HP OpenView Performance Insight

Cisco IP Telephony Statistics Report Pack User Guide

Software Version: 3.0

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contents

Overview

This overview covers the following topics:
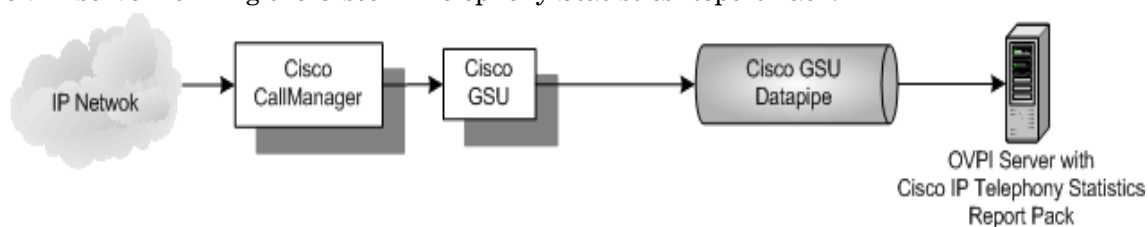
- OVPI and Cisco Gateway Statistics
- Folders and Reports
- Integration with NNM
- Editing Reports
- Sources for Additional Information

OVPI and Cisco Gateway Statistics

The Cisco IP Telephony Statistics Report Pack contains interactive reports designed to highlight Cisco CallManager resources that are underutilized or imbalanced. Use the reports in this package to display performance information for the following metrics:

- CAS channel usage
- PRI channel usage
- FXO port usage
- FXS port usage
- Total call volume handled by an instance of a CallManager
- Time spent in different states by channels of a given gateway

The figure below shows a Cisco CallManager, a Cisco GSU, the Cisco GSU Datapipe, and an OVPI server running the Cisco IP Telephony Statistics Report Pack.

The Cisco GSU (Gateway Statistics Utility) is a drop-in module for CiscoWorks IP Telephony Environment Monitor. The Cisco GSU collects performance statistics for Media Gateway Control Protocol (MGCP) gateways controlled by Cisco CallManager. The Cisco GSU Datapipe includes a preprocessor that reformats output from the Cisco GSU. After reformatting data,

the datapipe imports the results into OVPI. The Cisco IP Telephony Statistics Report Pack adds report templates, adds new objects to OVPI's object model, and configures OVPI to summarize and aggregate the data imported by the Cisco GSU Datapipe.

New Objects for the Object Model

An object is any item that has performance data or property information associated with it. Devices, customers, and locations are objects categories that belong to OVPI's default object model. When you select an object in the object model, you refresh the right side of the Object/Property Management window. Under **General Tasks**, you will see a list of forms, under **Object Specific Tasks**, you will see a list of forms, and under **Object Specific Reports**, you will see a list of reports.

The object tree changes each time you install a new report pack. The Cisco IP Telephony Statistics package adds the following object categories to the object model:

- Cluster
- CallManager
- Gateway
- IP_Phone

Version History

Version	RNS Version and Date	Features/Enhancements
1.0	RNS 3.0 - May 2003	32 reports Cisco GSU Datapipe
2.0	RNS 4.0 - October 2003	OVPI Object Manager support *Change Forms:* • Configure a New CallManager Cluster • Assign CallManagers to Clusters • Configure Gateway Thresholds • Configure CallManager Thresholds • Configure Channel/Port Thresholds
2.0	RNS 5.0 - April 2004	OVPI 5.0 support
3.0	RNS 6.0 - August 2004	Oracle support Upgrade package (to_3.0)

Folders and Reports

If you are using the Management Console, you will access the reports in Cisco IP Telephony Statistics by navigating the object model. If you are accessing reports on the web, you will see four report folders:

- CallManager Cluster

- CallManager

- Gateway

- Location

CallManager Cluster Folder

The reports in the CallManager Cluster folder present data aggregated for CallManagers that belong to a particular cluster. These reports allow you to drill down from a given CallManager Cluster to usage patterns and trends. In addition, these reports allow you to correlate the usage patterns for the CallManagers in the cluster. This folder contains the following reports:

- Cluster Busy Hour Utilization Correlation

- Cluster CAS Channel Activity Summary

- Cluster Call Activity Summary

- Cluster Call Activity Top Ten

- Cluster FXO Port Activity Summary

- Cluster FXS Port Activity Summary

- Cluster Forecast

- Cluster PRI Channel Activity Summary

- Cluster Peak Utilization Correlation

- Cluster Port Utilization Top Ten

CallManager Folder

The reports in the CallManager folder present data aggregated at the CallManager level. These reports allow you to drill down from a given CallManager cluster to usage patterns and trends. This folder contains the following reports:

- CallManager CAS Channel Activity Summary

- CallManager Call Activity Summary

- CallManager Call Activity Top Ten

- CallManager FXO Port Activity Summary

- CallManager FXS Port Activity Summary

- CallManager Forecast

- CallManager PRI Channel Activity Summary

- CallManager Port Utilization Top Ten

Gateway Folder

The reports in the Gateway folder provide gateway summarization and reporting features, allowing you to drill down from a given gateway to usage patterns and trends at the following levels: gateway, DS1, and DS0. This folder contains the following reports:

- CAS Channel Activity Summary
- DS0 Usage Summary
- DS1 Usage Summary
- FXO Port Activity Summary
- FXS Port Activity Summary
- Gateway Forecast
- PRI Channel Activity Summary

Location Folder

The reports in the Location folder summarize the above data based on the geographic location or a user-defined group. This folder contains the following reports:

- Channel Usage Summary By Location
- DS1 Usage Summary Correlation By Location
- Gateway Forecast By Location
- Gateway Summary By Location
- Location Forecast
- Location Summary
- Location/Gateway Top Ten

The Generic Reports

The preceding lists of reports contain multiple instances of four generic report types:

- Top Ten
- Summary
- Forecast
- Correlation

Top Ten reports identify the heavily utilized CallManager Clusters, CallManagers, gateways or locations based on yesterday's resource utilization levels.

Summary reports provide historical data for groups of devices organized by CallManager Cluster, CallManagers, gateways, DS1 and other user-defined groups. Use these reports to determine if recent excess traffic is a short-lived anomaly or a longer-term trend that may require corrective action.

Forecast reports show estimates of future port utilization. These reports highlight items that are trending toward over-utilization and under-utilization. Use these reports to find out which CallManager Clusters, CallManagers, gateways, and locations may be over- or under-utilized in the near future.

Correlation reports display the usage metrics for various devices (or group of devices) on a single graph. Use these reports to determine if traffic is distributed evenly among the members of the group.

Integration with NNM

If your NNM server and your OVPI server are integrated, you can blend the trending analysis produced by Cisco IP Telephony Statistics will the diagnostic and fault management capabilities of NNM. The NNM operator can reach any report in Cisco IP Telephony Statistics by opening the Report Launchpad window.

You can integrate these two systems more closely by installing the thresholds sub-package that comes with Cisco IP Telephony Statistics. If you install the thresholds sub-package, OVPI will send threshold traps to your NNM server, and your NNM server will display these traps as alarms in the NNM alarm browser.

The thresholds sub-package contains default thresholds. For a description of the defaults in the sub-package and the change forms related to thresholds, see Resource Thresholds and Associated Change Forms on page 34.

Editing Reports

You can easily change the contents of a report by editing parameters and selecting a different view option for individual tables and graphs. For details about view options for tables and graphs, see Chapter 10, Editing Tables and Graphs.

Editing a parameter applies a constraint to the report, eliminating the data you are not interested in seeing. If you edit the Gateway parameter, data for all gateways except the gateway you typed in the Gateway field drops from the report. If you edit Gateway Location, data for all locations except the location you typed in the Gateway Location field drops from the report. You may apply multiple constraints at once. Cisco IP Telephony Statistics 3.0 supports the following parameters:

*   CallManager Cluster Name
*   CallManager Name
*   Gateway Name
*   Gateway Location

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

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

Sources for Additional Information

This user guide contains samples of some of the reports in the package. The demo package that comes with Cisco IP Telephony Statistics contains samples of every report in the package. If you have access to the demo package, and you want to know what fully-populated reports look like, install the demo package. Like real reports, demo reports are interactive. Unlike real reports, demo reports are static.

The Cisco IP Telephony Statistics Report Pack and the IP Telephony Call Detail Report Pack are designed to share property data for the objects they have in common. Sharing property data eliminates duplication and simplifies administration. However, installing both packages is not required, since they operate independently.

For information regarding the latest enhancements and any known issues, refer to the following document:

Cisco IP Telephony Statistics Report Pack 3.0 Release Statement

You may also be interested in the following documents:

- *Common Property Tables 3.5 User Guide*

- *IP Telephony Call Detail Report Pack 2.0 User Guide*

- *IP Telephony Call Detail Report Pack 2.0 Release Statement*

Manuals for the core product, OVPI, and manuals for the reporting solutions that run on the core product can be downloaded from the following site:

http://www.hp.com/managementsoftware

Select **Technical Support** > **Product Manuals** to open the **Product Manual Search** page. Manuals for OVPI are listed under **Performance Insight**. Manuals for OVPI report packs and value-add components for NNM are listed under **Reporting and Network Solutions**.

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The Upgrade Install

This chapter covers the following topics:

Guidelines for a Smooth Upgrade

When you insert the RNS 6.0 CD, launch the package extraction interface, and select OVPI report packs for installation, the install script extracts every OVPI package from the CD and copies the results to the Packages directory on your system. Once the extraction process finishes, the install script prompts you to launch Performance Insight and start Package Manager. Upgrading to Cisco IP Telephony 3.0 is an easy and straightforward task:

- Install the 2.0-to-3.0 upgrade package
- Remove Cisco GSU Datapipe 2.0
- Install Cisco GSU Datapipe 3.0

Before running Package Manager, review the following guidelines.

Prerequisites

Make sure the following software is already installed before upgrading to version 3.0:

- OVPI 5.0
- Any service pack available for OVPI 5.0
- Common Property Tables 3.0 or higher

Common Property Tables

If you are running version 2.2 of Common Property Tables, you must upgrade your current version to version 3.0 or higher. When you install the upgrade package (either 2.2-to-3.0 or 3.0-to-3.5), do not install anything else at the same time. Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables.

