Cisco Unified Service Statistics Manager 8.5

Deployment Best Practices
Deployment Guide

June, 2011

For further information, questions and comments please contact ccbu-pricing@cisco.com

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Introduction

This document outlines best practices for a successful deployment of Cisco Unified Service Statistics Manager (SSM). It documents the initial deployment and ongoing operational environments.

This document is not an alternative to the installation guide or the user guide, as it does not cover all the features and functions of the product. It is a supplement to the installation guide and the user guide. Detailed steps are provided for best practices wherever relevant.

Product Overview

Cisco® Unified Service Statistics Manager, which is part of the Cisco Unified Communications Management Suite, provides advanced statistics analysis and reporting capabilities for Cisco Unified Communications deployments. Cisco Unified Service Statistics Manager 8.5 is an easy-to-use web-based software product that features a variety of advanced reports for executive, operations, and capacity planning functions. Cisco Unified Service Statistics Manager provides ready-made reports as well as customizable reports that provide visibility into key metrics including call volume, call quality, resource utilization, and capacity across the Cisco Unified Communications System, including across multiple Cisco Unified Communications Manager (formerly known as Cisco Unified CallManager) clusters, gateways, and related devices. It helps enable users to view information based on network, service, business, and user criteria and to define service-level agreement (SLA) constructs as well as to measure and verify them based on collected Unified Communications statistics. Customizable report templates and automatic report invocation and scheduling provide users with a great deal of flexibility.

Cisco Unified Service Statistics Manager 8.5 can be deployed for statistics analysis and reporting for small, medium-sized, and large Cisco Unified Communications deployments. Cisco Unified Service Statistics Manager 8.5 integrates with and relies on the data collection capabilities of Cisco Unified Operations Manager (UOM) 8.5 and Cisco Unified Service Monitor (USM) 8.5; the latter two products are prerequisites for the deployment of Cisco Unified Service Statistics Manager 8.5. For small and medium-sized deployments (generally up to 10,000 Cisco Unified IP phones), Cisco Unified Service Statistics Manager 8.5, Cisco Unified Service Monitor 8.5, and Cisco Unified Operations Manager 8.5 may be deployed on the same Windows-based server/workstation. For larger deployments, it is recommended that Cisco Operations Manager 8.5 be run on a separate server. Figure 1 shows a sample deployment.

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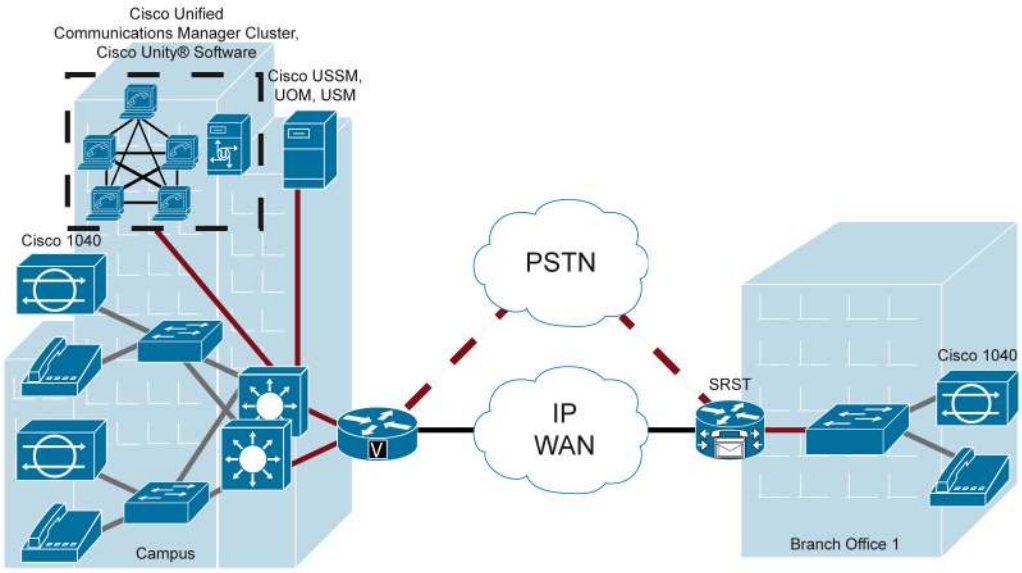
Figure 1. Deployment Example



Features and Benefits

Cisco Unified Service Statistics Manager provides the following features and benefits:

- Integrates with and uses the data collection capabilities of Cisco Unified Operations Manager and Cisco Unified Service Monitor to harvest and consolidate Cisco Unified Communications statistics information from a variety of Cisco devices and systems, including Cisco Unified Communications Manager, Cisco Unified Communications Manager Express (formerly known as Cisco Unified Call Manager Express), Cisco Unity® software, Cisco Unity Connection, Cisco Unity Express, and Cisco IOS® Software-based voice gateways; the collected data stored in a consolidated database can be partitioned based on a variety of network, service, user, and business criteria for detailed analysis and reporting.
- Provides a variety of ready-made reports on key metrics including call volume, call quality, and resource utilization across the Cisco Unified Communications System. Cisco Unified Service Statistics Manager 8.5 provides a variety of reports for executive, operations, and capacity planning personnel. These include:
  - Call volume, call duration, service quality, call completion, and mean opinion score (MOS) reports across multiple Cisco Unified Communications Manager clusters, with capabilities to get more information about specific clusters and time periods
  - A variety of top-N reports based on calls, users, endpoints, and other entities in the Cisco Unified Communications deployment
  - Gateway and trunk traffic and utilization reports over time, with capacity trending and capabilities to get more detailed information
  - Call failure analysis reports over time, including cause code information
  - Top-N upgrade and downgrade candidates reports for capacity planning and trending
  - IP phone and inventory reports
  - IP telephony testing reports, including IP SLA test results over time

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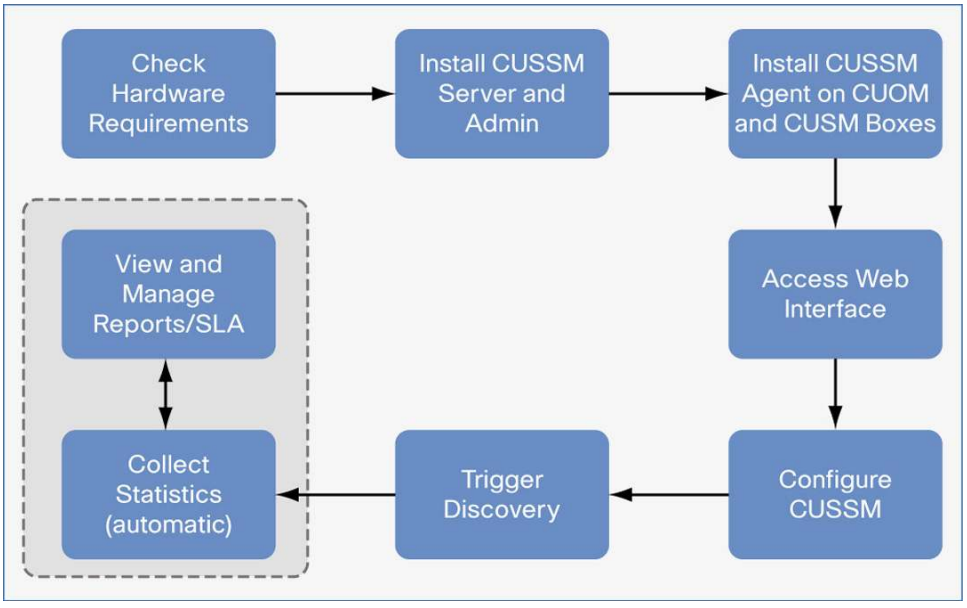
- A variety of exception and operations reports, including most frequently dialed numbers, longest calls, calls to specified number, and more
- A variety of SLA reports, including SLA capacity trends, SLA compliance history, SLA executive summary, SLA health summary, and more

- Helps enable the user to personalize reports, customizing the content as well as the format and presentation of the reports.
- Facilitates the distribution of reports to executive, operations, and capacity planning personnel through email as well as a user-friendly web-based portal that features a customizable dashboard displayed when the user logs in. Users can specify the reports to be shown on their dashboard as well as the layout in a user-friendly manner. The product features intuitive navigation and detailed reporting from aggregate to fine levels.
- Provides powerful scheduling features, facilitating the generation and distribution of user-specified reports automatically at specific times.
- Facilitates the export of data and reports to external applications and users in a variety of formats, including HTML, PDF, and comma-separated value (CSV) file formats.
- Cisco Unified Service Statistics Manager 8.5 adds the following new reports:
  - Device pool-based reports
  - Route group utilization reports
  - Session Initiation Protocol (SIP) trunk in call volume reports
  - Call Admission Control (CAC) location bandwidth reports
  - Erlangs and Common Channel Signaling (CCS) added for capacity planning

Service Statistics Workflow

Figure 2. Cisco Unified Service Statistics Manager Workflow



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Cisco Unified Service Statistics Manager uses the short-term wealth of operational data collected from Cisco Unified Operations Manager and Cisco Unified Service Monitor to perform long-term analysis and reporting (Figure 2). It is therefore mandatory to have Unified Operations Manager and Unified Service Monitor operational prior to deploying Unified Service Statistics Manager.

Service Statistics Manager has the following components:

- **Service Statistics Manager server:** The primary component of Service Statistics Manager. It hosts the database and web interface. It is responsible for talking to remote Service Statistics Manager agents and gathers data from Cisco Unified Operations Manager and Cisco Unified Service Monitor.
- **Service Statistics Manager agent:** Sends data to the Service Statistics Manager server for data mining. Required to be running in all Cisco Unified Operations Manager and Cisco Unified Service Monitor servers.
- **SSM web user interface:** Primary user interface for viewing reports, graphs, and SLAs and for administering the dial plan, call quality, and so on.
- **SSM administration console:** Java console for administering users, groups, and agents. Uses Java Remote Method Invocation (RMI) to communicate with the Service Statistics Manager server. A maximum limit of four instances of the administration console can be installed and used to manage Service Statistics Manager.

Preinstallation Tasks

Server Requirements

- The hardware configuration needed to operate Cisco Unified Service Statistics Manager at different scalability levels and the client requirements are detailed in the Quick Start Guide for Cisco Unified Service Statistics Manager 8.5 available at http://www.cisco.com/en/US/products/ps7285/prod_installation_guides_list.html.

Hardware requirements for installing Service Statistics Manager on a system with Operations Manager and Service Monitor are provided in the Co resident Guidelines section in the Installation Guide for Cisco Unified Operations Manager 8.5 (Includes Service Monitor).

Postinstallation Tasks

Integrating with Operations Manager and Service Monitor

- This section assumes that installation procedures as specified in the Quick Start Guide (installation guide) have been completed.

The Quick Start Guide for Cisco Unified Service Statistics Manager 8.5 provides a checklist (Table 10, Configuration Checklist) of installation procedures. Make sure that the installer has checked all the items on the checklist (for example, things to do in Cisco Unified Operations Manager and Cisco Unified Service Monitor - make sure Cisco Voice Transmission Quality is turned on, make sure that Cisco Unified Operations Manager polling is being done and displayed for desired statistics, and so on) **before** using Cisco Unified Service Statistics Manager.

