Cisco Expressway Series version X8.6

Advanced Gateways for Simple and Secure Collaboration

Product Overview

Collaborating with someone should be as simple and secure as a phone call. But often it's not. Tools that enrich interaction such as video and content sharing typically are confined to enterprise locations or to users who are on the same network or using the same kind of application or device. It breaks down when employees leave the office. Or when they reach out to suppliers, customers, or partners who aren't using the same system, network, or device. These barriers force people to use less-productive means such as the phone or email. Meanwhile they miss out on the stronger relationships, faster decision making, and competitive edge that comes with the best forms of collaboration.

Cisco® Expressway Series is an advanced collaboration gateway that helps solve these problems. It works with Cisco Unified Communications Manager, Cisco Business Edition, and Cisco Hosted Collaboration Solution (HCS) to help make collaboration more universal. The main uses for Cisco Expressway Series include:

- **Mobile and remote access:** Cisco Expressway makes collaboration as easy outside the enterprise as it is inside by simplifying the end-user experience. Using secure mobile access based on Transport Layer Security (TLS), Cisco Jabber® mobile users can access all their collaboration workloads (video, voice, content, instant messaging, and presence) without the extra step of establishing a VPN. Cisco Expressway also enables single-sign-on capabilities for Cisco Jabber users, integrating directly with the enterprise authentication and authorization methods in place. Both these capabilities help provide mobile experiences simply from anywhere on a range of devices with Cisco Jabber clients, and complements common IT department BYOD security policies. In addition, teleworkers can use their Cisco endpoints (Cisco TelePresence® EX Series, MX Series, and SX Series; Cisco TelePresence Integrator C Series; and Cisco DX Series), without a VPN, making collaboration at home as easy as in the office.

- **Cisco Jabber Guest support:** Cisco Expressway is integral for enabling Cisco Jabber Guest. Together, using mobile and browser-based collaboration, the two products enable new ways of securely and easily interacting with "guests," whether they are consumers, other businesses, or even temporary employees.

- **Open business-to-business federation:** Cisco Expressway also simplifies external collaboration. Using Uniform Resource Identifier (URI) dialing, organizations can securely collaborate with customers, partners, and suppliers and do so as easily as sending an email. No prearrangements needed. They can collaborate with partners or customers just as if they shared an office.

- **Cisco cloud connectivity:** Cisco Expressway also helps people meet more easily. It supports Cisco Collaboration Meeting Rooms (CMR), bringing together Cisco's industry-leading collaboration infrastructure and proven, scalable Cisco WebEx® cloud conferencing services to deliver an outstanding meeting experience. Now transparently integrate voice, video, and data sharing for video-optimized meetings available to anyone, anywhere, on any device. Cisco Expressway acts as the gateway connecting on-premises Cisco and third-party systems to the Cisco WebEx cloud. And it has the intelligence to recognize CMR Cloud subscription users and does not consume a call license for these attendees.
- **Video interoperability:** If your organization already has third-party video systems, Cisco Expressway can help you migrate to Cisco when you're ready. Cisco Expressway provides video interoperability with standards-based Session Initiation Protocol (SIP) or H.323 systems.

Figure 1 illustrates a deployment with Cisco Expressway-C and Expressway-E forming a secure traversal link enabling video, voice, content, instant messaging, and presence collaboration outside the firewall. Cisco Expressway works with most firewalls and complements existing security policy, requiring only minimal firewall configuration.

