

Configure and Troubleshoot Expressway Smart Licensing

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Introduction

This document describes how to configure Expressway with Cisco Software Smart Licensing (CSSM).

Prerequisites

Requirements

Cisco recommends you have knowledge of these topics:

- Expressway and CSSM.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Expressway x14.0.11
- Cisco Expressway x14.3.1
- Cloud CSSM

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background

Cisco Smart Licensing makes managing licensing more flexible and simplifies management across the enterprise. Devices that utilize Smart Licensing report license consumption, which removes the need to use option keys (Product Activation Keys). License entitlements are pooled in a single account that can be used across Expressways or across different clusters of Expressways. Expressway started to utilize Cisco Smart Licensing in version x12.6. At that time, deployments could use either traditional licenses or Smart Licensing. With version x14.1 and later the Expressway only supports Smart licensing. Upgrades from deployments using traditional licenses to any version x14.1 or newer automatically enables Smart licensing and starts a 90 day grace period. Expressway version x14.2 introduced Specific License Reservations (SLR).

Here are some benefits of Smart Licensing:

- Adds flexibility to licensing and simplifies it across the enterprise.
- Easier to procure, deploy, and manage licenses easily where devices self-register and report license consumption, removing the need for product activation keys (PAK).
- utilize on premise satellite Cisco Smart Software Manager or Cloud Smart Software Manager to easily allocate licenses where needed ([CSSM](#)).



Note: Due to a Root Certificate change on software.cisco.com in January 2023, Expressway does NOT work with neither a direct or proxy connection to Smart Licensing unless running X14.0.11 or X14.2.5 (or newer). Only Satellite CSSM works before these versions.

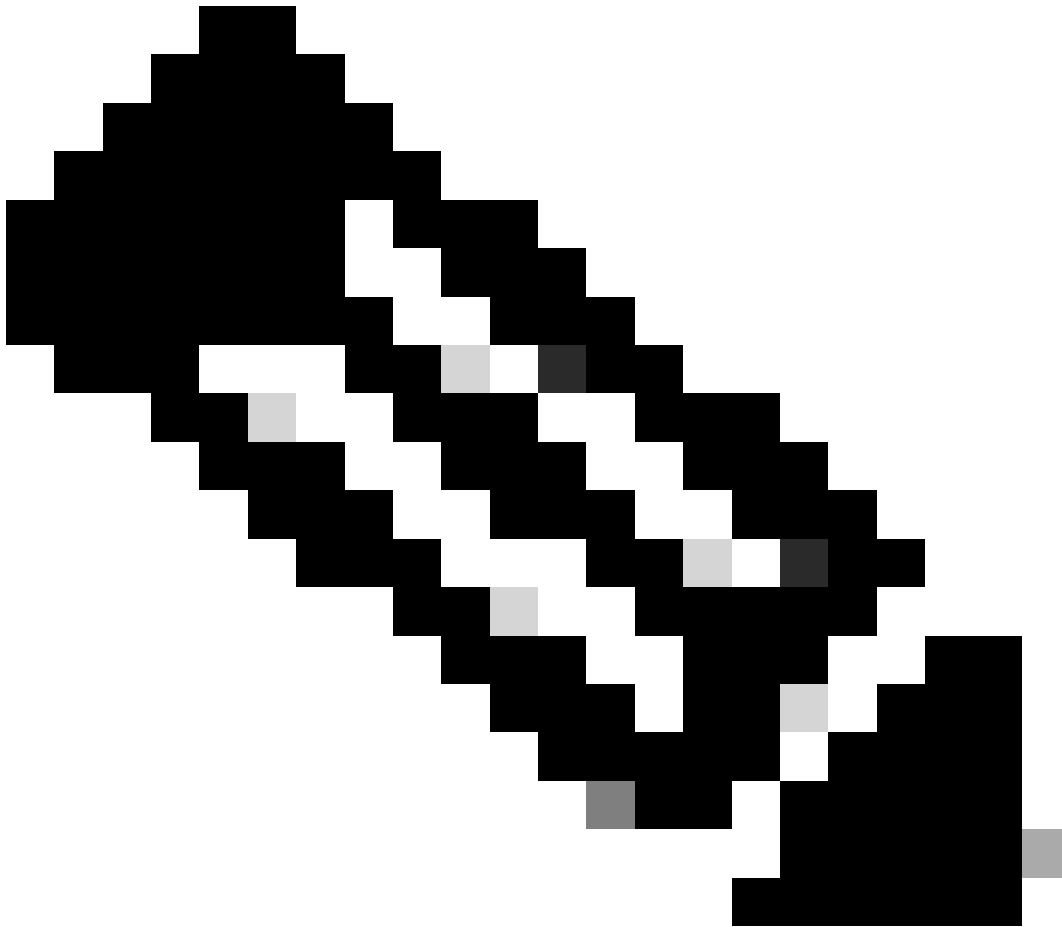
Types of Smart Licenses

There are 4 types of license reservation types available for Smart Licensing on Expressways. These are used to create a pool of licenses that each Expressway in the deployment can utilize.

- **Cisco Expressway Rich Media Session License** (Rich Media Session)
- **UC Manager Enhanced License** (Desktop/User Device)
- **UC Manager Telepresence Room License** (Telepresence Room)
- **Permanent License Reservation (PLR)** (Cisco internal use only)

These licenses are not available on Smart Licensing, so if using these, deployments cannot be upgraded past 14.0.x

- **Advanced Account Security** - 116341J00
- **Hardware Security Module (HSM)** - 116341H00



Note: No licenses are required for Mobile Remote Access (MRA) unless placing video calls from MRA clients to addresses outside your domain. If the latter, Expressway E requires RMS licenses.

Converting Traditional Licenses to Smart Software Licenses

If you do not yet have smart licenses in your Virtual Account, you can convert your existing licenses to Smart Licenses in the Smart Software Licensing Portal (<https://software.cisco.com>). If you do not already have eligible SKUs (only RMS and Device Licenses are eligible for Smart Licensing), you need to have your PAK number for the licenses you want to convert and associate those with your Smart Account before converting them. You would perform that association in the Product License Registration Portal. If you do not have your PAK numbers, contact Cisco Licensing and provide them your sales order number so they can help complete the conversion for you.

1. Navigate to **Cisco Software Central > Smart Software Licensing > Convert to Smart Licensing** and select either **Convert PAKs** or **Convert Licenses**, depending on what you need.

Alerts Inventory **Convert to Smart Licensing** Reports Preferences On-Prem Accounts Activity

License Conversion

Convert PAKs

Convert Licenses

Conversion History

Conversion Settings

Event Log

The table below contains devices in your Smart Account that are using traditional licenses that can be converted to Smart Software Licenses. If you do not see a device you expect to see in the table, ensure that it has been assigned to your Smart Account in the [Product License Registration Portal](#). You can also try entering the device information in the License Conversion wizard.

There may be licenses that are eligible to be converted, based on your [automatic conversion settings](#). [Convert Now...](#)

Last Updated : 2024-Feb-13 11:30:08



Convert from a Device File...

Search Identifier, Product Family or Virtual Account

Device Identifier	Product Family	Eligible SKUs	Virtual Account	Status	Actions
Cisco On PremTelePresen...		A-FLEX-EXP-RMS (10), A-FLEX-...	DEFAULT		Convert Licenses
			DEFAULT		Convert Licenses...
			DEFAULT		Convert Licenses...
			DEFAULT		Convert Licenses...
			DEFAULT		Convert Licenses...
			DEFAULT		Convert Licenses...

License Conversion

2. Select the licenses you want to convert (A-FLEX-EXP-RMS, A-FLEX-EXP-DESK, A-FLEX-EXP-ROOM), then click **Convert Licenses**.

3. On the pop up menu **Convert to Smart Software Licenses**:

a: select the licenses you want to convert, click next

b: review your selection and click Convert Licenses

Transport settings

When configuring Smart Licensing on Expressway, Transport settings must be configured in the **Maintenance > Smart Licensing** page. This section tell Expressway how to reach Smart Licensing.

Transport

Transport settings

URL

Do not share my hostname or IP address with Cisco

Direct

Direct

Cisco Smart Software Manager On-Prem

Proxy server

Save

Expressway Transport Settings

Direct: Expressway reaches out to the Internet directly to the Smart Receiver. The Expressway requires HTTPS access to the Internet for this method.