After Cisco Unified Service Statistics Manager has been installed, integration with Operations Manager and Service Monitor will have to be configured. To accomplish this:

1. Log in to the Cisco Unified Service Statistics Manager GUI through http://<hostname>:48101, where hostname is the name of the machine running SSM. See Figure 3.

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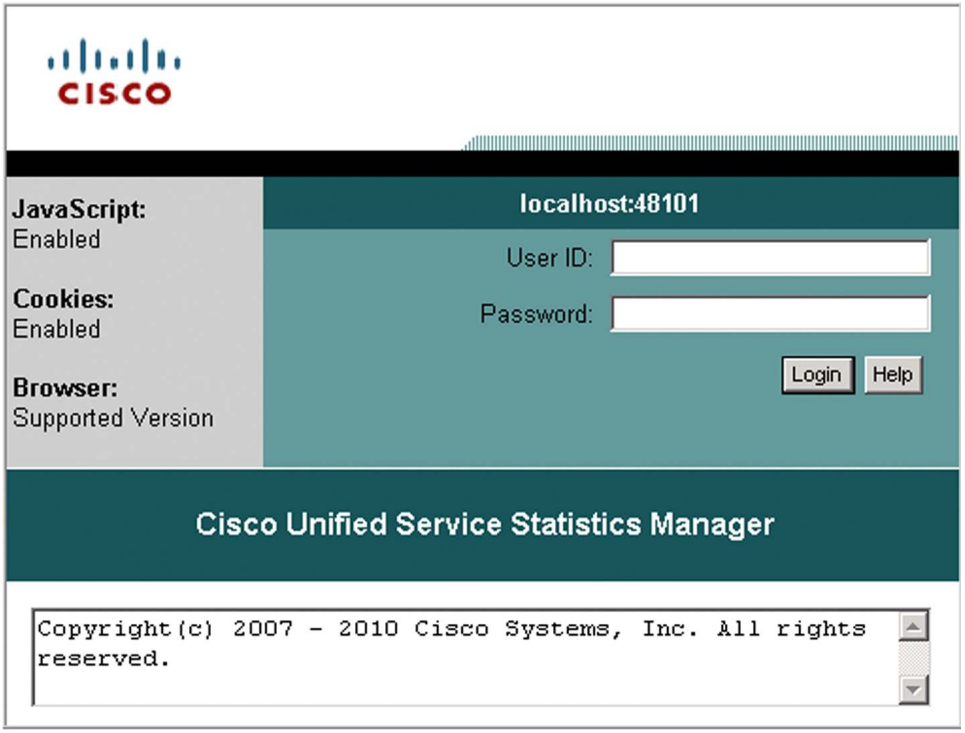
Figure 3. Log In to Cisco Unified Service Statistics Manager



2. Then click **Administration > Show** (in the Advanced section - see Figure 4).

Figure 4. Click Show in the Advanced Section

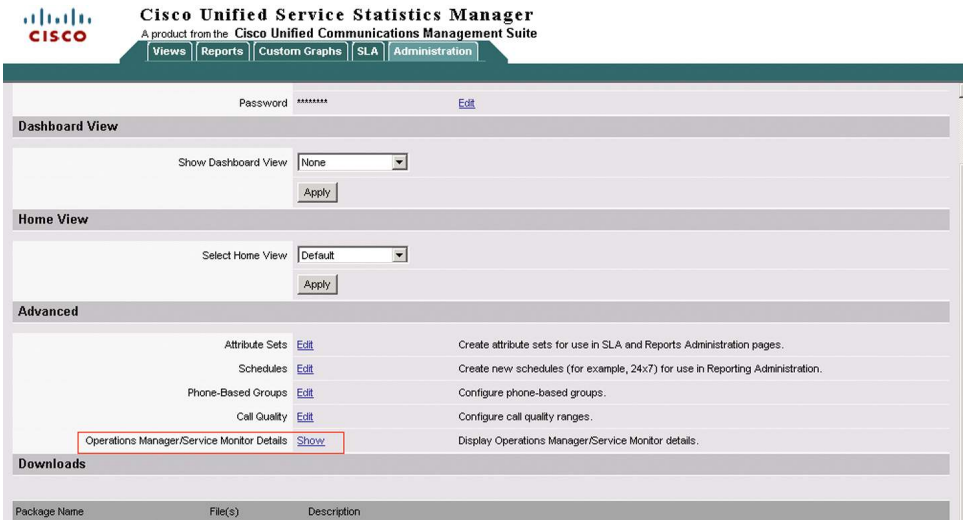


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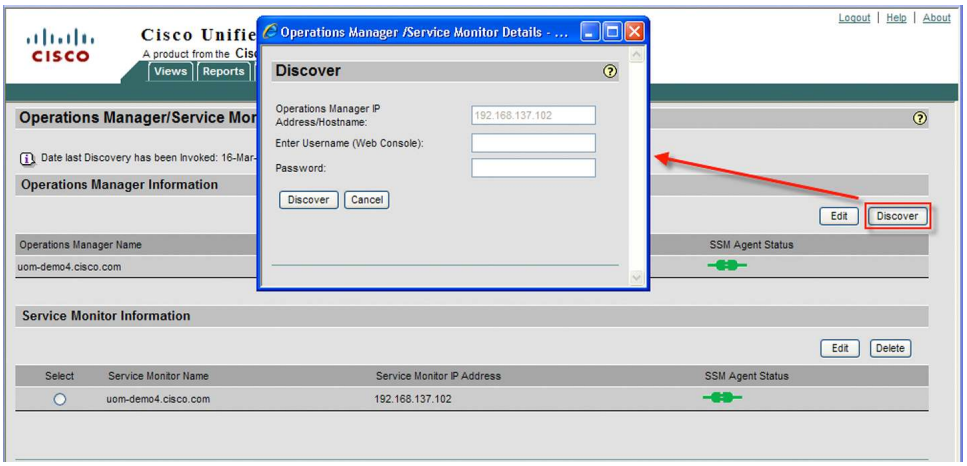
Figure 5. Enter the Operations Manager Server Name, Username, and Password and Click Discover



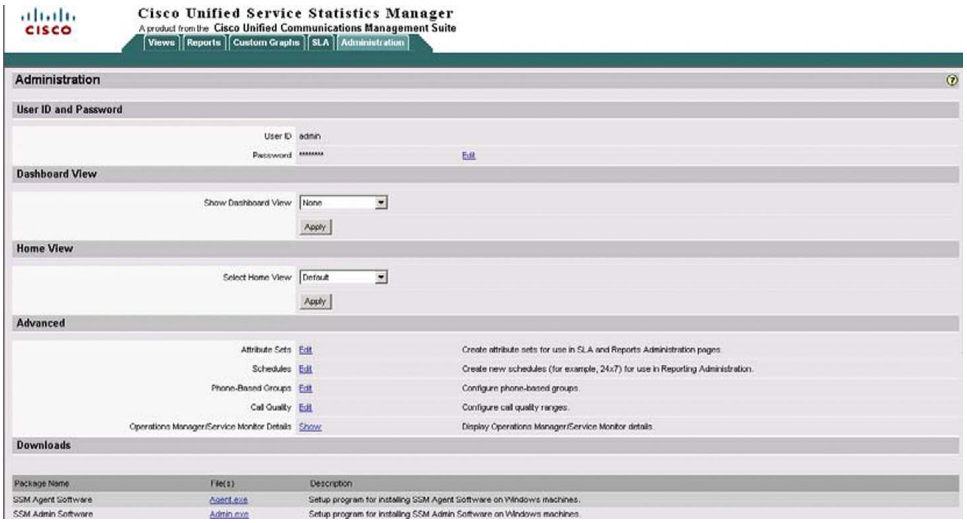
3. Enter the IP address of the Operations Manager server, username, and password. See Figure 5.
4. Click **Discover**.

Service Monitor software associated with the Operations Manager will be discovered as well.

Administration Tab

There are other functions in the Administration tab that you should explore, such as changing the default Admin password, selecting the Dashboard and Home views, and setting Advanced options. See Figure 6.

Figure 6. Functions in the Administration Tab



User Scenarios

Creating a Capacity Planning Home View

Users can create a Capacity Planning Home view that includes top-N gateways and trunk utilization, trunk capacity trends, call volume, and voice-mail port utilization. The sample Capacity Planning Home view is displayed in Figure 7.

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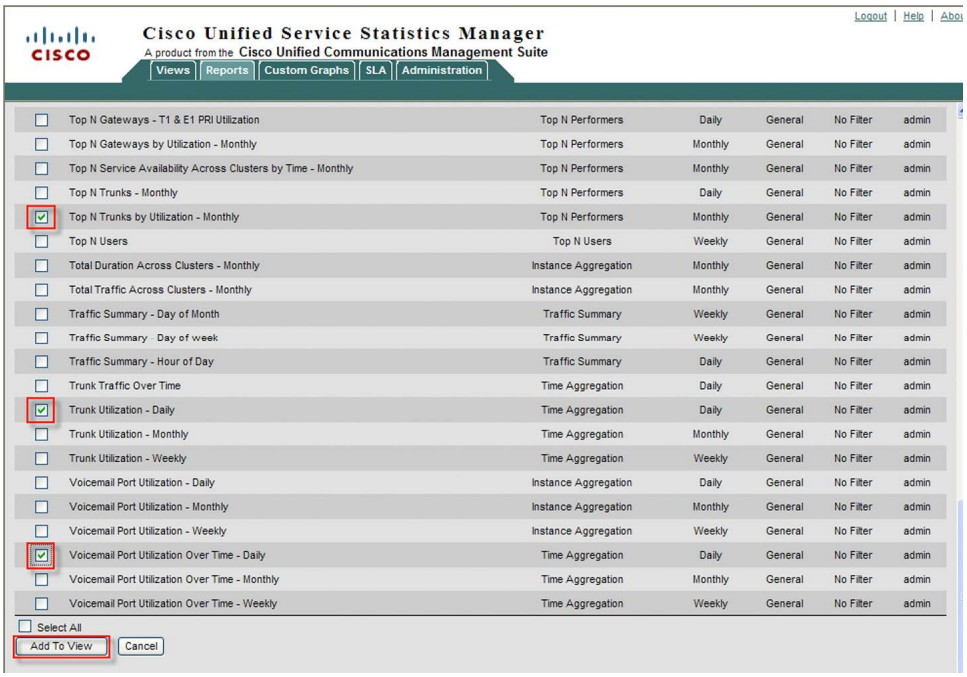
1. Click the **Create** button.
2. Enter **Capacity Planning Home** in the View Title field.
3. Click **Add Reports**.
4. Select the reports for this view.

