

The Cisco IP/VC Product Family

Cisco Videoconferencing Solutions Humanize Communications

To thrive in a global marketplace, today's business, government, educational, and medical organizations of all sizes need to provide their stakeholders with the ability to capitalize on rapid change. This means they need an intelligent network infrastructure and communications tools that support collaboration in real time, from anywhere in the world.

Cisco has long been dedicated to providing superior network infrastructures, and as the leader in IP technology, we're uniquely positioned to help enterprises reap the benefits of a converged network.

Cisco AVVID (Architecture for Voice, Video and Integrated Data) is an open, standards-based multiservice architecture that allows organizations to converge disparate data, voice, and video networks onto a single network. With bandwidth costs decreasing—and hardware value, quality, and performance on the rise—even

small organizations can harness the power of IP technology to implement sophisticated desktop and group videoconferencing solutions. Cisco IP/VC™ videoconferencing solutions can be deployed anytime, anywhere—from desktop to conference room, from classroom to physician's office. They enable a wide range of internal and external communications as reliably and robustly as the telephone on the desktop.

Cisco IP/VC videoconferencing solutions effectively eliminate the barriers of time, distance, and resources, permitting people around the world to function as if they were in the same room. Companies can integrate telecommuters, arrive at decisions faster, and more effectively train and educate employees. Educational institutions can interactively disseminate knowledge anywhere, creating a true “campus without walls.” Doctors can consult specialists from any part of the world to provide the best care for their patients at a reasonable cost. Organizations that “humanize” their communications in this way can reduce administrative costs and increase productivity, profitability, and competitiveness as never before.

Network Videoconferencing and H.323

H.323 is the International Telecommunications Union (ITU) standard for real-time multimedia communications and conferencing over packet-based (IP) networks. Transmitting videoconferences

Figure 1
The Cisco IP/VC Product Family





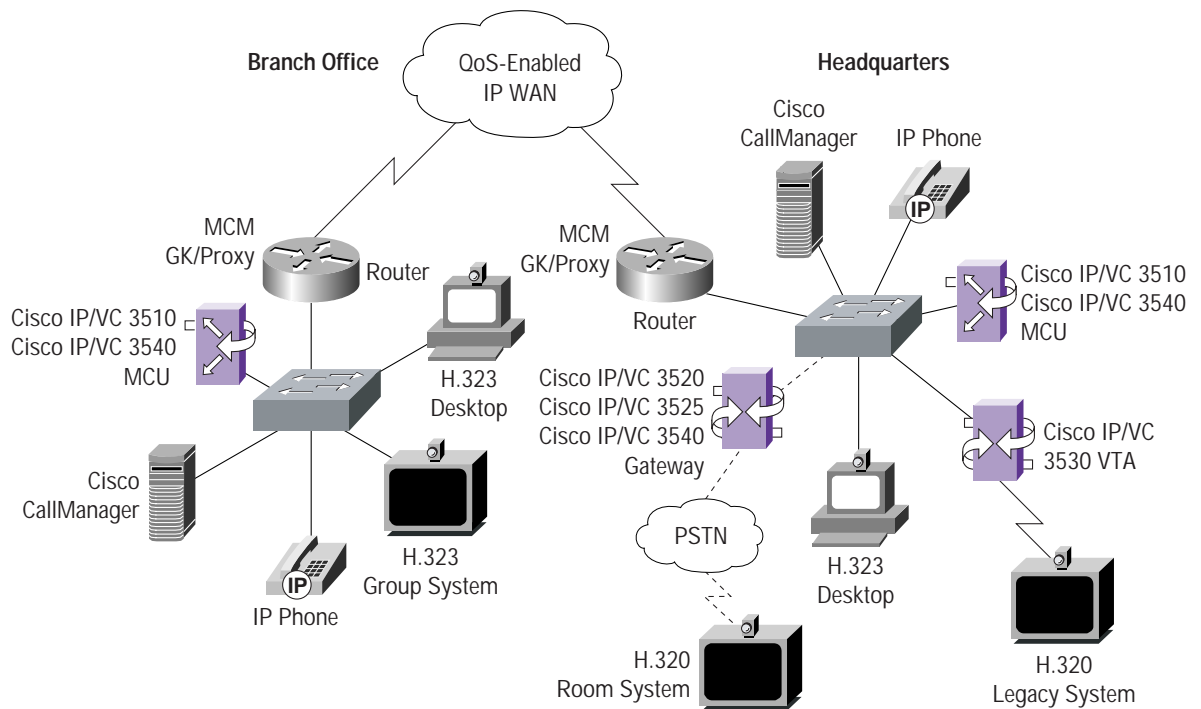
over standard ISDN lines is expensive and prone to connectivity problems. Because of specialized, dedicated equipment needs, ISDN-based videoconferencing is often restricted to special sites and rooms. IP-based H.323 videoconferencing is the next-generation standard. H.323 is more cost-effective, offering greater flexibility and scalability: wherever a LAN connection is located, H.323 videoconferencing equipment will operate. Best of all, many vendors are offering products designed to the H.323 standard, giving customers a choice to find the most compatible and cost-effective solution for their needs.