Cisco Smart Software Manager On-Prem: Expressway talks to a satellite server that is running locally on your network. (Configure the satellite server URL with /SmartTransport at end of the satellite URL).

Proxy Server: Expressway has to connect via a proxy server to reach the Internet. Deployments that do not allow devices direct access to the Internet over HTTPS require a proxy server for that traffic to flow through.

Do Not share my Hostname or IP address with Cisco: When left unchecked, the host name is visible in the **Smart licensing > Product instance** page. This only occurs when using Tokens. If using License Reservation, the product instance page shows Expressway and the device serial number. In this example, e1 and e2 are shown as the name because the deployment is using tokens and the box is not checked.

Virtual Account: 3 Minor Hide Alerts

General Licenses **Product Instances** Event Log

Authorize License-Enforced Features...

Name	Product Type	Last Contact	Alerts	Actions
381a299b950211edac280242cb007106	CTSPMP	2023-Feb-04 20:52:27 (Reserved Licenses)		Actions
e1	EXPY	2023-Sep-27 17:25:24		Actions
e2	EXPY	2023-Sep-27 17:25:07		Actions
fb440ec8988911ebb8150242cb007104	CTSPMP	2023-Jul-19 15:37:00 (Reserved Licenses)		Actions

Product Instance Page - CSSM

Smart Licensing Using Tokens

Smart Licensing using Tokens was the only method to connect to Smart Licensing between versions x12.6 and x14.0.11 and required the Expressway to be able to reach the CSSM (cloud or on-prem) in order to access available licenses, or to update license usage. The inclusion of Smart licensing makes managing Expressway licenses easier, removing the need for PAK licensing. Prior to x14.1, Smart Licensing must be enabled in **Maintenance > Smart Licensing**, but from x14.1 onward, Smart Licensing is enabled by default.

Tokens give the Expressway(s) access to all available licenses in the Virtual Account (VA) on CSSM.



Note: Each node in an Expressway cluster must have tokens assigned. Applying a token to the primary expressway node does not license the peer nodes.

Configure

1. Log into software.cisco.com and go to the **General** tab in the Virtual Account and select **New Token**.
2. Fill in the token registration with a **Description**, **Expires After** (number of days the token is valid for before applying to the servers, in days), and **Max. Number of Uses**, and click **Create Token**.

Cisco Software Central > Smart Software Licensing Smart account → InternalTestDemoAccount8.cisco.com

Smart Software Licensing

SL Product Details Support Help

Alerts | **Inventory** | Convert to Smart Licensing | Reports | Preferences | On-Prem Accounts | Activity

Virtual Account: Virtual Account 3 Minor Hide Alerts

General Licenses Product Instances Event Log

Virtual Account

Description: Darren McKinnon
 Default Virtual Account: No

Product Instance Registration Tokens

The registration tokens below can be used to register new product instances to this virtual account.

New Token...

Create Registration Token

This will create a token that is used to register product instances, so that they can use licenses from this virtual account. Once it's created, go to the Smart Licensing configuration for your products and enter the token, to register them with this virtual account.

Virtual Account:

Description:

• Expire After: Days ← How many days do you have to apply this token to your server

Between 1 - 365, 30 days recommended

Max. Number of Uses: ← How many times can a token be used

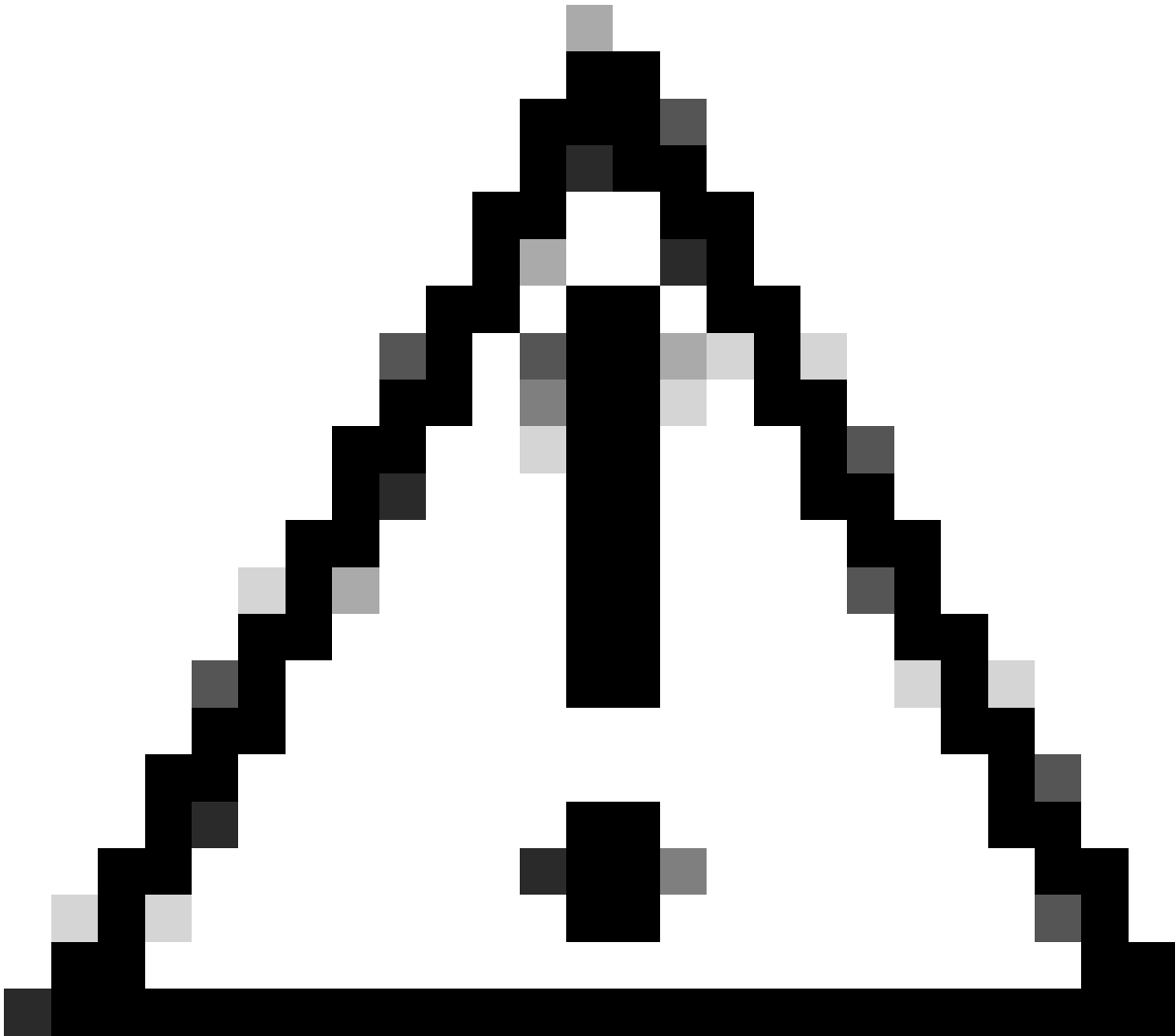
The token will be expired when either the expiration or the maximum uses is reached

Allow export-controlled functionality on the products registered with this token ⓘ

