



# Cisco Expressway X12.5.9

## Release Notes

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## Preview Features Disclaimer

Some features in this release are provided in “preview” status only, because they have known limitations or incomplete software dependencies. Cisco reserves the right to disable preview features at any time without notice. Preview features should not be relied on in your production environment. Cisco Technical Support will provide limited assistance (Severity 4) to customers who want to use preview features.

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# Preface

## Change History

**Table 1 Release Notes Change History**

Date	Change	Reason
November 2020	Remove incorrect references to support for SIP UPDATE Method for Session Refresh over MRA.	Document correction
May 2020	Reinstate links to Bug Search Tool for X12.5.7 and X12.5.8.	Document correction
April 2020	Updates for maintenance release.	X12.5.9
April 2020	Updates for maintenance release.	X12.5.8
March 2020	Only SHA passwords supported for SNMP from X12.5.7.	Document clarification
February 2020	Updates for maintenance release.	X12.5.7
December 2019	<ul style="list-style-type: none"> <li>■ Correct default setting for OAuth token with refresh (Table 6) to "On".</li> <li>■ Mention in <i>Limitations</i> section that active calls are not preserved if a node fails (no handover to a clustered peer).</li> </ul>	Document clarification /correction
November 2019	Updates for maintenance release.	X12.5.6
August 2019	Updates for maintenance release.	X12.5.5
July 2019	Updates for maintenance release.	X12.5.4
June 2019	Adjust wording in <i>Withdrawn or Deprecated Features</i> section.	Document clarification
May 2019	Updates for maintenance release.	X12.5.3
April 2019	Updates for maintenance release.	X12.5.2
April 2019	Include mention of notable resolved bugs CSCvn49463 (intradomain RMS licensing) and CSCvp21304 (no non-traversal call counting and no status display when Expressway is registrar) which were fixed in X12.5.1.	Document addition
February 2019	Updates for maintenance release.	X12.5.1
February 2019	Clarification of Hybrid Services upgrade not requiring release key. Clarify existing OAuth Token Authorization with Jabber item in <i>Limitations</i> . Add licensing issue for Jabber Guest versions before 11.1(2), to <i>Open and Resolved Issues</i> .	Document corrections
January 2019	First publication.	X12.5

## Supported Platforms

**Table 2 Expressway Software Versions Supported by Platform**

Platform name	Serial Numbers	Scope of software version support
Small VM (OVA)	(Auto-generated)	X8.1 onwards.
Medium VM (OVA)	(Auto-generated)	X8.1 onwards.
Large VM (OVA)	(Auto-generated)	X8.1 onwards.
CE1200 (Expressway pre-installed on UCS C220 M5L)	52E#####	X8.11.1 onwards
CE1100 <sup>‡</sup> (Expressway pre-installed on UCS C220 M4L)	52D#####	X8.6.1 onwards.
CE1000 (Expressway pre-installed on UCS C220 M3L)	52B#####	X8.1.1 to X8.10.x No support for any versions after X8.10.x on this hardware.
CE500 (Expressway pre-installed on UCS C220 M3L)	52C#####	X8.1.1 to X8.10.x No support for any versions after X8.10.x on this hardware.

<sup>‡</sup> As of 13<sup>th</sup> November 2018, you cannot order the CE1100 appliance from Cisco. See the [End-of-sale announcement](#) for other important dates in the lifecycle of this platform.

### Advance Notice - Hardware Service Support for CE1100 Appliance to be Withdrawn

This section applies to **hardware** support services only.

Cisco will withdraw support services for the Cisco Expressway CE1100 appliance hardware platform in a future release. More details are available in the [End-of-sale announcement](#).

### Advance Notice - Hardware Service Support for CE500 and CE1000 Appliances to be Withdrawn

This section applies to **hardware** support services only.

Cisco will withdraw support services for the Cisco Expressway CE500 and CE1000 appliance hardware platforms in a future release. More details are available in the [End-of-sale announcement](#).

## Related Documentation

**Table 3 Links to Related Documents and Videos**

Support videos	Videos provided by Cisco TAC engineers about certain common Expressway configuration procedures are available on the <a href="#">Expressway/VCS Screencast Video List</a> page
Installation - virtual machines	<i>Cisco Expressway Virtual Machine Installation Guide</i> on the <a href="#">Expressway installation guides page</a>
Installation - physical appliances	<i>Cisco Expressway CE1200 Appliance Installation Guide</i> on the <a href="#">Expressway installation guides page</a>
Basic configuration for registrar / single systems	<i>Cisco Expressway Registrar Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>
Basic configuration for firewall traversal / paired systems	<i>Cisco Expressway-E and Expressway-C Basic Configuration Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>
Administration and maintenance	<i>Cisco Expressway Administrator Guide</i> on the <a href="#">Expressway maintain and operate guides page</a>  <i>Cisco Expressway Serviceability Guide</i> on the <a href="#">Expressway maintain and operate guides page</a>
Clustering	<i>Cisco Expressway Cluster Creation and Maintenance Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>
Certificates	<i>Cisco Expressway Certificate Creation and Use Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>
Ports	<i>Cisco Expressway IP Port Usage Configuration Guide</i> on the <a href="#">Expressway configuration guides page</a>
Unified Communications	<i>Mobile and Remote Access Through Cisco Expressway</i> on the <a href="#">Expressway configuration guides page</a>
Cisco Meeting Server	<i>Cisco Meeting Server with Cisco Expressway Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>  <i>Cisco Meeting Server API Reference Guide</i> on the <a href="#">Cisco Meeting Server programming guides page</a>  Other Cisco Meeting Server guides are available on the <a href="#">Cisco Meeting Server configuration guides page</a>
Cisco Webex Hybrid Services	<a href="#">Hybrid services knowledge base</a>

**Table 3 Links to Related Documents and Videos (continued)**

Cisco Hosted Collaboration Solution (HCS)	<a href="#">HCS customer documentation</a>
Microsoft infrastructure	<i>Cisco Expressway with Microsoft Infrastructure Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>  <i>Cisco Jabber and Microsoft Skype for Business Infrastructure Configuration Cheatsheet</i> on the <a href="#">Expressway configuration guides page</a>
Rest API	<i>Cisco Expressway REST API Summary Guide</i> on the <a href="#">Expressway configuration guides page</a> (high-level information only as the API is self-documented)
Multiway Conferencing	<i>Cisco TelePresence Multiway Deployment Guide</i> on the <a href="#">Expressway configuration guides page</a>

## Feature History Summary

**IMPORTANT! New features from software version X12.5 and later are not supported for the Cisco TelePresence Video Communication Server product (VCS). They apply only to the Cisco Expressway Series product (Expressway). This software version is provided for the VCS for maintenance and bug fixing purposes only.**

**Table 4 Feature History by Release Number - Cisco Expressway Series**

Feature / change	X12.5	X12.5.1	X12.5.2, X12.5.3	X12.5.4, X12.5.5, X12.5.6, X12.5.9 (X12.5.7 & X12.5.8 withdrawn)
Direct 9-1-1 Calls for "Kari's Law" (for Applicable B2B Deployments)	NA	NA	NA	Supported from X12.5.7 onwards
Virtualized Systems - ESXi Qualification and version support	Please see the <i>Cisco Expressway on Virtual Machine Installation Guide</i> for details			
ACME (Automated Certificate Management Environment) support on Expressway-E	Supported	Supported	Supported	Supported
Single SAML for Clusters	Supported	Supported	Supported	Supported
SIP Proxy to Multiple Meeting Server Conference Bridges - Support for Cisco Meeting Server Load Balancing (Not new in X12.5. Included for information due to its preview status)	Preview	Supported	Supported	Supported
MRA: Media Path Optimization for ICE	Supported	Supported	Supported	Supported
MRA: Improved Handling of Dual Network Domains with no Split DNS	Supported	Supported	Supported	Supported
MRA: OAuth with Refresh (Self-Describing) on Unified CM SIP Lines	Preview	Supported	Supported	Supported
MRA: Device Onboarding with Activation Codes	Preview	Preview	Preview	Supported
MRA: Support for Encrypted iX	Preview	Preview	Preview	Supported
MRA: Support for Headset Management	Preview	Preview	Preview	Supported
<b>Features which are not new in X12.5 but included for information due to their former preview status:</b>				
Cisco Meeting App can use the Expressway-E TURN Server	Preview	Supported	Supported	Supported
Multiple Presence Domains over MRA	Preview	Preview	Preview	Preview
Smart Call Home	Deprecated and Preview	Deprecated and Preview	Deprecated and Preview	Deprecated and Preview



## Changes in X12.5.9

# Changes in X12.5.9

## CAUTION - Please Read Before you Install X12.5.9

Expressways that are currently running **version X8.5.3 or earlier need a two-stage upgrade. In this case you must upgrade to an intermediate, approved version before upgrading to this release**, as described in [Upgrade Prerequisites and Software Dependencies, page 28](#).

Cisco Jabber 12.5 or later is needed if you want chat/messaging services over MRA with authentication using OAuth refresh (self-describing tokens) and you configure IM and Presence Service presence redundancy groups. With this release of Expressway, user login failures will occur in this scenario if Jabber versions before 12.5 are in use.