The Cisco IP/VC Product Family

The Cisco Videoconferencing Solution encompasses a range of stackable and modular chassis-based products. It includes multipoint conference units that enable interactive collaboration between three or more endpoints, gateways that provide connectivity between networks of IP-based H.323 endpoints and ISDN-based H.320 videoconferencing systems, and video terminal adapters that connect single H.320 systems to IP networks. In addition, the T.120 data collaboration servers expand the capability of any videoconference to include application sharing, cooperative white boarding, and file transfer.

These products, and the solutions they enable, are developed for organizations that want a reliable, easy-to-manage, cost-effective network infrastructure for videoconferencing applications deployment. The Cisco IP/VC product family enables videoconferencing over IP networks, and at the same time, integrates legacy H.320 systems—protecting customers' investments in videoconferencing systems.

Figure 2
Putting It All Together: The Cisco IP/VC Solution at Work





What About Legacy H.320 Videoconferencing Systems?

Many enterprises have already made substantial investments in H.320 videoconferencing. It is important to know that the H.323 standard enables interoperation with H.320-based systems. Cisco IP/VC products enable enterprises that have already experienced the benefits of videoconferencing over ISDN to leverage and protect their original investment while implementing new IP-based solutions.

Cisco IP/VC 3500 Series

Cisco IP/VC 3510 Videoconferencing Multipoint Control Unit (MCU)

The Cisco IP/VC 3510 MCU is a desktop or rack-mountable unit that enables conferences between three or more endpoints. Participants in multiple locations can attend the same meeting with full real-time interactivity. The Cisco IP/VC 3510 MCU is designed to allow users to spontaneously initiate full multimedia, multipoint conferences. Users may choose to run a conference in continuous presence mode, where up to four locations are shown on the screen at once. Alternatively, the conference can use a voice-activated switching mode, where the video picture follows the active speaker, or the conference may be run in moderator controlled mode where a chairperson can control which speaker is seen on the screen.

Each Cisco IP/VC 3510 MCU can support up to 15 simultaneous participants in 1 or multiple conferences at bandwidths from 128 kbps to 1.5 Mbps, giving it a wide range of performance. Its compact design also provides a way to cascade multiple MCUs together to support larger conferences. For small videoconferencing networks, the MCU features built-in gatekeeper functions. It is a totally self-contained unit and is simple to install.

Cisco IP/VC 3520 and Cisco IP/VC 3525 Videoconferencing Gateways

The Cisco IP/VC 3520 and the Cisco IP/VC 3525 Gateways, also desktop or rack-mountable units, are devices that translate between H.323 and H.320 protocols. These gateways let users interconnect IP-based H.323 networks consisting of LAN-attached videoconference endpoints with legacy ISDN-based H.320 systems.

The Cisco IP/VC 3520 Gateway offers two and four ports configurations of Basic Rate Interface (BRI) or V.35 WAN interfaces. It supports up to four calls at speeds up to 384 kbps (BRI interfaces) or 768 kbps (V.35 interfaces). All ports include audio transcoders for optimal video/audio quality and bandwidth utilization. The BRI ports come standard with echo cancellation. The V.35 ports support EIA/TIA-366 (RS-366) signaling for call setup through external ISDN access devices.

