

# HP OpenView Performance Insight

## IP Telephony Call Detail Report Pack User Guide

**Software Version: 2.0**

*Reporting and Network Solutions 7.0*



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## Overview

This chapter covers the following topics

- OVPI and Cisco CallManager
- Folders and reports
- Data collection and data aggregation
- Integration with NNM
- Ways to customize reports; how to import property data
- Sources for additional information

## OVPI and Cisco CallManager

Improved planning and management of Cisco CallManager installations is the reason the IP Telephony Call Detail reporting solution was created. This package contains 30 reports that analyze Call Detail Record (CDR) data collected from Cisco CallManager. These reports assess call quality, call availability, and call usage. If you are collecting data once a day (the default), the tables and graphs will be updated once a day.

Although Cisco CallManager has its own ad hoc reporting capability, those reports are limited in scope and harder to produce compared to the reports in IP Telephony Call Detail. The OVPI approach offers these benefits:

- Spans multiple CallManager clusters (inter-site reporting)
- Produces rolling baseline statistics
- Produces forecasts derived from rolling baseline statistics
- Performs ongoing analysis and aggregation of IPT records
- Monitors thresholds and reports threshold breaches
- Integrates with other OVPI reporting solutions, including
  - IP Telephony Statistics Report Pack
  - Service Assurance Report Pack
- Integrates with Network Node Manager (NNM)

## Dial Plans and Configuration Steps

This report pack will not operate correctly until you assign a dial plan to every gateway. The procedure for this step is explained in [Chapter 3, Package Configuration](#). Chapter 3 also includes procedures for defining a data source. You may define the data source either before or after installing IP Telephony Call Detail.

## Version History

The following table highlights recent changes to IP Telephony Call Detail.

Version	RNS Version and Date	Features/Enhancements
1.0	RNS 4.0 - October 2003	30 call detail reports, 1 inventory report Sybase support OVPI Object Manager support Cisco CallManager 3.3 support
1.0	RNS 5.0 - April 2004	No changes to reports
2.0	RNS 6.0 - August 2004	Oracle support Cisco CallManager 4.0 support
2.0	RNS 7.0 - November 2004	No changes to reports

## Folders and Reports

IP Telephony Call Detail contains the following report folders:

- CallManager Cluster
- CallManager
- Gateway
- Phone Number
- Location

Folder contents are as follows:

### Reports in the CallManager Cluster Folder

- Cluster History Summary
- Cluster QoS Summary
- Cluster History Top Ten
- Cluster QoS Top Ten
- Cluster Call Detail Forecast



**Reports in the Call Manager Folder**

- CallManager History Summary
- CallManager QoS Summary
- CallManager History Top Ten
- CallManager QoS Top Ten
- CallManager Call Detail Forecast

**Reports in the Gateway Folder**

- Gateway History Summary by CallManager
- Gateway QoS Summary by CallManager
- Gateway History Top Ten by CallManager
- Gateway QoS Top Ten by CallManager
- Gateway Call Detail Forecast by CallManager

**Reports in the Phone Number Folder**

- Phone Number History Summary
- Phone Number QoS Summary
- Phone Number History Top Ten
- Phone Number QoS Top Ten
- Phone Number Call Detail Forecast

**Reports in the Location Folder**

- Gateway History Summary by Location
- Gateway QoS Summary by Location
- Gateway History Top Ten by Location
- Gateway QoS Top Ten by Location
- Gateway Call Detail Forecast by Location
- Location History Summary
- Location QoS Summary
- Location History Top Ten
- Location QoS Top Ten
- Location Call Detail Forecast

## Reports in the Admin Folder

The Admin folder contains one inventory report. This report provides a list of clusters, CallManagers, gateways, and IP phones. The inventory report reads property tables that are created by the Admin module and populated by the CDR Datapipe.



IP Telephony Call Detail and IP Telephony Statistics use the same Admin module. They share the inventory report and they share property tables.

## Generic Report Types

Following is a brief description of each report type in the package.

**History Summary.** Provides summary data about call history from multiple perspectives. This report focuses on the Call Success Rate (CSR) percentage, while also providing statistics for Total Call Minutes and Total Normal Disconnections. Selection tables rank items by CSR, highest to lowest. Investigate CSR more closely by looking at the following graphs:

- Total Call Volume
- Total Call Minutes
- Call Type Distribution
- Maximum and Average Call Duration per success call
- Abnormal Disconnect Cause
- Call Duration Distribution

**History Summary Top Ten.** Performs a ranking function, using results from yesterday. Provides the following tables:

- Highest Call Volume
- Highest Call Volume Increase
- Most Call Minutes
- Highest Call Minutes Increase
- Worst Call Success Rate
- Highest CSR Decrease

**QoS Summary.** Provides summary data about call QoS metrics for multiple perspectives. Focuses on the packets lost, jitter, latency, and average QoS. Investigate call QoS more closely by looking at the following graphs:

- Calls by QoS Value stacked by:
  - Good
  - Acceptable
  - Fair
  - Poor
- Packet Lost
- Jitter
- Latency

**QoS Top Ten.** Performs a ranking function, using results from yesterday. Provides the following tables:

- Highest Packet Lost
- Highest Packet Lost Increase
- Highest Jitter
- Highest Jitter Increase
- Highest Latency
- Highest Latency Decrease

**Forecast reports.** Focuses on Total Calls 30, 60, and 90 days from today. You can investigate forecasts in more detail by using the following tabbed graphs:

- Call Volume Forecast
- Call Minutes Forecast
- Call Success Rate Forecast
- Average QoS Forecast

Use the Standard tab to compare the baseline average to future performance; use the Day of Week tab to correlate future performance by day of week; use the History tab to track the data used in the forecast. The rolling baseline average is based on 91 days of data.

## Data Collection and Aggregation

Cisco CallManager produces two types of call information records:

- Call Detail Records (CDRs)
- Call Management Records (CMRs)

CDRs store information about call endpoints and other call control/routing details; CMRs contain information about the quality of the streamed audio. A preprocessor built into the CDR Datapipe processes both record types, producing CSV files. The CDR Datapipe runs a collection against these files, populates rate tables, then maps data into hourly tables maintained by the report pack. This process provides the report pack with hourly data for the following variables:

- Lost packets
- Jitter
- Latency
- A value for QoS derived from lost packets, jitter, and latency
- Call volume
- Call duration
- Call Success Ratio (CSR)
- Disconnect Cause Distribution
- Call Type Distribution

In accordance with directives from the report pack, OVPI produces hourly, daily, and monthly summaries. In addition, OVPI aggregates data by the following perspectives:

- Phone Number
- Gateway by CallManager
- Gateway by Location
- CallManager
- CallManager Cluster
- Location

## Integration with Network Node Manager (NNM)

The trending analysis produced by IP Telephony Call Detail is designed to blend smoothly with the fault management and diagnostic capabilities of Network Node Manager. If your OVPI server and your NNM server are integrated, the NNM operator will see IP Telephony Call Detail reports in the Report Launchpad window. This window can be opened from NNM ovw, Home Base Dynamic Views, and the NNM alarm browser.

If you install the optional thresholds sub-package on the OVPI server, OVPI will send threshold traps to NNM. The trap sent by OVPI will appear as an alarm in the NNM alarm browser. The NNM operator can respond to the alarm by launching the following reports:

- CallManager History Summary
- CallManager QoS Summary
- Gateway History Summary by Location
- Gateway QoS Summary by Location

## Ways to Customize Reports

The contents of a report can be customized. Here are your options:

- Apply group filters
- Edit parameters, tables, and graphs
- Add and modify property information, including thresholds

Service providers use group filters to produce customer-specific reports. Edits to parameters, tables, and graphs are temporary change that anyone can make. For more information about view options for tables and graphs see [Chapter 10, Editing Tables and Graphs](#).

### Group Filters

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

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

- Create a group filter for each group account

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

## Importing Property Information

The reports in this package include the following types of property information:

- The ID assigned to a cluster, CallManager, or gateway
- The customer and location associated with a cluster, CallManager, or gateway
- Threshold values assigned to a CallManager, gateway, or QoS parameter
- Users and locations assigned to IP phones

Property information comes from the following sources:

- CDR Datapipe
- Common Property Tables 3.5
- Change forms bundled with IP Telephony Call Detail

If the CDR Datapipe identifies a new CallManager or gateway, it will add that CallManager or gateway to Common Property Tables. When that CallManager or gateway appears in reports, the following defaults will appear as associated properties:

- *Customer Unassigned*
- *Location Unassigned*

To associate a customer or a location with a CallManager or a gateway, use the Update Node Information form. This form is bundled with Common Property Tables. When you navigate the object tree, you will see this form listed under **Object Specific Tasks**.

The following properties are imported using forms bundled with IP Telephony Call Detail:

- CallManager thresholds
  - Call Success threshold
  - Network Fail threshold
  - QoS threshold
- Gateway thresholds
  - Call Success threshold
  - Network Fail threshold
  - QoS threshold
- Gateway dial plans
  - International call prefix
  - Local area codes
  - Toll free codes



Assigning a dial plan to each of your gateways is mandatory; if this step is not taken, the report pack will not function properly.

- IP phone properties
  - User
  - Location
- QoS thresholds
  - Packet loss
  - Jitter
  - Latency

For more details about forms, see [Chapter 3, Package Configuration](#).

## Editing Parameters

Editing a parameter applies a constraint. The constraint filters out the data you do not want to see. If you edit the Customer Name parameter, data for every customer except the customer you typed in the Customer Name field will drop from the report. Similarly, if you edit the Location parameter, data for all locations except the location you typed in the Location field will drop from the report.

You may apply multiple constraints at once. IP Telephony Call Detail supports the following parameters:

- Customer Name
- Location
- Cluster
- CallManager
- Gateway
- Phone number

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 guide contains samples of some of the reports in the package. The demo package that comes with IP Telephony Call Detail 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. Like real reports, demo reports are interactive; unlike real reports, demo reports are static.

For information regarding the latest enhancements to this package and any known issues affecting how it operates, refer to the *IP Telephony Call Detail Report Pack 2.0 Release Statement*. You may also be interested in the following documents:

- *Cisco IP Telephony Statistics 3.0 User Guide*

- *Common Property Tables 3.5 User Guide*
- *Thresholds Module 5.0 User Guide*
- *NNM / Performance Insight Integration Module 2.0 User Guide*
- *Service Assurance Report Pack 3.0 User Guide*
- *RNS 7.0 Release Notes, November 2004*

User guides for the core product, OVPI, and user guides for the reporting solutions that run on OVPI can be downloaded from the following web site:

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

Select **Support > Product Manuals** to reach the **Product Manuals Search** page. The user guides for OVPI are listed under **Performance Insight**. The user guides for reporting solutions, NNM SPIs, and NNM correlators are listed under **Reporting and Network Solutions**.

The entries under **Reporting and Network Solutions** indicate the date of publication. If a manual is revised and later reposted, the date will change even if the software version number does not change. Because we post revised user guides on a regular basis, you should search this site for updates before using an older PDF that may not be the latest PDF available.





# Package Installation

This chapter covers the following topics:

- Guidelines for a smooth installation
- Installing the report pack and associated packages
- Accessing deployed reports; new objects in the object model
- Package removal

## Guidelines for a Smooth Install

The reporting solutions created for OVPI consist of two packages: a report pack and a datapipe, or sometimes a report pack and multiple datapipes. When you install a datapipe, you direct OVPI to collect a specific type of performance data at a specific polling interval. When you install a report pack, you direct OVPI to summarize and aggregate performance data in a specific way.

The RNS 7.0 CD contains packages for NNM and OVPI. When you insert the RNS CD, launch the package extraction interface, and select OVPI packages for installation, the install script extracts every OVPI package 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.

If the OVPI packages on the RNS CD have already been copied to the Packages directory on your system, IP Telephony Call Detail is ready to install. Before running Package Manager, review the following guidelines.

## Prerequisites for a New Install

The following software must be in place before installing the IPT Call Detail package:

- OVPI 5.0
- All service packs available for OVPI 5.0

Details about each service pack, including installation instructions, can be found in release notes for the service pack.

## Distributed Environments

If you intend to run this package in a distributed environment, installation is more complicated. The rules are as follows:

- Make sure that every server is running the same release of OVPI.
- Make sure that every server is running the same service packs.
- Disable trendcopy on the central server.
- Install the following packages on the central server:
  - IPT CallDetails Admin; deploy reports
  - IPT CallDetails; deploy reports
  - IPT CallDetails Location; deploy reports
  - IPT CallDetails Thresholds
  - Thresholds Module (Threshold and Event Generation)
  - Common Property Tables 3.5
- Install the following packages on each satellite server:
  - IPT CallDetails Admin; do not deploy reports
  - IPT CallDetails; do not deploy reports
  - IPT CallDetails Location; do not deploy reports
  - Common Property Tables 3.5
- Re-enable trendcopy on the central server.

After the installation is complete, you must configure the central server to pull data from each satellite server, and you must disable daily aggregations on each satellite server. These tasks are covered in [Chapter 4, Distributed Systems](#).

## Upgrading Common Property Tables

IP Telephony Call Detail requires Common Property Tables 3.0 or higher. If you are installing everything for the first time, there is nothing for you to do regarding Common Property Tables; the install wizard will install Common Property Tables for you, automatically.

If you are running Common Property Tables 2.2, you must upgrade to the latest version. Do this by installing the version 2.2-to-3.0 upgrade package. Installing the upgrade package is no different from installing other packages. However, keep in mind that you cannot install the upgrade *and* other packages at the same time. Install the upgrade package for Common Property Tables and *only* the upgrade package for Common Property Tables.

## Integration with the NNM Alarm Browser

If NNM and OVPI are integrated, the threshold breaches spotted by OVPI can be detected by NNM. To take advantage of this feature, install the optional thresholds sub-package. This sub-package contains default threshold settings. If necessary, these settings can be modified using the forms described in [Chapter 3, Package Configuration](#).

The thresholds sub-package cannot operate unless the Threshold and Event Generation Module, more commonly known as the Thresholds Module, is also installed. Although there are configuration options for the Thresholds Module, the Thresholds Module operates without user intervention. Configuring the Thresholds Module is optional.

If you are running the previous version of the Thresholds Module, you may upgrade to the current release. For more information about configuration options and the recent changes to this package, refer to the *Thresholds Module 5.0 User Guide*.

## Installable Packages and Sub-Packages

Once OVPI packages have been extracted to the Packages directory on your system, the following packages will be available for installation:

- IPT\_Admin.ap
- IPT\_CallDetails.ap
- IPT\_CallDetails\_Location.ap
- IPT\_CallDetails\_Thresholds.ap

A brief description of each package follows.

### IPT\_Admin.ap

IPT\_Admin.ap allows the Cisco IP Telephony Statistics Report Pack and the IP Telephony Call Detail Report Pack to share property data for the objects they have in common. Sharing property data eliminates duplication, allows the database to operate more efficiently, and simplifies administration. The IPT\_Admin.ap module creates the following tables:

- K\_IPT\_Cluster — for IP Telephony CallManager clusters
- K\_IPT\_CManager — for IP Telephony CallManagers
- K\_IPT\_gateway — for the gateways associated with CallManagers
- K\_IPT\_gateway\_loc — for the gateways associated with locations
- K\_IPT\_phoneNum — for the IP phones associated with CallManagers
- K\_IPT\_loc — for the IP phones associated with locations
- K\_IPT\_Qos — for QoS parameters

The data in these tables can be modified using the property update forms described in [Chapter 3, Package Configuration](#).

### IPT\_CallDetails.ap

The main package. Provides summarization and aggregation directives to OVPI.

### IPT\_CallDetails\_Location.ap

An optional sub-package that makes it possible to see usage patterns and trends aggregated by location.

## IPT\_CallDetails\_Thresholds.ap

An optional sub-package that sets thresholds for performance, generates exception traps when a threshold is breached, and sends traps to NNM. The Thresholds Module is also required if you wish to use this sub-package. (If you install the thresholds sub-package, Package Manager will install the Thresholds Module automatically.)

# Installing IP Telephony Call Detail

Perform the following tasks to install IP Telephony Call Detail 2.0:

- Task 1: Stop OVPI Timer and extract packages from the product CD.
- Task 2: If necessary, upgrade to Common Property Tables 3.0 or higher.
- Task 3: Install these packages:
  - IPT CallDetails 2.0
  - Cisco CDR Datapipe 2.0
  - IPT CallDetails Thresholds (optional)
  - IPT CallDetails Location (optional)
  - IPT CallDetails Demo (optional)



This procedure is intended for a stand-alone system. If your system is distributed, do not install the datapipe on the central server.

### 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, do one of the following:

HP-UX: **sh /sbin/ovpi\_timer stop**

Sun: **sh /etc/init.d/ovpi\_timer stop**

- 3 Insert the RNS 7.0 CD. On Windows, a Main Menu displays automatically; on UNIX, mount the CD if it does not mount automatically, then navigate to the top level directory on the CD and run the **./setup** command.
- 4 Type **1** in the choice field and press **Enter**. The install script displays a percentage complete bar. When the copy is complete, the install script starts Package Manager. The Package Manager welcome window opens.

When the copy to the Package directory finishes, you can navigate to the Packages directory. The Packages directory contains a folder for IP Telephony Call Details and a separate folder for the Cisco CDR Datapipe. The following folders appear under the IP Telephony Call Detail folder:

- IPT\_CallDetails.ap
- IPT\_CallDetails\_Demo.ap

- IPT\_CallDetails\_Location.ap
- IPT\_CallDetails\_Thresholds.ap

The following folder appears under the Cisco CDR Datapipe folder:

- CiscoCDR\_Datapipe.ap

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

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

IP Telephony Call Detail 2.0 requires Common Property Tables 3.0 or higher. If you have not already upgraded to Common Property Tables 3.0, do this now. If you are currently running Common Property Tables 3.0, you have the option of upgrading to version 3.5. If you need help with the upgrade, refer to the *Common Property Tables 3.5 User Guide*. When Package Manager indicates that the upgrade is complete, click **Done** to return to the Management Console.