## Software Changes and Enhancements for X12.5.9

- Software maintenance and bug fixing.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated.

The X12.5.7 and X12.5.8 software releases were withdrawn after their initial release. This X12.5.9 software includes all the software maintenance, bug fixes, and software enhancements in the withdrawn releases. The details are as described below.

## Changes in X12.5.8

**Note:** This release is now withdrawn and the changes are available from X12.5.9 instead.

## Software Changes and Enhancements

- General software maintenance and bug fixing.
- A significant bug fixed by this release is [CSCvr91082](#), which caused MRA-connected calls to fail if they converted from audio to video and the B2BUA was involved.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated.

## (Preview) KEM Support for Compatible Phones - MRA Deployments

We have not officially tested and verified support over MRA for the Key Expansion Module (KEM) accessory for Cisco IP Phone 8800 Series devices. However, we have observed under lab conditions that KEMs with multiple DNs work satisfactorily over MRA. These are **not** official tests, but in view of the COVID-19 situation, this may be useful information for customers who are willing to use an unsupported preview feature.

SIP path headers must be enabled on Expressway, and you need a Unified CM software version that supports path headers (release 11.5(1)SU4 or later is recommended).

## Hardware-Based Systems - CE1100 Appliance Advance Notice of Support Changes

### Software

The next major Expressway software release (X12.6) will be supported to a limited extent on Cisco Expressway CE1100 appliances (but not for appliances running as Cisco TelePresence Video Communication Server products). Support is provided for maintenance and bug fixing purposes only and new features in X12.6 are not supported on the Cisco Expressway CE1100 appliances.

### Hardware

Cisco's hardware service support for CE1100 appliances will also be withdrawn in future.

## Changes in X12.5.7

### Virtualized Systems - ESXi 6.0 End of General Support

This item applies to virtualized Expressway systems. Be aware that the VMware ESXi 6.0 virtual hardware product (including vSphere 6.0) is end of general support from March 2020. Refer to the VMware notifications for more information.

### Documentation Changes

The X12.5.5 release included support for using Cisco Webex Edge Audio without Expressway-C. The instructions in the X12.5.5 section of these notes now include a workaround for the issue that some default settings pre-configured in the Webex zone are not the required values. (The workaround is to create a DNS zone and modify that zone.)

### Changes in X12.5.7

**Note:** This release is now withdrawn and the changes are available from X12.5.9 instead.

### Direct 9-1-1 Calls for "Kari's Law" (Expressway as Call Control using PSTN Gateway)

This item applies if you add a Gateway to Expressway that enables PSTN calling, including 911 emergency calls placed in the United States. The recent "Kari's Law" mandated by the Federal Communications Commission, requires multi-line telephone systems (MLTS) to allow direct 911 calling.

Expressway now supports compliance with Kari's Law as follows:

- The previous requirement to have at least one RMS license installed before a call can be placed does not now apply to 911 calls.
- The latest *Expressway Administrator Guide* describes an example dial plan configuration to route 911 calls without a prefix or additional digits, from Expressway-registered endpoints with dialing facilities.

### Software Changes and Enhancements

- ESXi 6.7 Update 2 version has been successfully tested for hosting Expressway Small VM and Medium VMs (it's already verified for Large VMs).  
**Note:** Video calling capacity may be restricted if the ESXi Side-Channel-Aware Scheduler is enabled and CPU load exceeds 70%.
- Details about the Expressway server certificate and trust store are now included in the diagnostic log (excluding the private key). The intention is to make it easier to identify common problems with certificates, such as missing fields or invalid signatures. These additional files are now part of the diagnostic log:
  - `ca_<system host name>_<timestamp>.pem` - contains the trust store
  - `server_<system host name>_<timestamp>.pem` - contains the public Server Certificate
- For MRA deployments, the Do Not Disturb (DND) feature has now been tested and verified through Expressway with MRA-connected compatible endpoints.
- From X12.5.7, only SHA passwords are supported for SNMP authentication (**System > SNMP**). We no longer support MD5-based passwords.
- General software maintenance and bug fixing.
- A significant bug fixed by this release is [CSCvr82346](#), which previously required a workaround to use ACME with new Expressway deployments (existing ACME registrations were unaffected). You no longer need the workaround.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated for this maintenance release.

## Changes in X12.5.6

## Documentation Changes

For CE1200 appliance-based Expressways, the [Limitations](#) section now include version recommendations for the C220 M5 server UCS firmware (also mentioned in the *Expressway CE1200 Installation Guide*).

## Changes in X12.5.6

## Software Changes and Enhancements

- General software maintenance and bug fixing.
- A significant bug fixed by this release is [CSCvq89030](#), which caused issues if a Neighbor zone configured with SRV lookup returned more peers than the maximum peers field configured for the zone.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated for this maintenance release.

## Documentation Changes

Currently, if a Expressway node in a clustered deployment fails or loses network connectivity for any reason, or if the Unified CM restarts, all active calls going through the affected node will fail. The calls are not handed over to another cluster peer. This behavior was not documented in previous releases, but is now mentioned in the [Limitations](#) section in these notes (and also in the *Mobile and Remote Access Through Cisco Expressway* guide for X12.5.x.)

## Changes in X12.5.5

## Software Changes and Enhancements

- General software maintenance and bug fixing.
- Cisco Webex Edge Audio without Expressway-C. For business to business cases (not for MRA) in this release we successfully tested using Edge Audio with the Webex Edge Connect product, and without an Expressway-C. So Expressway-E connects to Cisco Unified Communications Manager without Expressway-C. No traversal or firewall is required for this scenario, and Expressway E connects the Webex Cloud directly to Cisco Unified Communications Manager. The tested configuration uses standard Webex Edge Audio over the internet, with a Neighbor zone between Cisco Unified Communications Manager and Expressway -E. .  
This scenario requires inbound connections to be opened on the internal firewall. So it is **not** supported for standard Expressway deployments with the usual dual firewall configuration.  
**How to change the default settings.** The media encryption mode for the Webex zone is "Auto". Because a Webex zone is a pre-configured DNS zone, if some scenarios require it to be "On", we recommend creating a DNS zone instead. Then change the DNS zone through the Expressway web interface (**Configuration > Zones > Zones** and set **Media encryption mode** to *On*). The same workaround can be used to change the **SIP authentication trust mode** to *On*.
- The ESXi 6.7 Update 2 version has been successfully tested for hosting Expressway Large VMs. (This was actually available in X12.5.4 but due to an oversight was not mentioned in the previous release notes.)  
Note that issues exist with the ESXi Side-Channel-Aware Scheduler, as described in VMware's knowledge base article on the subject.

## Changes in X12.5.4

- Static NAT on TURN. Since X12.5.3, NAT reflection is not required for standalone Expressway deployments that use the Expressway TURN server. In X12.5.5, support for static NAT functionality on TURN is extended to clustered systems, **subject to these requirements**:
  - After the upgrade to X12.5.5, restart all the peers in the cluster.
  - If you later add a new peer to the cluster, restart all of the existing peers after you add the new one.
  - Peers which are configured as TURN servers must be reachable using the private addresses for their corresponding public interfaces.Bug ID [CSCvp74492](#) relates to these changes (bug ID [CSCvq93633](#) relates to the current limitations to restart all peers).
- The *Single SAML for Clusters* section in these release notes has been fixed to remove a requirement in cluster-wide mode to generate a self-signed certificate. This was incorrect information.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated for this maintenance release.

## Changes in X12.5.4

### Software Changes and Enhancements

- A release key is not required to upgrade a system on X8.6.x or later software to this release.
- General software maintenance and bug fixing.
- Search lists for [Open and Resolved Issues, page 22](#) are updated for this maintenance release.
- User documentation now includes links to [videos by Cisco TAC engineers](#) about certain common Expressway configuration procedures.

### Supported Features in X12.5.4 That Were Formerly Preview

The following features were introduced as preview in earlier feature releases, and are now fully supported for the Cisco Expressway Series, subject to running the required versions of Cisco Unified Communications Manager and Jabber. (The features were actually fully supported in Expressway from X12.5.3, but were not announced in that version due to unresolved external software dependencies at that time.)

#### MRA: Device Onboarding with Activation Codes

This feature optionally allows MRA-compliant devices to easily and securely register over MRA using an activation code. It's enabled with the **Allow activation code onboarding** setting on the **Configuration > Unified Communications > Configuration** page.

Onboarding with an activation code requires mutual TLS (mTLS) authentication. TLS is automatically enabled or disabled on the MRA port 8443, depending on whether onboarding with an activation code is enabled or disabled.

##### **Existing deployments need to refresh CUCMs before this feature can be used**

If you have upgraded an existing Expressway from an earlier release than X12.5, refresh the currently configured Unified CMs on Expressway before you use this feature. To do this, go to **Unified Communications > Configuration**, select all the configured Unified CMs and click **Refresh**. This task is not necessary for any Unified CMs that you add later.

