Introduction

- About the Expressway, on page 1
- About This Guide, on page 5
- About the Service Setup Wizard (Service Selection Page), on page 12

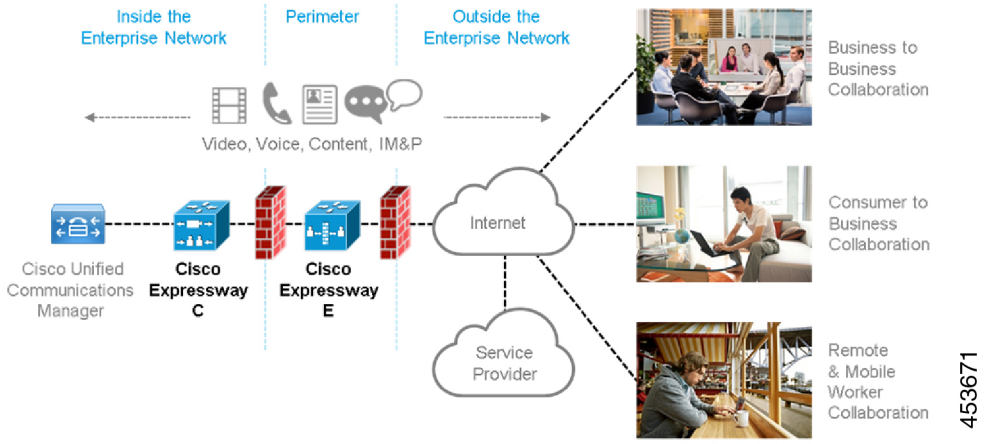
About the Expressway

Cisco Expressway Series (Expressway) is designed specifically for comprehensive collaboration services. It features established firewall-traversal technology and helps to redefine traditional enterprise collaboration boundaries, to support our Cisco vision of any-to-any collaboration.

Expressway offers the following primary features and benefits:

- Provides proven, highly secure, firewall-traversal technology.
- Facilitates connections for business-to-business, business-to-consumer, and business-to-cloud-service-provider.
- Facilitates session-based access to collaboration services for remote workers, with no need for a separate VPN client.
- Supports a wide range of devices, including Cisco Jabber for smartphones, tablets, and desktops.
- Complements bring-your-own-device strategies and policies for remote and mobile workers.

A typical Expressway system is deployed as a pair: an Expressway-C with a trunk and line-side connection to Unified CM, and an Expressway-E deployed in the DMZ and configured with a traversal zone to an Expressway-C.



Expressway is available on a dedicated physical appliance such as a CE1200, or as a virtual machine (VM) on a Cisco UCS server.

Expressway Types

Each Expressway can be configured as one of two types, which offer different capabilities.

Expressway-C

Expressway-C delivers any-to-any enterprise wide conference and session management and interworking capabilities. It extends the reach of telepresence conferences by enabling interworking between Session Initiation Protocol (SIP)- and H.323-compliant endpoints, interworking with third-party endpoints; it integrates with Unified CM and supports third-party IP private branch exchange (IP PBX) solutions. Expressway-C implements the tools required for creative session management, including definition of aspects such as routing, dial plans, and bandwidth usage, while allowing organizations to define call-management applications, customized to their requirements.

Expressway-E

The Expressway-E deployed with the Expressway-C enables smooth video communications easily and securely outside the enterprise. It enables business-to-business video collaboration, improves the productivity of remote and home-based workers, and enables service providers to provide video communications to customers. The application performs securely through standards-based and secure firewall traversal for all SIP and H.323 devices. As a result, organizations benefit from increased employee productivity and enhanced communication with partners and customers.

It uses an intelligent framework that allows endpoints behind firewalls to discover paths through which they can pass media, verify peer-to-peer connectivity through each of these paths, and then select the optimum media connection path, eliminating the need to reconfigure enterprise firewalls.

The Expressway-E is built for high reliability and scalability, supporting multivendor firewalls, and it can traverse any number of firewalls regardless of SIP or H.323 protocol.