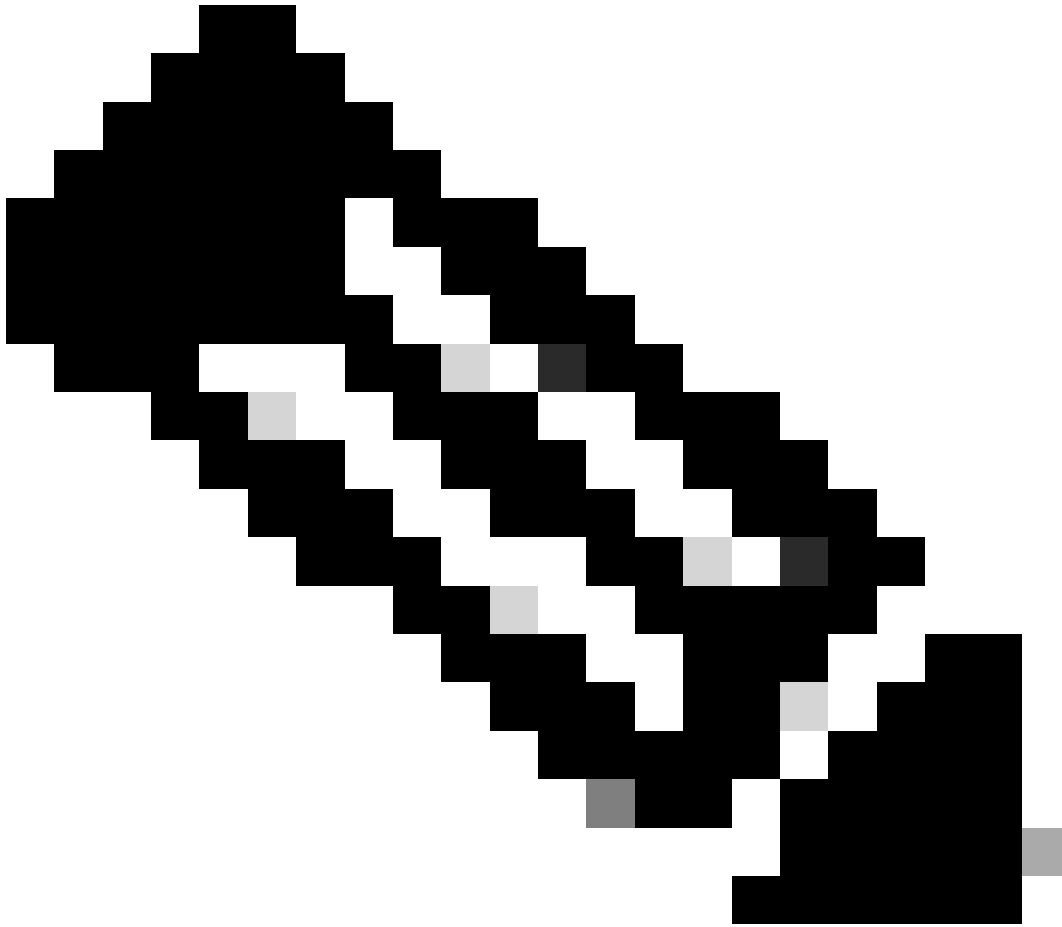
↑ indicates if encryption will be permitted
Allow Export-controlled = yes

Create Token Cancel

CSSM Token Creation



Caution: Smart Licensing changed their Certificate Authority (CA) on Jan, 2023. Since that time, tokens do not work if using Direct or Proxy connection to CSSM prior to x14.0.11. Refer to Cisco bug ID [CSCwe09378](#).



Note: Only registered Cisco users can access internal Cisco bug information.

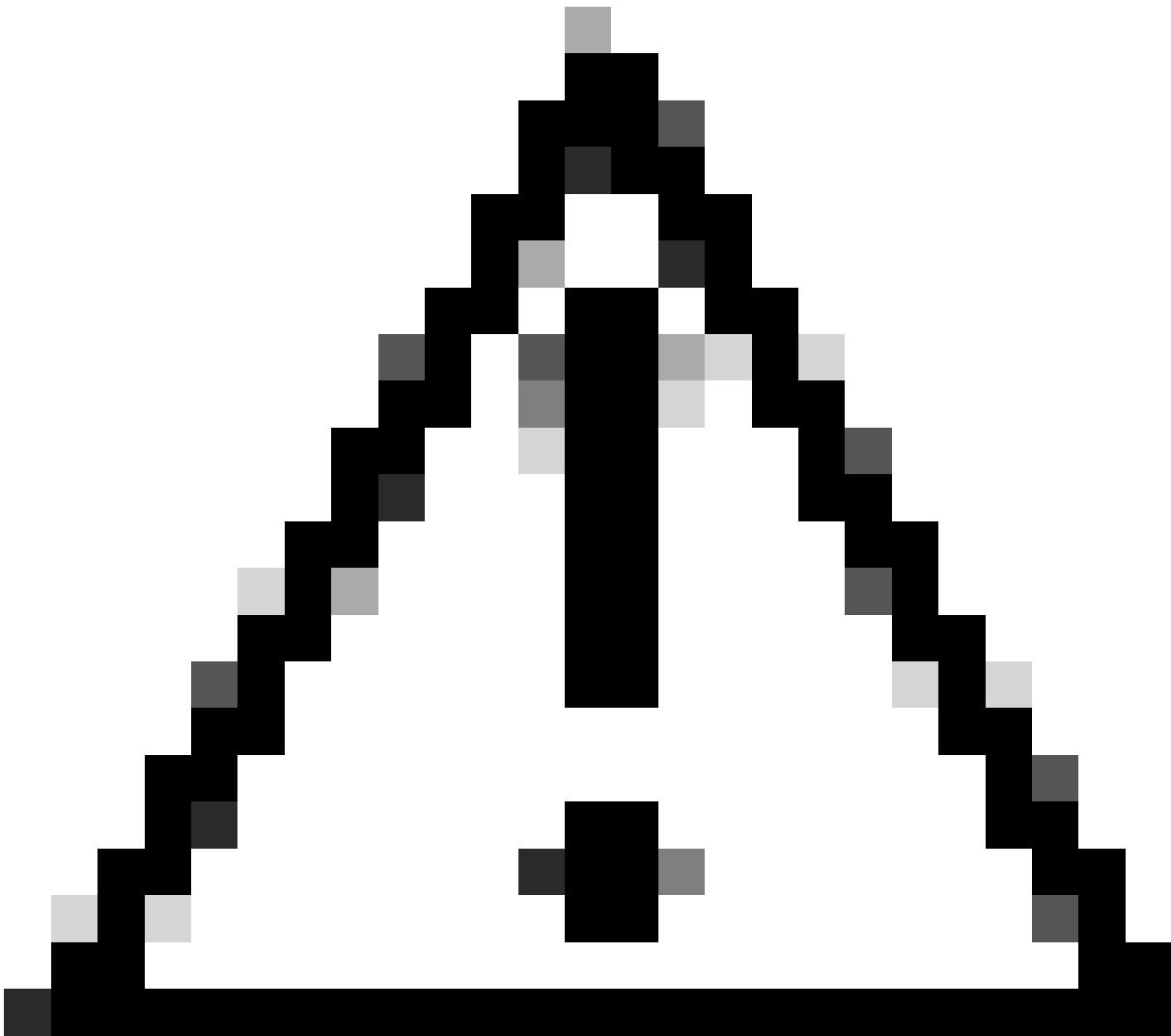
3. Copy the token and on each Expressway in the deployment, open **Maintenance > Smart Licensing**. If on an Expressway version x12.6 - x14.0.x, you must manually enable Smart Licensing. A prompt is displayed saying that enabling Smart Licensing is irreversible and a factory reset is required if you want to go back to using traditional licenses.
4. Paste token in the Registration field at the bottom of the page and click **Register**.

A screenshot of a web form titled "Registration". The form has a light blue header with the word "Registration" in a darker blue box. Below the header, there is a label "Product Instance Registration token" followed by a large, empty text input field. To the right of the input field is a small information icon (i). Below the input field, there is a checkbox labeled "Reregister this product instance if it is already registered" and another small information icon (i). At the bottom left of the form is a "Register" button.

Expressway Token Field

The deployment license usage is automatically updated every 6 hours from Expressway to CSSM, but if you

wanted to update the usage at any given time, this can be done in Expressway **Maintenance > Smart Licensing**, and selecting **Update Usage Details**.



Caution: This is resource intensive, and must be used with caution.

