



## **CISCO SERVICE CONTROL SOLUTION GUIDE**



### **Cisco Service Control Usage Analysis and Reporting Solution Guide, Release 5.2.x**

- [1 About this Guide](#)
- [2 Usage Analysis and Reporting Solution Overview](#)
- [3 Using the SCA Reporter](#)
- [4 Useful Cisco SCA Reporter Tools](#)



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**Note** This document supports all 5.2.x releases.

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## 1 About this Guide

The *Cisco Service Control Usage Analysis and Reporting Solution Guide* provides an:

- Overview of the Cisco Service Control solution and the advantages that it can provide when monitoring and analyzing network use.
- Overview of the Cisco Service Control Application (Cisco SCA) Reporter.
- Introduction to using the Cisco SCA Reporter to create reports based on network bandwidth use, which allow you to understand how subscribers are using your network.

## 2 Usage Analysis and Reporting Solution Overview

The goal of Usage Analysis is to identify how network resources are used to save operational costs and generate new revenue streams that reflect the established business model. The Cisco Service Control solution gives service providers an effective means of gaining true visibility into subscriber activity and usage patterns of complex network environments.

The Cisco Service Control solution:

- Allows you to identify network activity, control subscriber and application traffic, and to perform traffic management service creation.
- Provides a granular classification and control engine that provides key, actionable data on network activities.
- Consists of the Cisco Service Control Engine (Cisco SCE), Cisco Service Control Application for Broadband (Cisco SCA BB), Cisco Service Control Collection Manager, and Service Control Application (Cisco SCA) Reporter components.

The Cisco Service Control solution provides these advantages:

- Deep packet inspection (DPI) reconstructs traffic semantics up to Layer 7 protocol information, classifies traffic to end application (file sharing, over the top [OTT] video, browsing, VoIP, gaming) even for port-hopping or multiframe applications.
- Subscriber-aware traffic processing monitors traffic at a per-subscriber, group, or global level.
- Usage statistics that are actionable and meaningful.
- Traffic inspection and usage data are exported without any impact on existing network performance.
- The deployment is transparent in either Cisco or third-party networks. The Cisco Service Control solution can be installed inline or in receive-only mode.

When the solution is installed:

1. Cisco Service Control SCE creates raw data records (RDRs) that contain the raw information about network use.
2. Cisco Service Control Collection Manager collects the RDRs into a database.
3. Cisco SCA Reporter (as part of the Cisco SCA BB Console or as a standalone application) queries the Cisco Service Control Collection Manager database to produce reports.

For details on the Cisco Service Control Solution, see the *Cisco Service Control Product Overview*.

## 3 Using the SCA Reporter

This chapter describes how to use the Cisco SCA Reporter to produce meaningful reports that highlight network use by services and subscribers.

### Service Control Application Reporter

The Cisco SCA Reporter enables you to produce reports based on the traffic analysis performed by the Cisco SCE platform. The information is sent from the Cisco SCE platform and is stored in a database. The Cisco SCA Reporter can query and retrieve information from the database, and present the results in a comprehensive range of reports; including global monitoring, subscriber monitoring, file sharing and OTT video, and traffic discovery statistics reports.

### Prerequisites

Before proceeding, ensure that these prerequisites are met:

- Cisco SCE platform, Cisco SCA BB Console, Cisco SCA Reporter, and Cisco Service Control Collection Manager are installed. For details on installing these components, see the *Cisco Service Control Product Installation Guide*.
- Cisco SCE is processing traffic.
- Collection Manager is set up and collecting RDRs.
- Cisco SCA Reporter is connected to the Cisco Service Control Collection Manager database.

### Initial Reports

Several categories of reports are available. However, this chapter focuses on the following reports which provide a comprehensive view of the entire bandwidth used by applications, subscribers, and services:

- Global Monitoring reports:
  - Global Bandwidth per Service provides information about how much bandwidth is consumed by applications and can be used to view bandwidth use by particular groups of applications.
- Demographic Data and Service Popularity reports:
  - Global Active Subscriber per Service shows the distribution of subscribers among the different services defined in the system for all traffic, regardless of subscriber or package.
  - Relative Consumption of Top Subscribers shows the relative consumption of a specific number of subscribers compared to other subscribers.
- Subscriber Monitoring reports:
  - Top Subscriber shows a list of the top subscriber volume consumption in a specific hour or day.
  - Subscriber Bandwidth per Service shows the relative consumption of services by a specific subscriber.
- Web and Streaming reports and Traffic Discovery Statistics reports:
  - Top Web Hosts provides information about sites that are most popular among the subscribers.
  - Top Service Ports shows the most popular server ports of a certain service or services.
- VoIP reports:
  - Top Talkers shows the consumption of volume, sessions, or minutes by the top talkers in a specific hour or day for a specific VoIP service.
  - Global VoIP MOS shows the global VoIP quality estimation, that is, the mean opinion score (MOS).
  - Global VoIP MOS Distribution shows the distribution of the global VoIP quality estimation.
  - Global VoIP Codec Distribution shows the distribution of the VoIP codecs in use.
- Malicious Traffic reports:
  - Top Scanned or Attacked Ports shows the top scanned or attacked ports.

## Starting the Reporter and Generating Reports

**Step 1** Start the SCA BB Console by choosing **Start > All Programs > Cisco SCA > SCA BB Console 5.2.0 > SCA BB Console 5.2.0**.

The Cisco SCA BB Console splash screen appears. After the Console has loaded, the main window of the Console appears.

**Step 2** Choose **Tools > Reporter** from the main menu.

The Cisco SCA Reporter opens with the Templates tab displayed.

## Global Monitoring

The Global Monitoring group of reports are the most commonly used and provide a starting point for monitoring bandwidth use on the network. To monitor bandwidth per service, use the Global Bandwidth per Service report template. A Global Bandwidth per Service report shows the applications that go through the network and the bandwidth they use.

### Creating a Global Bandwidth per Service Report

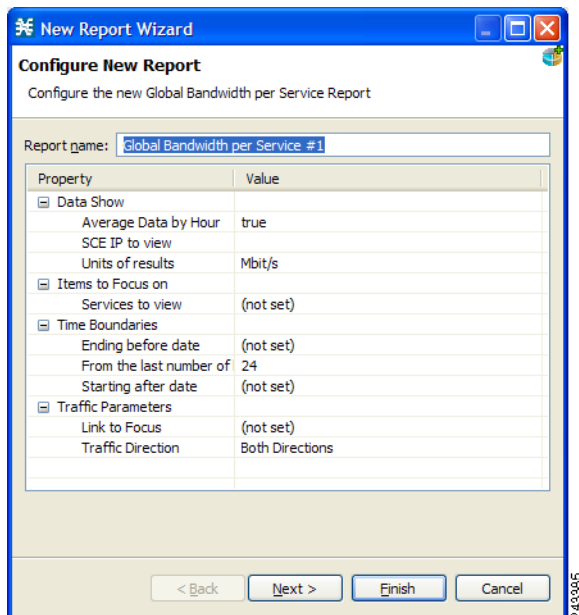
**Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.

**Step 2** Expand the Global Monitoring group in the Templates view.

**Step 3** Double-click **Global Bandwidth per Service**.

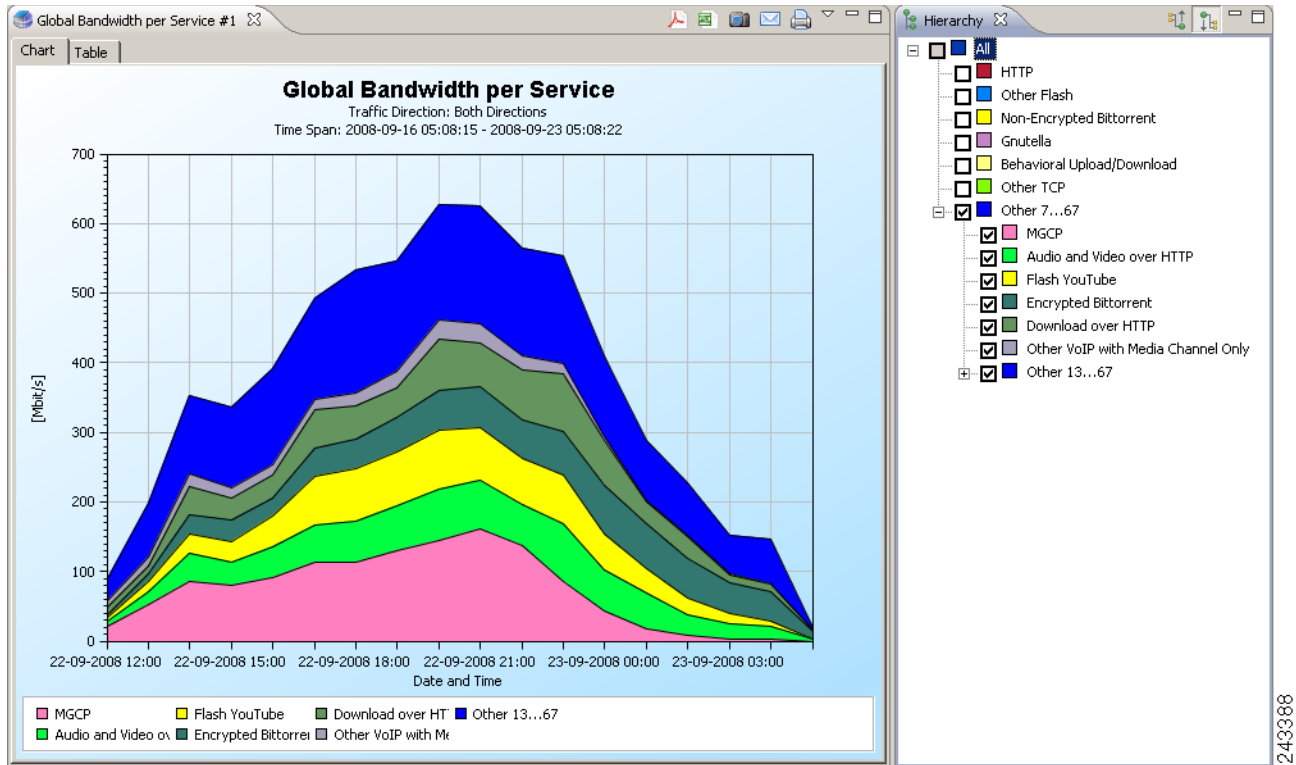
The New Report Wizard appears (see [Figure 1](#)). You can configure the new report using this wizard.

