



# Cisco CallManager Express

Cisco® CallManager Express is a solution embedded in Cisco IOS® Software that provides call processing for Cisco IP phones. This solution enables the large portfolio of Cisco access routers to deliver telephony features similar to those that are commonly used by business users to meet the requirements of the small office, thereby enabling deployment of a cost-effective, highly reliable, IP Communications solution for the small office.

Customers can now scale IP telephony to a small site or branch office with a solution that is very simple to deploy, administer, and maintain. The Cisco CallManager Express solution is best suited for customers who are looking for a low-cost, reliable, feature-rich solution for a deployment of up to 100 users.

## Key Features and Benefits

IP telephony is currently undergoing tremendous growth, accelerated by access to value-added features and applications only IP telephony can provide to the end user. Additionally, the cost benefits of converging voice, video, and data onto a single network are fueling the rapid acceptance of this technology. Because it is integrated into a router, the Cisco CallManager Express solution enhances the advantages of convergence by offering the following unique benefits:

Cost-effective operations through a single, integrated voice-and-data platform for all branch office needs-Highly reliable access routers such as the Cisco 1700, 2600, 3600, and 3700 series platforms already provide industry-leading features, including robust quality of service (QoS), network security, encryption, and firewall, and offer new network modules that deliver content networking and enhanced VPN services to address branch and small-office business needs. Now these routers can also deliver integrated IP telephony, voice mail, and automated attendant. This allows customers to deploy one device in their office to address all their business needs, simplifying management, maintenance, and operations, and delivering a lower total cost of ownership (TCO).

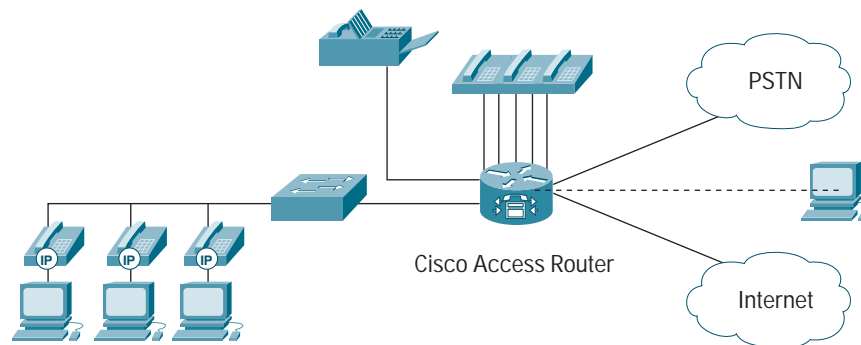
Robust set of commonly used key system and low-end PBX capabilities-Small offices have different workflows and require specialized features to support their work practices. Cisco CallManager Express delivers a robust set of telephony features for the small office, and delivers unique value-added capabilities through Extensible Markup Language (XML) that enhance the productivity of the end user and of the business, and that cannot be delivered by traditional solutions.



Investment protection and ease of upgrade to centralized call-processing solutions-Through a simple software or firmware upgrade, and in most cases through only a configuration change on the router, a system with Cisco CallManager Express can be converted to a highly available, robust voice gateway for a remote site in a centralized Cisco CallManager deployment architecture. This flexibility helps ensure full investment protection to successful businesses that might outgrow the system capacity.

Remote maintenance and troubleshooting using Cisco IOS Software command-line interface (CLI) or Web-based Graphical User Interface (GUI)-Customers have the option of using the industry-standard Cisco IOS Software CLI or user-friendly GUI to configure and administer Cisco CallManager Express. Cisco CallManager Express comprises network intelligence integrated into Cisco IOS Software. This service can act as a standalone call-processing engine for IP phones located in the branch office (Figure 1).