#### MRA: Support for Headset Management

Expressway supports user headset management by Cisco Unified Communications Manager administrators, over MRA connections. This means that MRA-connected users no longer have to do their own headset configuration.

Expressway does not currently support the `/headset/metrics` API.

## Changes in X12.5.3

### MRA: Support for Encrypted iX (for ActiveControl)

ActiveControl over MRA is already supported with encrypted phone profiles. This feature will allow MRA video endpoints and Jabber clients with non-secure phone security profiles to negotiate ActiveControl so that users can see roster lists, layouts, and other iX-dependent ActiveControl features in video meetings.

There are no configuration or interface changes for this feature. However, you may need to rediscover your Cisco Unified Communications Manager servers after you upgrade the Expressway.

### Withdrawn or Deprecated Features

The following features or software **are no longer supported from Expressway version X12.5.x**.

- Cisco Advance Media Gateway (AM Gateway)
- For VM deployments, VMware ESXi virtual hardware versions ESXi5.x

The following features and preview features are deprecated from Expressway version X12.5, and **support for them in Expressway will be withdrawn in a subsequent release**.

- Support for Cisco Jabber Video for TelePresence (Movi). This item relates to Cisco Jabber Video for TelePresence (works in conjunction with Cisco Expressway for video communication) and not to the Cisco Jabber soft client that works with Unified CM.
- FindMe device/location provisioning service
- Smart Call Home
- Expressway forward proxy

### Software Version Numbering

The software version numbering for Expressway changed after X8.11.4, to better align with other Cisco product versions. There is no Expressway X12.0 release. And there are no other intermediate Expressway releases between X8.11.4 and X12.5.x.

## Changes in X12.5.3

### Software Changes and Enhancements

- General software maintenance and bug fixing.
- Static NAT on TURN. In earlier releases, deployments configured with Static NAT on Expressway-E's TURN server required NAT reflection on the external firewall. This is because when Static NAT is configured, Expressway-E sends incoming signaling and media traffic to its external IP address. In this condition, you must configure NAT reflection on the external firewall to "hairpin" or reflect the media back to Expressway. This is not a recommended configuration, as some firewalls do not support NAT reflection. From X12.5.3, we have addressed this challenge by removing the requirement for NAT reflection in Expressway deployments that use the Expressway TURN server. Expressway now has the ability to detect its own address.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated for this maintenance release.

## Changes in X12.5.2

## Changes in X12.5.2

### Software Changes and Enhancements

- General software maintenance and bug fixing.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated for this maintenance release.
- The ESXi 6.7 Update 1 version has been successfully tested for hosting Expressway virtual machines.
- The Expressway Small VM (OVA virtual appliance) is now supported on the VMware ESXi virtual hardware platform, subject to the same hardware requirements as specified for Small VMs running on a Cisco Business Edition (BE) 6000 platform.
- From X12.5.2, the Back-to-Back User Agent (B2BUA) can forward the Reason header in SIP response messages. Note that in case of multiple Reason headers presented in an incoming SIP message, B2BUA forwards only the first Reason header. This capacity was introduced to mitigate an issue with Unified CM not forwarding the calls that are declined to voicemail. Bug ID [CSCvk38038](#) refers.

## Changes in X12.5.1

### Software Changes and Enhancements

- General software maintenance and bug fixing.  
**Note:** The bugs fixed in this maintenance release include [CSCvp21304](#) - if Expressway is the registrar, non-traversal calls are not counted and call status does not display on the **Overview** page in the web user interface. This issue was included in the X8.11.4 release notes *Notable Issues* list, and is now resolved.
- Previously (from X8.10), intracompany/intradomain calls through Expressway between Cisco Meeting Server and Microsoft Skype for Business on-premise users, consumed RMS licenses on Expressway-C. From X12.5.1, this is resolved and these calls no longer consume an RMS license. Bug ID [CSCvn49463](#) refers.
- These features which were previously in preview status are now fully supported by Expressway:
  - Cisco Meeting App can use the Expressway-E TURN Server.
  - Support for Cisco Meeting Server Load Balancing.
  - For MRA deployments, OAuth with Refresh (Self-Describing) on Cisco Unified Communications Manager SIP Lines.
- The search lists for [Open and Resolved Issues, page 22](#) have been updated for this maintenance release.
- These changes only affect deployments that use Expressway for Hybrid Services:
  - Fixes to the Management Connector software on Expressway in this version accommodate a different registration flow when you start using the Expressway to host connectors for Hybrid Services.
  - Cosmetic branding corrections to align with the Cisco Webex brand.

### Supported Features in X12.5.1 That Were Formerly Preview

The following features were introduced as preview in earlier feature releases, and are fully supported from X12.5.1 for the Cisco Expressway Series.

#### SIP Proxy to Multiple Meeting Server Conference Bridges (Support for Meeting Server Load Balancing)

This feature is not supported with Cisco Meeting Server software version 2.3 or earlier. Also, a [Limitation](#) currently exists regarding support for dual-homed conferences with a Meeting Server cluster.

## Changes in X12.5.1

From X8.11, Cisco Expressway Series supports the mechanism that is used to load balance calls between Meeting Servers that are in call bridge groups.

When Cisco Meeting Servers are in a call bridge group, and a participant tries to join a space on a server that has no capacity, the call is rerouted to another server. That other server then sends a SIP INVITE to the call control layer, using the original call details. The participant is now in the correct space, on a different Meeting Server. In cases where there is capacity in the “second” server, but another Meeting Server has more capacity, it asks that Meeting Server in the group to send the SIP INVITE.

There is a new setting in the neighbor zone called Meeting Server load balancing which must be enabled (**Configuration > Zones > Zones > Zone Name > Advanced**). This allows the Cisco Expressway's B2BUA to process the INVITE from the "second" Meeting Server to enable the participant to connect.

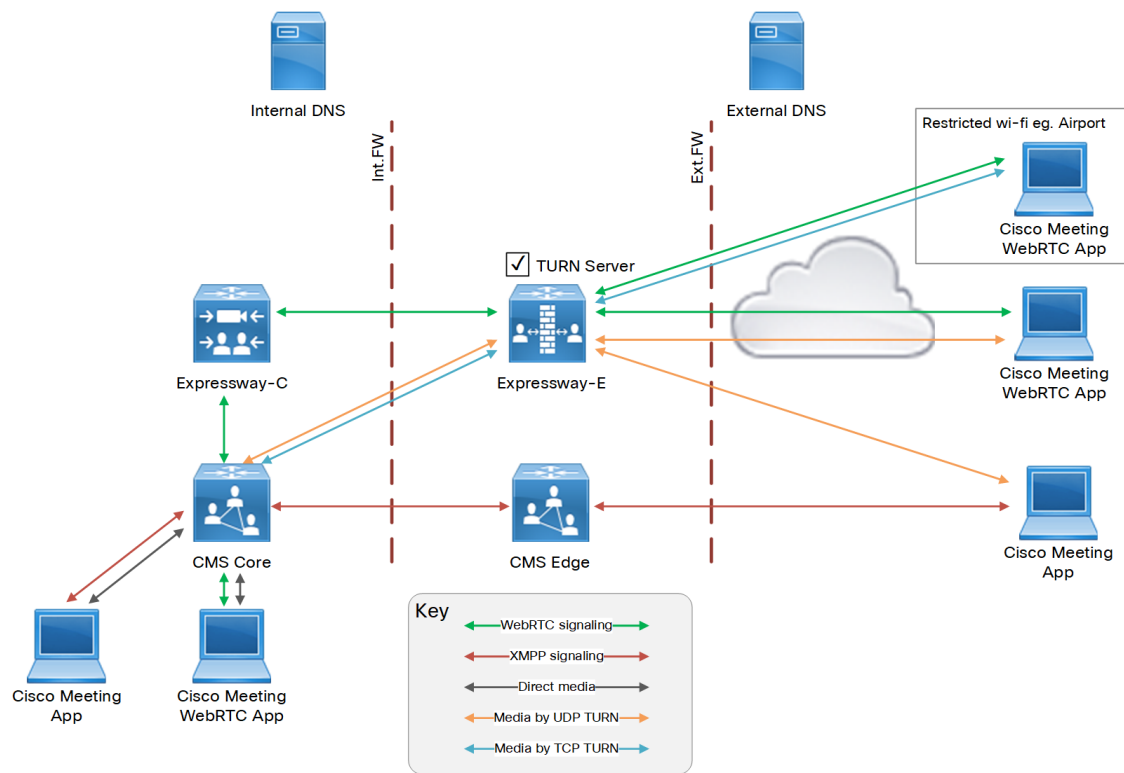
We recommend that Meeting Server load balancing is set to *On* regardless of whether endpoints are registered with Expressway or with Unified CM.

## Supported and Unsupported Functionality

- Cisco Expressway invokes its B2BUA to process the call replacement.
- Load balancing of calls from registered H.323 endpoints is also supported.
- Different encryption modes can be applied on call legs to and from Cisco Expressway.
- Calls with DTLS-secured media are not supported.
- Unified CM is the registrar, and Cisco Expressway proxies to the Meeting Server call bridge group.
- Unified CM is the registrar, and Cisco Expressway is a B2BUA between the Meeting Server call bridge group and the endpoint..
- Cisco Expressway is the registrar, and the B2BUA is not engaged.
- Cisco Expressway is the registrar, and the B2BUA is engaged.