**Figure 1** *New Report Wizard*



**Step 4** Click **Finish**. The report appears with all of the services listed on the Hierarchy tab (see [Figure 2](#)).


**Figure 2 Global Bandwidth per Service Report**



## Viewing Reports by Popularity of Service

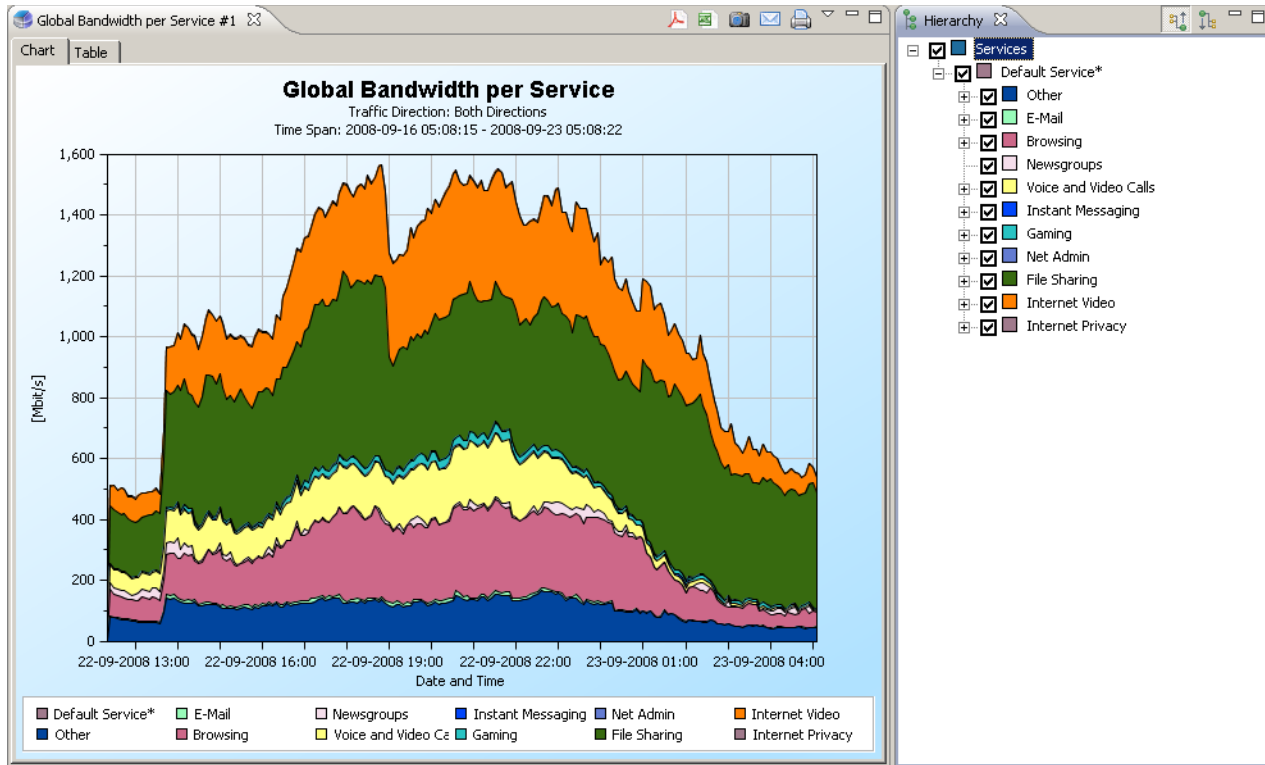
By default, reports are generated and displayed based on the configured services tree. However, it is often useful to view the report based on the popularity (that is, the amount of bandwidth consumed) of the services.

**Step 1** Create a Global Bandwidth per Service report. See the “[Creating a Global Bandwidth per Service Report](#)” section on [page 4](#).

**Step 2** Click the Based on service popularity (  ) icon on the Hierarchy tab.

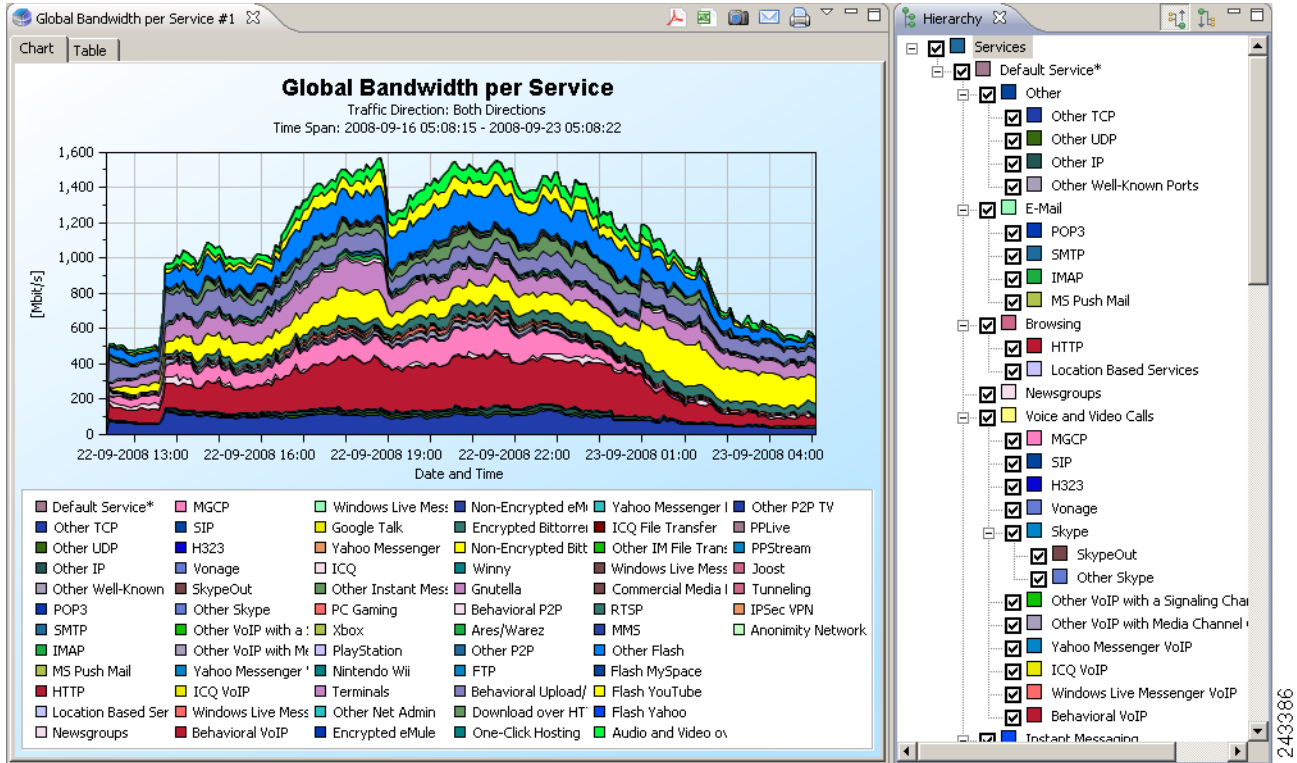
The report is redrawn to show the services based on their popularity (see [Figure 3](#)).

**Figure 3 Global Bandwidth per Service by Popularity**



To expand a service, click the expand icon next to the service name on the Hierarchy tab. The report is redrawn to show all the services that were used over the report time period, based on their popularity (see [Figure 4](#)).


