



## **CISCO SERVICE CONTROL SOLUTION GUIDE**



### **Cisco Service Control Usage Analysis and Reporting Solution Guide,**

#### **Release 3.5.5**

- 1** About This Guide
- 2** Solution Overview
- 3** Using the SCA Reporter
- 4** Useful SCA Reporter Tools
- 5** Obtaining Documentation and Submitting a Service Request

# 1 About This Guide

This *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.
- An overview of the Cisco Service Control Application (SCA) Reporter.
- An introduction to using the SCA Reporter to create reports based on network bandwidth use that allow you to understand how subscribers are using your network.

# 2 Solution Overview

The goal of Usage Analysis is to identify the manner in which 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 provides the following advantages:

- Deep packet inspection 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 multi-flow applications
- Subscriber aware traffic processing monitors traffic at a per-subscriber, group, or global level
- Actionable and meaningful usage statistics
- Traffic inspection and usage export without any impact on existing network performance
- Transparent deployment in either Cisco or third-party networks. The Cisco Service Control solution can be installed inline or receive-only.

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 Service Control Engine (SCE), Service Control Application for Broadband (SCA BB), Collection Manager, and Service Control Application (SCA) Reporter components.

When the solution is installed:

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

For more information, see the [Cisco Service Control Product Overview](#).

# 3 Using the SCA Reporter

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

## Service Control Application Reporter

The Cisco SCA Reporter is the Cisco Service Control Application tool that allows you to produce reports based on the traffic analysis performed by the SCE platform. The information is sent from the SCE platform and is stored in a database. The 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 the following prerequisites are met:

- The SCE platform, SCA BB Console, SCA Reporter, and Collection Manager are all installed. For details, see the [Cisco Service Control Product Installation Guide](#).
- The SCE is processing traffic.
- The Collection Manager is set up and collecting RDRs.
- The SCA Reporter is connected to the Collection Manager database.

## Initial Reports

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

- Global Monitoring reports—The report used is the Global Bandwidth per Service report. This report 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—The reports used are:
  - Global Active Subscriber per Service which 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 which shows the relative consumption of a specific number of subscribers compared to other subscribers.
- Subscriber Monitoring reports—The reports used are
  - Top Subscriber report which shows a list of the top subscriber volume consumption in a specific hour or day.
  - Subscriber Bandwidth per Service which shows the relative consumption of services by a specific subscriber.
- Web and Streaming reports and Traffic Discovery - Statistics reports—The report used are:
  - Top Web Hosts report. This report provides information about which sites are most popular among the subscriber base.
  - Top Service Ports report which shows the most popular server ports of a certain service or services.
- VoIP reports—The reports used are:
  - Top Talkers report which 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 which shows the global VoIP quality estimation; that is, the Mean-Opinion-Score (MOS).
  - Global VoIP MOS Distribution report which shows the distribution of the global VoIP quality estimation.
  - Global VoIP Codec Distribution report which shows the distribution of the VoIP codecs in use.
- Malicious Traffic Reports—The report used is the Top Scanned or Attacked ports which shows the top scanned or attacked ports.

## Starting the Reporter and Generating Reports

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**Step 1** Start the SCA BB Console by choosing **Start > All Programs > Cisco SCA > SCA BB Console 3.5.5 > SCA BB Console 3.5.5**.

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

**Step 2** From the Console main menu, choose **Tools > Reporter**.

The Reporter opens and the Templates tab appears.

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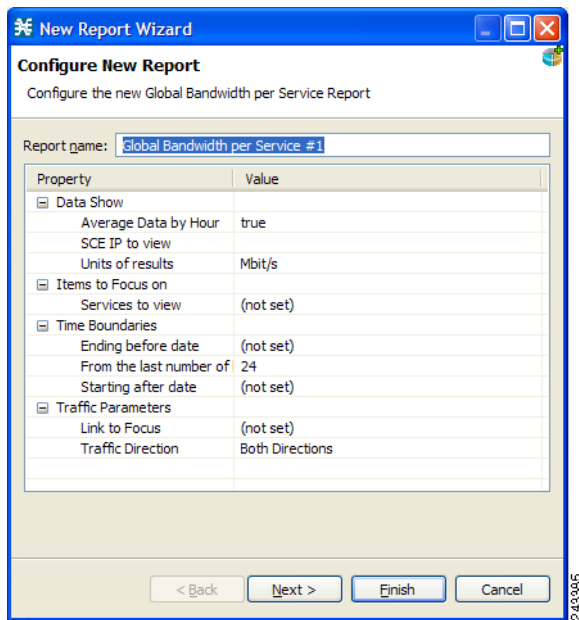
## Global Monitoring

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 you use the Global Bandwidth per Service report template. A Global Bandwidth per Service report shows which applications are going through network and how much bandwidth they are using.

### Creating a Global Bandwidth per Service Report

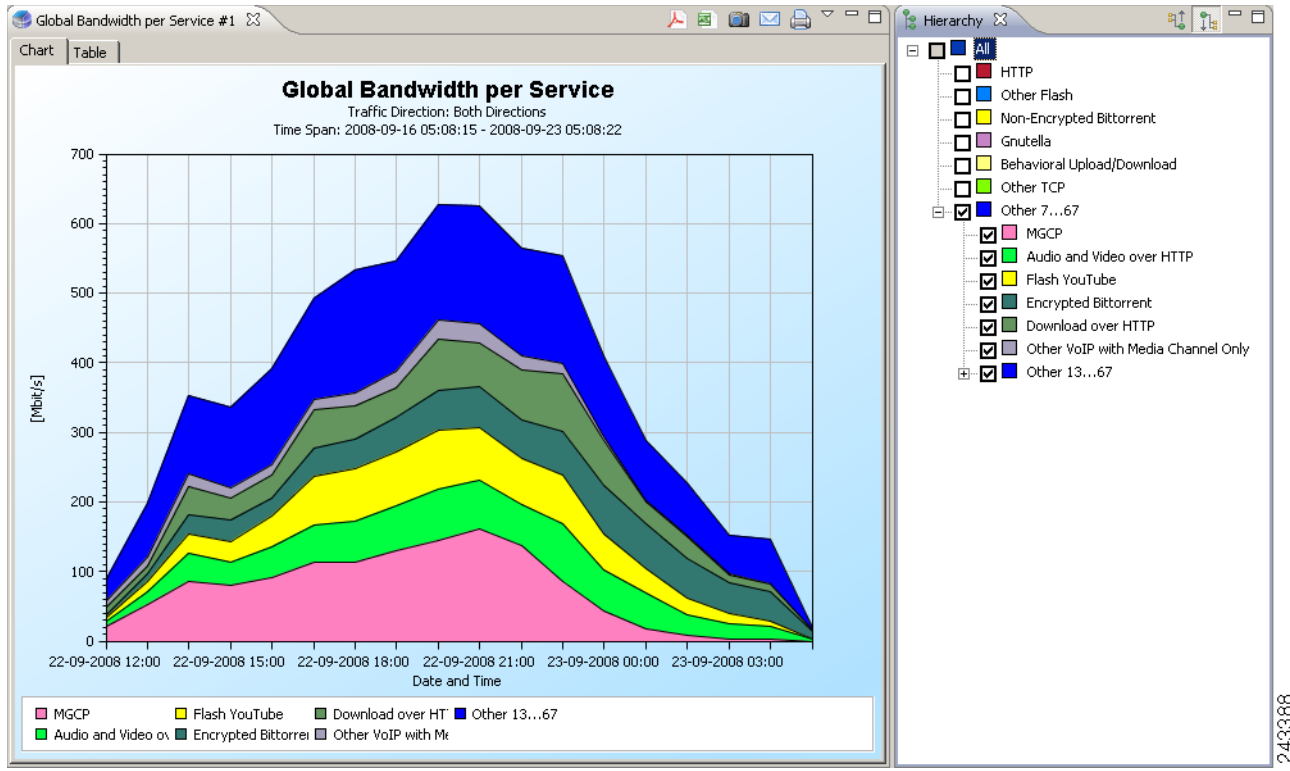
- Step 1** Open the SCA Reporter. See Starting the Reporter and Generating Reports, page 3.
- Step 2** In the Templates view, expand the Global Monitoring group.
- Step 3** Double-click **Global Bandwidth per Service**.  
The New Report Wizard window appears (Figure 1), allowing you to configure the new report.