The Cisco IP/VC 3525 Gateway offers a single Primary Rate Interface (PRI) to the Public Switched Telephone Network (PSTN). It is configurable for T1 or E1 connections, making it suitable for deployment anywhere in the world. The Cisco IP/VC 3525 Gateway supports three calls at 384 kbps on a T1 connection, four calls on an E1, up to eight calls at 128 kbps, or a mix of calls at different bandwidths. Audio transcoding is also provided as a standard feature for optimal video/audio quality.

Like the Cisco IP/VC 3510 MCU, the Cisco IP/VC Gateways offer built-in gatekeeper functions for small videoconferencing networks, a compact design, and easy installation.



Cisco IP/VC 3530 Video Terminal Adapter (VTA)

The Cisco IP/VC 3530 VTA is a self-contained video interface that connects one H.320 system to an IP network. It allows companies to protect their investments in legacy technologies while implementing new IP-based multimedia communications. The Cisco IP/VC 3530 VTA connects an H.320 room system to a LAN and converts it to use the H.323 protocol. It offers two V.35 WAN interfaces, EIA/TIA-366 signaling, a 10BASE-T LAN port and operates at speeds up to 768 kbps. It comes in a low-profile desktop or rack-mount package and is easy to install.

Cisco IP/VC 3540 Series

The Cisco IP/VC 3540 family of videoconferencing products is a flexible and powerful modular solution. The foundation of the Cisco IP/VC 3540 Series is a four-slot chassis that can be configured with a variety of MCU, Gateway, and Application Server/Data Conferencing Server module configurations to suit customer needs. This flexible approach enables customers to configure a system tailored to their requirements, with the appropriate mix of modules. Cisco IP/VC 3540 Series system management is entirely Web based. Both device configuration and system management can be accessed from a Web browser, either locally or remotely.

Cisco IP/VC 3540 Series Multipoint Conference Unit (MCU) Module

The Cisco IP/VC 3540 Series MCU combines audio and video streams to create conferences with three or more participants. A single MCU module can support up to 100 users in a conference, or 100 users in multiple conferences simultaneously. Up to four MCU modules can be combined to create a centralized conferencing resource capable of concurrently hosting hundreds of users in small and large multipoint conferences.

The Cisco IP/VC 3540 Series MCU offers multiple video display modes, including continuous presence, voice-switched, and director controlled. With continuous presence, participants see a four-way view, each displaying a different conference participant. With other viewing modes, a single participant appears on the screen. The selected site can either be the speaker's site or another site chosen by the conference moderator.

The MCU supports the two H.323 video-encoding standards: H. 261 and H.263. These standards offer customers a range of video quality options and enable compatibility with a variety of industry-standard endpoints. It operates at today's business-quality video bandwidths of 128 and 384 kbps, but also supports conferences at 768 kbps and 1.5 Mbps for the most quality-intensive applications.

With an optional Audio Transcoder Card, the MCU supports all the audio encoding methods defined for videoconferencing with H.323 or H.320. This accommodates a wide variety of endpoint capabilities offering the best quality audio possible at a variety of different bandwidths.

The optional Rate Matching Module, a complement to the MCU Modules, allows users to join a conference at different rates. This provides maximum flexibility and video quality for both high and low bandwidth capable endpoints.

The MCU can support either ad-hoc or prescheduled conferences. Impromptu conferences are created "on the fly," whereby conference resources are allocated at the conference start, or scheduled, with resources—including rooms and people—allocated ahead of time.



Cisco IP/VC 3540 Series Application Server and T.120 Data Conferencing Application

The Cisco IP/VC 3540 Series includes an Application Server based on an Intel Pentium processor, running Microsoft Windows Server. This server platform hosts the T.120 Data Conferencing Application and is capable of hosting future applications.