**Figure 4 Global Bandwidth per Service by Popularity Over Time Period**



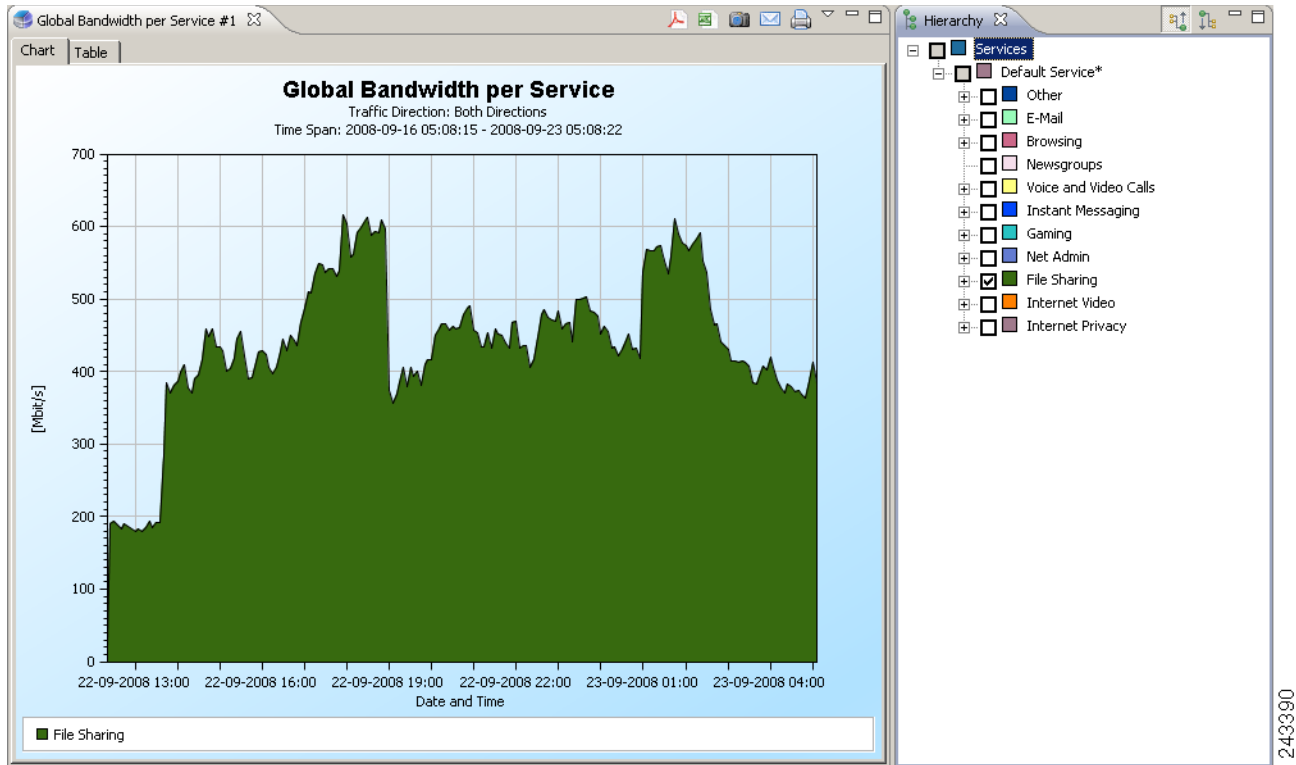
## Viewing File Sharing Bandwidth Use

You can use the reporter to drill down and view a particular group of services and see the quantity of bandwidth consumed.

**Note** You can use the viewing file sharing bandwidth use procedure to view the bandwidth used by any group of service (for example, Internet Video or Gaming).

- Step 1** Create a Global Bandwidth per Service report. See the “[Creating a Global Bandwidth per Service Report](#)” section on page 4.
- Step 2** Click the Based on service popularity (  ) icon on the Hierarchy tab.
- Step 3** Uncheck all the group check boxes, but leave the File Sharing check box checked. The report shows only the file sharing bandwidth use (see [Figure 5](#)).

**Figure 5 Global Bandwidth per Service—Only File Sharing**

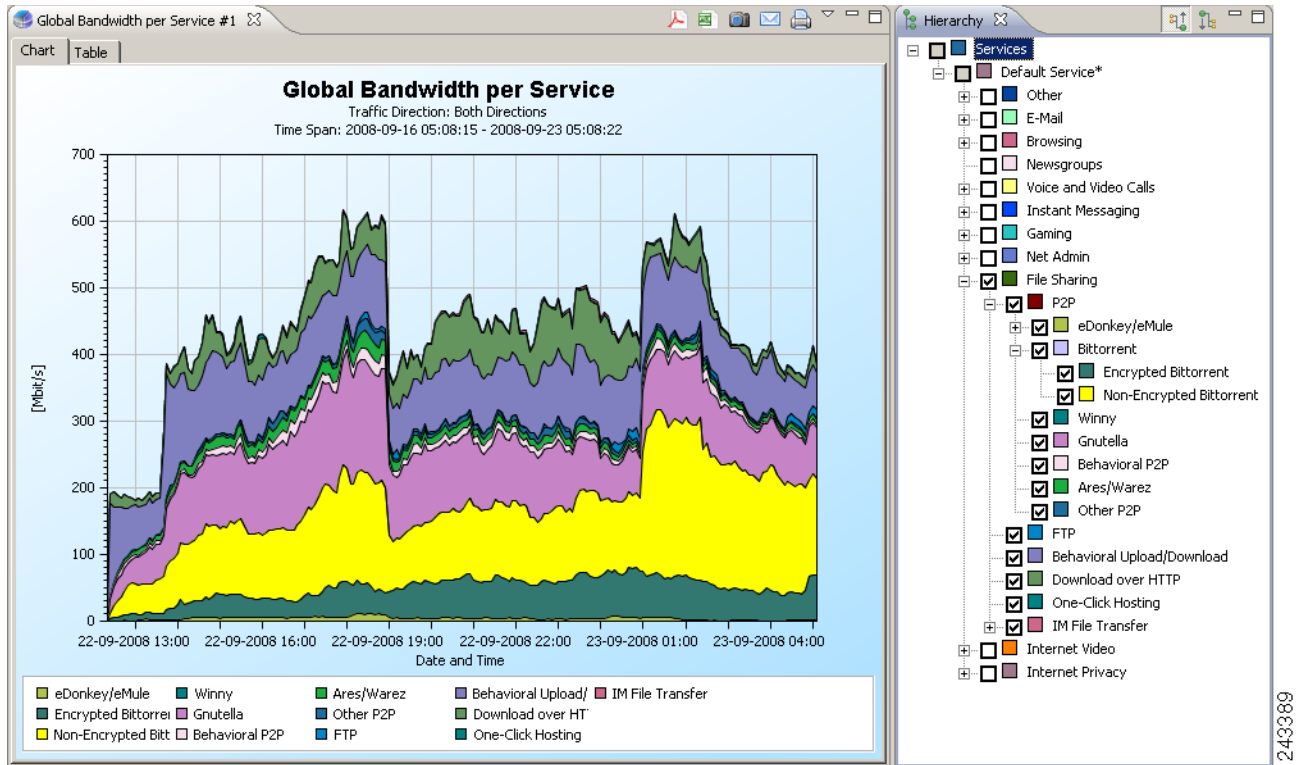


**Step 4** Check the File Sharing checkbox to view the report.

The report shows each of the File Sharing services that consumed bandwidth during the report time period (see [Figure 6](#)).



**Figure 6 Global Bandwidth per Service—File Sharing Services**



## Monitoring Demographic Data

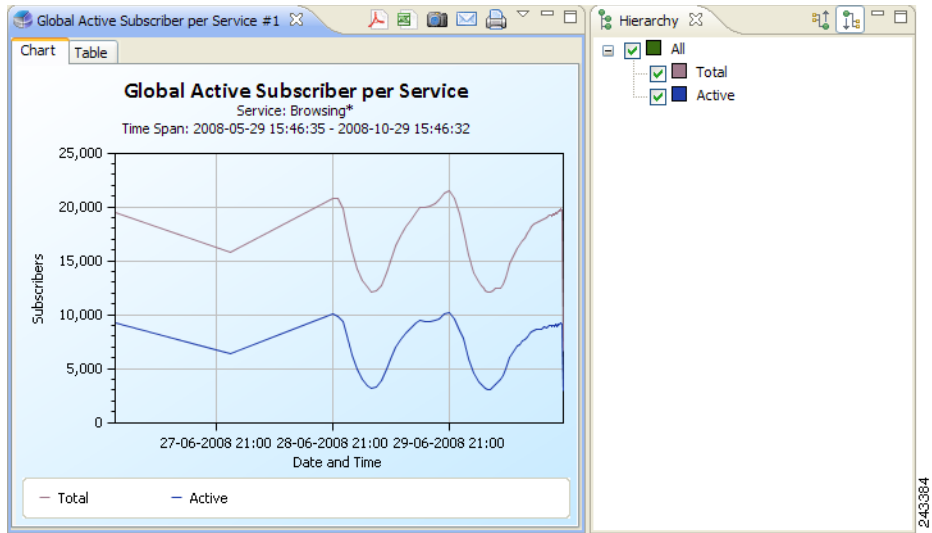
Use the Demographic Data and Service Popularity reports to view statistics of the demographic data. The Global Active Subscriber per Service report shows the distribution of subscribers among the different services defined in the system for all traffic, regardless of subscriber or package. The Relative Consumption of Top Subscribers report shows the relative consumption of a specific number of subscribers compared to other subscribers.