Standard Features

Standard features on Expressway include the following:

- Secure firewall traversal and session-based access to Cisco Unified Communications Manager for remote workers, without the need for a separate VPN client
- Endpoint registration support.
- SIP Registrar (requires Room or Desktop SIP Proxy. Note that SIP and H.323 protocols are disabled by default on new installs, and can be enabled from **Configuration** > **Protocols** Registration licenses.)
- SIP and H.323 support, including SIP / H.323 interworking
- IPv4 and IPv6 support, including IPv4 / IPv6 interworking
- TURN relay licenses
- Advanced networking
- Device provisioning and FindMe services
- H.323 gatekeeper
- QoS tagging
- Bandwidth management on both a per-call and a total usage basis, configurable separately for calls within the local subzones and to external systems and zones
- Automatic downspeeding option for calls that exceed the available bandwidth
- URI and ENUM dialing via DNS, enabling global connectivity
- Rich media session (RMS) support
- 1000 external zones with up to 2000 matches
- 1000 subzones and supporting up to 3000 membership rules
- Flexible zone configuration with prefix, suffix and regex support
- Can function as a standalone Expressway, or be neighbored with other systems such as other Expressways, gatekeepers and SIP proxies
- Can be clustered with up to 6 Expressways to provide n+1 redundancy, and up to 4 x individual capacity.
- Can be clustered with up to 6 Expressways to provide n+2 redundancy, and up to 4 x individual capacity.
- Intelligent Route Director for single number dialing and network failover facilities
- Optional endpoint authentication
- Control over which endpoints are allowed to register
- Call Policy (also known as Administrator Policy) including support for CPL
- Support for external policy servers
- Can be managed with Cisco TelePresence Management Suite 13.2 or later
- Active Directory authentication

- Pre-configured neighbor zone defaults for Cisco Unified Communications Manager and for Nortel Communication Server
- Embedded setup wizard using a serial port for initial configuration
- System administration using a web interface or SSH, or via the CIMC port for a CE*nnnn* physical appliance
- Intrusion protection

Do Not Install Other Cisco or Third-Party Software onto Expressway

Cisco does not support the installation of any additional Cisco or third-party software, applications, or agents on Expressway (VMs or physical appliances), unless we state explicitly otherwise. Non-Expressway products may corrupt the Expressway code and must not be installed.

Hardware Appliance and Virtual Machine Options

Expressway supports on-premises and cloud applications and is available as a dedicated appliance or as a virtualized application on VMware, with additional support for Cisco Unified Computing System (Cisco UCS) platforms.

Virtual Machine Options

Expressway has these virtualized application deployment types:

- Small (for Cisco Business Edition 6000 or supported VMware ESXi platforms, subject to the required minimum hardware specification)
- Medium (standard installation)
- Large (extra performance and scalability capabilities)

See *Cisco Expressway Virtual Machine Installation Guide* on the Expressway Installation Guides page.

Hardware CE Series Appliances

The Expressway is also available as a dedicated CE Series appliance based on UCS hardware. For example, the CE1200 appliance based on a UCS C220 M5L, operates as a medium capacity or large capacity Expressway.

Note The Cisco VCS series is not supported on CE1200 appliances.

Changing the default system size

For appliances deployed as Expressway-E you can manually change the default system size of appliances from Large to Medium, or the other way round. This capability was introduced to mitigate an issue with demultiplexing ports for media traversal on appliances with a 1 Gbps NIC (SFP module) that are configured as Medium systems.

To change the size of the appliance, go to **System** > **Administration** settings page and select the required size from the **Deployment Configuration** list.

Installation information

See *Cisco Expressway CE1200 Appliance Installation Guide* on the Expressway Installation Guides page.

Limitation

Medium Appliances with 1 Gbps NIC - Demultiplexing Ports

If you upgrade a Medium appliance with a 1 Gbps NIC to X8.10 or later, Expressway/Cisco VCS automatically converts the system to a Large system. This means that Expressway-E/Cisco VCS Expressway listens for multiplexed RTP/RTCP traffic on the default demultiplexing ports for Large systems (36000 to 36011) and not on the demultiplexing ports configured for Medium systems. In this case, the Expressway-E/ Cisco VCS Expressway drops the calls because ports 36000 to 36011 are not open on the firewall.

