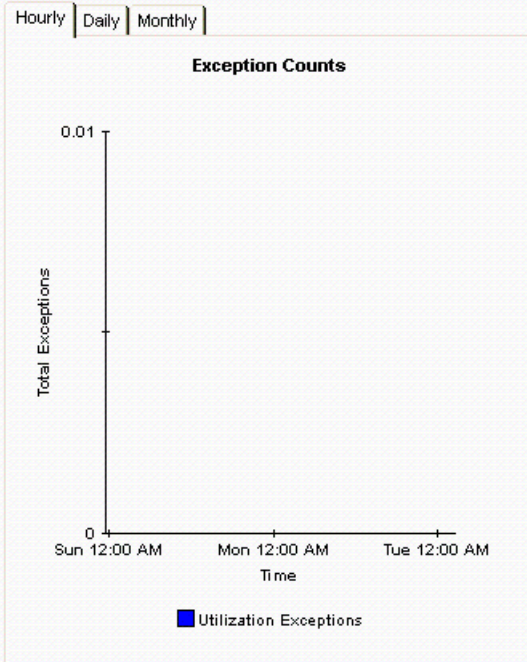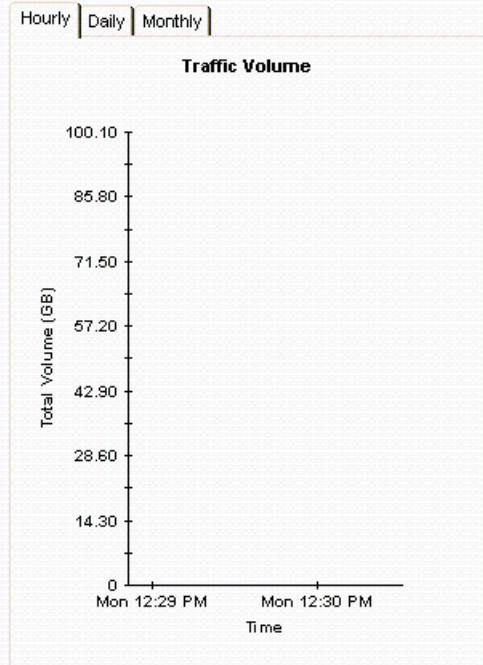
11 Capacity Planning

In addition to monitoring the exceptions created by occasional spikes in traffic, Interface Reporting is concerned with gradual increases in utilization and the resulting capacity problems that may arise a few months from now. Interface Reporting includes the following capacity planning reports:

- Capacity Planning by Interface (Busy Hour)
- Capacity Planning by Device
- Capacity Planning by Location
- Capacity Planning by Protocol

The interface version of the report focuses on the baseline busy hour average (a rolling average of 42 busy hours) and projected increases or decreases in the baseline busy hour average. The selection table sorts interfaces by the F30 forecast for the baseline busy hour and allows you to compare the following statistics for each interface:

- Baseline busy hour
- F30 forecast for baseline busy hour
- Utilization threshold

The baseline busy hour will change slightly every day, since, each day, the oldest busy hour value will be dropped from the average, while a new busy hour (for yesterday) will be added to the average. Note that the value for each busy hour is itself an average (based on four samples) and should not be confused with peak usage. For a portion of that busy hour, actual usage may have been much higher (or much lower) than the average.

The other three capacity planning reports are customer-oriented, so your first step is to select a customer. The selection table will then rank the elements (devices, locations, or protocols) belonging to that customer. The ranking is done according to rate of growth and the rate of growth is calculated by dividing the F30 forecast by the baseline busy hour. In all four capacity planning reports, the graphs beneath the selection table provide additional forecast data (baseline details, the F60 value, the F90 value, and day-of-week values) and a Grade of Service score that assesses the impact of discard, error, and utilization exceptions.

Samples of two capacity planning reports follow; the first report is from the Interface folder, the second report is from the Device folder .

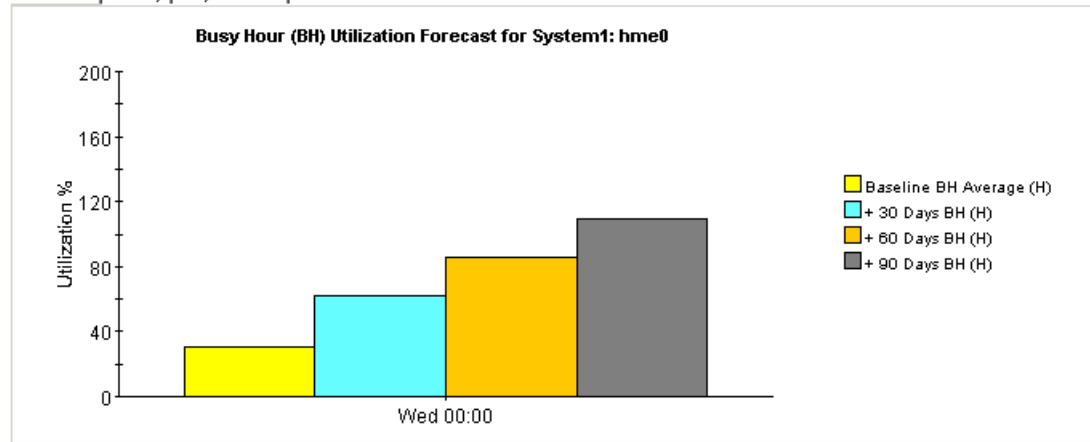# Interface Reporting

Busy Hour Capacity Planning

This report provides details about the interfaces whose 30 day forecasted busy hour utilization is greater than their utilization threshold. The busy hour (BH) utilization is the maximum average utilization across a complete hour during the day. F/H = Full or Half Duplex.
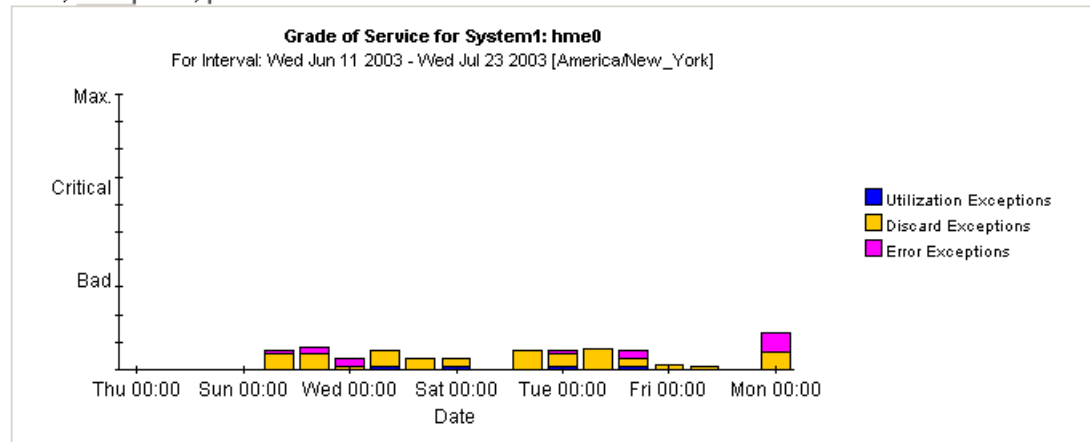
Interfaces Where Forecasted Utilization Exceeds Threshold
Sorted by Forecasted Utilization

Device	Interface	F/H	Customer	BH Avg. Util.	F30 BH Util.	Util. Threshold	Descr.
server1	2	H	Customer Unassigned	57	187	30	hme0
System1	2	H	Acme	31	62	30	hme0
15.140.11.63	Serial0.1	F	Customer Unassigned	In:11 Out:11	In:91 Out:91	70	Serial0.1
15.140.11.63	Serial0	F	Customer Unassigned	In:11 Out:11	In:91 Out:91	70	Serial0
15.68.184.2	Serial0	F	Customer Unassigned	In:220 Out:136	In:40 Out:173	90	Serial0

Standard | History | Day of Week

Busy Hour (BH) Utilization Forecast for System1: hme0

Legend:
- Baseline BH Average (H)
- + 30 Days BH (H)
- + 60 Days BH (H)
- + 90 Days BH (H)

Wed 00:00

Hourly | Daily | Monthly

Grade of Service for System1: hme0
For Interval: Wed Jun 11 2003 - Wed Jul 23 2003 [America/New_York]

Legend:
- Utilization Exceptions
- Discard Exceptions
- Error Exceptions

Date

Interface Reporting

Device Capacity Planning

This report provides utilization forecasts and related information aggregated by device and customer groupings. All metrics are for administratively up interfaces unless otherwise stated. % Growth represents the expected 30 day busy hour utilization growth. Select a grouping from the list on the left.