## Creating a Global Active Subscriber per Service Report

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the Demographic Data and Service Popularity group in the Templates view.
- Step 3** Double-click Global Active Subscriber per Service. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click Finish.

The report shows the number of active subscribers and the number of total subscribers for the time period specified (see Figure 7).

**Figure 7** Global Active Subscribers per Service



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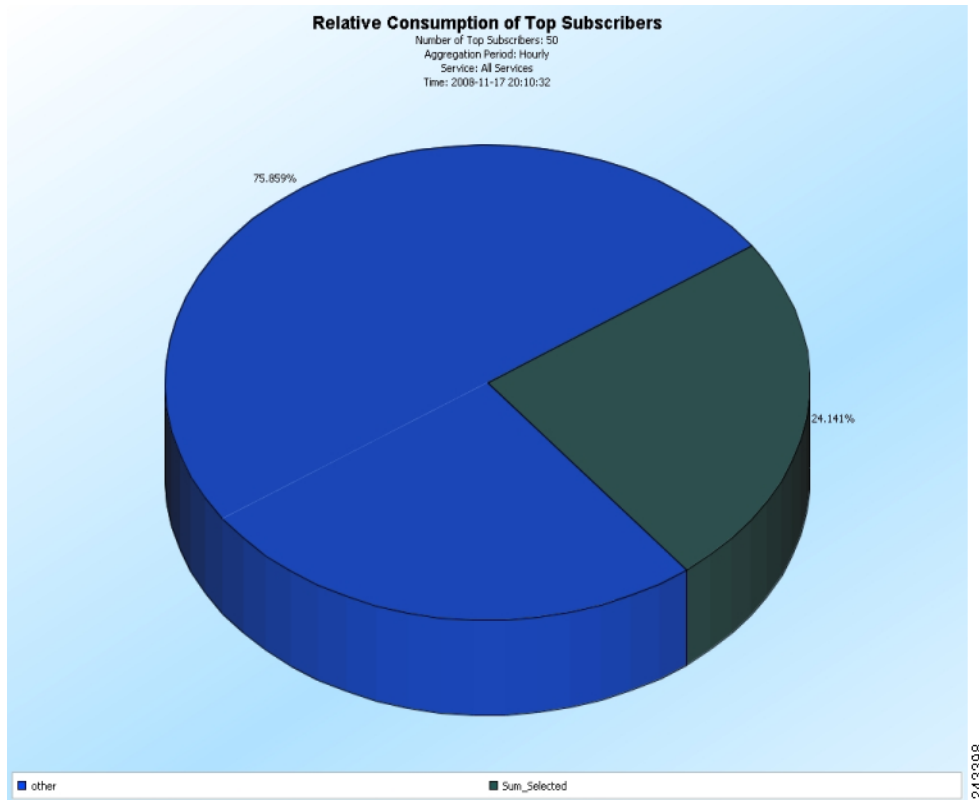
## Creating a Relative Consumption of Top Subscribers Report

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- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the Demographic Data and Service Popularity group in the templates view.
- Step 3** Double-click Relative Consumption of Top Subscribers. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click the right column in the Specific Time row, and click the **Browse** button that appears. A calendar appears.
- Step 6** Choose a date and time that contains the traffic for which you want to produce a report.
- Step 7** Click **OK**.
- Step 8** Click **Finish**.

The report shows the consumption of the top subscribers compared to the consumption of the other subscribers (see [Figure 8](#)).

**Figure 8** *Relative Consumption of Top Subscribers*



## Monitoring Subscribers

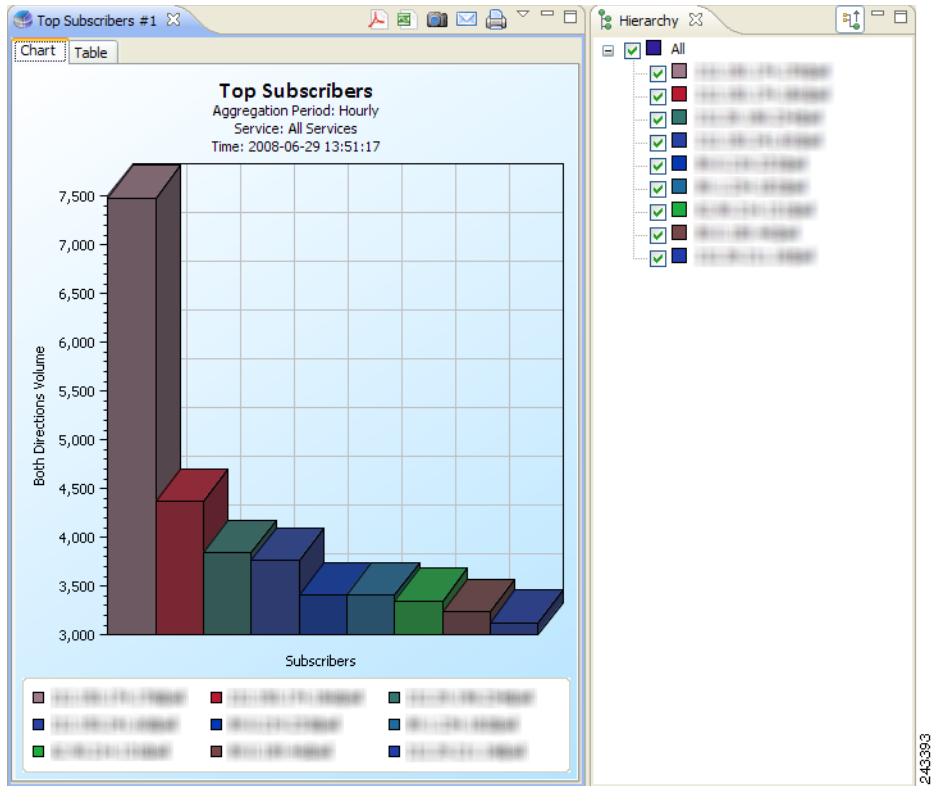
Use the Subscriber Monitoring group of reports to view statistics about the bandwidth or volume of traffic used by subscribers. The reports are provided per service usage counter for the total volume consumed by subscribers. The Top Subscribers report identifies the subscribers who consume the largest traffic volume. The Subscriber Bandwidth per Service report shows the bandwidth used for each service by a specific subscriber.

## Creating a Top Subscribers Report

- Step 1** Open the Cisco SCA Reporter. See the [“Starting the Reporter and Generating Reports”](#) section on page 4.
- Step 2** Expand the Subscriber Monitoring group in the Templates view.
- Step 3** Double-click **Top Subscribers**. The New Report Wizard appears.
- Step 4** Click the right column in the Specific Time row, and click the **Browse** button that appears. A calendar appears.
- Step 5** Choose a date and time that contains the traffic for which you want to produce a report.
- Step 6** Click **OK**.
- Step 7** Click **Finish**.

The report shows the top subscribers for the specified time (see [Figure 9](#)).

