



## Migrating to Smart Licensing Using Policy

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To upgrade to SLP, you must upgrade the software version (image) on the switch to a supported version.

### Before You Begin

Ensure that you have read the [Upgrades](#) section, to understand how SLP handles various aspects of all earlier licensing models.

When migrating from traditional licensing model to SLP, license conversion takes place automatically. This Device Led Conversion (DLC) process is triggered when traditional licenses are detected on the device during an upgrade. DLC request is sent to CSSM as part of the license report and may take up to an hour to complete.

### Upgrading the Switch Software

See the corresponding release note for the upgrade procedure. If there are any general release-specific considerations, these are called-out in the corresponding release notes.

Also refer to the sample show command outputs of the migration scenarios provided below. Sample outputs are provided for before and after migration, for comparison.

- [Smart Licensing to Smart Licensing Using Policy, on page 1](#)
- [RTU Licensing to Smart Licensing Using Policy, on page 8](#)
- [Evaluation or Eval Expired to Smart Licensing Using Policy, on page 9](#)

## Smart Licensing to Smart Licensing Using Policy

The following is an example of a Cisco Nexus 9000 switch migrating from Smart Licensing to SLP. This is a High Availability setup with an active and a standby.

The show command outputs below call-out key fields to check, before and after migration.

Table 1: Smart Licensing to Smart Licensing Using Policy: Show Commands

Before Upgrade	After Upgrade
<p><b>show license summary</b> (Smart Licensing)</p> <pre>Device# show license summary  Smart Licensing is ENABLED  Registration:   Status: REGISTERED   Smart Account: BU Production Test 1   Virtual Account: N9K_SA_49_Testing   Export-Controlled Functionality: Allowed  License Authorization:   Status: AUTHORIZED on Jul 16 14:26:01 2021   UTC    Last Communication Attempt: SUCCEEDED   Next Communication Attempt: Aug 15 14:26:01   2021 UTC   Communication Deadline: Oct 14 14:20:59 2021   UTC  Smart License Conversion:   Automatic Conversion Enabled: False   Status: Not started  License Usage: License                               Entitlement tag                                Count      Status</pre>	<p><b>show license summary</b> (SLP)</p> <pre>Device# show license summary  License Usage: License                               Entitlement tag                                Count      Status</pre> <hr/> <pre>DCN NDB Add-On License ... (DCN_NDB)                                1          IN USE Network Services for Ne... (NETWORK_SERVICES_PKG)         1          IN USE LAN license for Nexus 9... (LAN_ENTERPRISE_SERVICES_PKG)  1          IN USE</pre> <p>The <b>Status</b> field shows that the licenses are now <b>IN USE</b> instead of registered and authorized.</p>
<pre>LAN license for Nexus 9... (LAN_ENTERPRISE_SERVICES_PKG)    1 AUTHORIZED Network Services for Ne... (NETWORK_SERVICES_PKG)          1 AUTHORIZED</pre> <p>The <b>Status</b> and <b>License Authorization</b> fields show that the license is <b>REGISTERED</b> and <b>AUTHORIZED</b>.</p>	

Before Upgrade	After Upgrade
<p><b>show license usage (Smart Licensing)</b></p> <pre> Device# show license usage License Authorization:   Status: AUTHORIZED on Jul 16 14:26:01 2021   UTC  (LAN_ENTERPRISE_SERVICES_PKG):   Description: LAN license for Nexus 9500-M4   Count: 1   Version: 1.0   Status: AUTHORIZED  (NETWORK_SERVICES_PKG):   Description: Network Services for Nexus 9500 -M4   Count: 1   Version: 1.0   Status: AUTHORIZED                     </pre>	<p><b>show license usage (SLP)</b></p> <pre> License Authorization: Status: Not Applicable  (DCN_NDB): Description: DCN NDB Add-On License N9K Modular &lt;&lt;&lt; This is RTU license Count: 1 Version: 1.0 Status: IN USE Enforcement Type: NOT ENFORCED License Type: Generic  (NETWORK_SERVICES_PKG): Description: Network Services for Nexus 9500 -M4 Count: 1 Version: 1.0 Status: IN USE Enforcement Type: NOT ENFORCED License Type: Generic  (LAN_ENTERPRISE_SERVICES_PKG): Description: LAN license for Nexus 9500-M4 Count: 1 Version: 1.0 Status: IN USE Enforcement Type: NOT ENFORCED License Type: Generic                     </pre> <p>The license counts remain the same.</p> <p>The <b>Enforcement Type</b> field displays NOT ENFORCED. (There are no export-controlled or enforced licenses on Cisco Nexus Switches).</p>

Before Upgrade	After Upgrade
<p><b>show license status (Smart Licensing)</b></p> <p>Device# <b>show license status</b>            Smart Licensing is ENABLED</p> <p>Registration:            Status: REGISTERED            Smart Account: BU Production Test 1            Virtual Account: N9K_SA_49_Testing            Export-Controlled Functionality: Allowed            Initial Registration: SUCCEEDED on Jul 16 14:25:49 2021 UTC            Last Renewal Attempt: None            Next Renewal Attempt: Jan 12 14:25:48 2022 UTC            Registration Expires: Jul 16 14:20:45 2022 UTC</p> <p>License Authorization:            Status: AUTHORIZED on Jul 16 14:26:01 2021 UTC</p> <p>    Last Communication Attempt: SUCCEEDED on Jul 16 14:26:01 2021 UTC            Next Communication Attempt: Aug 15 14:26:00 2021 UTC            Communication Deadline: Oct 14 14:20:58 2021 UTC</p> <p>Smart License Conversion:            Automatic Conversion Enabled: False            Status: Not started</p>	