Customer	Device	Avg BH Util.	F30 Util.	Avg. Volume	F30 Volume	% Growth
Entire Network						
Acme	15.24.176.154	0.0	0.0	61.7 Mb	0 bytes	1,161
Customer Unassigned	tshp18.cnd.hp.com	0.4	2.7	1.3 Gb	2.8 Gb	630
HP	15.140.11.63	0.0	0.0	2.1 Gb	14.3 Gb	569
	System8	0.2	1.2	1.4 Gb	1.6 Gb	373
	server1	16.8	68.1	4.8 Gb	19.0 Gb	304
	System18	0.3	1.2	2.3 Gb	3.2 Gb	303
	15.12.151.159	0.2	0.6	43.6 Mb	159.8 Mb	227
	gold.rose.hp.com	1.4	4.5	5.8 Gb	13.4 Gb	219
	15.12.151.160	0.2	0.6	42.4 Mb	166.5 Mb	213
	15.252.8.45	0.1	0.3	526.7 Mb	669.1 Mb	209
	hpat617.atl.hp.com	0.1	0.2	2.5 Gb	3.0 Gb	196
	biotite.cnd.hp.com	0.1	0.2	739.1 Mb	1.1 Gb	173
	15.10.47.253	0.4	1.0	460.9 Mb	665.9 Mb	164
	tshp19.cnd.hp.com	0.0	0.0	691.5 Mb	365.8 Mb	163
	ROS59042MOR2	0.3	0.9	697.7 Mb	1.1 Gb	151
	15.95.132.169	0.3	0.6	68.0 Mb	119.2 Mb	136

System Contact	System Name	System Location

Standard | History | Day of Week

Utilization Forecast for 15.24.176.154

% Utilization

- Baseline BH Average
- + 30 Days
- + 60 Days
- + 90 Days

Wed 00:00

Hourly | Daily | Monthly

Exception Counts for 15.24.176.154

Total Exceptions

- Utilization Exceptions
- Discard Exceptions
- Error Exceptions

Sun 00:00
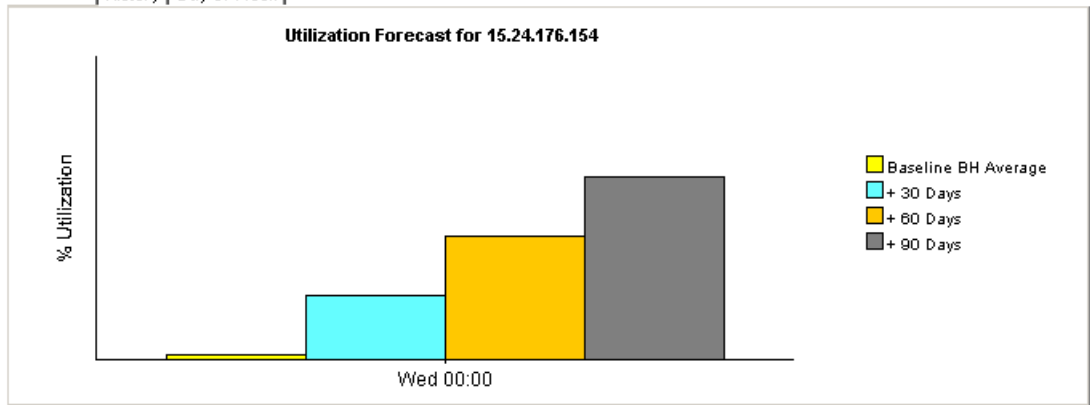
Month
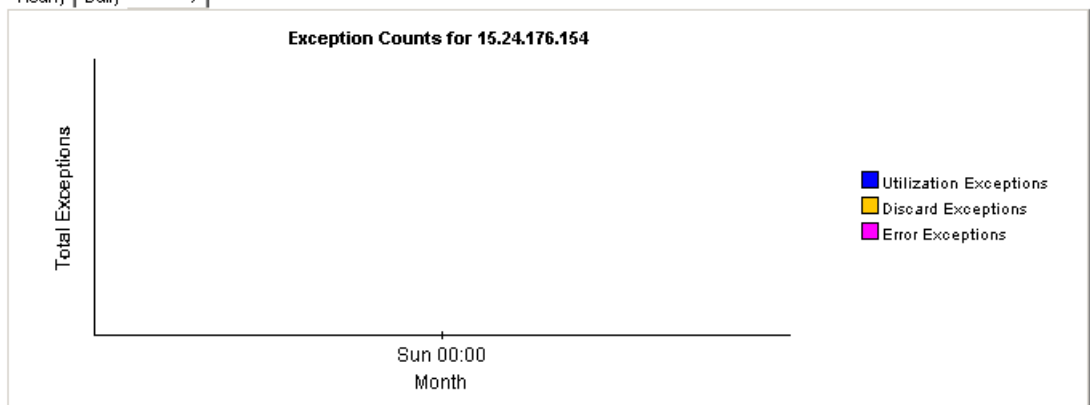
12 Service Level Management

Service level agreements between service providers and customers commonly stipulate a minimum response time and minimum availability. The purpose of the Service Level Management (SLM) reports is to improve service level monitoring for both parties, enhancing precision and making violations easier to spot.

SLM reports focus on SNMP response time and availability. Response time measures delay within the management infrastructure, that is, delay between the datapipe and the device being polled, not delay between clients and servers. While you would not want to infer from a high SNMP response time that users are seeing the same delay, the response time that users are seeing could be similar if the device is the source of the delay.

Availability measures the percentage of time a device has been operational. This metric provides insight into device outages as reported through the SNMP *sysUpTime* attribute. To calculate the availability of individual interfaces, PI combines the *sysUpTime* value for the device with two interface attributes, *ifOperStatus* and *ifLastChange*.

Use the SLM reports to identify specific interfaces, devices, protocols, and locations that are experiencing availability or response time problems. The report in the Interface folder is interface-oriented, beginning with a list of device/interface combinations; the other SLM reports are customer-oriented, allowing you to select a customer/element combination.

The initial selection table looks at yesterday's availability, and ranks items by availability, lowest to highest. Use the graph to the right to view availability on an hour by hour basis, then compare the hourly graph to the daily graph to find out whether yesterday's activity was an isolated incident, not likely to occur again, or part of an ongoing trend. The second table, response time, looks at yesterday's response time and ranks items by response time, highest to lowest.

Interface Reporting includes four Service Level Management reports. Two samples follow, one from the Interface folder and one from the Device folder.

Interface Reporting

Service Level Management

The Service Level Management report indicates whether interfaces are meeting contracted service levels for availability and response time. Select an interface from the table to see performance over time. Only interfaces with less than 100% availability will be listed. Use the AvailabilityPct parameter to constrain which interfaces are displayed.