**Figure 9** Top Subscribers for a Specified Time Period



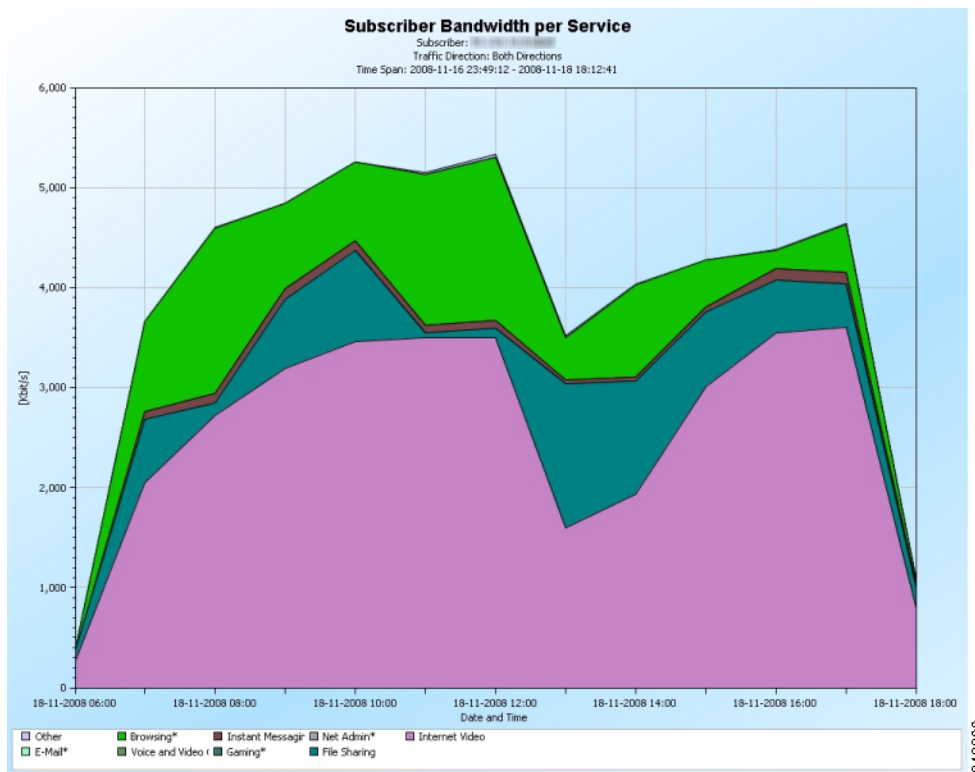
## Creating a Subscriber Bandwidth per Service Report

After enabling a subscriber for real-time monitoring, you can produce reports specific to that subscriber.

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the Subscriber Monitoring group in the Templates view.
- Step 3** Double-click **Subscriber Bandwidth per Service**. The New Report Wizard appears.
- Step 4** Click the right column in the Name of subscriber to focus on row, and enter the ID of the subscriber you wish to view.
- Step 5** Click **Finish**.

The report shows the bandwidth consumed by the services used by the specified subscriber (see [Figure 10](#)).

**Figure 10** Subscriber Bandwidth per Service



## Monitoring Top Sites and Service Ports

Use the Web and Streaming group of report templates to compile statistics presenting the most popular servers or hosts for the various predefined system services (such as browsing, streaming, and downloading) and for user-defined services. The Top Web Hosts report shows the most popular web hosts among the subscribers.

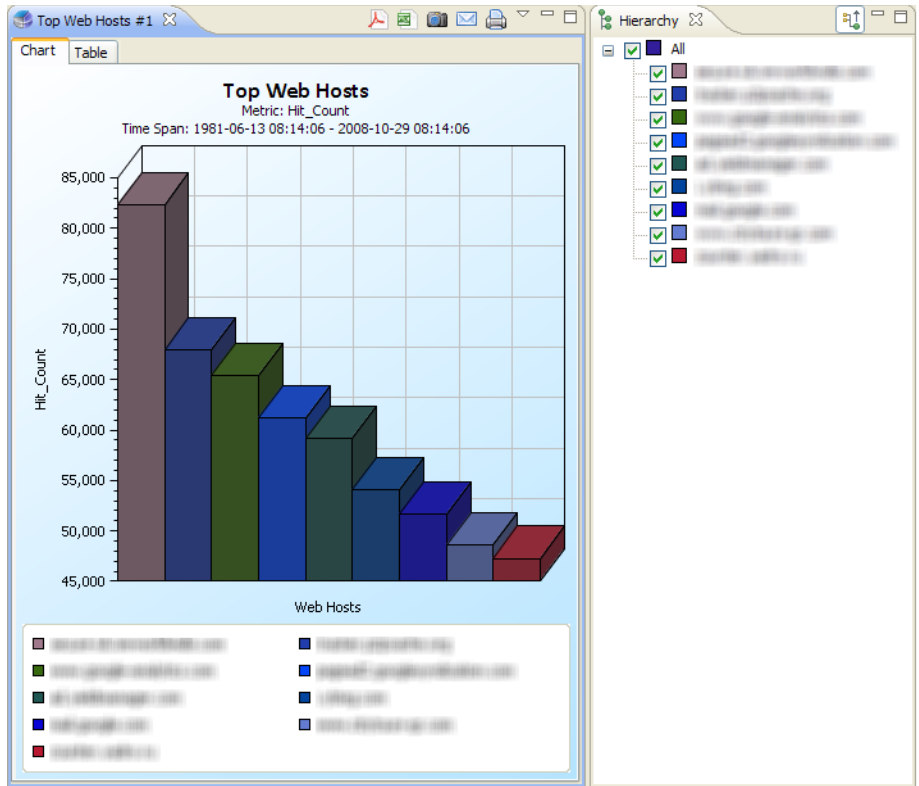
The Traffic Discovery - Statistics group of report templates allows you to view statistics compiled from the source and destination IP addresses, and ports of the system traffic. The Top Service Ports report shows the most popular server ports of a certain service or services.

## Creating a Top Web Hosts Report

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the Web and Streaming group in the Templates view.
- Step 3** Double-click **Top Web Hosts**. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click **Finish**.

The report shows all the web hosts listed on the Hierarchy tab (see Figure 11).

**Figure 11 Top Web Hosts**

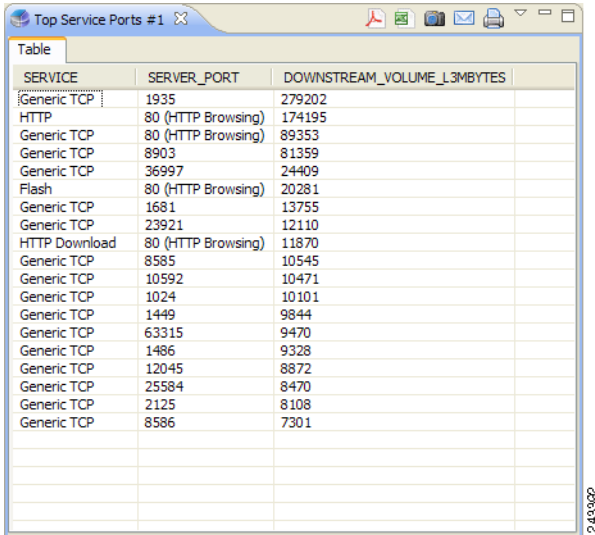


## Creating a Top Service Ports Report

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the Traffic Discovery - Statistics group in the Templates view.
- Step 3** Double-click Top Service Ports. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click Finish.

The report is in table format; listing the top services, the ports used by the top services, and the volume of traffic used by the services (see Figure 12).

**Figure 12 Top Service Ports**



SERVICE	SERVER_PORT	DOWNSTREAM_VOLUME_L3MBYTES
Generic TCP	1935	279202
HTTP	80 (HTTP Browsing)	174195
Generic TCP	80 (HTTP Browsing)	89353
Generic TCP	8903	81359
Generic TCP	36997	24409
Flash	80 (HTTP Browsing)	20281
Generic TCP	1681	13755
Generic TCP	23921	12110
HTTP Download	80 (HTTP Browsing)	11870
Generic TCP	8585	10545
Generic TCP	10592	10471
Generic TCP	1024	10101
Generic TCP	1449	9844
Generic TCP	63315	9470
Generic TCP	1486	9328
Generic TCP	12045	8872
Generic TCP	25584	8470
Generic TCP	2125	8108
Generic TCP	8586	7301

## Monitoring VoIP Use

The VoIP group of reports allows you to view statistics of the VoIP traffic:

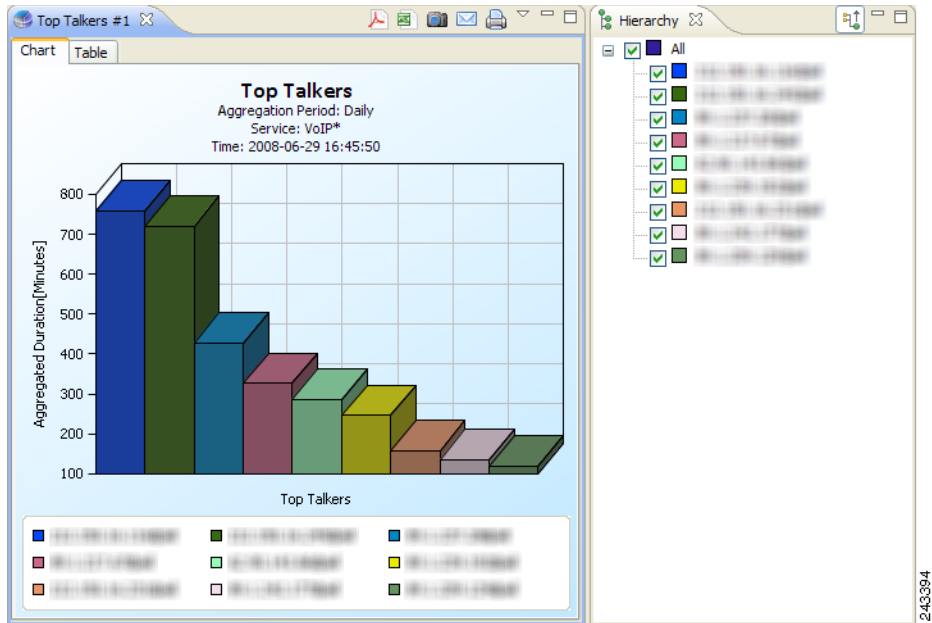
- Top Talkers report—Shows the consumption of volume, sessions, or minutes by the top talkers in a specific hour or day for a specific VoIP service.
- Global VoIP MOS report—Shows the global VoIP quality estimation.
- Global VoIP MOS distribution report—Shows the distribution of the VoIP quality estimation.
- Global VoIP Codec distribution report—Shows the distribution of the VoIP codecs being used.