### Task 3: Install IP Telephony Call Detail, the Datapipe, and Optional Sub-Packages

- 1 Start Package Manager. The Package Manager welcome window opens.
- 2 Click **Next**. The Package Location window opens.
- 3 Click **Install**. Approve the default installation directory or select a different directory if necessary.
- 4 Click **Next**. The Report Deployment window opens. Accept the default for Deploy Reports; accept the defaults for application server name and port; type your user name and password for the OVPI Application Server.
- 5 Click **Next**. The Package Selection window opens.
- 6 Click the check box next to the following packages:

*IPT\_CallDetails 2.0*

*IPT\_CallDetails\_Admin 2.0*

*IPT\_CallDetails\_Location 2.0*

*IPT\_CallDetails\_Thresholds*

*CiscoCDR\_Datapipe 2.0*



If your system is distributed, the thresholds sub-package belongs on the central server, not on satellite servers; this is because you are setting thresholds against daily data, not hourly data.

The CiscoCDR Datapipe belongs on any server that polls.

- 7 Click **Next**. The Type Discovery window opens. Disable the default.
- 8 Click **Next**. The Selection Summary window opens.
- 9 Click **Install** to begin the installation process. The Installation Progress window opens and the install process begins. When the install finishes, an installation 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, do one of the following:

HP-UX: **sh /sbin/ovpi\_timer start**

Sun: **sh /etc/init.d/ovpi\_timer start**

## Accessing Deployed Reports

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

- OVPI clients
- Web browser

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

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

## 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, and all three of these object categories belong to OVPI's default object model. When you select an object in the object model, the right side of the Object/Property Management window refreshes, showing a list of forms under **General Tasks**, a list of forms under **Object Specific Tasks**, and a list of reports under **Object Specific Reports**.

The object tree changes each time you install a new report pack, and some report packs will add a new class of objects or services that do not fit within the default model. When this happens, the report pack adds a new view. To open the new view, select **View > Change View**.

IP Telephony Call Detail adds the following object categories to the object model:

- Cluster
- CallManager
- Gateway
- IP\_Phone

## Package Removal

If you remove a report pack, the associated tables and all the data in those tables will be deleted. If you want to preserve the data in those tables, archive the data before removing the package. Follow these steps to uninstall IPT Call Detail and the associated packages.

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

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

*UNIX:* As root, do one of the following:

HP-UX: **sh /sbin/ovpi\_timer stop**

Sun: **sh /etc/init.d/ovpi\_timer stop**

- 3 Select **HP OpenView > Performance Insight > 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 defaults for Undeploy Reports, Application Server Name, and Port; type your username and password.
- 7 Click **Next**. The Package Selection window opens.
- 8 Click the check box next to the following packages:

*IPT\_CallDetails*

*IPT\_CallDetails\_Admin*

*IPT\_CallDetails\_Location* (if installed)

*IPT\_CallDetails\_Thresholds* (if installed)

*IPT\_CallDetails\_Demo* (if installed)

*CiscoCDR\_Datapipe*

- 9 Click **Next**. The Selection Summary window opens.
- 10 Click **Uninstall**. The Progress window opens and the removal process begins. When removal finishes, a removal complete message appears.
- 11 Click **Done** to return to the Management Console.
- 12 Restart OVPI Timer.

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

*UNIX:* As root, do one of the following:

HP-UX: **sh /sbin/ovpi\_timer start**

Sun: **sh /etc/init.d/ovpi\_timer start**





## Package Configuration

This chapter covers the following topics:

- Configuring a data source
  - Configuring CallManager to schedule exports
  - Configuring an ODBC data source (Windows only)
- Downloading and Installing DBD::ODBC and DBI
- Assigning dial plans to gateways

▶ This step is mandatory. The report pack will not operate correctly until you have assigned a dial plan to every gateway.

- Default thresholds for CallManagers and gateways
- Modifying users and locations for IP phones
- Modifying QoS parameters

### Configuring a Data Source

If you are running OVPI on UNIX, your only option is to collect CallDetail data from CSV-format flat files exported by CallManager. If you are running OVPI on Windows, you have two ways to collect call data:

- The CDR Datapipe can read CSV-format flat files exported by CallManager.
- The CDR Datapipe can collect CallDetail data directly from the CallManager SQL Server database.

This section provides procedures for the following tasks:

- Configuring CallManager to schedule exports from the appropriate tables
- Defining an ODBC data source

## Configuring CallManager to Schedule Exports

This section provides procedures for:

- Scheduling an export from the CallDetailRecord table
- Scheduling an export from the CallDetailRecordDiagnostic table

### Schedule an Export from the CallDetailRecord Table

To schedule exporting data of the table *CallDetailRecord* in the database CDR, follow these steps:

- 1 Select **Start > Programs > Microsoft SQL Server > Enterprise Manager**. The SQL Server Enterprise Manager window opens.
- 2 Select **Console Root > Microsoft SQL Servers > SQL Server Group** and select the SQL server name in the Tree window.
- 3 Select **Tool > Data Transformation Services > Export Data**. The DTS Import/Export Wizard opens.
- 4 Click **Next**. The Choose a Data Source window opens.
- 5 Select **CDR** in the **Database** drop-down list.
- 6 Click **Next**. The Choose a Destination window opens.
- 7 Select **Text File** in the **Destination** drop-down list.
- 8 Type the path\filename in the **File name** field. For example:  
**C:\IPT\_CDR\CallDetailRecord.csv**



The .csv extension is required.

- 9 Click **Next**. The Specify Table Copy or Query window opens.
- 10 Click **Use a query to specify the data to transfer**.
- 11 Click **Next**. The Type SQL Statement window opens.
- 12 Type the following SQL statement in the Query statement window:

```
"select cdrRecordType,
      globalCallID_callManagerID,
      globalCallID_callID,
      dateTimeOrigination,
      origSpan,
      origIpAddr,
      CallingPartyNumber,
      origCause_value,
      origMediaTransportAddress_IP,
      origMediaCap_payloadCapability,
      destSpan,
      destIpAddr,
      finalCalledPartyNumber,
      destCause_value,
      destMediaTransportAddress_IP,
```

```

destMediaCap_payloadCapability,
dateTimeConnect,
dateTimeDisconnect,
duration,
origDeviceName,
destDeviceName,
globalCallID_ClusterID

```

```

from CallDetailRecord

```

```

where datediff(day,dateadd(second,dateTimeDisconnect,'1/1/
1970'),getdate())=1".

```

- 13 Click **Next**. The Select Destination File Format window opens.
- 14 Click **Next** by accepting default settings. The Save, schedule, and replicate package window opens.
- 15 Mark the **Schedule DTS package for later execution** check box.
- 16 Click **Next**. The Save DTS Package window opens.
- 17 Type the name of your DTS package in the **Name** field. For example:

```

Export_CDRs

```

- 18 Click **Next**. The Summary window of the DTS Import/Export Wizard opens.
- 19 Click **Finish** if there is no error in the Summary window.
- 20 Click **OK** if a pop-up window opens with this message:

```

Successfully copied a table from the Microsoft SQL Server to flat
file.

```

If you see an error message, fix the problem, then repeat these steps.

- 21 Click **Done** in the Executing Package window.

## Schedule an Export from the CallDetailRecordDiagnostic Table

Follow these steps to schedule an export of data from the *CallDetailRecordDiagnostic* table:

- 1 Repeat steps 1 through 11 above.
- 2 Type the following SQL statement in the Query statement window:

```

"select cdrRecordType,
      globalCallID_callManagerID,
      globalCallID_callID,
      dateTimeStamp,
      numberPacketsSent,
      numberOctetsSent,
      numberPacketsReceived,
      numberOctetsReceived,
      numberPacketsLost,
      jitter,
      latency,
      deviceName,
      globalCallID_ClusterID

```

```
from CallDetailRecordDiagnostic
where datediff(day,dateadd(second,dateTimeStamp,'1/1/
1970'),getdate())=1"
```

- 3 Repeat steps 13 through 16 above.
- 4 Type the name of your DTS package in the **Name** field. For example:  
**Export\_CMRS**
- 5 Repeat steps 18 through 21 above.

## Defining an ODBC Data Source (Windows Only)

If you are running OVPI on Windows, you have the option of collecting CallDetail data directly from the CallManager SQL Server database. Follow these steps to define an ODBC data source in the OVPI system.

- 1 Make sure that perl module DBD::ODBC is installed in the OVPI system. Since this module is not included with the OVPI 5.0, it will not install just by installing OVPI 5.0.
- 2 Type this command in your command window:  
**perl -e "use DBD::ODBC"**
- 3 Press **Enter**. If no error message appears, the module installed. If you get an error message, see the install procedure in the next section below.
- 4 Select **Control Panel > Administrative Tools**. The Administrative Tools window opens.
- 5 Click **Data Sources (ODBC)**. The ODBC Data Source Administrator window opens.
- 6 Select the **System DSN** tab.
- 7 Click **Add**. The Create New Data Source window opens.
- 8 Select SQL Server as the driver.
- 9 Click **Finish**. The next window opens for inputting DSN information.
- 10 Type a name in the **Name** field. For example:  
**CiscoCDR**  
This name will be used for the *-m* option for the CiscoCDR\_PP.pl.
- 11 Type the SQL Server name you want to connect. For example:  
**CallManager1**
- 12 Click **Next**.
- 13 Click this radio button: **With SQL Server authentication using a login ID and password entered by the user**.
- 14 Type your username and password. (The username and password that are registered in the Cisco CallManager SQL Server database.)
- 15 Click **Next**.
- 16 Click this radio button: **Change the default database to** and select **CDR** in the drop-down list.
- 17 Click **Next**.
- 18 Click **Finish**.

- 19 Click **Test Data Source**.
- 20 Click **OK** if you see this message in a pop-up window: **TESTS COMPLETED SUCCESSFULLY!**  
If an error message displays, fix the problem and repeat the steps above.
- 21 Click **OK**.
- 22 Click **OK**.

## Downloading and Installing DBD::ODBC and DBI

If you got the following error message when you verified that DBD:ODBC is installed:

```
Can't locate DBD/ODBC.pm in @INC...
```

you need to install the DBD::ODBC module and the required version of DBI. Follow these steps to install DBD::ODBC and DBI:

- 1 Go to this site:  
<http://ppm.activestate.com/PPMPackages/zips/6xx-builds-only>  
Download DBD-ODBC.zip and DBI.zip to your OVPI system. (If the URL is not available, visit [www.activestate.com](http://www.activestate.com) and search for a new location for the DBD::ODBC module.)
- 2 Unzip these zip files to a local directory, for example: C:\PerlModules
- 3 Navigate to subdirectory C:\PerlModules\DBI\DBI from a command window and type the following command:  
**ppm install DBI.ppd**
- 4 Press **Enter**.
- 5 Go to C:\PerlModules\DBD-ODBC from the command window and type the following command:  
**ppm install DBD-ODBC.ppd**
- 6 Press **Enter**.
- 7 Type the following command in the command line window:  
**perl -e "use DBD::ODBC"**

If you don't see an error message, the DBD::ODBC module installed successfully.

## Data Source Directories

This section covers:

- Using an FTP session
- Using an ODBC connection

## Using an FTP Session

If CallManager is storing raw data on a remote machine, configure the preprocessor to FTP those files from the remote machine to your OVPI server. Follow these steps:

- 1 Open this file:

```
{DPIPE_HOME}/scripts/CiscoCDR_Collection.pro
```

- 2 Locate this line:

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

- 3 Change that line to:

```
{DPIPE_HOME}/bin/perl {DPIPE_HOME}/bin/CiscoCDR_PP.pl -f 1 -m <Remote_Host_Name> -u  
<username> -p <password> -r <remote_directory>
```

## Using an ODBC Connection

Follow these steps to configure the preprocessor to use an ODBC Connection.



This option applies to OVPI servers running on Windows only.

- 1 Open this file:

```
{DPIPE_HOME}/scripts/CiscoCDR_Collection.pro
```

- 2 Locate this line:

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

- 3 Change that line to:

```
{DPIPE_HOME}/bin/perl {DPIPE_HOME}/bin/CiscoCDR_PP.pl -f 2 -m <ODBC_DSN_Name> -u  
<username> -p <password>
```

## Assigning Dial Plans to Gateways

The IPT Call Detail Report Pack will not operate correctly until you have assigned a dial plan to every gateway. *Do this as soon as possible after the datapipe is installed, and after one day of data has been collected.* Follow these steps to configure dial plans:

- 1 Start the Management Console.
- 2 Click **Objects**. The Object/Property Management window opens.
- 3 Select **View > Change View > Cluster**.
- 4 Select a cluster.
- 5 Open a CallManager folder and select a gateway. You will see the Configure Gateway Dial Plan form under **Object Specific Tasks**.
- 6 Double-click **Configure Gateway Dial Plan**. The form opens.
- 7 Modify the following fields:

- International call prefix
  - Local area codes
  - Toll free codes
- 8 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.
  - 9 Repeat this procedure for every gateway.

## Cisco IP Telephony

### Configure Gateway Dial Plan



This form allows you to configure the dial plan for a given gateway associated with a CallManager. Enter/modify the values. Click the OK button to save the values and close the window. Click the Apply button to update the values in the database and leave the window open for further modifications. Click the Cancel button to cancel.

#### Gateway Selection

CallManager	Gateway
s1ccm1	s1c1c4k-3
s1ccm1	s1c1c4k-4
s1ccm1	s1c1cat4k-1

Gateway Phone Number

International Call Prefix

Local Area Codes

Toll Free Codes

## Default Thresholds

The thresholds sub-package imposes six defaults. Three defaults pertain to CallManagers and three defaults pertain to gateways. When performance reaches a default, the thresholds sub-package sends a trap to the network management system. The following table indicates the default setting, the breach condition, and the severity associated with the breach condition.

Threshold	Default	Breach Condition	Severity
Call Success	50%	Call success ratio is below the threshold.	Warning
Network Fail	50%	The ratio of failed calls caused by network problems exceeds the threshold.	Warning
QoS	3.0	Average QoS value for all calls exceeds the threshold.	Warning

### Modifying Default Thresholds

Two forms are available for modifying the default thresholds in the preceding table:

- Modify CallManager Call Detail Thresholds
- Modify Gateway Call Detail Thresholds

### CallManager Thresholds

Follow these steps to modify default thresholds for CallManagers:


- 1 Start the Management Console.
- 2 Click **Objects**. The Object/Property Management window opens.
- 3 Select **View > Change View > Cluster**.
- 4 Select a cluster.
- 5 Open a CallManager folder and select a CallManager. You will see the Modify CallManager Call Detail Thresholds form under **Object Specific Tasks**.



- 6 Double-click **Modify CallManager Call Detail Thresholds**. The form opens.

/admin/Cisco\_IPT\_Admin\_Forms/CallManagerThreshConfig.frep

# Cisco IP Telephony



## Configure CallManager Thresholds

This form allows to configure the threshold values for the CallManager. Enter/modify the threshold values. Click the OK button to save the values and close the window. Click the Apply button to update the values in the database and leave the window open for further modifications. Click the Cancel button to cancel.

<b>PRI Channel Max. Util</b>	<input type="text" value="95.00"/>
<b>PRI Channel Min. Util</b>	<input type="text" value="5.00"/>
<b>CAS Channel Max. Util</b>	<input type="text" value="95.00"/>
<b>CAS Channel Min. Util</b>	<input type="text" value="5.00"/>
<b>FXO Port Max. Util</b>	<input type="text" value="95.00"/>
<b>FXO Port Min. Util</b>	<input type="text" value="5.00"/>
<b>FXS Port Max. Util</b>	<input type="text" value="95.00"/>
<b>FXS Port Min. Util</b>	<input type="text" value="5.00"/>

OK Apply Cancel

- 7 Modify one or more defaults.
- 8 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.


## Gateway Thresholds

Follow these steps to modify default thresholds for gateways:

- 1 Start the Management Console.
- 2 Click **Objects**. The Object/Property Management window opens.
- 3 Select **View > Change View > Location**.
- 4 Select a location.

- 5 Open the Gateway folder and select a gateway. You will see the Modify Gateway Call Detail Thresholds form under **Tasks Specific to the Selected Objects**.
- 6 Double-click **Modify Gateway Call Detail Thresholds**. The form opens.

/admin/Cisco\_IPT\_Admin\_Forms/Gateway\_CallDetailsThresh\_Config.frep

  
 invent

## Cisco IP Telephony

### Modify Gateway CallDetails Thresholds

---

This form allows you to modify CallDetails thresholds for the Gateway. Enter/modify the threshold values. Click the OK button to save the values and close the window. Click the Apply button to update the values in the database and leave the window open for further modifications. Click the Cancel button to cancel.

**Gateway Selection**  
 Hold the Ctrl or Shift key to select multiple rows

Gateway	CallSuccessThreshold	NetworkFailThreshold	QoSThreshold
gateway1	50.0	50.0	3.0

**CallSuccessThreshold**  If CallSuccessRate is less than this threshold, send a trap to NNM.

**NetworkFailThreshold**  If NetworkFailRate is greater than this threshold, send a trap to NNM.

**AverageQoSThreshold**  If AverageQoS is greater than this threshold, send a trap to NNM.

- 7 Modify one or more defaults.
- 8 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.


## Modifying IP Phone User and Location

Follow these steps to modify default thresholds for gateways:

- 1 Start the Management Console.
- 2 Click **Objects**. The Object/Property Management window opens.
- 3 Select **View > Change View > Cluster**.
- 4 Select a location, then open the CallManager folder.
- 5 Open the IP phone folder and select an IP phone. You will see the Configure IP Phone User and Location form under **Tasks Specific to the Selected Objects**.
- 6 Double-click **Configure IP Phone User and Location**. The form opens.
- 7 Add the user and location for one or multiple IP phones.
- 8 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

/admin/Cisco\_IPT\_Admin\_Forms/IP\_Phone\_Config.frep \_ \_

# Cisco IP Telephony



## Configure IP Phone UserName and Location

---

This form allows you to configure the user name and location for a given IP Phone associated with a CallManager. Enter/modify the values. Click the OK button to save the values and close the window. Click the Apply button to update the values in the database and leave the window open for further modifications. Click the Cancel button to cancel.