Figure 1  
Cisco CallManager Express Deployment



Cisco CallManager Express allows a Cisco access router to provide call processing for locally attached IP phones. All the necessary files and configurations for IP phones are stored internally on the router, so an external database or file server is not required. In addition, the solution offers a robust set of public switched telephone network (PSTN) interfaces, a wide selection of WAN interfaces, and a full phone portfolio. The solution offers integrated voice mail and automated attendant, a robust set of industry-leading voice features present in Cisco IOS Software designed for IP-based systems, such as H.323 signaling, advanced QoS, and interworking with a gatekeeper, are all available for use in Cisco CallManager Express deployments. In addition, integrated functions such as channel service unit/digital service unit (CSU/DSU) and Network Termination 1 (NT1) devices are available on the PSTN interface cards to provide flexible and robust voice services. IP phone operation and the location of buttons and softkeys are similar to Cisco CallManager, so user training is minimized should the customer decide to migrate to a Cisco CallManager if they outgrow the Cisco CallManager Express solution.



## IP Phone Support

While the Cisco CallManager Express is typically suitable for less than 100 users, a maximum of 120 IP phones can be supported across the choice of platforms with CallManager Express. The maximum numbers of phones supported on each platform is listed in Table 1.

Table 1 IP Phone Support per Platform

Platform	Maximum phones
Cisco IAD 24xx Series integrated access devices,	24
Cisco 1751-V and 1760-V access routers	24
Cisco 261xXM, 262xXM Series access routers	36
Cisco 265xXM Access Router	48
Cisco 2691 Access Router	72
Cisco 3725 Access Router and Cisco Catalyst® 4000 Access Gateway Module (AGM)	96
Cisco 3745 Access Router	120

## Cisco CallManager Express Features

Cisco CallManager Express provides a robust set of commonly used key system and low-end PBX telephony features to locally connected IP phones. It also provides several industry-unique features that are not available from other traditional telephony solutions. Currently, the following features (Table 2) are available with Cisco CallManager Express Version 3.0, which is available for platforms supporting Cisco IOS Software Release 12.2(15)ZJ3 and later.

### Phone Features

- 120 phones per system
- 34 line appearances per phone
- After-hours toll bar override
- Cisco Analog Terminal Adapter (ATA) 186/188
- Attendant console functionality using IP Phone 7960 and 7914s Software-Fast Transfer, Busy Lamp, Direct Station Select, Silent Ringing options
- Call Fwd, Busy, No Answer, All
- Do Not Disturb
- Dual line appearances per button
- European date formats
- Hook flash pass through across analog PSTN trunks
- Idle URL-Periodically push messages on to the screen of a 7940 or 7960 phone
- IP phone support- 7902G, 7905G, 7912G, 7910, 7914, 7920, 7940, 7960, 7935
- Last number redial
- Local directory lookup



- On-hook dialing
- Station speed dial
- System speed dial
- Speed-dial configuration changes from IP phone
- Silent and feature ring options
- Support for analog phones and fax machines
- XML services on Cisco IP phones

### **Trunk Features**

- Analog-FXO, DID, E&M
- BRI/PRI support-NI2, 4ESS, 5ESS, EuroISDN, DMS100, DMS250, and several other switch types currently supported in Cisco IOS Software.
- Caller ID, automatic number identification (ANI), calling name
- Digital trunk support-(T1/E1)
- Direct inward dial, direct outward dial
- E1 R2 support
- H.323 Trunks with H450 support
- QSIG support
- Session Initiation Protocol (SIP) trunks
- Account codes and call data record (CDR) field entry
- Call Back Busy Subscriber/Camp-On within Cisco CallManager Express system
- Call Forwarding-Busy, No Answer, ALL
- Call Hold, Pick and Retrieve
- Call Pickup explicit ringing extension
- Call Pickup local group ringing phone
- Call Pickup explicit group ringing phone
- Call Transfer-Consultative and Blind
- Call Waiting
- Conference
- Computer Telephony Integration (CTI) integration with Outlook and Interact ACT using Telephony Application Programming Interface (TAPI) "Lite"
- Directory services using XML
- GUI Customization
- Hunt Groups-Sequential, Circular, and Parallel
- Intercom-built in
- International language support: German, French, Italian, Spanish, Portuguese, Dutch, Danish, Norwegian, Swedish
- Music on Hold (MoH)-Internal or external source



