



Introduction

This chapter provides an overview of Cisco CallManager Serviceability, remote serviceability, and Call Detail Record (CDR) Analysis and Reporting and comprises the following topics:

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Cisco CallManager

Cisco CallManager provides the software-based, call-processing component of the Cisco IP Telephony Solutions for the Enterprise, part of Cisco AVVID (Architecture for Voice, Video and Integrated Data).

The Cisco CallManager system extends enterprise telephony features and functions to packet telephony network devices such as IP phones, media processing devices, voice-over-IP (VoIP) gateways, and multimedia applications. Additional data, voice, and video services such as unified messaging, multimedia

conferencing, collaborative contact centers, and interactive multimedia response systems interact through Cisco CallManager open telephony application program interface (API).

The Cisco CallManager system includes a suite of integrated voice and video applications for performing voice and video conferencing and manual attendant console functions. Because of this suite of voice and video applications, no need exists for special-purpose, voice-processing hardware.

Supplementary and enhanced services such as hold, transfer, forward, conference, multiple-line appearances, automatic route selection, speed dial, last-number redial, and other features extend to IP phones and gateways. Because Cisco CallManager is a software application, enhancing its capabilities in production environments requires only upgrading software on the server platform.

Distribution of Cisco CallManager and all Cisco IP Phones, gateways, and applications across an IP network provides a distributed, virtual telephony network. This architecture improves system availability and scalability. Call admission control ensures that voice quality of service (QoS) is maintained across a constricted WAN link and automatically diverts calls to alternate public switched telephone network (PSTN) routes when WAN bandwidth is not available.

Cisco CallManager Administration, a web-based interface to the Cisco CallManager database, provides remote device and system configuration and serviceability. This interface also provides access to HTML-based online help for administrators.

Serviceability

Administrators can use the Cisco CallManager Administration service tool to troubleshoot system problems. This web-based tool, Serviceability, provides the following services:

- Alarms—Saves alarms and events generated by Cisco CallManager services for troubleshooting and provides alarm message definitions. See [Chapter 7, “Alarms,”](#) for detailed Alarms information.
- Trace—Saves trace information generated by Cisco CallManager services to various log files for troubleshooting. Administrators can configure, collect, and analyze trace information. See [Chapter 8, “Trace,”](#) for detailed Trace information.

- Real-Time Monitoring Tool—Monitors real-time behavior of the components in a Cisco CallManager cluster. See [Chapter 9, “Real-Time Monitoring Tool,”](#) for detailed information.
- Service Activation—Displays activation status of Cisco CallManager services. Administrators use Service Activation to activate and deactivate services. See [Chapter 5, “Service Activation,”](#) for more detailed Service Activation information.
- Control Center—Displays status of Cisco CallManager services. Administrators use Control Center to start and stop services. See [Chapter 6, “Control Center,”](#) for detailed Control Center information.
- Quality Report Tool (QRT)—Provides voice quality and general problem-reporting tool for Cisco IP Phones 7940 and 7960. See [Chapter 10, “Quality Report Tool,”](#) for detailed QRT information.

Access Serviceability from the Cisco CallManager Administration window by choosing Applications from the menu bar. Installing the Cisco CallManager software automatically installs Serviceability and makes it available.

Remote Serviceability Tools

Cisco Service Engineers (CSE) use the remote serviceability tools to supplement the management and administration of your Cisco CallManager system. Using these tools, CSEs gather system and debug information when remote troubleshooting or diagnostic help is needed.

With customer permission, technical support engineers log on to a Cisco CallManager server and get a desktop or shell that allows them to perform any function that could be done from a local logon session.

Remote serviceability supports numerous applications in the multihost and multiplatform Cisco IP Telephony Solutions environment. The tools can process and report on a vast collection of local or remote Cisco CallManager configuration data and system information.

