Cisco Unified Videoconferencing 3545 System Release 5.7

Product Overview

Cisco® Unified Communications solutions enable collaboration so that organizations can quickly adapt to market changes while increasing productivity, improving competitive advantage through speed and innovation, and delivering a rich-media experience across any workspace, securely and with optimal quality.

The Cisco Unified Videoconferencing 3545 System, an integral component of the Cisco Unified Communications solution, allows face-to-face discussions among remote participants. The solution supports multiple protocols to facilitate connectivity with a wide variety of video-enabled devices from desktop video telephony to standard-definition (SD) and high-definition (HD) room systems and the Cisco TelePresence™ System.

The Cisco Unified Videoconferencing 3545 System is a flexible, high-performance solution for medium-sized and large organizations that want to deploy multi-location video conferencing. Each system consists of a modular chassis that supports multipoint-control-unit (MCU), enhanced-media-processor (EMP), and ISDN gateway modules for a wide variety of video conferencing features and capacities.

The solution helps organizations promote effective communication and collaboration by allowing people to meet at any time from anywhere without the expense and inefficiencies of travel. Educational institutions and organizations can conduct efficient training and education programs that extend beyond the campus environment. Doctors can consult specialists from any part of the world to provide the best care for their patients. Organizations can build trust and stronger relationships with remote staff and customers through more frequent face-to-face communications while lowering expenses and enabling carbon-reduction initiatives through travel reduction.

Main Features and Benefits

The Cisco Unified Videoconferencing 3545 System offers important features and benefits for video users-and for your organization.

Multiprotocol Support: Broad Video Interoperability

The Cisco Unified Videoconferencing System supports multiple video and audio compression standards, codecs, and protocols, including H.323, Session Initiation Protocol (SIP), Skinny Client Control Protocol (SCCP), and H.320, to help ensure broad connectivity with traditional and emerging video environments. This degree of support provides flexibility that allows Cisco Unified Videoconferencing solutions to interoperate with traditional room and desktop video conferencing systems, Cisco WebEx™ Meeting Center, Cisco TelePresence solutions, Cisco video telephony environments, and unified communications clients, including Cisco Unified Personal Communicator, Microsoft Office Communicator, and IBM Lotus Sametime. Providing a single video infrastructure solution for a broad range of devices and access methods helps simplify the user experience and system management, facilitating effective video communications and enabling a lower total cost of ownership (TCO).

High-Performance, Flexible Solution: Optimized Experience for All

The Cisco Unified Videoconferencing 3545 System uses a powerful hardware design with flexible processing capabilities to provide an exceptional user experience that is also scalable and cost effective. The products are specifically designed to meet the needs of today's heterogeneous video environments by maintaining HD quality for HD endpoints while simultaneously providing highly scalable SD and desktop video conferencing.

- HD conferencing: Connections to HD-capable endpoints deliver full-screen voice-activated switching in HD, full interoperability with SD endpoints in the same conference, and continuous presence. The HD services run simultaneously on the MCU with both the high-quality and high-capacity SD video services. For the best HD experience and capacity, the next generation Cisco Unified Videoconferencing 5230 MCU is recommended.

- High-quality SD video conferencing: Every port has dedicated encoders, and the system automatically implements transcoding and connection-speed transrating so endpoints can connect to any conference, at any supported bit rate, with any supported audio or video codec, at any supported resolution, and with any screen layout. This approach helps ensure an optimal experience for each participant. The encoder-per-port hardware architecture also significantly reduces planning, provisioning, and scheduling requirements by eliminating the need to define or limit the bit rates, video formats, and conference features.

- High-capacity SD video conferencing: The Cisco Unified Videoconferencing 3545 System has the flexibility to redistribute processing resources. If available bandwidth is not fully used, the number of available ports automatically increases, making the solution highly cost effective for desktop video and video telephony deployments.