## Creating a Top Talkers Report

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the VoIP group in the Templates view.
- Step 3** Double-click **Top Talkers**. The New Report Wizard appears.
- Step 4** Choose the service on which the report focuses in the Items to Focus on property group.
- Step 5** Click the right column in the Specific Time row, and click the **Browse** button that appears. A calendar appears.
- Step 6** Choose a date and time that contains the traffic for which you want to produce a report.
- Step 7** Click **OK**.
- Step 8** Click **Finish**.

The report shows the top talkers for the time period and the service chosen (see [Figure 13](#)).

**Figure 13 Top Talkers**



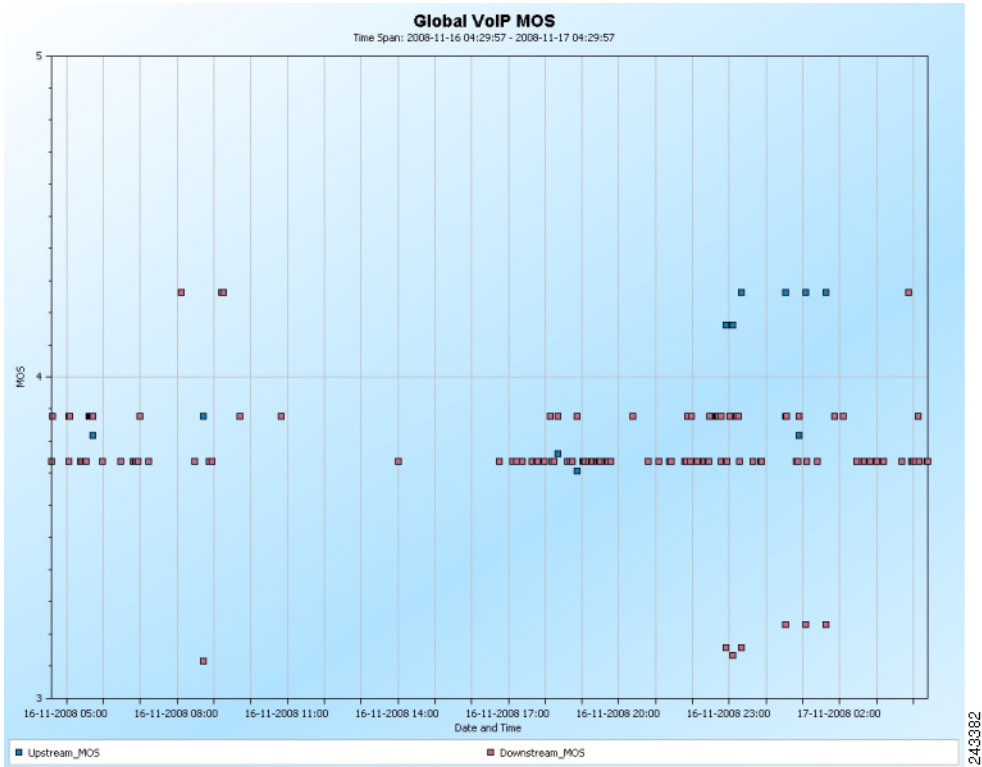
## Creating Global VoIP MOS Reports

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the VoIP group in the Templates view.
- Step 3** Double-click **Global VoIP MOS**. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click **Finish**.

The report shows the global VoIP quality estimation (see [Figure 14](#)).



**Figure 14 Global VoIP MOS**



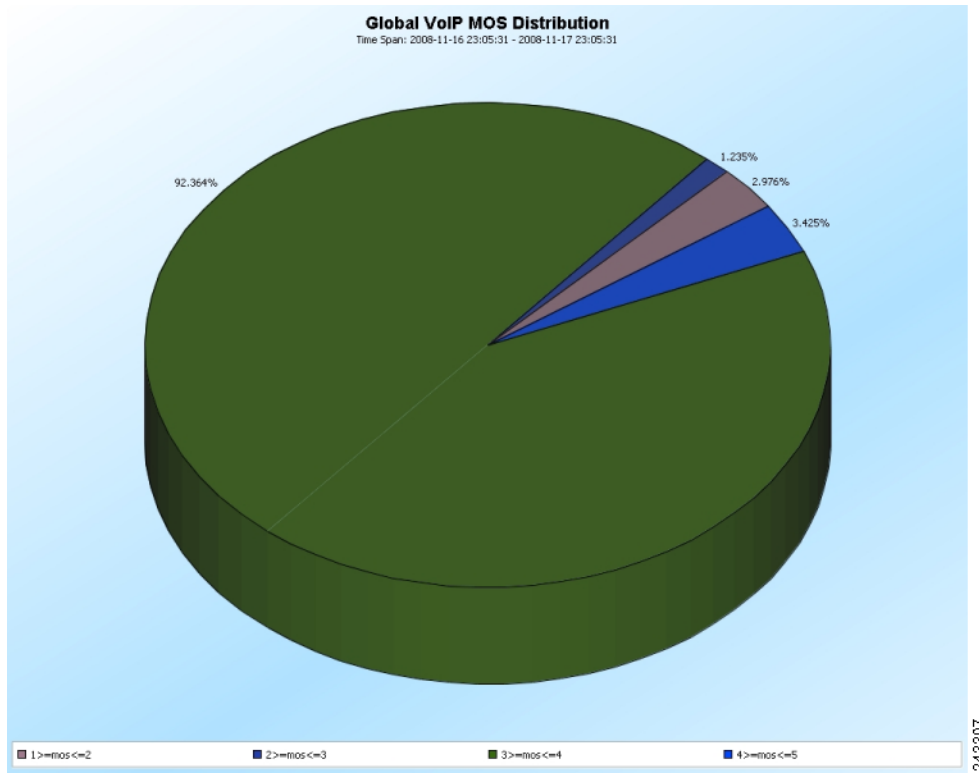
**Step 6** Double-click **Global VoIP MOS Distribution** to create a Global VoIP MOS distribution report. The New Report Wizard appears.

**Step 7** (Optional) Configure the new report.

**Step 8** Click **Finish**.

The report shows the global VoIP quality estimation distribution (see [Figure 15](#)).

**Figure 15** Global VoIP MOS Distribution

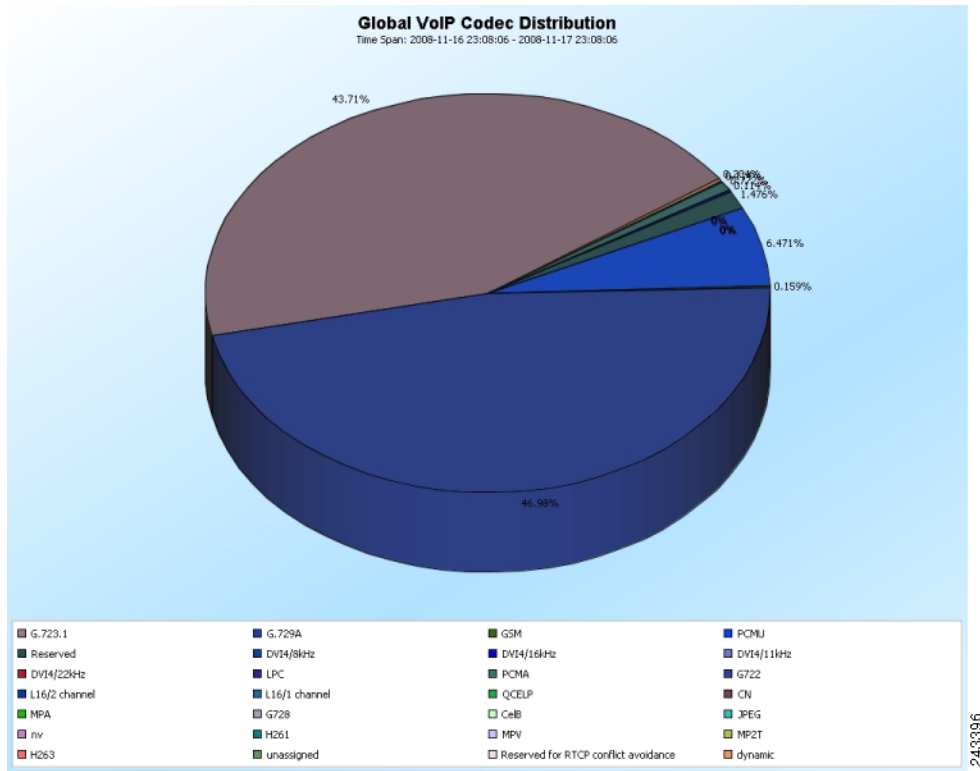


## Creating a Global VoIP Codec Distribution Report

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the VoIP group in the Templates view.
- Step 3** Double-click **Global VoIP Codec Distribution**. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click **Finish**.