Distributed Environments

If your system is distributed, every server must be running OVPI 5.0 and all the service packs currently available for OVPI 5.0. Following is an overview of the installation procedure for a distributed environment:

1   Disable trendcopy on the central server.

2   At the central server:

 •   Install the upgrade package for Common Property Tables; deploy reports

 •   Install the 3.0 upgrade package for Cisco IP Telephony Statistics 3.0; deploy reports

3   At each satellite server:

 •   Install the upgrade package for Common Property Tables

 •   Install the 3.0 upgrade package for Cisco IP Telephony Statistics.

 •   Remove Cisco GSU Datapipe 2.0

 •   Install Cisco GSU Datapipe 3.0

4   Re-enable trendcopy on the central server.

When you installed Cisco IP Telephony Statistics 2.0 in a distributed environment, you had to set up connections with satellite server databases, configure trendcopy pull commands, and switch off aggregations on the satellite servers. If you recently upgraded from OVPI 4.6 to OVPI 5.0, the following configuration changes, which you made the first time when you installed version 2.0, will have to be redone:

 •   Set up connections with satellite server databases (using the Add Database Wizard)

 •   Configure trendcopy pull commands again.

For details, see Chapter 5, Distributed Systems.

Upgrading Version 2.0 to Version 3.0

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

 •   Task 1: Stop OVPI Timer and extract packages from the RNS 6.0 CD

 •   Task 2: Install the upgrade package for Common Property Tables

 •   Task 3: Install the upgrade package for Cisco IP Telephony Statistics

 •   Task 4: Remove Cisco GSU Datapipe 2.0

 •   Task 5: Install Cisco GSU Datapipe 3.0

 •   Task 6: Restart OVPI Timer

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

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

2   Stop OVPI Timer and wait for processes to terminate.

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

   UNIX: As root, type one of the following:

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

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

3   Insert the RNS 6.0 CD. On Windows, a Main Menu displays automatically; on UNIX, mount the CD, navigate to the top-level directory for the CD drive, and type the setup command.

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

If you navigate to the Packages directory on your system, you will see the following folders under the IP Telephony folder:

*   Cisco_IP_Telephony_Statistics.ap
*   Cisco_IP_Telephony_Statistics_Demo.ap
*   Cisco_IP_Telephony_Statistics_Location.ap
*   Cisco_IP_Telephony_Statistic_Thresholds.ap
*   UPGRADE_Cisco_IP_Telephony_to_3.ap
*   UPGRADE_Cisco_IP_Telephony_Statistics_Location_to_3.ap

You are about to install the two upgrade packages. Under Cisco GSU Datapipe, you will see the following folder:

*   CiscoGSU_Datapipe.ap

Task 2:   Upgrade to Common Property Tables 3.0 or higher

If you are running an earlier version of Common Property Tables, upgrade to Common Property Tables 3.0 or higher. If you are not running any version of Common Property Tables, skip this task. If you are upgrading, observe these rules:

*   Do not install any other package with the upgrade package; install the Common Property Tables upgrade package and *only* the Common Property Tables upgrade package.

*   When prompted to accept or disable the option to Deploy Reports, accept the default. If you disable the default, the forms that come with Common Property Tables will not be deployed.

*   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 3.5 User Guide*.

Task 1:   Upgrade Cisco IP Telephony Statistics

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 and enter your username and password for the OVPI Application Server.

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

6   Click the check box next to the following packages:

- UPGRADE_Cisco_IP_Telephony_Statistics_to_3
- UPGRADE_Cisco_IP_Telephony_Statistics_Location_to_3

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; when installation is complete, a package installation complete message appears.

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

Task 2:   Remove the Cisco GSU Datapipe 2.0

1   Start Package Manager. The Package Manager welcome window opens.

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

3   Click **Uninstall.**

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

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

6   Click the check box next to the following package:

- CiscoGSU_Datapipe 2.0

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

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

9   Click **Done**.

Task 3:   Install the Cisco GSU Datapipe 3.0

1   Start Package Manager. The Welcome window opens.

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

3   Click **Install**.

4   Click **Next**. The Report Deployment window opens. Disable the default for Deploy Reports and click **Next**. The Package Selection window opens.

5   Click the check box next to the following package:

- CiscoGSU_Datapipe 3.0

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

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

8   Click **Done**.

Package Removal

If you remove a report pack, the associated tables and all the data in those tables will be deleted. If you want to preserve the data in those tables, archive the data before removing the report pack.

Follow these steps to uninstall Cisco IP Telephony Statistics:

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

2   Stop OVPI Timer and wait for processes to stop running.

    Windows: Do the following:

    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**.

    UNIX: As root, do one of the following:

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

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

3   Start Package Manager.

    a   Launch Performance Insight and select **Management Console**.

    b   Select **Tools** → **Package Manager**

        The Package Manager welcome window opens.

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

5   Click **Uninstall**.

6   Click **Next**. The Report Undeployment window opens. Accept the default for Undeploy Reports; accept the defaults for application server name and port. Enter your username and password for the OVPI Application Server.

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

8   Click the check box next to the following packages:

    •   *Cisco IP Telephony Statistics*

    •   *Cisco IP Telephony Statistics_Location*

    •   *Cisco IP Telephony Statistics_Thresholds* (if installed)

    •   *Cisco IP Telephony Statistics _Demo* (if installed)

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

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

11 Click **Done**.

12 Restart OVPI Timer.

    Windows: Do the following:

    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, do one of the following:

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

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

> ▶ Removing Cisco IP Telephony Statistics automatically removes the Cisco GSU Datapipe even if you do not select the datapipe for removal.

The New Install

This chapter covers the following topics:

*   Guidelines for a smooth installation
*   Prerequisites related to OVPI and Cisco
*   Installing IP Telephony Statistics 3.0
*   Options for viewing reports
*   Package removal

Guidelines for a Smooth Install

The reporting solutions that run on OVPI consist of two installable packages, a report pack and a datapipe. Some reporting solutions have multiple datapipes. When you install a datapipe, you configure OVPI to collect a specific type of performance data at a specific polling interval. When you install a report pack, you configure OVPI to summarize and aggregate performance data in a specific way.

When you insert the RNS 6.0 CD, launch the package extraction interface, and select OVPI report packs for installation, the install script extracts every OVPI report pack from the CD and copies the results to the Packages directory on your system. When the extraction process finishes, the install script prompts you to launch Performance Insight and start Package Manager. Review the following guidelines before running Package Manager.

Prerequisites

Cisco IP Telephony Statistics 3.0 has the following prerequisites:

*   OVPI 5.0
*   Any service packs available for OVPI 5.0
*   A functioning CallManager environment
*   CiscoWorks
*   Cisco GSU 1.0 or Cisco GSU 2.0

Upgrading Common Property Tables

If you are running an earlier version of Common Property Tables, you must upgrade your version to version 3.0 or later. If you are not running any version of Common Property Tables, you have nothing to do since Package Manager will 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 package for Common Property Tables and *only* the upgrade package for Common Property Tables. For more information about installing and using this package, refer to the *Common Property Tables 3.5 User Guide*.

Distributed Environments

If you intend to run Cisco IP Telephony Statistics in a distributed environment, the installation procedure is more complicated. Here is an outline of the steps involved when installing Cisco IP Telephony Statistics in a distributed environment:

1   Verify that every server is running OVPI 5.0 and all available service packs for OVPI 5.0

2   Disable trendcopy on the central server.

3   If you are running an earlier version of Common Property Tables, upgrade to 3.0 or higher.

4   Install Cisco IP Telephony Statistics 3.0 on the central server; deploy reports

5   For each satellite server:

    • Upgrade to Common Property Tables 3.0 or higher

    • Install Cisco IP Telephony Statistics 3.0

    • Install the Cisco GSU Datapipe 3.0

6   Re-enable trendcopy on the central server.

After the installation is complete, you must set up connections with satellite server databases, configure trendcopy pull commands, and switch off aggregations above the hourly level on the satellite servers. For details, see Chapter 5, Distributed Systems.

Prerequisites Related to Cisco

A functioning CallManager environment consists of CallManager systems, MGCP gateways, and phones.

Installing CiscoWorks and Cisco GSU

CiscoWorks is available on *Cisco CD One, Fifth Edition for Windows*. Please refer to documentation published by Cisco for more information about installing, configuring, and troubleshooting CiscoWorks.

Cisco GSU can be downloaded from the following URL:

```
http://www.cisco.com/cgi-bin/tablebuild.pl/cw-gtwystat-util
```

You need a Cisco CCO login to download Cisco GSU. If you do not have a login, contact your local Cisco representative.

Download both the Cisco GSU readme and the executable installation file.

Read the readme and run the GSU installation file. The CiscoWorks menu window opens.
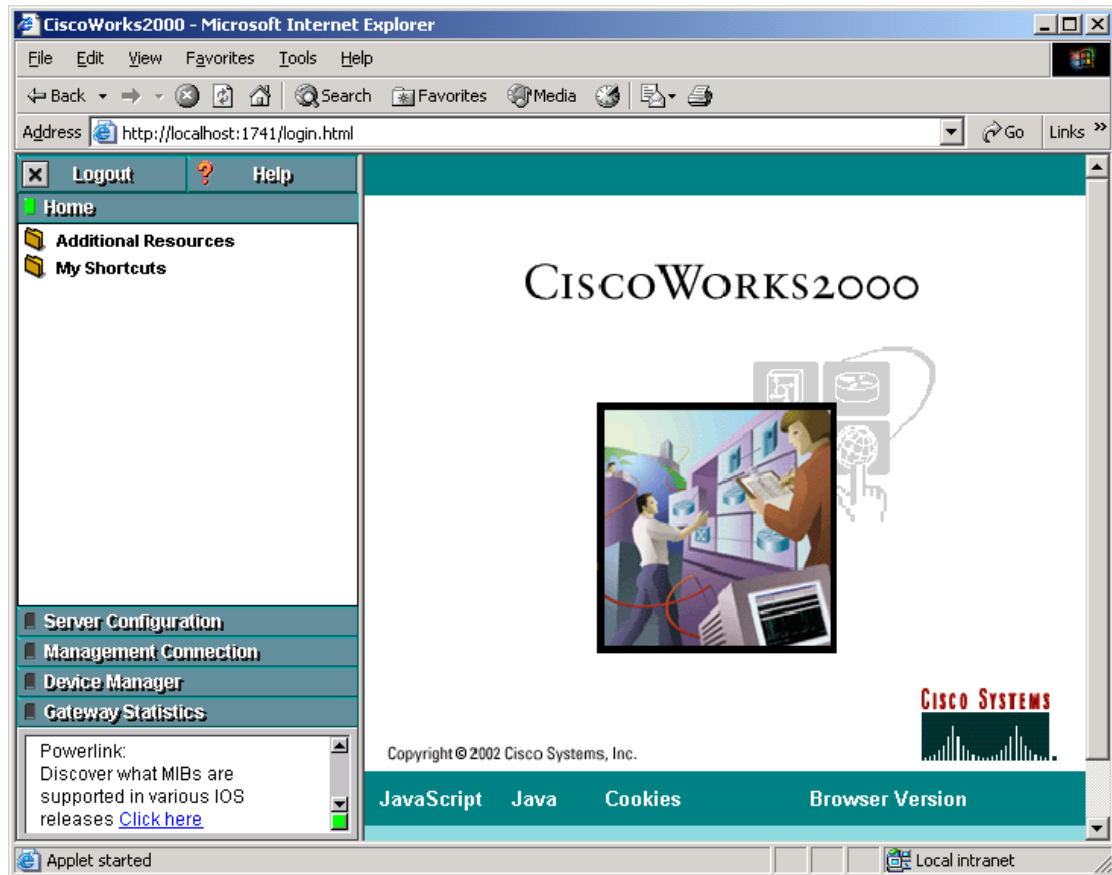
Configuring Cisco GSU