Availability
Interfaces with Lowest Availability for Yesterday
Tue Jul 22 2003

Device	Interface	Availability	Desc
15.43.235.20	A3	0	
15.43.235.20	A4	0	
15.24.115.2	Serial0	0	Seri:
15.24.115.2	Serial0.1	0	Seri:
15.24.117.60	Serial0.1	0	Seri:
15.24.117.60	Serial0.2	0	Seri:
15.24.117.60	Serial0.3	0	Seri:
15.24.117.60	Serial0.4	0	Seri:
15.24.117.60	Serial0.5	0	Seri:
15.24.117.60	Serial0.6	0	Seri:
15.24.117.60	Serial0.7	0	Seri:
15.24.117.60	Serial0.8	0	Seri:
15.24.117.60	Serial0.9	0	Seri:
15.24.117.60	Serial0.10	0	Seri:
15.24.117.60	Serial1.1	0	Seri:
15.24.117.60	Serial1.2	0	Seri:

Hourly | Daily |

Availability
For: 15.43.235.20: A4
Mon Jul 21 12:00 AM - Wed Jul 23 10:00 AM
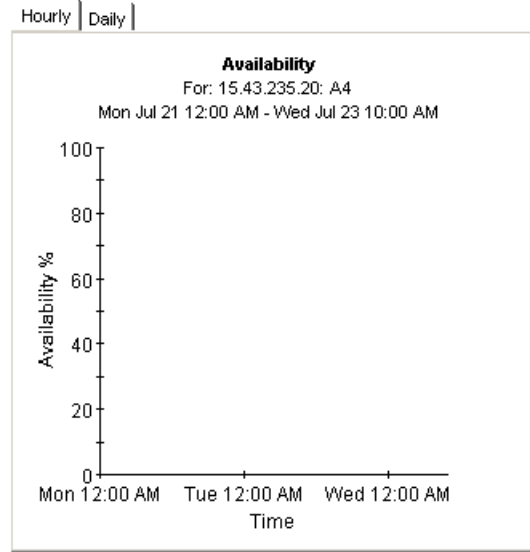
Max Response Time
Highest SNMP Response Time by Interface
Tue Jul 22 2003

Device	Interface
15.140.11.216	2/4
15.140.11.216	1/2
15.140.11.216	2/8
15.140.11.216	2/2
15.140.11.216	2/1
15.140.11.216	2/11
15.140.11.216	2/5
15.140.11.216	2/6
15.140.11.216	2/7
15.140.11.216	2/3
15.140.11.216	2/9
15.16.122.32	FastEthernet0/16
15.140.11.216	2/10
15.140.11.216	2/12

Hourly | Daily |

Response Times
For: 15.140.11.216: 10/100 utp ethernet (cat 3/5)
Mon Jul 21 12:00 AM - Wed Jul 23 10:00 AM

— Max Response Time
— Avg Response Time
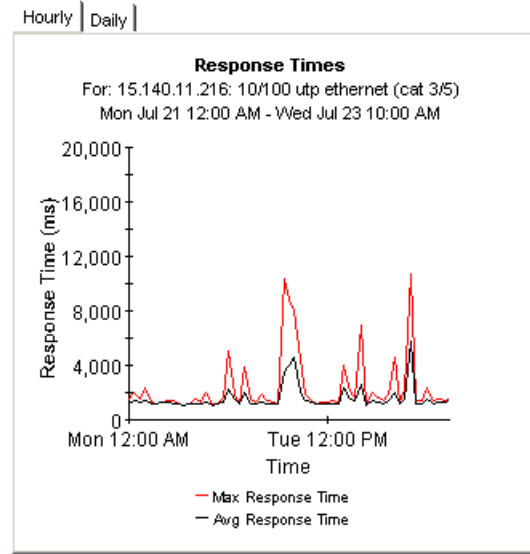
Interface Reporting

Device Service Level Management

The Service Level Management report shows whether groups of interfaces are meeting contracted service levels for availability and response time based on Customers and Device. The number of interfaces (# Int.) includes only those interfaces which are administratively up. Select a device from the tables on the left to see performance over time.

Availability %
Ordered by Lowest Availability for the Day
Tue Jul 22 2003

Device	Customer	# Int.	Availability
15.24.117.60	Customer Unassigned	41	2
Test1	Customer Unassigned	52	4
15.40.241.3	Customer Unassigned	27	7
15.43.235.20	Customer Unassigned	34	9
15.9.72.10	Customer Unassigned	88	11
15.162.112.253	Customer Unassigned	4	15
15.25.40.27	Customer Unassigned	88	18
15.27.0.95	Customer Unassigned	4	20
Test2	Customer Unassigned	11	27
15.1.53.129	Customer Unassigned	11	27
15.24.115.2	Customer Unassigned	11	27
Test3	Customer Unassigned	7	29
15.27.0.190	Customer Unassigned	47	32
15.25.40.25	Customer Unassigned	88	32
15.9.72.28	Customer Unassigned	88	35
15.9.72.11	Customer Unassigned	88	36
15.17.187.59	Customer Unassigned	16	37
15.25.40.6	Customer Unassigned	88	37
15.140.11.216	HP	16	37
15.25.40.19	Customer Unassigned	88	38
15.16.122.32	Customer Unassigned	28	39

Daily | Hourly

Availability % (from sysUpTime)
Sun Jun 22 2003 - Tue Jul 22 2003
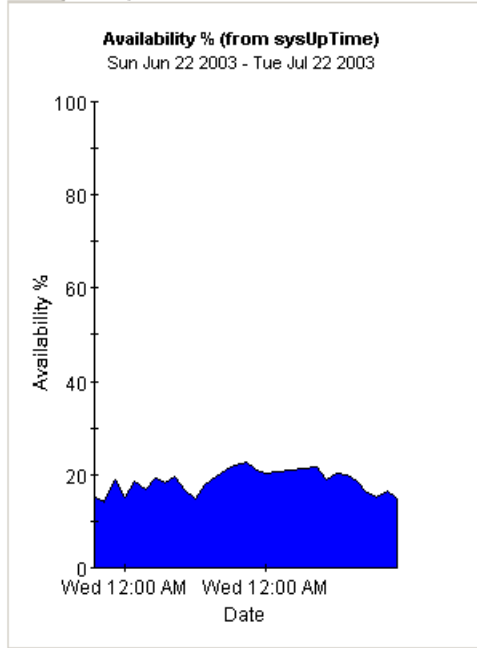
Response Times Greater than 200 (ms)
Ordered by Highest SNMP Response Time
Tue Jul 22 2003

Device	Customer	# Int.	Max	Avg
15.140.11.216	HP	16	12,812	1,628
15.2.144.2	Customer Unassigned	46	8,672	629
15.23.227.5	Customer Unassigned	28	7,969	396
15.17.188.16	Customer Unassigned	3	7,750	516
15.70.186.76	Customer Unassigned	2	6,938	1,308
15.128.9.130	Customer Unassigned	1	6,468	1,019
Test1	Customer Unassigned	52	6,329	361
15.128.9.128	Customer Unassigned	2	5,750	828
15.10.47.253	Customer Unassigned	2	5,687	1,057
Test2	Customer Unassigned	4	5,359	227
Test3	Customer Unassigned	11	5,296	294
15.162.112.253	Customer Unassigned	4	5,188	835
15.128.9.129	Customer Unassigned	2	4,781	738
15.3.208.119	Customer Unassigned	59	4,766	652
15.9.72.6	Customer Unassigned	88	3,531	365
15.9.72.9	Customer Unassigned	88	3,390	393
15.9.72.8	Customer Unassigned	88	3,328	395
15.25.40.27	Customer Unassigned	88	3,266	378
15.25.40.25	Customer Unassigned	88	3,110	371
15.25.40.21	Customer Unassigned	88	3,094	371
15.9.72.10	Customer Unassigned	88	3,062	371
15.9.72.23	Customer Unassigned	88	2,984	380

Daily | Hourly

Response Times
Thu Jul 17 2003 - Tue Jul 22 2003

— Max Response Time
— Avg Response Time

.
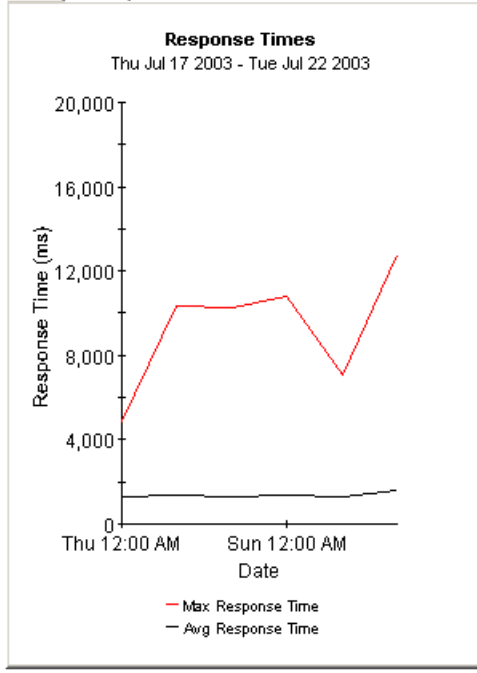
13 Administration Reports

The following table outlines the scope of each admin report.