**IP Phone Selection**

CallManager	phoneNumber	DeviceName	UserName	Location
Cluster1_CCM1	7793538	Patphone		Location Unassigned
Cluster1_CCM1	7793502	Softphone		Location Unassigned
Cluster1_CCM1	7793520	k00075674		Location Unassigned
Cluster1_CCM1	7793522	k00136033		Location Unassigned
Cluster1_CCM1	7793535	m00443406		Location Unassigned
Cluster1_CCM1	7793599	m00568807		Location Unassigned
Cluster1_CCM1	7793501	SEP000A412B7954		Location Unassigned
Cluster1_CCM1	7793502	SEP0009E881263B		Location Unassigned
Cluster1_CCM1	7793503	SEP000A41426997		Location Unassigned
Cluster1_CCM1	7793535	SEP0009E8812431		Location Unassigned

**User Name**

**Location**

## Modify IP QoS Parameters

Follow these steps to modify default QoS definition ranges:

- 1 Start the Management Console.
- 2 Click **Objects**. The Object/Property Management window opens.
- 3 You will see the Modify QoS Parameters form under **General Tasks**.
- 4 Double-click **Modify QoS Parameters**. The form opens.
- 5 Modify defaults for Good, Acceptable, Fair.
- 6 Click **Apply** to save changes, **OK** to save changes and close the form, or **Cancel** to close the form without saving changes.

/admin/Cisco\_IPT\_Admin\_Forms/Define\_QoS\_Parameters.frep

### Cisco IP Telephony



### Modify QoS Parameters

This form allows you to configure the QoS parameters which define the ranges of selected statistic values. Enter/modify the parameter values. QoS weight is the weight used to compute QoS for the selected metric (i.e., LostPackets, Jitter, and Latency). Click the OK button to save the values and close the window. Click the Apply button to update the values in the database and leave the window open for further modifications. Click the Cancel button to cancel.

Quality of Service	LostPackets (%) <=	Jitter (ms) <=	Latency (ms) <=
<b>Good</b>	<input type="text" value="15.00"/>	<input type="text" value="20.00"/>	<input type="text" value="150.00"/>
<b>Acceptable</b>	<input type="text" value="30.00"/>	<input type="text" value="100.00"/>	<input type="text" value="250.00"/>
<b>Fair</b>	<input type="text" value="45.00"/>	<input type="text" value="150.00"/>	<input type="text" value="500.00"/>
<b>Poor</b>	Otherwise	Otherwise	Otherwise
<b>QoS Weight</b>	<input type="text" value="1.00"/>	<input type="text" value="1.00"/>	<input type="text" value="1.00"/>

# Distributed Systems

If you intend to run IPT Call Detail as a distributed system, and you followed the instructions in the installation chapter, you installed packages on the central server and each satellite server. The following packages are installed on the central server:

- IP Telephony Call Detail 2.0
- Location Sub-Package (optional)
- Thresholds Sub-Package (optional)
- Common Property Tables 3.5

The following packages are installed on each satellite server:

- IP Telephony Call Detail 2.0
- Location Sub-Package (optional)
- Common Property Tables 3.5
- Cisco CDR Datapipe

Your next step is to configure the central server to pull data from each satellite server. This is done by setting up connections from the central server to each satellite server database and by configuring trendcopy pull commands for each satellite server database. You also must disable daily aggregations on each satellite server.

## Configuring the Central Server

To configure the central server, perform these tasks:

- Task 1: Set up connections with satellite server databases
- Task 2: Configure trendcopy pull commands for IPT\_CallDetails.ap
- Task 3: Configure trendcopy pull commands for IPT\_CallDetails\_Location.ap

In addition to performing these tasks, verify that the system clock on the central server is synchronized with the system clock on each satellite server.

### 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 finish adding databases.

### Task 2: Configure trendcopy pull commands for IPT\_CallDetails.ap

- 1 Configure trendcopy pull commands for each satellite server; open the following file:

```
$DPIPE_HOME/scripts/IPT_CallDetails_trendcopy.pro
```

- 2 Remove '#' in block0:

```
begin: block0 wait

{DPIPE_HOME}/bin/trendcopy -t SHIPT_QoS_phoneNum -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_QoS_gateway -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_QoS_CManager -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_QoS_Cluster -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_Hist_phoneNum -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_Hist_gateway -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_Hist_CManager -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_Hist_Cluster -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

end: block0
```

- 3 Modify block0 as follows:
  - Replace *SATELLITE\_SERVER\_1\_DATABASE* with the satellite server name
  - Replace *THIS\_MACHINE\_DATABASE* with the central server name
- 4 If there is more than one satellite server, create a copy of block0 for each satellite server and repeat steps 2 and 3 for each copy of block0.

### Task 3: Configure trendcopy pull commands for IPT\_CallDetails\_Location.ap

- 1 Open the following file:

```
$DPIPE_HOME/scripts/IPT_CallDetails_Loc_trendcopy.pro
```

- 2 Remove all '#' in the block0 as shown below:

```
begin: block0 wait
```

```
{DPIPE_HOME}/bin/trendcopy -t SHIPT_QoS_gateway_loc -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_QoS_loc -s SATELLITE_SERVER_1_DATABASE
-S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_Hist_gateway_loc -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

{DPIPE_HOME}/bin/trendcopy -t SHIPT_Hist_loc -s
SATELLITE_SERVER_1_DATABASE -S THIS_MACHINE_DATABASE

end: block0
```

- 3 Modify block0 as follows:
  - Replace *SATELLITE\_SERVER\_1\_DATABASE* with the satellite server name
  - Replace *THIS\_MACHINE\_DATABASE* with the central server name
- 4 If there is more than one satellite server, create a copy of block0 for each satellite server and repeat step 6 and 7 for each copy of block0.
- 5 Open this file:
 

```
DPIPE_HOME/scripts/IPT_CallDetails_Location_Daily.pro
```
- 6 Comment out block1 by adding the comment sign (“#”) before the word **begin** and the word **end**.

## Configuring a Satellite Server

Follow these steps to disable daily aggregations on each satellite server:

- 1 Open the following file:
 

```
$DPIPE_HOME/scripts/IPT_CallDetails_Daily.pro
```
- 2 Comment out block1 to block8 by adding the comment sign (“#”) before the word **begin** and the word **end**.
- 3 Open this file:
 

```
DPIPE_HOME/scripts/IPT_CallDetails_Location_Daily.pro
```
- 4 Comment out block2 to block4 by adding the comment sign (“#”) before the word **begin** and the word **end**.
- 5 Verify that the system clock is synchronized with the system clock on the central server.





## Call History Summary

The History Summary reports look at call history from the following perspectives:

- Cluster
- CallManager
- Gateway by CallManager
- Gateway by Location
- Location
- Phone number

The focus of this report, regardless of the perspective you are using, is yesterday's Call Success Rate (CSR). CSR is a percentage calculated by dividing successful calls by total calls and multiplying the result by 100. All selection tables sort by CSR, highest to lowest. All History Summary reports provide the following graphs:

- Total Call Volume stacked by Success Call and Failed Call
- Total Call Minutes
- Call Type Distribution stacked by:
  - Internal
  - Incoming PSTN
  - Outgoing Local; Long Distance; International
  - Tandem
- Maximum and Average Call Duration per success call
- Abnormal Disconnect Cause stacked by:
  - Called Party Cause
  - Wrong Number
  - No Response
  - Network Fail
  - Others
- Call Duration Distribution stacked by:
  - Less than 1 minute

- 1 to 5 minutes
- 5 to 30 minutes
- 30 minutes to 2 hours
- 2 hours to 12 hours
- More than 12 hours

An hourly graph shows 24 hours for yesterday, a daily graph looks at data for the previous 30 days, and a monthly graph looks at data for the previous 12 months.

# Cisco IP Telephony Call Details



## Cluster History Summary

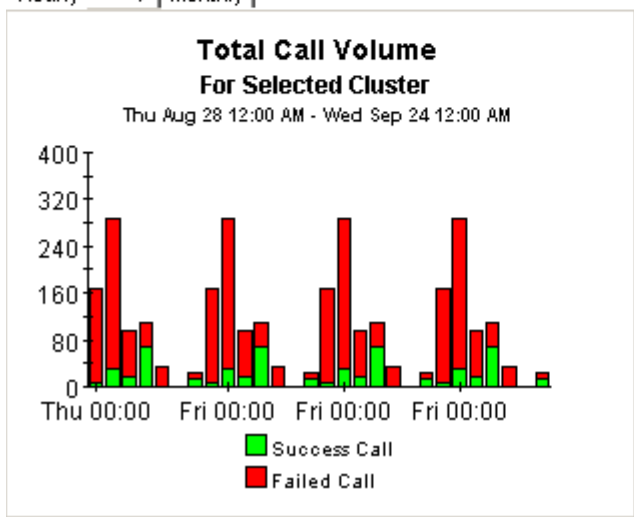
The Cluster History Summary Report presents call history metrics aggregated for a given Call Manager Cluster. This report can be used to view call history statistics and identify device performance issues.

### Cluster Selection

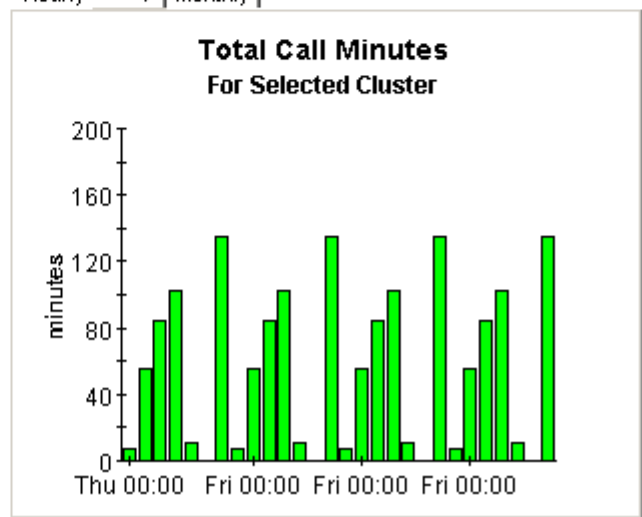
Wed Sep 24 12:00 AM

ClusterName	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
Cluster1	24	52.2	134.4	13

Hourly | **Daily** | Monthly

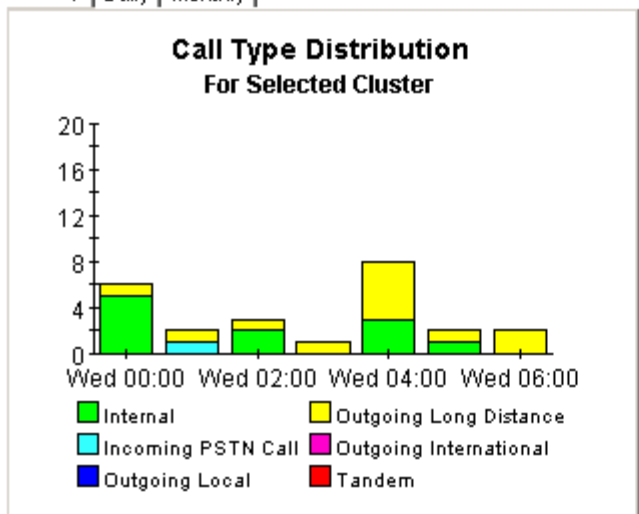


Hourly | **Daily** | Monthly

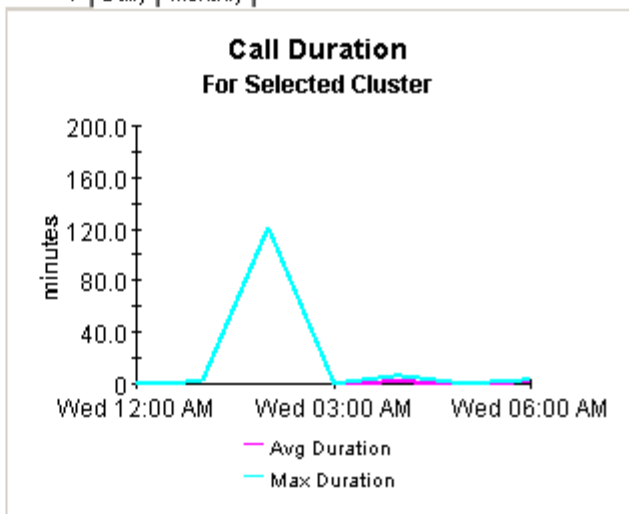




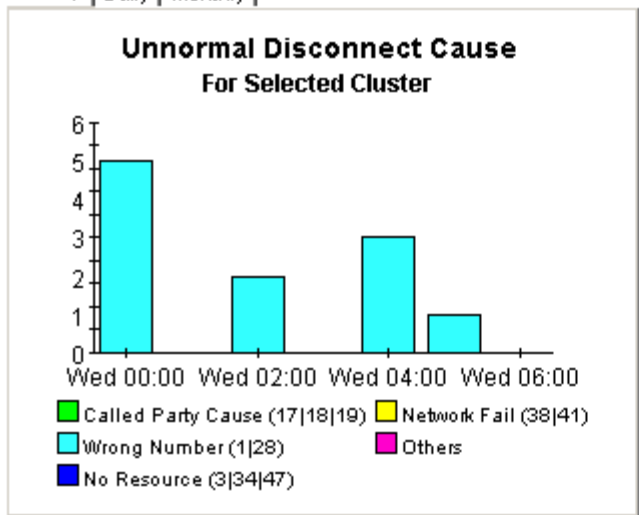
Hourly | Daily | Monthly



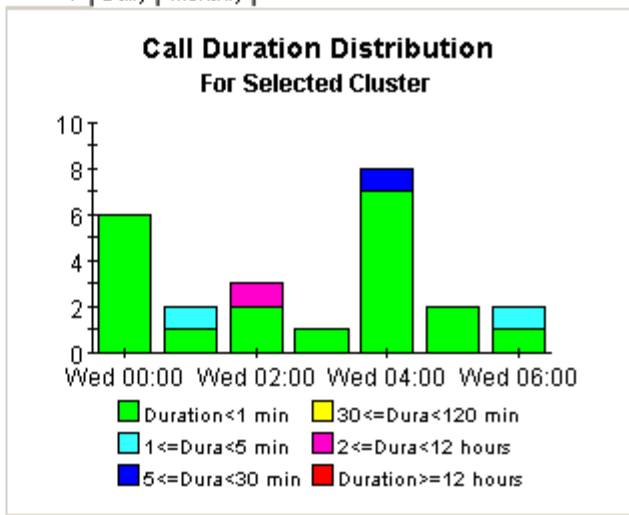
Hourly | Daily | Monthly



Hourly | Daily | Monthly



Hourly | Daily | Monthly



# Cisco IP Telephony Call Details



## CallManager History Summary

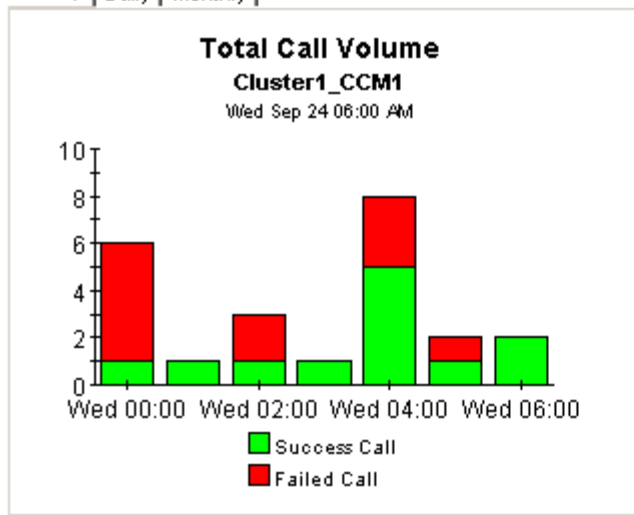
The CallManager History Summary Report presents call history metrics aggregated for a given Call Manager. This report can be used to view call history statistics and identify device performance issues.

### CallManager Selection

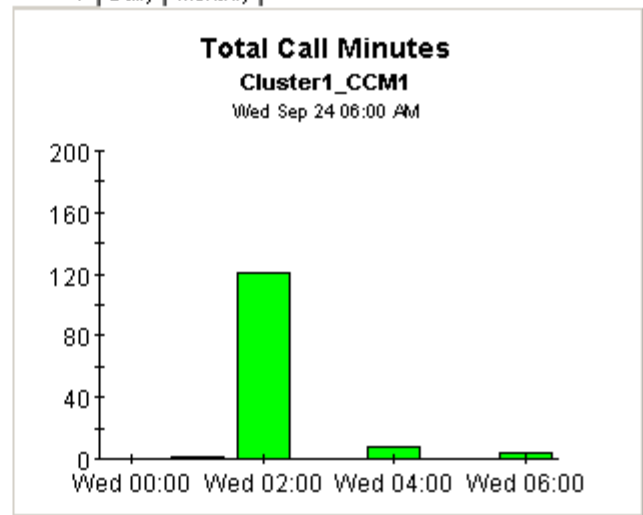
Wed Sep 24 12:00 AM

Cluster_CallManager	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
Cluster1_CCM1	24	52.2	134.4	13