Workaround

From X8.11.4 you can manually change the system size back to Medium, through the **System** > **Administration settings** page (select *Medium* from the **Deployment Configuration** list).

Before X8.11.4, the workaround is to open the default demultiplexing ports for Large systems on the firewall.

About This Guide

This guide describes the various features, services, and capabilities of Expressway. It assumes a fully equipped version of Expressway, so your deployment may not support all of the items described.

The guide only applies to the Cisco Expressway Series product. For information about Cisco VCS, please refer to the *X12.5.x Cisco VCS Administrator Guide* on the Cisco TelePresence Video Communication Server Maintain and Operate Guides page.

Most configuration tasks on Expressway can be done through the web user interface or the command line interface (CLI). The guide mainly describes how to use the web user interface. Some features are only available through the CLI, and these are described where relevant.

Web user interface directions are shown in the format **Menu** > **Submenu** followed by the **Name** of the page that you will be taken to.

CLI commands where provided, are shown in the format:

```
xConfiguration <Element> <SubElement>
xCommand <Command>
```

Change History

Table 1: Change History

Date	Change	Reason
February 2025	Republishing X15.2. Addressed a defect. Replaced the existing content "CSRF Protection is Disabled by default." with "The CSRF Protection is Enabled by default," The change is made in the "Expressway Interfaces" chapter, "About the API" section, "Cross-Site Request Forgery Protection Header" section.	X15.2 release

Date	Change	Reason
October 2024	First published for X15.2. Introduced a few xConfiguration commands: • xConfiguration MRACookieConfig Httponly • xConfiguration MRACookieConfig Expiry Updated the following: • Replaced the default port value of the "xConfiguration SIP Advanced SipTlsDhKeySize: <1024/2048/3072>" from 1024 to 2048. • Implementation of default access for API use for admin needs to be disabled on GUI and CLI. • Expressway shall check for poll validation fields in ntpd servers from ntp-4.2.8p18. • Addressed a few Customer Defects. • Corrected the "Verify System key command" from `/sbin/verify-skey` to `/sbin/verify-syskey` • Expressway to send RSA algorithm as default algorithm during TLSv1.3 negotiation. • Default Ciphers list for fresh install and upgrades.	X15.2 release
December 2023	First published for X15.0. • Enabling/Disabling the Cross-Site Request Forgery (CSRF) Protection Header • Enable PreRoutedRouteHeader (PRRH) on the Expressway Select image • LDAP TLS supports different ports other than 636 and 3269 • Banned ciphers are removed that are offered by default: TLS_DHE_RSA_WITH_AES_128_CCM, TLS_RSA_WITH_AES_256_CCM, TLS_RSA_WITH_AES_128_CCM • WebRTC session counter on Web User Interface for Expressway-E. • Addressed Customer Defects • Log rotation stops in the Expressway	X15.0 release

Date	Change	Reason
June 2023	First published for X14.3. • Updated the following tables "Capacity Guidelines for Standalone Systems, Capacity Guidelines for Clustered Systems, and Fast Path Registration for MRA (Caching Optimization for Registrations)" in chapter "Expressway Capacity and Sizing". • Removed the tables, Standalone Systems, Capacity Guidelines for Clustered Systems, and Fast Path Registration for MRA (Caching Optimization for Registrations) from the chapter "Clustering and Peers." Provided a link to the chapter "Expressway Capacity and Sizing" for details. • Support for Elliptic Curve Digital Signature Algorithm (ECDSA) Certificate, Update to the Command Line Interface • Route calls to US Suicide Prevention Hotline (988) without RMS licenses • Set the Default Value of SIP TLS DH key size to 2048 for Fresh Install and Upgrade	X14.3 release
August 2022	Republished X14.2. Replaced Bug ID	X14.2 release
August 2022	First published for X14.2. • Smart Licensing Export Compliance - Capped at 2500 encrypted signaling sessions to endpoints • New REST API - CDB Rest API Access - Enable/Disable CDB REST API Access • TLS Verification Mode - Enabled server certificate verification by default • TLS 1.3 Support • ECDSA Cipher Preference Over RSA • Alternate Method of Using xCommand FIPS • Reducing Email Notifications • XCP Routing Table • Support for 4+1 and 5+1 Redundancy Models	X14.2 release