Admin Report	Information Provided

Configuration and Logging	• Configuration settings for:
	  — Logging level
	  — Data filtering
	  — Provisioning.
	• List of recent log entries
	• Entries are listed by component
	• Each entry is time-stamped
	• Each entry indicates duration in seconds
	• IR_map_p is the most common component
	• The number of entries per poll (two entries per poll in the sample report) is related to number of index types

Inventory	• List of customers
	• List of devices for each customer
	• IP address, make, model, description
	• List of interfaces on each device
	• Attributes for each interface:
	  — AdminStatus
	  — Protocol
	  — Full/Half
	  — Speed
	  — Threshold
	  — Description

Top Level Inventory	• Total number of devices for each customer • Total number of interfaces for each customer • List of devices by make and model

Admin Report	Information Provided
System Performance	Processes that took place during the last 2 hours: • Name • Start time • Duration • Rating • Bar chart showing duration of each process in seconds Processes that took place since yesterday: • Name • Start time • Duration • Rating • Bar chart showing duration of each process in seconds

See below for samples of these reports:

• Configuration and Logging

• Inventory

• System Performance

Report Pack Administration

Configuration and Logging

This report displays configuration information relating to Interface Reporting collections, and lists the most recent log table entries for report rack internal procedures. Logging to this report is open to all installed report packs. Use the 'Component' parameter to filter the displayed data.

IR Mapping Procedure Configuration

Configuration Parameter	Current Value	Meaning
Logging Level	1	High Level and Errors Only
Data Filtering	0	Report on all interfaces
Provisioning	0	Use provisioned data only

ReportPack Log Entries

Time	Component	Message
Wed Jul 23 11:09 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 2 seconds.
Wed Jul 23 11:08 AM	IR_map_p	Info: 1725 polled rows were mapped to SRIRDevPorts in 5 seconds.
Wed Jul 23 10:52 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 0 seconds.
Wed Jul 23 10:52 AM	IR_map_p	Info: 1734 polled rows were mapped to SRIRDevPorts in 5 seconds.
Wed Jul 23 10:37 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 0 seconds.
Wed Jul 23 10:37 AM	IR_map_p	Info: 1734 polled rows were mapped to SRIRDevPorts in 4 seconds.
Wed Jul 23 10:22 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 0 seconds.
Wed Jul 23 10:22 AM	IR_map_p	Info: 1734 polled rows were mapped to SRIRDevPorts in 4 seconds.
Wed Jul 23 10:09 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 0 seconds.
Wed Jul 23 10:08 AM	IR_map_p	Info: 1727 polled rows were mapped to SRIRDevPorts in 10 seconds.
Wed Jul 23 09:52 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 0 seconds.
Wed Jul 23 09:51 AM	IR_map_p	Info: 1734 polled rows were mapped to SRIRDevPorts in 11 seconds.
Wed Jul 23 09:37 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 0 seconds.
Wed Jul 23 09:37 AM	IR_map_p	Info: 1735 polled rows were mapped to SRIRDevPorts in 6 seconds.
Wed Jul 23 09:22 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 1 seconds.
Wed Jul 23 09:22 AM	IR_map_p	Info: 1733 polled rows were mapped to SRIRDevPorts in 5 seconds.
Wed Jul 23 09:09 AM	IR_map_p	Info: 411 polled rows were mapped to SRIRDevPorts in 2 seconds.

Interface Reporting

Inventory Report

This report has one entry for each customer and provides inventory information for the devices assigned to that customer and the interfaces on those devices. Modify the report constraints to limit the number of interfaces displayed. Only interfaces that were polled yesterday will be displayed.

Customer	Id
Acme	1
Customer Unassigned	-2
HP	2

Devices Associated with the Chosen Customer

Device	Make	Model	Description
15.6.96.4	Cisco	2522	15.6.96.4

Interfaces on 15.6.96.4
Change Constraints to Modify the List

Interface	AdminStatus	Protocol	Full/Half	Speed	Threshold %	Description
Ethernet0	Up	ethernet-csmacd	H	10.0 Mb/s	U:30 D:1 E:1	Ethernet0
Serial0	Up	frameRelay	F	In: 1.5 Mb/s Out: 1.5 Mb/s	U:70 D:1 E:1	Serial0
Serial1	Up	frameRelay	F	In: 1.5 Mb/s Out: 1.5 Mb/s	U:70 D:1 E:1	Serial1
Serial2	Up	frameRelay	F	In: 115.0 Kb/s Out: 115.0 Kb/s	U:70 D:1 E:1	Serial2

Interface Reporting

Reporting System Performance

This report provides total duration details in seconds for groups of related tasks in the report pack. The information can be used to assess if the system is approaching its processing limits.

Hourly Process Durations
For the Last 2 Hours

Process Name	StartTime	Duration (s)	Rating
DevPort_Summary	Wed Jul 23 11:20 AM		
DevPort_Summary	Wed Jul 23 10:20 AM	34	Excellent
DevPort_Summary	Wed Jul 23 09:20 AM	40	Excellent

Hourly Durations
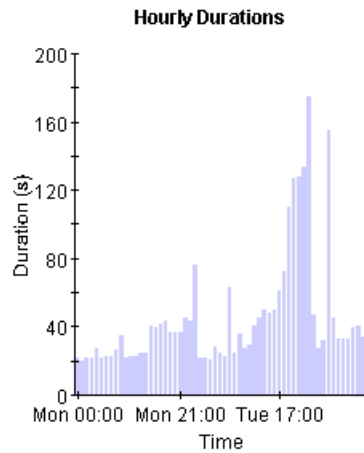
Daily Process Durations
Since Yesterday

Process Name	StartTime	Duration (s)	Rating
DevPort_DMF_Summary	Wed Jul 23 04:00 AM	585	Good
DevPort_DMF_Summary	Tue Jul 22 04:00 AM	510	Good
Device_DMF_Summary	Wed Jul 23 04:06 AM	94	Excellent
Device_DMF_Summary	Tue Jul 22 04:06 AM	97	Excellent
Property_Import	Wed Jul 23 04:00 AM	18	Excellent
Property_Import	Tue Jul 22 04:00 AM	17	Excellent

Daily Durations
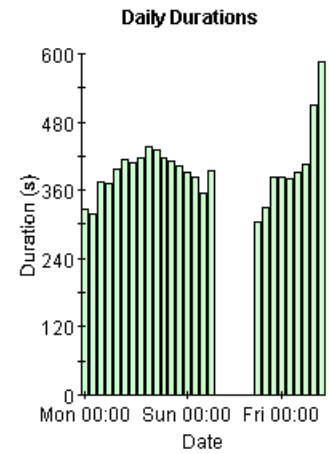
A PI Report Packs

Business Technology	Reporting Solution
Application	Application Report Pack: • WebLogic SPI • WebSphere SPI
Database	Database SPI Report Pack
HP Business Process Insight	BPI Report Pack
HP Internet Services	Internet Services Report Pack
HP Network Node Manager	NNM Event & Availability Report Pack
HP Operations	OVO Report Pack
HP Service Desk	Help Desk Report Pack Change Management Report Pack SLM Integration Report Pack
IP Telephony	• Cisco IP Telephony Call Detail • Cisco IP Telephony Gateway Statistics
MPLS VPN	MPLS VPN Report Pack
Networking	Infrastructure Usage • Interface Reporting • Device Resource Report Pack LAN/WAN Edge • Frame Relay (SNMP only) • ATM (SNMP only) WAN Core • Frame Relay (multiple switch vendors) • ATM (multiple switch vendors)

Business Technology	Reporting Solution
Networking (continued)	Traffic Profiling • RMON II • NetFlow Interface • NetFlow Global View • IP QoS Report Pack • Class-Based QoS Quality Assurance • Cisco Ping Report Pack • Service Assurance • IP Access Rate
System Resources	• System Resource Report Pack

B Options for Customizing Reports

These are some of the way you can customize reports:

- Import properties (customers and locations)
- Apply group filters
- Apply constraints
- Modify the time period (so that you can view archive data in archive reports)
- Add details about interface attributes
- Change the default view of tables and graphs

Although creating group filters is a task for an administrator, any user looking at a report can apply constraints, change view options, or switch to archive reports. For details about view options for tables and graphs, see Appendix C, Editing Tables and Graphs.