The report shows the distribution of VoIP codecs that are used (see [Figure 16](#)).

**Figure 16 Global VoIP Codec Distribution**



## Monitoring Malicious Traffic

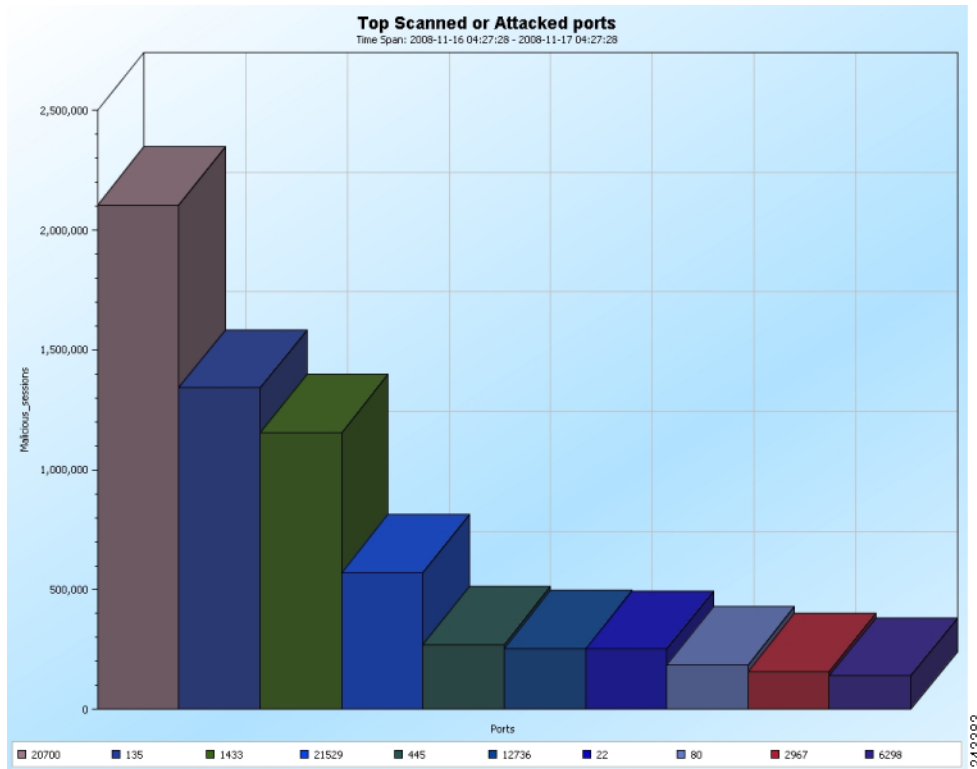
The Malicious Traffic group of report templates allows you to view statistics of the malicious events accrued in the system. The Top Scanned or Attacked Ports report shows the top scanned or attacked ports.

### Creating a Top Scanned or Attacked Ports Report

- Step 1** Open the Cisco SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 4.
- Step 2** Expand the Malicious Traffic group in the Templates view.
- Step 3** Double-click **Top Scanned or Attacked Ports**. The New Report Wizard appears.
- Step 4** (Optional) Configure the new report.
- Step 5** Click **Finish**.

The report shows the top scanned or attacked ports (see [Figure 17](#)).

**Figure 17** Top Scanned or Attacked Ports



## 4 Useful Cisco SCA Reporter Tools

The Cisco SCA Reporter contains features that enables you to:

- Zoom in and zoom out of the report
- View chart tool tips
- Edit chart colors
- Export the reports to various formats

### Zooming In and Out of Charts

This section describes the zooming in and out of charts.

#### Zooming in on a 2-Dimensional Chart

- Step 1** Generate a report. A report view opens displaying the report, and the Properties view displays the chart display properties.
- Step 2** Click the 3D property to display the chart in two dimensions. The value of the 3D property toggles from True to False and the Look/3D category is removed from the Properties view.
- Step 3** Demarcate a rectangle by dragging the mouse over the chart. The cursor changes to a plus icon.
- Step 4** Release the mouse button. The view zooms in.

## Zooming Out of a Zoomed-In Chart

- Step 1** Demarcate a rectangle by dragging the mouse over the chart while pressing the **Shift** key. The cursor changes to a minus icon.
- Step 2** Release the mouse button. The view zooms out.

## Managing Report Output

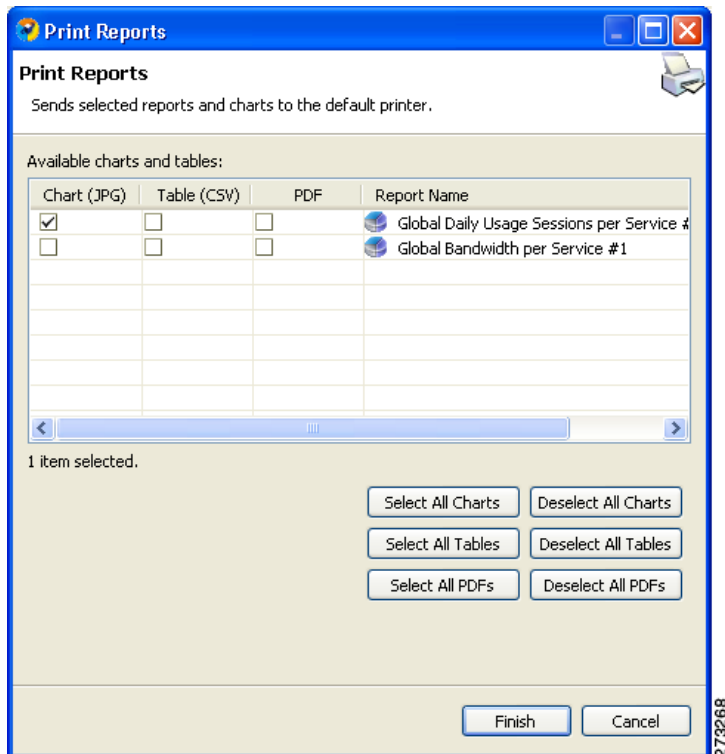
You can manage report output in several ways:

- You can print, send by e-mail, or export reports to PDF format.
- You can save charts to a number of graphic formats.
- You can save tables to CSV or Quoted CSV formats, which you can open as spreadsheets.
- You can print, send, or export multiple reports in one send operation.

## Printing Reports

- Step 1** Execute one or more report instances.
- Step 2** Choose **File > Print Reports**. The Print Reports wizard opens (see [Figure 18](#)).

**Figure 18** *Print Reports*



- Step 3** Select one or more format for each report you are printing.
- Step 4** Click **Finish**. The selected reports print in the format or formats you chose in Step 3.



**Note**

For PDF and CSV formats, the print feature uses the desktop interface and prints only if the associated application can print from the desktop. If you can print from the desktop without opening the application, the print feature works.



**Note**

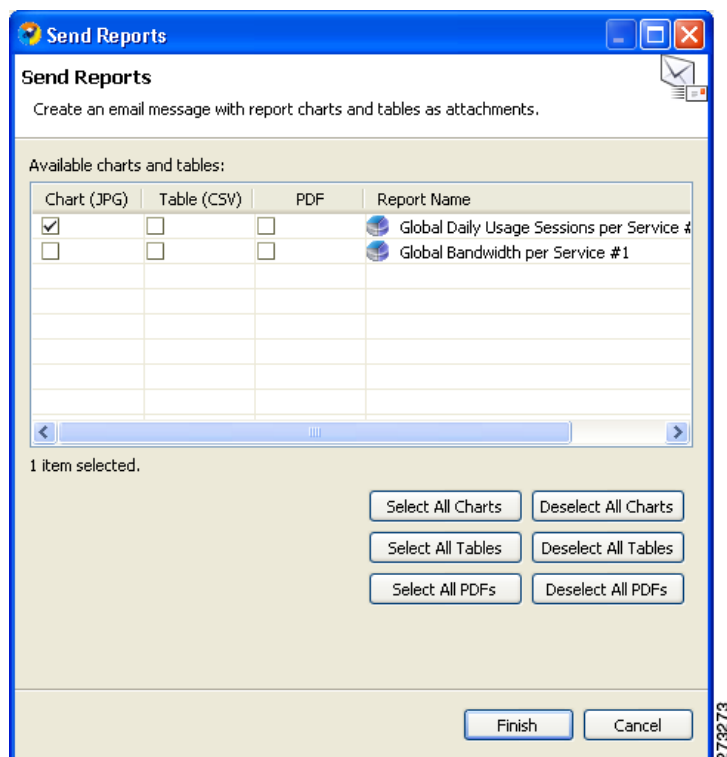
If you selected several reports to print, the application may freeze for several moments while sending the reports to the printer.