Cisco CallManager supports the following capabilities for remote serviceability:

- Cisco Secure Telnet—Allows CSEs to log on to customer remote site to troubleshoot Cisco CallManager system. See [Chapter 16, “Cisco Secure Telnet,”](#) for detailed information.
- Show Command Line Interface—Allows CSEs to display Cisco CallManager system statistics on customer network. See [Chapter 17, “Show Command Line Interface,”](#) for detailed information.
- Microsoft Windows 2000 Performance Monitoring—Allows administrators to monitor performance of Cisco CallManager on local or remote installations. See [Chapter 12, “Microsoft Performance,”](#) for detailed information.
- CiscoWorks2000 Network Management System—Provides remote network management for a Cisco CallManager cluster. See [Chapter 19, “CiscoWorks2000,”](#) for information.
- Path Analysis Interface—Traces connectivity between two specified points on a network and analyzes both physical and logical paths (Layer 2 and Layer 3) taken by packets that flow between those points. See [Chapter 20, “Path Analysis,”](#) for detailed information.
- System Log Management—Provides a centralized system logging service for Cisco IP Telephony Solutions. See [Chapter 21, “System Log Management,”](#) for detailed information.
- SNMP Instrumentation—Enables administrators to remotely manage network performance, find and solve network problems, and plan for network growth. See [Chapter 18, “Simple Network Management Protocol,”](#) for detailed information.
- Cisco Discovery Protocol Support—Enables discovery of Cisco CallManager servers and management of those servers by CiscoWorks2000. See [Chapter 22, “Cisco Discovery Protocol Support,”](#) for detailed information.

Reporting Tools

The Cisco CallManager Serviceability reporting tool, CDR Analysis and Reporting (CAR), provides the following functions:

- Multiple levels of users—Administrators who can generate system reports and configure system parameters, managers who can generate reports for users an departments, and users who can generate individual billing reports.
- Generate user reports—Individual bills, department bills, top N by charge, top N by duration, top N by number of calls, CTI port enabled, and Cisco IP Phone services.
- Generate system reports—QoS detail, QoS summary, QoS by gateway, QoS by call types, traffic summary, traffic summary with extensions, system overview, and CDR error.
- Generate device reports—Gateway detail, gateway summary, gateway utilization, route group utilization, route list utilization, route pattern utilization, conference bridge utilization, and voice-mail utilization.
- CDR search—CDR database search to verify the details of a call and to help track the progress and quality of a call leg.
- System configuration—Administrators configure system parameters, report scheduler, database options, and error and event logs.
- Report configuration—Administrators configure base rate and duration for calls, factoring options, QoS values, and automatic report generation/alert.

Appendices

The following list comprises the appendices found in this document:

- [Appendix A, “Cisco CallManager Performance Counters, RTMT, and CISCO-CCM-MIB”](#)—This appendix comprises the performance counters for phones and gateways that contain related or overlapping information that the Cisco CallManager Serviceability Real-Time Monitoring Tool (RTMT) and CISCO-CCM-MIB also use.

- [Appendix B, “Trace Examples”](#)—This appendix contains a sample customer problem and some trace troubleshooting procedures.
- [Appendix C, “Performance Objects and Counters”](#)—This appendix provides a complete list, including descriptions, of performance objects and their associated counters.

Definitions

[Table 1-1](#) provides the definitions for the terms used throughout this document.

Table 1-1 Serviceability Terms and Definitions

Term	Definition
Real-Time Monitoring Tool (RTMT)	This term identifies a program in Serviceability that provides real-time information about Cisco CallManager devices and performance counters.
Alarm	Administrators use alarms to obtain run-time status and state of the Cisco CallManager system. Alarms contain information about system problems such as explanation and recommended action.
Alarm Catalog	This term refers to a file that contains all the Alarm definitions for Cisco CallManager services. Serviceability supports multiple alarm catalogs that are specific to the alarm type.
Alarm Definition	Administrators search the alarm definitions database for alarm information. The alarm definition contains a description of the alarm and a recommended action.