Group Filters

If you want to share reports with customers, you must produce customer-specific reports. To produce customer-specific, perform these tasks:

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

For more information group filters, refer to the *PI Administration Guide.*

Applying Constraints

Editing a parameter applies a constraint. The constraint eliminates the data you are not interested in seeing. 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. You can apply multiple constraints at the same time. Interface Reporting supports the following parameters:

- Customer Name

- Customer ID

- Location Name

- Location ID

- Device Name

- Make

- Model

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

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

Viewing Archive Reports

If you are using the Web Access Server to view reports, switch to archive data by following these steps:

1 Click **Preferences**.

2 Expand the Deployed Items folder.

3 Click **View**. The View Settings panel opens.

4 Click the box next to **Allow Element Editing**.
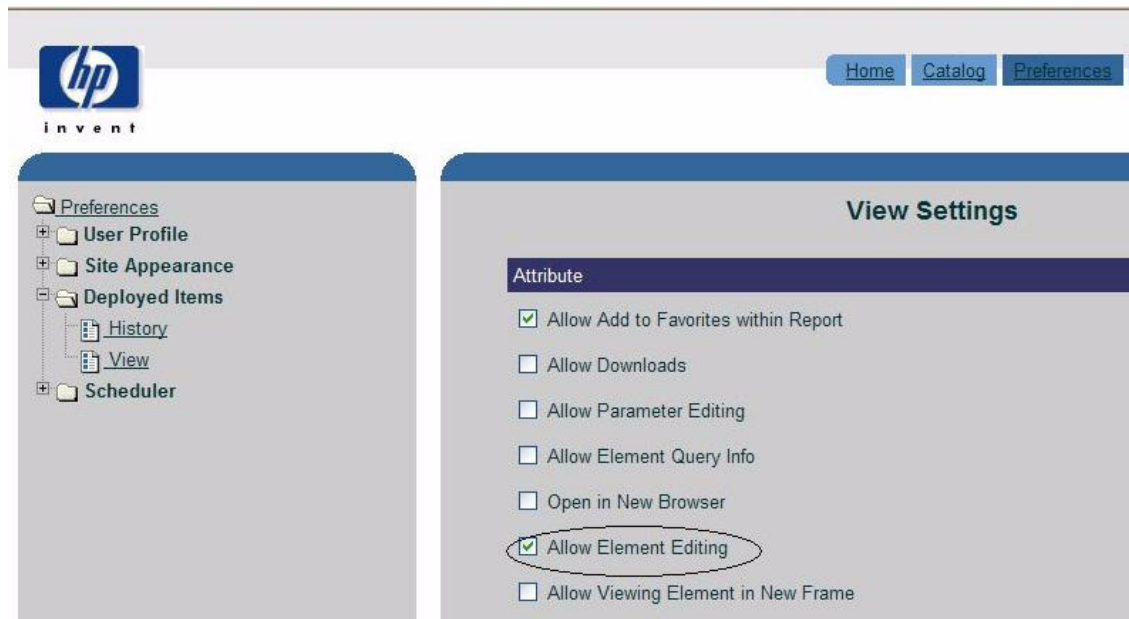
5   Click **Apply**. The system displays the following message:

    `You have successfully updated your report view settings.`

6   Click **Catalog**.

7   Expand the System folder.

8   Expand the Interface Reporting folder.

9   Expand the Archive folder.

10   Expand the Interface folder.
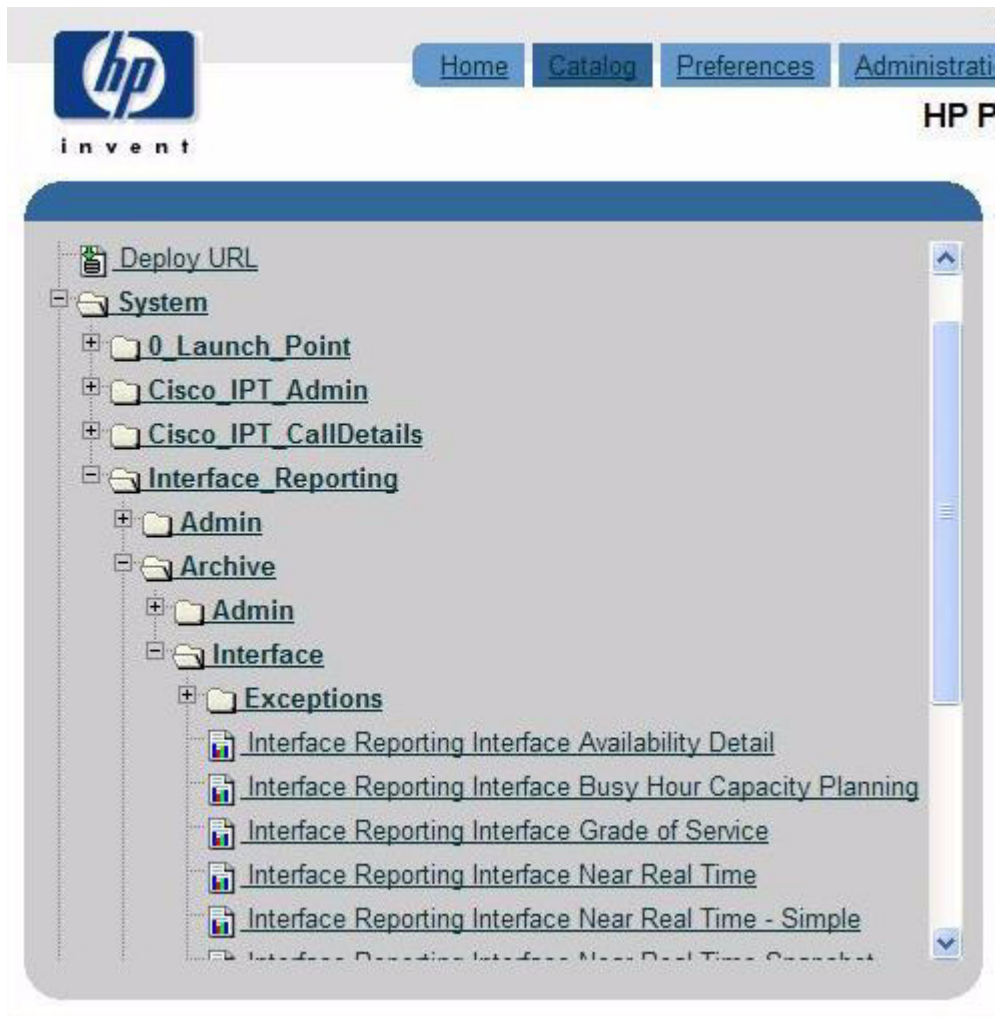
11 Double-click any report.

12 When the report opens, click the paint icon in the upper right. The Table Edit window opens.

13 Click **Absolute** and enter a start time and an end time.

14 Click **Submit**.

Table Edit - Microsoft Internet Explorer provided by Hewlett-Pa...

Table Edit

Property	Value
Max Rows:	5000
Constraints:	AND full_half = [Full_Half] ifAdminStatus = [AdminStatus]

Time Range:

○ Relative

   ○ This [hour ▾]

   ⊙ Last [6] [hour(s) ▾] ☑ until now

○ Absolute

   Start Time: [Oct 17 04:00 AM 2007]

   End Time: [Oct 17 10:33 AM 2007]

[**Submit**] [**Cancel**]

Done   Local intranet

Importing Properties

You have the option of populating reports with node-level properties and interface-level properties. Node-level properties are sourced from Common Property Tables. Interface-level properties can be sourced from the network, or read from a property import file that you create yourself from scratch. If you prefer, you can also export existing property data from PI, modify what you get from PI, and then re-import this file with your changes. The following forms are available for updating properties:

- Change Protocol Defaults
- Change Interface Properties
- Change Interface Customer
- Change Interface Location
- Change Interface Description
- Administer Interface Poll Flag

The Administer Interface Reporting form does not pertain to object properties. Use it to modify the behavior of the package itself.

C Editing Tables and Graphs

Any table or graph can be viewed in several ways. Although 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

Set Time Period...
Change Constraint Values...
Select Nodes/Interfaces...
Change Max Rows...
View in new Frame
Print Table...
Export Element as CSV...
Delete Table
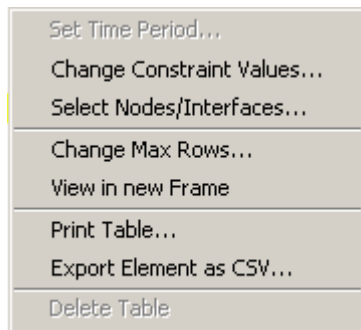
Select **Set Time Period** to alter the relative time period (relative to now) or set an absolute time period. The Set Time Period window opens.