## Sending Reports by E- mail

**Step 1** Execute one or more report instances.

**Step 2** Choose File > Send Reports. The Send Reports wizard appears (see [Figure 19](#)).

**Figure 19** Send Reports



**Step 3** Select one or more formats for each report you want to send.

**Step 4** Click Finish.

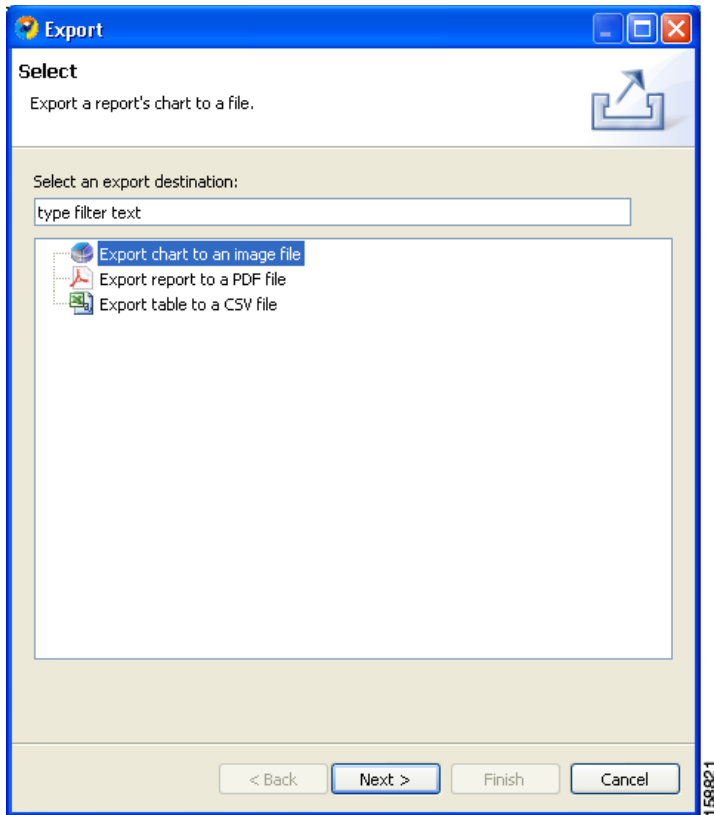
## Exporting Reports

**Step 1** Execute one or more report instances.

**Step 2** Choose File > Export.

The Export wizard appears (see [Figure 20](#)).

**Figure 20** *Export Wizard*



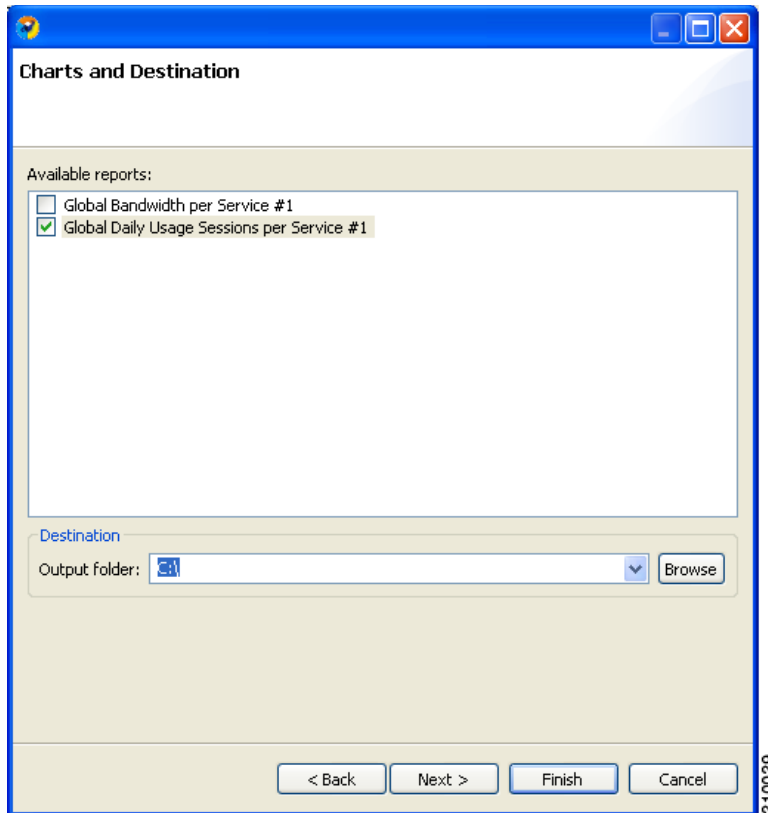
**Step 3** Select one of these:

- Export chart to an image file
- Export report to a PDF file
- Export table to a CSV file

**Step 4** Click Next.

The Tables and Destination page of the Export wizard appears (see [Figure 21](#)).

**Figure 21** Charts and Destination



**Step 5** Check the check box for one or more of the Available reports.

**Step 6** (Optional) Click **Browse** to change the Output folder.

**Step 7** Do one of these:

- If you chose Report in [Step 3](#), go to [Step 9](#).
- If you chose Chart or Table in [Step 3](#), click **Next**.

The Format page of the Export wizard opens. (The display depends on whether you chose Chart or Table in [Step 3](#).)

**Step 8** Enter the required information. Do one of these:

- For Chart
  - From the **File type** drop-down list, choose a file type.
  - In the Image width and Image height fields, enter values in pixels.
- For Table
  - From the **File type** drop-down list, choose a file type.
  - (Optional) Uncheck **Open the exported CSV file in the system's default CSV editor**.

**Step 9** Click **Finish**. Each report selected is saved in a separate file.

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## Setting the Colors Used in Charts

Predefined colors are packaged within the Cisco SCA BB Templates package. Instead of using the default color set for charts that is installed as part of the Reporter installation, you can define your own color sets.

This allows you to ensure color persistence between different sessions of the Reporter, including:

- Different sessions of the same Reporter installation



- Different Reporter installations using data from the same SCE platform, by exporting and importing color files
- Different Reporters using data from different SCE platforms
- Different versions of the Reporter

## Changing the Color of Legend Items

**Step 1** From the Cisco SCA BB Console main menu, choose **Preferences > Reporter**. The Preferences dialog box appears.

**Step 2** In the Preferences tree, choose **Reporter > Charts Colors**. The Charts Colors preference page opens.

**Step 3** Select a legend item from the color tree.



**Note** Possible categories of legend items are Direction, Hostname, Host IP, Protocol, MOS, Range, Codec, Port Number, Newsgroup, Protocol, Service, Measure, and Subscriber.

Categories and legend items are displayed in the Charts Colors pane only after the colors are allocated to legend items. Colors are allocated to any legend items in the chart the first time a report instance is executed.

The current color of the legend item appears in the upper right of the Charts Colors pane.

**Step 4** Click the displayed color. A color palette dialog box appears.

**Step 5** Select a new color for the legend item and click **OK**. The Color dialog box closes.

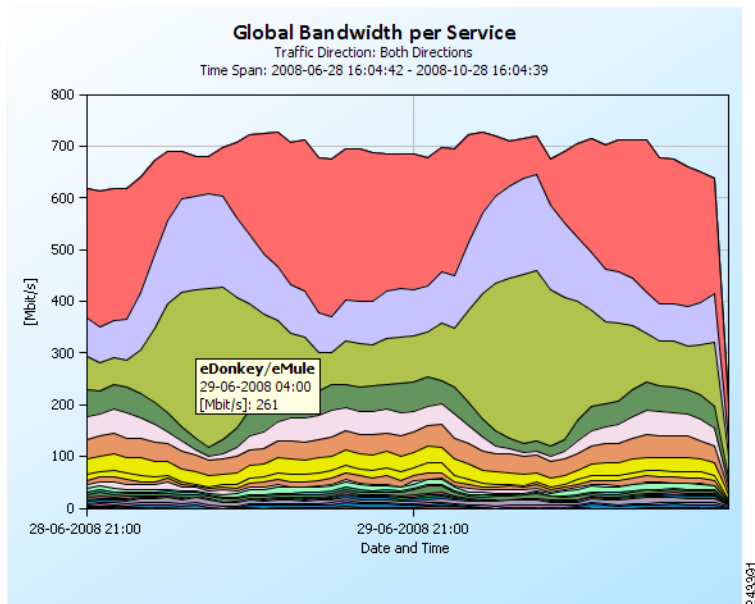
The selected color is applied to the legend item.

**Step 6** Click **OK**.

## Viewing Chart Tooltips

To view the chart tooltips, hover your mouse over the chart from an open chart. A tooltip appears with information about the chart; specifically, information about the location over which the mouse is placed (see [Figure 22](#)).

**Figure 22 Global Bandwidth per Service—Tooltip**



## 5 Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: <http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html>.

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