Prerequisites for Configuring Smart Licensing

You must have the following in CSSM:

- Cisco Smart Account
- One or more Virtual Account
- User role with proper access rights
- You should have accepted the Smart Software Licensing Agreement on CSSM to register devices.

Introduction to Smart Licensing

Smart Licensing is a cloud-based, software license management solution that allows you to manage and track the status of your license and hardware and software usage trends. Smart Licensing also enables you to automate time-consuming, manual licensing tasks. Smart Licensing helps simplify tasks in the following ways:

- Smart Licensing offers you Cisco Smart Software Manager (CSSM), a centralized portal that enables you to manage all your Cisco software licenses from one centralized website.
You can automatically track activations against your license entitlements. Additionally, there is no need to install the license file on every node. You can create license pools (virtual accounts) to reflect your organization structure.

Through the portal, Smart Licensing offers an integrated view of the licenses you have purchased and what has been deployed in your network. You can use this data to make better purchase decisions, based on your consumption.

Note
Licenses are managed as smart licenses from Cisco IOS XE Fuji 16.9.1 and later. Right-to-Use licenses are deprecated from Cisco IOS XE Fuji 16.9.1.

For an overview of smart software licensing, see Smart Licensing.

Overview of CSSM
CSSM enables you to manage all your Cisco smart software licenses from one centralized portal. With CSSM, you can organize and view your licenses in groups called virtual accounts (collections of licenses and product instances).

You can access the CSSM on https://software.cisco.com/#, by clicking the Smart Software Licensing link under the License tab.

Note
Use a Chrome 32.0, Firefox 25.0, or Safari 6.0.5 web browser to access CSSM. Also, ensure that Javascript 1.5 or a later version is enabled in your browser.

Use the CSSM to do the following tasks:

- Create, manage, or view virtual accounts.
- Create and manage Product Instance Registration Tokens.
- Transfer licenses between virtual accounts or view licenses.
- Transfer, remove, or view product instances.
- Run reports against your virtual accounts.
- Modify your email notification settings.
- View overall account information.

CSSM Help describes the procedures for carrying out these tasks.

Connecting to CSSM
The following illustration shows the various options available to connect to CSSM:
1. Direct cloud access: In this method, Cisco products send usage information directly over the internet to Cisco.com; no additional components are needed for the connection.

2. Direct cloud access through an HTTPs proxy: In this method, Cisco products send usage information over the internet through a proxy server - either a Call Home Transport Gateway or an off-the-shelf proxy (such as Apache) to Cisco.com.

3. Mediated access through a connected on-premises collector: In this method, Cisco products send usage information to a locally-connected collector, which acts as a local license authority. Periodically, this information is exchanged to keep the databases synchronized.

4. Mediated access through a disconnected on-premises collector: In this method, Cisco products send usage information to a local disconnected collector, which acts as a local license authority. Exchange of human-readable information takes place occasionally (maybe once a month) to keep the databases synchronized.
Options 1 and 2 provide an easy connection option, and options 3 and 4 provide a secure environment connection option. Cisco Smart Software Manager On-Prem (formerly known as Cisco Smart Software Manager satellite) provides support for options 3 and 4.

**Linking Existing Licenses to CSSM**

The following section is required for those licenses that were purchased without a Cisco Smart Account. These licenses will not be available in CSSM after you have upgraded to Cisco IOS XE Fuji 16.9.1. You are requested to contact the Cisco Global Licensing Operations (GLO) team with the following email template. Fill the template with the appropriate information to request linking of your existing licenses to your Cisco Smart Account in CSSM.

**Email Template:**

To: licensing@cisco.com

Subject: Request for Linking Existing Licenses to Cisco Smart Account

**Email Text:**

Cisco.com ID: #####

Smart virtual account name: #####

Smart account domain ID (domain in the form of "xyz.com"): #####

List of UDIs:

List of licenses with count:

Proof of purchase (*Please attach your proof of purchase along with this mail*)

**Configuring a Connection to CSSM and Setting Up the License Level**

The following sections provide information about how to set up a connection to CSSM and set up the license level.

**Setting Up a Connection to CSSM**

The following steps show how to set up a Layer 3 connection to CSSM to verify network reachability. Skip this section if you already have Layer 3 connectivity to CSSM.