## Cisco Meeting App with Expressway-E TURN Server

Owing to TURN server enhancements in X8.11, it is possible to use the Expressway-E TURN server for media path discovery and media relay between the Cisco Meeting App and the Cisco Meeting Server, even when that Expressway-E is being used to proxy WebRTC to the Meeting Server.

**Figure 1 Cisco Meeting WebRTC App and Cisco Meeting App sharing a TURN server**

In the diagram, the Expressway-E is configured to listen on TCP 443 for TURN requests and for WebRTC requests. The TURN clients (Meeting Server Core, Meeting App, and Cisco Meeting WebRTC App) will all try to use UDP 3478 for TURN requests.

If the WebRTC App cannot make the outbound connection to UDP 3478, it uses the TCP override port, which is 443 by default, to request media relays.

The Meeting Server Edge is still required to traverse the XMPP signalling for Cisco Meeting Apps. However, there is no need to use the TURN services of the Meeting Server Edge server.

## MRA: OAuth with Refresh (Self-Describing) on Unified CM SIP Lines

Subject to running supported versions of Unified CM and Jabber, Expressway X12.5 and later supports OAuth with refresh on the Cisco Unified Communications Manager SIP line interface, for Jabber clients only. When this option is enabled on the Cisco Unified Communications Manager SIP line and the Jabber client, on-premises clients are authorized using self-describing tokens instead of client certificates.

This feature allows secure SIP and SRTP without Certificate Authority Proxy Function (CAPF), and enables end-to-end encryption of ICE and ICE passthrough calls over MRA.

### How to enable OAuth with refresh on the Cisco Unified Communications Manager SIP line interface

1. On the Cisco Unified Communications Manager node, do the following:
  - a. Enable SIP OAuth Mode using the CLI command `utils sip-oauth enable`.
  - b. Verify if SIP OAuth is set to listen on default ports (**System > Cisco Unified CM**).

The default ports are 5090 for on-premises and 5091 for MRA. To avoid port conflicts, ensure that these ports are not configured to listen for any existing **SIP Trunk** in Cisco Unified Communications Manager.



Changes in X12.5.1

The settings to enable SIP OAuth on the SIP line are summarized here for convenience. For detailed information, see the Cisco Unified Communications Manager documentation.

2. After you enable Cisco Unified Communications Manager for SIP OAuth, discover or refresh the Cisco Unified Communications Manager nodes in Expressway-C.

A new CEOAuth (TLS) zone is created automatically in Expressway-C. For example, *CEOAuth <Unified CM name>*. A search rule is created to proxy the requests originating from the on-premises endpoints towards the Cisco Unified Communications Manager node. This zone uses TLS connections irrespective of whether Cisco Unified Communications Manager is configured with mixed mode. To establish trust, Expressway-C also sends the hostname and Subject Alternative Name (SAN) details to the Cisco Unified Communications Manager cluster

3. Upgrade the Jabber clients to Cisco Jabber 12.5 or later, which is required for MRA or on-premises clients to connect using OAuth with refresh.
4. Enable OAuth authorization on the Phone Security Profile (**System > Security > Phone Security Profile**) and apply the Phone Security Profile on the Jabber clients.

## Features in X12.5

### Virtualized Systems – ESXi 6.0, 6.5, and 6.7 Qualification

This item applies to virtualized systems. The VMware ESXi virtual hardware versions required to host Expressway VMs have changed in this release and **the minimum required version is now ESXi 6.0** (ESXi 5.0 and ESXi 5.5 are no longer supported by VMware). The following ESXi versions have been successfully tested for Expressway X12.5.x:

- ESXi 6.0 (Be aware that the VMware ESXi 6.0 virtual hardware product – including vSphere 6.0 – is end of general support from March 2020. Refer to the VMware notifications for more information.)
- ESXi6.5 Update 2
- ESXi6.7 Update 1 from X12.5.2, Update 2 for Large VMs only from X12.5.4, Update 2 for all VMs from X12.5.9.

### ACME Automatic Certificate Signing

From X12.5 the Cisco Expressway Series supports the ACME protocol (Automated Certificate Management Environment) which enables automatic certificate signing and deployment to the Cisco Expressway-E from a certificate authority such as Let's Encrypt. The main benefit of this feature is to generate low-cost server certificates to identify the Expressway-E, thereby reducing the cost of Expressway-based deployments like MRA (Mobile and Remote Access).

Due to the underlying validation mechanism this feature is most likely to be useful for MRA deployments. For Business to Business (B2B) applications, it's not always practical to include your primary domain in ACME certificates.

The configuration process is simple. You enter some information on the Cisco Expressway-E to create a certificate signing request (CSR), then the Expressway's ACME client interacts with the certificate authority to request the certificate. The Expressway downloads the certificate and you click a button to deploy it. After this manual step, you can schedule renewal so that the certificate does not expire—because ACME certificates are deliberately short-lived.

One compromise of the ACME protocol is that it requires an inbound HTTP connection to port 80 on the Cisco Expressway-E. You can manage this risk with the Expressway's security features or, for highly secure environments, you can disable ACME and use the traditional CSR procedure with your preferred certificate authority.

#### No Jabber Guest support with ACME

Currently Expressway does not support ACME with Jabber Guest deployments.

#### Let's Encrypt and API version change

Let's Encrypt will not be aware of changes from API V1 to API V2 until a certificate update occurs.

### Single SAML for Clusters

From X12.5, Cisco Expressway supports using a single, cluster-wide metadata file for SAML agreement with an IdP. Previously, you had to generate metadata files per peer in an Expressway-C cluster (for example, six metadata files for a cluster with six peers). Now, both cluster-wide and per-peer modes are supported. The settings are on **Configuration > Unified Communications > Configuration > SAML Metadata**.

For the cluster-wide mode, export the metadata file from the primary peer for the SAML agreement. You must not export it from the other peers. If you change the primary peer for any reason, you must again export the metadata file from the new primary peer, and then reimport the metadata file to the IdP.

### MRA: Media Path Optimization for ICE

From X12.5, we support Interactive Connectivity Establishment (ICE) passthrough to allow MRA-registered endpoints to pass media directly between endpoints by bypassing the WAN and the Cisco Expressway Series.

A new **Status > ICE Passthrough metrics** page in the web user interface displays metrics data about completed ICE passthrough calls.

## Features in X12.5

**More information**

Configuration details and required versions for ICE passthrough are in the *Mobile and Remote Access Through Cisco Expressway* guide on the [Expressway Configuration Guides](#) page.

Background information about ICE in Expressway is in *About ICE and TURN Services* in the *Cisco Expressway Administrator Guide* on the [Expressway Maintain and Operate Guides](#) page.

The ICE protocol is defined in [RFC 5245](#).

## MRA: Improved Handling of Dual Network Domains

The main application for this feature is for MRA deployments with separate internal and external network domains. It's no longer a requirement to add a `_cisco-uds` SRV record to the internal DNS.

From X12.5, the Cisco Expressway Series supports the case where MRA clients use an external domain to lookup the `_collab-edge` SRV record, and the `_cisco-uds` SRV record for that same external domain cannot be resolved by the Expressway-C. This is typically the case when split DNS is not available for the external domain. And prior to X12.5 this required a pinpoint subdomain or some other DNS workaround on the Expressway-C, to satisfy the client requirements for resolving the `_cisco-uds` record.

Note that this feature is for MRA-connected devices. The `_cisco-uds` record is still required for local/internal Jabber clients.

**Limitation:** This case is not supported for CUCM nodes identified by IP addresses, only for FQDNs.

This feature also supports a secondary case, for MRA deployments that *only* allow Jabber access over MRA even if users are working on-premises. In this case only one domain is required and typically the DNS records are publicly resolvable (although this is not required if MRA access is disallowed for users when off premises). The change in X12.5 means that there is no need to have a `_cisco-uds._tcp.<external-domain>` DNS SRV record available to Cisco Expressway-C or to the Jabber clients.

There are no configuration or interface changes for this feature. More details about how to configure network domains and DNS records in Expressway for MRA are in the *Expressway Mobile and Remote Access Deployment Guide*.

## Cisco Webex Hybrid Services with Expressway X12.5

- Some Expressway-based Hybrid Services require that you configure the connector host as a cluster, even if there is only one peer in the cluster ("cluster of one"). **Be very careful when modifying the Clustering configuration that you do not clear all Peer N address fields and Save the configuration**, unless you intend to factory reset the Cisco Expressway. You will lose your registration, all your connectors, and all associated configuration. See [Features in X12.5, page 18](#).
- The Management Connector must be up to date before you upgrade Expressway. Authorize and accept any Management Connector upgrades advertised by the Cisco Webex cloud before you try to upgrade Expressway. Failure to do so may cause issues with the connector after the upgrade.
- Expressways that will be used to host connectors for Cisco Webex Hybrid Services must be running a supported Expressway software version now, before you register them to Cisco Webex. (You can upgrade just the Management Connector component on the Expressway, without needing to upgrade the whole Expressway.)