Extensive Features for Meeting Control and Flexible Video Presentation

The Cisco Unified Videoconferencing 3545 System offers two modes of video display: voice-activated video selection and continuous presence. The H.239 standard is also fully supported, allowing conference participants to share content in real time. The solution provides extensive conference-management functions. Users and conference moderators can control the meeting from a web-based user interface, a dual-tone multifrequency (DTMF) interface from video endpoints or standard phones, or video endpoint remote controls. For example, the conference moderator can lock the conference as well as add, mute, or disconnect participants. Having access to these integrated controls improves meeting effectiveness, particularly in large video conferences or educational environments.

Integrated Unified Communications and Rich-Media Conferencing Solution

The Cisco Unified Videoconferencing 3545 System is integrated with the Cisco Unified Communications solution to enable multiple video environments and use scenarios, including impromptu conferences that you can initiate from desktop communications clients and phones; collaborative conferences that integrate voice, video, and web conferencing; and traditional multilocation video conferencing. You can easily transition across and between applications, such as presence, instant messaging (IM), IP telephony, unified messaging, and rich-media conferencing as interactions warrant, independent of where they are or what device they are using. Unified communications interoperability also delivers investment protection by helping ensure that your organization can fully use your investment in video conferencing systems. The Cisco Unified Videoconferencing 3545 System supports the following deployment modes, which can be used separately or together:

- Traditional IP videoconferencing: The solution provides flexible, scalable, and high-performance multiparty video conferencing for traditional room-based video conferencing systems across a wide variety of endpoints, including H.320, H.323, SCCP, and SIP devices.

- Cisco TelePresence interoperability: When used in conjunction with the Cisco TelePresence Multipoint Switch, the Cisco Unified Videoconferencing 3545 System provides an SD bridge between traditional video conferencing endpoints and Cisco TelePresence endpoints, allowing your business to protect and take full advantage of your investments.

- Cisco WebEx Meeting Center interoperability: When used with the Cisco Unified Videoconferencing Manager, the Cisco Unified Videoconferencing 3545 System provides more advanced video capabilities for Cisco WebEx Meeting Center. The solution lets you display standards-based video clients, room systems, and Cisco TelePresence endpoints in Cisco WebEx Meeting Center meetings. The Cisco Unified

Videoconferencing with WebEx® solution also increases the number of video participants that can be viewed, improves the resolution of displayed video, and adds video controls.

- Rich-media conferencing: The Cisco Unified Videoconferencing 3545 System, when combined with the Cisco Unified MeetingPlace® Video Integration option, delivers video conferencing capabilities for Cisco Unified MeetingPlace 6.0 conferencing and earlier. The solution integrates enterprise-class voice, video, and web conferencing with industry-leading video setup and control capabilities.

Note: Cisco Unified MeetingPlace 7.0 and later unify voice and video conferencing in a single media server appliance that does not require Cisco Unified Videoconferencing. Cisco Unified Videoconferencing complements Cisco Unified MeetingPlace 7.0 by providing HD conferencing and interoperability with Cisco TelePresence and WebEx solutions.

- Cisco video telephony: Cisco Unified Communications Manager video telephony dramatically simplifies your video experience by making video communications as easy as placing a telephone call (Figure 1). The Cisco Unified Videoconferencing 3545 System provides multiparty conferencing support for video telephony environments. The solution makes initiating or adding a user to a conference as easy as pressing the conference control on a Cisco Unified IP Phone or video telephony application, such as Cisco Unified Personal Communicator.

Figure 1.   Cisco Video Telephony: Video Calls Are as Easy to Place as Telephone Calls

- When deployed with the Cisco Unified Videoconferencing Manager, Cisco Unified Videoconferencing enhances the collaboration capabilities of Microsoft Office Communicator and IBM Lotus Sametime by adding support for standards-based, multiparticipant video. Microsoft Office Communicator and Lotus Sametime users can initiate impromptu video communications with other Microsoft Office Communicator and Lotus Sametime users and with any video solution that can connect to Cisco Unified Videoconferencing, including the Cisco TelePresence System.