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `{ip | ipv6} name-server server-address 1 [server-address 2] [server-address 3] [server-address 4] [server-address 5] [server-address 6]`
4. `ip name-server vrf Mgmt-vrf server-address 1 [server-address 2] [server-address 3] [server-address 4] [server-address 5] [server-address 6]`

5. `ip domain lookup source-interface interface-type interface-number`

6. `ip domain name example.com`

7. `ip host tools.cisco.com ip-address`

8. `interface vlan_id`

9. `ntp server ip-address [version number] [key key-id] [prefer]`

10. `switchport access vlan vlan_id`

11. `ip route ip-address ip-mask subnet mask`

12. `license smart transport callhome`

13. `ip http client source-interface interface-type interface-number`

14. `exit`

15. `copy running-config startup-config`

### Detailed Steps

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td>Example: <code>Device&gt; enable</code></td>
<td>Enter your password, if prompted.</td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td>Example: <code>Device# configure terminal</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> `ip</td>
<td>ipv6</td>
</tr>
<tr>
<td>Example: <code>Device(config)# ip name-server 209.165.201.1 209.165.200.225 209.165.201.14 209.165.200.230</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> <code>ip name-server vrf Mgmt-vrf server-address 1 [server-address 2] [server-address 3] [server-address 4] [server-address 5] [server-address 6]</code></td>
<td>(Optional) Configures DNS on the VRF interface.</td>
</tr>
<tr>
<td>Note</td>
<td>You should configure this command as an alternative to the <code>ip name-server</code> command.</td>
</tr>
<tr>
<td>Example: <code>Device(config)# ip name-server vrf Mgmt-vrf 209.165.201.1 209.165.200.225 209.165.201.14 209.165.200.230</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong> <code>ip domain lookup source-interface interface-type interface-number</code></td>
<td>(Optional) Configures the source interface for the DNS domain lookup.</td>
</tr>
<tr>
<td>Example: <code>Device(config)# ip domain lookup source-interface Vlan100</code></td>
<td></td>
</tr>
</tbody>
</table>
### Purpose

**Command or Action**  

**Step 6**  

ip domain name example.com  

Example:  

Device(config)\# ip domain name example.com

**Step 7**  

ip host tools.cisco.com ip-address  

Example:  

Device(config)\# ip host tools.cisco.com 209.165.201.30

**Step 8**  

interface vlan_id  

Example:  

Device(config)\# interface Vlan100  
Device(config-if)\# ip address 192.0.2.10 255.255.255.0  
Device(config-if)\# exit

**Step 9**  

ntp server ip-address [version number] [key key-id] [prefer]  

Example:  

Device(config)\# ntp server 198.51.100.100 version 2 prefer

**Step 10**  

switchport access vlan vlan_id  

Example:  

Device(config)\# interface GigabitEthernet1/0/1  
Device(config-if)\# switchport access vlan 100  
Device(config-if)\# switchport mode access  
Device(config-if)\# exit  
Device(config)\#

**Step 11**  

ip route ip-address ip-mask subnet mask  

Example:  

Device(config)\# ip route 192.0.2.0 255.255.255.255 192.0.2.1

**Step 12**  

license smart transport callhome  

Example:  

Device(config)\# license smart transport callhome

**Step 13**  

ip http client source-interface interface-type interface-number  

Example:  

Device(config)\# ip http client source-interface Vlan100

---

### Step 6

**Purpose**  

Configures the domain name.

**Example:**

Device(config)\# ip domain name example.com

### Step 7

**Purpose**  

(Optional) Configures static hostname-to-address mappings in the DNS hostname cache if automatic DNS mapping is not available.

**Example:**

Device(config)\# ip host tools.cisco.com 209.165.201.30

### Step 8

**Purpose**  

Configures a Layer 3 interface.

**Example:**

Device(config)\# interface Vlan100  
Device(config-if)\# ip address 192.0.2.10 255.255.255.0  
Device(config-if)\# exit

### Step 9

**Purpose**  

Forms a server association with the specified system.

**Note**  

The `ntp server` command is mandatory to ensure that the device time is synchronized with CSSM.

**Example:**

Device(config)\# ntp server 198.51.100.100 version 2 prefer

### Step 10

**Purpose**  

(Optional) Enables the VLAN for which this access port carries traffic and sets the interface as a nontrunking nontagged single-VLAN Ethernet interface.

**Note**  

This step is to be configured only if the switchport access mode is required.

**Example:**

Device(config)\# interface GigabitEthernet1/0/1  
Device(config-if)\# switchport access vlan 100  
Device(config-if)\# switchport mode access  
Device(config-if)\# exit  
Device(config)\#

### Step 11

**Purpose**  

Configures a route on the device.

**Note**  

You can configure either a static route or a dynamic route.

**Example:**

Device(config)\# ip route 192.0.2.0 255.255.255.255 192.0.2.1

### Step 12

**Purpose**  

Enables the transport mode as Call Home.

**Note**  

The `license smart transport callhome` command is mandatory.

**Example:**

Device(config)\# license smart transport callhome

### Step 13

**Purpose**  

Configures a source interface for the HTTP client.

**Note**  

The `ip http client source-interface interface-type interface-number` command is mandatory.