For details about which versions of Expressway are supported for hybrid connector hosting, see [Connector Host Support for Cisco Webex Hybrid Services](#)

## Features in X12.5

- Upgrading a connector host Expressway to X12.5.x from X8.11.x does *not* require a release key if both these conditions apply to the Expressway:
  - It was configured for Hybrid Services using the Service Select wizard, which disables the release key requirement.
  - It does not already have a release key. That is, the Expressway is not being used as anything other than a connector host.

These conditions are met in most Hybrid Services deployments. However, if your deployment requires the Expressway connector host to have a release key, then you need a new release key to upgrade to this release.

## REST API Expansion

We continue to expand the REST API to simplify remote configuration. We are adding REST API access to configuration, commands, and status information when we add new features, but are also selectively retrofitting the REST API to features that were introduced in earlier versions.

For example, third party systems, such as Cisco Prime Collaboration Provisioning, can use the API to control the following features / services on the Expressway:

Configuration APIs	API introduced in version
Clustering	X8.11
Smart Call Home	X8.11
Microsoft Interoperability	X8.11
B2BUA TURN Servers	X8.10
Admin account	X8.10
Firewall rules	X8.10
SIP configuration	X8.10
Domain certificates for Server Name Identification	X8.10
MRA expansion	X8.9
Business to business calling	X8.9
MRA	X8.8

The API is self-documented using RESTful API Modeling Language (RAML). You can access the RAML definitions for your system at <https://<ip address>/api/provisioning/raml>. A high-level summary of how to access and use the API is available in *Cisco Expressway REST API Summary Guide* on the [Expressway installation guides page](#).

## All Preview Features Including from Earlier Releases

The following features are Preview status only. Some of them were originally introduced as Preview features in X8.11.x or earlier.

- Multiple Presence Domains / Multiple IM Address Domains over MRA
- (Now deprecated) Smart Call Home

### (PREVIEW - now DEPRECATED) Smart Call Home

This feature is deprecated from Expressway X12.5, and **support will be withdrawn in a subsequent release**.

## Features in X12.5

Smart Call Home is an embedded support capability for Expressway. It offers proactive diagnostics and real-time alerts, enabling higher network availability and increased operational efficiency. Smart Call Home notifies users of Schedule- and Event-based notifications.

- Schedule-based notifications: inventory, telemetry and configuration messages used to generate a Device Report and improve hardware and software quality by identifying failure trends. You can find these notifications posted on the first day of every month.
- Event-based notifications: ad hoc events already supported by Expressway such as alarms and ACRs. You will find these notifications posted to the Smart Call Home server as and when they occur.

**Note:** Although the web user interface includes an option for SMTP with Smart Call Home, currently this is not actually implemented in the Expressway.

## (PREVIEW) Multiple Presence Domains / Multiple IM Address Domains over MRA

This feature is currently in preview status only.

Jabber 10.6 and later can be deployed into an infrastructure where users are organized into more than one domain, or into domains with subdomains (subject to IM and Presence Service 10.0.x or later).

## Open and Resolved Issues

### Bug Search Tool Links

Follow the links below to read the most recent information about the open and resolved issues in this release.

- [All open issues, sorted by date modified \(recent first\)](#)
- [Issues resolved by X12.5.9, X12.5.8, and X12.5.7](#) (composite link for convenience)
- [Issues resolved by X12.5.9](#)
- [Issues resolved by X12.5.8](#)
- [Issues resolved by X12.5.7](#)
- [Issues resolved by X12.5.6](#)
- [Issues resolved by X12.5.5](#)
- [Issues resolved by X12.5.4](#)
- [Issues resolved by X12.5.3](#)
- [Issues resolved by X12.5.2](#)
- [Issues resolved by X12.5.1](#)
- [Issues resolved by X12.5](#)

By default these links show issues classified as severity level 3 or higher. Manually change the **Severity**: filter if you want to see lower severity issues.

### Notable Issues in this Version

#### **Licensing issues with Jabber Guest calls in Single NIC deployments**

Currently the software has some unexpected rich media session (RMS) licensing behavior for Jabber Guest calls in Single NIC deployments.

- The Expressway-E should count one RMS license for each Jabber Guest call, but it does not. This issue may cause confusion about the server's load, because usage appears low even when the server is processing multiple calls. Bug ID [CSCva36208](#) refers.
- **This issue only applies to users who have a Jabber Guest version earlier than release 11.1(2)**, users with 11.1(2) and later are not affected. In affected cases, although each Jabber Guest call ought to consume an RMS license on the Cisco Expressway-E, in reality the RMS licenses are consumed on the Cisco Expressway-C. This issue was identified in X8.10 and Bug ID [CSCvf34525](#) refers. Contact your Cisco representative if you are affected by it.

Note that we recommend the Dual NIC Jabber Guest deployment.

## Limitations

### Some Expressway Features are Preview or Have External Dependencies

**Important:** We aim to provide new Expressway features as speedily as possible. Sometimes it is not possible to officially support a new feature because it may require updates to other Cisco products which are not yet available, or known issues or limitations affect some deployments of the feature. If customers might still benefit from using the feature, we mark it as "preview" in the release notes. Preview features may be used, **but you should not rely on them in production environments** (see [Preview Features Disclaimer, page 1](#)). Occasionally we may recommend that a feature is not used until further updates are made to Expressway or other products.

Expressway features which are provided in preview status only in this release, are listed in the [Feature History table](#) earlier in these notes.

### Unsupported Functionality

- Currently, if one Expressway node in a clustered deployment fails or loses network connectivity for any reason, or if the Unified CM restarts, all active calls going through the affected node will fail. The calls are not handed over to another cluster peer. This is not new behavior in X12.5.x, but due to an oversight it was not documented in previous releases. Bug ID [CSCtr39974](#) refers.
- Expressway does not terminate DTLS. We do not support DTLS for securing media and SRTP is used to secure calls. Attempts to make DTLS calls through Expressway will fail. The DTLS protocol is inserted in the SDP but only for traversing the encrypted iX protocol.
- From X12.5, Expressway provides limited SIP UPDATE support over MRA connections for session refresh purposes only, as specified by RFC [4028](#). However, you should not switch this on unless you have a specific requirement to use this capability. Any other use of SIP UPDATE is not supported and features that rely on this method will not work as expected.
- Audio calls may be licensed as video calls in some circumstances. Calls that are strictly audio-ONLY consume fewer licenses than video calls. However, when audio calls include non-audio channels, such as the iX channel that enables ActiveControl, they are treated as video calls for licensing purposes.

### Static NAT for Clustered Systems

From X12.5.5, support for static NAT functionality on TURN is extended to clustered systems (support for standalone systems was introduced in X12.5.3). However, peers which are configured as TURN servers must be reachable using the private addresses for their corresponding public interfaces.

### Mobile and Remote Access Limitations

**Important: If you use Expressway for Mobile and Remote Access (MRA), various unsupported features and limitations currently exist.** The list of key unsupported features that we know do not work with MRA are detailed in *Key Supported and Unsupported Features with Mobile and Remote Access* in the [Mobile and Remote Access Through Cisco Expressway](#) guide.

For details of which 7800/8800 Series phones and other endpoints support MRA, see the *MRA Requirements* section of the *Mobile and Remote Access Through Cisco Expressway* guide, or ask your Cisco representative.

### Spurious Alarms when Adding or Removing Peers in a Cluster

When a new peer is added to a cluster, the system may raise multiple 20021 Alarms (*Cluster communication failure: Unable to establish...*) even if the cluster is in fact correctly formed. The alarms appear on the existing peers in the cluster. The unnecessary alarms are typically lowered after at least 5 minutes elapses from the time that the new peer is successfully added.

## Limitations

These alarms also occur if a peer is removed from a cluster. This is generally valid alarm behavior in the case of removing a peer. However, as in the case of adding a peer, the alarms may not be lowered for 5 minutes or more.

## Virtual Systems

Video calling capacity may be restricted if the ESXi Side-Channel-Aware Scheduler is enabled, and CPU load exceeds 70%.

With physical Expressway appliances, the **Advanced Networking** feature allows the speed and duplex mode to be set for each configured Ethernet port. You cannot set port speeds for virtual machine-based Expressway systems.

Also, virtual machine-based systems always show the connection speed between Expressway and Ethernet networks as 10000 Mb/s, regardless of the actual physical NIC speed. This is due to a limitation in virtual machines, which cannot retrieve the actual speed from the physical NIC(s).