Modular, Scalable Solution That Uses an Intelligent Network

Each Cisco Unified Videoconferencing 3545 System consists of a modular chassis that supports MCU, EMP, and ISDN gateway modules for a wide variety of video conferencing features and capacities. The Cisco Unified Videoconferencing ISDN Gateway modules allow ISDN H.320 endpoints to participate in the same conferences as IP-based H.323, SCCP, and SIP endpoints, providing investment protection for ISDN video conferencing deployments. The Cisco Unified Videoconferencing 3545 System also works with the Cisco Unified Videoconferencing 3515 MCU and the Cisco Unified Videoconferencing 3522 Basic Rate Interface (BRI) and 3527

Primary Rate Interface (PRI) Gateway appliances, which you can readily deploy at remote network sites to provide a distributed video environment, optimizing WAN bandwidth use for geographically dispersed organizations.

Video conferencing deployments with the Cisco Unified Videoconferencing 3545 System often require the presence of an H.323 gatekeeper in the video network to provide functions such as telephone number-to-IP address resolution and zone bandwidth management for video conferencing endpoints. Based on Cisco IOS® Software, the Cisco IOS Gatekeeper runs on a wide variety of Cisco integrated services routers. The Cisco Unified Border Element, also a Cisco IOS Software product, can enhance a video conferencing deployment by providing session-border-control services, quality-of-service (QoS) functions, and enhanced security with firewall traversal capabilities, all of which allow you to extend your video conferencing capabilities beyond your network to partner and customer networks, or even to video endpoints using the public Internet.

Advanced Solution Management, Desktop Video, and Streaming: Cisco Unified Videoconferencing Manager

The Cisco Unified Videoconferencing System can be managed as standalone devices or with the Cisco Unified Videoconferencing Manager, which helps organizations of all sizes use their video conferencing resources more effectively and extend desktop video access to new classes of users. The Cisco Unified Videoconferencing Manager allows you to easily schedule video conferences from a web browser or a Microsoft Outlook or IBM Lotus Notes calendar, where you can view, check availability, and reserve video resources, such as Cisco Unified Videoconferencing MCU devices and gateways. Additional features such as custom meeting templates that identify bandwidth, layout, and terminal setting preferences; Lightweight Directory Access Protocol (LDAP) integration; email notifications; and automatic dial-out to video terminals help make the scheduling and attending experience flexible and efficient, thereby reducing TCO and the need for support. You can also record and play back video conferences.

Cisco Unified Videoconferencing Manager reduces the hurdles to deployment of video conferencing to large or geographically dispersed environments. Video conferencing devices are registered with Cisco Unified Videoconferencing Manager, which then combines the device information, network topology, and bandwidth information to help simplify user and administrator interactions and make intelligent resource-allocation decisions. Cisco Unified Videoconferencing Manager also helps improve meeting effectiveness by providing in-meeting controls.

Cisco Unified Videoconferencing Manager also includes desktop video capabilities, including fully interactive video, one-way video streaming, and interoperability with Microsoft Office Communicator, IBM Lotus Sametime, and Cisco WebEx Meeting Center. Anyone with a PC, web browser, and webcam can join a video conference as a fully interactive video participant whether the person is inside or outside the corporate firewall. The streaming video features allow anyone with a web browser to view a live video stream of a conference, which is well suited for meetings such as panel discussions with a large audience but in which only a subset of the attendees actively participates. Eliminating the need to be connected to the enterprise network or have access to traditional video endpoints makes it easier for traveling or remote employees, partners, and customers to participate and gain the benefits of visual communications. Microsoft Office Communicator and Lotus Sametime interoperability provides interoperability with standards-based video solutions and lets you initiate multiparticipant video directly from a buddy list or an instant message.

Product Information

Table 1 lists the Cisco Unified Videoconferencing 3545 System module options by part number, Table 2 describes the system features, and Table 3 lists the physical specifications of the system.