Hourly | Daily | Monthly

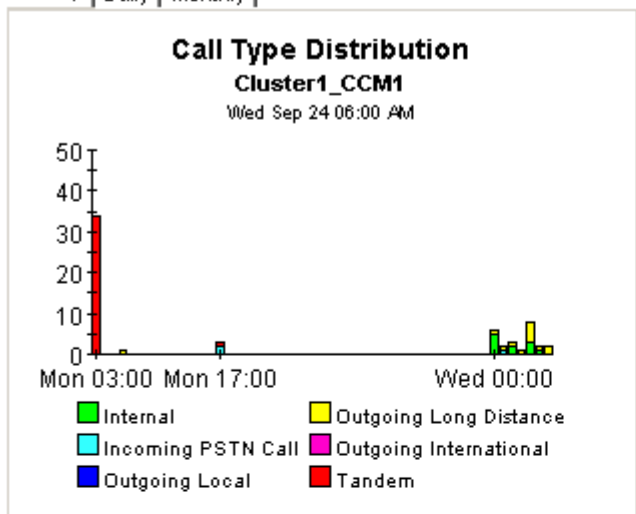


Hourly | Daily | Monthly

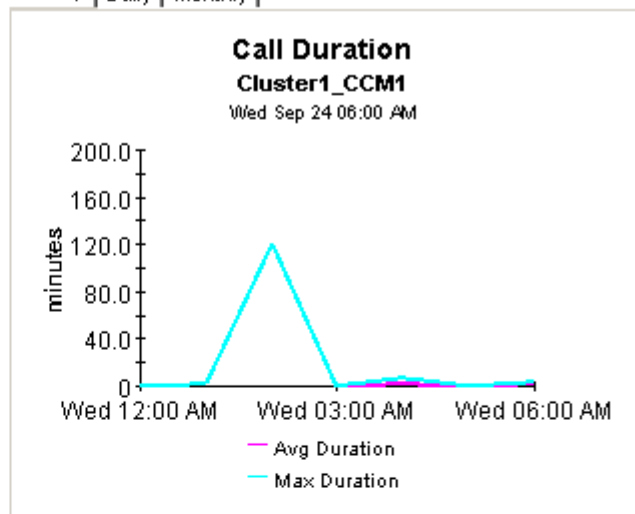




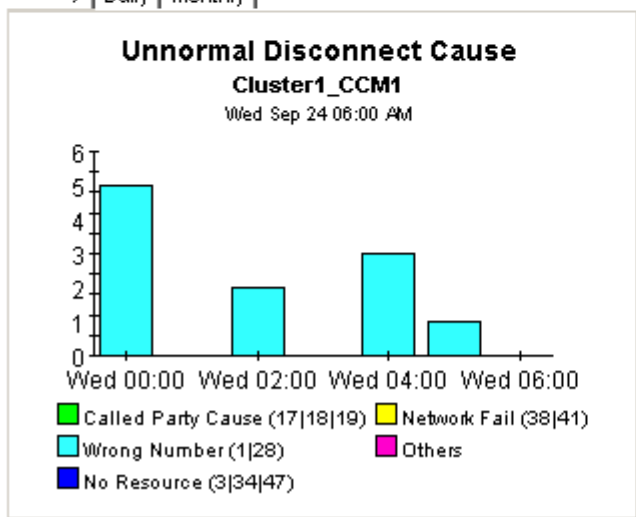
Hourly | Daily | Monthly



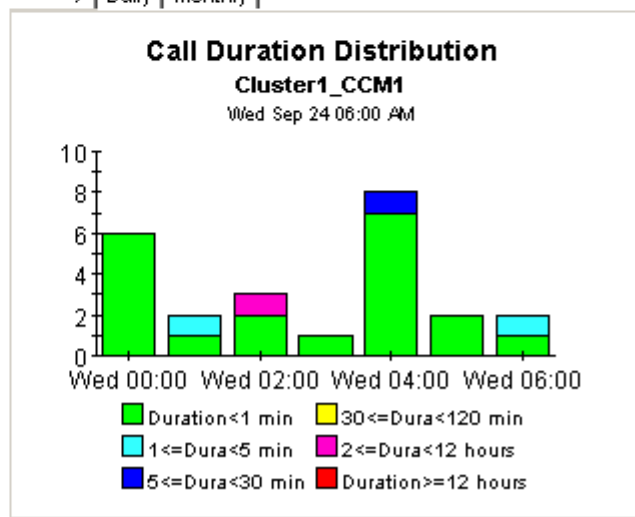
Hourly | Daily | Monthly



Hourly | Daily | Monthly



Hourly | Daily | Monthly



# Cisco IP Telephony Call Details



## Gateway History Summary by CallManager

The Gateway History Summary Report presents call history metrics aggregated for a given gateway. This report can be used to view call history statistics and identify device performance issues.

### CallManager Selection

Wed Sep 24 12:00 AM

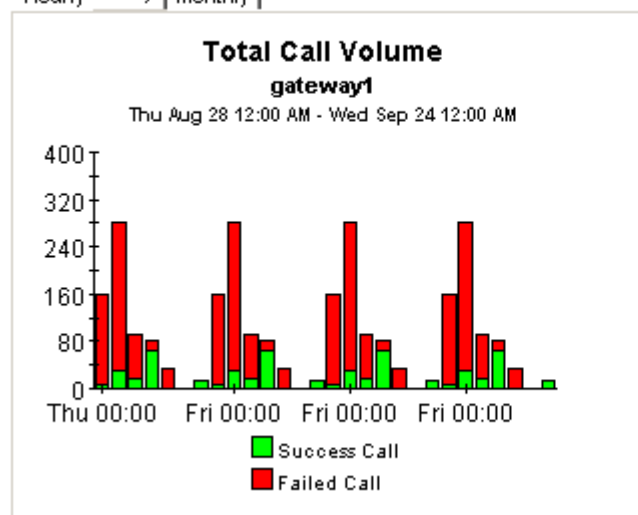
Call Manager	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
Cluster1_CCM1	24	52.2	134.4	13

### Gateway Selection

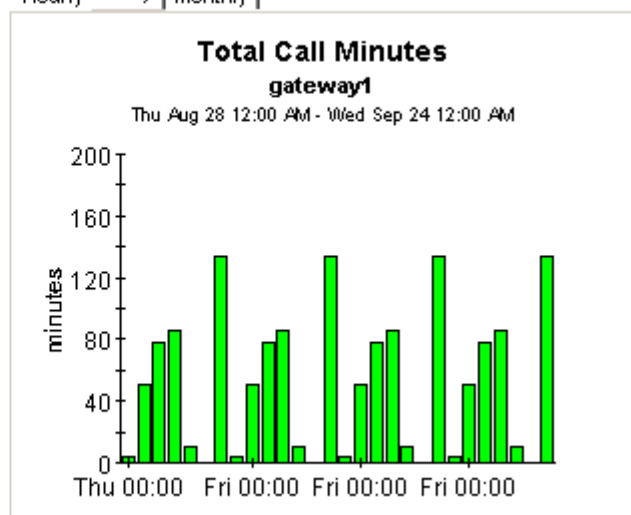
Wed Sep 24 12:00 AM

Gateway	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
gateway1	13	100.0	134.4	13

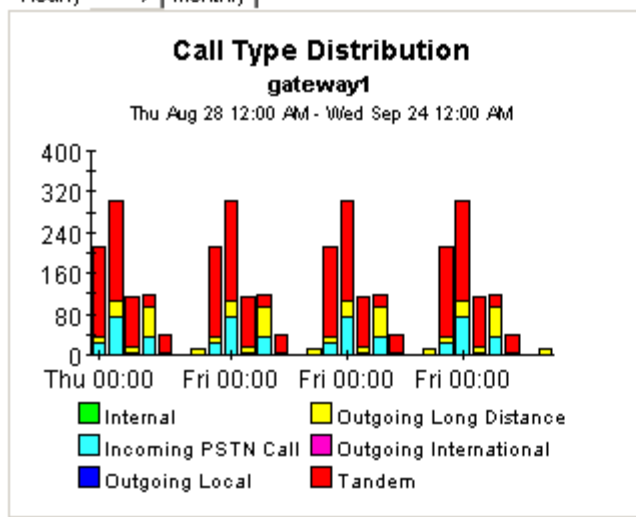
Hourly | **Daily** | Monthly



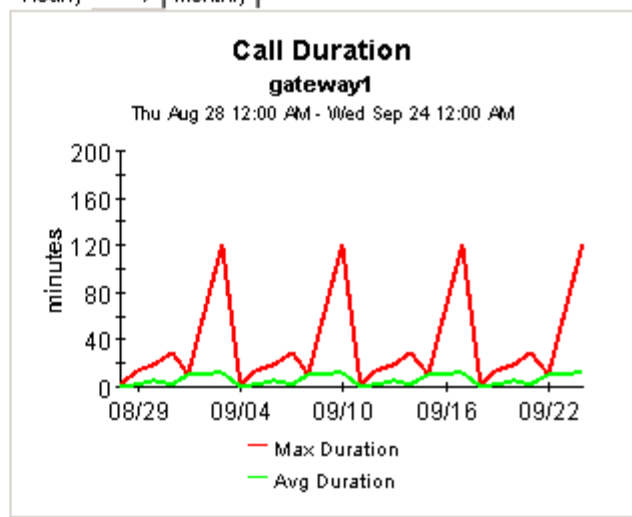
Hourly | **Daily** | Monthly



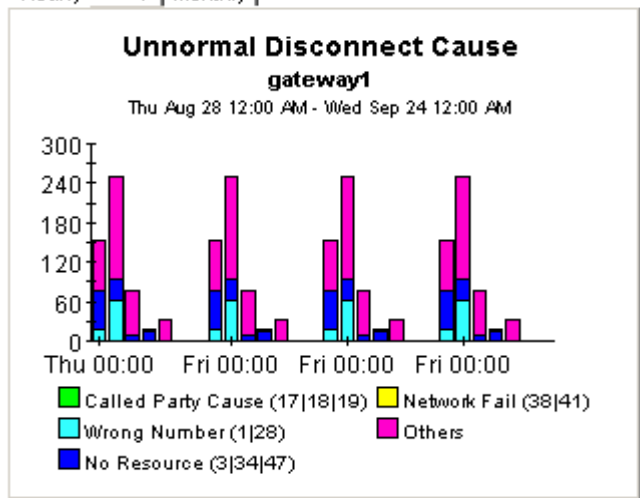
Hourly Daily Monthly



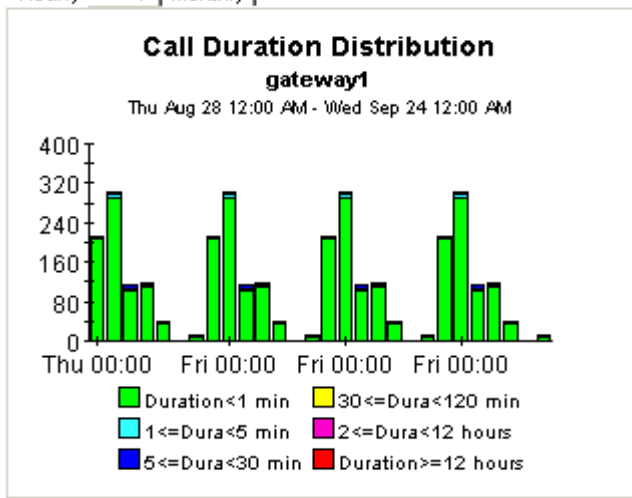
Hourly Daily Monthly



Hourly Daily Monthly



Hourly Daily Monthly



# Cisco IP Telephony Call Details



## Gateway History Summary by Location

The Gateway History Summary by Location Report presents call history metrics aggregated for a given gateway. This report can be used to view call history statistics and identify device performance issues.

### Location Selection

Wed Sep 24 12:00 AM

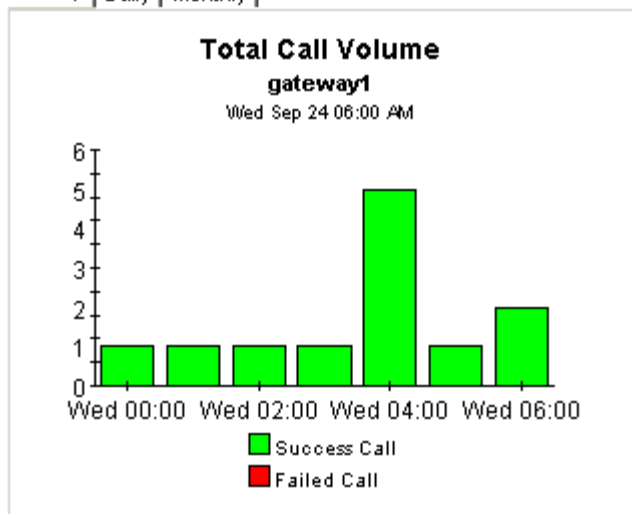
Location	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
Location Unassigned	23	52.2	134.4	12

### Gateway Selection

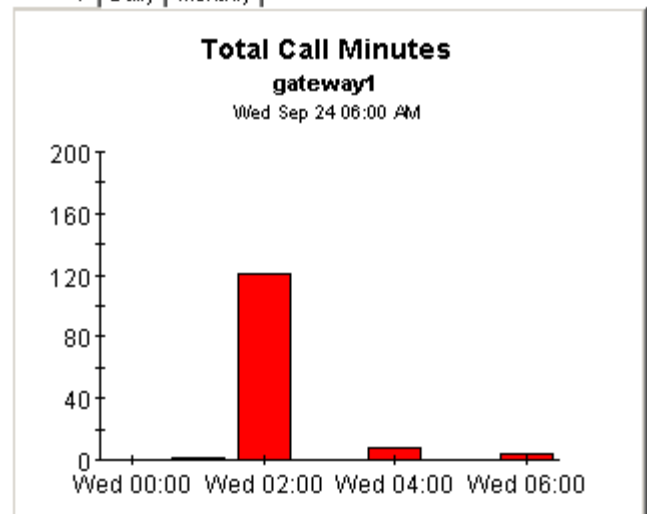
Wed Sep 24 12:00 AM

Gateway	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
gateway1	13	100.0	134.4	13

Hourly | Daily | Monthly



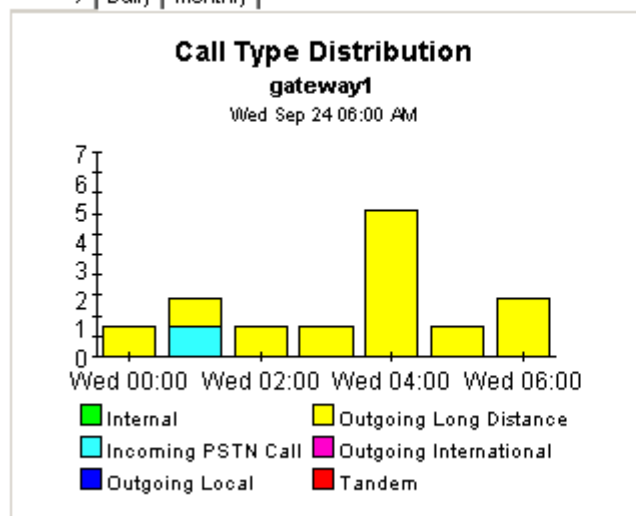
Hourly | Daily | Monthly



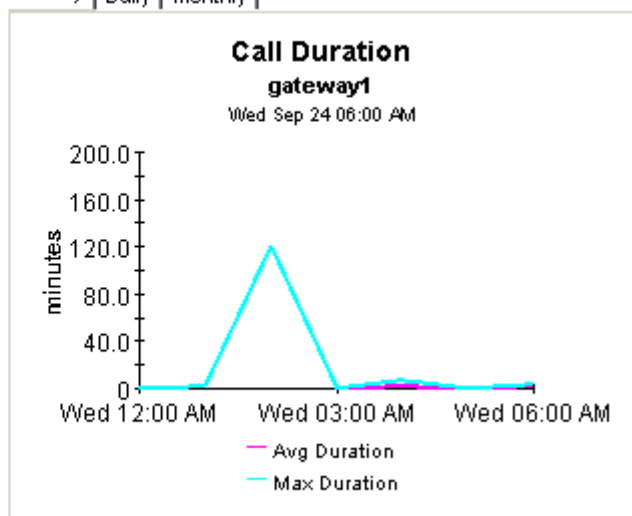




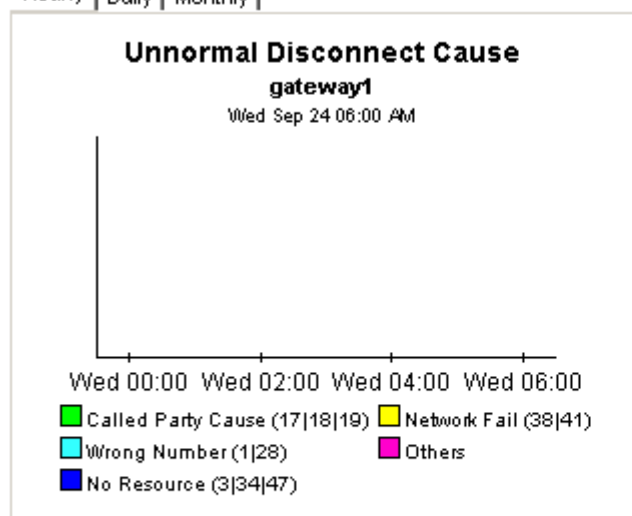
Hourly | Daily | Monthly



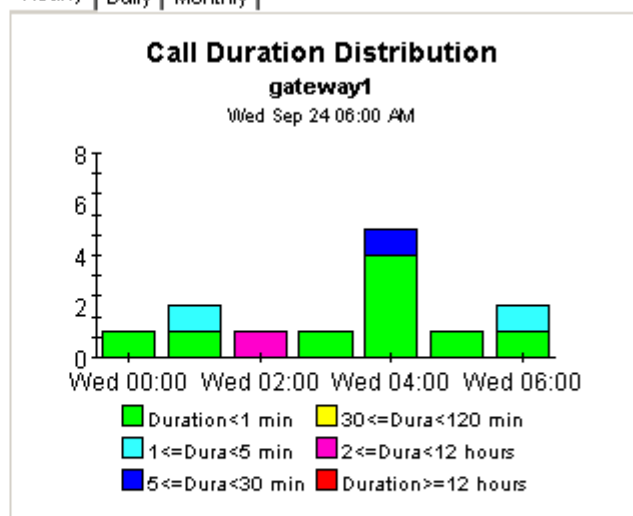
Hourly | Daily | Monthly



Hourly | Daily | Monthly



Hourly | Daily | Monthly



# Cisco IP Telephony Call Details



## Phone Number History Summary

The Phone Number History Summary Report presents call history metrics aggregated for a given Phone Number. This report can be used to view call history statistics and identify device performance issues.