## CE1200 Appliance

- Specific requirements for the X710 firmware version exist, which may change depending on the current versions available. Please check the *Expressway CE1200 Installation Guide*, in the section "Required Firmware Version" for the latest details.
- The appliance requires the minimum Expressway software version detailed in the *Cisco Expressway CE1200 Installation Guide* (the version depends on the appliance revision). Although the system does not prevent downgrades to an earlier software version, Cisco does not support appliances on earlier versions.
- The Expressway allows you to add or delete Traversal Server or Expressway Series keys through the CLI, but in practice these keys have no effect in the case of CE1200 appliances. The service setup wizard (Type setting) manages whether the appliance is an Expressway-C or an Expressway-E, rather than the Traversal Server key as for earlier appliances.

## 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 automatically converts the system to a Large system. This means that Expressway-E 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 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.

## Language Packs

If you translate the Expressway web user interface, new Expressway language packs are available from X8.10.4. Older language packs do not work with X8.10.n software (or X8.9.n). Instructions for installing or updating the packs are in the *Expressway Administrator Guide*.

## Option Keys Only Take Effect for 65 Keys or Fewer

If you try to add more than 65 option keys (licenses), they appear as normal in the Expressway web interface (**Maintenance > Option keys**). However, only the first 65 keys take effect. Additional keys from 66 onwards appear to be added, but actually the Expressway does not process them. Bug ID [CSCvf78728](#) refers.



## Limitations

## XMPP Federation–Behavior on IM&P Node Failure

If you use XMPP external federation, be aware that if an IM and Presence Service node fails over to a different node after an outage, the affected users are not dynamically moved to the other node. Expressway does not support this functionality, and it has not been tested.

## Cisco Webex Calling May Fail with Dual-NIC Expressway

This issue applies if you deploy Expressway with a dual-NIC Expressway-E. Cisco Webex Calling requests may fail if the same (overlapping) static route applies to both the external interface and the interface with the Expressway-C. This is due to current Expressway-E routing behavior, which treats Webex INVITES as non-NAT and therefore extracts the source address directly from the SIP Via header.

We recommend that you make static routes as specific as possible, to minimize the risk of the routes overlapping, and this issue occurring.

## Microsoft Federation with Dual Homed Conferencing–SIP Message Size

If you use dual homed conferencing through Expressway and Meeting Server with an AVMCU invoked on the Microsoft side, the maximum SIP message size must be set to 32768 bytes (the default) or greater. It's likely that you will need a greater value for larger conferences (that is, from around nine or more participants upwards). Defined via **SIP max size** on **Configuration > Protocols > SIP**.

## Intradomain Microsoft Interop with Expressway and Cisco Meeting Server

If you use Meeting Server for Microsoft interoperability, a limitation currently applies to the following intradomain/intracompany scenario:

*You deploy separate Microsoft and standards-based SIP networks in a **single domain** and in a configuration that has an Expressway-E **directly facing** a Microsoft front end server (because you use internal firewalls between subnetworks, or for any other reason). For example, Cisco Unified Call Manager in one (sub)network and Microsoft in a second (sub)network, inside the same domain.*

In this case we do not generally support Microsoft interoperability between the two networks, and calls between Meeting Server and Microsoft will be rejected.

### Workaround

If you are not able to deploy the intradomain networks without an intervening Expressway-E (you cannot configure Meeting Server <> Expressway-C <> Microsoft), a workaround is to deploy an Expressway-C in each subnet, with an Expressway-E to traverse between them. That is:

Meeting Server <> Expressway-C <> Firewall <> Expressway-E <> Firewall <> Expressway-C <> Microsoft

## Licensing Behavior with Chained Expressway-Es

If you chain Expressway-Es to traverse firewalls (from X8.10), be aware of this licensing behavior:

- If you connect through the firewall to the Cisco Webex cloud, each of the *additional* Expressway-Es which configure a traversal zone with the traversal client role, will consume a Rich Media Session license (per call). As before, the original Expressway-C and Expressway-E pair do not consume a license.
- If you connect through the firewall to a third-party organization (Business to Business call), *all* of the Expressway-Es in the chain, including the original one in the traversal pair, will consume a Rich Media Session license (per call). As before, the original Expressway-C does not consume a license.

## Limitations

### OAuth Token Authorization with Jabber

Regardless of any MRA access policy settings configured on Cisco Unified Communications Manager, if you have Jabber users running versions before 11.9 (no token authentication support) and Expressway is configured to allow non-token authentication methods, then those users are able to authenticate by username and password or by traditional single sign-on.

**Note:** If your deployment opts to strictly enforce MRA policy, then endpoints that don't support self-describing tokens ("OAuth with Refresh") cannot use MRA. This includes Cisco TelePresence TC and CE endpoints, and Cisco IP Phone 7800 or 8800 Series endpoints that don't have the onboarding with activation codes feature.

### Expressway Forward Proxy

**CAUTION: Do not use the built-in Expressway forward proxy. It is a deprecated feature and support for it will be withdrawn in a subsequent Expressway release. If you require a forward proxy deployment, you need to use a suitable third-party HTTPS proxy instead.**

### TURN Servers

Currently, the TCP 443 TURN service and TURN Port Multiplexing are not supported through the CLI. Use the Expressway web interface to enable these functions (**Configuration > Traversal > TURN**).

## Interoperability

### Test Results

The interoperability test results for this product are posted to <http://www.cisco.com/go/tp-interop>, where you can also find interoperability test results for other Cisco TelePresence products.

### Notable Interoperability Concerns

X8.7.x (and earlier versions) of Expressway are not interoperable with Cisco Unified Communications Manager IM and Presence Service 11.5(1) and later. This is caused by a deliberate change in that version of IM and Presence Service, which has a corresponding change in Expressway X8.8 and later.

To ensure continuous interoperability, you must upgrade the Expressway systems *before* you upgrade the IM and Presence Service systems. The following error on Expressway is a symptom of this issue:

```
Failed Unable to Communicate with <IM&P node address>. AXL query HTTP error "'HTTPError:500'"
```

### Which Expressway Services Can Run Together?

The *Cisco Expressway Administrator Guide* on the [Cisco Expressway Series maintain and operate guides](#) page details which Expressway services can coexist on the same Expressway system or cluster. See the table "*Services That Can be Hosted Together*" in the Introduction section. For example, if you want to know if MRA can coexist with CMR Cloud (it can) the table will tell you.

## Upgrading to X12.5.9

### Upgrade Prerequisites and Software Dependencies

A release key is not required to upgrade a system on X8.6.x or later software to this release (from X8.11.4 to X12.5.9 for example). This change was introduced in X12.5.4.

**CAUTION: This section has important information about issues that may prevent the system working properly after an upgrade. Before you upgrade, please review this section and complete any tasks that apply to your deployment.**

#### Expressway systems on X8.5.3 or earlier need a two-stage upgrade

If you are upgrading a system which is running software earlier than version X8.6, **you must first upgrade to an intermediate release before you install X12.5.9 software** (this requirement applies to all upgrades to X8.11.x and later versions). Depending on the existing system version, the upgrade will fail due to file size problems **and there is a risk of data corruption** due to database format changes in later versions.

We recommend upgrading to X8.8.2 as the intermediate release. However, if you have specific reasons to prefer a different version, you can upgrade to any version between X8.6 and X8.8.2 inclusive, before you install this X12.5.9 software.

- Version X8.8.2 release notes are available here:  
<https://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-release-notes-list.html>

#### All deployments

We do not support downgrades. Do not install a previous Expressway version onto a system that is running a newer version. If you do so, the system configuration will not be preserved.

From X8.11.x, when the system restarts after the upgrade it uses a new encryption mechanism. This is due to the unique root of trust per software installation, introduced in that release.

From X8.8, the software is more secure than earlier versions. Upgrading could cause your deployments to stop working as expected, and you must check for the following environmental issues before you upgrade to X8.8 or later:

- Certificates: Certificate validation was tightened up in X8.8.
  - Try the secure traversal test before and after upgrade (**Maintenance > Security > Secure traversal test**) to validate TLS connections.
  - Are your Unified Communications nodes using valid certificates that were issued by a CA in the Expressway-Cs' trust list?
  - If you use self-signed certificates, are they unique? Does the trusted CA list on Expressway have the self-signed certificates of all the nodes in your deployment?
  - Are all entries in the Expressway's trusted CA list unique? You must remove any duplicates.
  - If you have TLS verify enabled on connections to other infrastructure (on by default for Unified Communications traversal zone, and optional for zones to Unified Communications nodes), ensure that the hostname is present in the CN or SAN field of the host's certificate. We do not recommend disabling TLS verify mode, even though it may be a quick way to resolve a failing deployment.
- DNS entries: Do you have forward and reverse DNS lookups for all infrastructure systems that the Expressway interacts with? From X8.8, you must create forward and reverse DNS entries for all Expressway-E systems, so that systems making TLS connections to them can resolve their FQDNs and validate their certificates. If the Expressway cannot resolve hostnames and IP addresses of systems, complex deployments like MRA may not work as expected after the upgrade.

## Upgrading to X12.5.9

- Cluster peers: Do they have valid certificates? If they currently use default certificates, you should replace them with (at least) internally generated certificates and update the peers trust lists with the issuing CA. From X8.8, clustering communications use TLS connections between peers instead of IPSec. By default, TLS verification is not enforced after the upgrade, and an alarm will remind you to enforce it.