**Figure 1** *New Report Wizard*




- Step 4** Click **Finish**. The report appears along with all of the services listed in the Hierarchy tab as shown in Figure 2.

**Figure 2 Global Bandwidth per Service Report**

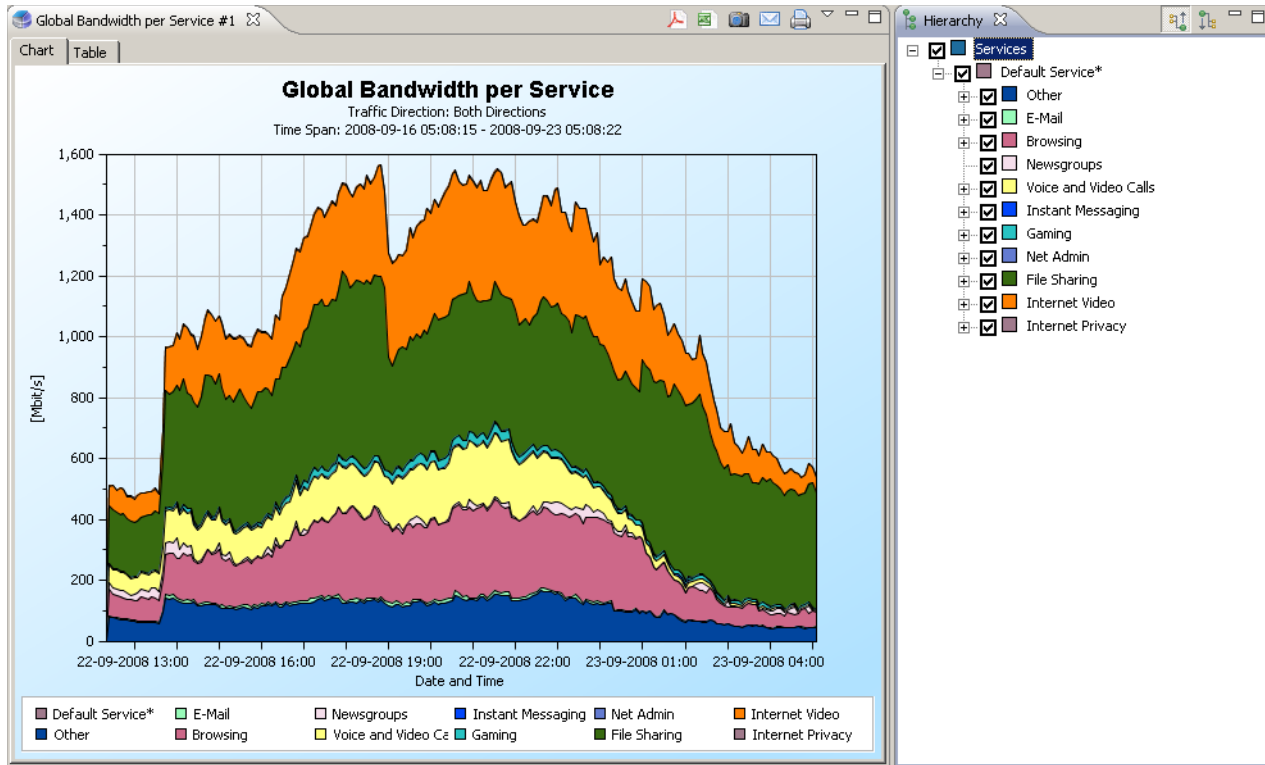


**Viewing Reports by Popularity of Service**

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.

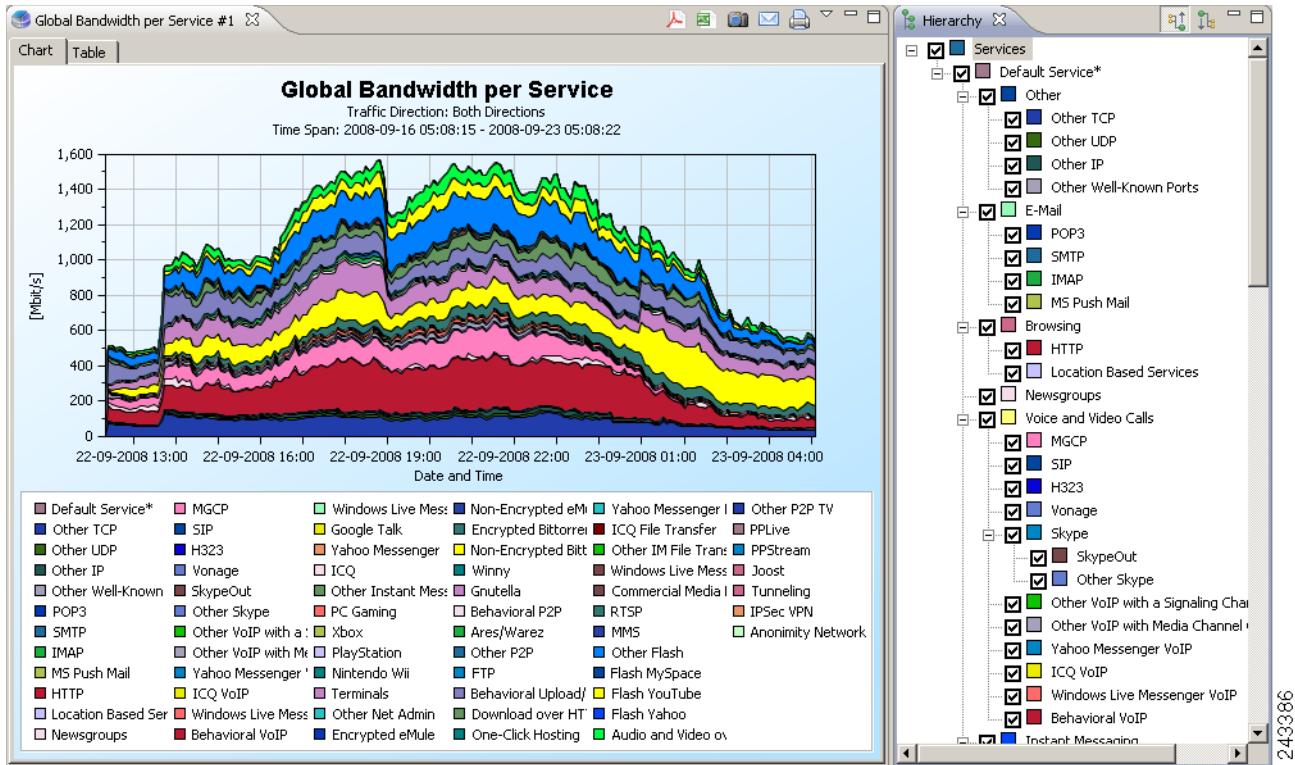
- Step 1** Create a Global Bandwidth per Service report. See the “Creating a Global Bandwidth per Service Report” section on page 4.
- Step 2** To view the services by popularity, on the Hierarchy tab, click  (Based on service popularity). The report is redrawn to show the services based on their popularity as shown in Figure 3.

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



To expand a service, click **expand** next to the service name in the Hierarchy tab. The report is redrawn to show all services that were used over the report time period, based on their popularity as shown in Figure 4.