Figure 1. Cisco Expressway Series Deployment
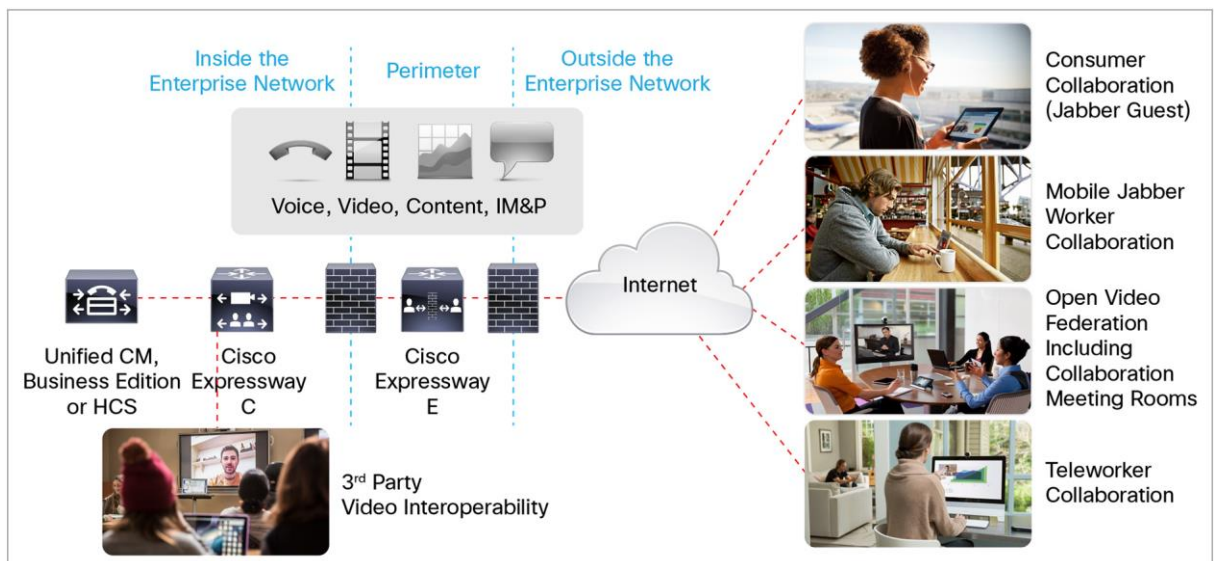
The Cisco Expressway Series supports flexible deployment options. It can be deployed on the Cisco Expressway CE500 and CE1000 Appliances or as a virtualized application for VMware and similar virtual environments.

Features and Benefits of Cisco Expressway Series

- **Increased competitiveness:** Cisco Expressway helps enterprises speed decision making and business processes with real-time video, voice, content, instant messaging, and presence collaboration beyond the firewall.
- **Enhanced workforce mobility:** Cisco Expressway embraces mobility and device proliferation trends. It provides simple and secure access for a range of Cisco Jabber unified communications clients, with single-sign-on capabilities and without the need for a separate VPN client, thus complementing common bring-your-own-device (BYOD) strategies.

- **Improved productivity and agility:** Cisco Expressway empowers people to collaborate with colleagues, customers, and partners in a more timely and effective manner while helping reduce travel costs.
- **Interoperability:** Cisco Expressway supports open standards and provides interworking between disparate systems to help enhance return on your existing investments and increase the number of contacts with whom you can connect. Supported standards include IPv4 to IPv6, H.323 to SIP, and Microsoft Lync 2013 H.264 SVC to advanced video codec (AVC). Support is also provided for Microsoft Remote Desktop Protocol (RDP) to enable content sharing with Lync users.
- **Flexibility:** Cisco Expressway supports businesses of all sizes as part of the Cisco Business Edition solutions or an enterprise Cisco Unified Communications Manager deployment, or its services can be enabled through the cloud using Cisco HCS.
- **Simplified licensing:** Mobile and remote access using Cisco Expressway is included as part of Cisco Unified Workspace License (UWL) Standard and Pro and Cisco User Connect License (UCL) Enhanced and Enhanced Plus agreements. For Cisco HCS deployments, it is included in the Cisco HCS Foundation and Standard license bundles.

Features and Benefits

Table 1 lists the features and benefits of Cisco Expressway.

Table 1.   Features and Benefits

Feature	Benefit
User Interface	
Web browsers supported	• The web interface supports Internet Explorer 8, 9, 10, and 11; Firefox 3 or later; and Chrome
Management interfaces	• Support for industry standards such as HTTP and Secure HTTP (HTTPS), XML, Simple Network Management Protocol (SNMP v1, v2, and v3), Secure Copy Protocol (SCP), and Secure Shell (SSH) Protocol • Embedded setup wizard for initial configuration • Support for call logging and diagnostics • Local time-zone-aware
Language	• English, Chinese (Simplified), French, German, Japanese, Korean, Russian, and Spanish
Endpoint Support and Session Management	
Supported endpoints	• Cisco Expressway is compatible with any standards-compliant SIP or H.323 video conferencing or telepresence device but does not support local registration of these standards-compliant endpoints. • Cisco TelePresence EX Series, MX Series, and SX Series; Cisco TelePresence Integrator C Series; Cisco DX Series; and Cisco Jabber, registered to Cisco Unified Communications Manager via Cisco Expressway mobile and remote access • Microsoft Lync 2013
Session control	• Support for H.225/Q.931 and H.245 call-control-routed mode and non-call-routed mode • Support for H.323 SIP Interworking Encryption • Support for H.323 SIP Interworking DuoVideo • Support for URI dialing • Support for direct call signaling among neighbored Cisco Expressways and VCSs, border controllers, and gatekeepers • Support for call policy management (RFC 3880) • Support for call routed mode • Support for call loop detection