- Night Service Bell
- Overlay extensions for enhanced call coverage
- Paging-built in or to external system
- Per-call caller ID blocking
- Secondary dial tone
- Standards-based Network Call Transfer and Call Forwarding through H450.2 and H450.3
- System speed dial option through XML service
- Time of Day, Day of Week, call blocking

#### **Voice Mail Features**

- Integrated Voice Mail Solution-Cisco Unity™ Express
- Integration with Cisco Unity voice mail
- Cisco CallManager Express third-party Voice Mail integration (H.323, SIP, or dual tone multifrequency [DTMF]) with Octel, Active Voice, Stonevoice, Converse
- Message waiting indicator

#### **Manageability Improvements**

- Automatic assignment of extensions to IP phones
- Single GUI for system and integrated voice-mail setup
- Centralized Network Management using Packet Telephony Center
- Telephony-service setup wizard
- Web-based GUI for moves, adds, and changes

#### **Cisco IP Phones Supported by Cisco CallManager Express**

Figure 2  
Cisco IP Phone Family





Cisco CallManager Express supports a new generation of intelligent Cisco IP phones (Figure 2) with the following enhancements:

- Entirely display based
- Straightforward user customization based on changing needs
- Inline power accepted from a Cisco Catalyst switch or the Cisco EtherSwitch<sup>®</sup> Network Module available on the Cisco 2600XM and 3700 series routers
- 2-port 10/100BASE-T switch interface to help ensure QoS

### **Cisco IP Phone 7960G**

Figure 3  
Cisco IP Phone 7960G



The Cisco IP Phone 7960G (Figure 3) is a second-generation, full-featured IP phone designed primarily for manager and executive needs. It provides six programmable line or feature buttons and four interactive softkeys that guide a user through call features and functions. The Cisco IP Phone 7960G also features a large, pixel-based liquid crystal display (LCD). The display provides features such as date and time, caller name, caller number, and digits dialed. The graphic capability of the display allows for the inclusion of present and future features.

### **Cisco IP Phone 7940G**

Figure 4  
Cisco IP Phone 7940G





The Cisco IP Phone 7940G (Figure 4) is a second-generation, full-featured IP phone for low- to medium-traffic users who require a minimum of directory numbers. It provides two programmable line or feature buttons and four interactive softkeys that guide a user through call features and functions. The Cisco IP Phone 7940G also has a large, pixel-based LCD display. The display provides features such as date and time, caller name, caller party number, and digits dialed. The graphic capability of the display allows for the inclusion of present and future features.

### **Cisco IP Phones 7910G and 7910G+SW**

Figure 5  
Cisco IP Phones 7910G



The Cisco IP phones 7910G (Figure 5) and 7910G+SW are basic telephones designed for common use areas that require only basic features, such as lobbies, break rooms, and hallways. The Cisco IP Phone 7910G+SW includes a Cisco two-port switch, making it suitable for work environments where basic phone capability and a collocated Ethernet device, such as a PC, are needed.

This single-line phone also provides four dedicated feature buttons: line, hold, transfer, and settings, located prominently under the display. A cluster of six feature-access keys is located above the volume control rocker switch which supports messages (msgs), conference (conf), forward, speed dial (speed 1, speed 2), and redial features.