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

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

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

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

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

Table Viewer

Polled IP QoS Statistics Data - Input
Over Previous 6 Hours

Direction	IpPrecedence	Switched Bytes	Switched Pkts	Time Period
Input	0	105,688	675	Tue Oct 29 07:00 AM
Input	1	0	0	Tue Oct 29 07:00 AM
Input	2	0	0	Tue Oct 29 07:00 AM
Input	3	0	0	Tue Oct 29 07:00 AM
Input	4	0	0	Tue Oct 29 07:00 AM
Input	5	0	0	Tue Oct 29 07:00 AM
Input	6	600	5	Tue Oct 29 07:00 AM
Input	7	0	0	Tue Oct 29 07:00 AM
Input	0	98,334	638	Tue Oct 29 06:45 AM
Input	1	0	0	Tue Oct 29 06:45 AM
Input	2	0	0	Tue Oct 29 06:45 AM
Input	3	0	0	Tue Oct 29 06:45 AM
Input	4	0	0	Tue Oct 29 06:45 AM
Input	5	0	0	Tue Oct 29 06:45 AM
Input	6	0	0	Tue Oct 29 06:45 AM
Input	7	0	0	Tue Oct 29 06:45 AM
Input	0	97,539	648	Tue Oct 29 06:30 AM
Input	1	0	0	Tue Oct 29 06:30 AM
Input	2	0	0	Tue Oct 29 06:30 AM
Input	3	0	0	Tue Oct 29 06:30 AM
Input	4	0	0	Tue Oct 29 06:30 AM
Input	5	0	0	Tue Oct 29 06:30 AM
Input	6	120	1	Tue Oct 29 06:30 AM
Input	7	0	0	Tue Oct 29 06:30 AM
Input	0	90,744	564	Tue Oct 29 06:15 AM
Input	1	0	0	Tue Oct 29 06:15 AM
Input	2	0	0	Tue Oct 29 06:15 AM
Input	3	0	0	Tue Oct 29 06:15 AM
Input	4	0	0	Tue Oct 29 06:15 AM
Input	5	0	0	Tue Oct 29 06:15 AM
Input	6	0	0	Tue Oct 29 06:15 AM
Input	7	0	0	Tue Oct 29 06:15 AM
Input	0	103,775	656	Tue Oct 29 06:00 AM
Input	1	0	0	Tue Oct 29 06:00 AM
Input	2	0	0	Tue Oct 29 06:00 AM
Input	3	0	0	Tue Oct 29 06:00 AM
Input	4	0	0	Tue Oct 29 06:00 AM
Input	5	0	0	Tue Oct 29 06:00 AM
Input	6	0	0	Tue Oct 29 06:00 AM
Input	7	0	0	Tue Oct 29 06:00 AM
Input	0	85,466	547	Tue Oct 29 05:45 AM
Input	1	0	0	Tue Oct 29 05:45 AM
Input	2	0	0	Tue Oct 29 05:45 AM
Input	3	0	0	Tue Oct 29 05:45 AM
Input	4	0	0	Tue Oct 29 05:45 AM
Input	5	0	0	Tue Oct 29 05:45 AM
Input	6	0	0	Tue Oct 29 05:45 AM
Input	7	0	0	Tue Oct 29 05:45 AM

View Options for Graphs

Right-clicking a graph, or clicking the Edit Graph icon if you are using the Web Access Server, opens the following list of view options.
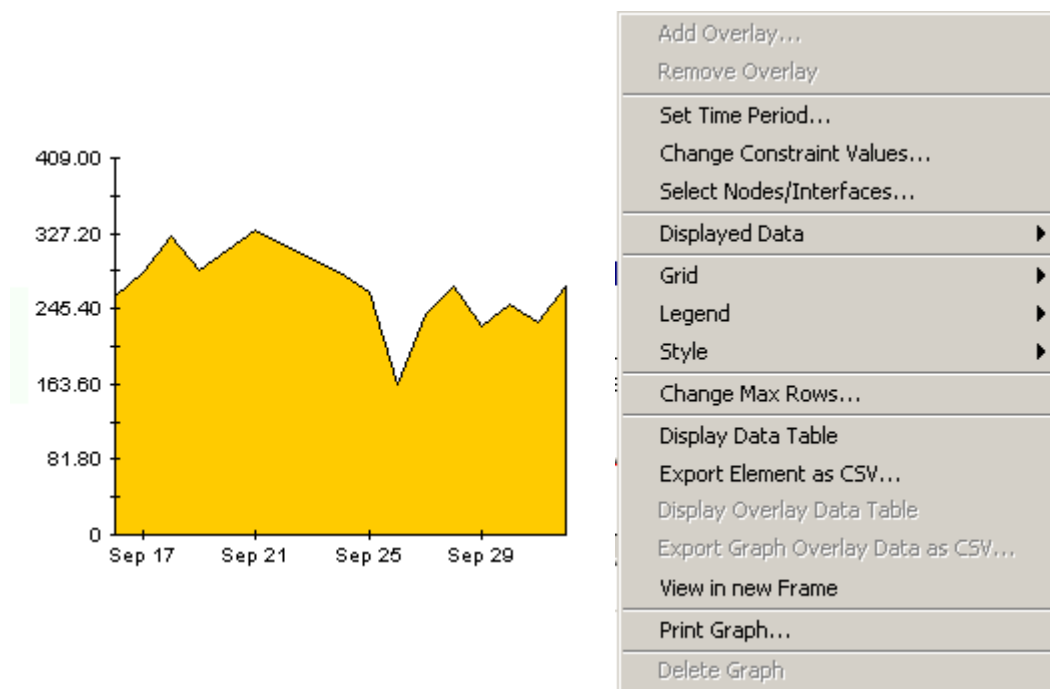
The following table provides details about each option.

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

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.
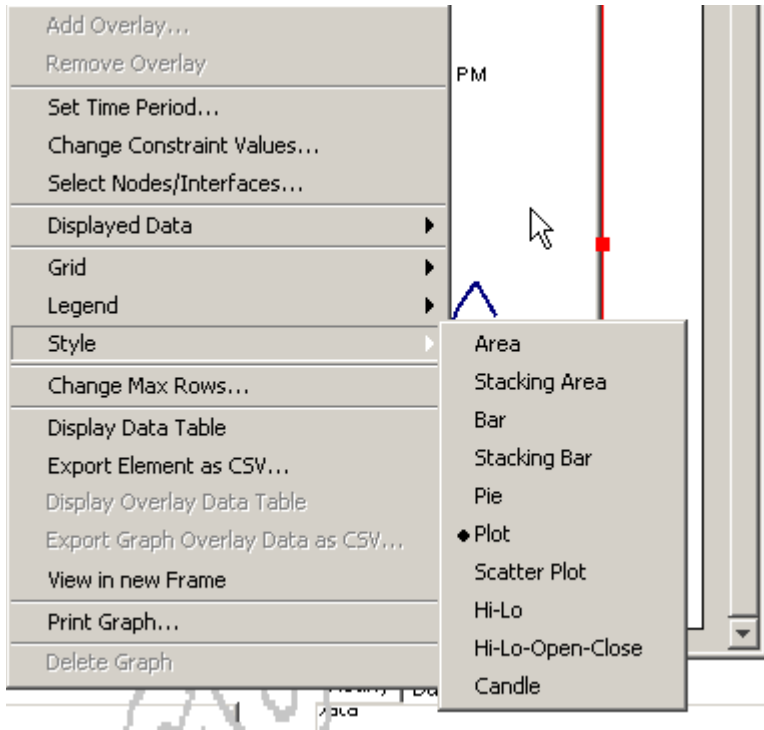
Style > Area