Feature	Benefit

Zone control and bandwidth management	• Support for remote zone monitoring
	• Support for remote zone redundancy
	• Support for up to 1000 neighbor zones (including Cisco Expressways and VCSs, border controllers, gatekeepers, and SIP proxies)
	• Support for subzone area definition for bandwidth management
	• Support for flexible zone configuration with named zones and default zone
	• Support for forwarding of requests to neighbor zones
	• Support for interzone bandwidth management: Definable call by call
	  ◦ Maximum bandwidth per call
	  ◦ Maximum aggregate bandwidth for all neighboring zones
	• Support for intrazone bandwidth management: Definable call by call
	  ◦ Maximum bandwidth per call
	  ◦ Maximum aggregate bandwidth
	• Support for auto-down-speeding if call exceeds per-call maximum
	• Support for gateway load balancing
	• Support for automatic network failover
	• Support for capacity warnings for users and administrators

Network	• Support for Domain Name System (DNS) addressing • Support for IPv4 and IPv6 simultaneously • Support for IPv4 and IPv6 translation services
Firewall Traversal	
Traversal services	• Cisco Expressway technology • Serial tunnel (STUN) discovery and STUN relay services • Firewall traversal STUN-compliant • H.460.18/19-compliant • H.460.18 client-proxy support • Support for H.460.19 multiplexed media • SIP support
Remote collaboration services supported	• XMPP for IM • HTTPS for logon, provisioning and configuration, contact search, and visual voicemail services • SIP for session establishment, register, and invite using Cisco Unified Communications Manager Business Edition and Cisco HCS • Real-Time Transfer Protocol (RTP) and Secure RTP (SRTP) for audio and video • Binary Floor Control Protocol (BFCP) for content sharing • Single sign-on for Cisco Jabber 10.6 and later
Network	• Support for DNS addressing • Support for IPv4 and IPv6 simultaneously • Support for IPv4 and IPv6 translation services
Scalability and Capacity	

Single Cisco Expressway virtual machine capacity (small and medium-size deployments)	• The capacity of one Cisco Expressway (small and medium-sized virtual machine) follows
	  ◦ Up to 2500 proxied registrations to Cisco Unified Communications Manager
	  ◦ Up to 100 video calls or 200 audio calls

Single Cisco Expressway virtual machine capacity (large deployments)	• The capacity of one Cisco Expressway (large virtual machine) follows:
	  ◦ Up to 2500 proxied registrations to Cisco Unified Communications Manager
	  ◦ Up to 500 video calls or 1000 audio calls[*]
	[*]Assumes 10-Gbps interface

Cisco Expressway CE500	• The capacity of one Cisco Expressway CE500 is as follows:
	  ◦ 1-Gbps network interface
	  ◦ Up to 2500 proxied registrations to Cisco Unified Communications Manager
	  ◦ Up to 100 video calls or 200 audio calls

Feature	Benefit

Cisco Expressway CE1000	• The capacity of one Cisco Expressway CE1000 is as follows:
	  ◦ 1- or 10-Gbps network interface
	  ◦ Up to 2500 proxied registrations to Cisco Unified Communications Manager
	  ◦ Up to 500 video calls or 1000 audio calls[*]
	[*]Assumes 10-Gbps interface