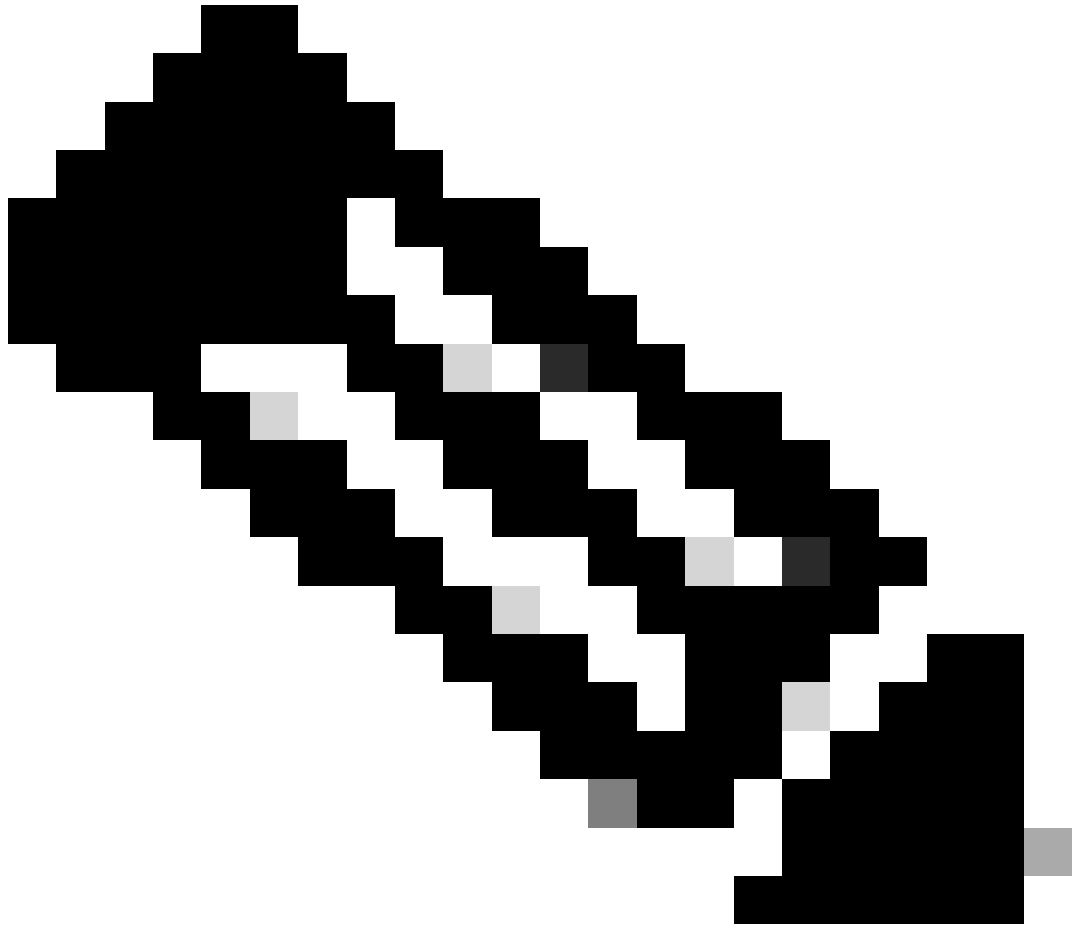


Note: This assumes you have already set up the Transport settings in Expressway **Maintenance > Smart Licensing**.

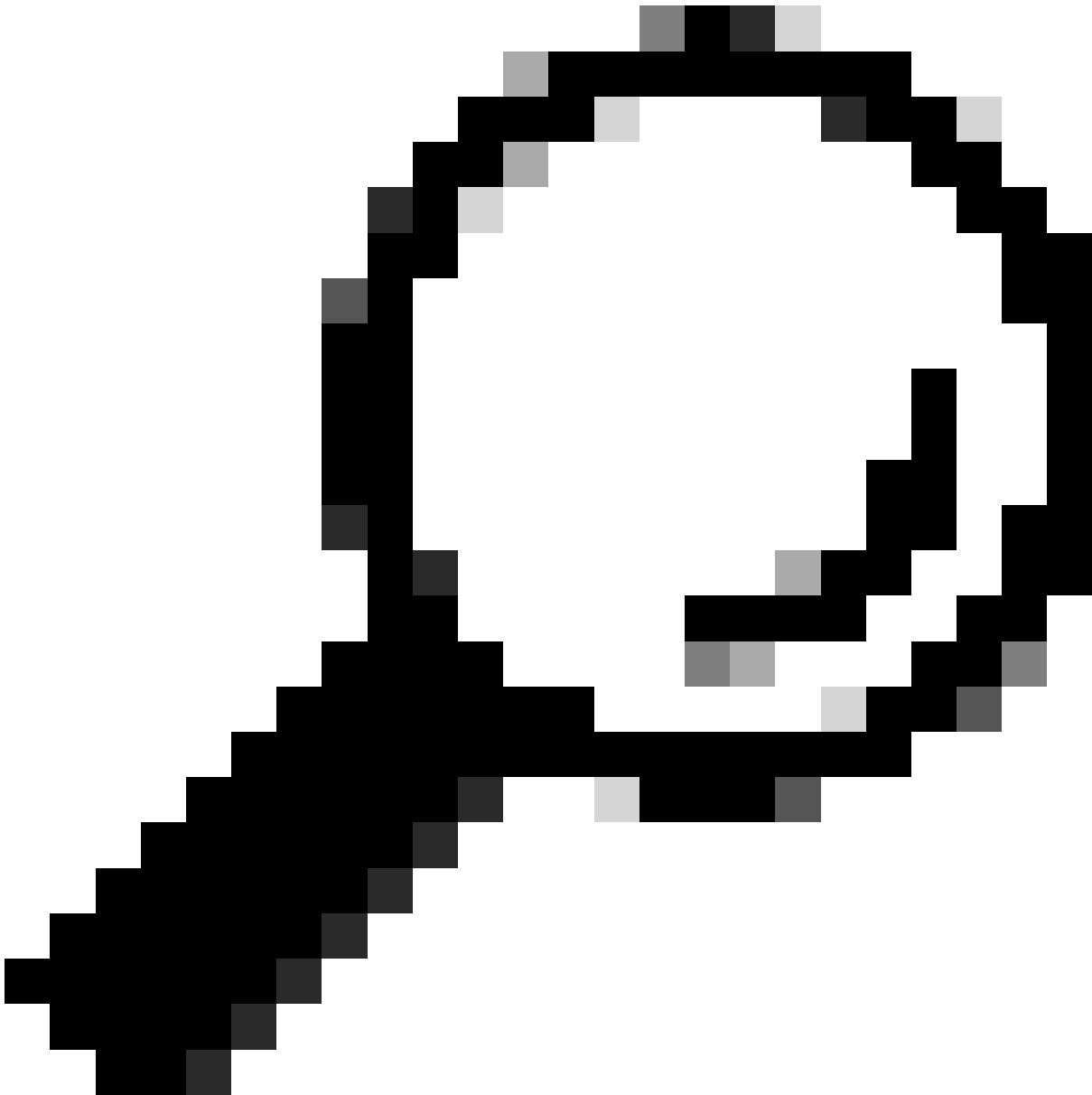
Smart Licensing Using Specific License Reservation (SLR)

Introduced in Expressway x14.2, SLR licensing method is needed for air-gapped deployments, where Expressway cannot reach the Internet, but is suitable for any deployment that is using cloud CSSM. Only cloud CSSM can have License Reservation, so if you have on-prem CSSM, you need to use Smart Licensing Tokens or engage the Cisco Licensing team to assist in creating a new Virtual Account in your cloud CSSM that can have License Reservation. Each node in a cluster must have Smart License Reservation enabled and configured.

Before beginning, deployments that are clustered already must have no alarms. Refer to the Cisco Expressway Cluster creation documentation for further details regarding clustering.



Note: Specific License Reservation (SLR) must be performed on each node in the Expressway cluster.



Tip: SLR cannot be used with Satellite CSSM and cannot be used in cloud CSSM using the same Virtual Account (VA) used for connecting with the satellite CSSM. If wanting to use SLR, Expressway Smart Licenses need to be transferred to a different or new VA in cloud CSSM. Engage Cisco Licensing team for assistance, if needed.

Configure

Steps to enable SLR:


1. In CLI, run command **xconfiguration license Smart reservationEnable: on.**
2. In CLI, run command **xcommand license Smart reservation request.**
3. Copy the Reservation Request Code, and log into the Smart Account at [Cisco Software Smart Licensing](#).
4. In the Virtual Account, click **License Reservation** and paste the **Reservation Request Code**.