Date	Change	Reason
July 2021	Updates for X14.0.2. • Updated the section "Certificate Requirements". Traffic Server Enforces Certificate Verification • New REST API - Status - fail2banbannedaddress • Auto Created CE Zone Status	X14.0.2 release
June 2021	Updates for X14.0.1. • Updated a few security related enhancements, MRA Registration issues using a wrong Traversal Zone are fixed • New REST API - Alarms - view and acknowledge, SNMP Configuration	X14.0.1 release
May 2021	Changed the MRA Registrations (proxied) value for CE1200 in the Table - Standalone Capacity Guidelines - Single Expressway.	Document correction
April 2021	First published for X14.0.	X14.0 release
December 2020	Updates for X12.7.	X12.7 release
October 2020	• Update missing and out of date settings in pre-configured zones. • Remove duplicated content about HSM. • Clarify external/third party gatekeeper meaning in RMS license usage.	Document corrections
October 2020	Update missing and out of date settings in pre-configured zones.	Document correction
October 2020	Updates for X12.6.4 maintenance release (fix for software bug ID CSCvv92477 - configurable DH key length for H.323-SIP interworking). Changes to *Configuring Password Security* topic to reflect that **Enforce strict passwords** applies to all locally-managed accounts since X12.6, not just to local admin accounts.	X12.6.4 maintenance release / document correction
August 2020	Updates for X12.6.2 maintenance release.	X12.6.2 maintenance release
July 2020	Restructure content related to logging and serviceability and integrate content that was formerly in the Expressway Serviceability Guide and is now merged into this guide. Also restructure troubleshooting and diagnostics information into its own chapter.	Document reorganization
July 2020	Updates for X12.6.1 maintenance release including MRA registrations count; and Expressway-E TURN server no longer functions as a generic STUN server.	X12.6.1 maintenance release

Date	Change	Reason
June 2020	Update *Firewall Traversal* section to explain cases of IP address mismatch in STUN packets.	Document clarification
June 2020	Updates for X12.6, add process to restore “Applications” menu if not visible in web UI.	X12.6 release
February 2020	Updates for X12.5.7 maintenance release including “Kari's Law”. **Note** X12.5.7 now withdrawn and replaced with X12.5.9. Clarify option keys for CE1200 appliances.	X12.5.7 maintenance release
January 2020	Update *Cluster License Usage and Capacity Guidelines* section to clarify no capacity gain from clustering Small VMs.	Document correction
December 2019	Clarify not to install other software onto the product. Correct location of VM Size field.	Document clarification Document correction
November 2019	Updates for X12.5.6 maintenance release.	X12.5.6 maintenance release
July 2019	Updated for X12.5.4. Removed references to release key as it is not required to upgrade a system on X8.6.x or later software to 12.5.4 or later. Fix incorrect default value for “Redirect HTTP requests to HTTPS” in the *Network Services* section. CSCvq39362 refers.	X12.5.4 release
June 2019	RMS license consumption table updated, now includes only those scenarios which consume RMS licenses.	Document correction
May 2019	Fix incorrect reference to 488 response code in the description of Meeting Server load balancing setting.	Document correction
April 2019	Updates for X12.5.2 maintenance release (includes support for virtualized Small VMs on VMware ESXi platform).	X12.5.2 maintenance release
March 2019	Updates for X12.5.1 maintenance release.	X12.5.1 maintenance release
February 2019	Reinstate “Services That Can be Hosted Together” table in the Introduction.	Documentation correction
January 2019	Updates for X12.5.	X12.5 release