Clustered Cisco Expressway capacity	• Up to 6 Cisco Expressway appliances and virtual machines can be deployed as a clust to increase capacity and provide redundancy • Clustering increases the maximum call capacity by up to 4 times
Microsoft Lync interworking capacity	• The maximum number of calls interworked to Microsoft Lync is 100. It is highly recommended that a separate Cisco Expressway-C server be deployed for use as a dedicated Microsoft Lync gateway.
System Security and Resilience	
Security features	• Secure management with HTTPS, SSH, and SCP • Secure file transfer • Inactivity timeout • Capability to lock down IP services • Authentication required on HTTP(S), SSH, and SCP • H.235 authentication support • Transport Layer Security (TLS) for SIP signaling • Roles-based password-protected GUI user access • Capability to enforce strict passwords • Capability to disable root access over SSH • Automated intrusion protection
Resilience and reliability	• Capability to deploy Cisco Expressway in a redundant (6) cluster • Capability to share licenses across a cluster • Capability to replicate configuration for clusters
Supported RFCs	
RFC	• 2543, 3261, 3264, 1889, 3265, 3325, 3515, 3891, 3892, 2327, 4566, 5626, 5627, 5389, and 5766

Product Specifications for Virtualized Environments

Cisco Expressway can be deployed virtually or as an appliance. Table 2 lists the Cisco Expressway virtualized application specifications.

Table 2.   Cisco Expressway Virtualized Application Specifications

Product Feature	Product Specification		
Virtualized Application Specifications			
Servers for virtual environment	• Cisco UCS® B-Series Blade Servers or C-Series Rack Servers or third-party servers that meet the minimum requirements • VMware vSphere or vCenter server running VMware ESXi, which includes Cisco UCS E-Series Servers on Cisco Integrated Services Routers (ISRs) For full details of host requirements, refer to the Cisco Expressway Series virtual machine deployment guide.		
Virtual Machine Host Requirements	**Small Deployment (For Cisco BE6000 Platform)**	**Medium-Size Deployment (Typical Installation)**	**Large Deployment (Performance and Scalability)**
vCPU	2 core	2 core	8 core
Reserved CPU resource	3600 MHz (2 x 1.8 GHz)	4800 MHz (2 x 2.4 GHz)	25600 MHz (8 x 3.20 GHz)
Reserved RAM	4 GB	6 GB	8 GB
Disk space	132 GB	132 GB	132 GB
Network interface card	1 Gbps	1 Gbps	10 Gbps

Product Specifications When Deployed as an Appliance

Cisco Expressway can also be deployed as an appliance on the Cisco Expressway CE500 and CE1000 appliances. Table 3 shows the features and benefits of these appliances, Table 4 lists the specifications, and Table 5 provides standards compliance information.

Table 3. Appliance Features and Benefits

Cisco Expressway CE500 and CE1000 Appliance Features	Benefits
10-Gbps unified network fabric	• Low-latency, lossless, 10-Gbps Ethernet
Redundant fans and power supplies	• Dual-redundant fans and hot-swappable, redundant power supplies for enterprise-class reliability and uptime • Power efficiency through Cisco Common Form-Factor Platinum power supplies (450W and 650W)
Integrated dual-port Gigabit Ethernet	• Outstanding network I/O performance and increased network efficiency and flexibility
Trusted Platform Module (TPM)	• TPM is a chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys • TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy, helping ensure authentication and authorization
Tool-free access	• Tool-free access to all serviceable items, and color-coded indicators to guide users to hot-pluggable and serviceable items

Table 4. Product Specifications for the Cisco Expressway CE500 and CE1000 Appliances

Item	Platform Specification
Processors	Cisco Expressway CE500: 1 3.30-GHz Intel Xeon processor (E5-2643/130W 4C/10-MB Cache/DDR3 1600 MHz)
	Cisco Expressway CE1000: 2 3.30-GHz Intel Xeon processors (E5-2643/130W 4C/10-MB Cache/DDR3 1600 MHz)
Memory	Cisco Expressway CE500: 16-GB memory (DDR3-1600-MHz RDIMM/PC3-12800/dual rank/1.35V) Advanced error-correcting code (ECC)
	Cisco Expressway CE1000: 32-GB memory (DDR3-1600-MHz RDIMM/PC3-12800/dual rank/1.35V) Advanced error-correcting code (ECC)
Network Interfaces	Cisco Expressway CE500: Broadcom 5709 Dual-Port 1 Gbps with TOE iSCSI for Cisco UCS M3 servers
	Cisco Expressway CE1000: Intel X520 Dual-Port 10-Gbps SFP+ Adapter
RAID Card	Cisco Expressway CE1000 only: RAID 1 configuration, hardware controller (MegaRAID 9271 w/o Supercap, 2 X4 internal SAS connector)
Hard drives	2 1TB SAS 7.2K RPM 3.5-inch HDD/hot plug/drive sled mounted
Cisco UCS Integrated Management Controller	• Integrated Emulex Pilot-3 Baseboard Management Controller (BMC) • IPMI 2.0 compliant for management and control • One 10/100/1000 Ethernet out-of-band management interface • CLI and WebGUI management tool for automated, lights-out management • KVM
Front-panel connector	One KVM console connector (supplies 2 USB, 1 VGA, and 1 serial connector)
Front-panel locator LED	Indicator to help direct administrators to specific servers in large data center environments
Additional rear connectors	Additional interfaces including a VGA video port, 2 USB 2.0 ports, an RJ45 serial port, 1 Gigabit Ethernet management port, and dual 1 Gigabit Ethernet ports
Physical dimensions (H x W x D)	1RU: 1.7 x 16.9 x 28.5 in. (4.32 x 43 x 72.4 cm)
Temperature: Operating	32° to 104°F (0° to 40°C) (operating, sea level, no fan fail, no CPU throttling, turbo mode)
Temperature: Nonoperating	-40° to 158°F (-40° to 70°C)
Humidity: Operating	10% to 90% noncondensing
Humidity Nonoperating	5% to 93% noncondensing
Altitude: Operating	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1°C per 300m
Altitude: Nonoperating	0 to 40,000 ft (12,000m)