To configure Cisco GSU, do the following:

1 Create a data collection file.

2 Import the data collection file.

3 Schedule data collection.

Creating a Data Collection File

Create a data collection file that includes a list of the gateways you want to monitor. Use the following syntax rules:

Field	Description
Device Name	**Required**. The device name or IP address for the CCM system.
Device Capabilities	**Required**. The only valid value is "CCM".

Field	Description
Device Family	**Optional**. Describes the CCM platform.
Software Version	**Required**. The version number of the CCM software. Valid values are "3.1" and "3.2".
HTTP Server	**Optional**. The DNS name or IP address of the HTTP server in the CCM cluster. If this field is not specified, the address or the name of the CCM system is used.

An example entry is:

```
CCMSys1,CCM,MCS,3.1,
```

For more information, refer to the online help.

Importing the Data Collection File

To import the data collection file:

1   From the CiscoWorks menu, select **Gateway Statistics**.

2   From the Gateway Statistics menu, select **Device Management**.

3   From the Device Management menu, select **Device Import**. When you are prompted, enter the path and name of the data collection file you created.

4   Close the Device Import window.

Scheduling Data Collection

Schedule data collection by defining study parameters:

1   From the CiscoWorks menu, select **Gateway Statistics**.

2   From the Gateway Statistics menu, select **Study Management**. The Define Study Parameters window opens.
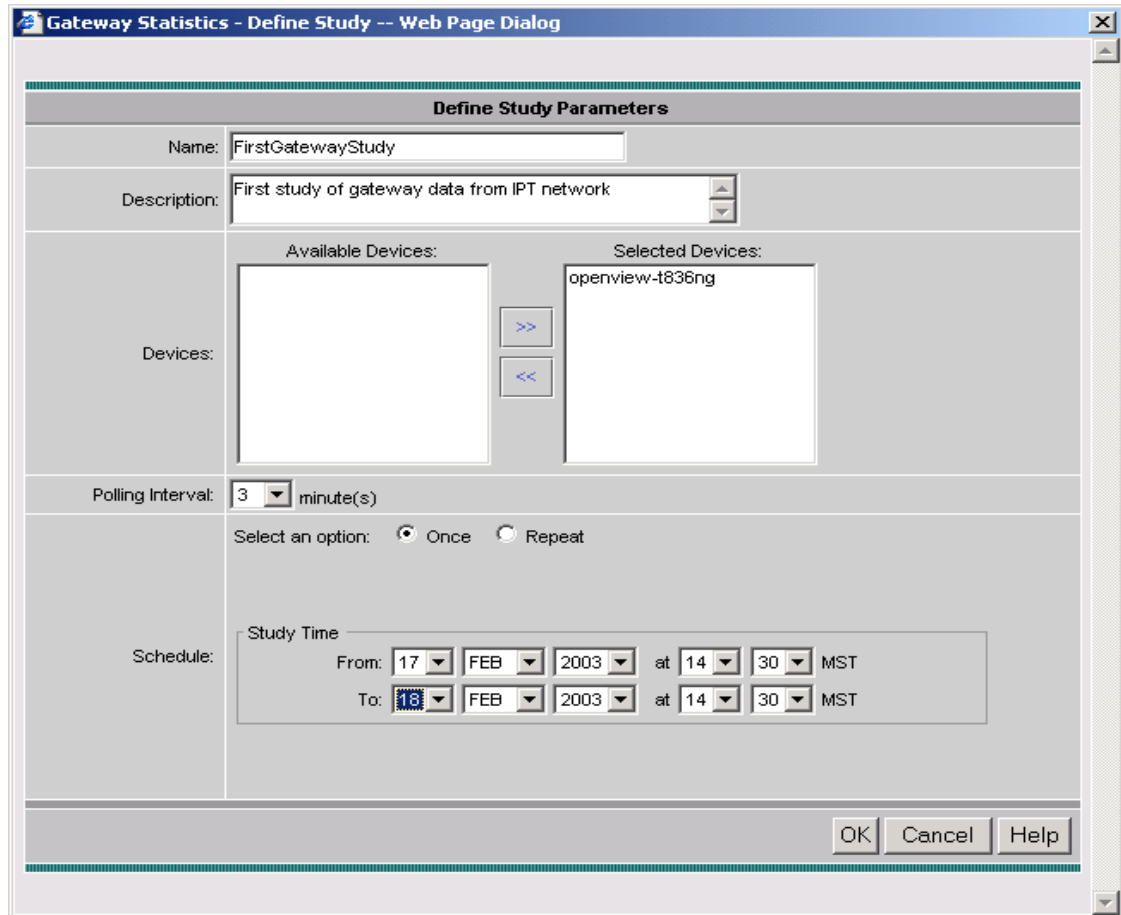
3   Schedule data collection by accepting or modifying the defaults for polling interval and schedule.

4   Click **OK**.

Installing Cisco IP Telephony Statistics 3.0

This section covers the following tasks:

- Task 1: Stop OVPI Timer and extract packages from the RNS 6.0 CD
- Task 2: Upgrade to Common Property Tables 3.0 or higher
- Task 3: Remove Thresholds Module 4.0
- Task 4: Install these packages:
  - Cisco IP Telephony Statistics 3.0
  - Cisco IP Telephony Statistics Location
  - Cisco IP Telephony Statistics Thresholds (optional)
  - Cisco GSU Datapipe

- Task 5: Restart OVPI Timer

Task 1: **Stop OVPI Timer and extract packages from the RNS CD**

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

2 Stop OVPI Timer and wait for processes to terminate.

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

UNIX: As root, type one of the following:

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

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

3 Insert the RNS 6.0 CD. On Windows, a Main Menu displays automatically; on UNIX, mount the CD, navigate to the top-level directory for the CD drive, and type the setup command.

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

If you navigate to the Packages directory on your system, you will see the following folders under the IP Telephony folder:

- Cisco_IP_Telephony_Statistics.ap
- Cisco_IP_Telephony_Statistics_Demo.ap
- Cisco_IP_Telephony_Statistics_Location.ap
- Cisco_IP_Telephony_Statistic_Thresholds.ap
- UPGRADE_Cisco_IP_Telephony_to_3.ap
- UPGRADE_Cisco_IP_Telephony_Location_to_3.ap

Ignore the upgrade packages. Installing the demo package is optional. You may install the demo package by itself, or you may install the demo package along with everything else.

Under Cisco GSU Datapipe, you will see the following folder:

- CiscoGSU_Datapipe.ap

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

If you are running an earlier version of Common Property Tables, upgrade to Common Property Tables 3.0 or higher. Observe these rules:

- Do not install any other package with the upgrade package; install the Common Property Tables upgrade package and *only* the Common Property Tables upgrade package.
- When prompted to accept or disable the option to Deploy Reports, accept the default. If you disable the default, the forms that come with Common Property Tables will not be deployed.
- 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 3.5 User Guide*.

Task 3:   Remove any previous version of the Thresholds Module

There is no upgrade path for the Thresholds Module. The latest version is version 5.0. If you are running an earlier version of the Thresholds Module (most likely version 3.0 or possibly version 4.0) uninstall this package by starting Package Manager and following the on-screen directions for package removal. When the uninstall is complete, click **Done** to return to the Management Console.

Package Manager will install the newest version of the Thresholds Module for you, automatically, if and when you select for installation the thresholds sub-package that comes with Cisco IP Telephony Statistics. In Task 4, you are directed to install the thresholds sub-package. If you install the thresholds sub-package, Package Manager will select and install Thresholds Module 5.0 for you.

Task 4:   Install Cisco IP Telephony 3.0 and the Cisco GSU Datapipe

1   Start Package Manager. The Package Manager welcome window opens.

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

3   Click **Install.** Approve the default installation directory or 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 your username and password for the OVPI Application Server.

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

6   Click the check box next to the following package:

   •   *Cisco IP Telephony Statistics 3.0*

   •   *Cisco IP Telephony Statistics Location*

   •   *Cisco IP Telephony Statistics Thresholds*

   •   *Cisco IP Telephony Statistics Demo* [optional]

   •   *Cisco GSU Datapipe 3.0*

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** to return to the Management Console.

11   Restart OVPI Timer.

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

   UNIX: As root, type one of the following:

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

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

12   Click **Next**. The Type Discovery window opens.

13 Type Discovery is not required for Cisco IP Telephony Statistics and CiscoGSU_Datapipe. If no other packages are to be installed at the same time, clear the Discover check box and click **Next**. The Selection Summary window opens.

14 Click **Install**. The Installation Progress window opens; when installation is complete, the following message appears: `Report Package: Completed`.

15 Click **Done**.

Task 5:   Restart OVPI Timer.

Windows: Do the following:

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, do one of the following:

— HP-UX: `sh /sbin/ovpi_timer start`

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

Viewing Reports

Before reports can be viewed using a web browser, they must be deployed. If you enabled the Deploy Reports option during the preceding installation procedure, the reports in this package are deployed and available for remote viewing.