Figure 7. Creating a Capacity Planning Home View



5. Click **Add to View** after selecting the reports.

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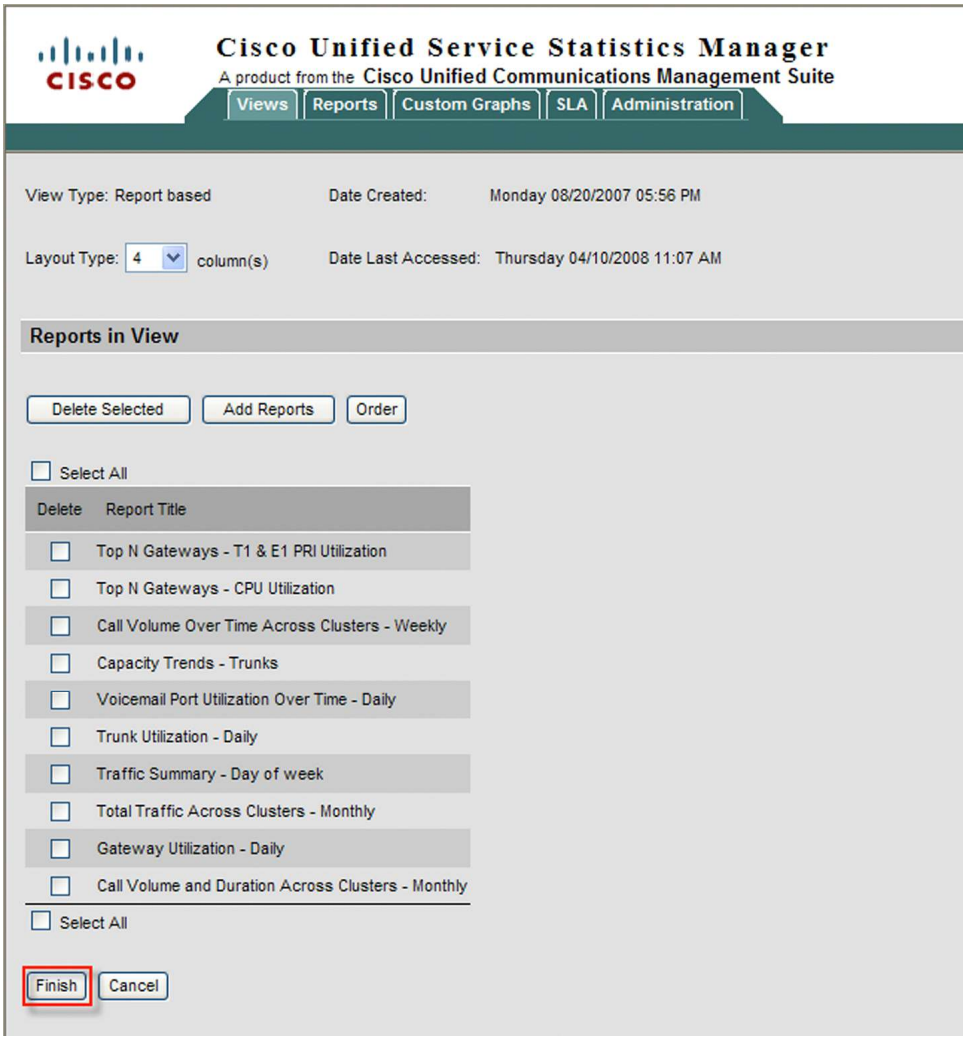
Figure 8. Click Finish to Add the Reports



6. Click **Finish** (see Figure 8).

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Figure 9. To View Details, Click the Appropriate Graph or Title

Details of each report can be viewed by clicking the graph or title (Figure 9).

Capacity Trend Reports

Capacity trend reports will predict threshold violations in the specified time period based on the monitored attributes. The report will display whether the threshold has been violated or the days to violation.

Creating a Trunk Group

If your environment consists of trunk groups, those trunk groups must be created in Cisco Unified Service Statistics Manager. Reports then can be generated using those groups. This is accomplished in the Service Statistics Manager Administration Console.

1. Launch the console from **Start > Programs > Cisco Unified Service Statistics Manager > Cisco Unified Service Statistics Manager Admin** (Figure 10) and log in (Figure 11).

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Figure 10. Launch the Administration Console

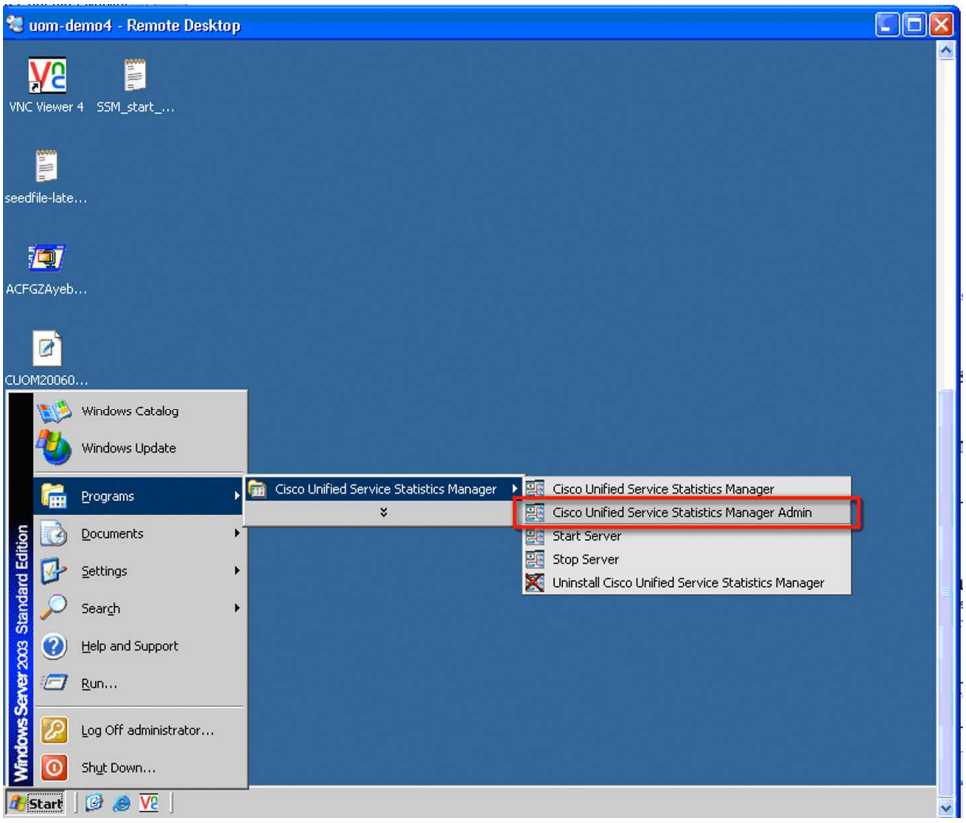
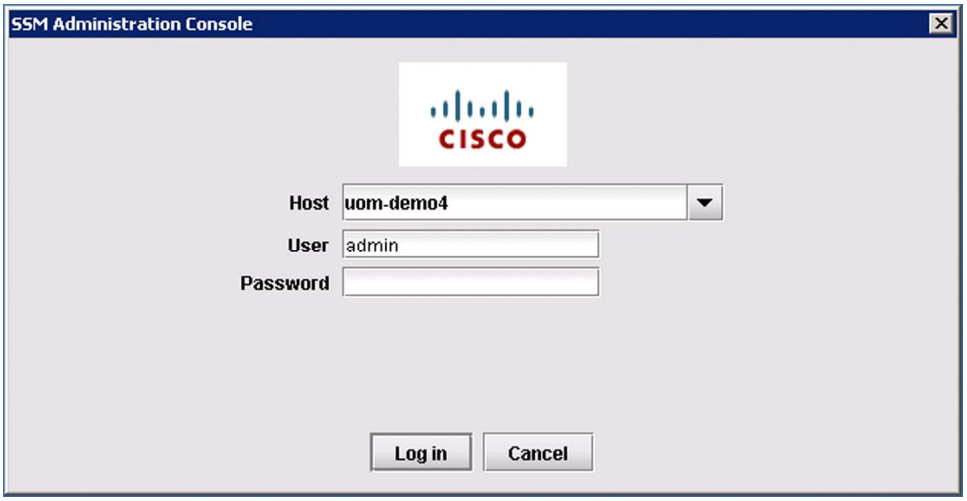


Figure 11. Log In



2. Right-Click **Group > Add Group** (see Figure 12).

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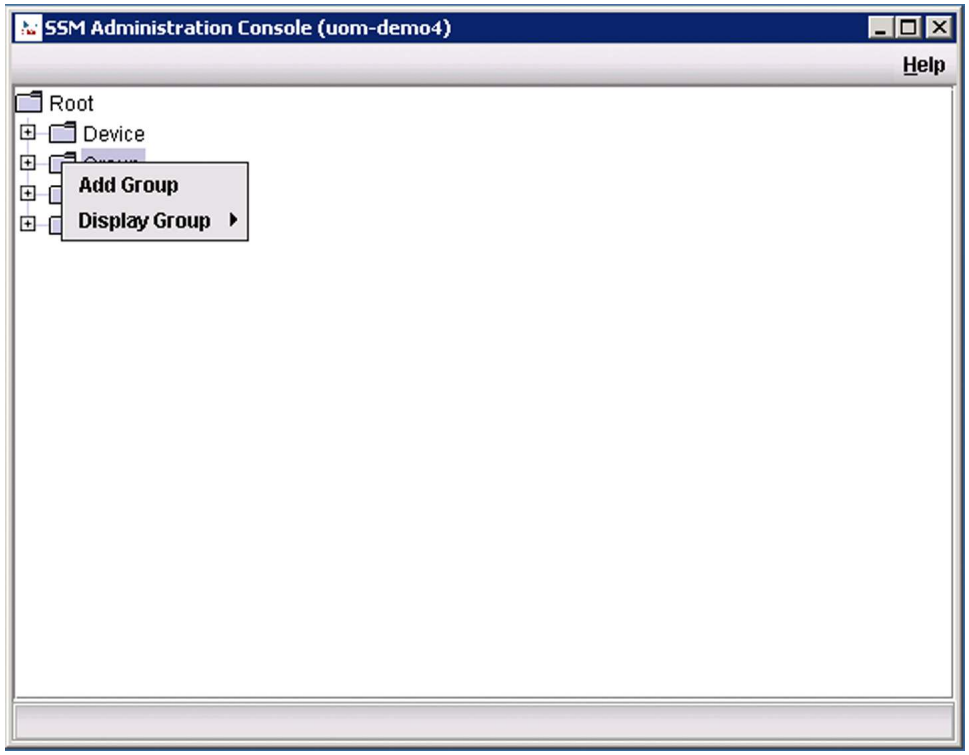
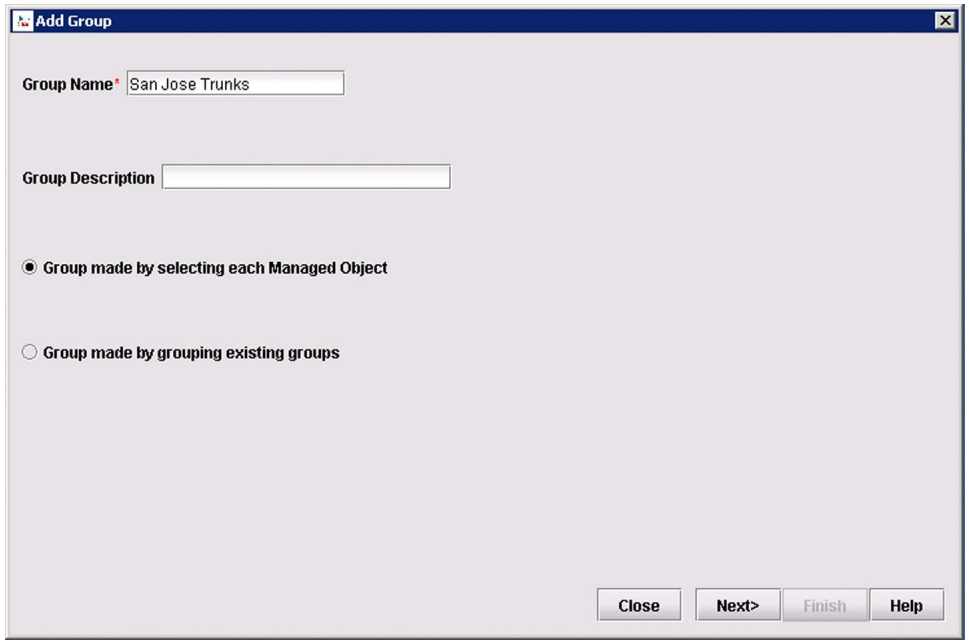
Figure 12. Click Add Group