**Deployments that use MRA**

This section only applies if you use the Expressway for MRA (mobile and remote access with Cisco Unified Communications products).

- Minimum versions of Unified Communications infrastructure software apply - some versions of Unified CM, IM and Presence Service, and Cisco Unity Connection have been patched with CiscoSSL updates. Check that you are running the minimum versions described in the Expressway MRA deployment guide, before you upgrade Expressway (see *Mobile and Remote Access Through Cisco Expressway* on the [Expressway configuration guides page](#)).  
IM and Presence Service 11.5 is an exception. You must upgrade Expressway to X8.8 or later *before* you upgrade IM and Presence Service to 11.5.
- Expressway-C and Cisco Expressway-E **should be upgraded together**. We don't recommend operating with Expressway-C and Expressway-E on different versions for an extended period.
- This item applies if you are upgrading a Expressway that is used for MRA, with clustered Unified CMs and endpoints running TC or Collaboration Endpoint (CE) software. In this case you must install the relevant TC or CE maintenance release listed below (or later) *before* you upgrade the Expressway. This is required to avoid a known problem with failover. If you do not have the recommended TC/CE maintenance release, an endpoint will not attempt failover to another Unified CM if the original Unified CM to which the endpoint registered fails for some reason. Bug ID [CSCvh97495](#) refers.
  - TC7.3.11
  - CE8.3.3
  - CE9.1.2
- Versions from X8.10.x move MRA authentication (access control) settings from Expressway-E to Expressway-C and apply default values where it is not possible to retain existing settings. After you upgrade **you must reconfigure the access control settings on the Expressway** as described later in these upgrade instructions.

**Deployments that use X8.7.x or earlier with Cisco Unified Communications Manager IM and Presence Service 11.5(1)**

X8.7.x and earlier versions of Expressway are not interoperable with Cisco Unified Communications Manager IM and Presence Service 11.5(1) and later. You must upgrade the Expressway software before the IM and Presence Service software. More details are in [Interoperability, page 27](#).

**Deployments that use Cisco Webex Hybrid Services**

The Management Connector must be up to date before you upgrade Expressway. Authorize and accept any Management Connector upgrades advertised by the Cisco Webex cloud before you try to upgrade Expressway. Failure to do so may cause issues with the connector after the upgrade. For details about which versions of Expressway are supported for hybrid connector hosting, see [Connector Host Support for Cisco Webex Hybrid Services](#)

## Upgrade Instructions

### Before You Begin

- Do the upgrade when the system has low levels of activity.
- Make sure all relevant tasks in [Upgrade Prerequisites and Software Dependencies, page 28](#) are complete.
- Note your MRA authentication settings before upgrading. This item only applies if you use the Expressway for MRA and you upgrade from X8.9.x or earlier to X8.10 or later. From version X8.10 we moved the MRA authentication (access control) settings from the Expressway-E to the Expressway-C. The upgrade does not preserve the existing Cisco Expressway-E settings, so after the upgrade you need to review the MRA access control settings on the Expressway-C and adjust them as necessary for your deployment. To access the existing MRA authentication settings:
  - a. On the Expressway-E, go to **Configuration > Unified Communications > Configuration** and locate **Single Sign-on support**. Note the existing value (On, Exclusive, or Off)
  - b. If **Single Sign-on support** is set to On or Exclusive, also note the current values of these related fields:
    - **Check for internal authentication availability**
    - **Allow Jabber iOS clients to use embedded Safari**

### Clustered systems

To upgrade a clustered system, use the upgrade instructions in the *Expressway Cluster Creation and Maintenance Deployment Guide* on the [Cisco Expressway Series configuration guides page](#). The following important requirement for upgrading clusters is explained in that guide, but for convenience it is also repeated here:

**CAUTION: For clustered systems, to avoid the risk of configuration data being lost and to maintain service continuity, it is ESSENTIAL TO UPGRADE THE PRIMARY PEER FIRST and then upgrade the subordinate peers ONE AT A TIME IN SEQUENCE.**

### Upgrading Expressway-C and Expressway-E systems connected over a traversal zone

We recommend that Expressway-C (traversal client) and Expressway-E (traversal server) systems that are connected over a traversal zone both run the same software version.

However, we do support a traversal zone link from one Expressway system to another that is running the previous feature release of Expressway (for example, from an X8.11 system to an X8.10 system). This means that you do not have to simultaneously upgrade your Expressway-C and Expressway-E systems.

Some services, like Mobile and Remote Access, require both the Expressway-C and Expressway-E systems to be running the same software version.

## Process

This process does not apply if you are upgrading a clustered system, or a Expressway that uses device provisioning (Cisco TMSPE), or FindMe (with Cisco TMS managing Expressway). In those cases, follow the directions in the *Expressway Cluster Creation and Maintenance Deployment Guide* instead.

1. Backup the Expressway system before you upgrade (**Maintenance > Backup and restore**).
2. Enable maintenance mode:
  - a. Go to **Maintenance > Maintenance mode**.
  - b. Set **Maintenance mode** to *On*.
  - c. Click **Save** and click **OK** on the confirmation dialog.

## Upgrading to X12.5.9

3. Wait for all calls to clear and registrations to timeout.
  - If necessary, manually remove any calls that do not clear automatically (**Status > Calls**, click **Select all** and then click **Disconnect**).
  - If necessary, manually remove any registrations that do not clear automatically (**Status > Registrations > By device**, click **Select all** and then click **Unregister**).
4. Upgrade and restart the Expressway (**Maintenance > Upgrade**).

If you are upgrading to X12.5.4 or later, for example from X8.x to X12.5.5, a release key is not required.

The web browser interface may timeout during the restart process, after the progress bar has reached the end. This may occur if the Expressway carries out a disk file system check – which it does approximately once every 30 restarts.
5. This step depends on whether or not you use the Expressway for MRA:
  - If you don't use MRA, the upgrade is now complete and all Expressway configuration should be as expected.
  - If you do use MRA, and you are upgrading from X8.9.x or earlier, you need to reconfigure your MRA access control settings as described in [Appendix 1: Post-Upgrade Tasks for MRA Deployments, page 33](#)

## Using Collaboration Solutions Analyzer

*Collaboration Solutions Analyzer* is created by Cisco Technical Assistance Center (TAC) to help you with validating your deployment, and to assist with troubleshooting by analyzing Expressway log files. For example, you can use the Business to Business Call Tester to validate and test calls, including Microsoft interworked calls.

**Note:** You need a customer or partner account to use Collaboration Solutions Analyzer.

### Getting started

1. If you plan to use the log analysis tool, first collect the logs from your Expressway.
2. Sign in to <https://cway.cisco.com/tools/CollaborationSolutionsAnalyzer/>
3. Click the tool you want to use. For example, to work with logs:
  - a. Click **Log analysis**.
  - b. Upload the log file(s).
  - c. Select the files you want to analyze.
  - d. Click **Run Analysis**.

The tool analyzes the log files and displays the information in a format which is much easier to understand than the raw logs. For example, you can generate ladder diagrams to show SIP calls.

## Using the Bug Search Tool

The Bug Search Tool contains information about open and resolved issues for this release and previous releases, including descriptions of the problems and available workarounds. The identifiers listed in these release notes will take you directly to a description of each issue.

To look for information about a specific problem mentioned in this document:

1. Using a web browser, go to the [Bug Search Tool](#).
2. Sign in with a cisco.com username and password.
3. Enter the bug identifier in the **Search** field and click **Search**.

To look for information when you do not know the identifier:

1. Type the product name in the **Search** field and click **Search**.
2. From the list of bugs that appears, use the **Filter** drop-down list to filter on either *Keyword*, *Modified Date*, *Severity*, *Status*, or *Technology*.

Use **Advanced Search** on the Bug Search Tool home page to search on a specific software version.

The Bug Search Tool help pages have further information on using the Bug Search Tool.

## Obtaining Documentation and Submitting a Service Request

Use the [Cisco Notification Service](#) to create customized flexible notification alerts to be sent to you via email or by RSS feed.

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see [What's New in Cisco Product Documentation](#).

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the [What's New in Cisco Product Documentation RSS feed](#). The RSS feeds are a free service.



## Appendix 1: Post-Upgrade Tasks for MRA Deployments

This section only applies if you use the Expressway for Mobile and Remote Access and you upgrade from X8.9.x or earlier to X8.10 or later. After the system restarts you need to reconfigure the MRA access control settings:

1. On the Expressway-C, go to **Configuration > Unified Communications > Configuration > MRA Access Control**.
2. Do one of the following:
  - To take advantage of the new MRA access control methods from X8.10, set the appropriate values on this page for your chosen methods. See the first table below for help about which values to apply.
  - Or to retain your pre-upgrade authentication approach, set the appropriate values on this page to match your previous settings on the Expressway-E. See the second table below for help about how to map the old Expressway-E settings to their new equivalents on the Expressway-C.
3. If you configure self-describing tokens (**Authorize by OAuth token with refresh**), refresh the Unified CM nodes: Go to **Configuration > Unified Communications > <UC server type>** and click **Refresh servers**.

