

Cisco CallManager Version 3.3

Cisco IP Communications—a comprehensive system of powerful, enterprise-class solutions including IP telephony, unified communications, IP video and audio conferencing, and customer contact—helps organizations realize business gains by improving operational efficiencies, increasing organizational productivity, and enhancing customer satisfaction. Cisco CallManager—an integral component of the Cisco IP Communications system—is the software-based call-processing component of the Cisco enterprise IP telephony solution; it is enabled by Cisco AVVID (Architecture for Voice, Video and Integrated Data).

Cisco CallManager software extends enterprise telephony features and capabilities 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 with the IP telephony solution through Cisco CallManager open telephony application programming interfaces (APIs). Cisco CallManager is installed on the Cisco Media Convergence Servers (MCSs) and selected third-party servers. Cisco CallManager software is shipped with a suite of integrated voice applications and utilities, including the

Cisco CallManager Attendant Console—a software-only manual attendant console; a software-only ad-hoc conferencing application; the Bulk Administration Tool (BAT); the CDR Analysis and Reporting (CAR) tool; the Admin Serviceability Tool (AST); a simple, low-density Cisco CallManager Auto Attendant (CM-AA); the Tool for Auto-Registered Phones Support (TAPS); and the IP Manager Assistant (IPMA) application.

Key Features and Benefits

Cisco CallManager Version 3.3 provides a scalable, distributable, and highly available enterprise IP telephony call-processing solution. Multiple Cisco CallManager servers are clustered and managed as a single entity. Clustering multiple call-processing servers on an IP network is a unique capability in the industry and highlights the leading architecture provided by Cisco AVVID. Cisco CallManager clustering yields scalability of from 1 to 30,000 IP phones per cluster, load balancing, and call-processing service redundancy. By interlinking multiple clusters, system capacity can be increased up to 1 million users in a 100+ site system. Clustering aggregates the power of multiple, distributed Cisco CallManagers, enhancing the scalability and accessibility of the servers to phones, gateways, and applications. Triple call-processing server redundancy improves overall system availability.



The benefit of this distributed architecture is improved system availability, load balancing, and scalability. Call admission control (CAC) ensures that voice quality of service (QoS) is maintained across constricted WAN links, and automatically diverts calls to alternate public switched telephone network (PSTN) routes when WAN bandwidth is not available. A Web-browsable interface to the configuration database enables remote device and system configuration. HTML-based online help is available for users and administrators.

The enhancements provided by Version 3.3 offer improved scalability, interoperability, and productivity. Cluster scalability has increased by more than a factor of three. H.323 enhancements and Q.SIG signaling expand the range of interoperable interfaces to which Cisco CallManager can connect to standards-based systems. The new IPMA application presents the manager and assistant with job-specific tools to more efficiently manage calls in this important environment. A summary of these enhancements follows. Additional RAM may be required in MCSs to support existing and enhanced services in Cisco CallManager 3.3. Consult appropriate design guidelines for design recommendations.

Specifications

Platforms

- Cisco Media Convergence Server (MCS)
- Cisco ICS 7750 Integrated Communication System (ICS-7750)
- Selected third-party servers

Bundled Software

- Cisco CallManager Version 3.3 (call-processing and call-control application)
- Cisco CallManager Version 3.3 configuration database (contains system and device configuration information, including dial plan)
- Cisco CallManager administration software
- Cisco Conference Bridge
- Cisco Attendant Console
- BAT
- CAR tool
- AST
- IPMA application

System Capabilities Summary

- Alternate Automatic Routing (AAR)
- Attenuation and gain adjustment per device (phone and gateway)
- Automated bandwidth selection
- Auto route selection (ARS)
- CAC—intercluster and intracluster
- Coder-decoder (codec) support for automated bandwidth selection



- G.711 mu-law, a-law
- G.723.1
- G.729A/B
- GSM-EFR, FR
- Wideband audio—Proprietary 16-bit resolution, 16-kHz sampled audio
- Digit analysis and call treatment (digit string insertion, deletion, stripping, dial access codes, digit string translation)
- Distributed call processing
 - Deployment of devices and applications across an IP network
 - “Clusters” of Cisco CallManagers for scalability, redundancy, and load balancing
 - Maximum of 7,500 IP phones per Cisco CallManager server (configuration dependent)
 - Maximum of 100,000 busy-hour call completions (BHCCs) per Cisco CallManager server (configuration dependent)
 - Eight Cisco CallManager servers per cluster
 - Maximum of 250,000 BHCCs per Cisco CallManager cluster (configuration dependent)
 - Maximum of 30,000 IP phones per cluster (configuration dependent)
 - Intercluster scalability to 100+ sites or clusters through H.323 gatekeeper
 - Intracluster feature transparency
 - Intracluster management transparency
- Fax over IP—G.711 pass-through and Cisco Fax Relay
- H.323 interface to selected devices
- Hotline and private line automated ringdown (PLAR)
- Hunt groups—longest idle, linear
- Interface to H.323 gatekeeper for scalability, CAC, and *redundancy
- Language support for client user interfaces (languages specified separately)
- Multilocation—dial-plan partition
- Multiple ISDN protocol support
- Multiple remote Cisco CallManager platform administration and debug utilities
 - Real-time and historical application performance monitoring through operating system tools and Simple Network Management Protocol (SNMP)
 - Monitored data collection service
 - Remote terminal service for off-net system monitoring and alerting
 - Telnet relay application
 - Platform and database debugging tools—Supports **show** command using command-line interface
 - Real-time event monitoring and presentation to common syslog
 - Call-trace utility
 - Browse to onboard device statistics