3. Enter the group name (Figure 13).

Figure 13. Add the Group Name



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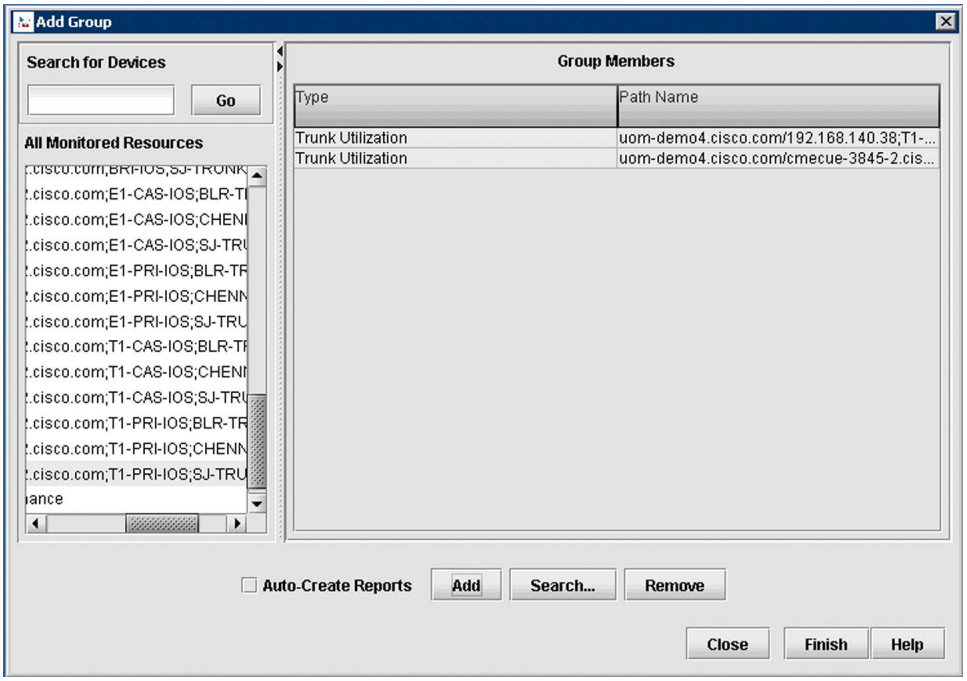
4. Expand the **All Monitored Resources** tree to **Trunk Utilization**. Select the trunks in the San Jose group and click **Add** (Figure 14).

Figure 14. Click Add to Add the Resources



5. Click **Finish**.

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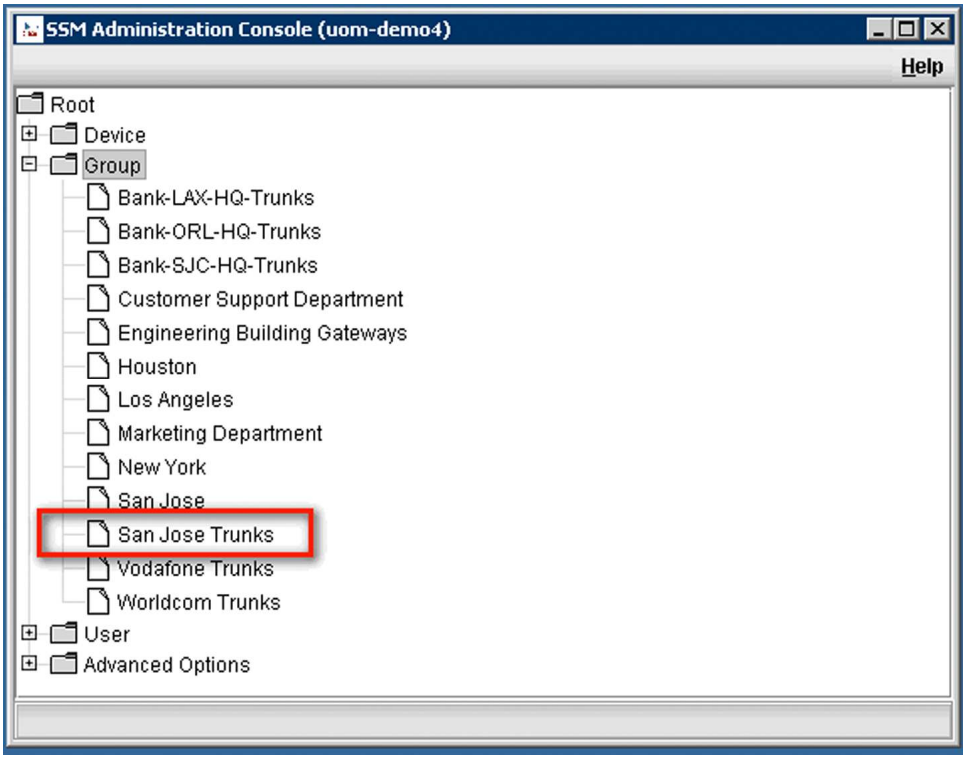
Figure 15. Creating a Trunk Capacity Trend Report



Creating a Trunk Capacity Trend Report

The San Jose Trunks group created (Figure 15) will be used in the capacity trend report.

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1. Select the **Reports** tab and click **Create** (see Figures 16 and 17).

Figure 16. Creating a Capacity Trends Report

2. Click the **Selected Groups** option.
3. Highlight **San Jose Trunks** and move to **Selected Groups**.
4. Click the **Single Attribute** option.
5. Select **Trunk Utilization** and **Utilization** from the drop-down lists.
6. Enter the Capacity Threshold.
7. Select the appropriate time duration for the **"Show Instance that will violate in the next:"** and **"Use data of the last:"** options.
8. Click **Next** (see Figure 18).

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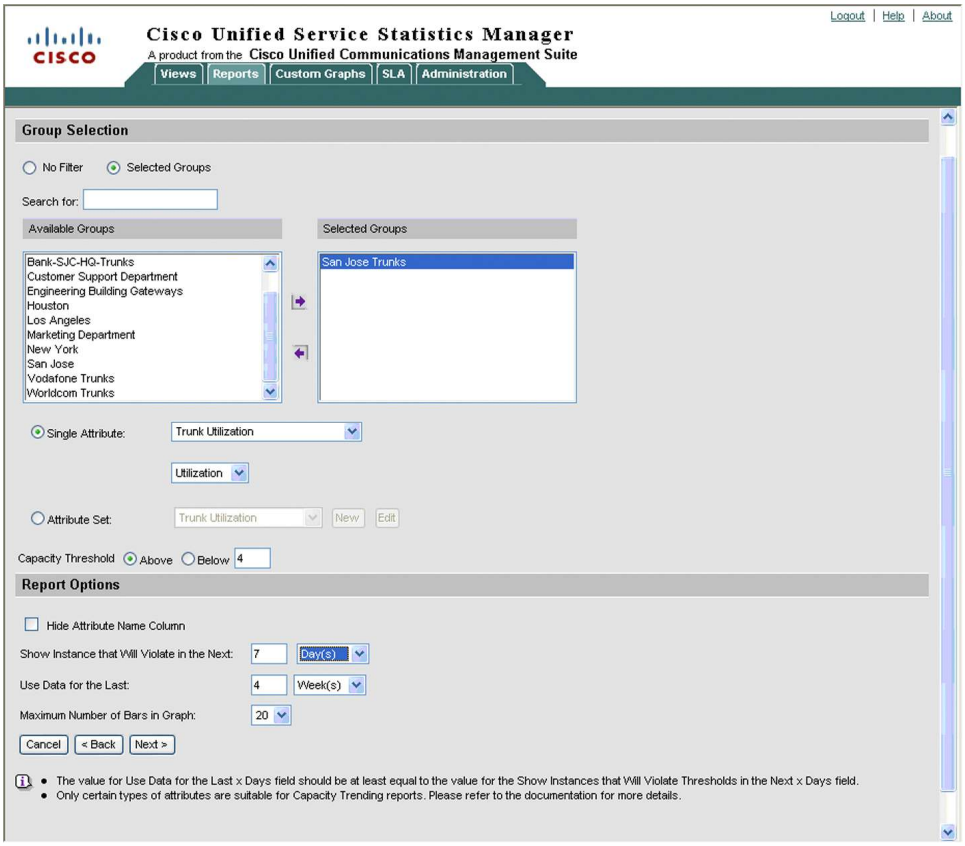
Figure 17. Choosing Report Options



9. Select the **3D Bar** radio button for the Graph Type.
10. Select the **"Show Device name with Monitor Info"**, **"Show Source Agent with Monitor Info"**, and **"Show Report Details at:"** check boxes.
11. Select the **"Generate This Report Immediately After Adding to the Schedule"** check box.
12. Click **Finish**.

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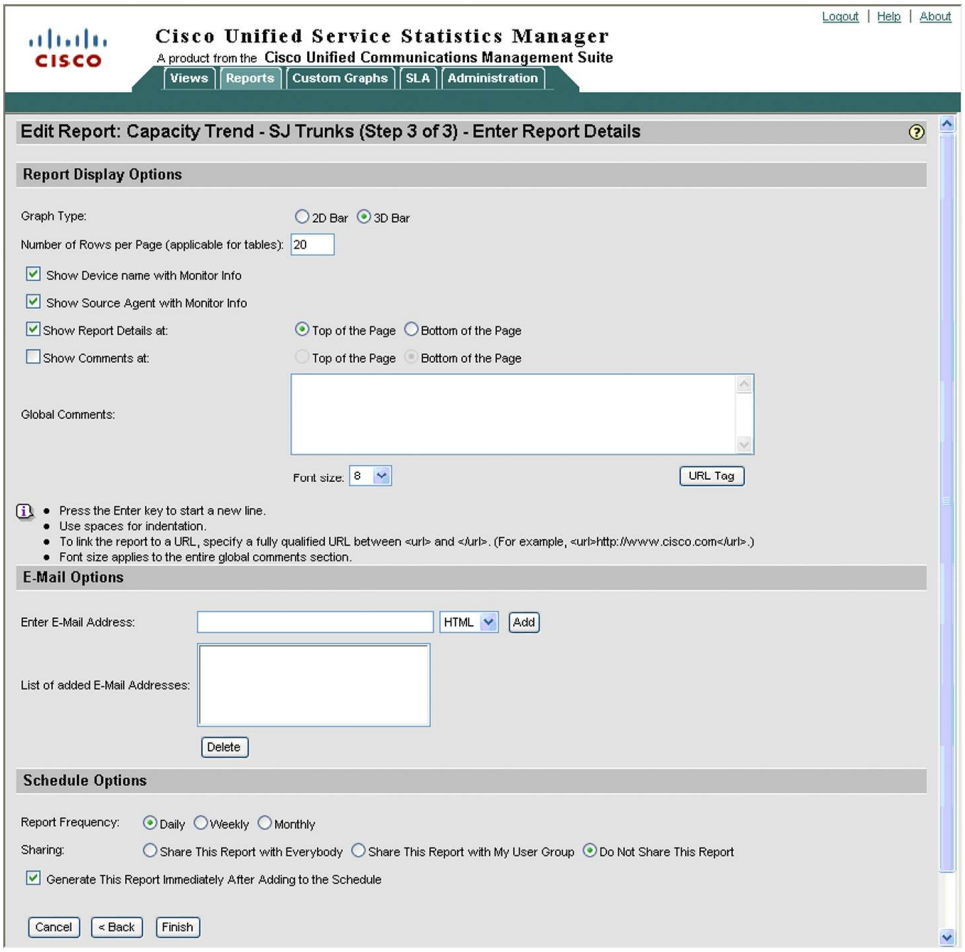
Figure 18. Enter Report Details