Table 5.   Regulatory Standards Compliance: Safety and EMC for the Cisco Expressway CE500 and CE1000 Appliances

Specification	Description
Safety	• UL 60950-1 No. 21CFR1040 Second Edition • CAN/CSA-C22.2 No. 60950-1 Second Edition • IEC 60950-1 Second Edition • EN 60950-1 Second Edition • IEC 60950-1 Second Edition • AS/NZS 60950-1 • GB4943 2001
EMC: Emissions	• 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR2 2 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	• EN55024 • CISPR24 • EN300386 • KN24

Licensing Information

Cisco Expressway Series virtual application software is available at no additional charge to customers who have a license and valid support contract for Cisco Unified Communications Manager Version 9.1.2 or later or for Cisco HCS 9.2.1 or later. Standard and Professional Edition Cisco UWL or Enhanced and Enhanced Plus Cisco UCL agreements support mobile and remote access for Cisco Jabber unified communications clients; Cisco TelePresence System EX Series, Cisco TelePresence MX and SX Series, and Cisco TelePresence Integrator C endpoints; and Cisco DX Series endpoints. Cisco HCS Foundation and Standard license bundles offer similar support for Cisco HCS deployments.

Each concurrent call session terminating on a system not using Cisco Unified Communications Manager or Cisco HCS (for example, business-to-business calls, Cisco Jabber Guest, and Cisco Collaboration Meeting Rooms) requires a Cisco Expressway Rich Media Session license. In addition, each concurrent call requiring interworking also requires a Cisco Expressway Rich Media Session license. Examples of such calls include H.323-to-SIP interworked calls and H.264 SVC-to-H.264 AVC calls.

Ordering Information

To order Cisco Expressway, visit the Cisco Ordering homepage and refer to Table 6.

Table 6. Ordering Information for Cisco Expressway

Product Name	Part Number
Cisco Expressway Series Virtualized Applications	
Cisco Expressway-C Virtual Edition	EXPWY-VE-C-K9
Cisco Expressway-E Virtual Edition	EXPWY-VE-E-K9
Cisco Expressway CE500 Appliance	EXPWY-CE500-BDL-K9
Cisco Expressway CE1000 Appliance	EXPWY-CE1K-BDL-K9
Ordering Options for Cisco Expressway Series	
Cisco Expressway Rich Media Session License (Required for concurrent calls to/from any endpoint or application not registered to Cisco Unified Communications Manager. For example, business-to-business calls, Cisco Collaboration Meeting Rooms, Cisco Jabber Guest, and interworked calls, for example, H.323 to SIP, H.264 AVC to H.264 SVC)	LIC-EXP-RMS
Enhanced Microsoft Collaboration key for Cisco Expressway (Required to enable Microsoft Lync Gateway functionality)	LIC-EXP-MSFT

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco Services can help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, visit Cisco Technical Support Services online.

Cisco Capital

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Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. Learn more.

For More Information

For more information about the Cisco Expressway Series, please visit http://www.cisco.com/go/expressway or contact your local Cisco account representative or authorized Cisco partner. Product specifications are estimates and subject to change without notice.