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




## Viewing File Sharing Bandwidth Use

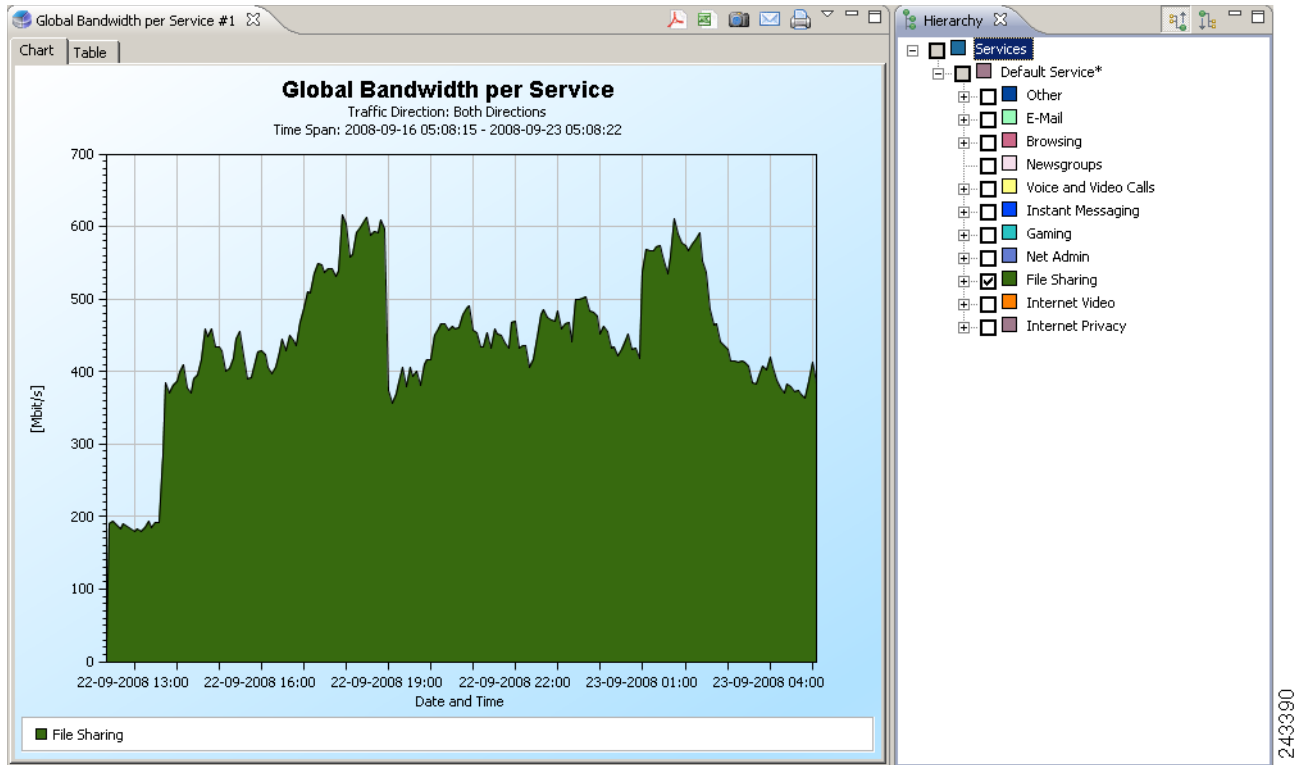
You can use the reporter to drill down and view a particular group of services and see the quantity of bandwidth consumed.



**Note** You can use this 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** On the Hierarchy tab, click  (Based on service popularity).
- Step 3** Uncheck all of the group check boxes, but leave the File Sharing check box checked. The report appears showing only the File Sharing bandwidth use as shown in Figure 5.

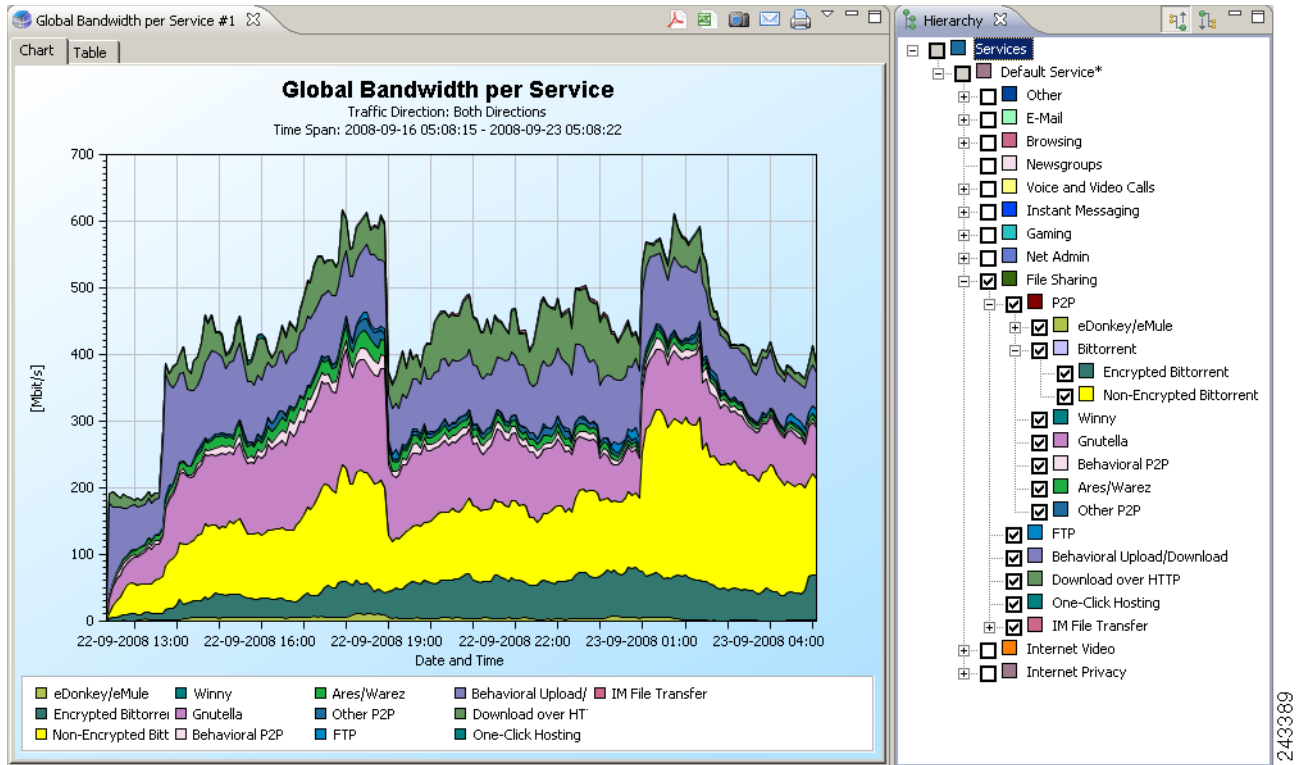
**Figure 5 Global Bandwidth per Service—File Sharing Only**



**Step 4** To view the report showing each of the File Sharing services, click the File Sharing **expand** button. The report shows each of the File Sharing services that consumed bandwidth during the report time period as shown in Figure 6.