- Multisite (cross-WAN) capability with intersite CAC
- Dial-plan partitioning
- Off-premises extension (OPX)
- Outbound call blocking
- Out-of-band dual tone multifrequency (DTMF) signaling over IP
- PSTN failover on route nonavailability—AAR
- Redundancy and automated failover on call-processing failure
 - Call preservation on call-processing failure
 - Station to station
 - Station through trunk (Media Gateway Control Protocol [MGCP] gateways)
 - Java Telephony API (JTAPI) and Telephony API (TAPI) applications enabled with automated failover
 - Triple Cisco CallManager redundancy per device (phones, gateway, applications) with automated failover and recovery
 - Trunk groups
- Survivable Remote Site Telephony (SRST)
- Third-party applications support
 - Broadcast paging—through foreign exchange station (FXS)
 - Simple Messaging Desktop Interface (SMDI) for message waiting indication
 - Hook-flash feature support on selected FXS gateways
 - TAPI 2.1 service provider (TSP) interface
 - JTAPI 1.2 service provider interface
 - Billing and call statistics
 - *Configuration database API (Cisco AVVID XML Layer)
- Shared resource and application management and configuration
 - Transcoder resource
 - Conference bridge resource
 - Topological association of shared resource devices (conference bridge, music on hold [MoH] sources, transcoders)
- Silence suppression, voice activity detection
- Simplified North American Numbering Plan (NANP) and non-NANP support
- SMDI interface for message waiting indication
- Toll restriction—dial-plan partition
- Unified device and system configuration
- Unified dial plan

**Indicates new feature or service for Cisco CallManager Version 3.3*



Summary of User Features

- Answer and answer release
- Autoanswer and intercom
- *Callback busy, no reply to station
- Call connection
- Call coverage
- Call forward—all (off net and on net)
- Call forward—busy
- Call forward—no answer
- Call hold and retrieve
- Call park and pickup
- Call pickup group-universal
- Call status per line (state, duration, number)
- Call waiting and retrieve (*with configurable audible alerting)
- Calling Line Identification (CLID)
- *Calling Line Identification Restriction call by call (CLIR)
- Calling party name identification (CNID)
- Direct inward dial (DID)
- Direct outward dial (DOD)
- Directory dial from phone—corporate, personal
- Directories—missed, placed, received calls list stored on selected IP phones
- Distinctive ring (on net vs. off net)
- *Distinctive ring per line appearance
- Distinctive ring per phone
- Drop last conference party (ad-hoc conferences)
- Extension mobility support
- Hands-free, full-duplex speakerphone
- Hypertext Markup Language (HTML) help access from phone
- Last number redial (off net and on net)
- *Manager-assistant service (IPMA application)
 - • *Manager features: Immediate divert or transfer, do not disturb, divert all calls, call intercept, call filtering on CLID
 - • *Assistant features: Intercom, immediate divert or transfer, divert all calls, manager call handling through assistant console application
 - • *System capabilities: Multiple managers per assistant, redundant service
- • Message waiting indication
- Multiparty conference—Ad hoc with add-on, meet-me features
- Multiple line appearances per phone



- Music-on-hold
- Mute capability from speakerphone and handset
- On-hook dialing
- Operator attendant—Cisco Attendant Console
- Privacy
- Real-time QoS statistics through HTTP browser to phone
- Recent dial list—Calls to phone, calls from phone, autodial, and edit dial
- Single-button data collaboration on softphone—chat, whiteboard, and application sharing
- Single directory number, multiple phones—Bridged line appearances
- Speed dial—Multiple speed dials per phone
- Station volume controls (audio, ringer)
- Transfer—With consultation hold
- User-configured speed dial and call forward through Web access
- Web services access from phone
- Wideband audio codec support—Proprietary 16-bit resolution, 16-kHz sampling rate codec

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Summary of Administrative Features