### **Cisco IP Conference Station 7935**

Figure 6  
Cisco IP Conference Station 7935





The Cisco IP Conference Station 7935 (Figure 6) is a full-featured, IP-based, full-duplex, hands-free conference station for use in offices and small to medium-sized conference rooms. Its full-duplex design offers superior voice quality, eliminating echoes, clipped words, and reverberations for more natural conversation. It features superior sound quality with a digitally tuned speaker and three microphones, allowing conference participants to move around while speaking. In addition to the regular telephony keypad, the Cisco IP Conference Station 7935 provides three softkeys and menu-navigation keys that guide a user through call features and functions. The conference station also features a pixel-based LCD display. The display provides features such as date and time, caller name, caller number, digits dialed, and feature and line status.

### **Cisco ATA 186 and 188 Analog Telephone Adaptors**

Figure 7  
Cisco ATA 188 Analog Telephone Adaptor



The Cisco ATA 186 and 188 analog telephone adaptors connect regular analog phones and fax machines to IP-based telephony networks. Each of the two voice ports on the adaptors supports independent telephone numbers, providing two separate lines. In addition, the internal Ethernet switch allows for a direct connection to a 10/100BASE-T Ethernet network using an RJ-45 interface. The Cisco ATA 188 Analog Telephone Adaptor supports an additional Ethernet port to provide LAN connectivity for a collocated PC or other Ethernet-based device.

### **Cisco IP Phone Expansion Module 7914**

Figure 8  
Cisco IP Phone Expansion Module 7914





The Cisco IP Phone Expansion Module 7914 (Figure 8) extends the capabilities of the Cisco IP Phone 7960G with additional buttons and an LCD display. The silent ring option for shared lines mapped to the expansion module can be used to provide attendant-console capability. This expansion module adds 14 buttons to the existing six buttons on the Cisco IP Phone 7960G, increasing the total number of buttons to 20 with one module or 34 with two modules. A Cisco IP Phone 7960 supports up to two modules. The module's large LCD display allows for quick and easy identification of associated buttons. The settings menu of the Cisco IP Phone 7960G offers the option to adjust the contrast of the individual LCDs for the phone and expansion module according to preference. The 14 buttons on each module can be programmed as a directory number or speed-dial key, much like the phone. The Cisco IP Phone Expansion Module 7914 is supported by Cisco CallManager Express version 2.1 and later.

### **Cisco IP Phone 7902G**

Figure 9  
Cisco IP Phone 7902G



The Cisco IP Phone 7902G (Figure 9) is a single-line IP phone with fixed-feature keys that provide one-touch access to the redial, transfer, conference, and voice-mail access features. Consistent with other Cisco IP phones, the Cisco IP Phone 7902G supports in-line power, which allows the phone to receive power over the LAN. This capability gives the network administrator centralized power control-translating into greater network availability. The Cisco IP Phone 7902G is supported by Cisco CallManager Express Version 3.0 and later.

### **Cisco IP Phone 7905G**

Figure 10  
Cisco IP Phone 7905G





The Cisco IP Phone 7905G (Figure 10) provides single-line access and four interactive softkeys that guide a user through call features and functions using the pixel-based LCD. The graphic capability of the display provides a rich user experience by presenting calling information, intuitive access to features, and language localization in future firmware releases.

The Cisco IP Phone 7905G supports in-line power, which allows the phone to receive power over the LAN. This capability gives the network administrator centralized power control, which translates into greater network availability. The Cisco IP Phone 7905G is supported by Cisco CallManager Express Version 3.0 and later.

### **Cisco IP Phone 7912G**

Figure 11  
Cisco IP Phone 7912G



The Cisco IP Phone 7912G (Figure 10) provides core business features and addresses the communication needs of a cubicle worker who conducts low to medium telephone traffic. The Cisco IP Phone 7912G offers four dynamic softkeys that guide a user through call features and functions. The graphic capability of the display provides a rich user experience by providing calling information and intuitive access to features. The Cisco IP Phone 7912G supports an integrated Ethernet switch, providing LAN connectivity to a colocated PC. In addition, the Cisco IP Phone 7912G supports in-line power, which allows the phone to receive power over the LAN. This capability gives the network administrator centralized power control, translating into greater network availability. The combination of in-line power and Ethernet switch support reduces cabling needs to a single wire to the desktop. The Cisco IP Phone 7912G is supported by Cisco CallManager Express Version 3.0 and later.