Date	Change	Reason
December 2018	Retitle for X8.11.4 (no substantive updates). Adjust B2BUA calls status section for CSCvn73111.	X8.11.4 maintenance release
October 2018	Updates for X8.11.3 maintenance release.	X8.11.3 maintenance release (withdrawn)
September 2018	Updated for Webex and Spark platform rebranding, CE1200 appliance, and X8.11.1 release.	X8.11.1 release (withdrawn)
July 2018	Updates for X8.11.	X8.11 release (withdrawn)
July 2017	Updates for X8.10.	X8.10 release
January 2017	General corrections and updates. New feature added.	X8.9.1 maintenance release
December 2016	New features and general corrections.	X8.9 release
September 2016	Help and admin guide updates including new call policy rule configuration.	X8.8.2 maintenance release
July 2016	Correction in MRA overview and Xconfig SIP Advanced CLI commands added.	X8.8 document corrections
June 2016	Updates for X8.8.	X8.8 release
April 2016	General corrections and updates. New features added.	X8.7.2 Maintenance release
February 2016	General corrections and updates. Document change history (this table) added. DNS zone parameters and alarm reference updated.	X8.7.1 Maintenance release

Training

Training is available online and at our training locations. For more information on all the training we provide and where our training offices are located, visit www.cisco.com/go/telepresencetraining.

Glossary

A glossary of TelePresence terms is available at: https://tp-tools-web01.cisco.com/start/glossary/.

Accessibility Notice

Cisco is committed to designing and delivering accessible products and technologies.

The Voluntary Product Accessibility Template (VPAT) for Cisco Expressway is available here:

http://www.cisco.com/web/about/responsibility/accessibility/legal_regulatory/vpats.html#telepresence

You can find more information about accessibility here:

http://www.cisco.com/web/about/responsibility/accessibility/index.html

Related Documentation

Table 2: Links to Related Documents and Videos

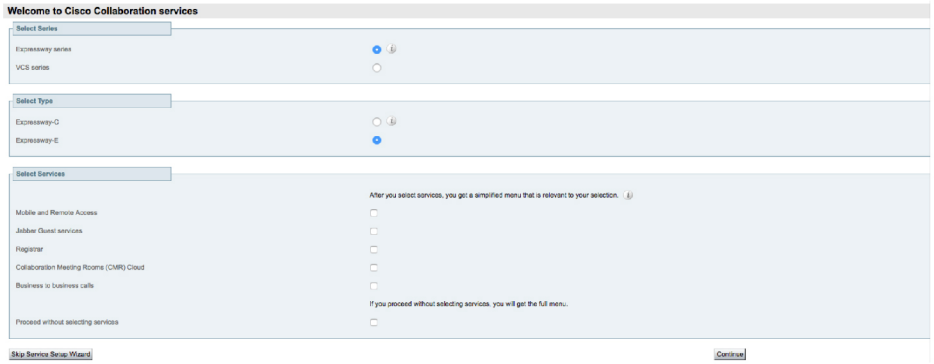
Support videos	Videos provided by Cisco TAC engineers about certain common Expressway configuration procedures are available on the Expressway/VCS Screencast Video List page (search for "Expressway videos")
Installation - virtual machines	*Cisco Expressway Virtual Machine Installation Guide* on the Expressway Installation Guides page
Installation - physical appliances	*Cisco Expressway CE1200 Appliance Installation Guide* on the Expressway Installation Guides page.
Basic configuration for single-box systems	*Cisco Expressway Registrar Deployment Guide* on the Expressway Configuration Guides page
Basic configuration for paired-box systems (firewall traversal)	*Cisco Expressway-E and Expressway-C Basic Configuration Deployment Guide* on the Expressway Configuration Guides page
Administration and maintenance	*Cisco Expressway Administrator Guide* on the Expressway Maintain and Operate Guides page (includes Serviceability information)
Clustering	*Cisco Expressway Cluster Creation and Maintenance Deployment Guide* on the Expressway Configuration Guides page
Certificates	*Cisco Expressway Certificate Creation and Use Deployment Guide* on the Expressway Configuration Guides page
Ports	*Cisco Expressway IP Port Usage Configuration Guide* on the Expressway Configuration Guides page
Unified Communications	*Mobile and Remote Access Through Cisco Expressway* on the Expressway Configuration Guides page