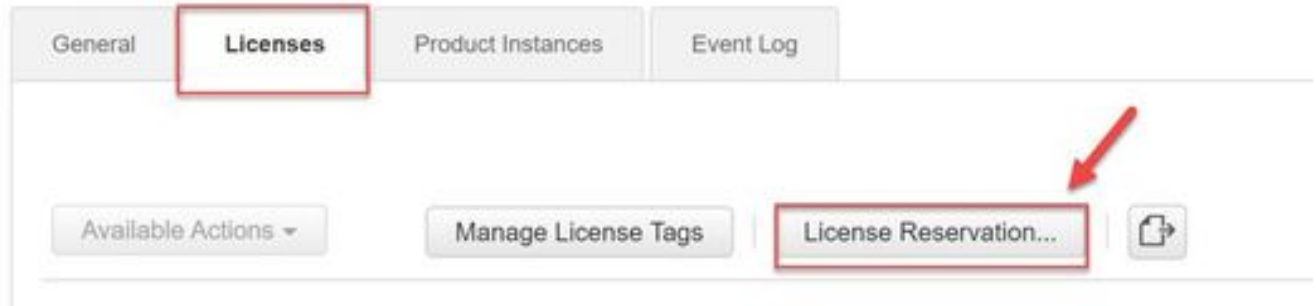
Smart Software Licensing

Alerts **Inventory** Convert to Smart Licensing | Reports | Preferences | On-Prem Accounts | Activity

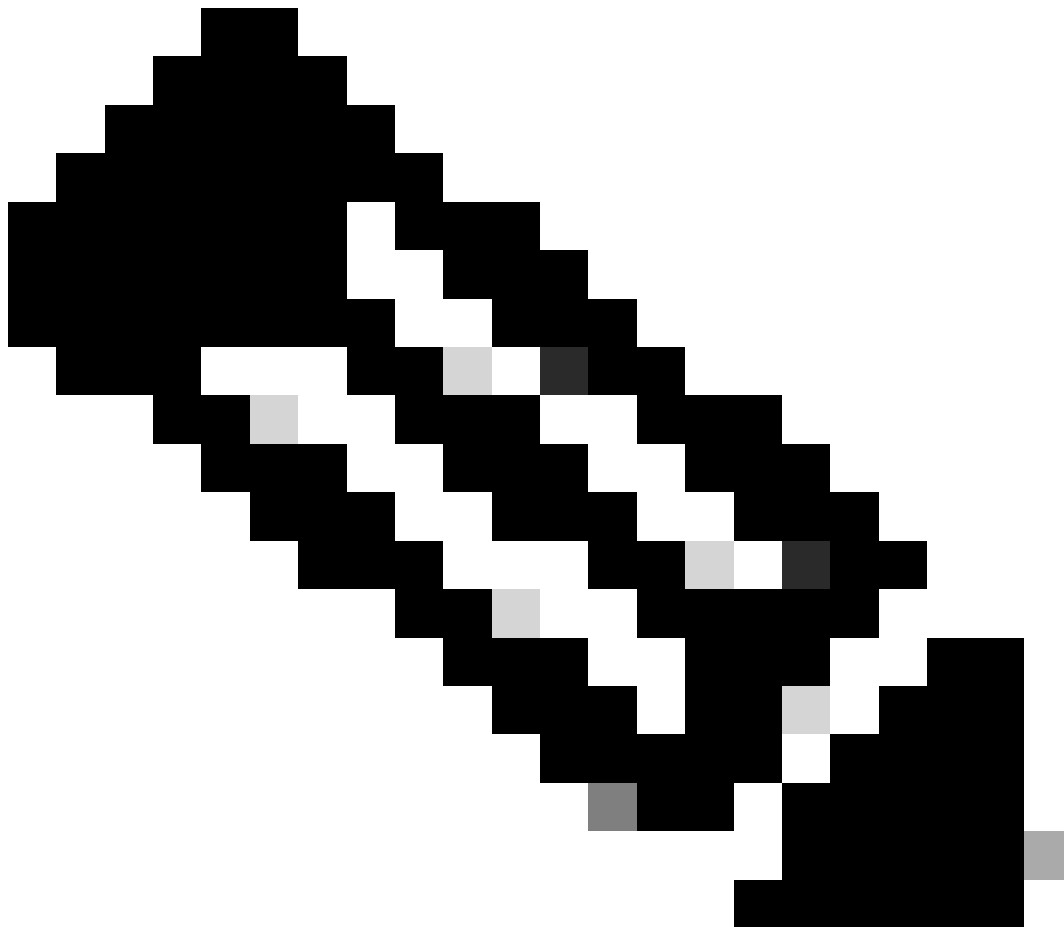
Virtual Account: ▼

General **Licenses** Product Instances Event Log

Available Actions ▼ Manage License Tags License Reservation... 

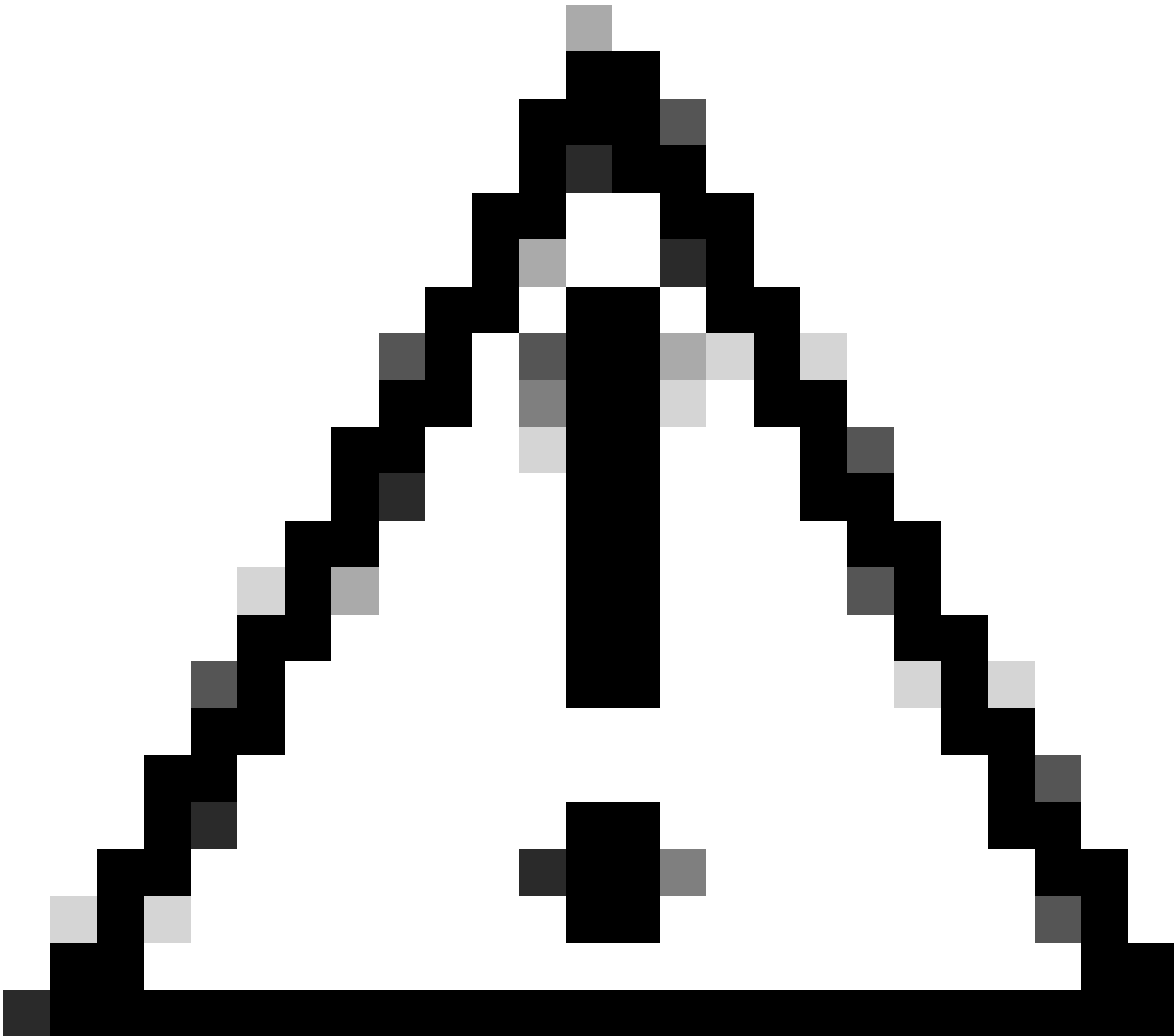


CSSM License Reservation



Note: If License Reservation is not the Virtual Account, engage Cisco Licensing team.

5. Select how many licenses to reserve for this request.



Caution: All nodes in the cluster must be registered to Smart Licensing which means there has to be some licenses available for all nodes. Do not assign all licenses to one node.