Table 1.   Cisco Unified Videoconferencing 3545 System Options

Part Number	Description	Features
IPVC-3545-CHAS (=)	The product chassis contains four slots, which can be populated with any combination of Cisco Unified	• Provides dual redundant power supplies and feeds

Part Number	Description	Features
	Videoconferencing 3545 System modules.	- Is rack mountable - Provides power and heat dissipation for modules

Part Number	Description	Features
IPVC-3545-MCU (=)	The MCU module is responsible for actually connecting all video conference participants to the same conference.	• Provides all audio-processing capabilities • Provides 96 fully processed and transcoded audio ports per module • Manages up to 4 EMP modules in 1 or more chassis on the network
IPVC-3545-EMP (=)	The EMP module is responsible for all video processing for conferences hosted on the MCU module.	• Provides 24 fully processed SD or switched HD video ports, or 16 processed HD video ports per module with continuous presence • Offers the capability for a single MCU module in the same or different chassis to manage 4 EMP modules
IPVC-3545-GW2P (=)	The dual PRI ISDN gateway module provides connectivity and translation services for older ISDN H.320 video conferencing endpoints so that they can join the same conferences as IP-based H.323, SIP, and SCCP endpoints.	• Provides dual PRI T1/E1 interfaces • Provides full built-in audio transcoding
IPVC-3545-GW4S (=)	The quad serial interface ISDN gateway module provides connectivity and translation services for older ISDN H.320 video conferencing endpoints so that they can join the same conferences as IP-based H.323, SIP, and SCCP endpoints.	• Provides 4 serial interfaces • Provides full built-in audio transcoding

Table 2.   Cisco Unified Videoconferencing 3545 System Features

Part Number	Description				
Audio and video capacities		1 MCU and 1 EMP module	1 MCU and 2 EMP modules	1 MCU and 3 EMP modules	1 MCU and 4 EMP modules
	High-capacity SD connections (384 kbps or lower)	96 audio 48 video	96 audio 96 video	-	-
	High-quality SD connections (up to 2 Mbps)	96 audio 24 video	96 audio 48 video	96 audio 72 video	96 audio 96 video
	Switched HD	96 audio 24 video	96 audio 48 video	96 audio 72 video	96 audio 96 video
	HD with continuous presence	96 audio 16 video[1]	96 audio 32 video[1]	96 audio 48 video[1]	96 audio 64 video[1]
Video capabilities	• Video codecs: H.261, H.263, and H.264 • Live video resolutions: Quarter Common Intermediate Format (QCIF), Common Intermediate Format (CIF), Standard Input Format (SIF), 4CIF, 1280 x 720p, and 1920 x 1080p (switched HD service only) • Presentation video resolutions: Video Graphics Array (VGA), Super Video Graphics Array (SVGA), and Extended Graphics Array (XGA) • Video bandwidth: Up to 4 Mbps per port • Full transcoding and transrating for all SD (up to and including 4CIF) video codecs and speeds on all ports • All continuous-presence layout options • Support for both SD and HD participants (for HD service) • QualiVision for highly improved, standards-based video quality in networks with packet loss; support for both SD and HD connections • QoS support with Differentiated Services (DiffServ), type of service (ToS), and IP Precedence • Video recording with Cisco Unified Video Conference Manager • On-screen menu for meeting selection				
Audio capabilities	• SD audio codecs: G.711, G.722, G.722.1, G.723.1, G.728, and G.729A • DTMF tone detection (in-band, H.245 tones, and RFC 2833)[2] • Entry and exit sounds played when conference participants join or leave a conference • Capability to record and upload custom messages • Full transcoding and mixing on all audio ports • Interactive voice response (IVR) for meeting selection				

[1] Enabling the processed HD service reduces capacity for all services on the MCU, but the high-capacity SD service continues to support two connections per port.
[2] When in-band DTMF detection is used, MCU audio and video capacity drops to 72 ports (three EMP modules), and H.235 encryption must be disabled.