The method of report viewing available depends on how OVPI was installed. If the client component is installed on the user's system, the user has access to Report Viewer, Report Builder, and the Management Console. If the client component is not installed on the user's system, the only way the user can view reports is to view them remotely on the web.

For more information about the client components, refer to the *Performance Insight Installation Guide*. For more information about deploying, viewing, and undeploying reports, refer to the *Performance Insight Guide to Building and Viewing Reports*.

Package Removal

If you remove a report pack, the associated tables and all the data in those tables are deleted. If you want to preserve the data in those tables, archive the data before removing the report pack. Follow these steps to uninstall Cisco IP Telephony Statistics:

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

2 Stop OVPI Timer and wait for processes to stop running.

Windows: Do the following:

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**.

UNIX: As root, do one of the following:

— HP-UX: **sh /sbin/ovpi_timer stop**

— Sun: **sh /etc/init.d/ovpi_timer stop**

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

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

5 Click **Uninstall**.

6 Click **Next**. The Report Undeployment window opens. Accept the default for Undeploy Reports; also accept the defaults for application server name and port. Type your username and password for the OVPI Application Server.

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

8 Click the check box next to the following packages:

- *Cisco IP Telephony Statistics*

- *Cisco IP Telephony Statistics_Location*

- *CiscoGSU_Datapipe*

- *Cisco IP Telephony Statistics_Thresholds* (if installed)

- *Cisco IP Telephony Statistics _Demo* (if installed)

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

10 Click **Uninstall**. The Progress window opens. When the uninstall process is complete, a removal complete message appears.

11 Click **Done**.

12 Restart OVPI Timer.

Windows: Do the following:

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, do one of the following:

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

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

> Removing Cisco IP Telephony Statistics automatically removes the Cisco GSU Datapipe even if you did not select the datapipe for removal.

Package Configuration

This chapter covers the following topics:

Specifying the Source Data Directory

Before the Cisco GSU Datapipe can begin to collect data, it needs to know where the source data files are located. According to the default, the raw data files from Cisco Gateway Statistics Utility should be located on the server that is running the Cisco GSU Datapipe. If the raw data files are located on a remote server, the Cisco GSU Datapipe can be configured to use FTP to retrieve those files.

The default directory for the location of the raw data files is:

```
${DPIPE_HOME}/data/ImportData/CiscoGSU_Datapipe
```

The Cisco GSU Datapipe includes a preprocessor. The purpose of the preprocessor is to filter the raw data and put the raw data into a format that can be manipulated by the Cisco GSU Datapipe. The preprocessor (a perl script, `CiscoGSU_PP.pl`) produces the following output:

- `CManager.dat`
- `Gateway.dat`
- `Channel.dat`

The preprocessor stores these files in the source data directory. The Cisco GSU Datapipe reads the output from the preprocessor and imports the data into the OVPI database using the `CiscoGSU_Collection.pro` file and the following specialized configuration TEEL files:

- `CiscoGSU_Cmanager.teel`
- `CiscoGSU_gateway.teel`
- `CiscoGSU_channel.teel`

Before package installation, the TEEL files are located in:

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

After installation, the TEEL files are located in:

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

```
{DPIPE_HOME}/lib
```

> If you make changes to TEEL files after installation, make the same changes in both directories.

Changing the Source Directory Path

If raw GSU data files are located on a remote system, you must modify a line in a file. Follow these steps:

1 Open the {DPIPE_HOME}/scripts/CiscoGSU_Collection.pro file

2 Locate this line:

```
{DPIPE_HOME}/bin/perl {DPIPE_HOME}/bin/CiscoGSU_PP.pl
```

3 Add this to the end of the line:

```
-f 1 -m <Remote_Host_Name> -u <Username> -p <Password> -r <Remote_directory>
```

If the data source directory is not the same as the default directory described in the preceding section, make the following changes:

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

2 Open the `CiscoGSU_Collection.pro` file.

3 Locate the following line:

```
{DPIPE_HOME}/bin/perl {DPIPE_HOME}/bin/CiscoGSU_PP.pl
```

4 Add this to the end of the line:

```
-l <new directory path>
```

5 Open the following files:

— `CiscoGSU_Cmanager.teel`

— `CiscoGSU_gateway.teel`

— `CiscoGSU_channel.teel`

6 Locate the line beginning with **Sourcefile =**

7 Change the path, replacing the existing path with the complete path name to the new directory; begin the new path name just after the equals sign (=). The source directory specified would normally be the directory created to receive the output from the Cisco Gateway Statistics Utility.

> Leave the filename as specified in the original SourceFile.

Changing Source Disposition

TEEL files are also used to specify what to do with a data file once the data has been imported. The default behavior for the Cisco GSU Datapipe is to delete the preprocessed files. Because raw data files are archived, there is no need to archive data output by the preprocessor.

CallManager Clusters

Although the Cisco IP Telephony Statistics package operates without importing custom property information, none of the cluster nor location-oriented reports provide meaningful data (for example, all CallManagers would be combined into one group called "Location Unassigned").

The Cisco IP Telephony Statistics Report Pack allows the user to place the devices (CallManagers and gateways) into logical groups:

- Groups of CallManagers (based on cluster or other criteria)
- Groups of gateways (based on geographic location or user-defined criteria)

The grouping of these objects is enabled by creating a cluster name and assigning CallManagers or gateways to the cluster. For example, if the CallManagers *s1ccm1* and *s1ccm2* are assigned to a cluster named *cluster1* and similarly if the CallManagers *s2ccm1* and *s2ccm2* are assigned a cluster named *cluster2*, the report pack aggregates the data belonging to these four CallManagers into two groups (*cluster1* and *cluster2*).

To get cluster information into reports, configure a CallManager cluster. You see clusters in reports immediately after OVPI processes your updated import file.

Configuring a CallManager Cluster

To configure a CallManager cluster, do the following:

1 Create a cluster name:

   a   Launch the Management Console.

   b   Click **Objects**. The Object/Property Management window opens.

c Select **File > New > Create a new CallManager Cluster**. The Configure A New CallManager Cluster form opens.

d Enter a name for the cluster and a brief description.

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

2 Assign CallManagers or gateways to the cluster:

a From the Object/Property Management window, select **View** > **Change View > Location**.

b Select a location.

c Highlight the Location Unassigned folder.

d Double-click **Assign CallManagers to Clusters** under **Object Specific Tasks**. The form opens.

e Highlight a CallManager name in the CallManager List and select the cluster name to which it is assigned.

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

Resource Thresholds and Associated Change Forms

Cisco_IP_Telephony_Statistics_Thresholds imposes nine default thresholds for resource utilization monitoring. When performance reaches one of these default thresholds, the thresholds sub-package sends a trap to the Network Node Manager (NNM). The following table describes the condition behind each threshold and the severity of the alarm.

Threshold	Default	Condition	Severity
PRIOverUtilization	95%	95% of PRI channels or more were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
PRIUnderUtilization	5%	5% of PRI channels or less were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
CASOverUtilization	95%	95% of CAS channels or more were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
CASUnderUtilization	5%	5% of CAS channels or less were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
FXOOverUtilization	95%	95% of FXO ports or more were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
FXOUnderUtilization	5%	5% of FXO ports or less were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
FXSOverUtilization	95%	95% of FXS ports or more were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
FXSUnderUtilization	5%	5% of FXS ports or less were occupied for each monitored device (CallManager or Gateway) during the previous day.	Warning
DeadChan	N/A	A channel was in OutofService status all the time during the previous day.	Warning

Modifying Gateway and CallManager Thresholds

Threshold values can be modified, using forms, for a gateway or CallManager. To modify a threshold value, do the following:

1   Launch the Management Console.

2 Click **Objects**. The Object/Property Management window opens.

3 Select **View** > **Change View > Cluster**.

4 Select a gateway or cluster.

5 Under **Object Specific Tasks**, double-click **Configure Gateway Thresholds** or **Configure CallManager Thresholds**. The form opens. Both forms are similar and the Configure Gateway Thresholds form is shown below.

6 Modify the threshold.

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

Modifying Channel/Port Thresholds

The channel/port threshold value (DeadChan) can be modified:

1 Start Report Builder.

On a Windows system, select **Programs** > **HP OpenView > Performance Insight > Builder**.

On a UNIX system, cd to *$OVPI_HOME*/bin and type **./builder**.

2   From Report Builder, select **File > Open**.

3   Open the following file:

%OVPI_HOME%\forms\deploy\admin\Cisco_IPT_Admin_Forms\
Cisco_IPT_Statistics_Forms\ChannelPortThreshConfig.frep

The Configure Channel/Port Thresholds form opens.

4   Modify the threshold.

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

Distributed Systems

If you intend to run Cisco IP Telephony Statistics as a distributed system across multiple servers, and you followed the installation guidelines in the installation chapter, your central server is running the report pack and each of your satellite servers is running the report pack and the Cisco GSU Datapipe. You are now ready to perform these tasks:

- Configure the central server
- Configure each satellite server
- Verify that all system clocks are synchronized

Configuring the Central Serve

Perform these tasks to configure the central server:

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

Task 1: Set up connections with satellite server databases.

1 Start the Management Console.

2 Click the **Systems** icon on the lower left. The **System/Network Administration** pane opens.

3 Right-click the **Databases** folder. When prompted, select **Add OVPI Database**. The Add Database Wizard opens.

4 Click **Next**.

5 Type the hostname and port number for the database you want to add; click **Next**.

6 Review the Summary. Repeat Steps 4 and 5 for each additional database.

7 Click **Finish** when you are done.

Task 2: Configure trendcopy pull commands from the central server to each satellite server.

1 Open the following file:

$DPIPE_HOME/scripts/Cisco_IP_Telephony_Statistics_Daily.pro

2 Modify block0 as follows:

a Remove "#" before each line in block0, including the begin and end lines.

    b   Replace *SATELLITE_SERVER_1_DATABASE* with the satellite server name.

    c   Replace *THIS_MACHINE_DATABASE* with the central server name.

3   If there is more than one satellite server, create a copy of block0 for each satellite server and repeat step 2 for each block.

4   Save and close:

`$DPIPE_HOME/scripts/Cisco_IP_Telephony_Statistics_Daily.pro`

Configuring a Satellite Server

Switch off daily aggregations. Follow these steps:

> If the satellite server is performing local reporting, or if the Cisco_IP_Telephony_Statistics_Location module is installed, do not switch off daily aggregations.