## Cisco IP Phone 7920G

Figure 12  
Cisco IP Phone 7920G



Cisco extends the power of IP communications throughout the enterprise by delivering a powerful converged wireless solution with intelligent wireless infrastructure and an innovative product with the introduction of the Cisco Wireless IP Phone 7920 (Figure 11). The Cisco Wireless IP Phone 7920 is an easy-to-use IEEE 802.11b wireless IP phone that provides comprehensive voice communications in conjunction with Cisco CallManager Express and Cisco Aironet<sup>®</sup> 1200, 1100, 350, and 340 series of WiFi (IEEE 802.11b) access points. The Cisco Wireless IP Phone 7920 delivers intelligent services such as security, mobility, QoS, and management across an end-to-end Cisco network.

### Supported Voice Interface Cards

The Cisco CallManager Express solution supports a variety of voice interface cards that can be used to service a customer's voice access needs:

- VIC-2E/M-2-port E&M ("ear and mouth") voice interface card (VIC)
- VIC-2FXS-2-port analog Foreign Exchange Station (FXS) voice interface card
- VIC-2FXO-2-port analog Foreign Exchange Office (FXO) voice interface card
- VIC-2FXO-EU-2-port analog FXO (for Europe) voice interface card
- VIC-2FXO-M1-2-port analog FXO with reversal (for United States) voice interface card
- VIC-2FXO-M2-2-port analog FXO with reversal (for Europe) voice interface card
- VIC-2FXO-M3-2-port analog FXO with reversal (for Australia) voice interface card
- VIC-2BRI-NT/TE-2-port Basic Rate Interface (BRI) (NT and TE) voice interface card
- VIC-2BRI-S/T-TE-2-port BRI (terminal) voice interface card\*\*
- VWIC-1MFT-T1-1-port T1/Primary Rate Interface (PRI) voice interface card
- VWIC-1MFT-E1-1-port E1/PRI voice interface card
- VWIC-2MFT-T1-2-port T1/PRI voice interface card
- VWIC-2MFT-E1-2-port E1/PRI voice interface card
- VIC-4FXS-4-port analog FXS voice interface card\*\*
- VIC-2-2FXS-2-port voice interface card – FXS



- VIC2-2FXO-2-port voice interface card – FXO (Universal)
- VIC2-4FXO-4-port voice interface card – FXO (Universal)
- VIC-4FXS/DID-4-port FXS or direct inward dialing (DID) VIC (DID is not supported)
- VIC2-2E/M-2-port voice interface card – E&M
- VIC2-2BRI-NT/TE-2-port voice interface card – BRI
- NM-HD-1V-1-slot IP Communications Voice/Fax Network Module
- Up to 4 channels of analog/BRI voice
- NM-HD-2V-2-slot IP Communications Voice/Fax Network Module
- Up to 8 channels of analog/BRI voice
- NM-HD-2VE-2-slot IP Communications enhanced Voice/Fax Network Module
- Up to 24\* channels of analog/BRI and digital voice
- NM-HDA-4FXS-4-port analog FXS expansion module\*\*\*\*
- NM-HDA-4FXS + EM-HDA-8FXS-12-port analog FXS expansion\*\*
- NM-HDA-4FXS + Two EM-HDA-4FXO-8-port analog FXO and 4-port analog FXS expansion\*\*
- NM-HDA-4FXS + EM-HDA-8FXS + EM-HDA-4FXO-12-port analog FXS and 4-port analog FXO expansion\*\*