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



## Monitoring Demographic Data

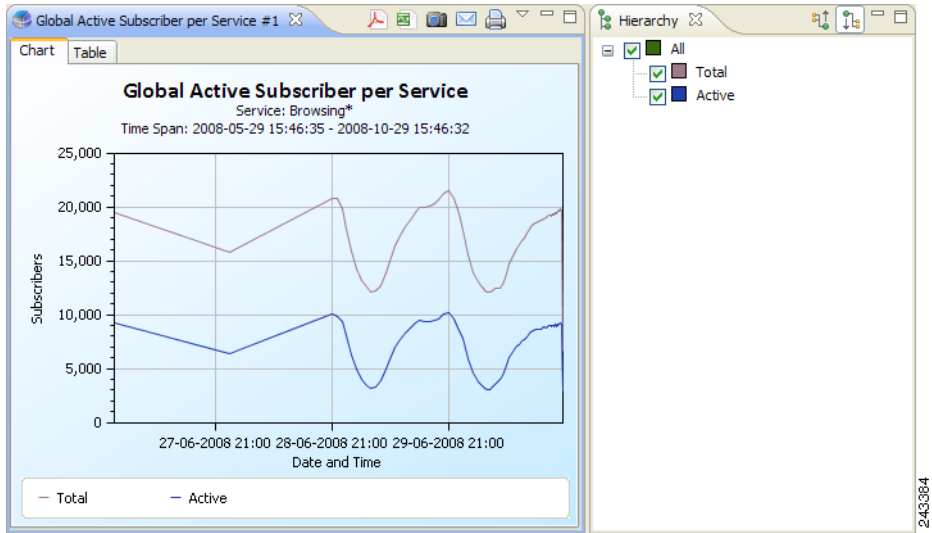
Use the Demographic Data and Service Popularity reports to view statistics of the demographic data. The Global Active Subscriber per Service report shows the distribution of subscribers among the different services defined in the system for all traffic, regardless of subscriber or package. The Relative 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 3.
- Step 2** In the Templates view, expand the Demographic Data and Service Popularity group.
- Step 3** Double-click Global Active Subscriber per Service. The New Report Wizard dialog box appears allowing you to configure the new report.
- Step 4** Click Finish.

The report appears showing the number of active subscribers and the number of total subscribers for the time period specified as shown in Figure 7.

**Figure 7** Global Active Subscribers per Service

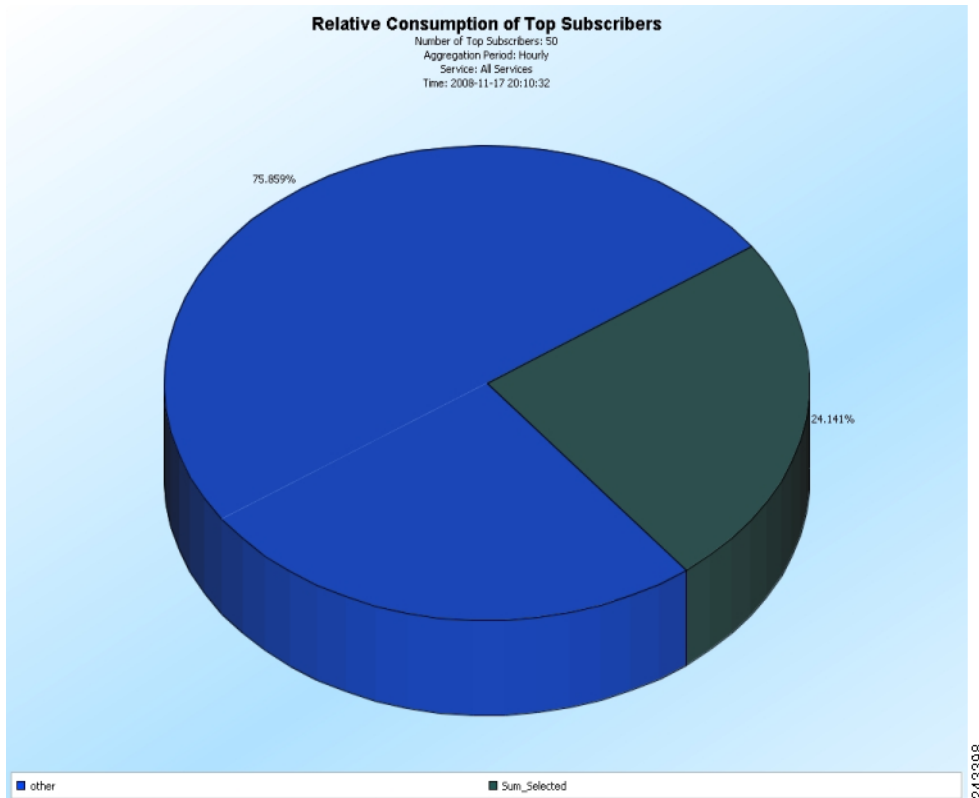


## Creating a Relative Consumption of Top Subscribers Report

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the Demographic Data and Service Popularity group.
- Step 3** Double-click **Relative Consumption of Top Subscribers**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** In the Specific Time row, click the right column 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 appears showing the consumption of the top subscribers compared to the consumption of the other subscribers as shown in Figure 8.

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



## Monitoring Subscribers

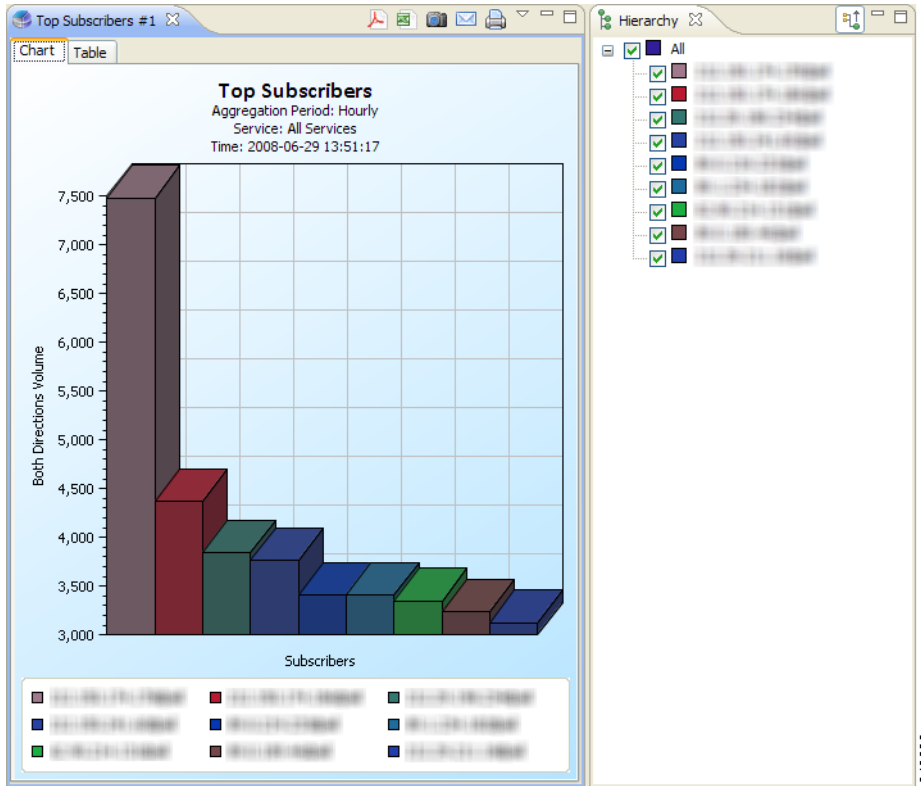
Use the Subscriber Monitoring group of reports to view statistics about the bandwidth or volume of traffic used by subscribers. The reports are provided per service usage counter for the total volume consumed by subscribers. The Top Subscribers report identifies the subscribers that consume the largest 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 SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the Subscriber Monitoring group.
- Step 3** Double-click **Top Subscribers**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** In the Specific Time row, click the right column 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 appears showing the top subscribers for the time specified as shown in Figure 9.

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



## Enabling Subscribers for Real-Time Monitoring

It is possible to enable the generation of real-time subscriber usage RDRs to allow you to produce reports for a specific subscriber using the SCE command line interface.