13. Click the **Capacity Trend** report from the Reports table (Figure 19).

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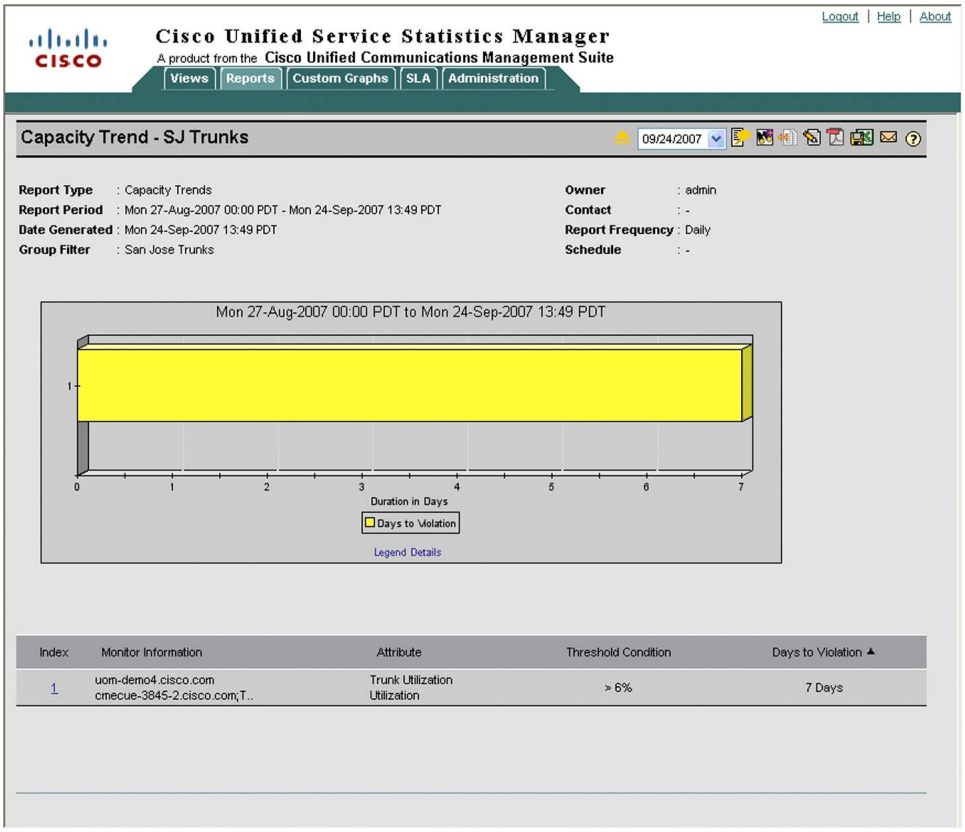
Figure 19. The Capacity Trend Report for San Jose Trunks



SLA Creation

You can create service-level agreements to measure any attributes of elements managed by Service Statistics Manager. You can use the default attributes or modify them and create others.

Modify/Create Attribute Set

Modify the Trunk Utilization attribute set and add a Call Count attribute.

1. In the Administration tab, select the **Edit** option for **Attribute Sets** (Figure 20).

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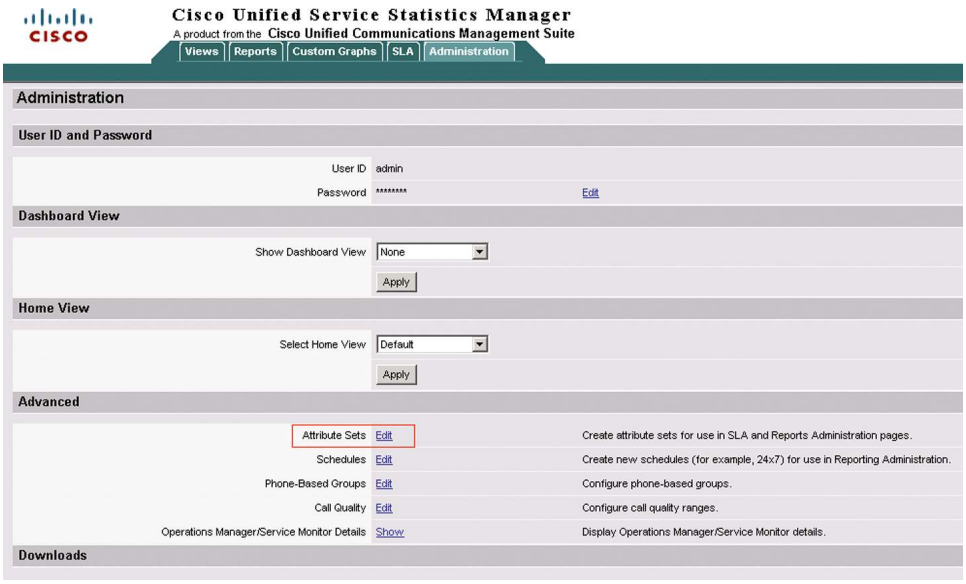
Figure 20. Edit the Attribute Sets



2. Click **Add** or **Edit** an existing attribute, for example, **System Utilization**.
3. Add attributes (Figures 21 and 22).

Figure 21. The Attribute Set Administration Dialog Box

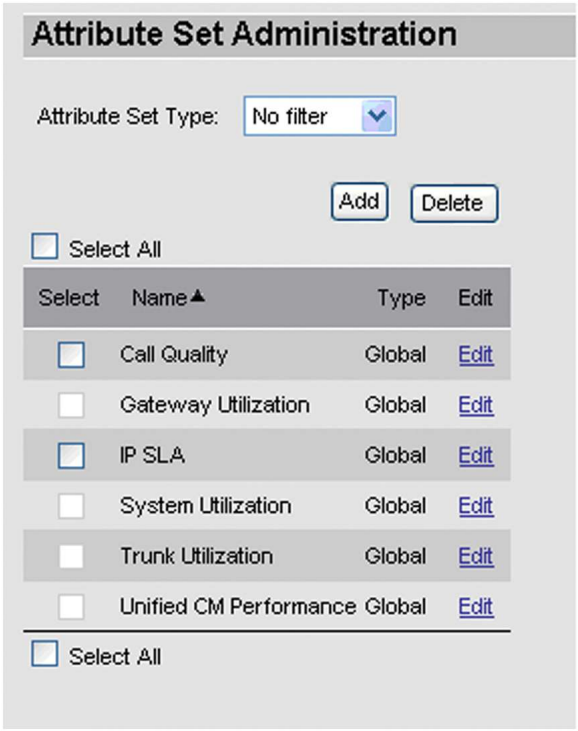


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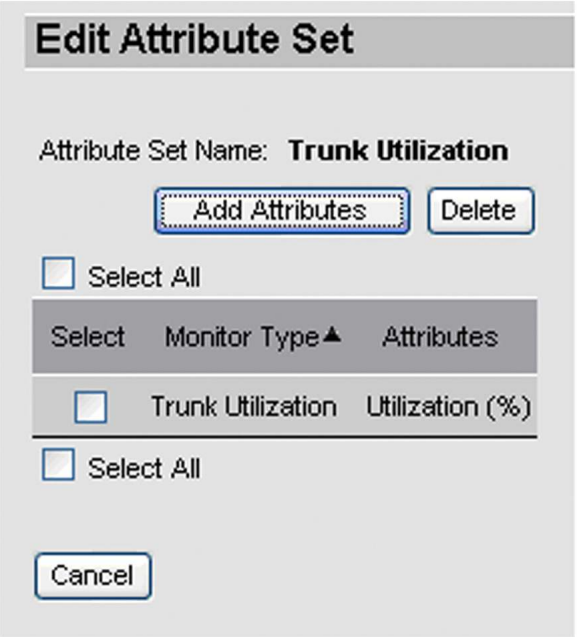
Figure 22. The Edit Attribute Set Dialog Box



4. Select **Trunk Utilization** and click **Next**.
5. Select the **Call Count** attribute and click **Next** (Figures 23 and 24).

Figure 23. Select Trunk Utilization

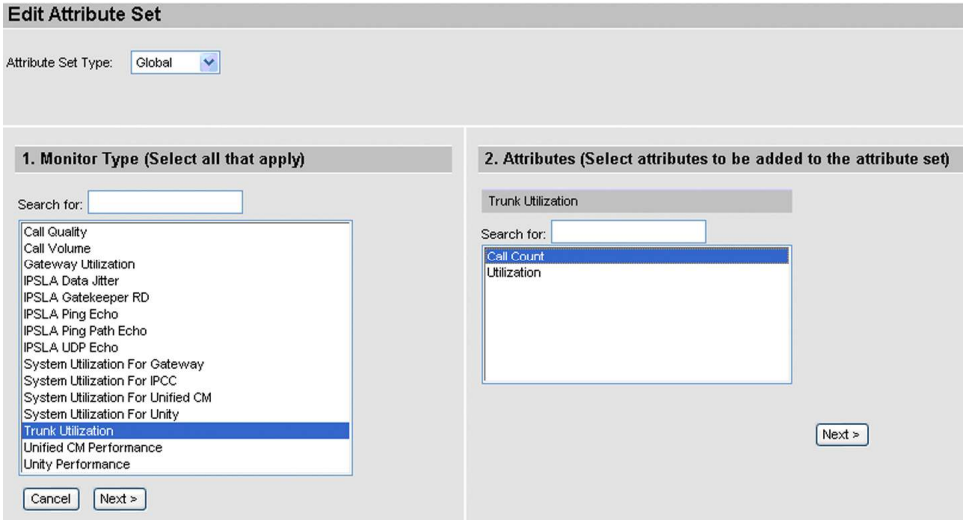


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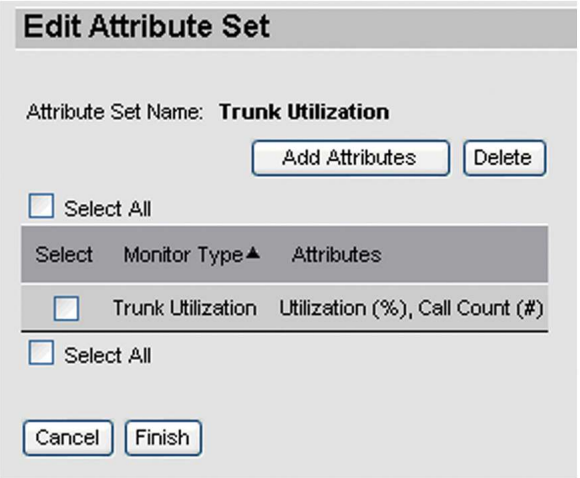
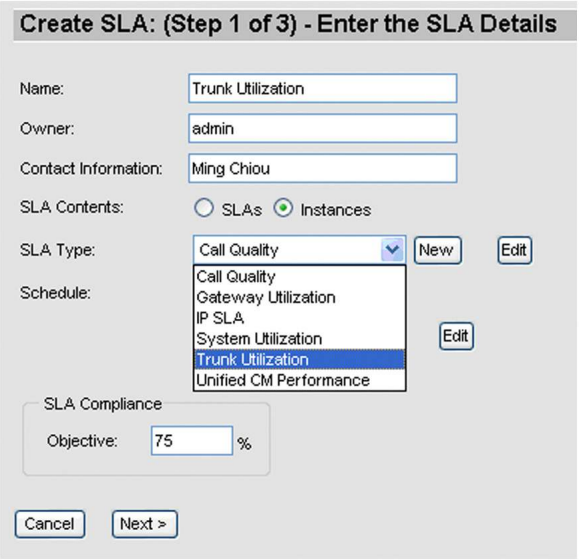
Figure 24. Select the Call Count Attribute



Create a Trunk Utilization SLA

1. On the SLA tab, click **SLA Administration > Add**.
2. Enter the name and contact information, then select **Trunk Utilization** from the SLA Type drop-down list and fill in **75%** for the SLA Compliance Objective (Figure 25).
3. Click **Next**.