### Supported WAN Interface Cards and Network Modules

Cisco CallManager Express is fully compliant with industry-leading Cisco WAN interface cards and network modules, allowing enhanced data connectivity to ATM, analog modem, channelized T1/ E1, Ethernet, Frame Relay, Gigabit Ethernet, high-speed serial, ISDN-BRI, ISDN-PRI, and xDSL interfaces. These data interface cards can be mixed and matched with voice interface cards to provide converged data and voice services in a single platform. In addition, advanced network modules can add enhanced services such as VPN hardware encryption, content networking, and Ethernet in-line power to a router with the Cisco CallManager Express:

- VPN hardware encryption modules
- 20- or 40-GB content engine network module\*\*\*\*\*
- 16- or 36-port 10/100 EtherSwitch network module with inline power support for IP phones\*\*\*\*

\*Supported on Cisco 1751, 1760, 1751-V and 1760 modular access routers only.

\*\* Supported on Cisco 2600XM, 2691, 3640/3640A, 3660, 3725 and 3745 router platforms only.

\*\*\* Supported on Cisco 2600XM, 2691, 3640/3640A, 3660, 3725 and 3745 modular access router platforms only.

\*\*\*\* 16-port version supported on Cisco 2600XM, 2691, 3620, 3640/3640A, 3660, 3725 and 3745 platforms only. 36-port version supported on 3660, 3725, and 3745 router platforms.



## Cisco CallManager Express Platforms

Cisco Systems<sup>®</sup> has developed Cisco CallManager Express for all Cisco access routers that support voice. Currently, the Cisco IAD 2400 Series integrated access devices, Cisco Catalyst<sup>®</sup> 4500 access gateway module (AGM), Cisco 1751-V and 1760-V modular access routers, and Cisco 2600XM, 3660, and 3700 series routers support this capability. Table 3 compares the specifications for a small-office system using Cisco CallManager Express, represented by either the Cisco 1760-V or the Cisco 2621XM Router, and a mid-sized office system with the Cisco CallManager Express, represented by the Cisco 3745 Access Router. Any of the other routers listed above can be selected to best fit the deployment needs of the office.

Table 2 Typical System Specifications

	Cisco 1760-V	Cisco 2621XM Router small office	Cisco 3745 Access Router mid-sized office
Maximum number of phones	24	36	120
Maximum number of lines	120	216	720
Maximum analog FXO trunks	16	8	32
Maximum E&M trunks	8	4	16
Maximum BRI trunks	12	8	32
Maximum PRI/T1/E1 trunks	4	3	10
Maximum analog FXS ports	16	12	48
Maximum T1 DSP channels	24	72	240
Maximum E1 DSP channels	30	90	300
Maximum integrated in-line power Ethernet ports	– External Cisco Catalyst Switch	16	36
Data processing rate	16 kpps	30 kpps	225 kpps
Flash memory (default/maximum)	32 MB/64 MB	16 MB/48 MB	32 MB/128 MB
System memory (default/ maximum)	96 MB/128 MB	32 MB/128 MB	128 MB/256 MB
Network module slots	–	1	4
Integrated WAN interface slots	4	2	3

## Summary

Cisco CallManager Express delivers telephony features similar to those that are commonly used by business users to meet the requirements of the small office. It also uses an XML infrastructure to deliver value-added features that traditional systems cannot deliver. These features improve employee and business productivity and deliver a lower TCO. Because this solution is integrated into highly reliable access routers that offer advanced data capabilities such as content networking, VPN, firewall, encryption, dial access,

and Ethernet switching, customers can meet all their voice and data needs for the small office with just one platform, simplifying their management, maintenance, and operations costs.

Cisco CallManager Express can be easily migrated to a large-scale IP telephony deployment should the feature-set or phone-count requirements of a customer expand. All hardware and software used by this solution is fully compatible with the Cisco CallManager and Cisco Survivable Remote Site Telephony (SRST) solution.

For more information about Cisco CallManager Express send an e-mail message to [access-ccme-cue@cisco.com](mailto:access-ccme-cue@cisco.com).



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