### Important!

- The **Check for internal authentication availability** setting will be off after the upgrade. Depending on the authentication settings on the Unified CM, this may prevent remote login by some Cisco Jabber users.
- The *Exclusive* option in X8.9 is now configured by setting **Authentication path** to *SAML SSO authentication*. This has the effect of prohibiting authentication by username and password.

The fields you actually see in the Web UI depend on whether MRA is enabled (**Unified Communications mode** set to *Mobile and remote access*) and on the selected authentication path. Not all the fields in the table are necessarily displayed.

**Table 5 Settings for MRA access control**

Field	Description	Default
Authentication path	<p>Hidden field until MRA is enabled. Defines how MRA authentication is controlled.</p> <p><i>SAML SSO authentication</i>: Clients are authenticated by an external IdP.</p> <p><i>UCM/LDAP basic authentication</i>: Clients are authenticated locally by the Unified CM against their LDAP credentials.</p> <p><i>SAML SSO and UCM/LDAP</i>: Allows either method.</p> <p><i>None</i>: No authentication is applied. This is the default setting until MRA is first enabled. The "None" option is needed (rather than just leaving MRA turned off) because some deployments must turn on MRA to allow functions which are not actually MRA. (Such as the Web Proxy for Meeting Server, or XMPP Federation.) Only these customers should use "None". <b>Do not use it in other cases.</b></p>	<p>None before MRA turned on</p> <p>UCM/LDAP after MRA turned on</p>
Authorize by OAuth token with refresh	<p>This option requires self-describing tokens for authorization. It's our recommended authorization option for all deployments that have the infrastructure to support them.</p> <p>Only Jabber clients are currently capable of using this authorization method. Other MRA endpoints do not currently support it. The clients must also be in OAuth token with refresh authorization mode.</p>	On

## Appendix 1: Post-Upgrade Tasks for MRA Deployments

Table 5 Settings for MRA access control (continued)

Field	Description	Default
Authorize by OAuth token (previously SSO Mode)	Available if <b>Authentication path</b> is <i>SAML SSO</i> or <i>SAML SSO and UCM/LDAP</i> .  This option requires authentication through the IdP. Currently, only Jabber clients are capable of using this authorization method, which is not supported by other MRA endpoints.	Off
Authorize by user credentials	Available if <b>Authentication path</b> is <i>UCM/LDAP</i> or <i>SAML SSO and UCM/LDAP</i> .  Clients attempting to perform authentication by user credentials are allowed through MRA. This includes Jabber, and supported IP phone and TelePresence devices.	Off
Check for internal authentication availability	Available if <b>Authorize by OAuth token with refresh</b> or <b>Authorize by OAuth token</b> is enabled.  The default is No, for optimal security and to reduce network traffic.  Controls how the Expressway-E reacts to remote client authentication requests by selecting whether or not the Expressway-C should check the home nodes.  The request asks whether the client may try to authenticate the user by OAuth token, and includes a user identity with which the Expressway-C can find the user's home cluster:  <i>Yes:</i> The <i>get_edge_sso</i> request will ask the user's home Unified CM if OAuth tokens are supported. The home Unified CM is determined from the identity sent by the Jabber client's <i>get_edge_sso</i> request.  <i>No:</i> If the Expressway is configured not to look internally, the same response will be sent to all clients, depending on the Edge authentication settings.  The option to choose depends on your implementation and security policy. If all Unified CM nodes support OAuth tokens, you can reduce response time and overall network traffic by selecting <i>No</i> . Or select <i>Yes</i> if you want clients to use either mode of getting the edge configuration - during rollout or because you can't guarantee OAuth on all nodes.  <b>Caution: Setting this to Yes has the potential to allow rogue inbound requests from unauthenticated remote clients.</b> If you specify No for this setting, the Expressway prevents rogue requests.	No

**Table 5 Settings for MRA access control (continued)**

Field	Description	Default
Identity providers: Create or modify IdPs	<p>Available if <b>Authentication path</b> is <i>SAML SSO</i> or <i>SAML SSO and UCM/LDAP</i>.</p> <p><b>Selecting an Identity Provider</b></p> <p>Cisco Collaboration solutions use SAML 2.0 (Security Assertion Markup Language) to enable SSO (single sign-on) for clients consuming Unified Communications services.</p> <p>If you choose SAML-based SSO for your environment, note the following:</p> <ul style="list-style-type: none"> <li>■ SAML 2.0 is not compatible with SAML 1.1 and you must select an IdP that uses the SAML 2.0 standard.</li> <li>■ SAML-based identity management is implemented in different ways by vendors in the computing and networking industry, and there are no widely accepted regulations for compliance to the SAML standards.</li> <li>■ The configuration of and policies governing your selected IdP are outside the scope of Cisco TAC (Technical Assistance Center) support. Please use your relationship and support contract with your IdP Vendor to assist in configuring the IdP properly. Cisco cannot accept responsibility for any errors, limitations, or specific configuration of the IdP.</li> </ul> <p>Although Cisco Collaboration infrastructure may prove to be compatible with other IdPs claiming SAML 2.0 compliance, only the following IdPs have been tested with Cisco Collaboration solutions:</p> <ul style="list-style-type: none"> <li>■ OpenAM 10.0.1</li> <li>■ Active Directory Federation Services 2.0 (AD FS 2.0)</li> <li>■ PingFederate® 6.10.0.4</li> </ul>	—
Identity providers: Export SAML data	<p>Available if <b>Authentication path</b> is <i>SAML SSO</i> or <i>SAML SSO and UCM/LDAP</i>.</p> <p>For details about working with SAML data, see <a href="#">SAML SSO Authentication Over the Edge, page 1</a>.</p>	—

## Appendix 1: Post-Upgrade Tasks for MRA Deployments

Table 5 Settings for MRA access control (continued)

Field	Description	Default
Allow Jabber iOS clients to use embedded Safari	<p>By default the IdP or Unified CM authentication page is displayed in an embedded web browser (not the Safari browser) on iOS devices. That default browser is unable to access the iOS trust store, and so cannot use any certificates deployed to the devices.</p> <p>This setting optionally allows Jabber on iOS devices to use the native Safari browser. Because the Safari browser <i>is</i> able to access the device trust store, you can now enable password-less authentication or two-factor authentication in your OAuth deployment.</p> <p>A potential security issue exists for this option. The mechanism to return browser control from Safari to Jabber after the authentication completes, uses a custom URL scheme that invokes a custom protocol handler. It's possible that another application other than Jabber could intercept the scheme and gain control from iOS. In that case, the application would have access to the OAuth token in the URL.</p> <p>If you are confident that your iOS devices will not have other applications that register the Jabber custom URL scheme, for example because all mobile devices are managed, then it's safe to enable the option. If you are concerned about the possibility of another app intercepting the custom Jabber URL, then do <b>not</b> enable the embedded Safari browser.</p>	No
SIP token extra time to live	<p>Available if <b>Authorize by OAuth token</b> is <i>On</i>.</p> <p>Optionally extends the time-to-live for simple OAuth tokens (in seconds). Gives users a short window to accept calls after their credentials expire. However, it increases the potential security exposure.</p>	0 seconds

## Appendix 1: Post-Upgrade Tasks for MRA Deployments

Table 6 MRA access control values applied by the upgrade

Option	Value after upgrade	Previously on...	Now on...
Authentication path	<p>Pre-upgrade setting is applied</p> <p><b>Notes:</b></p> <p><b>SSO mode=Off</b> in X8.9 is two settings in X8.10:</p> <ul style="list-style-type: none"> <li>■ <b>Authentication path=UCM/LDAP</b></li> <li>■ <b>Authorize by user credentials=On</b></li> </ul> <p><b>SSO Mode=Exclusive</b> in X8.9 is two settings in X8.10:</p> <ul style="list-style-type: none"> <li>■ <b>Authentication path=SAML SSO</b></li> <li>■ <b>Authorize by OAuth token=On</b></li> </ul> <p><b>SSO Mode=On</b> in X8.9 is three settings in X8.10:</p> <ul style="list-style-type: none"> <li>■ <b>Authentication path=SAML SSO/and UCM/LDAP</b></li> <li>■ <b>Authorize by OAuth token=On</b></li> <li>■ <b>Authorize by user credentials=On</b></li> </ul>	Both	Expressway-C
Authorize by OAuth token with refresh	On	–	Expressway-C
Authorize by OAuth token (previously SSO Mode)	Pre-upgrade setting is applied	Both	Expressway-C
Authorize by user credentials	Pre-upgrade setting is applied	Both	Expressway-C
Check for internal authentication availability	No	Expressway-E	Expressway-C
Identity providers: Create or modify IdPs	Pre-upgrade setting is applied	Expressway-C	Expressway-C (no change)
Identity providers: Export SAML data	Pre-upgrade setting is applied	Expressway-C	Expressway-C (no change)
Allow Jabber iOS clients to use embedded Safari	No	Expressway-E	Expressway-C
SIP token extra time to live	Pre-upgrade setting is applied	Expressway-C	Expressway-C (no change)

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