**Example:**

Device(config)\# ip http client source-interface Vlan100
Configuring the Call Home Service for Direct Cloud Access

Note
By default, the CiscoTAC-1 profile is already set up on the device. Use the `show call-home profile all` command to check the profile status.

The Call Home service provides email-based and web-based notification of critical system events to CSSM.

To configure and enable the Call Home service, perform this procedure:

### SUMMARY STEPS

1. `enable`  
2. `configure terminal`  
3. `call-home`  
4. `no http secure server-identity-check`  
5. `contact-email-address email-address`  
6. `profile CiscoTAC-1`  
7. `destination transport-method http`  
8. `destination address http url`  
9. `active`  
10. `no destination transport-method email`  
11. `exit`  
12. `exit`  
13. `service call-home`  
14. `exit`  
15. `copy running-config startup-config`

### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1**        | **enable**  
Example:  
Device> **enable**  
Enables privileged EXEC mode.  
Enter your password, if prompted. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>configure terminal</td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Device# configure terminal</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>call-home</td>
<td>Enters Call Home configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Device(config)# call-home</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>no http secure server-identity-check</td>
<td>Disables server identity check when HTTP connection is established.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home)# no http secure server-identity-check</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>contact-email-address email-address</td>
<td>Assigns customer's email address. You can enter up to 200 characters in email address format with no spaces.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home)# contact-email-address <a href="mailto:username@example.com">username@example.com</a></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>profile CiscoTAC-1</td>
<td>By default, the CiscoTAC-1 profile is inactive. To use this profile with the Call Home service, you must enable the profile.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home)# profile CiscoTAC-1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>destination transport-method http</td>
<td>Enables the Call Home service via HTTP.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# destination transport-method http</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>destination address http url</td>
<td>Connects to CSSM.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# destination address http <a href="https://tools.cisco.com/its/service/oddce/services/DDCEService">https://tools.cisco.com/its/service/oddce/services/DDCEService</a></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>active</td>
<td>Enables the destination profile.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# active</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>no destination transport-method email</td>
<td>Disables the Call Home service via email.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# no destination transport-method email</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>exit</td>
<td>Exits Call Home destination profile configuration mode and returns to Call Home configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# exit</td>
<td></td>
</tr>
<tr>
<td>Command or Action</td>
<td>Purpose</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
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<td></td>
</tr>
<tr>
<td>Step 12</td>
<td>exit</td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td>Device(config-call-home)# exit</td>
<td></td>
</tr>
<tr>
<td>Exits Call Home configuration mode and returns to global configuration mode.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 13</td>
<td>service call-home</td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td>Device(config)# service call-home</td>
<td></td>
</tr>
<tr>
<td>Enables the Call Home feature.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 14</td>
<td>exit</td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td>Device(config)# exit</td>
<td></td>
</tr>
<tr>
<td>Exits global configuration mode and returns to privileged EXEC mode.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 15</td>
<td>copy running-config startup-config</td>
<td></td>
</tr>
<tr>
<td>Example:</td>
<td>Device# copy running-config startup-config</td>
<td></td>
</tr>
<tr>
<td>(Optional) Saves your entries in the configuration file.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Configuring the Call Home Service for Direct Cloud Access through an HTTPs Proxy Server

The Call Home service can be configured through an HTTPs proxy server. This configuration requires no user authentication to connect to CSSM.

**Note**

Authenticated HTTPs proxy configurations are not supported.

To configure and enable the Call Home service through an HTTPs proxy, perform this procedure:

**SUMMARY STEPS**

1. enable
2. configure terminal
3. call-home
4. contact-email-address email-address
5. http-proxy proxy-address proxy-port port-number
6. profile CiscoTAC-1
7. destination transport-method http
8. no destination transport-method email
9. profile name
10. reporting smart-licensing-data
11. destination transport-method http
12. destination address http url
13. active
14. exit
### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>Enables privileged EXEC mode. Enter your password, if prompted.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device&gt; enable</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Enters Call Home configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device(config)# call-home</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Configures the default email address as <a href="mailto:sch-smart-licensing@cisco.com">sch-smart-licensing@cisco.com</a>.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device(config-call-home)# contact-email-address <a href="mailto:sch-smart-licensing@cisco.com">sch-smart-licensing@cisco.com</a></td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>Configures the proxy server information to the Call Home service.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device(config-call-home)# http-proxy 198.51.100.10 port 3128</td>
<td></td>
</tr>
<tr>
<td><strong>Step 6</strong></td>
<td>By default, the CiscoTAC-1 profile is inactive. To use this profile with the Call Home service, you must enable the profile.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device(config-call-home)# profile CiscoTAC-1</td>
<td></td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>Enables the Call Home service via HTTP.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device(config-call-home-profile)# destination transport-method http</td>
<td></td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td>Disables the Call Home service via email.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td>Device(config-call-home-profile)# no destination transport-method email</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Command or Action</td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
</tr>
<tr>
<td>9</td>
<td>profile name</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home)# profile test1</td>
</tr>
<tr>
<td>10</td>
<td>reporting smart-licensing-data</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# reporting smart-licensing-data</td>
</tr>
<tr>
<td>11</td>
<td>destination transport-method http</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# destination transport-method http</td>
</tr>
<tr>
<td>12</td>
<td>destination address http url</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# destination address http <a href="https://tools.cisco.com/its/service/oddce/services/DDCEService">https://tools.cisco.com/its/service/oddce/services/DDCEService</a></td>
</tr>
<tr>
<td>13</td>
<td>active</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# active</td>
</tr>
<tr>
<td>14</td>
<td>exit</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home-profile)# exit</td>
</tr>
<tr>
<td>15</td>
<td>exit</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config-call-home)# exit</td>
</tr>
<tr>
<td>16</td>
<td>service call-home</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config)# service call-home</td>
</tr>
<tr>
<td>17</td>
<td>ip http client proxy-server proxy-address proxy-port port-number</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config)# ip http client proxy-server 198.51.100.10 port 3128</td>
</tr>
<tr>
<td>18</td>
<td>exit</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td>Device(config)# exit</td>
</tr>
</tbody>
</table>
### Configuring the Call Home Service for Cisco Smart Software Manager On-Prem


To configure the Call Home service for the Cisco Smart Software Manager On-Prem (formerly known as Cisco Smart Software Manager satellite), perform this procedure:

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `call-home`
4. `no http secure server-identity-check`
5. `profile name`
6. `reporting smart-licensing-data`
7. `destination transport-method http`
8. `destination address http url`
9. `destination preferred-msg-format {long-text | short-text | xml}`
10. `active`
11. `exit`
12. `exit`
13. `ip http client source-interface interface-type interface-number`
14. `crypto pki trustpoint name`
15. `revocation-check none`
16. `end`
17. `copy running-config startup-config`

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1**
   - `enable`
   - **Example:**
     - `Device> enable`                     | Enables privileged EXEC mode. Enter your password if prompted. |
| **Step 2**
   - `configure terminal`
   - **Example:**
     - `Device# configure terminal`         | Enters global configuration mode.             |
<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 3</strong></td>
<td>Enters Call Home configuration mode.</td>
</tr>
<tr>
<td><code>call-home</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config)# call-home</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Disables server identity check when HTTP connection is established.</td>
</tr>
<tr>
<td><code>no http secure server-identity-check</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home)# no http secure server-identity-check</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>Enters Call Home destination profile configuration mode for the specified destination profile name. If the specified destination profile does not exist, it is created.</td>
</tr>
<tr>
<td><code>profile name</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home)# profile test1</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 6</strong></td>
<td>Enables data sharing with the Call Home service via HTTP.</td>
</tr>
<tr>
<td><code>reporting smart-licensing-data</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home-profile)# reporting smart-licensing-data</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>Enables the HTTP message transport method.</td>
</tr>
<tr>
<td><code>destination transport-method http</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home-profile)# destination transport-method http</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td>Configures the destination URL (CSSM) to which Call Home messages are sent.</td>
</tr>
<tr>
<td><code>destination address http url</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home-profile)# destination address http https://209.165.201.15:443/Transportgateway/services/DeviceRequestHandler</code></td>
<td></td>
</tr>
<tr>
<td><code>or</code></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home-profile)# destination address http http://209.165.201.15:80/Transportgateway/services/DeviceRequestHandler</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 9</strong></td>
<td>(Optional) Configures a preferred message format. The default is XML.</td>
</tr>
<tr>
<td><code>destination preferred-msg-format</code></td>
<td></td>
</tr>
<tr>
<td>`{long-text</td>
<td>short-text</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home-profile)# destination preferred-msg-format xml</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td>Enables the destination profile. By default, a profile is enabled when it is created.</td>
</tr>
<tr>
<td><code>active</code></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td><code>Device(config-call-home-profile)# active</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 11</strong></td>
<td>Exits Call Home destination profile configuration mode and returns to Call Home configuration mode.</td>
</tr>
<tr>
<td><code>exit</code></td>
<td></td>
</tr>
</tbody>
</table>
### Configuring the License Level

This procedure is optional. You can use this procedure to:

- Downgrade or upgrade licenses.
- Enable or disable an evaluation or extension license
- Clear an upgrade license

The required license level(s) needs to be configured on the device before registering. The following are the license levels available for Cisco Catalyst 9000 Series Switches:

**Base licenses**
- Network Essentials
- Network Advantage (includes Network Essentials)

**Add-on licenses**—These can be subscribed for a fixed term of three, five, or seven years.
• Digital Networking Architecture (DNA) Essentials
• DNA Advantage (includes DNA Essentials)

To configure the license levels, follow this procedure:

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `license boot level license_level`
4. `exit`
5. `write memory`
6. `show version`
7. `reload`

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td><code>enable</code></td>
<td>Enables privileged EXEC mode. Enter your password, if prompted.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>Device&gt;</code> <code>enable</code></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td><code>configure terminal</code></td>
<td>Enters global configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>Device# configure terminal</code></td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td><code>license boot level license_level</code></td>
<td>Activates the licenses on the switch.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>Device(config)# license boot level network-essentials</code></td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td><code>exit</code></td>
<td>Returns to the privileged EXEC mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>Device(config)# exit</code></td>
<td></td>
</tr>
<tr>
<td>Step 5</td>
<td><code>write memory</code></td>
<td>Saves the license information on the switch.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>Device# write memory</code></td>
<td></td>
</tr>
<tr>
<td>Step 6</td>
<td><code>show version</code></td>
<td>Shows license-level information.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>Device# show version</code></td>
<td></td>
</tr>
</tbody>
</table>
Registering a Device on CSSM

To register a device on CSSM, you must do the following tasks:

1. Generate a unique token from the CSSM.
2. Register the device with the generated token.

On successful registration, the device will receive an identity certificate. This certificate is saved on your device and automatically used for all future communications with Cisco. CSSM will attempt to renew the registration information every 30 days.

Additionally, license usage data is collected and a report is sent to you every month. If required, you can configure your Call Home settings to filter out sensitive information (like hostname, username and password) from the usage report.

---

**Note**

Downgrading a device from Cisco IOS XE Fuji 16.9.1 to any prior release will migrate the smart license to traditional license. All smart license information on the device will be removed. In case the device needs to be upgraded back to Cisco IOS XE Fuji 16.9.1, the license status will remain in evaluation mode until the device is registered again in CSSM.

Generating a New Token from CSSM

Tokens are generated to register new product instances to the virtual account.

**Step 1**
Log in to CSSM from [https://software.cisco.com/#](https://software.cisco.com/#).
You must log in to the portal using the username and password provided by Cisco.

**Step 2**
Click the **Inventory** tab.

**Step 3**
From the **Virtual Account** drop-down list, choose the required virtual account.

**Step 4**
Click the **General** tab.

**Step 5**
Click **New Token**.
The **Create Registration Token** window is displayed.

**Step 6**
In the **Description** field, enter the token description.

**Step 7**
In the **Expire After** field, enter the number of days the token must be active.

**Step 8**
(Optional) In the **Max. Number of Uses** field, enter the maximum number of uses allowed after which the token expires.

**Step 9**
Check the **Allow export-controlled functionality on the products registered with this token** checkbox.


**Step 10**
Click **Create Token** to create a token.

**Step 11**
After the token is created, click **Copy** to copy the newly created token.
## Registering a Device with the New Token

To register a device with the new token, perform this procedure:

### SUMMARY STEPS

1. `enable`
2. `license smart register idtoken token_ID`

### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1**  
* enable*  
* Example: * enable<br>`Device>`*enable*  
* Example:* | Enables privileged EXEC mode.  
Enter your password, if prompted. |
| **Step 2**  
* license smart register idtoken* `token_ID`  
* Example:* license smart register idtoken  
* Example:*  
  `Device# license smart register idtoken  
  $7140ytr902bsh61ck8we0t5wi5shz27d3a1p4we10bblp9b0%3d0a` | Registers the device with the back-end server using the token generated from CSSM. |

### Verifying the License Status After Registration

To verify the status of a license after registration, use the `show license all` command.

`Device>`*enable*  
`Device# show license all`  
Smart Licensing Status

---
Smart Licensing is ENABLED

Registration:
Status: REGISTERED
Smart Account: Smart Account Name
Virtual Account: Virtual Account 1
Export-Controlled Functionality: Not Allowed
Initial Registration: SUCCEEDED on Jul 27 08:38:44 2018 EDT
Last Renewal Attempt: None
Next Renewal Attempt: Jan 23 08:38:44 2019 EDT
Registration Expires: Jul 27 08:32:51 2019 EDT

License Authorization:
Status: AUTHORIZED on Jul 27 08:38:49 2018 EDT
Last Communication Attempt: SUCCEEDED on Jul 27 08:38:49 2018 EDT
Next Communication Attempt: Aug 26 08:38:49 2018 EDT
Communication Deadline: Oct 25 08:32:57 2018 EDT

Utility:
Status: DISABLED

Data Privacy:
  Sending Hostname: yes
  Callhome hostname privacy: DISABLED
  Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: Callhome