The following example shows how to enable the generation of the real-time subscriber usage RDRs for subscriber jane\_smith.

```
SCE> enable 10
Password:<cisco>
SCE# config
SCE(config)# interface linecard 0
SCE(config if)# subscriber name jane_smith property name monitor value 1
SCE(config if)#
```

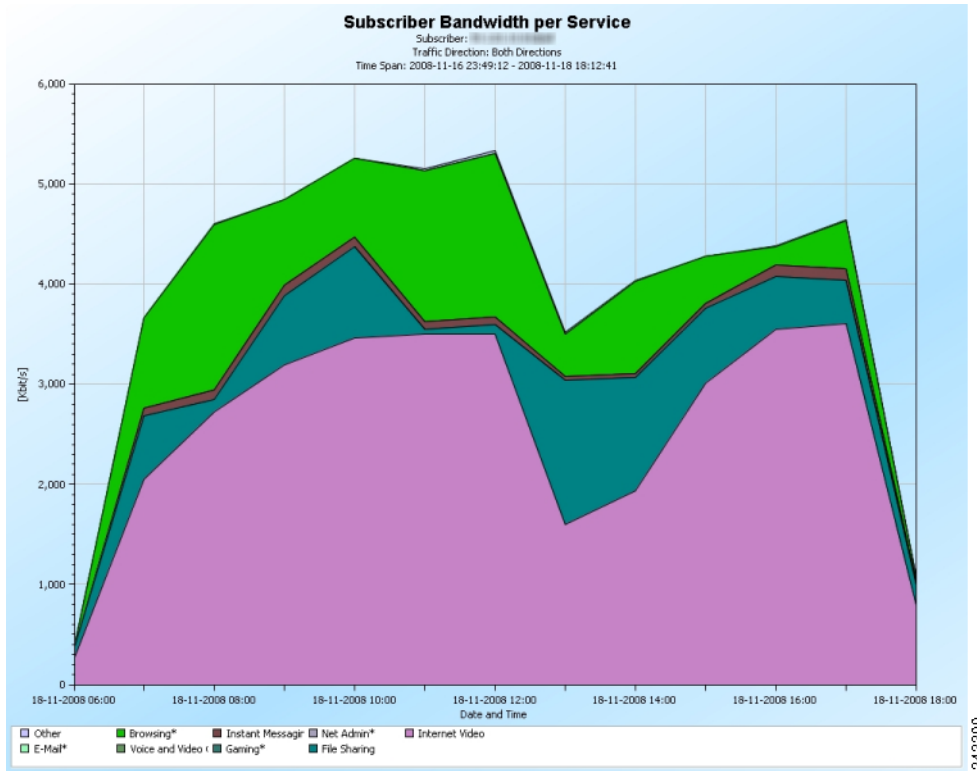
## Creating a Subscriber Bandwidth per Service Report

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

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

The report appears showing the bandwidth consumed by the services used by the specified subscriber as shown in 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 which are the most popular web hosts among the subscriber base.

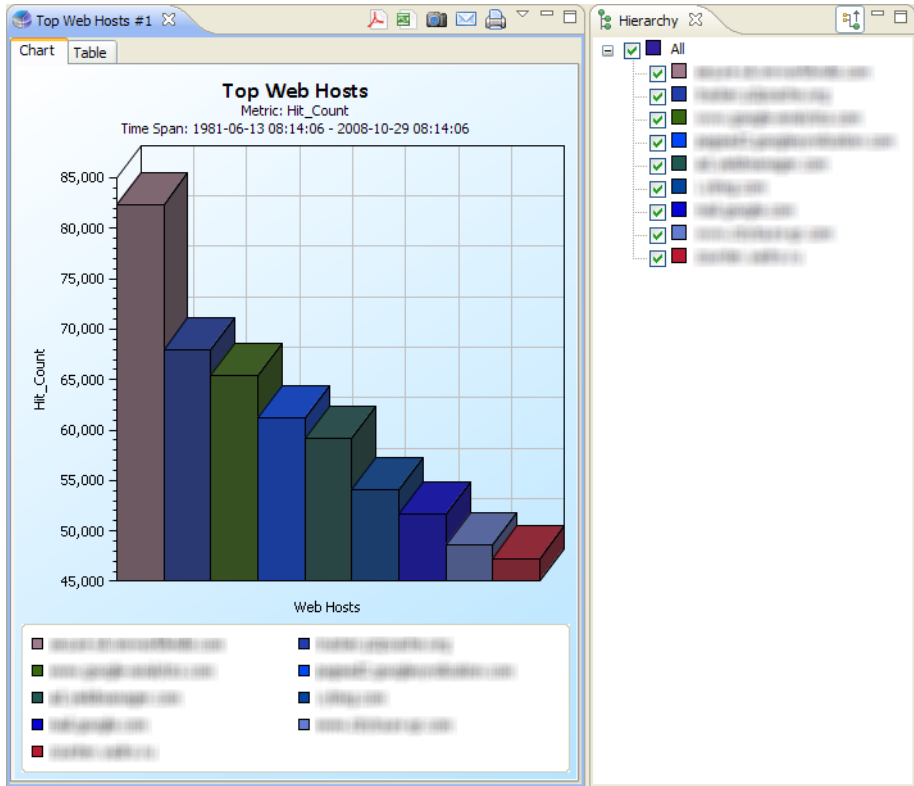
The Traffic Discovery - Statistics group of report templates allows you to view statistics compiled from the source and destination IP addresses and ports of the system traffic. The Top Service Ports report shows the most popular server ports of a certain service or services.

## Creating a Top Web Hosts Report

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the Web and Streaming group.
- Step 3** Double-click **Top Web Hosts**. The New Report Wizard dialog box appears allowing you to configure the new report.
- Step 4** Click **Finish**.

The report appears along with all of the web hosts listed in the Hierarchy tab as shown in Figure 11.

**Figure 11 Top Web Hosts**

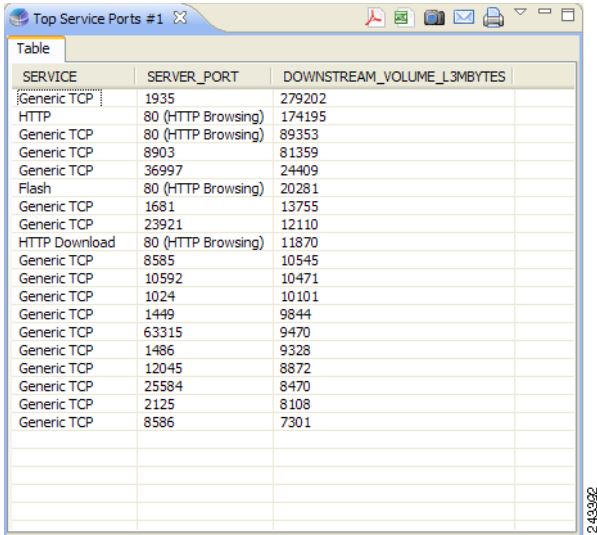


## Creating a Top Service Ports Report

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the Traffic Discovery - Statistics group.
- Step 3** Double-click **Top Service Ports**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** Click **Finish**.

The report appears in table format listing the top services, the ports used by the top services, and the volume of traffic used by the services as shown in Figure 12.

**Figure 12 Top Service Ports**



SERVICE	SERVER_PORT	DOWNSTREAM_VOLUME_L3BYTES
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

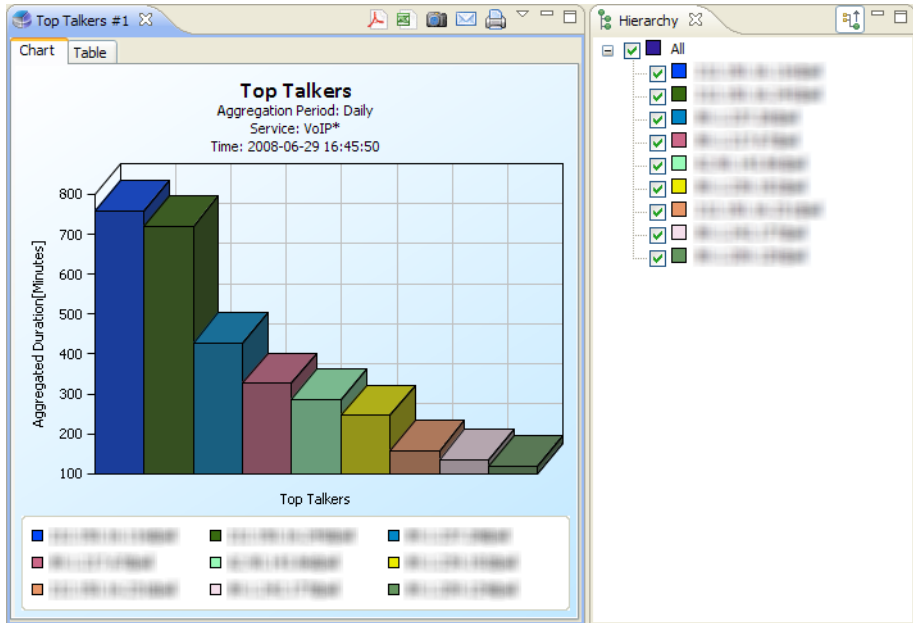
The VoIP group of reports allow you to view statistics of the VoIP traffic.