Figure 25. Entering the SLA Details



4. Select the trunks to monitor and click **Next** (Figure 26).

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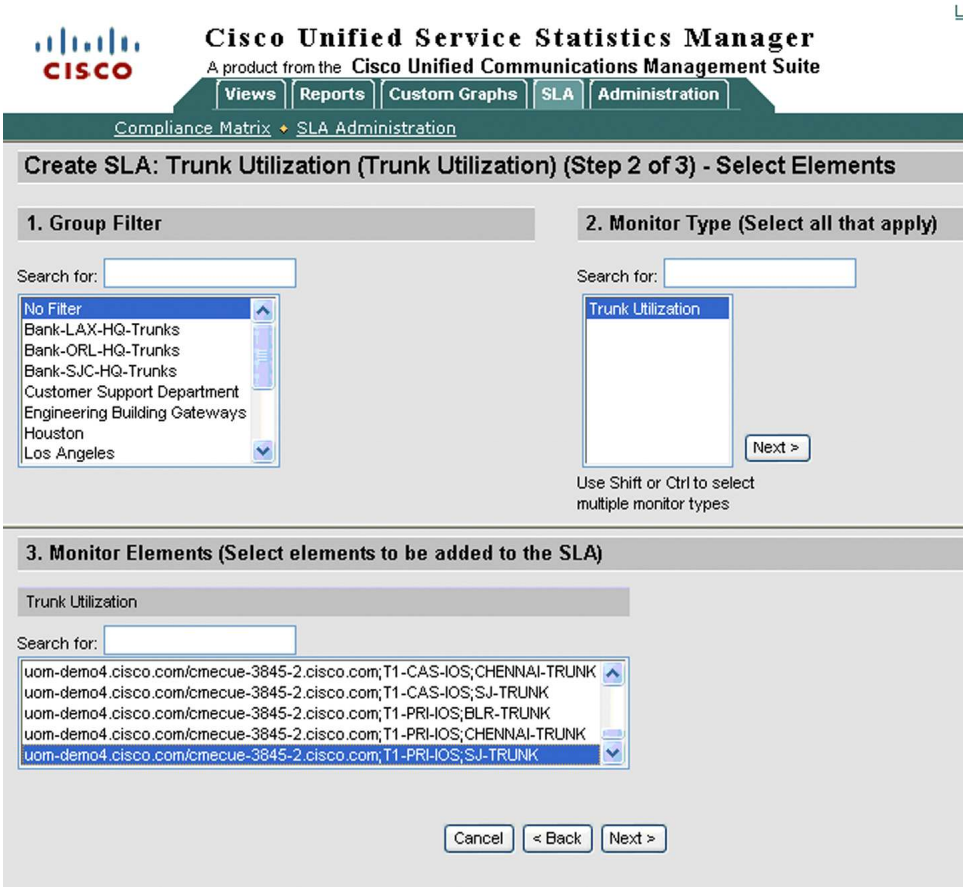
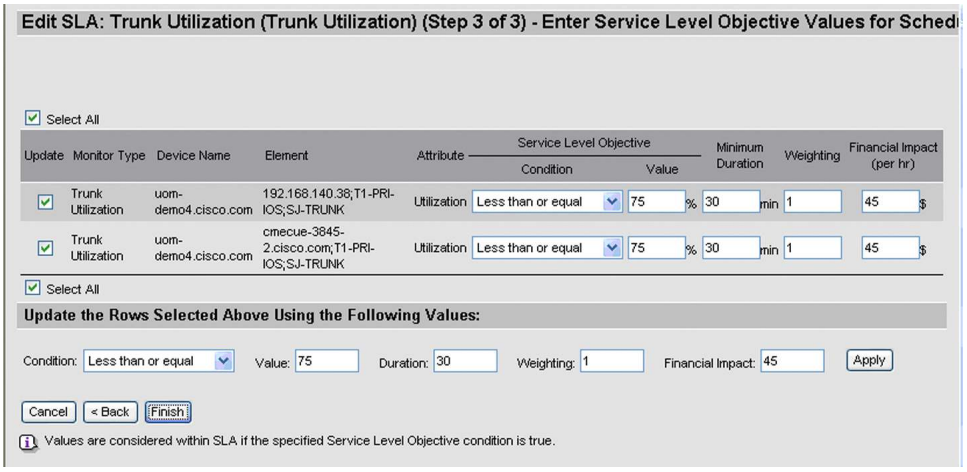
Figure 26. Select the Elements to Monitor



5. Select all or individual trunks, enter the condition parameters, and click **Apply** and **Finish** (Figure 27).

Figure 27. Enter the Service-Level Objective Values



6. The Trunk Utilization SLA is created; to view it, click **Compliance Matrix** (Figures 28 and 29).

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Figure 28. Click Compliance Matrix to View the Trunk Utilization SLA

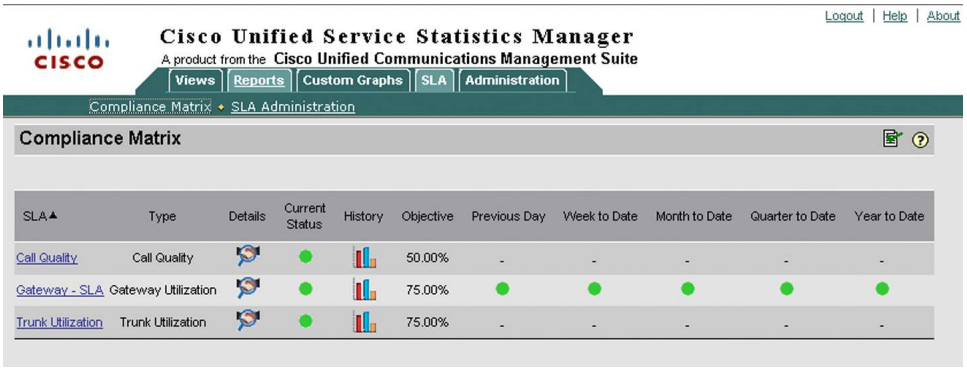
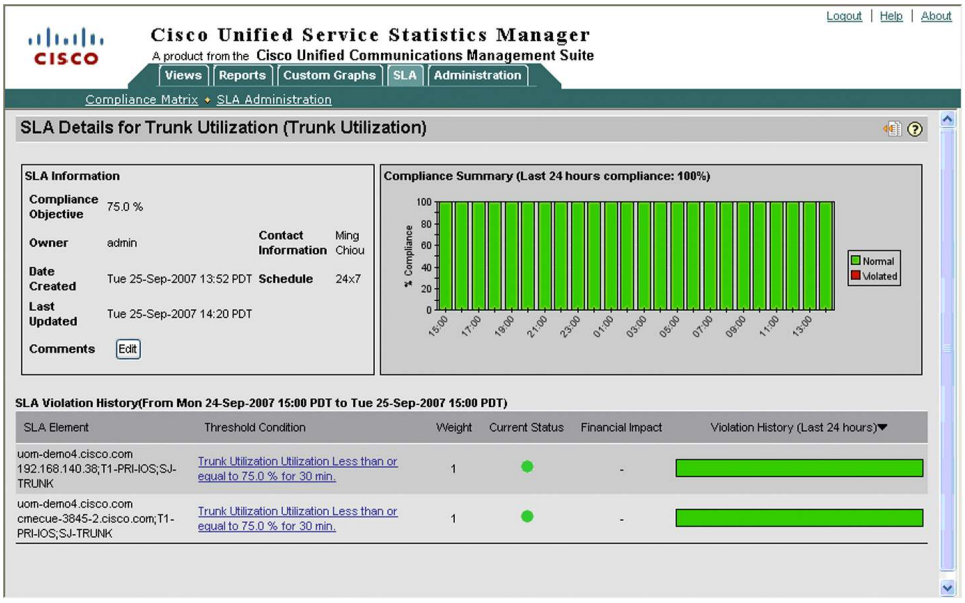