License Usage
==============

C9400 DNA Advantage (dna_advantage-C9400):
  Description: C9400 DNA Advantage
  Count: 1
  Version: 1.0
  Status: AUTHORIZED

C9400 Network Advantage (advantagek9-C9400):
  Description: C9400 Network Advantage
  Count: 2
  Version: 1.0
  Status: AUTHORIZED

Product Information
--------------------
UDI: PID:C9410R,SN:FXS2132Q0GU

HA UDI List:
  Active:PID:C9410R,SN:FXS2132Q0GU
  Standby:PID:C9410R,SN:FXS2132Q0GU

Agent Version
--------------
Smart Agent for Licensing: 4.4.13_rel/116
Component Versions: SA:(1_3_dev)1.0.15, SI:(dev22)1.2.1, CH:(rel15)1.0.3, PK:(dev18)1.0.3

Reservation Info
-----------------
License reservation: DISABLED
Canceling a Device's Registration in CSSM

When your device is taken off the inventory, shipped elsewhere for redeployment, or returned to Cisco for replacement using the return merchandise authorization (RMA) process, you can use the `deregister` command to cancel the registration of your device.

To cancel device registration, follow this procedure:

**Before you begin**

Layer 3 connection to CSSM must be available to successfully deregister the device.

**SUMMARY STEPS**

1. `enable`
2. `license smart deregister`

**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
</tr>
<tr>
<td><code>enable</code></td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td>Example: <code>enable</code></td>
<td>Enter your password, if prompted.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
</tr>
<tr>
<td><code>license smart deregister</code></td>
<td>Cancels the device's registration, and sends the device into evaluation mode. All smart licensing entitlements and certificates on the corresponding platform are removed. The device product instance stored on CSSM is also removed.</td>
</tr>
<tr>
<td>Example: <code>license smart deregister</code></td>
<td></td>
</tr>
</tbody>
</table>
# Monitoring Smart Licensing Configuration

Use the following commands in privileged EXEC mode to monitor smart licensing configuration.

**Table 1: Commands to Monitor Smart Licensing Configuration**

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>show license status</strong></td>
<td>Displays the compliance status of smart licensing. The following is the list of possible statuses:</td>
</tr>
<tr>
<td></td>
<td>• Enabled: Indicates that smart licensing is enabled.</td>
</tr>
<tr>
<td></td>
<td>• Waiting: Indicates the initial state after your device has made a license entitlement request. The device establishes communication with</td>
</tr>
<tr>
<td></td>
<td>Cisco and successfully registers itself with the CSSM.</td>
</tr>
<tr>
<td></td>
<td>• Registered: Indicates that your device is able to communicate with the CSSM, and is authorized to initiate requests for license entitlements.</td>
</tr>
<tr>
<td></td>
<td>• Authorized: Indicates that your device is in Compliance status and is authorized to use the requested type and count of licenses. The</td>
</tr>
<tr>
<td></td>
<td>Authorization status has a lifetime of 90 days. At the end of 30 days, the device will send a new entitlement authorization request to the CSSM</td>
</tr>
<tr>
<td></td>
<td>to renew the authorization.</td>
</tr>
<tr>
<td></td>
<td>• Out Of Compliance: Indicates that one or more of your licenses are out of compliance. You must buy additional licenses.</td>
</tr>
<tr>
<td></td>
<td>• Eval Mode: You must register the device with the CSSM within 90 days (of device usage). Otherwise, your device's evaluation period will expire.</td>
</tr>
<tr>
<td></td>
<td>• Evaluation Period Expired: At the end of 90 days, if your device has not registered, the device enters Evaluation Expired mode.</td>
</tr>
<tr>
<td><strong>show license all</strong></td>
<td>Displays all the entitlements in use. Additionally, it shows the associated licensing certificates, compliance status, UDI, and other details.</td>
</tr>
<tr>
<td><strong>show tech-support license</strong></td>
<td>Displays the detailed debug output.</td>
</tr>
<tr>
<td><strong>show license usage</strong></td>
<td>Displays the license usage information.</td>
</tr>
</tbody>
</table>
### Configuration Examples for Smart Licensing

The following sections provide various Smart Licensing configuration examples.