### CallManager Selection

Wed Sep 24 12:00 AM

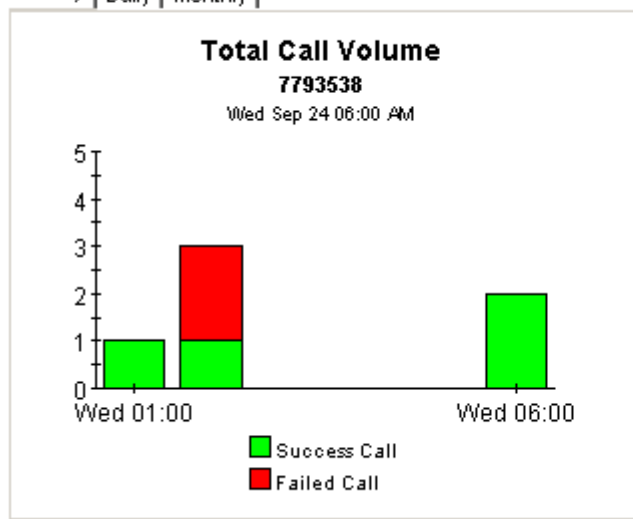
Call Manager	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
Cluster1_CCM1	24	52.2	134.4	13

### Phone Number Selection

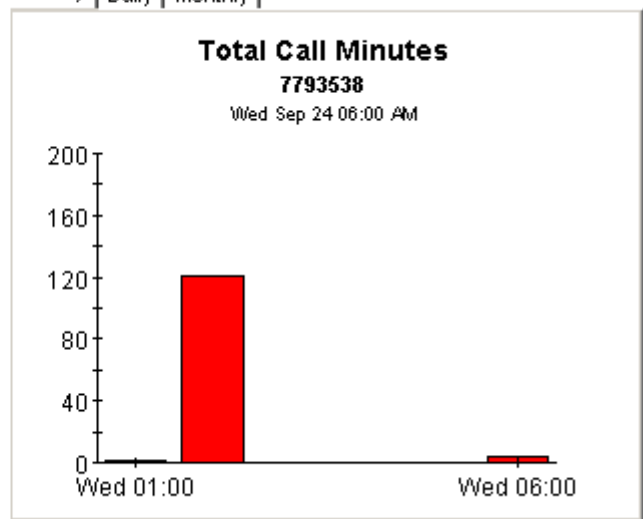
Wed Sep 24 12:00 AM

Phone Number	Total Calls	CSR (%)	Total Call Minutes	Total Normal Disconnections
7793538	6	66.7	125.8	4
7793520	8	62.5	8.0	5
7793535	2	50.0	0.2	1
7793599	6	16.7	0.3	1
7793535	1	100.0	0.1	1

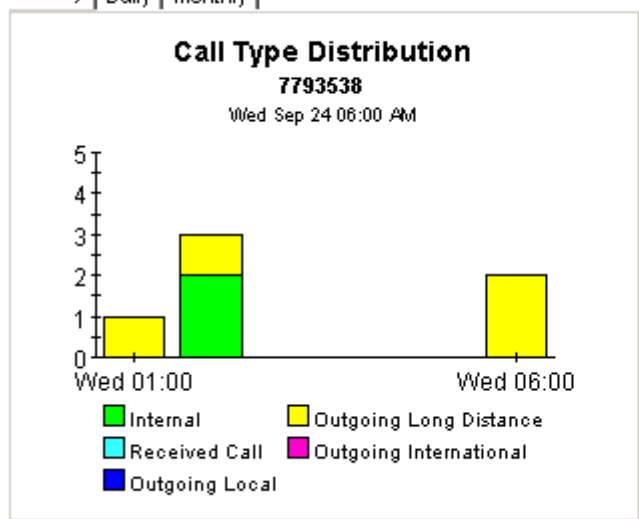
Hourly | Daily | Monthly



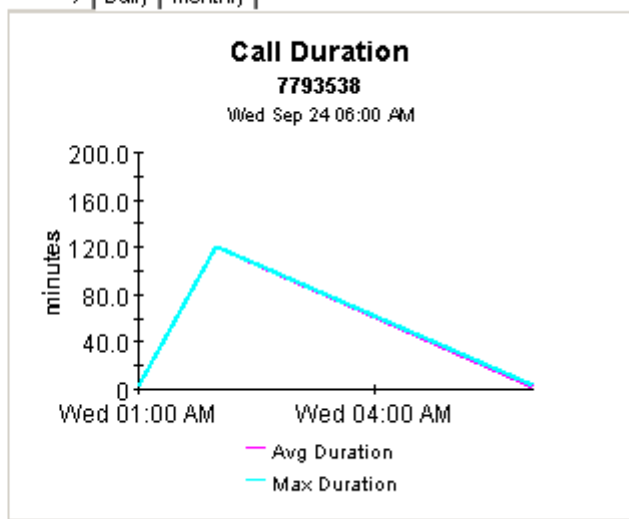
Hourly | Daily | Monthly



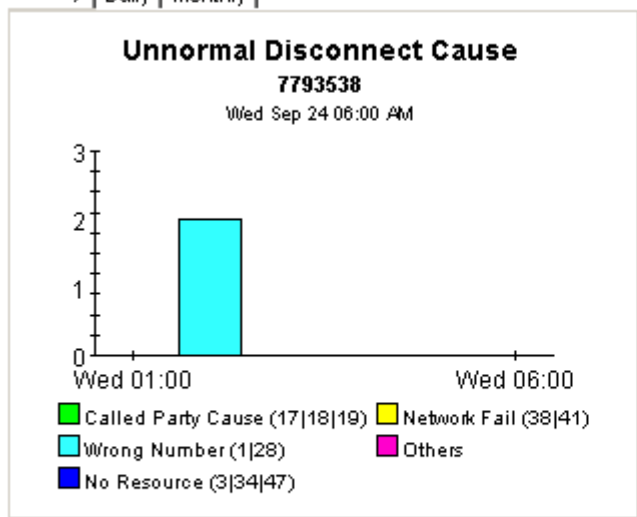
Hourly | Daily | Monthly



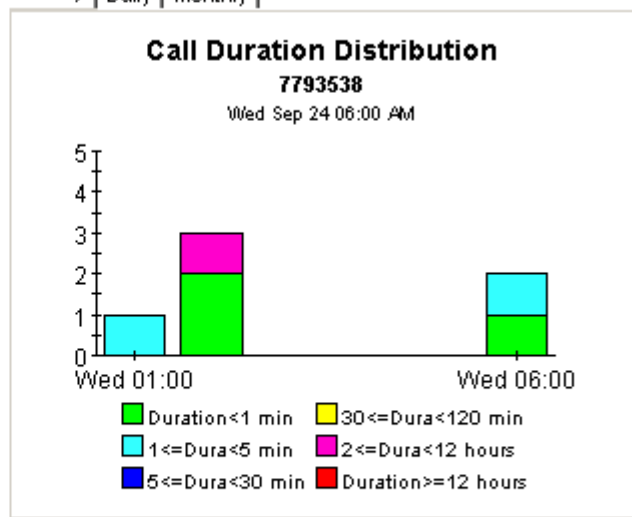
Hourly | Daily | Monthly



Hourly | Daily | Monthly



Hourly | Daily | Monthly





## Top Ten Reports

There are twelve top ten reports: six in the call history area, and six in the call QoS area.

<b>Call History</b>	<b>Call QoS</b>
Cluster History Top Ten	Cluster QoS Top Ten
CallManager History Top Ten	CallManager QoS Top Ten
Gateway History Top Ten by CallManager	Gateway QoS Top Ten by CallManager
Phone Number History Top Ten	Phone Number QoS Top Ten
Location History Top Ten	Location QoS Top Ten
Gateway History Top Ten by Location	Gateway QoS Top Ten by Location

Every top ten report performs a ranking function that makes it easy for you to spot potential problem areas in yesterday's extremes. The call history reports contain these tables:

- Highest Call Volume
- Highest Call Volume Increase
- Most Call Minutes
- Highest Call Minutes Increase
- Worst Call Success Rate
- Highest CSR Decrease

The call QoS reports contain these tables:

- Highest Packet Lost
- Highest Packet Lost Increase
- Highest Jitter
- Highest Jitter Increase
- Highest Latency
- Highest Latency Increase

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# Cisco IP Telephony Call Details



## Cluster History Top Ten

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The Cluster History Top Ten Report provides lists of Cluster that had the highest call volume, highest call minutes, and worst call success rate during the previous day. Clusters are also listed by the highest projected increase rate for each metric.

### Highest Call Volume

Wed Sep 24 12:00 AM

Cluster Name	Calls
Cluster1	24

### Highest Call Youlme Increase

Thu Aug 28 12:00 AM

Cluster Name	Baseline	+30/60/90 Days
Cluster1	142	30/-47/-124

### Most Call Minutes

Wed Sep 24 12:00 AM

Cluster Name	Minutes
Cluster1	134

### Highest Call Minutes Increase

Thu Aug 28 12:00 AM

Cluster Name	Baseline (minutes)	+30/60/90 Days
Cluster1	66	103/128/153

### Worst Call Success Rate

Wed Sep 24 12:00 AM

Cluster Name	CSR,%
Cluster1	52.2

### Highest CSR Decrease

Thu Aug 28 12:00 AM

Cluster Name	Baseline (%)	+30/60/90 Days
Cluster1	19.2	80/-999/-999

# Cisco IP Telephony Call Details



## CallManager History Top Ten

The CallManager History Top Ten Report provides lists of CallManager that had the highest call volume, highest call minutes, and worst call success rate during the previous day. CallManagers are also listed by the highest projected increase rate for each metric.

### Highest Call Volume

Wed Sep 24 12:00 AM

Call Manager	Calls
Cluster1_CCM1	24

### Highest Call Volume Increase

Thu Aug 28 12:00 AM

Call Manager	Baseline	+30/60/90 Days
Cluster1_CCM1	142	30/-47/-124

### Most Call Minutes

Wed Sep 24 12:00 AM

Call Manager	Minutes
Cluster1_CCM1	134

### Highest Call Minutes Increase

Thu Aug 28 12:00 AM

Call Manager	Baseline (minutes)	+30/60/90 Days
Cluster1_CCM1	66	103/128/153

### Worst Call Success Rate

Wed Sep 24 12:00 AM

Call Manager	CSR,%
Cluster1_CCM1	52.2

### Highest CSR Decrease

Thu Aug 28 12:00 AM

Call Manager	Baseline (%)	+30/60/90 Days
Cluster1_CCM1	19.2	80/-999/-999

# Cisco IP Telephony Call Details



## Cluster QoS Top Ten

---

The Cluster QoS Top Ten Report provides lists of Cluster which had the highest Packets Lost, highest Jitter, and highest Latency during the previous day. Clusters are also listed by the highest projected increase rate for each metric.

### Highest Packets Lost

Cluster Name	Packets Lost (%)
Cluster1	0.0

### Highest Packets Lost Increase

Cluster Name	Baseline (%)	+30/60/90/ Days
Cluster1	0.1	0.1/0.0/0.0

### Highest Jitter

Cluster Name	Jitter (ms)
Cluster1	7.0

### Highest Jitter Increase

Cluster Name	Baseline (ms)	+30/60/90/ Days
Cluster1	6.8	6.4/6.7/7.1

### Highest Latency

Cluster Name	Latency (ms)
Cluster1	0.0

### Highest Latency Increase

Cluster Name	Baseline (ms)	+30/60/90/ Days
Cluster1	0.0	0.0/0.0/0.0



# Cisco IP Telephony Call Details



## CallManager QoS Top Ten

---

The CallManager QoS Top Ten Report provides lists of CallManager that had the highest Packets Lost, highest Jitter, and highest Latency during the previous day. CallManagers are also listed by the highest projected increase rate for each metric.

### Highest Packets Lost

CallManager	Packets Lost (%)
Cluster1_CCM1	0.0

### Highest Packets Lost Increase

CallManager	Baseline (%)	+30/60/90/ Days
Cluster1_CCM1	0.1	0.1/0.0/0.0

### Highest Jitter

CallManager	Jitter (ms)
Cluster1_CCM1	7.0

### Highest Jitter Increase

CallManager	Baseline (ms)	+30/60/90/ Days
Cluster1_CCM1	5.8	6.4/6.7/7.1

### Highest Latency

CallManager	Latency (ms)
Cluster1_CCM1	0.0

### Highest Latency Increase

CallManager	Baseline (ms)	+30/60/90/ Days
Cluster1_CCM1	0.0	0.0/0.0/0.0



## Call QoS Summary Reports

The call QoS summary reports provide QoS metrics aggregated by:

- Cluster
- CallManager
- The gateways associated with each CallManager
- The gateways associated with each location
- The phone numbers associated with each CallManager
- The phone numbers associated with each location

These reports focus on the following metrics:

- Total calls
- Average packets lost
- Average jitter
- Average latency
- Average QoS

Investigate Packets Lost more closely by looking at the following data graphs, tabbed Hourly, Daily, and Monthly:

- Calls by QoS Value stacked by:
  - Good
  - Acceptable
  - Fair
  - Poor
- Packets Lost
- Jitter
  - Average
  - Maximum
- Latency
  - Average
  - Maximum

# Cisco IP Telephony Call Details



## Cluster QoS Summary

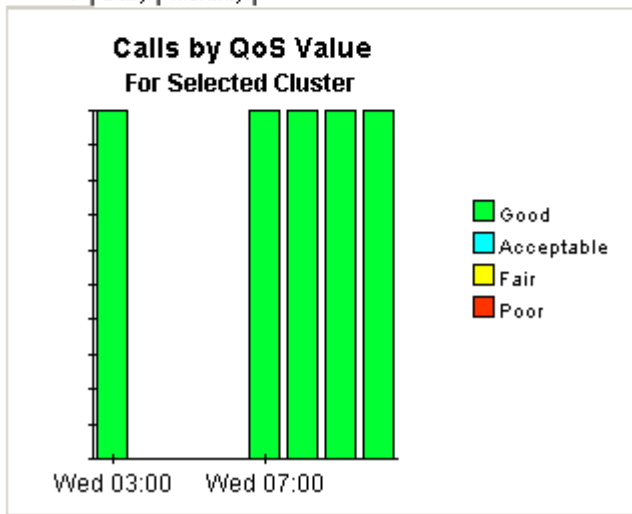
The Cluster QoS Report presents QoS metrics aggregated for a given Cluster. This report can be used to view QoS statistic metrics and identify device performance issues. QoS value is derived from the Packet Lost, Jitter, and Latency metrics based on the pre-defined value ranges. QoS definition: 1=Good, 2=Acceptable, 3=Fair, and 4=Poor.

### Cluster Selection

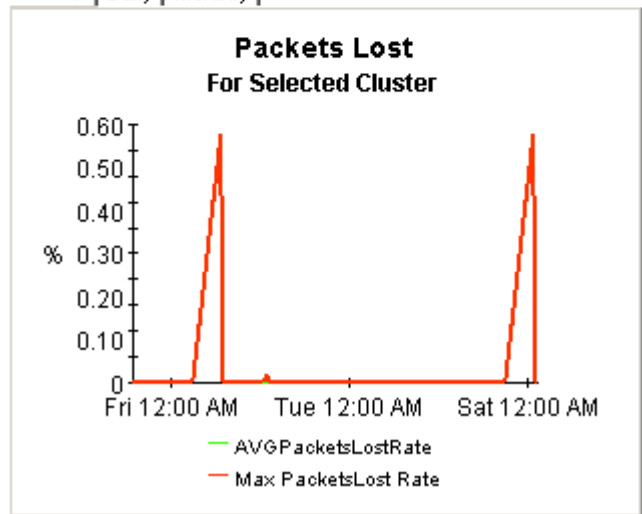
Wed Sep 24 12:00 AM

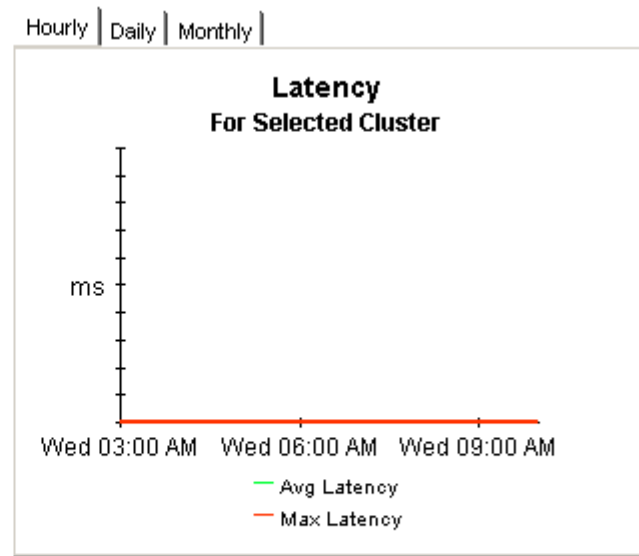
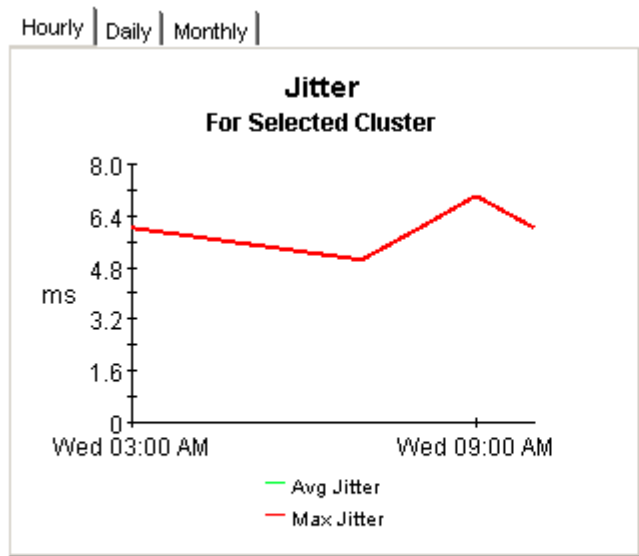
Cluster Name	Total Calls	Avg PacketsLost (%)	Avg Jitter (ms)	Avg Latency (ms)	Avg QoS
Cluster1	5	0.0	6.0	0.0	1.0

Hourly | Daily | Monthly



Hourly | Daily | Monthly





# Cisco IP Telephony Call Details



## Gateway QoS Summary by Location

The Gateway QoS Summary by Location Report presents QoS metrics aggregated for a given Gateway grouped by location. This report can be used to view QoS statistic metrics and identify device performance issues. QoS value is derived from the Packet Lost, Jitter, and Latency metrics based on the pre-defined value ranges. QoS definition: 1=Good, 2=Acceptable, 3=Fair, and 4=Poor.