Figure 29. Details for the Trunk Utilization SLA



7. Click one of the **Threshold Condition** links to see more details (Figure 30).

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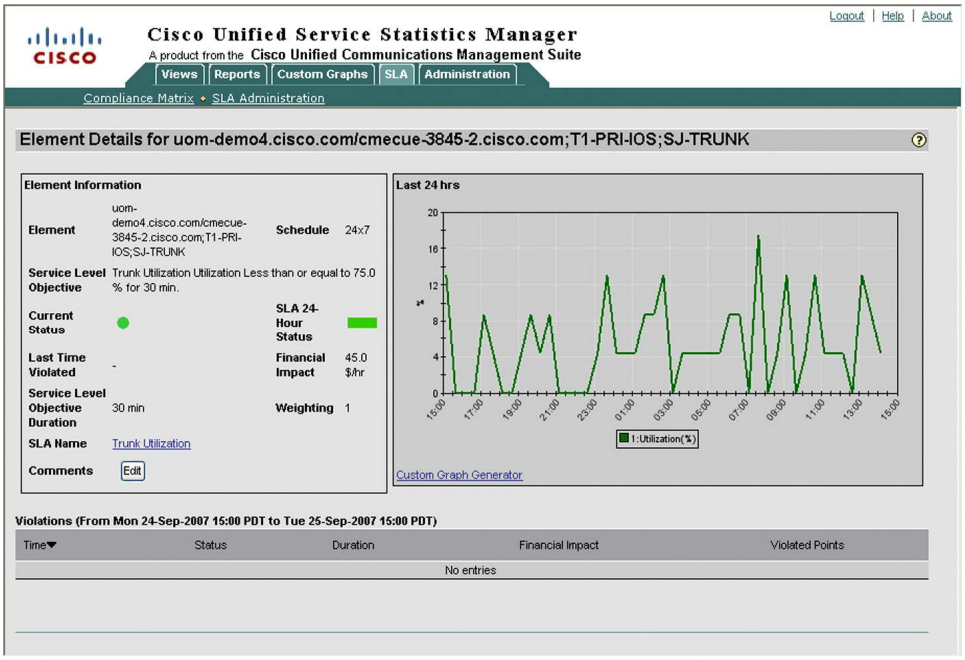
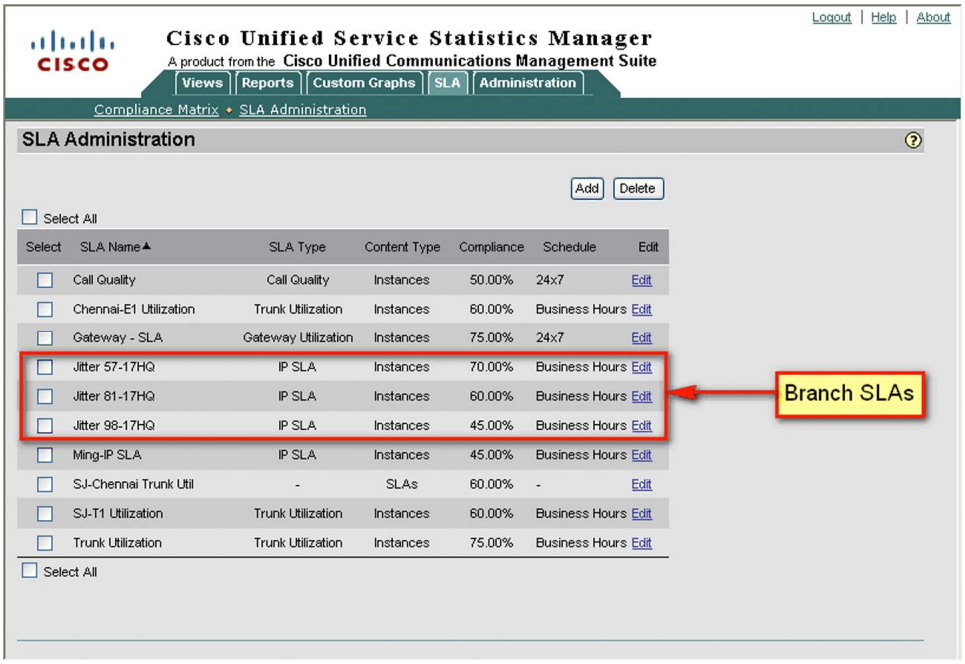
Figure 30. The Threshold Condition Links Provide More Details



Super-SLA

Individual SLAs can be rolled up into a super-SLA; for example, jitter for trunks from three branches can roll up to a higher-level regional SLA. Create the individual jitter SLAs through SLA Administration (refer to the “Create a Trunk Utilization SLA” section for creating the SLAs). Once the branch-level SLAs have been created, the main/super-SLA can be created (Figure 31).

Figure 31. Branch SLAs



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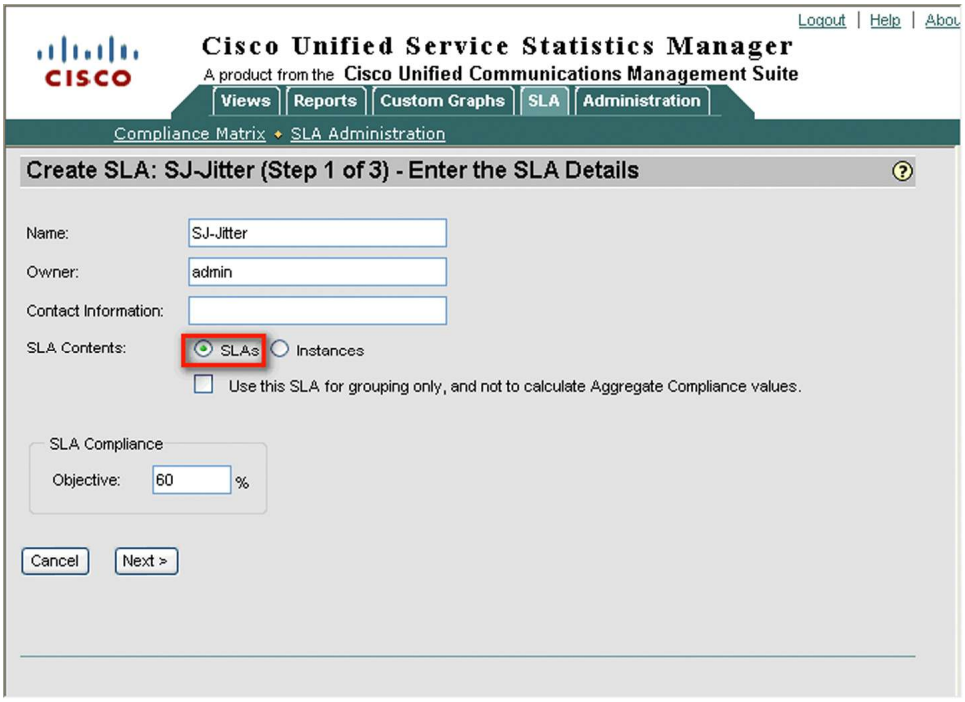
1. Click **Add** in SLA Administration to create the regional SLA (Figure 32).

Figure 32. Enter the SLA Details



2. Select the three branch SLAs from the list and click the top arrow (Figure 33).

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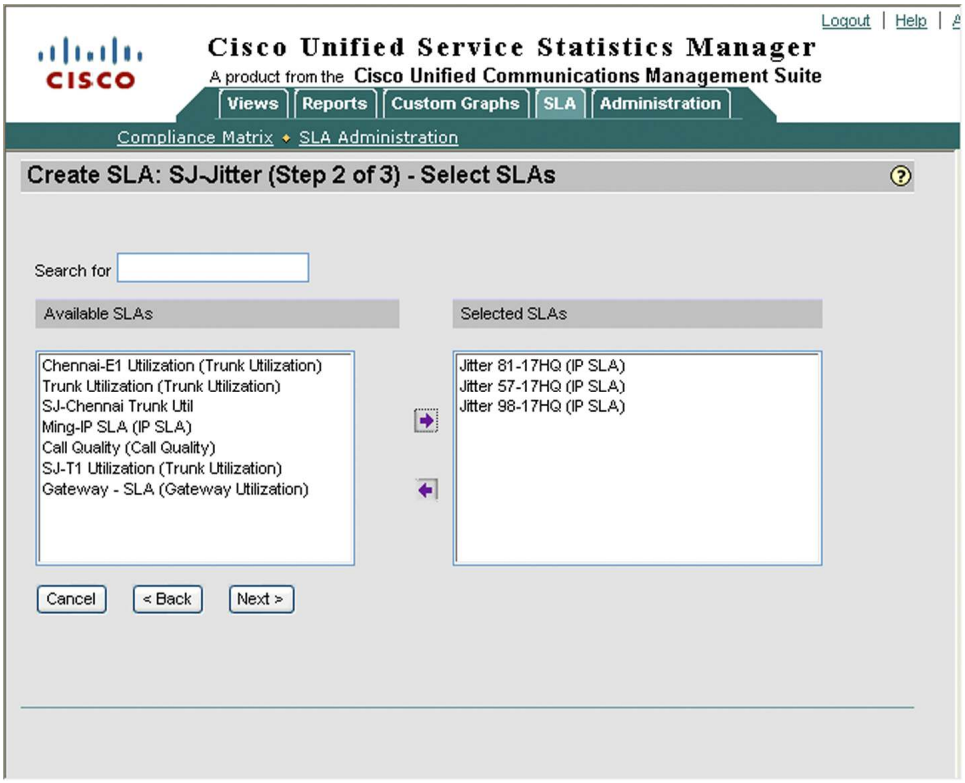
Figure 33. Select the SLAs



3. The weight can be changed, or you can accept the default setting; click **Finish** (Figure 34).

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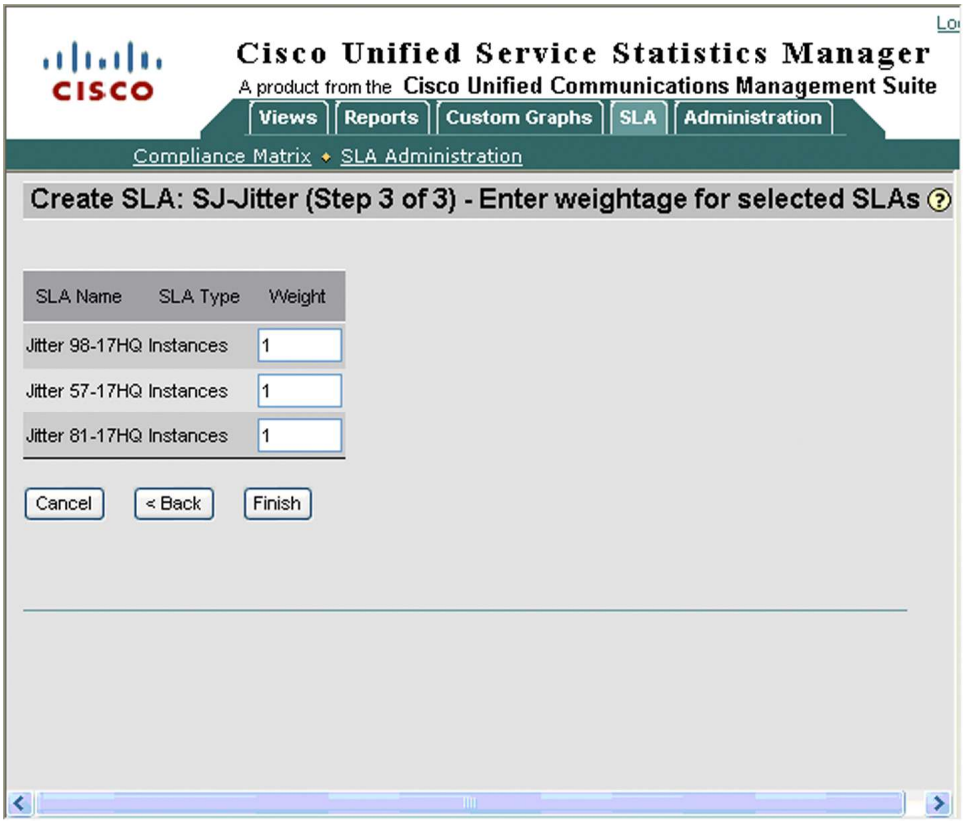
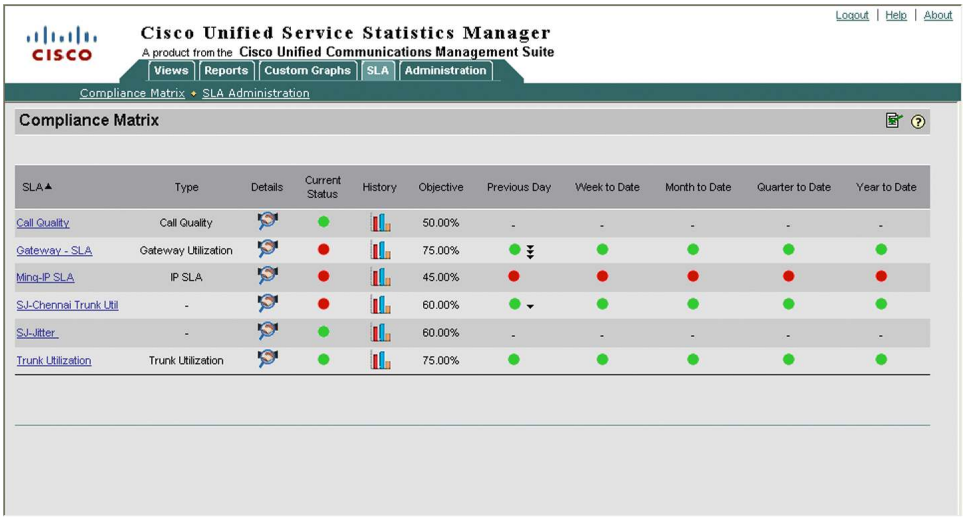
Figure 34. Enter a Weight for the Selected SLAs



4. The newly created SLA is shown in the SLA Administration table (Figure 35).

Figure 35. The SLA Administration Table



5. Click the Compliance Matrix to view the status of the SLAs. The table will display only the SJ-Jitter SLA since the branch SLAs have been rolled up into SJ-Jitter (Figure 36).