#### Example: Viewing the Call Home Profile

**Example**

To display the Call Home profile, use the `show call-home profile all` command:

```
Device> enable
Device# show call-home profile all
Profile Name: CiscoTAC-1
  Profile status: ACTIVE
  Profile mode: Full Reporting
  Reporting Data: Smart Call Home, Smart Licensing
  Preferred Message Format: xml
  Message Size Limit: 3145728 Bytes
  Transport Method: http
  HTTP address(es): https://tools.cisco.com/its/service/oddce/services/DDCEService
  Other address(es): default

  Periodic configuration info message is scheduled every 1 day of the month at 09:15
  Periodic inventory info message is scheduled every 1 day of the month at 09:00

  Alert-group        Severity
  ------------------- --------
  crash              debug
  diagnostic         minor
  environment        warning
  inventory          normal

  Syslog-Pattern     Severity
  ------------------- --------
  APF=.WLC_.*         warning
  .*                  major
```

#### Example: Viewing the License Information Before Registering

**Example**

To display the license entitlements, use the `show license all` command:

```
Device> enable
Device# show license all
```
Smart Licensing Status
======================
Smart Licensing is ENABLED

Registration:
Status: UNREGISTERED
Export-Controlled Functionality: Not Allowed

License Authorization:
Status: EVAL MODE
Evaluation Period Remaining: 68 days, 0 hours, 30 minutes, 5 seconds

Utility:
Status: DISABLED

Data Privacy:
Sending Hostname: yes
Callhome hostname privacy: DISABLED
Smart Licensing hostname privacy: DISABLED
Version privacy: DISABLED

Transport:
Type: Callhome

License Usage
--------------
C9400 DNA Advantage (dna_advantage-C9400):
Description: C9400 DNA Advantage
Count: 1
Version: 1.0
Status: EVAL MODE

C9400 Network Advantage (advantagek9-C9400):
Description: C9400 Network Advantage
Count: 2
Version: 1.0
Status: EVAL MODE

Product Information
-------------------
UDI: PID:C9410R,SN:FXS2132Q0GU

HA UDI List:
Active: PID:C9410R,SN:FXS2132Q0GU
Standby: PID:C9410R,SN:FXS2132Q0GU

Agent Version
--------------
Smart Agent for Licensing: 4.4.13_rel/116
Component Versions: SA:(1_3_dev)1.0.15, SI:(dev22)1.2.1, CH:(rel5)1.0.3, PK:(dev18)1.0.3

Reservation Info
----------------
License reservation: DISABLED

Example
To display the license usage information, use the `show license usage` command:
Device> enable
Device# show license usage

License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 68 days, 0 hours, 29 minutes, 38 seconds

C9400 DNA Advantage (dna_advantage-C9400):
  Description: C9400 DNA Advantage
  Count: 1
  Version: 1.0
  Status: EVAL MODE

C9400 Network Advantage (advantagek9-C9400):
  Description: C9400 Network Advantage
  Count: 2
  Version: 1.0
  Status: EVAL MODE

Example
To display all the license summaries, use the `show license summary` command:

Device> enable
Device# show license summary

Smart Licensing is ENABLED

Registration:
  Status: UNREGISTERED
  Export-Controlled Functionality: Not Allowed

License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 68 days, 0 hours, 29 minutes, 33 seconds

License Usage:

<table>
<thead>
<tr>
<th>License</th>
<th>Entitlement tag</th>
<th>Count</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>(dna_advantage-C9400)</td>
<td></td>
<td>1</td>
<td>EVAL MODE</td>
</tr>
<tr>
<td>(advantagek9-C9400)</td>
<td></td>
<td>2</td>
<td>EVAL MODE</td>
</tr>
</tbody>
</table>

Example
To display the license status information, use the `show license status` command:

Device> enable
Device# show license status

Smart Licensing is ENABLED

Utility:
  Status: DISABLED

Data Privacy:
  Sending Hostname: yes
  Callhome hostname privacy: DISABLED
  Smart Licensing hostname privacy: DISABLED
Version privacy: DISABLED
Transport:
 Type: Callhome
Registration:
 Status: UNREGISTERED
 Export-Controlled Functionality: Not Allowed
License Authorization:
 Status: EVAL MODE
 Evaluation Period Remaining: 68 days, 0 hours, 29 minutes, 35 seconds

Example: Registering a Device

Example
To register a device, use the license smart register idtoken command:

Device> enable
Device# license smart register idtoken
Tl4UytrNXbEe1ck8veUw85abnJOt7Dal1FwbVRA%0Ab1RMBz0%3D%0A

Example: Viewing the License Status After Registering

Example
To display the license entitlements, use the show license all command:

Device> enable
Device# show license all
Smart Licensing Status

Smart Licensing is ENABLED
Registration:
 Status: REGISTERED
 Smart Account: Smart Account Name
 Virtual Account: Virtual Account 1
 Export-Controlled Functionality: Not Allowed
 Initial Registration: SUCCEEDED on Jul 27 08:38:44 2018 EDT
 Last Renewal Attempt: None
 Next Renewal Attempt: Jan 23 08:38:44 2019 EDT
 Registration Expires: Jul 27 08:32:51 2019 EDT