1   Locate the `$DPIPE_HOME/lib/trendtimer.sched` file.

2   Comment out the lines referencing *Cisco_IP_Telephony_Statistics_Daily.pro*.

System Clocks

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

Top Ten Reports

The Cisco IP Telephony Statistics Report Pack contains five Top Ten reports: two cluster reports, two CallManager reports, and one location report. The cluster reports aggregate statistics for groups of devices belonging to each cluster. The location report aggregates statistics for groups of devices at various locations.

All five versions of the Top Ten reports display average utilization for yesterday and forecasts for future performance based on busy hour utilization over the baseline. Since these reports are driven by hourly utilization levels that were recorded yesterday, you can expect the contents of these reports to change from day to day.

Use this report to gain a good grasp of which CallManagers, CallManager Clusters, or locations are ranking worst in terms of resource utilization.

The Cluster Call Activity Top Ten does the following:

• Sorts CallManager Clusters by highest average active calls for yesterday

• Sorts CallManager Clusters by rate of increase in active calls

The Cluster Port Utilization Top Ten does the following:

• Sorts CallManager Clusters by highest port utilization rate for yesterday

• Sorts CallManager Clusters by highest rate of increase in port utilization

The CallManager Call Activity Top Ten does the following:

• Sorts CallManagers by highest average active calls for yesterday

• Sorts CallManagers by rate of increase in active calls

The CallManager Port Utilization Top Ten does the following:

• Sorts CallManagers by highest port utilization rate for yesterday

• Sorts CallManagers by highest rate of increase in port utilization

The Location/Gateway Top Ten does the following:

• Sorts locations by highest port utilization for yesterday

• Sorts locations by rate of increase in port utilization

• Sorts gateways by highest port utilization for yesterday

• Sorts gateways by highest rate of increase in port utilization

The rate of increase is calculated by taking the 30-day forecast and dividing that value by the baseline average. The baseline average is derived from averaging all the busy hours reported over the baseline period.

An example Top Ten report, the CallManager Call Activity Top Ten report, is shown.

The **Most Active Calls** table ranks CallManagers by highest average call volume. Use this table to find CallManagers handling the highest number of calls.

The **Active Calls Increase** table ranks CallManagers based on the F90 forecast value. Use this table to find out which CallManagers will be experiencing the highest call volume three months from now.

Summary Reports

Summary reports add depth to Top Ten Reports. They focus on a particular element type—by *aggregating* data according to the element type—and plot a variety of metrics over time. (See Chapter 1, Overview for a definition of each metric.) Use summary reports to find out whether performance appearing in a Top Ten report reflects a temporary condition or an on-going trend. See below for samples of these reports:

*   Cluster PRI Channel Activity Summary

*   DS1 Usage Summary

All summary reports provide access to hourly, daily, and monthly data. Use the hourly graph to identify anomalies and time of day usage patterns. The daily and monthly graphs show trends derived from historic activity.

Cisco IP Telephony Statistics

Cluster PRI Channel Activity Summary

The Cluster PRI Channel Activity Summary Report presents PRI Channel Activity metrics aggregated for all CallManager(s) for a given cluster. This report can be used to view historical trunk utilization metrics and to identify call distribution patterns across the CallManager clusters.

CallManager Cluster Selection Table
Mon Apr 21 2003

CallManager Cluster Name	Busy Hour Calls	Total PRI Channels	Busy Hour Active PRI	Total CAS Channels	Busy Hour Active CAS	Total FXO Ports	Busy Hour Active FXO	Total FXS Ports	Busy Hour Active FXS
West Coast Cluster1	24	0	0	0	0	12	7	36	21
East Coast Cluster1	38	24	14	24	14	6	4	36	19

Hourly | Daily | Monthly

PRI Channel Activity
East Coast Cluster1
Mon Apr 21 12:00 AM - Mon Apr 21 07:00 AM

- Avg Active PRI Channels
- Max Active PRI Channels
- Min Active PRI Channels
- Total PRI Channels
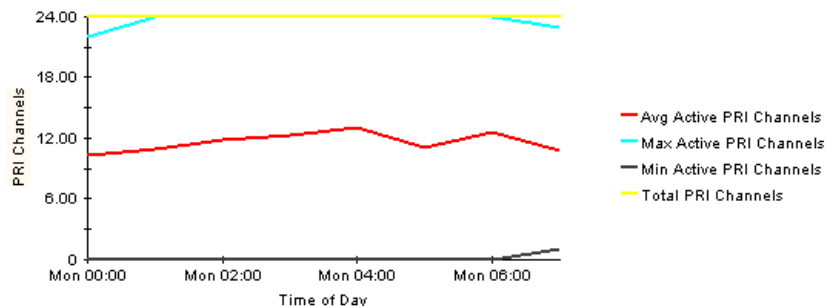
The **CallManager Cluster Selection** table sorts clusters by busy hour call activity, from highest to lowest. This table reports events for yesterday. Selecting a cluster updates the PRI Channel Activity graph to reflect the activity for the selected cluster.

In the **PRI Channel Activity** graph, if the average or busy hour levels for PRI channel activity in the hourly graph (see the full report) seem unusual, compare the hourly graph to the daily graph. The daily graph gives you a feel for what has been normal for the last few weeks. If the hourly graph diverges significantly from the daily graph, yesterday's levels were not typical. The daily tab includes busy hour. If conditions are normal, busy hour and average utilization will not converge.

Cisco IP Telephony Statistics

DS1 Usage Summary

The DS1 Usage Summary Report presents the usage metrics for a given DS1. This can be used to view the channel utilization at the DS1 level and also to identify any dramatic changes in the usage patterns of a given DS1(for example a sudden increase in "out of service" state).

CallManager Cluster Selection Table
Mon Apr 21 2003

CallManager Cluster Name	Busy Hour Calls	Total PRI Channels	Busy Hour Active PRI	Total CAS Channels	Busy Hour Active CAS	Total FXO Ports	Busy Hour Active FXO	Total FXS Ports	Busy Hour Active FXS
West Coast Cluster1	24	0	0	0	0	12	7	36	21
East Coast Cluster1	38	24	14	24	14	6	4	36	19

CallManager Selection Table
West Coast Cluster1
Mon Apr 21 2003

CallManager Name	Avg Active Calls	Total PRI Channels	Avg. Active PRI Channels	Total CAS Channels	Avg. Active CAS Channels	Total FXO Ports	Avg. Active FXO Ports	Total FXS Ports	Avg Active FXS Ports
s1ccm1	11	0	0	0	0	6	3	18	9
s1ccm2	11	0	0	0	0	6	3	18	9

Gateway Selection Table
s1ccm1
Mon Apr 21 2003

Gateway Name	Total PRI Channels	Avg. Active PRI Channels	Total CAS Channels	Avg. Active CAS Channels	Total FXO Ports	Avg. Active FXO Ports	Total FXS Ports	Avg Active FXS Ports
s1c1gw1	24	12	0	0	0	0	10	5
s1c1gw2	31	16	0	0	0	0	8	4

DS1 Selection Table
s1c1gw1
Mon Apr 21 2003

DS1 Name	% Busy State	% Idle State	% Out Of Service State	% Reserved State	% Unknown State
s1c1gw1trk0	20	20	20	20	20
s1c1gw1trk1	20	20	20	20	20

Channel States
s1c1gw1trk0
Mon Apr 21 12:00 AM - Mon Apr 21 11:00 PM
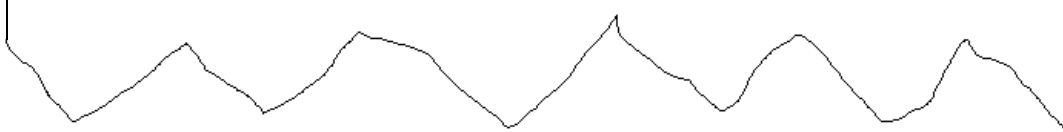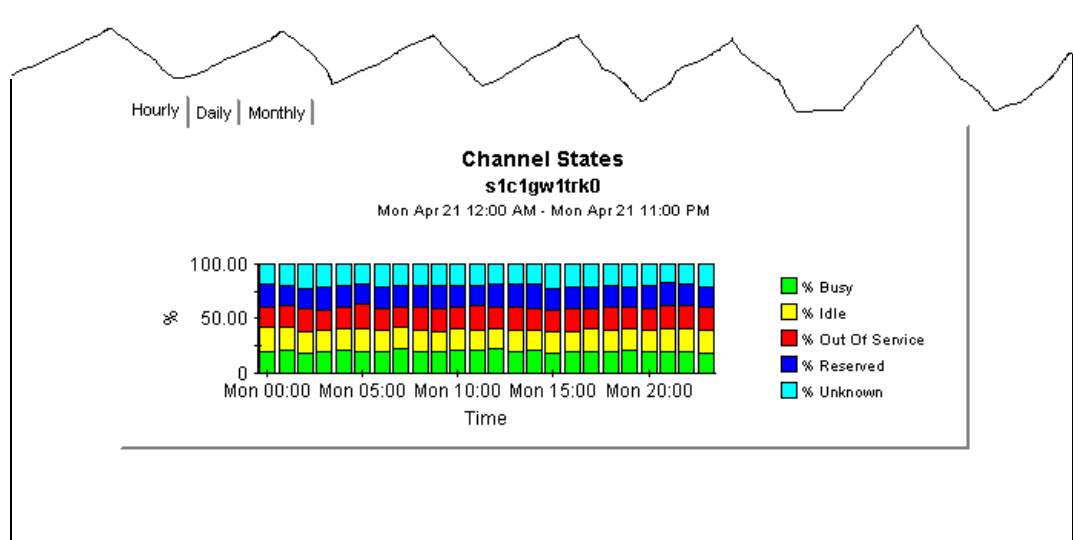
The **CallManager Cluster Selection** table sorts clusters by busy hour calls, from highest to lowest. Use this table to see which clusters require further investigation and which type or types of metrics need more attention. This table reports events for yesterday. Select a cluster to view call activity by CallManager in the CallManager Selection table.

The **CallManager Selection** table sorts CallManagers by call activity for the selected cluster (selected in the CallManager Cluster Selection table), from highest to lowest. This table reports events for yesterday.

The **Gateway Selection Table** and **DS1 Selection Table** present data aggregated at various levels in the hierarchy. They are similar to the CallManager Cluster and CallManager selection tables. In this example, the DS1 selection table is the lowest level in the hierarchy. Selecting a DS1 updates the Channel States graph with metrics for that DS1.