The Application Server/Data Conferencing Server combination enables data sharing as part of a multipoint conference. Many PC-based H.323 endpoints include a T.120 application that allows a user to share a view of an application, such as a spreadsheet or Web page. In many discussions, interactively changing the numbers in an analysis or demonstrating a Web page feature can make all the difference when illustrating a principle or making a point.

T.120 is an ITU standard for data sharing and collaboration, which is integrated with the H.323 (and H.320) standard. It is supported by the Cisco IP/VC gateways, making it possible for both LAN and ISDN-attached systems to participate in the same interactive collaborative session.

Cisco IP/VC 3540 Series Gateway Module

The Cisco IP/VC 3540 Series also offers H.320-to-H.323 gateway functionality. The gateway lets users interconnect IP-based H.323 networks of LAN-attached endpoints with H.320 video networks based on ISDN technology. The 3540 Gateway Module includes 2 PRI ports to provide ISDN connectivity, and it supports up to 30 simultaneous videoconferences between the IP and ISDN networks (with E1 connections). The gateway supports call bandwidths up to 384 kbps and all popular audio and video encoding standards.

The Cisco IP/VC 3540 Series gateway will be offered with optional transcoding capabilities. The transcoders convert between audio compression standards used over ISDN to standards used over IP. The result is more efficient bandwidth use and higher-quality audio and video on low-bandwidth calls.

Cisco Multimedia Conference Manager

The Multimedia Conference Manager (MCM) is a component of Cisco IOS[®] software. It functions as a high-performance H.323 gatekeeper and proxy, enabling network managers to control bandwidth and priority settings for H.323 videoconferencing services based on individual network configurations and capacities. The MCM is available across a wide range of Cisco router platforms, including the Cisco 2500, 2600, 3600, and 7200, and the MC3810 multiservice access concentrator.

The MCM H.323 gatekeeper subsystem functions as a point of control for various H.323 components that can be attached to an IP network: videoconferencing endpoints, MCUs, H.320-H.323 video gateways, IP telephony, IP PBXs, and PSTN-IP telephony gateways. The gatekeeper supports many advanced features for voice and video over IP calling services. These include caller authentication (via RADIUS and TACACS+), Connection Admission Control (CAC), bandwidth allocation and management, sophisticated call routing, generation of Call Detail Records (CDR), and an Application Programming Interface (API), which enables external systems to interface with the gatekeeper and enhance H.323 call processing.

The MCM proxy ensures high-quality H.323 conferencing calls and T.120 data conferencing sessions over LAN and WAN infrastructures, and it supports H.323 call authorization and establishment through firewalls. The proxy guarantees high conference quality by supporting IP Precedence packet classification and Resource Reservation Protocol (RSVP) bandwidth reservation for video- and data-conferencing packet flows. The proxy links into the



advanced IP to ATM QoS features available in Cisco IOS Software, providing robust support for H.323 videoconferencing over ATM wide-area networks. The MCM Proxy works in conjunction with Cisco firewalls to provide address translation and enable secure H.323 connections.

The MCM differentiates itself from other gatekeepers by providing proxy functions, sophisticated H.323 call processing, PSTN-IP telephony gateway services, and IP packet routing all in the same software image and on a single hardware platform. The MCM also offers superior scalability, price, and performance for small to very large H.323 deployments.

Completing the Solution—Your Choice of Endpoints

Endpoints are clients in an H.323 network. Many manufacturers offer a wide variety of endpoints, including videoconferencing appliances and PC-based hardware and software systems. And for greater flexibility, endpoints can be deployed anywhere there are LAN connections—on a desktop, in a conference room, or in an auditorium. This broad spectrum of endpoint alternatives also offers users an equally wide range of feature sets, functionality, and price points.

Cisco works closely with leading endpoint vendors to ensure compatibility and interoperability, giving customers the ability to choose the best endpoint for their purposes with the comfort and confidence that deployment will be easy.