### Location Selection

Wed Jul 30 12:00 AM

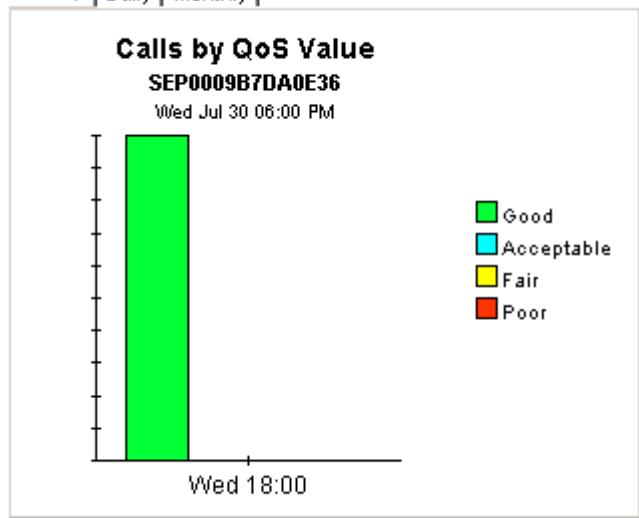
Location	Total Calls	Avg PacketsLost (%)	Avg Jitter (ms)	Avg Latency (ms)	Avg QoS
Location Unassigned	1.00	0.0	0.0	0.0	1.0

### Gateway Selection

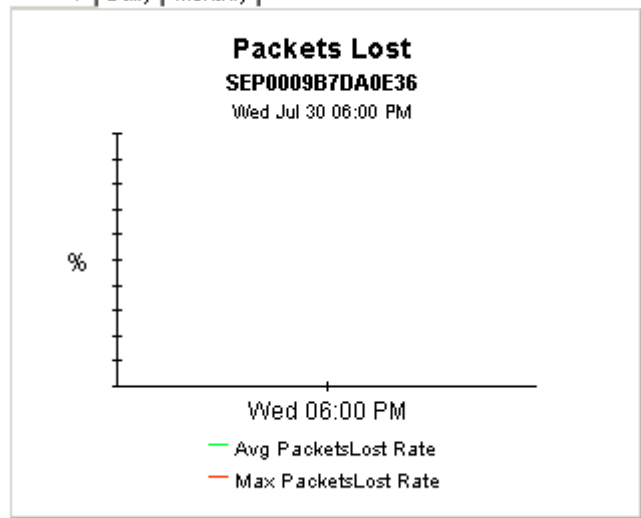
Wed Jul 30 12:00 AM

Gateway	Total Calls	Avg PacketsLost (%)	Avg Jitter (ms)	Avg Latency (ms)	Avg QoS
SEP0009B7DA0E36	1	0.0	0.0	0.0	1.0

Hourly | Daily | Monthly

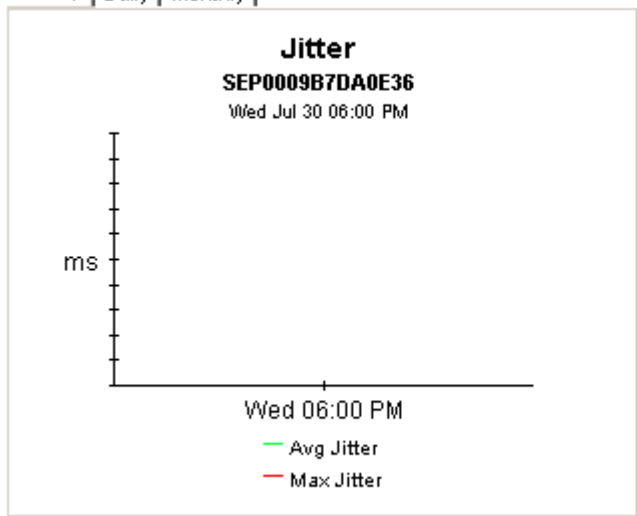


Hourly | Daily | Monthly

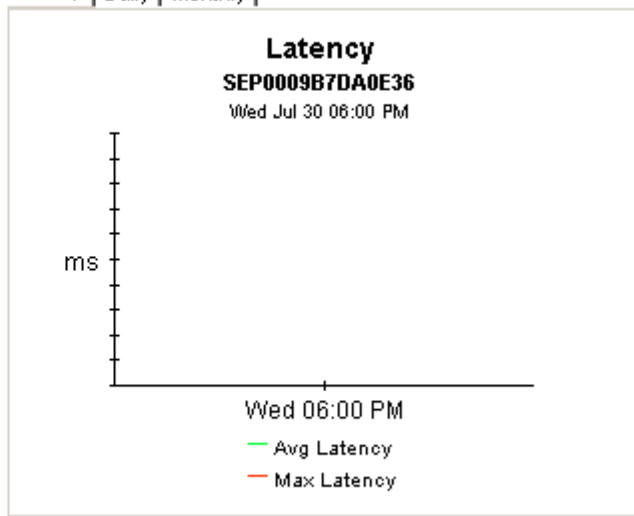




Hourly | Daily | Monthly



Hourly | Daily | Monthly



# Cisco IP Telephony Call Details



## CallManager QoS Summary

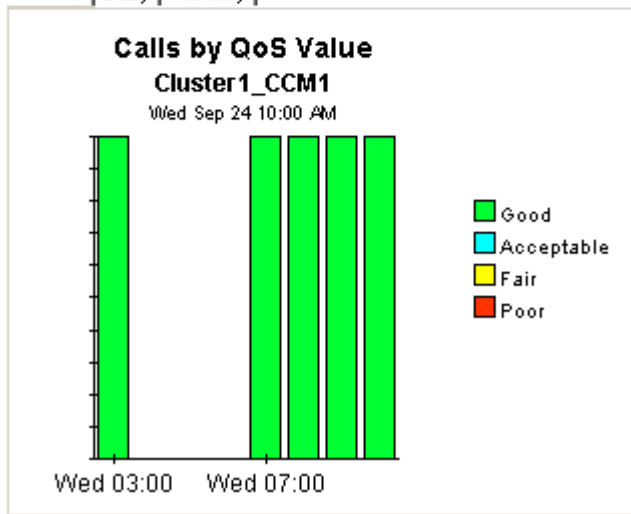
The CallManager QoS Report presents QoS metrics aggregated for a given CallManager. This report can be used to view QoS statistic metrics and identify device performance issues. QoS value is derived from the Packet Lost, Jitter, and Latency metrics based on the pre-defined value ranges. QoS definition: 1=Good, 2=Acceptable, 3=Fair, and 4=Poor.

### CallManager Selection

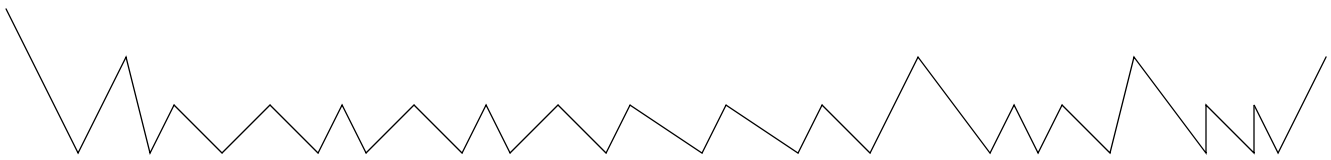
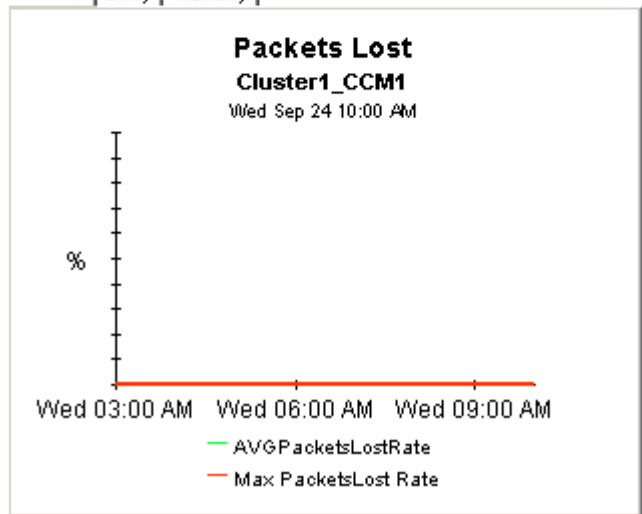
Wed Sep 24 12:00 AM

Call Manager	Total Calls	Avg PacketsLost (%)	Avg Jitter (ms)	Avg Latency (ms)	Avg QoS
Cluster1_CCM1	5	0.0	6.0	0.0	1.0

Hourly | Daily | Monthly



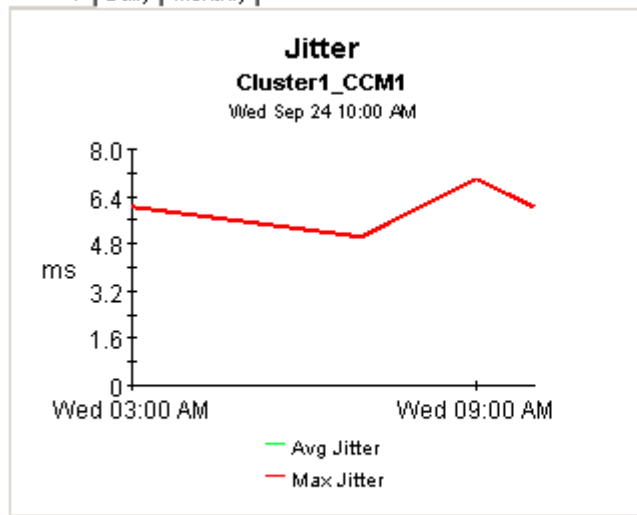
Hourly | Daily | Monthly



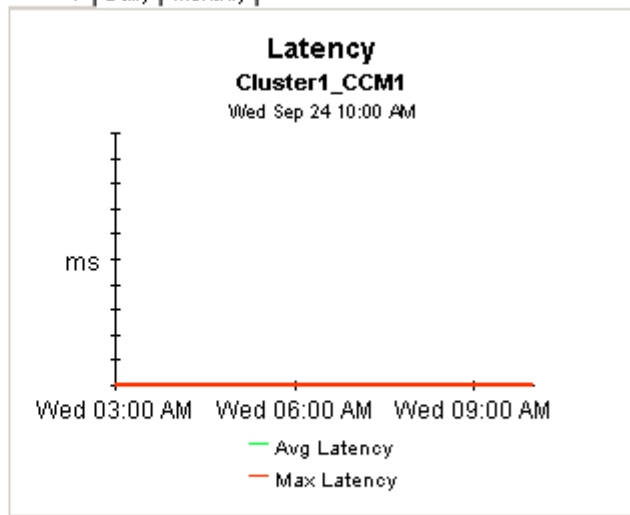




Hourly | Daily | Monthly



Hourly | Daily | Monthly



# Cisco IP Telephony Call Details



## Phone Number QoS Summary

The Phone Number QoS Summary Report presents QoS metrics aggregated for a given phone number associated with a CallManager. This report can be used to view QoS statistic metrics and identify device performance issues. QoS value is derived from the Packet Lost, Jitter, and Latency metrics based on the pre-defined value ranges. QoS definition: 1=Good, 2=Acceptable, 3=Fair, and 4=Poor

### CallManager Selection

Wed Sep 24 12:00 AM

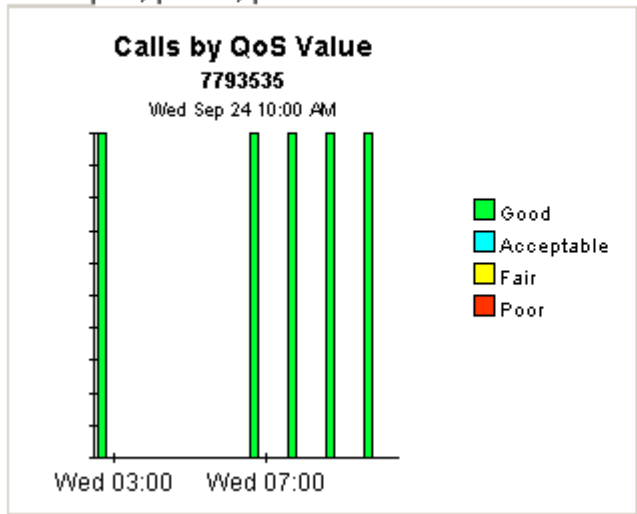
Call Manager	Total Calls	Avg PacketsLost (%)	Avg Jitter (ms)	Avg Latency (ms)	Avg QoS
Cluster1_CCM1	5.00	0.0	6.0	0.0	1.0

### Phone Number Selection

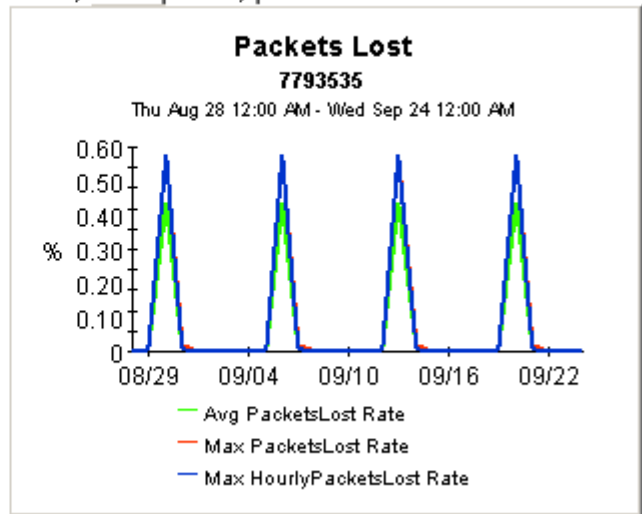
Wed Sep 24 12:00 AM

Phone Number	Total Calls	Avg Jitter (ms)	Avg PacketsLost (%)	Avg Latency (ms)	Avg QoS
7793535	5	6.0	0.0	0.0	1.0

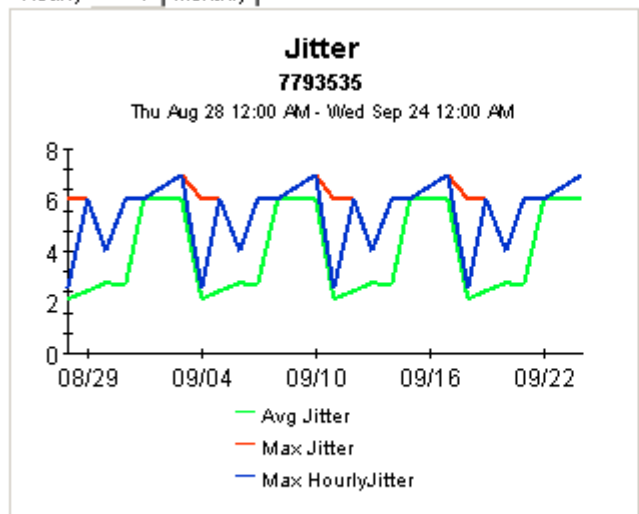
Hourly | Daily | Monthly



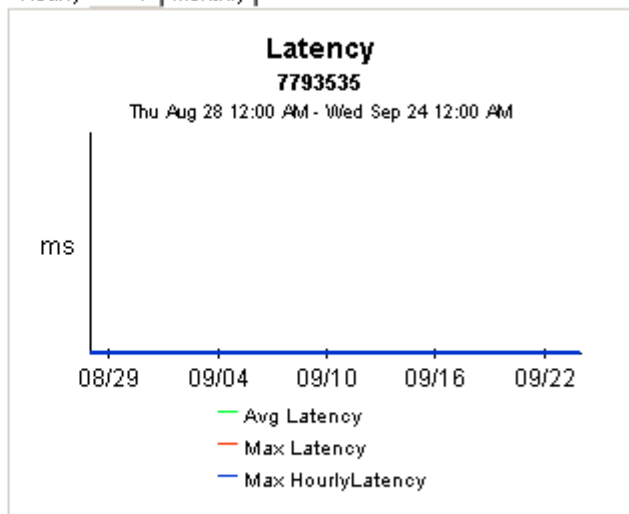
Hourly | Daily | Monthly



Hourly Daily Monthly



Hourly Daily Monthly





## Forecast Reports

Forecast reports tell you whether call volume is growing or decreasing and how fast it is growing or decreasing. IPT Call Detail includes six forecast reports:

- CallManager forecast
- Cluster forecast
- Gateway forecast by CallManager
- Phone number forecast
- Gateway forecast by location
- Location forecast

Each report begins with an estimate of future call volume. The time ranges are 30 days from now, 60 days from now, and 90 days from now. You can investigate future performance in more detail by using the following graphs:

- Call Volume Forecast
- Call Minutes Forecast
- Call Success Rate Forecast
- Average QoS Forecast

Each graph has the following tabs:

### **Standard**

Compare the baseline average to future performance.

### **Day of Week**

Correlate future performance by day of week.

### **History**

Inspect the data collected throughout the baseline period (the previous 91 days).

# Cisco IP Telephony Call Details



## CallManager Forecast

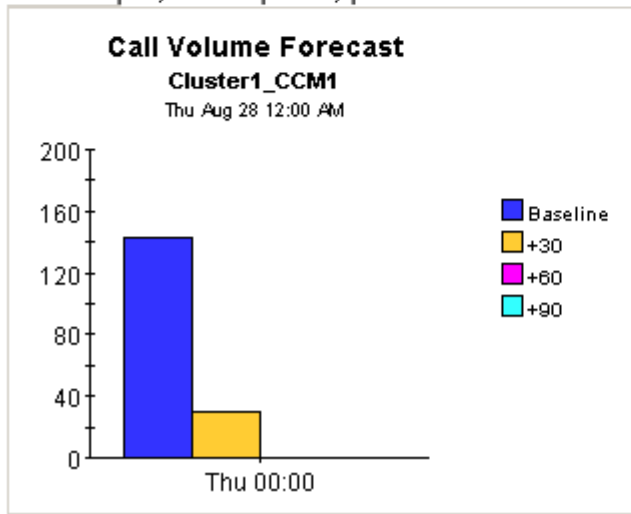
The CallManager Forecast Report enables the user to quickly identify CallManagers with the greatest projected increase in call volume, call minutes, call success rate, and average QoS grade. CallManagers are sorted by rate of increase in number of calls processed. Drill down charts present forecasted overall call volume metrics for the selected CallManager.