The **Channel States** graph displays the percentage of time spent in various states by the channels that belong to the selected DS1. Data is displayed at hourly, daily and monthly levels depending upon which tab is selected. If the hourly graph diverges significantly from the daily graph, yesterday's levels were not typical.

Forecast Reports

The following forecast reports alert you to port over-utilization and port under-utilization:

- CallManager Cluster Forecast
- CallManager Forecast
- Gateway Forecast by CallManager
- Location Forecast
- Gateway Forecast by Location

In the forecast reports, the standard tab compares the baseline to F30, F60, and F90 values. The Day of Week tab aggregates data by day, allowing you to see whether overall growth is generally the same throughout the week or whether there is a significant difference on a particular day. In addition, this view factors "downdays" out of the forecast equation, allowing you to see what values are like when they have not been skewed by abnormal levels of utilization on certain days.

The graphs vary from report to report. See the following table for details.

	CallManager Cluster	CallManager	Gateway Forecast by CallManager	Location	Gateway Forecast by Location
Call Activity	X	X			
PRI Channel Activity	X	X	X	X	X
CAS Channel Activity	X	X	X	X	X
FXO Port Activity	X	X	X	X	X
FXS Port Activity	X	X	X	X	X
Call Activity	X	X			

Cisco IP Telephony Statistics

Call Manager Forecast

The Call Manager Forecast Report enables the user to quickly identify Call Managers with the greatest projected increase in call volume. The list of call managers are sorted by rate of increase in number of calls processed. Drill down charts present forecasted overall call voulme metrics for the selected Call Manager.

Call Manager Selection Table

Call Manager Name	Call Activity Baseline	Active Ports Baseline, %	F30 Active Ports Rate, %	F60 Active Ports Rate, %	F90 Active Ports Rate, %
s2ccm2	27	57.5	56.8	56.4	55.9
s2ccm1	12	57.8	58.3	58.6	59.0
s1ccm1	12	57.6	56.3	55.3	54.4
s1ccm2	12	57.7	55.9	54.6	53.3

Standard | Day of Week | History |

Call Activity Forecast
s2ccm2
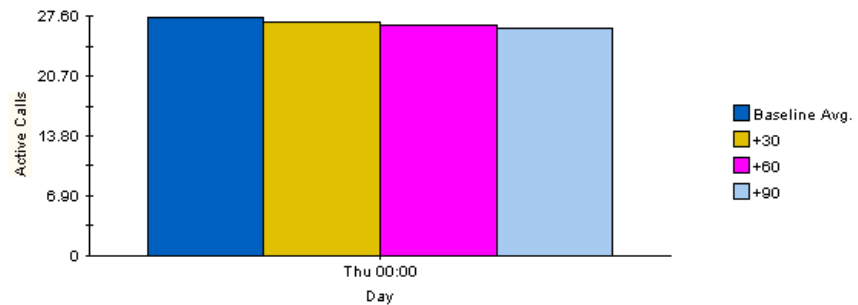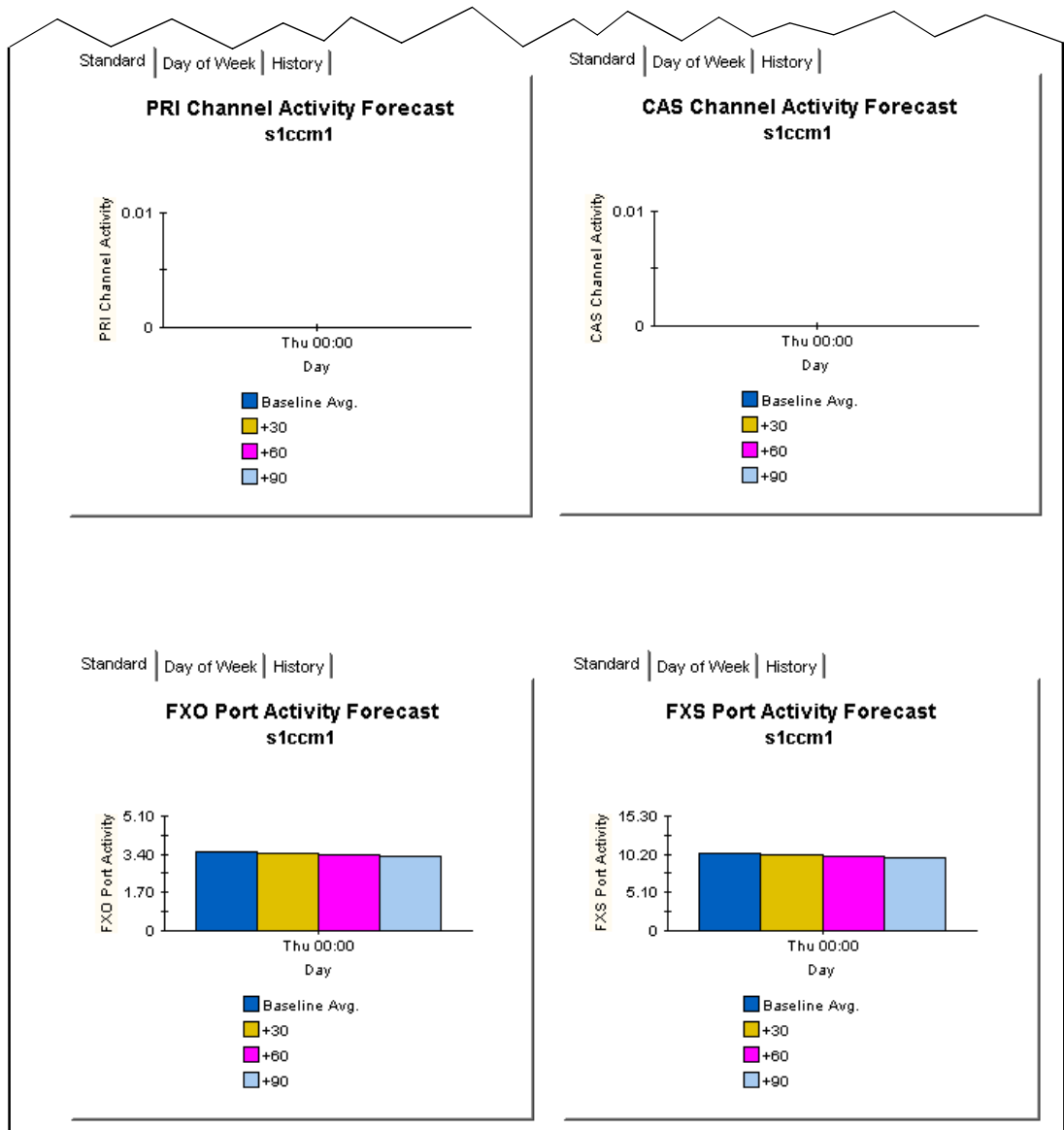
Use the **Call Activity Forecast** bar chart on the standard tab to find out where utilization is headed. This particular graph indicates that utilization is expected to remain the same for the next 90 days.

PRI Channel Activity - Day of Week Forecast
s2ccm2

Day of Week	Baseline Avg.	+30	+60	+90
Thu	14	14	14	15
Fri	14	16	18	20
Sat	14	14	15	15
Sun	14	19	23	26
Mon	14	15	17	18
Tue	14	16	19	21
Wed	13	12	12	11

Selecting the **Day of Week** tab displays a table with baseline busy hour average utilization percentages and future estimates on a per day-of-week basis. This particular graph indicates that PRI Channel Activity is headed up on certain days of the week (Sundays) and down on other days of the week (Wednesdays).
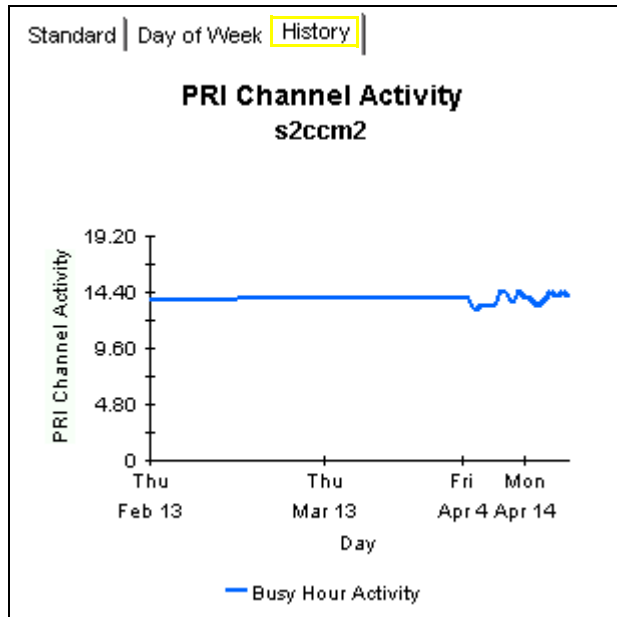
Selecting the **History** tab displays the busy hour metrics on which the forecast values are calculated.

9

Correlation Reports

Correlation Reports compare performance metrics for different resources within the same group (for example, CallManagers within a cluster or DS1 within a gateway). These reports help identify imbalanced utilization of resources within a group.

The following correlation reports alert you to imbalanced utilization of resources:

- Cluster Busy Hour Utilization Correlation
- Cluster Peak Utilization Correlation
- DS1 Usage Correlation by Location

Cisco IP Telephony Statistics
CallManager Cluster Busy Hour Utilization Correlation

This report presents the busy hour utilization metrics for all the CallManagers that belong to a particular cluster. This would help in identifying imbalanced utilization of resources across the CallManagers in a given cluster.