- 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 SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the VoIP group.
- Step 3** Double-click **Top Talkers**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** In the Items to Focus on property group, choose the service on which the report focuses.
- Step 5** In the Specific Time row, click the right column 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 appears showing the top talkers for the time period and service chosen (Figure 13).

**Figure 13 Top Talkers**

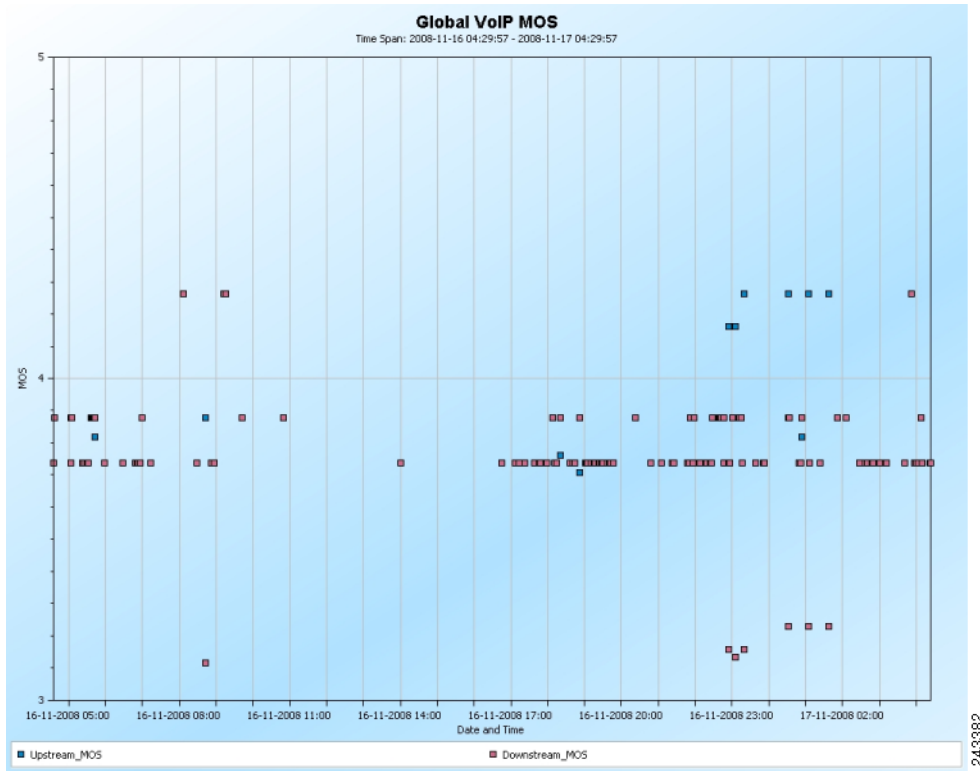


## Creating Global VoIP MOS Reports

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the VoIP group.
- Step 3** To create a Global VoIP MOS report, double-click **Global VoIP MOS**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** Click **Finish**.  
The report appears showing the global VoIP quality estimation (Figure 14).



**Figure 14 Global VoIP MOS**

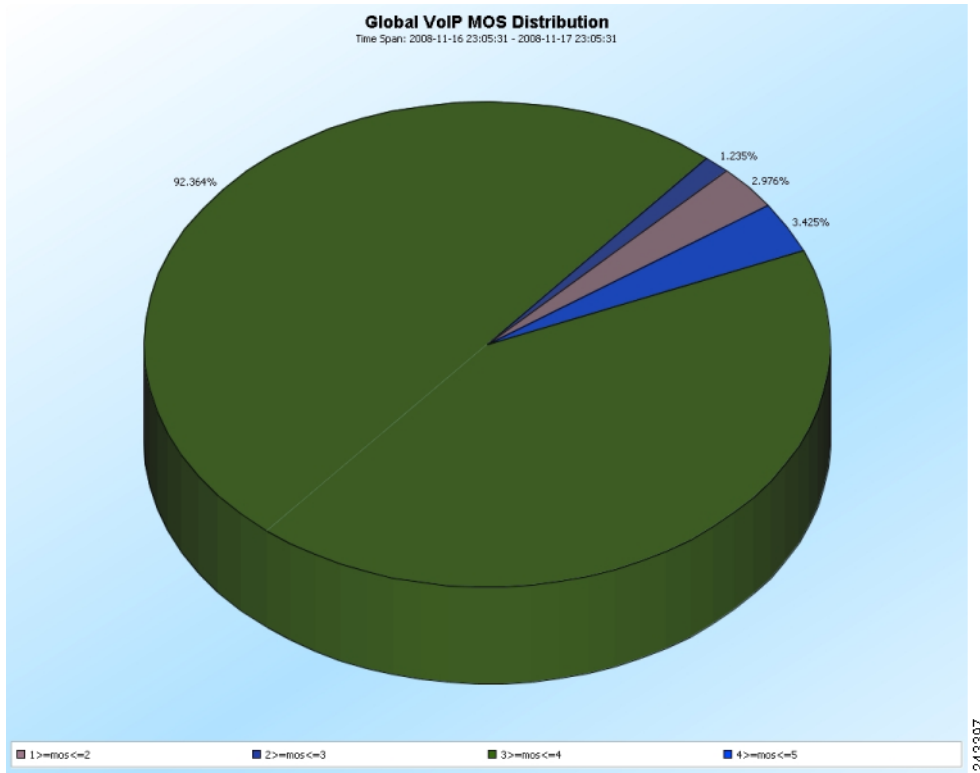


**Step 5** To create a Global VoIP MOS distribution report, double-click **Global VoIP MOS Distribution**. The New Report Wizard dialog box appears, allowing you to configure the new report.

**Step 6** Click **Finish**.

The report appears showing the global VoIP quality estimation distribution (Figure 15).

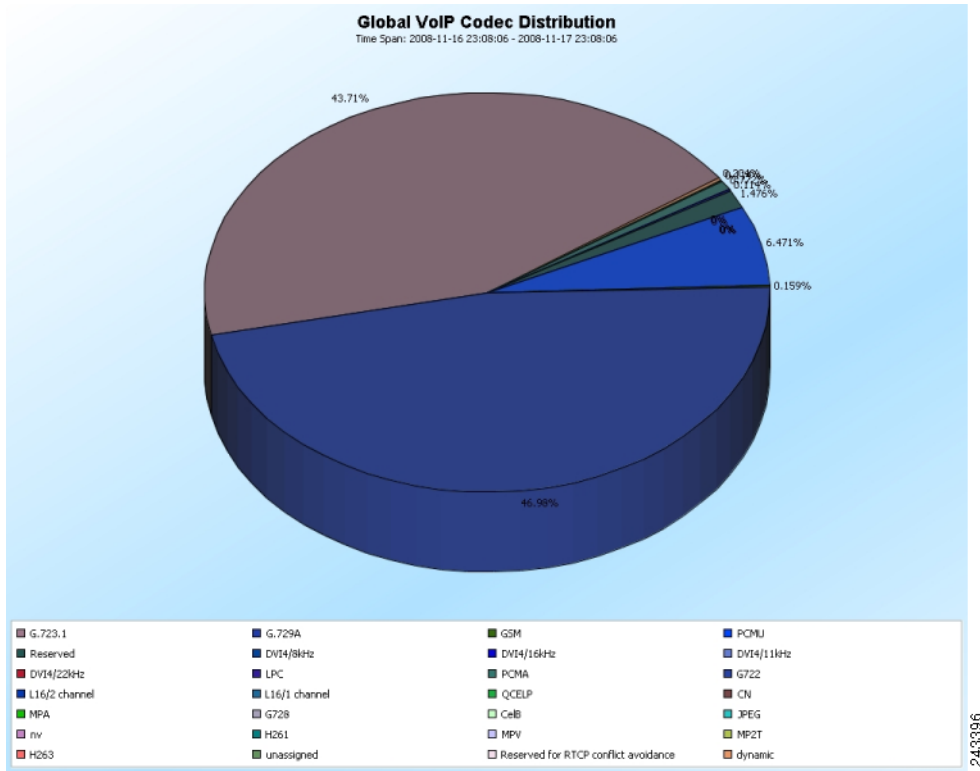
**Figure 15** Global VoIP MOS Distribution