Smart License Reservation

STEP 1 ✓ Enter Request Code STEP 2 **Select Licenses** STEP 3 Review and Confirm STEP 4 Authorization Code

Host Identifier: 310ea119
UDI VID: 1.0

Licenses to Reserve
In order to continue, ensure that you have a surplus of the licenses you want to reserve in the Virtual Account.

Reserve a specific license

License	Expires	Purchased	Available	Reserve
Level2 Supports substitution UC Manager Telepresence Room License <small>UC Manager Telepresence Room License</small>	2024-Feb-16	5	5	<input type="text" value="0"/>
Level 3 UC Manager Telepresence Room License (12.x) <small>UC Manager Telepresence Room License</small>	-	0	2	<input type="text" value="0"/>
Level2 Supports substitution				

Cancel Next

CSSM License Reservation

6. After reviewing, click **Generate Authorization Code**.

Smart License Reservation

STEP 1 ✓ Enter Request Code STEP 2 ✓ Select Licenses STEP 3 **Review and Confirm** STEP 4 Authorization Code

Product Type: EXPY
UDI PID: Expressway
UDI Serial Number: 098AA971
Host Identifier: 310ea119
UDI VID: 1.0

Licenses to Reserve

License	Expires	Quantity to Reserve
Level 2 UC Manager Telepresence Room License <small>UC Manager Telepresence Room License</small>	2024-Feb-16	1

Cancel Back **Generate Authorization Code**

CSSM Review and Confirm

7. Copy the authorization code, or download as a file, and close this window.


```
xcommand License Smart Reservation return  
  
Enter the following return code into the CSSM:  
CMcmMV-TriR2T-hKD6pi-c3h43U-sT8Hzx-6CRCjt-9J1GRA-6wZEnV-M2u
```

Expressway CLI - License Return code

3. In the virtual account on Smart licensing, go to **Product Instances > Actions** menu for the Expressway in question, click **Remove**, and enter the Reservation Return Code copied from CLI.

Virtual Account: Minor Hide Alerts

General Licenses **Product Instances** Event Log

Authorize License-Enforced Features...

Name	Product Type	Last Contact	Alerts	Actions
e1	EXPY	2023-Sep-18 18:41:28		Actions
e2	EXPY	2023-Sep-18 18:24:20		Actions
e3	EXPY	2023-Sep-18 18:24:50		Actions
e4	EXPY	2023-Sep-18 18:25:17		Actions
expewebapp	EXPY	2023-Sep-18 15:38:16		Actions
UDI_PID:Expressway; UDI_SN:098AA971; UDI_VID:1.0;	EXPY	2023-Sep-18 19:34:23 (Reserved Licenses)		Actions

Transfer...
Update Reserved Licenses...
Remove...
Rehost Licenses from a Failed Product...

Remove Reservation

To remove a Product Instance that has reserved licenses and make those licenses once again available to other Product Instances, enter in the Reservation Return Code generated by the Product Instance. If you cannot generate a Reservation Return Code, contact Cisco Support.

Reservation Return Code:

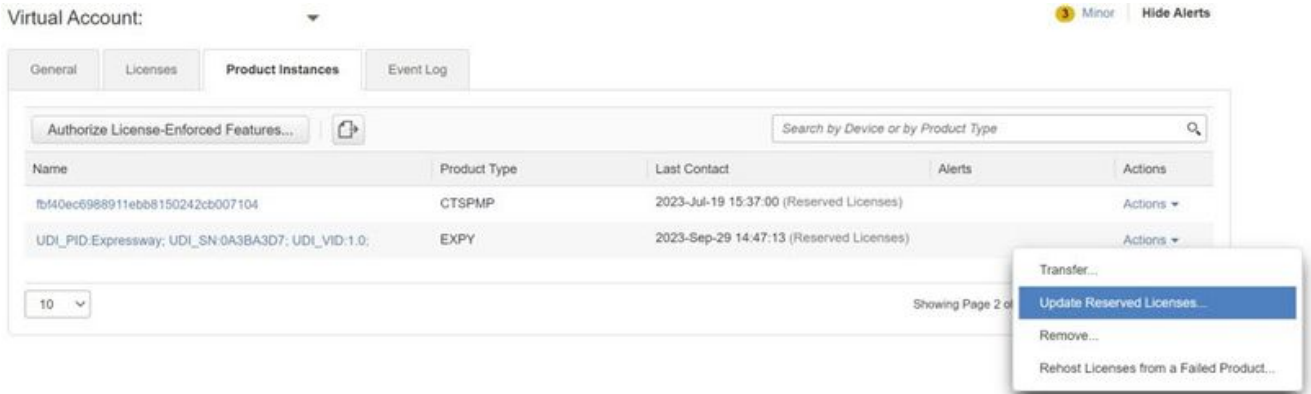
Remove Reservation Cancel

CSSM - License Return

Updating Reserved Licenses

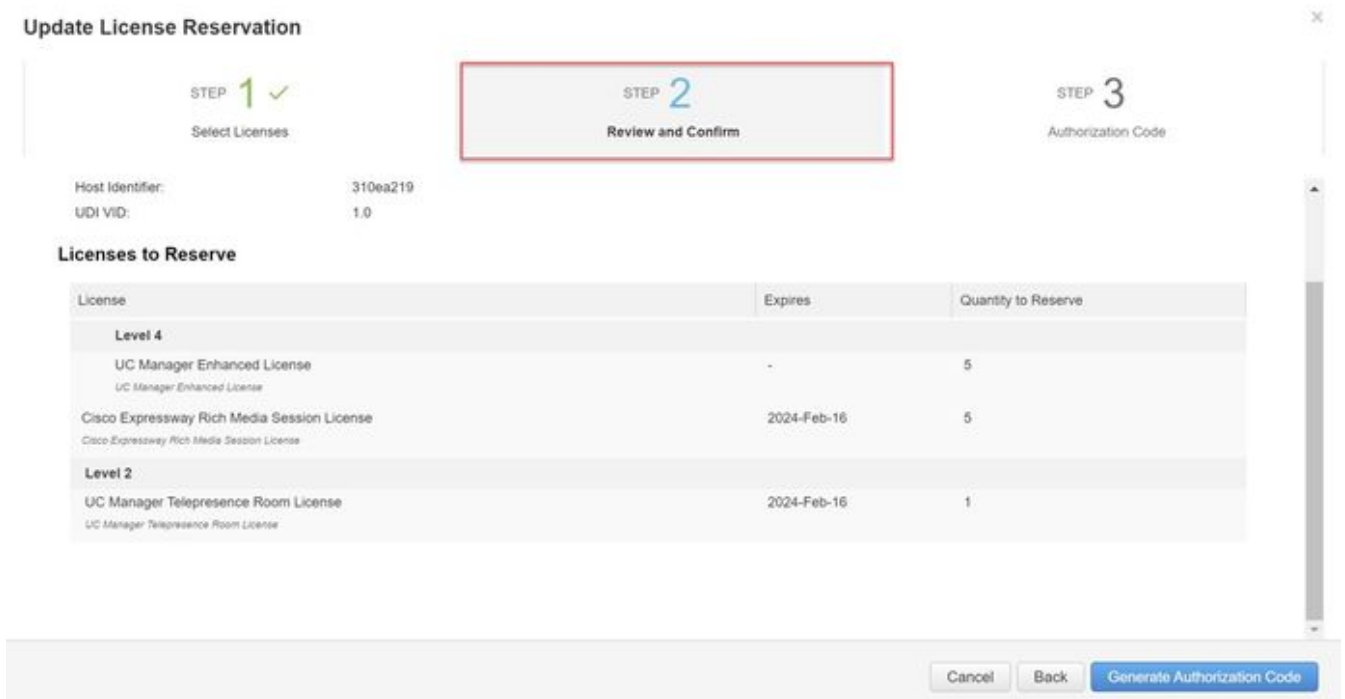
In the event that you need to add additional licenses to their SLR reservation, this can be done by first making the change in the cloud CSSM, then updating the Expressways themselves, and then finishing by entering the confirmation code from Expressway back into the cloud CSSM.

1. In CSSM, find Expressway reservation in **Virtual Account > Product Instances**.
2. Select **Actions > Update Reservation Licenses**.