### CallManager Selection

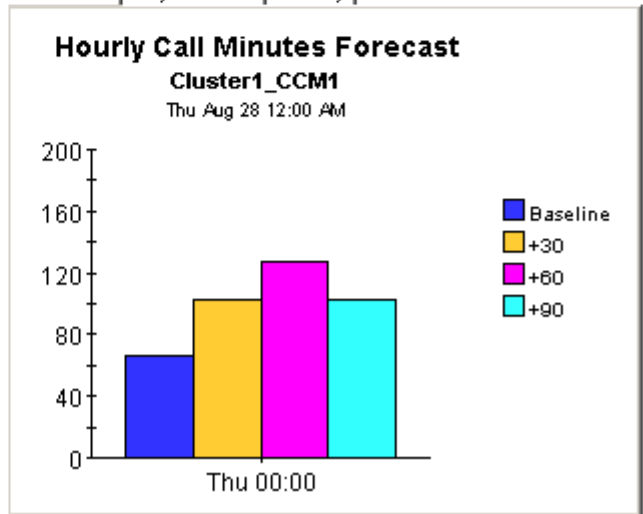
Thu Aug 28 12:00 AM

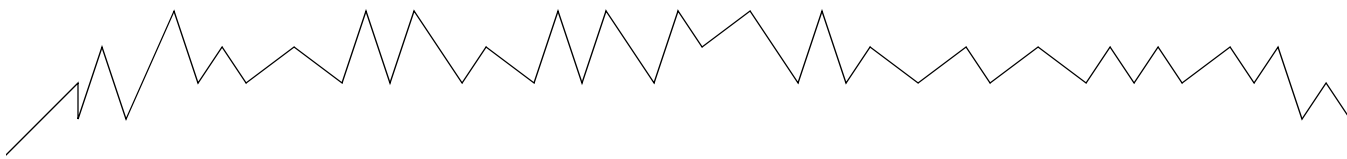
Call Manager	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
Cluster1_CCM1	142	30	-47	-124

Standard | Day of Week | History

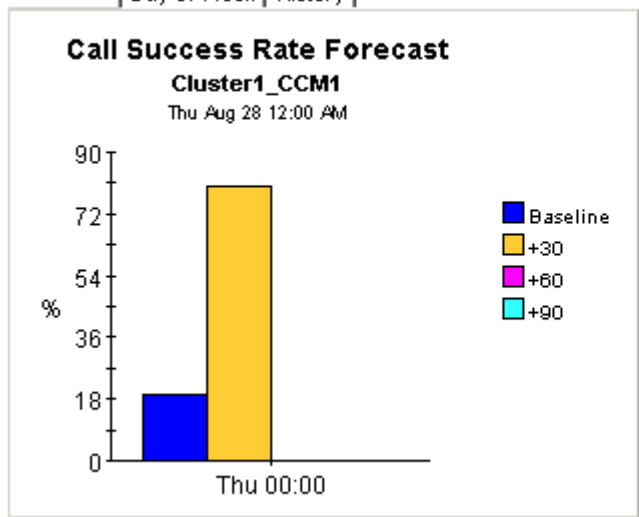


Standard | Day of Week | History

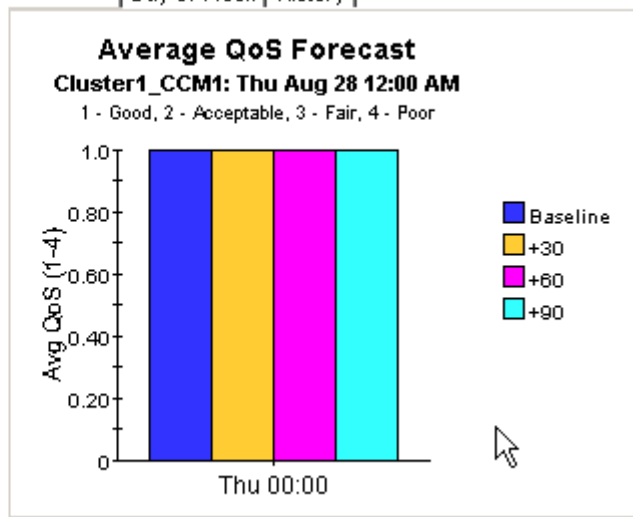




Standard | Day of Week | History



Standard | Day of Week | History



# Cisco IP Telephony Call Details



## Cluster Forecast

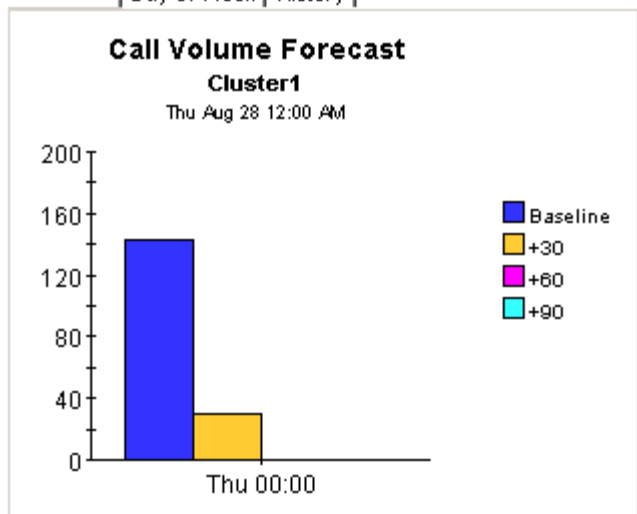
The Cluster Forecast Report enables the user to quickly identify Cluster with the greatest projected increase in call volume, call minutes, call success rate, and average QoS grade. Clusters are sorted by rate of increase in number of calls processed. Drill down charts present forecasted overall call volume metrics for the selected Cluster.

### Cluster Selection

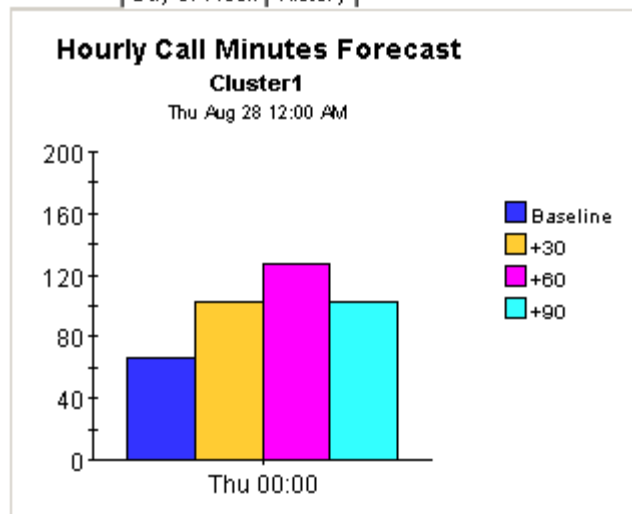
Thu Aug 28 12:00 AM

ClusterName	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
Cluster1	142	30	-47	-124

Standard | Day of Week | History



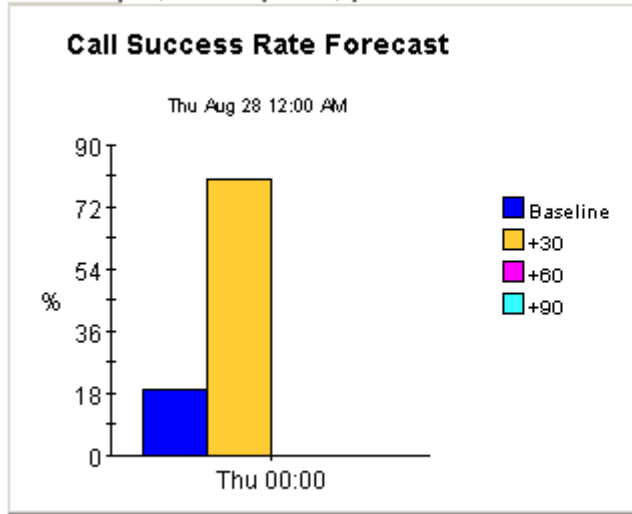
Standard | Day of Week | History



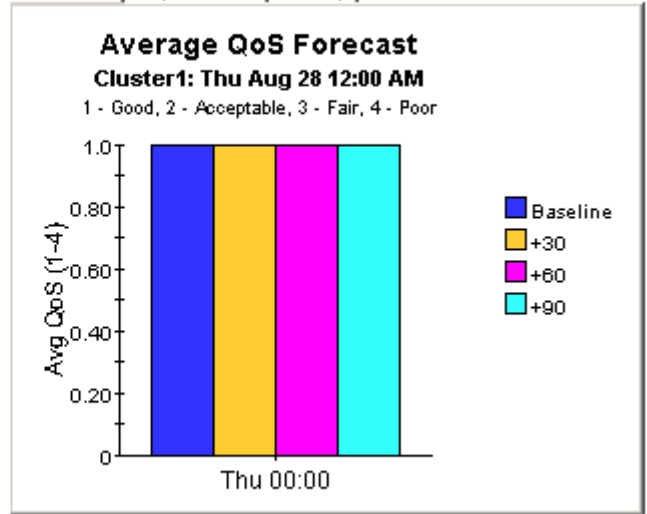




Standard | Day of Week | History



Standard | Day of Week | History



# Cisco IP Telephony Call Details



## Gateway Forecast by CallManager

The Gateway Forecast Report enables the user to quickly identify Gateways with the greatest projected increase in call volume, call minutes, call success rate, and average Quos grade. Gateways are sorted by rate of increase in number of calls processed. Drill down charts present forecasted overall call volume metrics for the selected Gateway.

### CallManager Selection

Thu Aug 28 12:00 AM

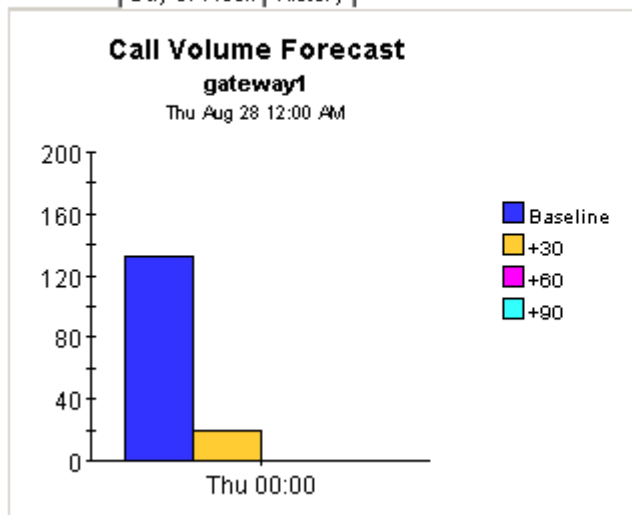
Call Manager	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
Cluster1_CCM1	142	30	-47	-124

### Gateway Selection

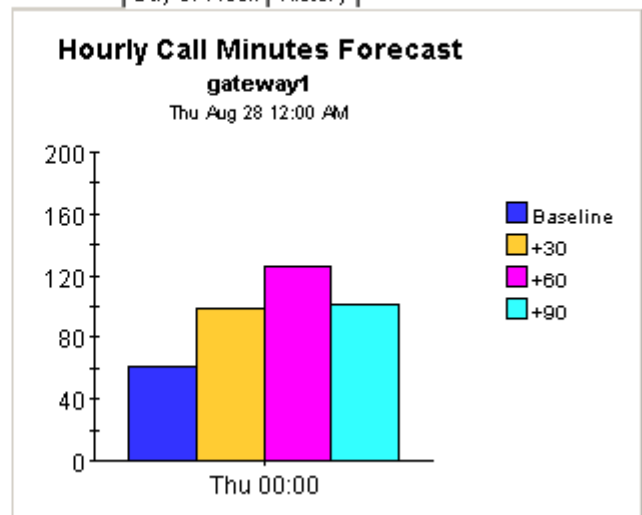
Thu Aug 28 12:00 AM

Gateway	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
gateway1	132	20	-57	-134

Standard | Day of Week | History



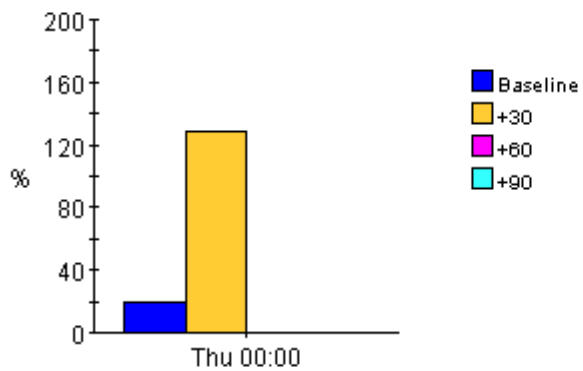
Standard | Day of Week | History



Standard | Day of Week | History

### Call Success Rate Forecast gateway1

Thu Aug 28 12:00 AM



Standard | Day of Week | History

### Average QoS Forecast gateway1: Fri Sep 26 02:01 PM

1 - Good, 2 - Acceptable, 3 - Fair, 4 - Poor

# Cisco IP Telephony Call Details



## Gateway Forecast by Location

The Gateway Forecast by Location Report enables the user to quickly identify Gateways with the greatest projected increase in call volume, call minutes, call success rate, and average QoS grade. Gateways are sorted by rate of increase in number of calls processed. Drill down charts present forecasted overall call volume metrics for the selected Gateway.



### Location Selection

Thu Aug 28 12:00 AM

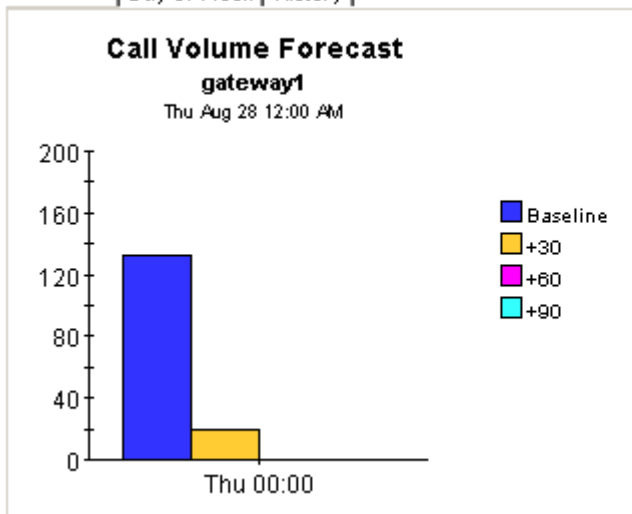
Location	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
Location Unassigned	37	31	27	24

### Gateway Selection

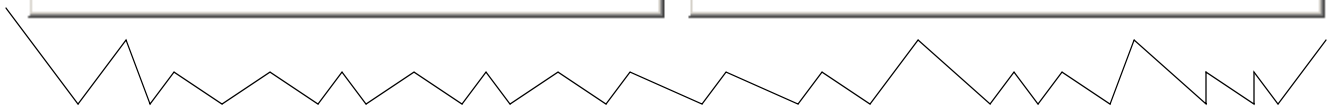
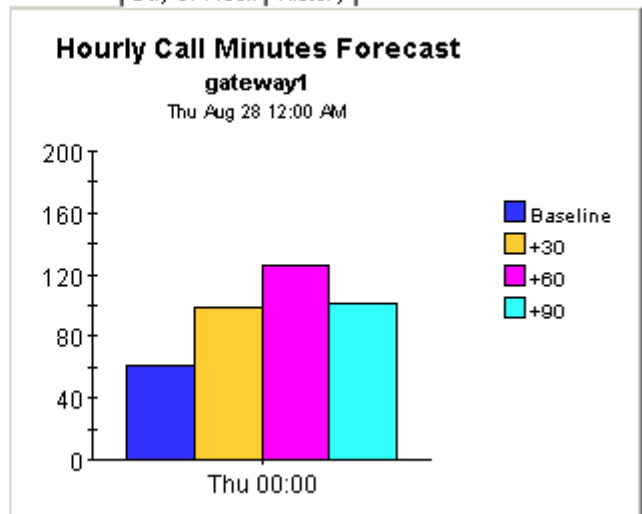
Thu Aug 28 12:00 AM

Gateway	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
gateway1	132	20	-57	-134

Standard | Day of Week | History

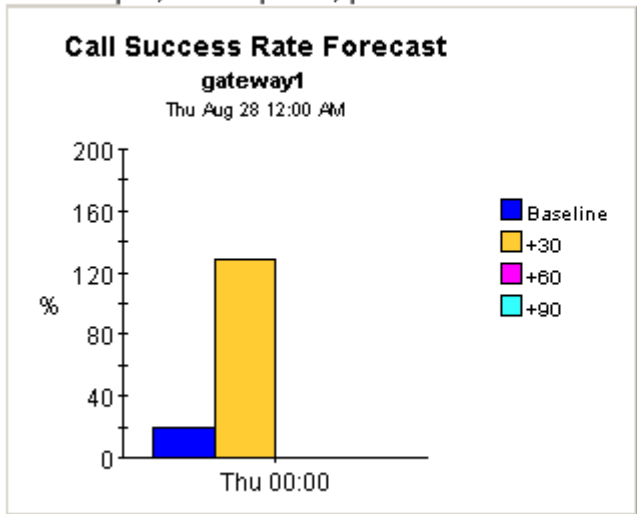


Standard | Day of Week | History





Standard | Day of Week | History



Standard | Day of Week | History

### Average QoS - Day of Week Forecast

gateway1: Thu Sep 25 12:00 AM  
1 - Good, 2 - Acceptable, 3 - Fair, 4 - Poor

Day of Week	Baseline	+30	+60	+90

# Cisco IP Telephony Call Details



## Phone Number Forecast

The Phone Number Forecast Report enables the user to quickly identify phone numbers with the greatest projected increase in call volume, call minutes, call success rate, and average QoS grade. Phone numbers are sorted by rate of increase in number of calls processed. Drill down charts present forecasted overall call volume metrics for the selected phone number.