## Creating a Global VoIP Codec Distribution Report

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the VoIP group.
- Step 3** Double-click **Global VoIP Codec Distribution**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** Click **Finish**.  
The report appears showing the distribution of VoIP codecs being used (Figure 16).

**Figure 16 Global VoIP Codec Distribution**



## Monitoring Malicious Traffic

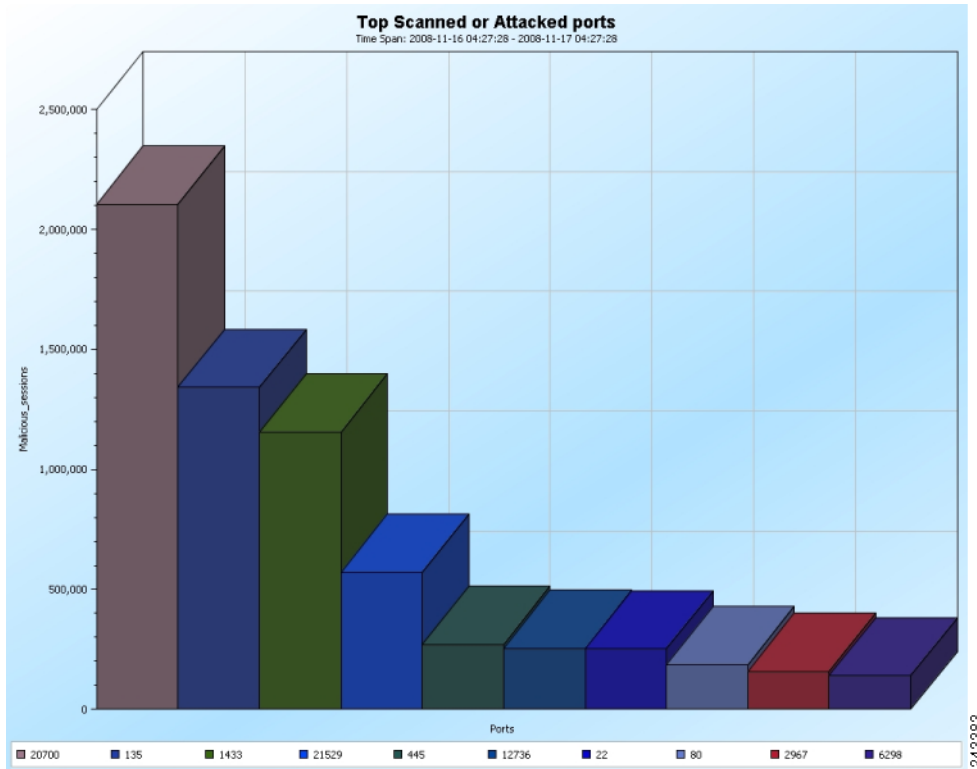
The Malicious Traffic group of report templates allows you to view statistics of the malicious events accrued in the system. The Top Scanned or Attacked Ports report shows the top scanned or attacked ports.

### Creating a Top Scanned or Attacked Ports Report

- Step 1** Open the SCA Reporter. See the “Starting the Reporter and Generating Reports” section on page 3.
- Step 2** In the Templates view, expand the Malicious Traffic group.
- Step 3** Double-click **Top Scanned or Attacked Ports**. The New Report Wizard dialog box appears, allowing you to configure the new report.
- Step 4** Click **Finish**.

The report appears showing the top scanned or attacked ports (Figure 17).

**Figure 17** Top Scanned or Attacked Ports



## 4 Useful SCA Reporter Tools

The SCA Reporter contains features that allow 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

#### 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** To display the chart in two dimensions, click the 3D property. The value of the 3D property toggles from True to False and the Look/3D category is removed from the Properties view.
- Step 3** Mark off 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** Mark off 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

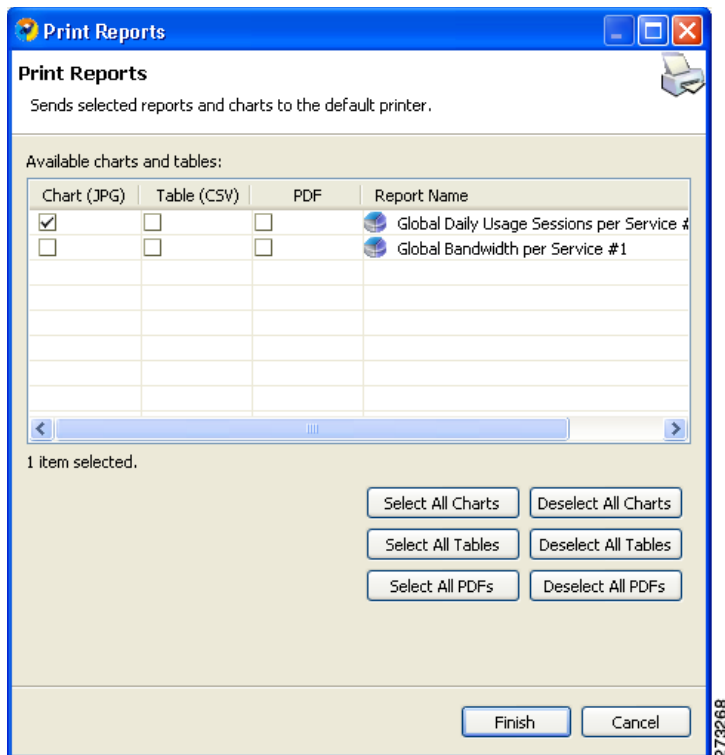
You can manage report output in several ways:

- You can print, send by email, 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** After you execute one or more report instances, choose **File > Print Reports**. The Print Reports wizard opens as shown in Figure 18.

**Figure 18** *Print Reports Wizard*



- Step 2** Select one or more format for each report you are printing.
- Step 3** Click **Finish**. The selected reports print in the format or formats you chose.



**Note**

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



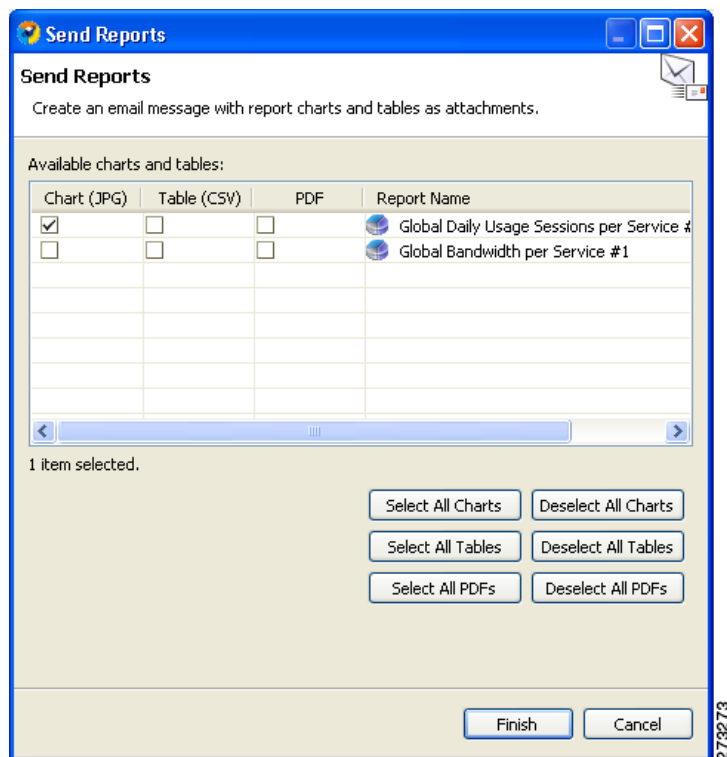
**Note**

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

## Sending Reports by Email

**Step 1** After executing one or more report instances, choose **File > Send Reports**. The Send Reports wizard opens as shown in Figure 19.