Cisco IP/VC Applications: New Ways to Extend Business Communications

Cisco IP/VC videoconferencing over the IP network enables an exciting new world of interactive applications. The compelling applications that can propel your business forward include:

- **Training**—As technologies change and the global marketplace grows, employees need more training than ever to keep their businesses competitive and running at peak efficiency. Today's enterprises spend between 2 and 8 percent of their payrolls on employee training—including time away from the job and travel expenses. Cisco IP/VC products enable interactive learning experiences—right at the desktop.
- **Business Communications and Collaboration**—As companies disburse geographically, splitting across states, or even continents, it is still possible to foster open, rapid, spontaneous communications with videoconferencing. Videoconferencing is fast and cost-effective, removing geographical distances from team collaboration, communications, legal and press briefings, customer service, and even human resources.
- **Telemedicine**—With increasing pressure on cost containment in the medical sector, video-assisted telemedicine lowers costs while delivering better medical care. Medical specialists located at a central hospital can virtually “see” many more patients who come into geographically distributed clinics for treatment. Physicians assistants and trained technicians conduct initial patient screening, and “call in” the specialist, if necessary, for consultation. Videoconferencing saves travel time for the specialist and allows the doctor to see many more patients.
- **Finance**—Financial institutions that are already network enabled can easily use IP video to deliver personal, one-on-one service to customers at a variety of sites. Cisco IP/VC systems enable branch banks located in supermarkets, drug stores, and shopping malls to function as financial institutions, by connecting customers with the financial services experts who can help them with loans, investments, or insurance.



- E-learning—Colleges and universities use videoconferencing to extend the university's reach, both to other campuses and out into the community. Using the Cisco IP/VC solution, students from all over the city, the state, or even the country, can take and participate in classes. This leverages the teaching staff, increases tuition revenues, and drives down costs. Elementary and high schools can also use the Cisco IP/VC solution to extend class offerings across their districts.

Why IT and Business Managers Choose Cisco IP/VC Solutions

The Cisco IP/VC family combines the best of videoconferencing with the best available networking capabilities. The Cisco Videoconferencing solution includes:

- An intelligent network—Video runs best over a Cisco intelligent network infrastructure. Cisco IP/VC products come from the leading network vendor who can provide customers with network design, scalability, management, redundancy, resiliency, and support.
- Commitment to industry standards—Cisco IP/VC products support open, industry standards, such as H.320 and H.323, to ensure interoperability with other products, such as endpoints, and easy legacy integration.
- Ease of management—Cisco migrates videoconferencing to IP, enabling the IT organization to efficiently manage it as part of a single multiservice network.
- Integrated with network services—As a feature set of the Cisco IOS software, the MCM H.323 Gatekeeper/Proxy provides QoS, management, and security services for your videoconferences.
- Greater flexibility—Cisco IP/VC systems and endpoints can be deployed anywhere you have a network connection.
- Lower costs—Operational costs are driven down when data, voice, and video run on a single multiservice network.
- New business tools—Customers are demanding new ways of doing business to keep up with the rapid changes in the new global marketplace. A network that combines data, voice, and video will allow rapid deployment of new applications, such as videoconferencing over IP, which will offer timely and effective communications to maintain high productivity.
- Cisco support—The Cisco IP/VC products are fully backed by Cisco SMARTnet™ maintenance service and support programs.

The Cisco Videoconferencing solution, enabled by Cisco AVVID, provides New World, dynamic solutions that deliver real-time collaborative communications.

Service and Support

Cisco support solutions are designed for one purpose: to ensure customer success by delivering a suite of proactive support solutions. Cisco support solutions offer presales network audit planning, design consulting, network implementation, operational support, and network optimization. Leveraging Cisco expertise and experience customers gain interactive knowledge transfer solutions to enhance their success. By including support with Cisco equipment purchases, customers immediately gain access to a wealth of support and resources.

CISCO SYSTEMS



Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems Europe
11 Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9
France
www-europe.cisco.com
Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the
Cisco Web site at www.cisco.com/go/offices

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia
Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland
Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland
Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden
Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

All contents are Copyright © 1992-2002, Cisco Systems, Inc. All rights reserved. IP/VC is a trademark of Cisco Systems, Inc.; and Cisco, Cisco IOS, Cisco Systems, and the Cisco Systems logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company.
(0203R) LW3166 04/02