Part Number	Description
Signaling protocols	• H.323 • SCCP • SIP • H.320 with gateway modules
Conferencing and video display features for SD conferences	• Unlimited number of simultaneous conferences • Continuous-presence conferences displaying up to 16 participants at one time • 28 screen layout options, all of which support both SD and HD participants • Autolayout selection based on the number of participants • Administrative control of layouts and conference views • Web interface that gives a conference moderator full control of participant location in the screen layout • Self-see window in the screen layout that can be turned off for SD participants, providing a unique and optimized view for each SD participant (without the participant in the layout; not available in HD) • Text overlay
Conference display for HD conferences	• Dynamic negotiation to help ensure that the highest-quality frame rate provides more natural motion • Full-screen voice-activated HD switching service that delivers the same port capacity as SD services while making optimal use of higher-resolution images • 28 screen layout options for HD service, displaying up to 16 SD or HD participants at one time • Continuous-presence screen layouts displayed up to 720p resolution to HD participants • Configurable methods to convert a 4:3 SD aspect ratio to a 16:9 HD aspect ratio (crop, stretch, or borders)
Scalability	• Capability to create larger conferences by automatically cascading multiple Cisco Unified Videoconferencing 3545 MCU modules and Cisco Unified Videoconferencing 3515 MCU modules together • Capability to centralize cascaded conferences in the data center or distribute conferences geographically to more efficiently use WAN bandwidth

Conference management	• Easy-to-use Web interface allows a conference moderator to perform a variety of conference monitoring and management functions
	• Real-time conference management and monitoring allows moderators to:
	  ◦ View conference list and number of participants
	  ◦ View conference type and participant information, including name, number, IP address, video and audio codecs in use, and time joined the conference
	  ◦ Create a new conference and assign a conference password
	  ◦ Terminate a video conference
	• Powerful conference control for management of active conferences allows moderators to:
	  ◦ Add or drop participants in a conference
	  ◦ Lock the video on a location to be viewed by all participants in a conference
	  ◦ Lock the video and specify image position during a continuous-presence conference
	  ◦ Switch between voice-activated and continuous-presence views during a conference
	  ◦ Mute audio from a selected participant
	  ◦ Terminate a videoconference
	• H.243 and DTMF conference control is possible from the endpoint
	• IP dialing with IVR and on-screen menu is available

On-demand or scheduled conferences	• Easy user initiation of unscheduled conferences • Conference scheduling through the Cisco Unified MeetingPlace solution or Cisco Unified Videoconferencing Manager
Security	• H.235 Advanced Encryption Standard (AES) and Data Encryption Standard (DES) encryption on both SD and HD connections, up to 128-bit keys, for secure audiovisual conferencing[3] • Password-protected web GUI user access with multiple levels: administrator, operator, and user • Strong password enforcement • HTTPS and SSL • PIN-protected conferences to help ensure privacy • Security warning page option • Serial port disable and enable • Session inactivity time-out and user lockout (manual and automatic) capabilities • Security event logging
Data sharing and collaboration	• H.239 and Tandberg DuoVideo for presentation sharing • Integration with the Cisco Unified MeetingPlace solution for rich-media conferencing and web collaboration

---

[3] When H.235 encryption is used, MCU audio capacity drops to 72 ports. If H.235 encryption is used on video calls over 768 kbps, EMP port capacity drops to 12 ports each. The high-capacity SD service does not support encryption; it supports the H.263 codec at 30 frames per second (fps) and H.264 codec at 15 fps.