- Application discovery and registration to SNMP manager
- Call detail records (CDRs)
- Call forward reason code delivery
- Centralized, replicated configuration database, distributed Web-based management viewers
- Configurable and default ringer WAV files per phone
- Database automated change notification
- Date and time display format configurable per phone
- Debug information to common syslog file
- Device addition through wizards
- Device-downloadable feature upgrades—Phones, hardware transcoder resource, hardware conference bridge resource, VoIP gateway resource
- Device groups and pools for large system management
- Device mapping tool—IP address to Media Access Control (MAC) address
- Dynamic Host Configuration Protocol (DHCP) block IP assignment—Phones and gateways
- Dialed number translation table (inbound and outbound translation)
- Dialed number identification service (DNIS)
- Enhanced 911 service
- H.323-compliant interface to H.323 clients, gateways, and gatekeepers
- JTAPI 1.2 computer telephony interface



- Lightweight Directory Access Protocol (LDAP) Version 3 directory interface to selected vendor's LDAP directories
 - Active directory
 - Netscape Directory Server
- MGCP signaling and control to selected Cisco VoIP gateways
- Native supplementary services support to Cisco H.323 gateways
- Paperless phone DNIS—Display-driven button labels on phones
- Performance-monitoring SNMP statistics from applications to SNMP manager or to operating system performance monitor
- QoS statistics recorded per call
- Redirected DNIS (RDNIS), inbound, outbound (to H.323 devices)
- Select specified line appearance to ring
- Select specified phone to ring
- Single CDR per cluster
- Single point system and device configuration
- Sortable component inventory list by device, user, or line
- System event reporting—to common syslog or operating system event viewer
- TAPI 2.1 computer telephony interface
- Time-zone configurable per phone
- Extended Markup Language (XML) API into IP phones (Cisco IP Phone 794x/796X)
- Zero-cost automated phone moves
- Zero-cost phone adds

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Cisco CallManager Version 3.3 Enhancements

User Feature Enhancements

- Station-to-station (Cisco IP Phone 7940 and Cisco IP Phone 7960) callback on busy subscriber; callback on no reply
- Distinctive ring per line appearance
- Configurable consecutive call waiting audible alerting
- IPMA application (supporting nonshared line configurations)
 - Manager features: Immediate divert or transfer, do not disturb, divert all calls, call intercept, call filtering on CLID
 - Assistant features: Intercom, immediate divert or transfer, divert all calls, manager call handling through assistant console application
 - System capabilities: Multiple managers per assistant, redundant service
- Call-by-call CLID restriction



System Capabilities Enhancements

- Q.SIG (International Organization for Standardization [ISO]) basic call, ID services, general functional procedures
- Enhanced scalability—30,000 IP phones per cluster (configuration dependent)
- Network-specific facilities support (software-defined network, Megacom) through selected trunk gateways
- New Cisco IP Phone (Cisco IP Phone 7905 and Cisco IP Phone 7920) support
- AAR enhancement for locations-based CAC
- H.323 enhancements for wholesale voice applications
 - Alternate gatekeeper support
 - Multiple gatekeeper support
 - Alternate signaling endpoint support
 - CanMapAlias support
 - Call-by-call selection of H.225, Inter-Cluster Trunk Protocol
 - Simple Bandwidth Resolution Query (BRQ) support
 - Inbound call load sharing for calls from separate clusters
 - RAS retry and configurable timer support
 - H.323 inbound FastStart from media gateways
- Mappable softkeys per device pool or phone—Cisco IP Phone 7940 and Cisco IP Phone 7960
- Localization enhancements—Decoupling new locales from Cisco CallManager releases

Administrative Enhancements

- Cisco CallManager Multilevel Administration Access (MLA)

Ordering Information

Description

- Base Cisco MCS installation—CD-ROMs, documentation shipped with ordered Cisco MCS servers
- Base Cisco ICS 7750 installation—Operating system, database, and documentation preinstalled to ordered Cisco ICS 7750 platform
- Upgrade CD-ROM package—Upgrade from Cisco CallManager 3.1(X) and 3.2(X) to Cisco CallManager 3.3

Part Numbers

- Base Cisco MCS installation—Ordered as software option to Cisco MCS servers; see Cisco MCS data sheets for detail
- Base Cisco ICS 7750 installation—Ordered as component software to Cisco ICS 7750 platform; see Cisco ICS 7750 data sheet for detail
- Cisco CallManager 3.3 upgrade—CD-ROM package, including supporting software (operating system upgrade and database server upgrade) and documentation (part number provided separately)
- Base installation to selected third-party servers CD-ROM package (part number provided separately)

Cisco IP Communications Services and Support
Cisco IP Communications services and support reduce the cost, time, and complexity associated with implementing a converged network. Cisco and its partners have designed and deployed some of today's largest and most complex IP communications networks—meaning that they understand how to integrate an IP communications solution into your network.

Cisco design tools and best practices ensure that the solution best fits your business needs from the start, eliminating costly redesigns and downtime. Cisco proven methods ensure a sound implementation

that delivers the functions and features you expect—on time. Support services include remote network operations, network management tools to administer the converged application and network infrastructure, and technical support services.

Through these services, your organization benefits from the experience gained by Cisco and its partners. If you take advantage of this valuable experience, you can create and maintain a resilient converged network that will meet your business needs today—and in the future.



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