Cisco Meeting Server	*Cisco Meeting Server with Cisco Expressway Deployment Guide* on the Expressway Configuration Guides page *Cisco Meeting Server API Reference Guide* on the Cisco Meeting Server Programming Guides page Other Cisco Meeting Server guides are available on the Cisco Meeting Server Configuration Guides page
Cisco Webex Hybrid Services	Hybrid Services Knowledge Base
Cisco Hosted Collaboration Solution (HCS)	HCS Customer Documentation
Microsoft infrastructure	*Cisco Expressway with Microsoft Infrastructure Deployment Guide* on the Expressway Configuration Guides page *Cisco Jabber and Microsoft Skype for Business Infrastructure Configuration Cheatsheet* on the Expressway Configuration Guides page
Rest API	*Cisco Expressway REST API Summary Guide* on the Expressway Configuration Guides page (high-level information only as the API is self-documented)
Multiway Conferencing	*Cisco TelePresence Multiway Deployment Guide* on the Expressway Configuration Guides page

About the Service Setup Wizard (Service Selection Page)

The Service Setup Wizard makes it easier to configure Expressway for its chosen purpose in your environment, and simplifies the web user interface. As well as running the wizard for initial configuration you can subsequently access its service selection page at any time (**Status** > **Overview**). For more details about using the wizard, see the *Cisco Expressway-E and Expressway-C - Basic Configuration guide* on the Expressway Configuration Guides page.

Figure 1: Service Setup Wizard - Example Service Selection Page



453645

Note If you use Smart Licensing, you cannot change the **Series** setting from the Service Selection page/wizard (to convert an Expressway to a VCS product). Instead this process must start with a factory reset (to disable Smart Licensing because it's not supported on VCS). Some of the other settings shown in this example are unnecessary with Smart Licensing and do not appear in the wizard on Expressways that use Smart Licensing.

Services That Can Be Hosted Together

Some services are incompatible and cannot be selected together. The following table provides a matrix of compatible services. The matrix specifies which services you can use together on the same system or cluster.

Table 3: Services That Can be Hosted Together

	Cisco Webex Hybrid Services (Connectors	Mobile and Remote Access	Jabber	Microsoft gateway server	Registration	CMR Cloud	Business to Business calling (includes Hybrid Call Service)
Cisco Webex Hybrid Services (Connectors)	Y	N	N	N	N	Y	Y
Mobile and Remote Access and/or (from X8.9) Meeting Server Web Proxy	N	Y	N	N	Y	Y	Y*
Jabber Guest Services	N	N	Y	N	Y	Y	Y
Microsoft gateway service	N	N	N	Y	N	N	N
Registrar	N	Y	Y	N	Y	Y	Y
CMR Cloud	Y	Y	Y	N	Y	Y	Y
Business to Business calling (includes Hybrid Call Service)	Y	Y*	Y	N	Y	Y	Y

Key to Table

Y: Yes, these services can be hosted on the same system or cluster

N: No, these services may not be hosted on the same system or cluster

Rules

- Hybrid Services connectors may co-reside with the Expressway-C of a traversal pair used for Call Service, subject to user number limitations.

  * If your Hybrid Call Service (or B2B) traversal pair is also used for MRA, then the Hybrid Services connectors must be on a separate Expressway-C. This is because we do not support the connectors being hosted on the Expressway-C that is used for MRA.

- Microsoft gateway service requires a dedicated VCS Control or Expressway-C (called “Gateway VCS” or “Gateway Expressway” in the help and documentation)
- Jabber Guest cannot work with MRA (technical limitation)
- MRA is currently not supported in IPv6 only mode. If you want IPv6 B2B calling to co-reside with IPv4 MRA on the same Expressway traversal pair, the Expressway-E and Expressway-C must both be in dual stack mode.