CSSM Product Instance Update

3. Select Reserve a Specific License and enter new amounts.
4. Click **Next > Generate Authorization Code**.

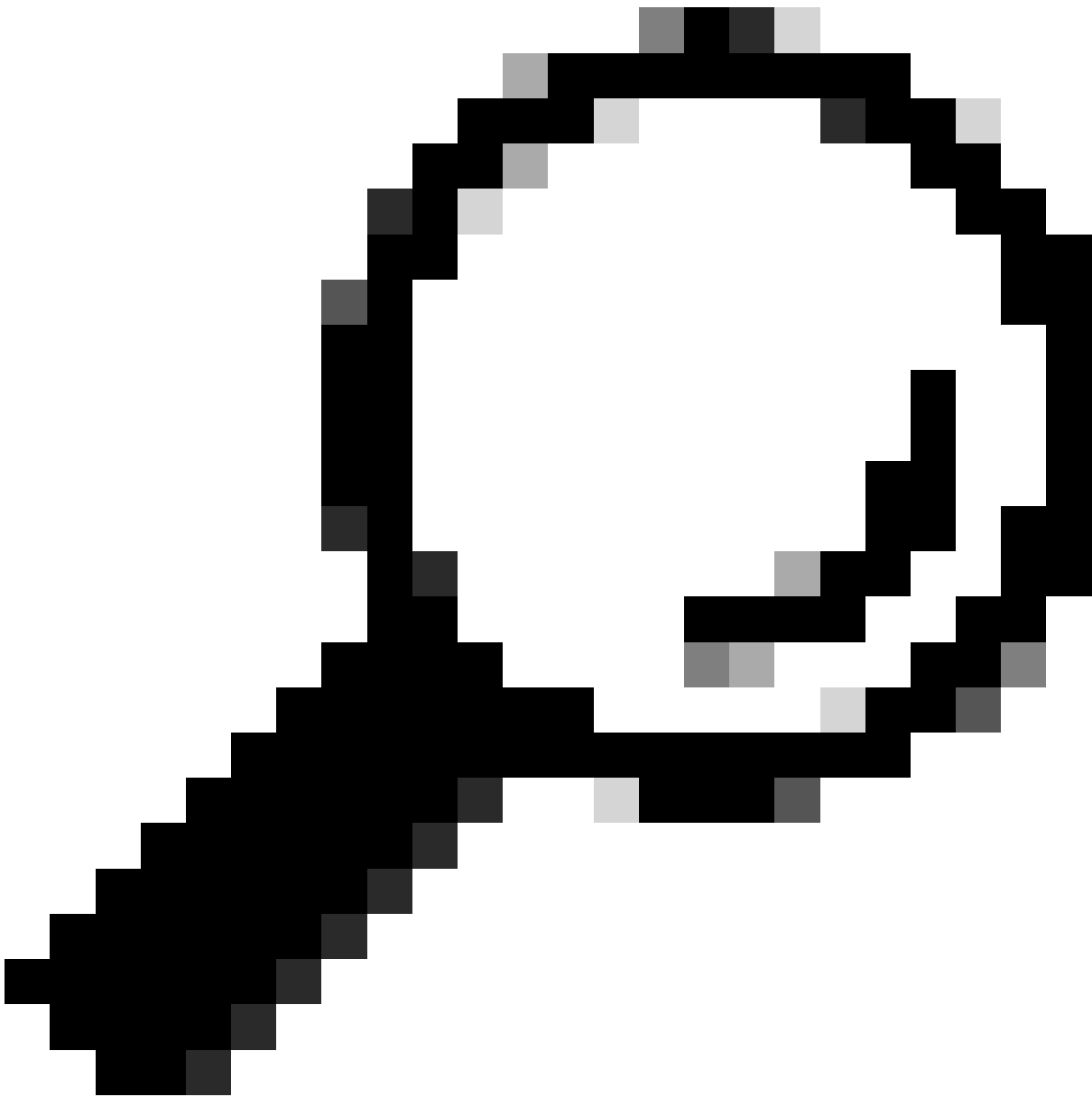


CSSM Generate Auth code

5. Copy the new Authorization code.
6. Leave this window open to enter the Confirmation code that Expressway generates, but if it is closed, the confirmation code can be entered later.
7. In command line interface of Expressway, run the command **xcommand license Smart reservation install <auth code>** and copy the confirmation code.
8. Return to CSSM to Enter the confirmation code. License reservation is not completed until this is done.

```
Authorization code installed.
Please enter the confirmation code to CSSM account: 3311aaea
```

Expressway CLI - update



Tip: Do not forget to use the quotations around the Authorization code when entering it into Expressway command line interface.

-
9. If the reservation window in CSSM was closed, go to Product Instances and find the Expressway.
 10. Select **Actions > Enter Confirmation Code** and paste the code to complete the process.

Virtual Account: 3 Minor Hide Alerts

General Licenses **Product Instances** Event Log

Authorize License-Enforced Features... Search by Device or by Product Type

Name	Product Type	Last Contact	Alerts	Actions
fbf40ec6988911ebb8150242cb007104	CTSPMP	2023-Jul-19 15:37:00 (Reserved Licenses)		Actions
UDI_PID:Expressway; UDI_SN:0A3BA3D7; UDI_VID:1.0;	EXPY	2023-Sep-29 14:45:24 (Reserved Licenses)	License Reservation Pe...	Actions

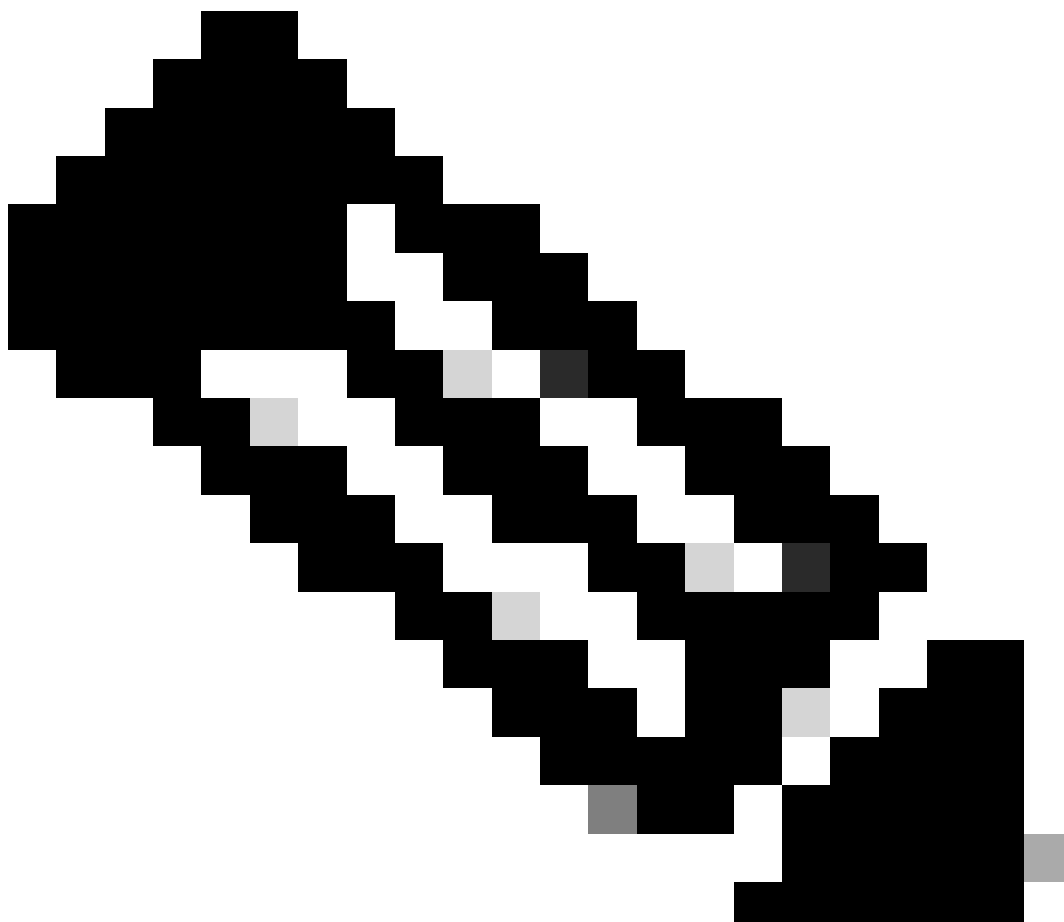
10 Showing Page 2 of

- Transfer...
- Update Reserved Licenses...
- Enter Confirmation Code...**
- Remove...
- Rehost Licenses from a Failed Product...