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

Disconnect Cause Hourly Totals for Yesterday
For Selected Gateway Group
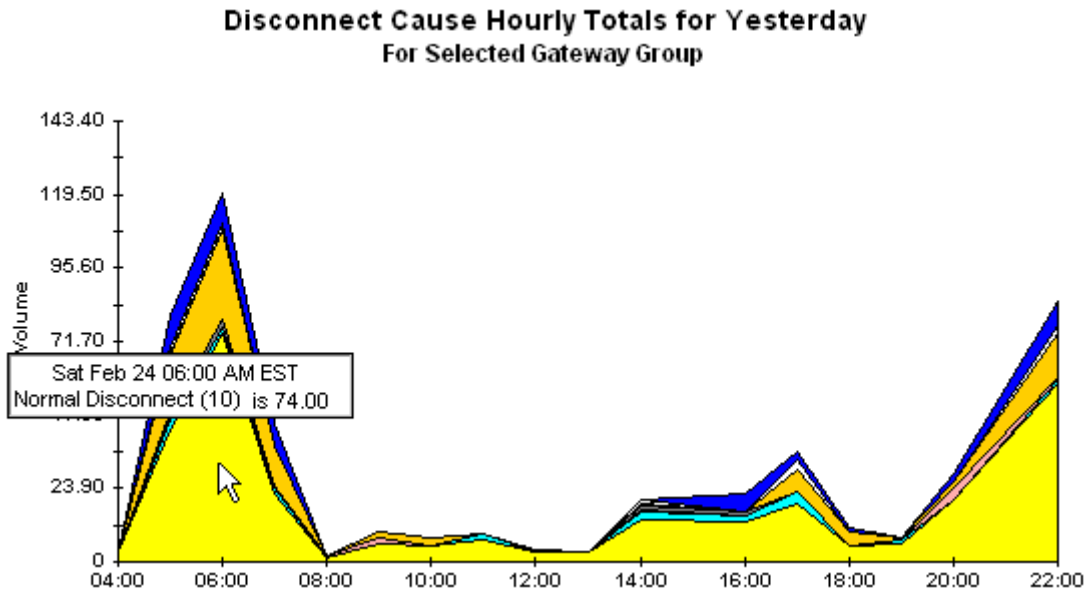
To shorten the time span of a graph, press **SHIFT+ALT** and use the left mouse button to highlight the time span you want to focus on. Release the mouse button to display the selected time span.

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.
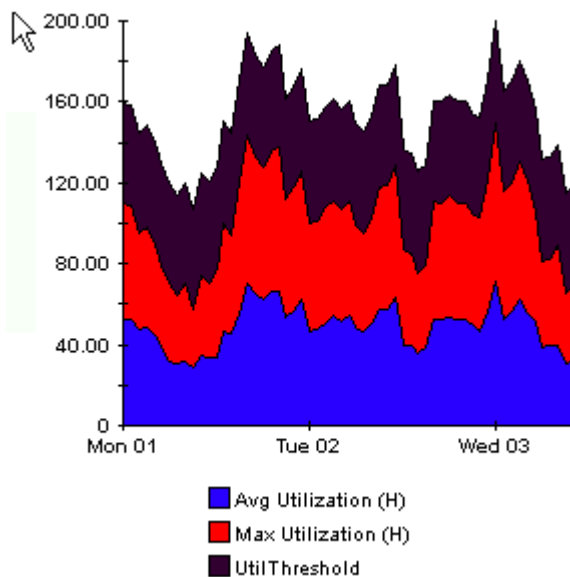
Style > Bar

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.
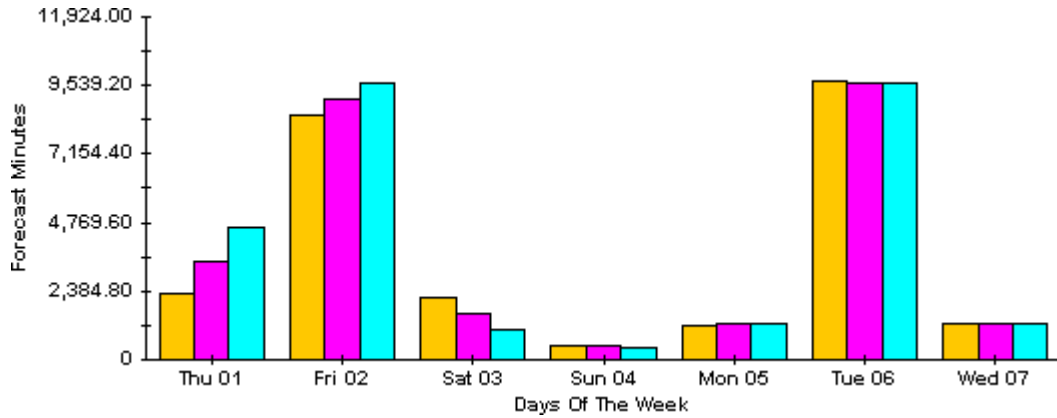
Style > Stacking Bar

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.
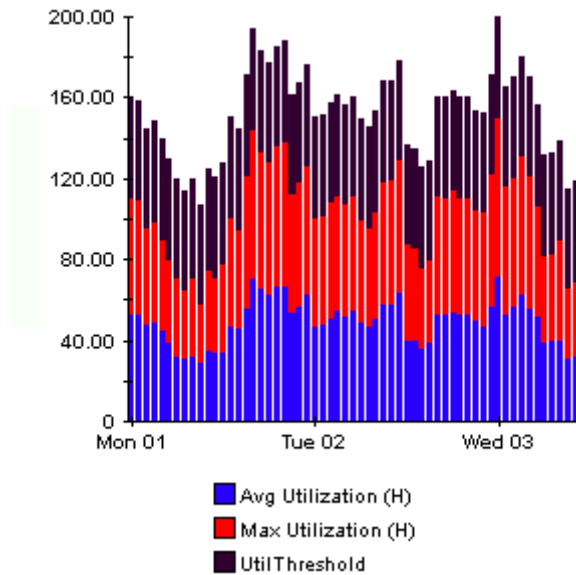
Style > Plot