**Figure 19** *Send Reports Wizard*



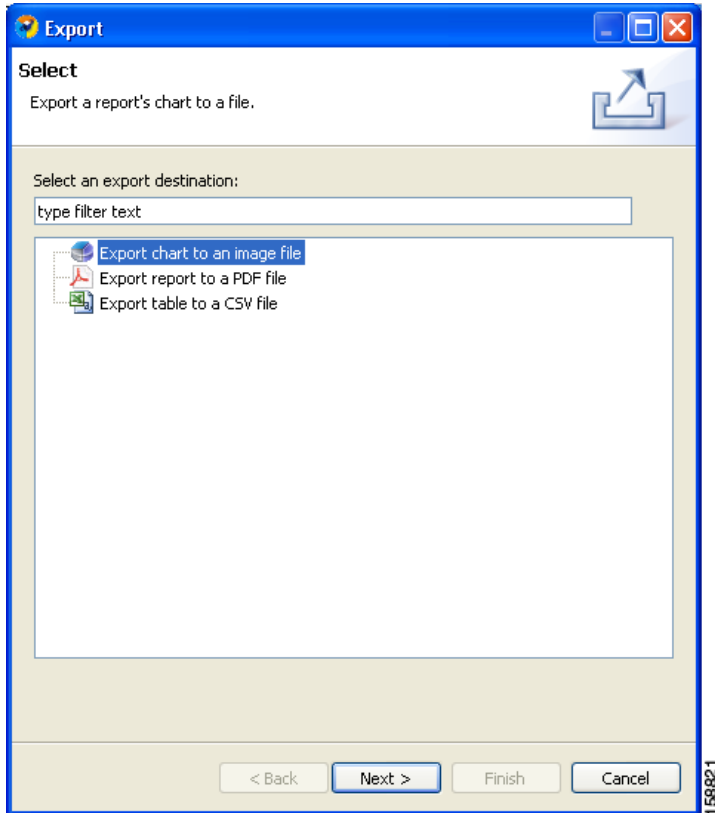
**Step 2** Select one or more format for each report you want to send.

**Step 3** Click **Finish**. An email message opens from the default email application installed on the desktop, with the selected reports attached.

## Exporting Reports

**Step 1** After you execute one or more report instances, choose **File > Export**.  
The Export wizard appears as shown in Figure 20.

**Figure 20** *Export Wizard*



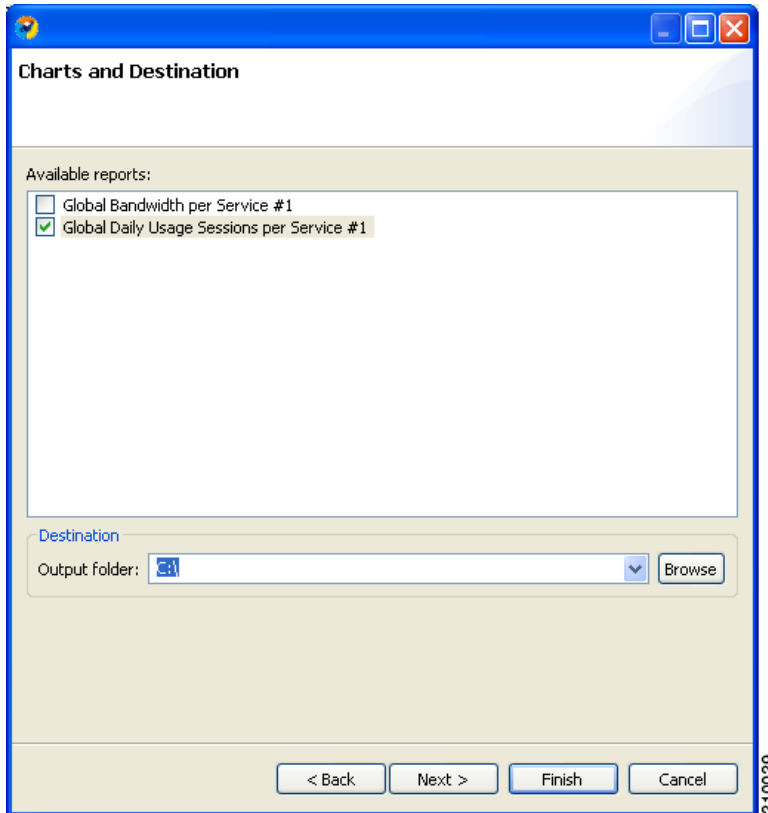
**Step 2** Select one of the following:

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

**Step 3** Click **Next**.

The Tables and Destination page of the Export wizard opens as shown in Figure 21.

**Figure 21** *Charts and Destination Window*



**Step 4** Check the checkbox for one or more of the Available reports.

**Step 5** (Optional) To change the Output folder, click **Browse**.

**Step 6** Do one of the following:

- If you chose Report in Step 2, go to Step 8.
- If you chose Chart or Table in Step 2, click **Next**.

The Format page of the Export wizard opens. (The display depends on whether you chose Chart or Table in Step 2.)

**Step 7** Enter the required information. Do one of the following:

- 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 8** 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 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

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**Step 1** From the 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**

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

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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.

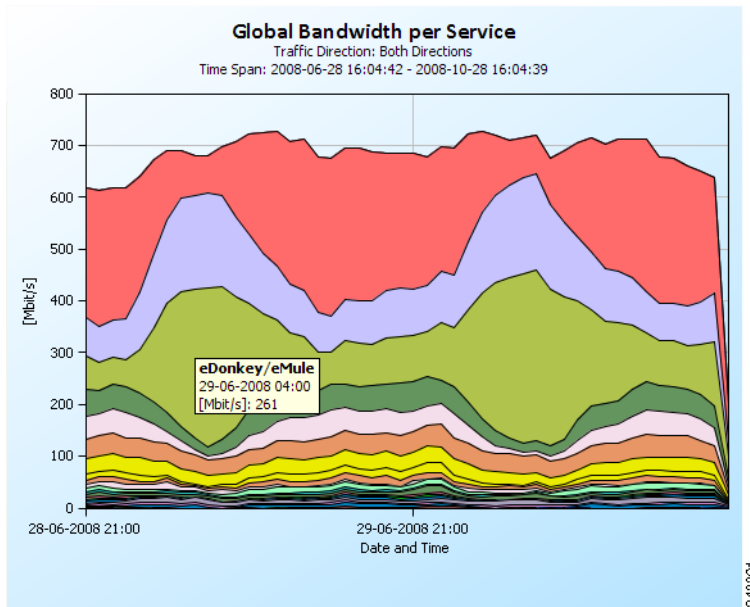
**Step 6** Click **OK**.

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## Viewing Chart Tool Tips

**Step 1** From an open chart, hover your mouse over the chart. A tool tip appears with information about the chart; specifically, information about the location over which the mouse is placed as shown in Figure 22.

**Figure 22** Global Bandwidth per Service— Tool Tip



## 5 Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at: <http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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