License Authorization:
 Status: AUTHORIZED on Jul 27 08:38:49 2018 EDT
 Last Communication Attempt: SUCCEEDED on Jul 27 08:38:49 2018 EDT
 Next Communication Attempt: Aug 26 08:38:49 2018 EDT
 Communication Deadline: Oct 25 08:32:57 2018 EDT

Utility:
 Status: DISABLED
Data Privacy:
- Sending Hostname: yes
- Callhome hostname privacy: DISABLED
- Smart Licensing hostname privacy: DISABLED
- Version privacy: DISABLED

Transport:
- Type: Callhome

License Usage
--------------
C9400 DNA Advantage (dna_advantage-C9400):
- Description: C9400 DNA Advantage
- Count: 1
- Version: 1.0
- Status: AUTHORIZED

C9400 Network Advantage (advantagek9-C9400):
- Description: C9400 Network Advantage
- Count: 2
- Version: 1.0
- Status: AUTHORIZED

Product Information
-------------------
UDI: PID:C9410R,SN:FXS2132Q0GU
HA UDI List:
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- Standby:PID:C9410R,SN:FXS2132Q0GU

Agent Version
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Component Versions: SA:(1_3_dev)1.0.15, SI:(dev22)1.2.1, CH:(rel5)1.0.3, PK:(dev18)1.0.3

Reservation Info
----------------
License reservation: DISABLED

Example
To display license usage information, use the show license usage command:

Device> enable
Device# show license usage
License Authorization:
  Status: AUTHORIZED on Jul 27 08:38:49 2018 EDT

C9400 DNA Advantage (dna_advantage-C9400):
  Description: C9400 DNA Advantage
  Count: 1
  Version: 1.0
  Status: AUTHORIZED

C9400 Network Advantage (advantagek9-C9400):
  Description: C9400 Network Advantage
  Count: 2
Example

To display all the license summaries, use the `show license summary` command:

```
Device> enable
Device# show license summary
Smart Licensing is ENABLED

Registration:
Status: REGISTERED
Smart Account: Smart Account Name
Virtual Account: Virtual Account 1
Export-Controlled Functionality: Not Allowed
Last Renewal Attempt: None
Next Renewal Attempt: Jan 23 08:38:43 2019 EDT

License Authorization:
Status: AUTHORIZED
Last Communication Attempt: SUCCEEDED
Next Communication Attempt: Aug 26 08:38:48 2018 EDT

License Usage:
<table>
<thead>
<tr>
<th>License Entitlement tag</th>
<th>Count Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>C9400 DNA Advantage</td>
<td>(dna_advantage-C9400) 1 AUTHORIZED</td>
</tr>
<tr>
<td>C9400 Network Advantage</td>
<td>(advantagek9-C9400) 2 AUTHORIZED</td>
</tr>
</tbody>
</table>
```

Example

To display the license status information, use the `show license status` command:

```
Device> enable
Device# show license status
Smart Licensing is ENABLED

Utility:
Status: DISABLED

Data Privacy:
Sending Hostname: yes
Callhome hostname privacy: DISABLED
Smart Licensing hostname privacy: DISABLED
Version privacy: DISABLED

Transport:
Type: Callhome

Registration:
Status: REGISTERED
Smart Account: Smart Account Name
Virtual Account: Virtual Account 1
Export-Controlled Functionality: Not Allowed
Initial Registration: SUCCEEDED on Jul 27 08:38:44 2018 EDT
Last Renewal Attempt: None
Next Renewal Attempt: Jan 23 08:38:44 2019 EDT
Registration Expires: Jul 27 08:32:51 2019 EDT
```
License Authorization:
Status: AUTHORIZED on Jul 27 08:38:49 2018 EDT
Last Communication Attempt: SUCCEEDED on Jul 27 08:38:49 2018 EDT
Next Communication Attempt: Aug 26 08:38:49 2018 EDT
Communication Deadline: Oct 25 08:32:57 2018 EDT

Additional References

Related Documents

<table>
<thead>
<tr>
<th>Related Topic</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco Smart Software Manager Help</td>
<td>Smart Software Manager Help</td>
</tr>
<tr>
<td>Cisco Smart Software Manager On-Prem</td>
<td>Cisco Smart Software Manager On-Prem</td>
</tr>
</tbody>
</table>

Technical Assistance

<table>
<thead>
<tr>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</td>
<td><a href="http://www.cisco.com/support">http://www.cisco.com/support</a></td>
</tr>
</tbody>
</table>

Feature Information for Smart Licensing

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.
### Table 2: Feature Information for Smart Licensing

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Releases</th>
<th>Feature Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Licensing</td>
<td>Cisco IOS XE Fuji 16.9.1</td>
<td>Smart Licensing is a cloud-based, software license management solution that allows you to manage and track the status of your license, hardware and software usage trends.</td>
</tr>
</tbody>
</table>