Table 1-1 Serviceability Terms and Definitions (continued)

Term	Definition
Alarm Event Levels	Administrators determine the level of information that an alarm will contain. Levels range from general information about the system to information for debugging purposes only.
Alarm Filters	Administrators determine the level of information an alarm contains and where the alarm information gets saved.
Alarm Monitors	Cisco CallManager Serviceability allows alarms to be sent to different destinations called monitors: Windows 2000 Event Viewer, CCM trace, SDL trace, SNMP trap, and SysLog.
Alert Notify	Administrators configure alert notifications for performance counters and gateway ports/channels by using the RTMT. Real-time monitoring sends alerts to the administrator by e-mail or in a system notification (popup) window.
Category Tabs	Administrators configure specific monitoring windows in real-time monitoring for troubleshooting purposes. The administrator creates these specific windows by using category tabs.
Chart View	The Performance Monitoring Window displays performance counters in chart view by default. Chart view graphically shows the counter information.
Cisco CallManager service	Cisco CallManager supports many services in the form of software that performs a specific function, such as TFTP, CTI, or music on hold.

Table 1-1 Serviceability Terms and Definitions (continued)

Term	Definition
Control Center	Control Center tool in Serviceability allows administrators to view the status of and to start and stop Cisco CallManager services.
Debug Trace Levels	Administrators determine the level of information that a trace will contain. Levels range from general errors to detailed errors for debugging purposes only.
Device Monitoring	Real-time monitoring displays real-time information about Cisco CallManager devices such as phones and gateways.
Device Monitoring Window	The right side of the RTMT window displays device performance information when the tool is monitoring device performance.
Device Name Based Trace Monitoring	Administrators obtain trace information about selected devices by configuring trace parameters for Cisco CallManager and Cisco CTIManager services.
Monitoring Objects Window	The left side of the RTMT window displays Cisco CallManager-related objects and counters or devices for a cluster. The information that displays depends on which tab is active in the window.

Table 1-1 Serviceability Terms and Definitions (continued)

Term	Definition
Objects and counters	Windows 2000 provides performance data that contains information about various objects and counters. Objects are the logical groupings of like counters for a specific device or feature, such as Cisco IP Phones, or Cisco CallManager System Performance. Counters measure various aspects of system performance. Counters measure statistics such as the number of registered phones, calls attempted, and calls in progress. The RTMT monitors the real-time statistics generated by these counters.
Performance Monitoring	The RTMT displays real-time information about a performance counter. Performance counters can be system specific or Cisco CallManager specific.
Performance Monitoring Window	The right side of the RTMT window displays counter statistics when the tool is monitoring counters.
CCM Trace log file (formerly SDI Trace)	Every Cisco CallManager service includes a default trace log file. The system traces system diagnostic interface (SDI) information from the services and logs run-time events and traces to a log file.

Table 1-1 Serviceability Terms and Definitions (continued)


Term	Definition
SDL Trace log file	<p>This file contains call-processing information from services such as Cisco CallManager and Cisco CTIManager. The system traces the signal distribution layer (SDL) of the call and logs state transitions into a log file.</p> <hr/> <p> Note In most cases, you will only gather SDL traces when Cisco Technical Assistance Center (TAC) requests it of you.</p>
Service status icons	<p>Control Center displays three icons that represent the status of a service on a server:</p> <ul style="list-style-type: none"> • Square represents a stopped service. • Arrow represents a service that is running. • Question mark represents a service that is in an unknown state.
Trace	<p>Administrators and Cisco engineers use trace files to obtain specific information about Cisco CallManager service problems.</p>
Trace Analysis	<p>This program in presents trace information in a format that allows you to filter the results.</p>
Trace log file	<p>Cisco CallManager Serviceability sends configured trace information to this file. Two types of trace log files exist: CCM and SDL.</p>

Table 1-1 Serviceability Terms and Definitions (continued)

Term	Definition
Window Status Bar	The bottom, right corner of the RTMT window displays the window status bar. The status bar displays five icons: Preferences, Cluster Information, Resource Usage, About, and Help.
Quality Report Tool	This term designates voice quality and general problem-reporting utility in Cisco CallManager Serviceability.

Where to Find More Information

Additional Cisco Documentation

- *Cisco CallManager Serviceability Administration Guide*
- *Troubleshooting Guide for Cisco CallManager*
- CiscoWorks2000 user documentation:
<http://www.cisco.com/univercd/cc/td/doc/product/rtrmgmt/cw2000/index.htm>