Part Number	Description		
ISDN gateway module capacities	Dual PRI gateway module		Quad serial gateway module
	T1 interface • 46 voice calls • 23 video calls at 128 kbps • 7 video calls at 384 bps • 3 video calls at 768 kbps • 2 video calls at full T1	E1 interface • 60 voice calls • 30 video calls at 128 kbps • 10 video calls at 384 kbps • 4 video calls at 768 kbps • 2 video calls at full E1	4 serial ports at up to 2 Mbps each
ISDN gateway features	Video, audio, and data support: • Signaling protocols: H.323 and H.320 • Video: H.261, H.263, H.263+, H.263++, and H.264 • Resolutions: QCIF, CIF, 4CIF, and 16CIF • Audio: G.711, G.722, G.722.1, G.723.1, and G.728 • Data: T.120, T.281 (FECC), DuoVideo, and H.239 • H.243 conference control Built-in audio transcoding and line echo cancellation: • Transcoding between G.728 and G.711 • Transcoding between G.711 and G.723.1 • Line echo cancellation on dual PRI gateway module (part number IPVC-3545-GW2P), allowing connection of standard telephones Call routing: • Built-in IVR • Direct inward dialing (DID): IP connectivity according to the ISDN number dialed • Terminal Control Session 4 (TCS4): Supplies the IP endpoint number as part of the ISDN dial string • Default extension: Connects all calls to a specific location (for example, an MCU) Call bonding on dual PRI gateway module (IPVC-3545G-W2P): • ISDN call bonding for up to 2 Mbps (E1) or 1.5 Mbps (T1) • Automatic downspeeding on ISDN channel failure		
Gatekeeper support	Cisco IOS Gatekeeper or equivalent		
Diagnostics	• Power-on self-test (POST) for CPU, interfaces, and memory when the unit is turned on • Front-panel error indicators • Telnet and serial port monitoring capabilities		

Table 3. Cisco Unified Videoconferencing 3545 System Specifications

Feature	Specification
LAN interface	One 10/100 Ethernet port, IEEE 802.3, 8-pin RJ-45 on each module
Serial port	EIA-232, 9-pin D-type
Dimensions	3.50 x 17.25 x 10.0 in. (8.89 x 43.815 x 25.4 cm)
Weight	17.6 lb (8 kg) for empty chassis (with 2 power supplies)
Power	• 100 to 240 VAC autosense, 50 to 60 Hz, 202W maximum, 689 BTU • Dual redundant power supplies • U.S. power cable included • Other power cables available
Environment	• Operating temperature: 32 to122℉ (0 to 50℃) • Storage temperature:13 to 158℉ (25 to 70℃) • Humidity 5 to 90% noncondensing
Agency compliance	Safety: • UL 60950: 2000 • CSA CS22.2 No. 60950-00 • GS Approval (EN 60950: 2000) • EN 60950: 2000 • ACA: TS002-1997 • AS/NZS 3260: 1993, A4: 1997 • AS/NZS 60950: 2000 • IEC 60950: 1999 (CB test report)

Feature	Specification
	EMI: • FCC Part 15 Subpart B, Class A, • EN 55022: 1998, Class A • ICES 003 • EN 55024: 1998 • EN 61000-3-2: 1995, Amendment A14: 2000 • EN 61000-3-3 • EN 61000-4-2: 1995 • EN 61000-4-3: 1995 • EN 61000-4-4: 1995 • EN 61000-4-5: 1995 • EN 61000-4-6: 1996 • EN 61000-4-8: 1993 • EN 61000-4-11: 1994 • AS/NZS 3548: 1995 Class A, Amendment 1: 1997, Amendment 2: 1997 • VCCI: 1999

Cisco Unified Communications Services

Cisco and our certified partners can help you deploy a secure, resilient Cisco Unified Communications solution, meeting aggressive deployment schedules and accelerating business advantage. The Cisco portfolio of services is based on proven methodologies for unifying voice, video, data, and mobile applications on fixed and mobile networks.

The unique Cisco lifecycle approach to services defines the requisite activities at each phase of the solution lifecycle. Customized planning and design services focus on creating a solution that meets your business needs. Award-winning technical support increases operational efficiency. Remote management services simplify day-to-day operations, and optimization services enhance solution performance as your business needs change.

For More Information

http://www.cisco.com/en/US/products/hw/video/ps1870/index.html.