CallManager Cluster Selection Table
Mon Apr 21 2003

CallManager Cluster Name	Busy Hour Calls	Total PRI Channels	Busy Hour Active PRI	Total CAS Channels	Busy Hour Active CAS	Total FXO Ports	Busy Hour Active FXO	Total FXS Ports	Busy Hour Active FXS
West Coast Cluster1	24	0	0	0	0	12	7	36	21
East Coast Cluster1	38	24	14	24	14	6	4	36	19

Hourly | Daily | Monthly

Call Activity
West Coast Cluster1
Mon Apr 21 12:00 AM - Mon Apr 21 11:00 PM

s1ccm1
s1ccm2
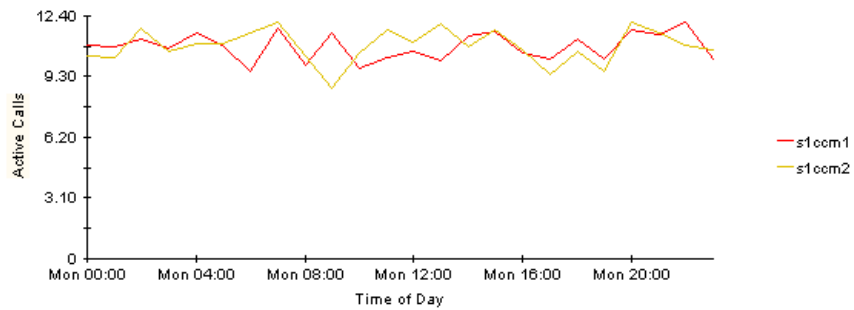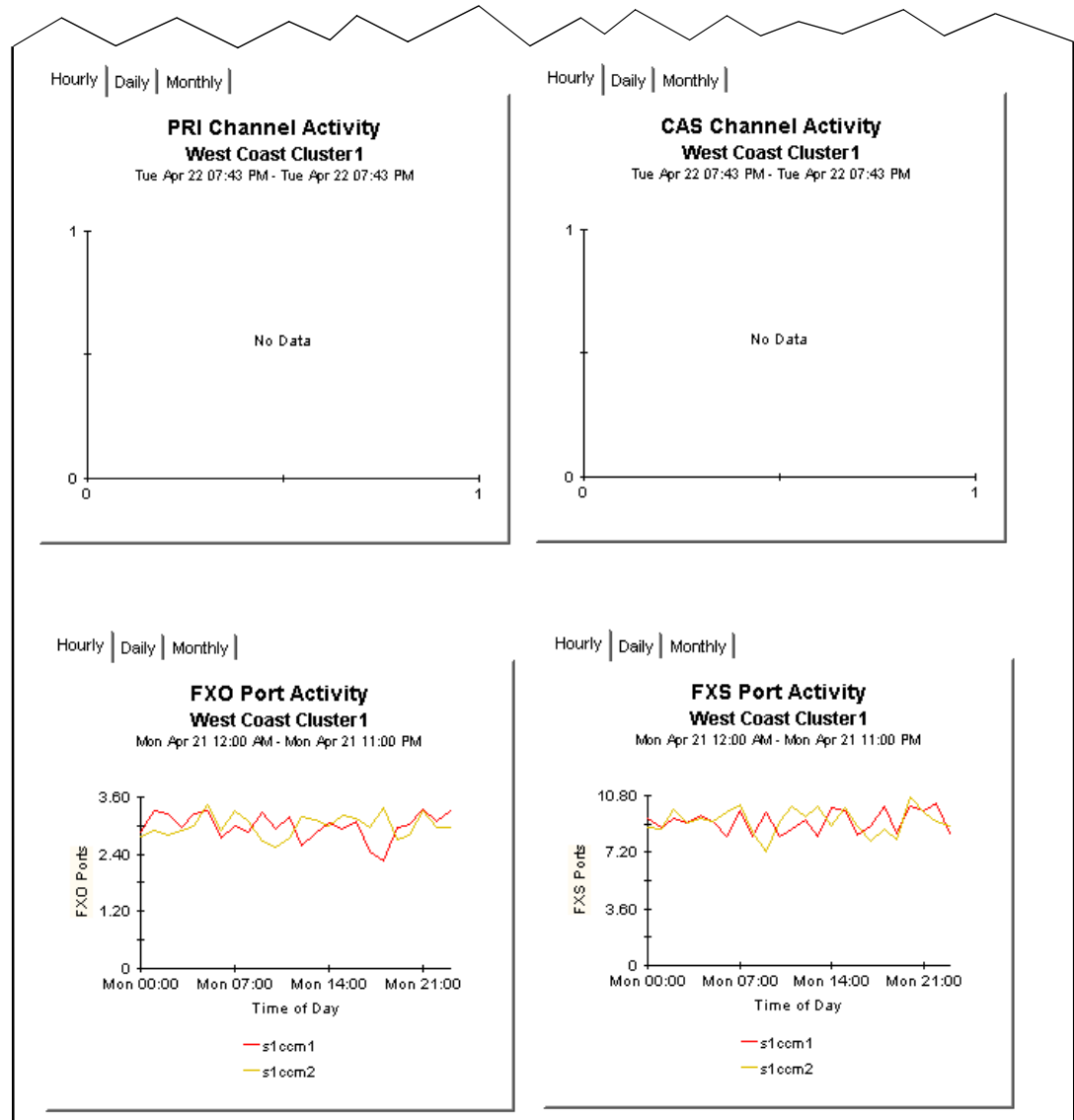
Selecting a cluster in the **CallManager Cluster Selection** table updates all the graphs with statistics for the CallManagers that belong to the cluster. In the **FXO Port Activity** graph, the FXO port utilization displays for the two CallManagers in the "West Coast Cluster1" cluster.

10

Editing Tables and Graphs

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

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

1   Click **Preferences** on the links bar.

2   Expand **Reports** in the navigation frame.

3   Click **Viewing**.

4   Select the **Allow element editing** box.

5   Click **Apply**.

6   Click 🖊 (the edit icon) next to the table or graph.

View Options for a Table

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

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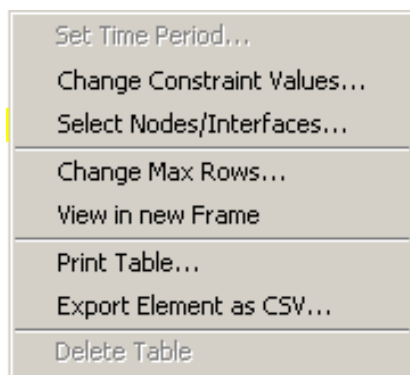
Select **Set Time Period** to alter the relative time period (relative to now) or set an absolute time period. The Set Time Period window opens.

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

View Options for a Graph

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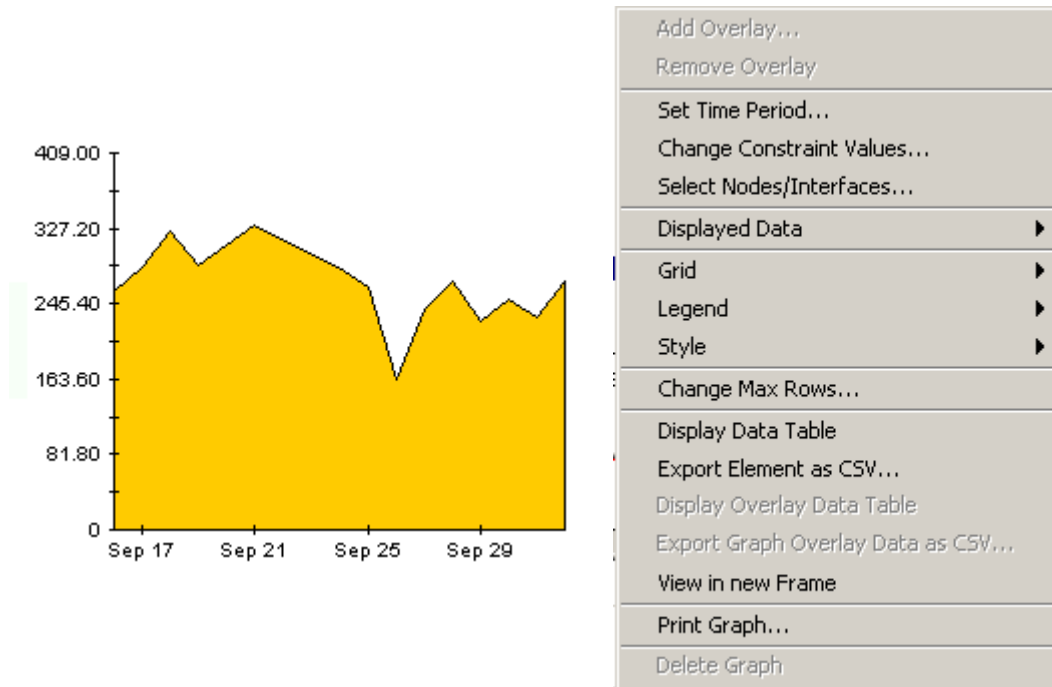
The following table provides details about each option.

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

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

Style Options

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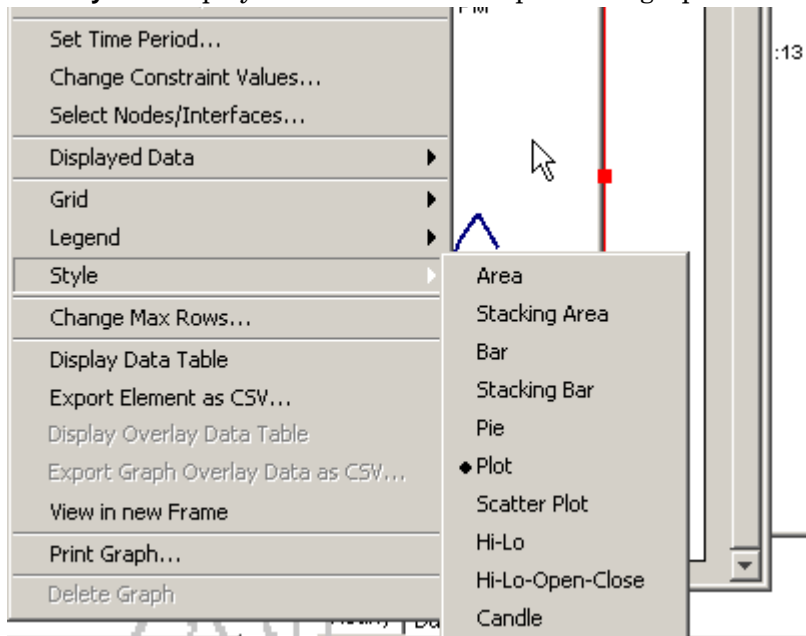
Style > Area

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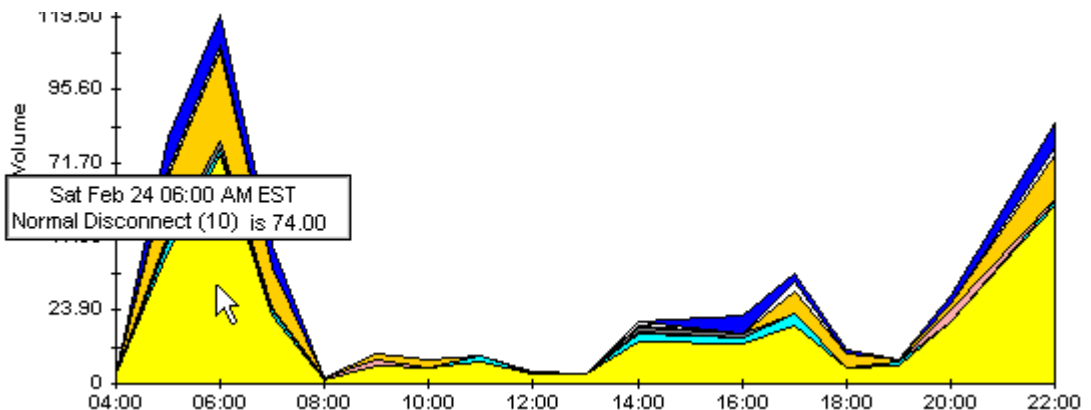
To shorten the time span of a graph, press SHIFT+ALT and use the left mouse button to highlight the time span you want to focus on. Release the mouse button to display the selected time span.