CSSM Product Instance Update

Migrating from PAK Licenses (Option Keys) to Smart Licensing

If the deployment currently uses option keys but you want to upgrade to x14.1 or newer where only Smart is available, or you want to simply enable Smart now, unless the you are using a Satellite CSSM, the only option is to upgrade to x14.2.5 or newer (x14.0.11 and newer also has the fix). This is due to Smart Licensing changing their root certificates in January, 2023. Refer to Cisco bug ID [CSCwe09378](https://tools.cisco.com/bugcenter/bug/?bugID=CSCwe09378)



Note: Only registered Cisco users can access internal Cisco bug information.

If you try to register an Expressway running software before the fixed version, the registration fails, stating this error message:

"SSL Certificate Problem: Self Signed Certificate in Certificate chain"

If using a Satellite CSSM server, it is okay to enable Smart Licensing at any time, but make sure there are enough licenses on their Virtual Account to cover the number of registrations and RMS Licenses needed.

Once Expressways are upgraded to X14.1 or newer, the server operates with a 90-day grace period for licensing, unless previously set up to use Smart Licensing.

Troubleshooting

Registration issues

If endpoint registration is failing, check the event log to see if it is reporting any licensing issues.

```
Results
2023-09-29T15:07:14.426+00:00 alarm: Level="WARN" Event="Alarm_Raised" Id="15005" UUID="b2b6ec13-7592-4793-a98a-b82b45e964" Severity="warning" Detail="Unsuitable hardware warning: Your current hardware does not meet supported VM configuration requirements for this version of Expressway." UTCTime="2023-09-29 15:07:14.426"
2023-09-29T15:06:54.831+00:00 licensemanager: Level="WARN" Event="Alarm_Raised" Id="30020" UUID="e238e348-d62-11e8-b86d-9a78f06e9478" Severity="warning" Detail="Room system license limit reached. A TelePresence room system registration failed because there were no available room system licenses. You are licensed for 1 concurrent TelePresence room system registrations." UTCTime="2023-09-29 15:06:54.831"
2023-09-29T15:06:54.830+00:00 tvc: Event="Registration_Rejected" Reason="License limit exceeded" Service="SIP" Src-ip="172.18.229.86" Src-port="5061" Protocol="TLS" AOR="roomkit@damckin.local" Contact="slo:roomkit@172.18.229.86:5061;transport=tls" Duration="60" Level="1" UTCTime="2023-09-29 15:06:54.830"
```

Expressway Event Log - Registration Rejected

Evaluation Mode

If Expressway fails to reach CSSM when using tokens, or if the deployment has Smart Licensing enabled, but not configured (common issue when upgrading from x14.0.x to x14.1 or newer), the expressway starts a 90 day count down. The deployment can function for 90 days in the evaluation mode. If the deployment is clustered, do not attempt to make any changes to the cluster after the 90 day period. This can cause irreversible problems with the database, resulting in needing to factory reset the node.

- Evaluation is only 90 days. It counts down when server is not registered to Smart Licensing. Once registered, the clock stops, but does not reset.
- Do not make any cluster configuration changes when evaluation mode has expired. This could break the cluster and could result in needing to rebuild the cluster (factory reset, rebuild).
- When Evaluation mode is expired, Cluster menu is greyed out.
- **Xstatus** shows how many days of evaluation mode are left.

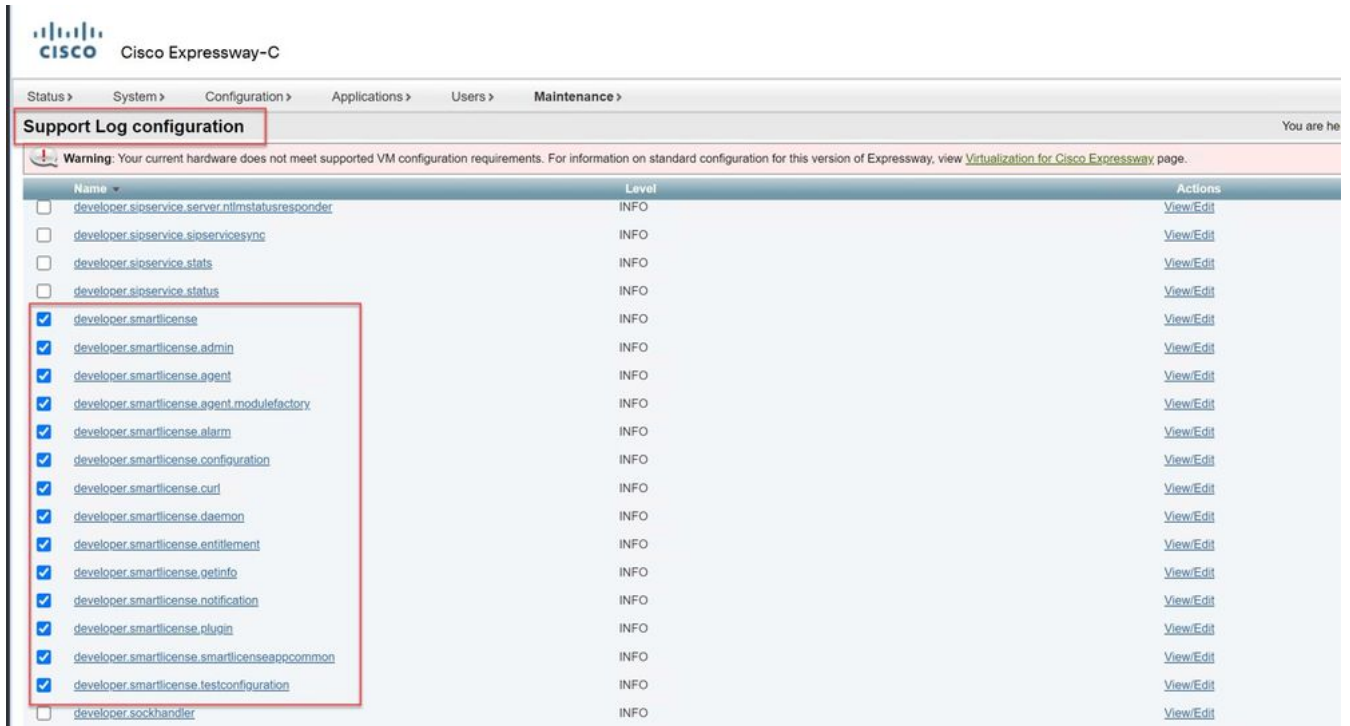
```
License Authorization:
Status: EVAL MODE
Evaluation Period Remaining: 89 days, 0 hours, 4 minutes, 34 seconds
```

xstatus evaluation mode

Diagnostic Logging

For additional troubleshooting, debugging can be enabled in the Expressway. Standard logging captures some issues. **Diagnostic log bundle > loggingsnapshot** the pertinent lines contain the phrase **Smartlicenseagent**.

Debugs can be enabled in **Maintenance > Diagnostics > Advanced > Support Log Configuration**



Support Log configuration

Warning: Your current hardware does not meet supported VM configuration requirements. For information on standard configuration for this version of Expressway, view [Virtualization for Cisco Expressway](#) page.

Name	Level	Actions
<input type="checkbox"/> developer.sioservice_server.nimstatusresponder	INFO	View/Edit
<input type="checkbox"/> developer.sioservice.sioservicesync	INFO	View/Edit
<input type="checkbox"/> developer.sioservice.stats	INFO	View/Edit
<input type="checkbox"/> developer.sioservice.status	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.admin	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.agent	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.agent.modulefactory	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.alarm	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.configuration	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.curl	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.daemon	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.entitlement	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.ogetinfo	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.notification	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.plugin	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.smartlicenseappcommon	INFO	View/Edit
<input checked="" type="checkbox"/> developer.smartlicense.testconfiguration	INFO	View/Edit
<input type="checkbox"/> developer.sockhandler	INFO	View/Edit

Expressway Support Log Configuration Debugs

Known Issues

Defects

1. "Unexpected software error was detected in smartlicenseget" and "signal SIGABRT, Aborted". Refer to Cisco bug ID [CSCwh22349](#)
2. "Detail="Smart license communication error: The system failed to communicate with cloud-based Cisco Smart Software Manager or Cisco Smart Software Manager On-Prem". Refer to Cisco bug ID [CSCwe09378](#)

Related Information

- [Cisco Technical Support & Downloads](#)