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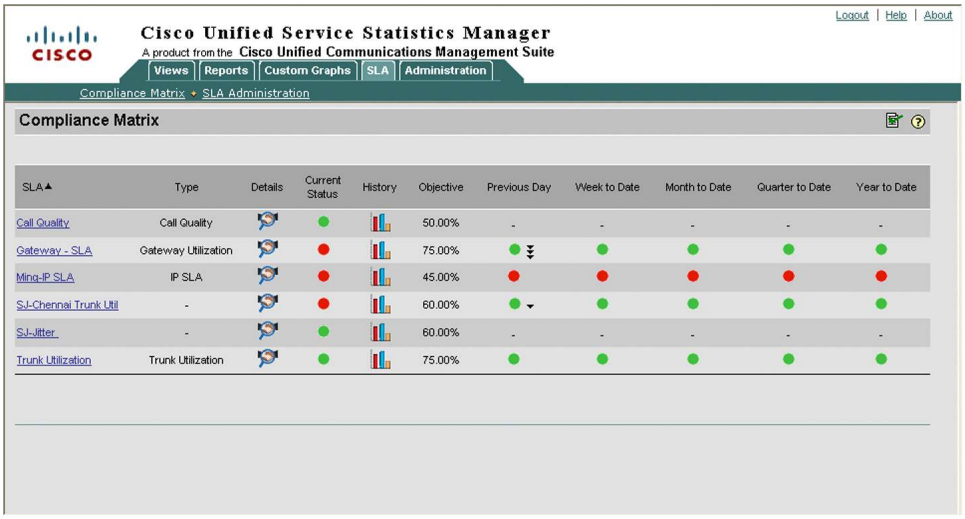
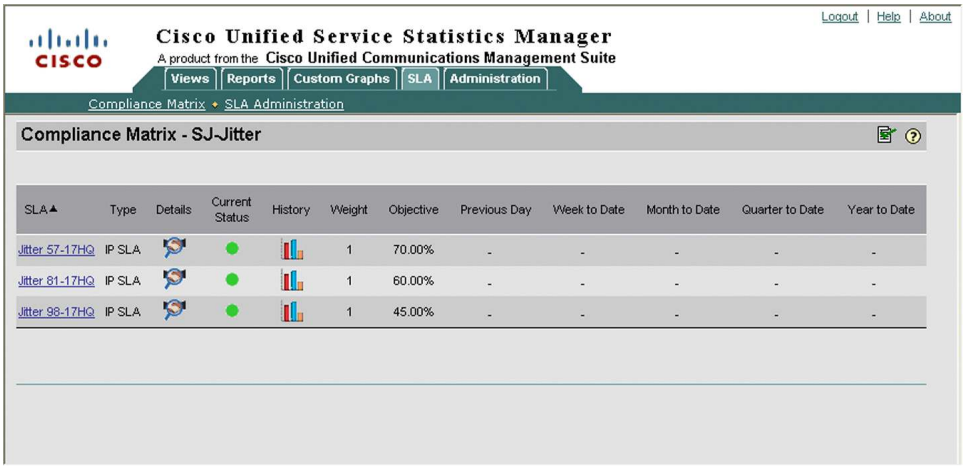
Figure 36. The Compliance Matrix



6. View the branch SLAs by clicking **SJ-Jitter** in the list of SLAs (Figure 37).

Figure 37. The Branch SLAs



SLA Capacity Trends

Similar to the trunk capacity trend report created in the “Creating a Trunk Capacity Trend Report” section, SLA capacity trends reports can be created based on the SLAs in the Compliance Matrix (Figure 38).

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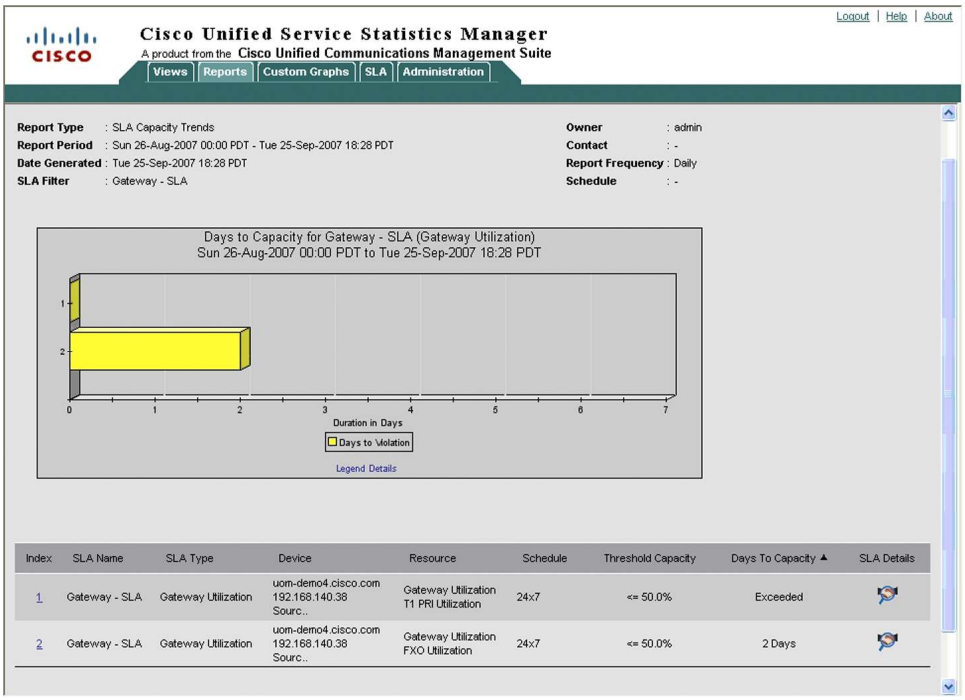
Figure 38. SLA Capacity Trends Report



Troubleshooting

Note: Cisco Unified Service Statistics Manager collects data from Cisco Unified Operations Manager and Cisco Unified Service Monitor. Ensure Operations Manager and Service Monitor (optional) is running first and operational prior to troubleshooting Service Statistics Manager.

Service Statistics Manager could run separately on its own server (stand alone mode), or it could run on same server with Operations Manager and Service Monitor (coresident mode).

If Service Statistics Manager is running in standalone mode, make sure to install Service Statistics Manager Agents in Operations Manager and Service Monitor servers. Service Statistics Manager Agent is installed automatically if deployed in coresident mode.

Service Statistics Manager log files are located in <Install Directory>\pw\pronto\logs\. It is recommended to zip and forward these logs when opening a Cisco Technical Assistance Center (TAC) service request.

Installation Failing

- Service Statistics Manager Installer automatically checks for system requirements prior to the start of installation. This is to help ensure that the target server complies with Service Statistics Manager's minimum system requirements.
- The TCP ports listed in Table 1 are in use by Service Statistics Manager and must be available and exempted from firewall inspections.

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Table 1. TCP Ports Used by Service Statistics Manager

Port	Use
8008	Connector port between Apache web server and Tomcat servlet engine
8009	Connector port between Apache web server and Tomcat servlet engine used for agent and agent controller tunneling
8093	JMS server port
9149	Port JServer listens for events from agent controller/rate
12123	Agent controller listener
12124	Default agent port
12126	Agent controller callback port
12130	Checkpoint monitor port for receiving log messages (optional)
12140	CLServer port
12141	Log server port
40402	Flex LM port
45000	Message server port
48443	SSL port
48099	RMI por`t
48100	JBoss port
48101	Http port
48102	Database port

The following logs are useful when troubleshooting Service Statistics Manager installation issues: <Install Directory>\pw\pronto\bin\SSMPreinstall.log, proactivenet_server_install.log and proactivenet_agent_install.log

Logon Failure

- Check whether Cisco Unified Operations Manager is reachable from Cisco Unified Service Statistics Manager. Try launching the Operations Manager web interface from Service Statistics Manager server, that is, open a browser to http://CUOM:1741.
- Check whether the Service Statistics Manager agent is running in the remote Operations Manager server. Windows Control Panel > Services > Agent must be running.
- Check whether the Operations Manager admin password has been changed. To synchronize the Operations Manager password with Service Statistics Manager, run <Install Directory>\pw\pronto\bin\ runjava scripts.ssm.UpdateOMPassword. The script will ask for the new Operations Manager password. Then restart Service Statistics Manager from Start > Programs > SSM > Stop/Start shortcuts.
- Check the Service Statistics Manager log file at \pw\pronto\logs\ProactiveNet.log. If the log file shows multiple SSL handshake errors, run this script at \pw\pronto\bin\ConfigureSSMToSSLOM <CUOM_IP_Address>. Then restart Service Statistics Manager.

Autodiscovery

- Make sure that the Operations Manager IP address and password are correct and that the Service Statistics Manager agent is running on that remote Operations Manager server.
- If Monitor Types are not getting created, make sure Performance Polling is enabled in Operations Manager. On how to enable performance polling in Operations Manager, refer to http://www.cisco.com/en/US/partner/docs/net_mgmt/cisco_unified_operations_manager/2.3/user/guide/cfgPT.html#wp1546763.

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- If call volume and call quality monitors are not getting created, check whether Service Monitor is configured in Operations Manager > UC Management tab > Service Monitor.
- If new devices are added in Operations Manager or Service Monitor, make sure to rerun discovery from Service Statistics Manager.
- To further troubleshoot autodiscovery issues, enable Service Statistics Manager detailed logging by running the following in the command line: pw debug -p jserver -s SSMAutoDiscovery. Log files will be stored in the \pw\pronto\logs\Debug folder.

Data Collection Failure

- Check whether Service Statistics Manager processes are still running. Run \CUSSM\serverstatus.bat. If Service Statistics Manager processes are not in the running state (that is, are stopped), you may restart Service Statistics Manager.
- Check whether Operations Manager and Service Monitor are operational. Try rediscovering Operations Manager and make sure discovery succeeds.

Cisco Unified Service Statistics Manager Licensing

The Cisco Unified Service Statistics Manager license dictates the Cisco Unified Service Statistics Manager features that are available and the number of IP phones that can be managed. Standard and Premium licenses are available. The only difference is that Premium includes the SLA features; these are unavailable with the Standard license and are activated when the Premium license is entered.

Product evaluation licenses are available and are good for 90 days.

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