### CallManager Selection

Thu Aug 28 12:00 AM

Call Manager	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
Cluster1_CCM1	142	30	-47	-124

### Phone Number Selection

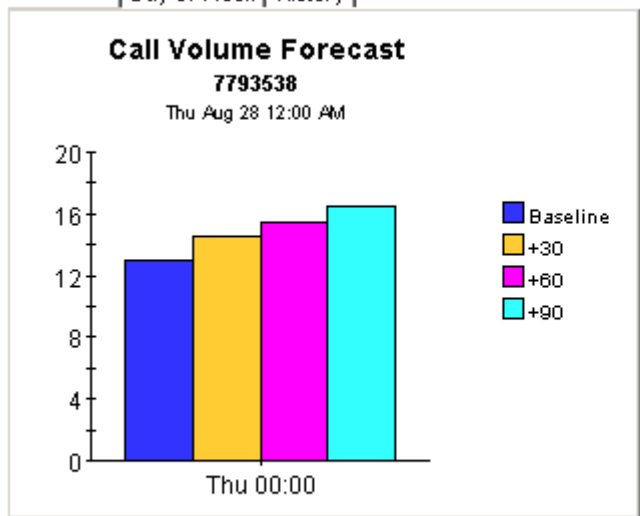
Sun Aug 31 12:00 AM

Phone Number	AVGTOTCalls	F30TOTCalls	F60TOTCalls	F90TOTCalls
7793538	13	14	15	16
7793502	1	1	1	1
7793520	9	8	7	7
7793522	17	17	17	17
7793535	10	2	-4	-10
7793599	7	6	5	5
7793501	1	1	1	1
7793502	2	3	4	5

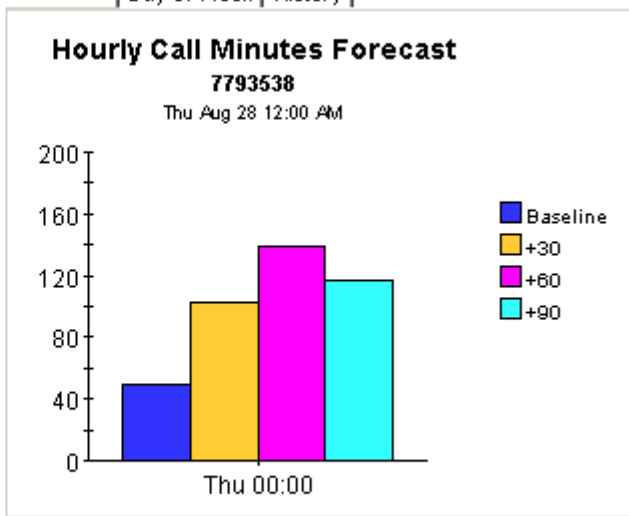




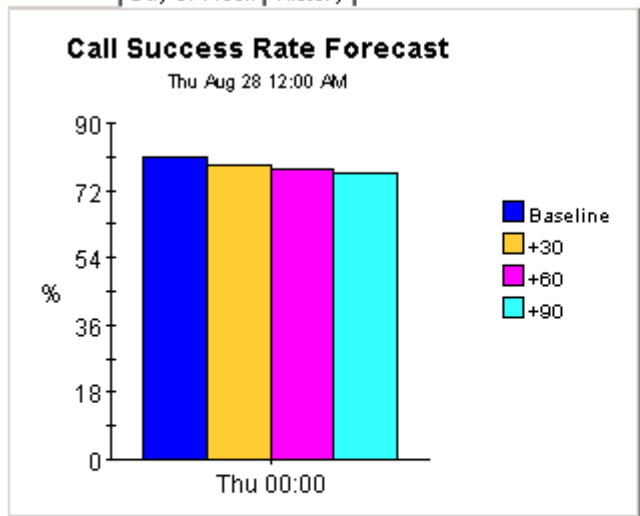
Standard | Day of Week | History |



Standard | Day of Week | History |



Standard | Day of Week | History |



Standard | Day of Week | History |







# Inventory Report

The inventory report provides a list of:

- Clusters
- CallManagers associated with each cluster
- Gateways associated with each CallManager
- IP phones associated with each CallManager

If you are in the habit of assigning customers and locations to CallManagers and gateways, this report will tell you which CallManager and gateways, if any, do not have customers or locations assigned to them.

The inventory report reads property tables created by the Admin module. The Admin module that comes with IPT Call Detail is exactly the same as the Admin module that comes with IP Telephony Gateway Statistics. Both packages share the same inventory report. The inventory report reads the following property tables:

- K\_IPT\_Cluster
- K\_IPT\_CManager
- K\_IPT\_gateway
- K\_IPT\_phoneNum
- K\_IPT\_gateway\_loc (location module)
- K\_IPT\_loc (location module)
- K\_IPT\_QoS

These tables are refreshed daily by the CDR Datapipe. In addition, they are updated by any changes you make using the property update forms that come with IPT Call Detail.

# Cisco IP Telephony Administration



## Inventory

---

This report has one entry for each CallManager Cluster and provides hierarchy information for the CallManagers, Gateways, and IP Phones associated with that CallManager Cluster.

### Cluster Selection

Cluster Name	Number of CallManager	Number of Gateway	Number of IP Phone
default	1	1	1
Cluster1	1	1	10

### Call Manager for Selected Cluster

CallManager	Location	Number of Gateway	Number of IP Phone
default	Location Unassigned	1	1

### Gateways for Selected CallManager


Gateway	Location
---------	----------

### IP Phones For Selected CallManager

Phone Number	User	Location
default		Location Unassigned

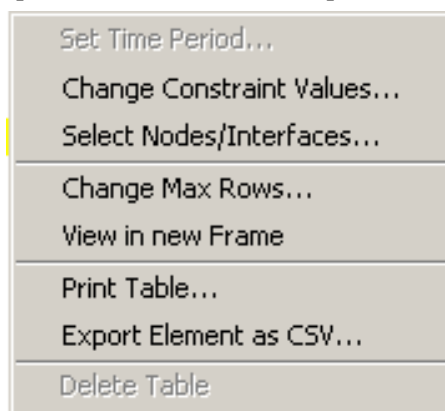
## Editing Tables and Graphs

Any table or graph can be viewed in several ways. While the default view is usually adequate, you can easily change to a different view. If you are using Report Viewer, display view options by right-clicking the object. If you are using the Web Access Server, follow these steps to change the default view:

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

### View Options for Tables

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



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

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

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

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

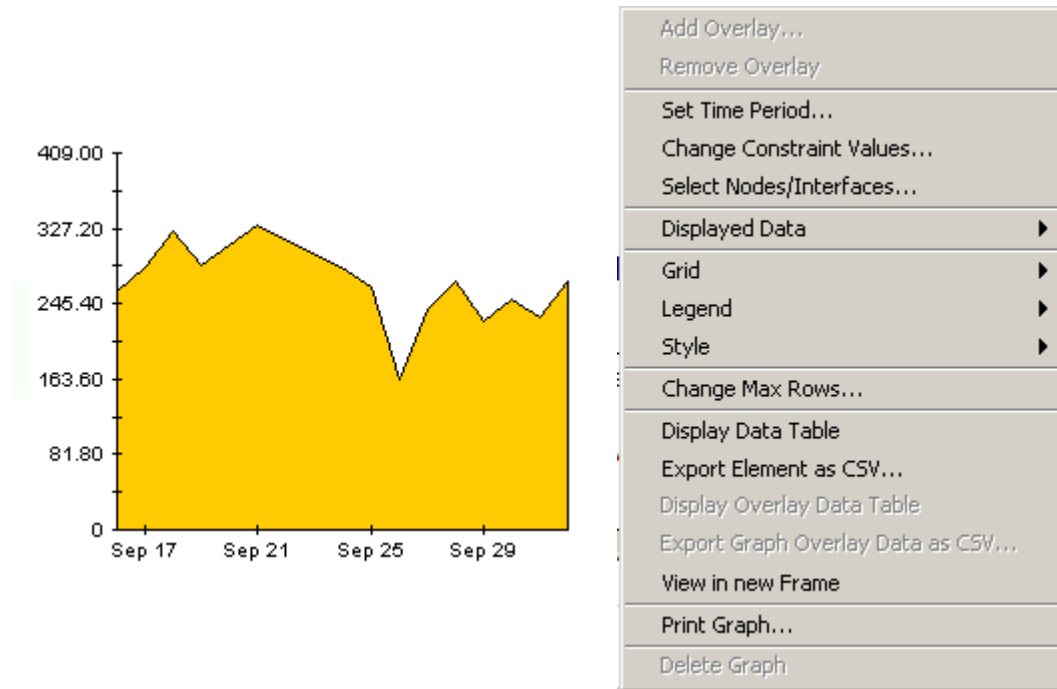
**Change Max Rows** increases or decreases the number of rows in a table. The default is 50. If you expand the default, the table may take more time to open. If you are trending a large network, using the default ensures that the table opens as quickly as possible.

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

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

## View Options for Graphs

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



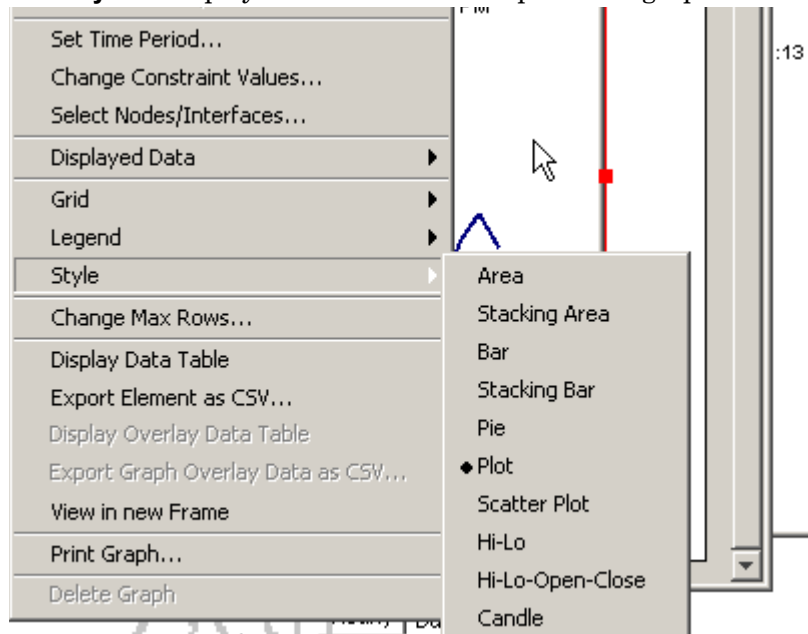
The following table provides details about each option.

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

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

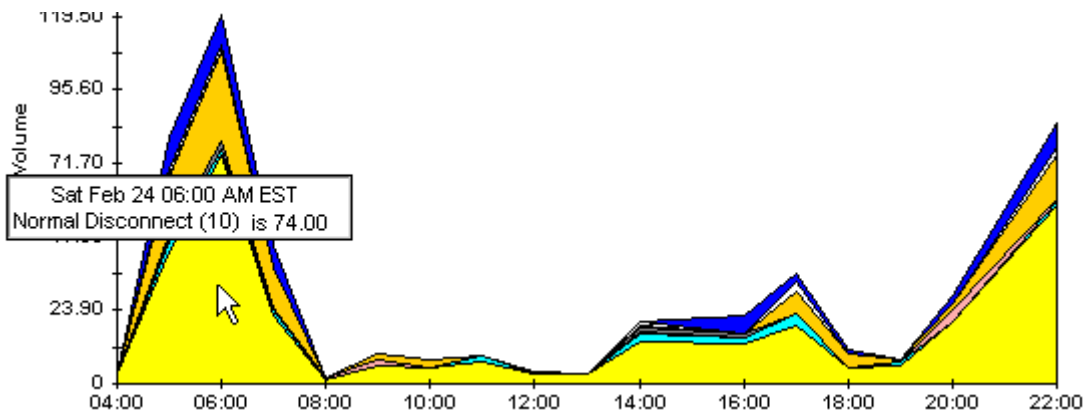
## Style Options

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



### Style > Area

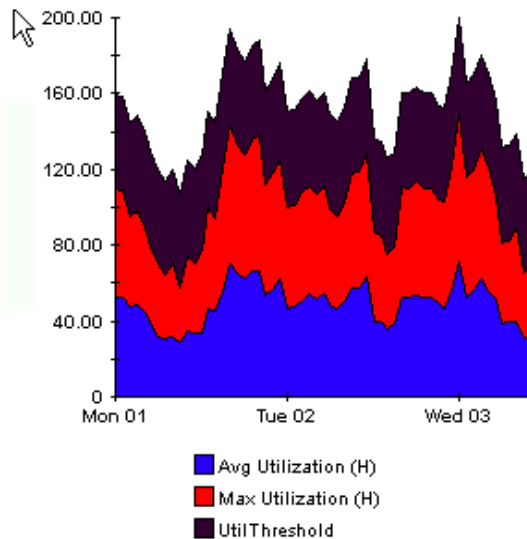
The plot or bar chart changes to an area graph. While relative values and total values are easy to view in this format, absolute values for smaller data types may be hard to see. Click anywhere within a band of color to display the exact value for that location



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

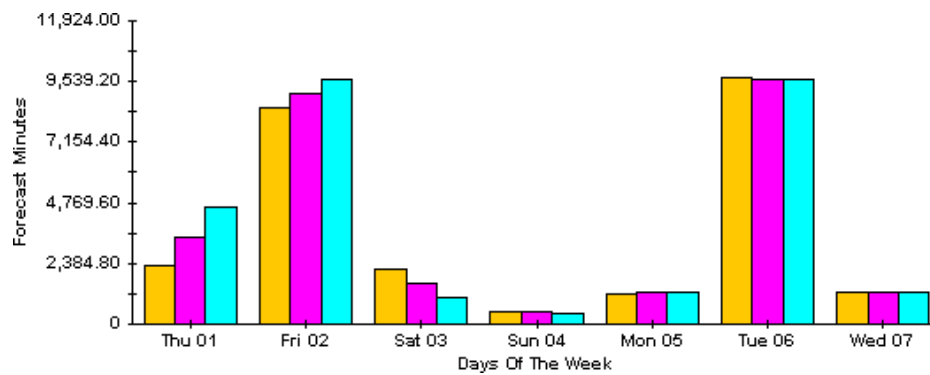
### Style > Stacking Area

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



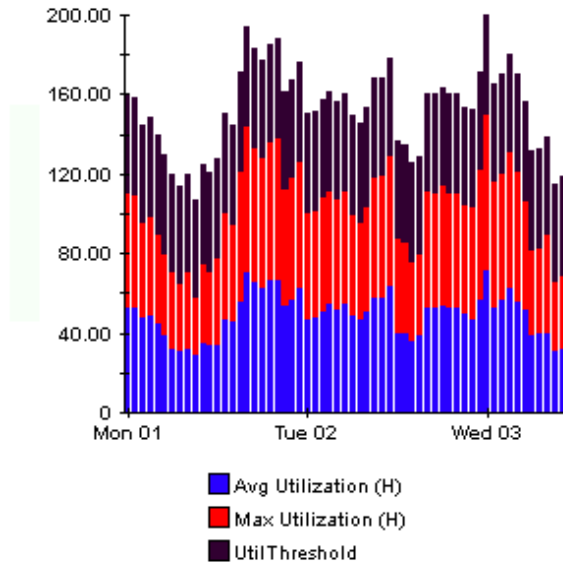
### Style > Bar

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



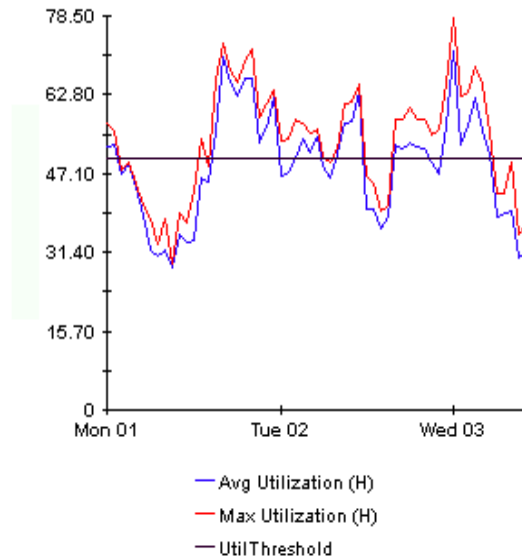
## Style > Stacking Bar

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



## Style > Plot

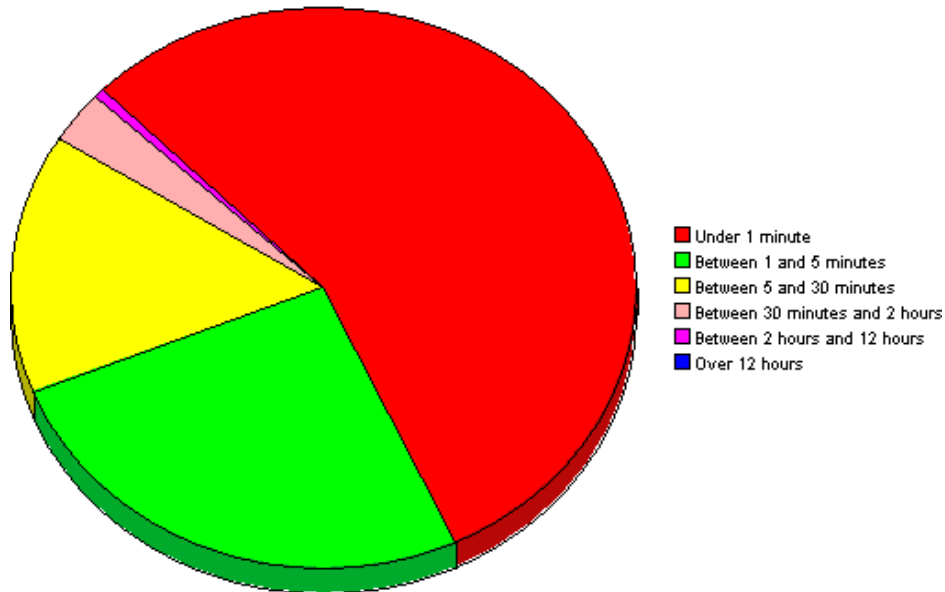
Bands of color in an area graph change to lines. If you adjust the frame width, you can make the data points align with hour; if you adjust the frame height, you can turn call volume into whole numbers.





## Style > Pie

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



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

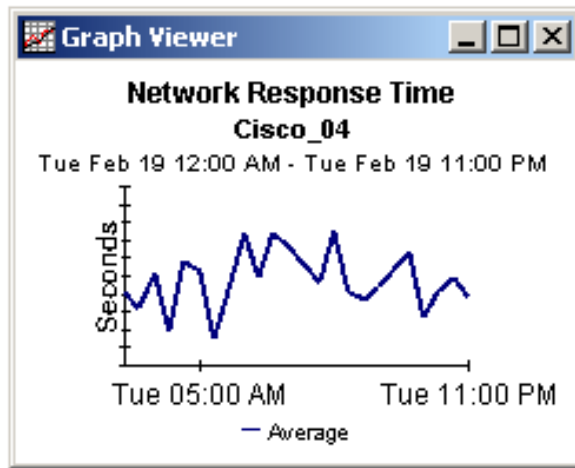
## Display Data Table

This option changes a graph into a spreadsheet.

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

## View in New Frame

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



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