Style > Stacking Area

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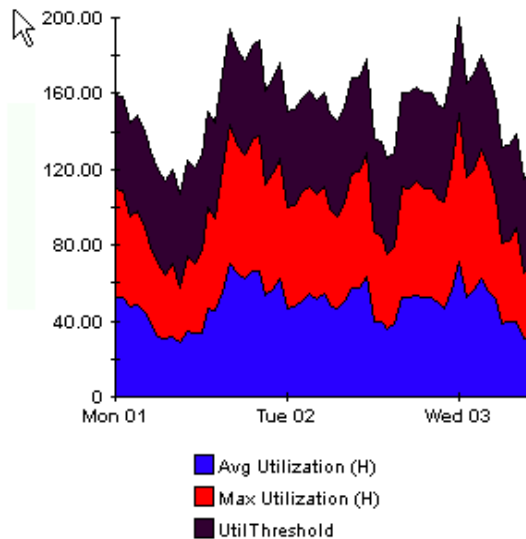
Style > Bar

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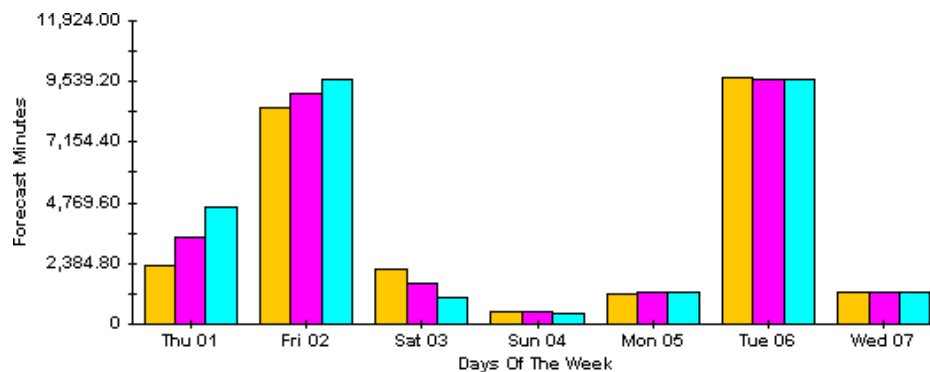
Style > Stacking Bar

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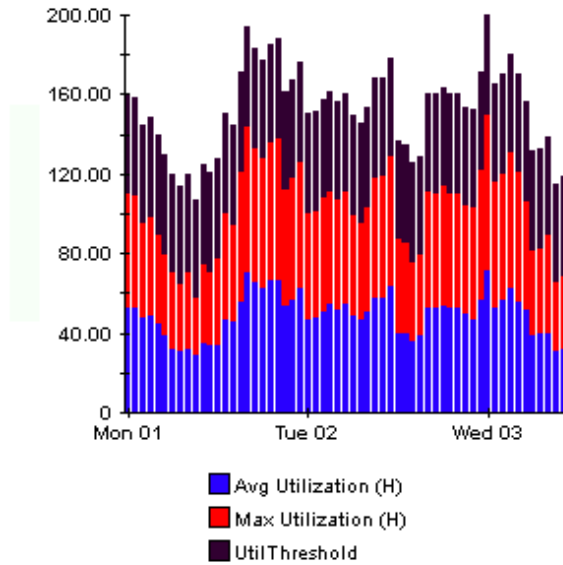
Style > Plot

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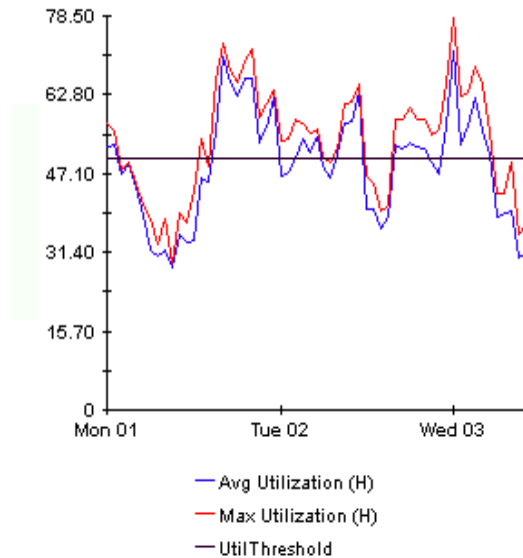
Style > Pie

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

Minutes Of Use Distributions for Yesterday
For Selected Customer

Legend:
- Under 1 minute
- Between 1 and 5 minutes
- Between 5 and 30 minutes
- Between 30 minutes and 2 hours
- Between 2 hours and 12 hours
- Over 12 hours
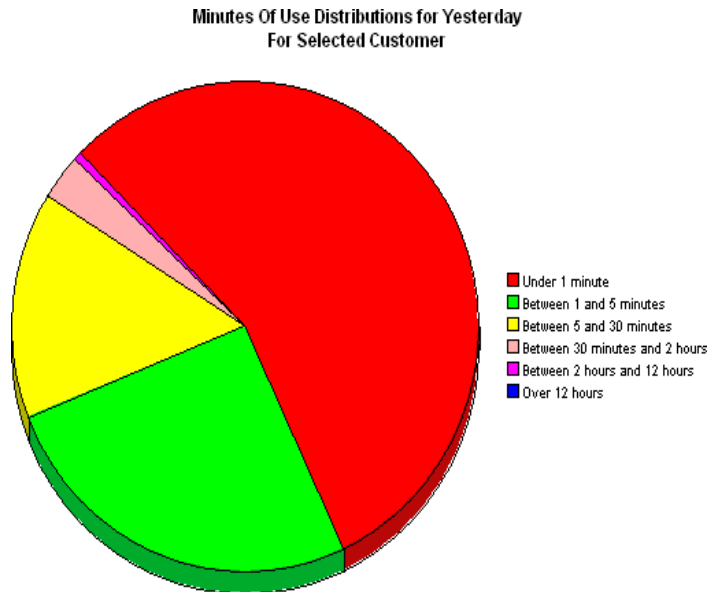
If you are looking at data for more than one day, you will see multiple pie graphs, one for each day.

Display Data Table

This option changes a graph into a spreadsheet.

Data table for 8.1

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

View in New Frame

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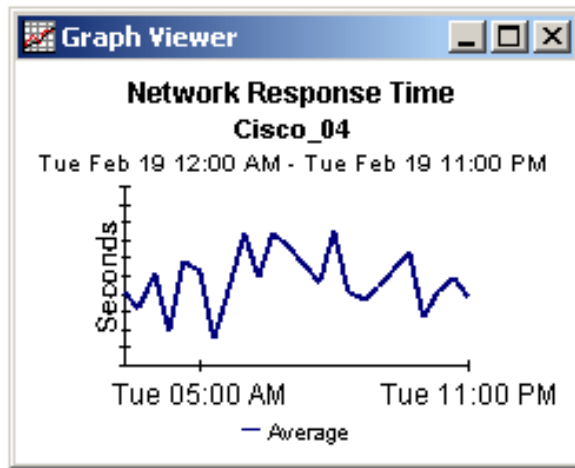
active ports rate

A measure of the percentage of total active channels/ports divided by the total channels/ports.

baseline average

The average of all samples during the baseline period. The baseline period is a rolling period comprising the previous 91 days

busy hour

Busy hour is the maximum hourly average for the day. This value is the basis for calculating future performance. Unlike the average for the day, this value does not smooth out daily peaks and valleys. In addition, unlike the daily maximum, or peak, and the daily minimum, this value represents a relatively persistent phenomenon, not a momentary condition. Since busy hour is an average, actual utilization could have been well above the average for a portion of that particular hour, as well as well below the average for a portion of that particular hour.

Cisco IP Telephony Statistics calculates a busy hour for the following metrics:

- Number of calls
- Active PRI channels
- Active CAS channels
- Active FXO ports
- Active FXS ports

CallManager

A Cisco AVVID IP Telephony service whose primary function is the control and routing of calls from voice-enabled IP device.

CAS

Channel Associated Signaling. A scheme for transmission of call signaling information that relies on interleaving the call signaling within the media information that the interface transmits.

channel name

The concatenation of DS1Name and Channel Index.

daily

Performance over the preceding 30 days for the following metrics:

- PRI channel activity
- CAS channel activity
- FXO port activity
- FXS port activity

The most recent day in this view is yesterday.

day of week

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

F30, F60, F90

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

FXO

Foreign Exchange Office. A VoIP gateway providing analog access to central office's line termination.

FXS

Foreign Exchange Station. A VoIP gateway providing analog to a Plain Old Telephone Service (POTS) station.

gateway

A device that provides real-time, two-way communications between the packet-based network and other stations on a switched network.

growth rate

Also known as rate of increase. F30 utilization divided by average busy-hour utilization.

hourly

A view of yesterday's performance for the following metrics:

- PRI channel activity
- CAS channel activity
- FXO port activity
- FXS port activity

location

The place where gateways are located. Value imported by the Common Property Tables provisioning process. If not provisioned, field reads *unassigned*.

PRI

Primary Rate Interface. An ISDN interface containing 24 or 32 channels for the communication of media and signaling information.

U

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    package, *13*
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