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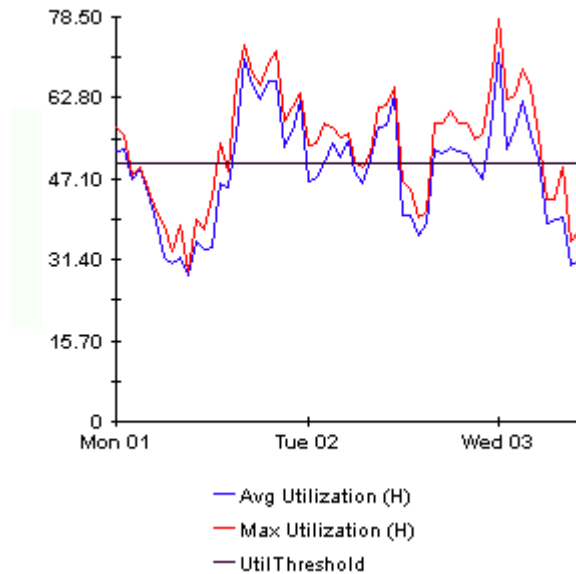
Style > Pie
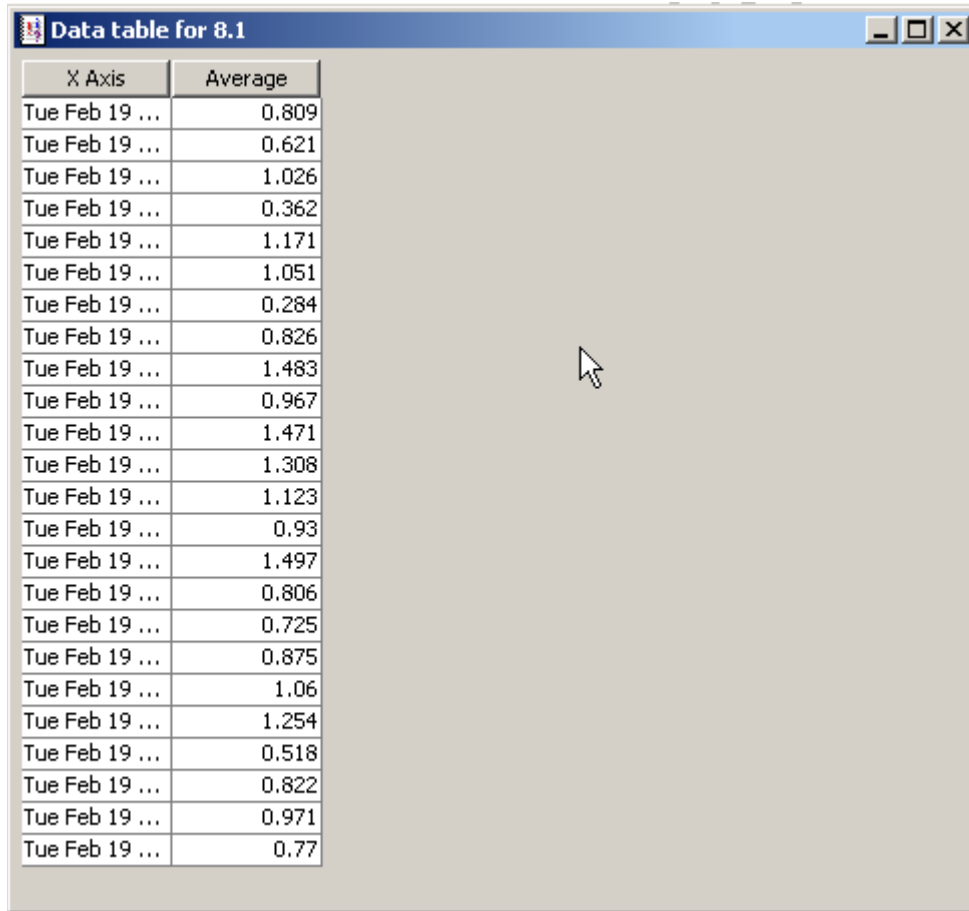
An area graph becomes a pie chart. Bands in an area graph convert to slices of a pie and the pie constitutes a 24-hour period. This view is helpful when a small number of data values are represented and you are looking at data for one day.
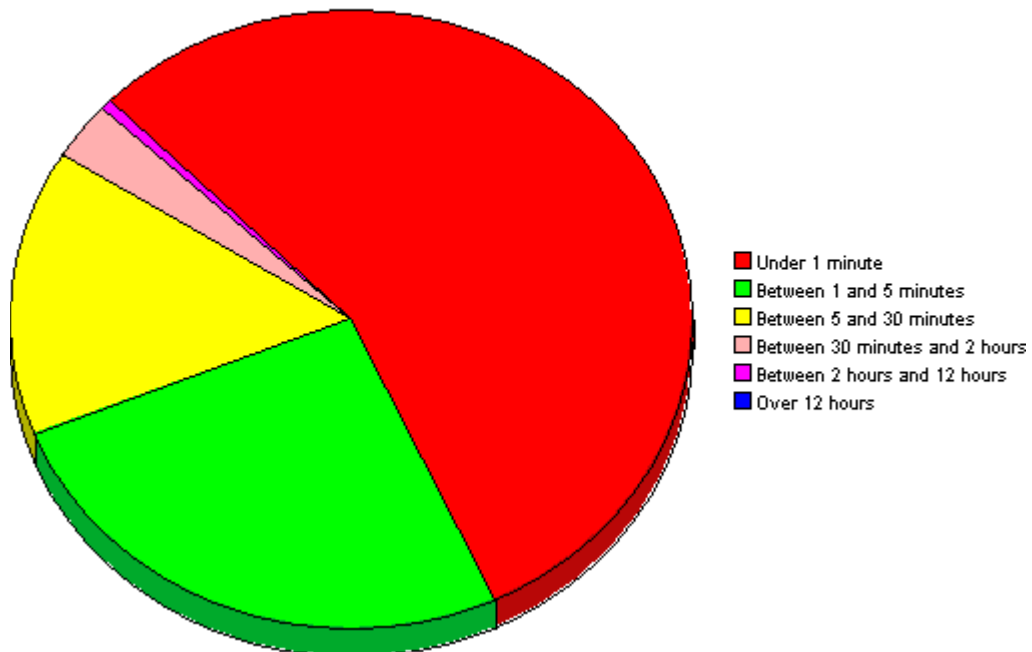
If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

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
Tue Feb 19 ...	0.875
Tue Feb 19 ...	1.06
Tue Feb 19 ...	1.254
Tue Feb 19 ...	0.518
Tue Feb 19 ...	0.822
Tue Feb 19 ...	0.971
Tue Feb 19 ...	0.77

View in New Frame

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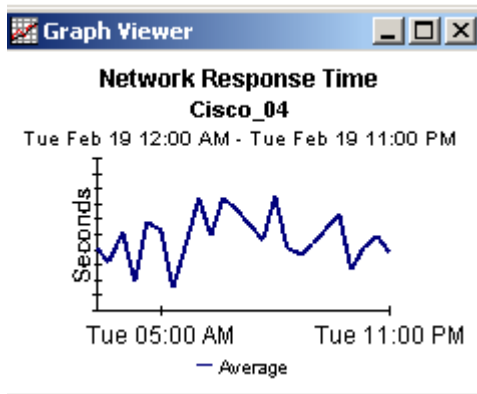
Glossary

availability

The percentage of time a device has been operational. Identifies device outages as reported through the sysUpTime variable. Calculated by combining device sysUpTime with interface ifOperStatus and interface ifLastChange.

avg volume

This metric is found in capacity planning reports. It refers to average daily volume during the baseline period.

baseline busy-hour

This value is the average of 42 busy-hour values recorded during the rolling baseline period. This value is static for one day only. It will be different tomorrow, when yesterday's busy hour is factored into the calculation that determines average Busy Hour. Baseline busy hour and forecasts for future baseline busy hour values appear in capacity planning reports.

busy-hour

This value reflects a relatively persistent phenomenon and, when combined with multiple busy-hour values over the baseline, is used to predict future performance. The busy hour value is an average of multiple samples taken during the hour. Do not confuse busy-hour with peak. During the busy hour, actual utilization can be significantly higher than the busy-hour average.

country

This value is imported by the provisioning interface. If not provisioned, the field reads *unknown*.

daily

A view showing daily performance for the previous 31 days. The most recent day in this view is yesterday.

day of week

A forecast, derived from baseline data, that assigns a growth rate to each day of the week.

discard rate

The percentage of packets discarded by the interface. Data about discards is sampled during each poll cycle (by default this is four times an hour); based on those samples, PI calculates an average and a maximum discard rate.

discard threshold

The point at which an acceptable percentage of discarded traffic becomes an abnormal percentage and possibly impacts response time. If the interface is full duplex, the same threshold value is applied to both in and out packets separately.

error rate

The percentage of packets with errors as reported by the interface. Data about errors is sampled during each poll cycle (by default this is four times an hour); based on those samples, PI calculates an average and a maximum error rate.

error threshold

The point at which an acceptable percentage of errored traffic becomes an abnormal percentage and possibly impacts response time. If the interface is full duplex, the same threshold value is applied to both in and out packets separately.

F30 / F60 / F90

The level where utilization (or volume) is expected to be 30, 60, and 90 days from now. Calculated by applying linear regression to busy-hour levels over the baseline period.

group

This value is imported by the provisioning interface. If not provisioned, the field displays *unknown*.

growth rate

F30 utilization divided by average busy-hour.

hourly

A view showing performance for the last two days and whatever portion of today has elapsed. The minimum time range is 48 hours; the maximum is 72 hours.

interface

An entry in the SNMP ifTable for the device, representing a physical or a logical interface.

location

This value imported by the provisioning interface. If not provisioned, the field reads unknown.

monthly

A view showing performance for each month over the last two years. Blank until data collection has been functioning for at least one month.

protocol

The textual name associated with the enumerated ifType of the interface.

response time

Delay within the network management structure, specifically, delay between the datapipe and the device. If the device is causing the delay, this value may point to device resource issues.

threshold

The line between normal and abnormal performance. When this line is crossed, an exception is recorded. Thresholds are set to default values that are easily changed to reflect individual needs.

utilization

The total number of octets traversing the interface as a percentage of the total *possible* number of octets, using the ifSpeed property. If an interface is full duplex, the table displays utilization in each direction. Groups of interfaces have their utilization calculated by taking the total traffic on all administratively up interfaces in the group and dividing that by the total possible bandwidth. Utilization for a group of interfaces is more reliable when all the interfaces in the group use the same protocol.

utilization threshold

The point at which the number of octets traversing the interface is considered detrimental to the service level required by network users. In the case of full duplex interfaces, the same threshold value is applied to in and out packets separately.

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