Before Upgrade	After Upgrade
	<pre> <b>show license status (SLP)</b> Device# <b>show license status</b>  Utility:   Status: DISABLED  Smart Licensing using Policy:   Status: ENABLED  Data Privacy:   Sending Hostname: yes   Callhome Hostname Privacy: DISABLED   Smart Licensing Hostname Privacy: DISABLED   Version Privacy: DISABLED  <b>Transport:</b>   <b>Type: Callhome</b>  Policy:   Policy in use: Merged from multiple sources   Reporting ACK required: Yes   Unenforced/Non-Export:     First report requirement (days): 90 (CISCO default)     Ongoing reporting frequency (days): 365 (CISCO default)     On change reporting (days): 90 (CISCO default)   Enforced (Perpetual/Subscription):     First report requirement (days): 0 (CISCO default)     Ongoing reporting frequency (days): 0 (CISCO default)     On change reporting (days): 0 (CISCO default) Export (Perpetual/Subscription):   First report requirement (days): 0 (CISCO default)   Ongoing reporting frequency (days): 0 (CISCO default)   On change reporting (days): 0 (CISCO default) Miscellaneous:   Custom Id: &lt;empty&gt;  Usage reporting:   Last ACK received: Jul 16 15:22:31 2021 UTC   Next ACK deadline: Jul 16 15:22:31 2022 UTC   Reporting push interval: 30 days   Next ACK push check: &lt;none&gt;   Next report push: Aug 15 15:18:28 2021 UTC   Last report push: Jul 16 15:18:28 2021 UTC   Last report file write: &lt;none&gt;  Trust Code installed: Jul 16 15:15:47 2021                     </pre>

Before Upgrade	After Upgrade
	<p>UTC</p> <p>Active: PID: N9K-C9504, SN: FOX2308PCEN Jul 16 15:15:47 2021 UTC</p> <p>Standby: PID: N9K-C9504, SN: FOX2308PCEN Jul 16 15:15:47 2021 UTC</p> <p>The Transport: <b>field</b>: A transport type was configured and therefore retained after upgrade.</p> <p>The Policy: header and details: A custom policy was available in the Smart Account or Virtual Account – this has also been automatically installed on the switch. (After establishing trust, CSSM returns a policy. The policy is then automatically installed.)</p> <p>The Usage Reporting: header: The Next report push: field provides information about when the switch will send the next RUM report to CSSM.</p> <p>The Trust Code Installed: field: The ID token is successfully converted and a trusted connected has been established with CSSM.</p>
<p><b>show license udi</b> (Smart Licensing)</p> <pre>Device# show license udi UDI: PID:N9K-C9504, SN:FOX2308PCEN</pre>	<p><b>show license udi</b> (SLP)</p> <pre>Device# show license udi UDI: PID:N9K-C9504, SN:FOX2308PCEN HA UDI List: Active: PID:N9K-C9504, SN:FOX2308PCEN HA UDI List: Standby: PID:N9K-C9504, SN:FOX2308PCEN</pre> <p>This is a High Availability setup, and the command displays all UDIs in the setup.</p>

**CSSM Web UI After Migration**

Log in to the CSSM Web UI at <https://software.cisco.com/software/smart-licensing/alerts> and click **Smart Software Licensing**. Under **Inventory > Product Instances**.

Registered licenses in the Smart Licensing environment were displayed with the hostname of the product instance in the Name column. After upgrade to SLP, they are displayed with the UDI of the product instance. All migrated UDIs are displayed. In this example, they are

PID:C9500-16X,SN:FCW2233A5ZV and PID:C9500-16X,SN:FCW2233A5ZY.

Only the active product instance reports usage, therefore PID:C9500-16X,SN:FCW2233A5ZV displays license consumption information under **License Usage**.

Figure 1: Smart Licensing to Smart Licensing Using Policy: Active and Standby Product Instances After Migration

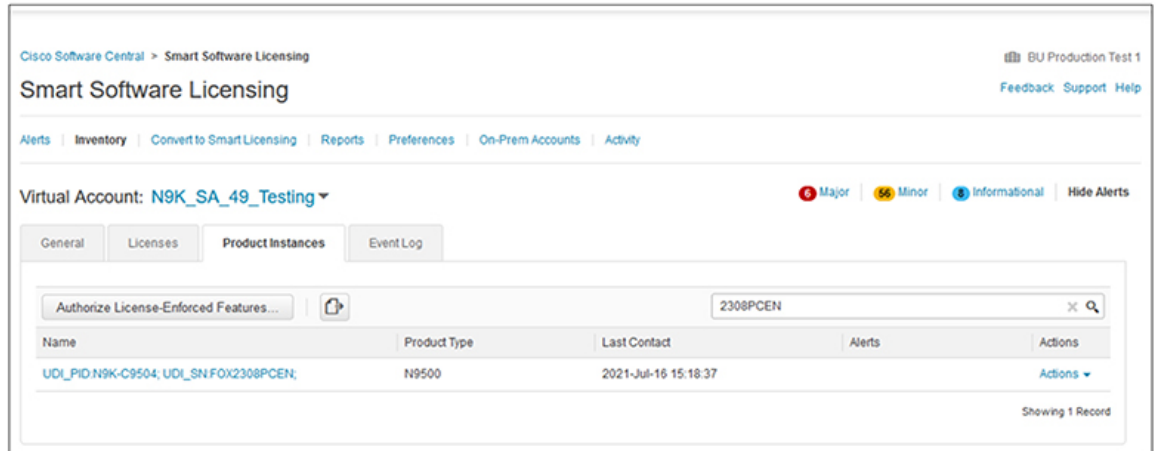


Figure 2: Smart Licensing to Smart Licensing Using Policy: UDI and License Usage under Active Product Instance

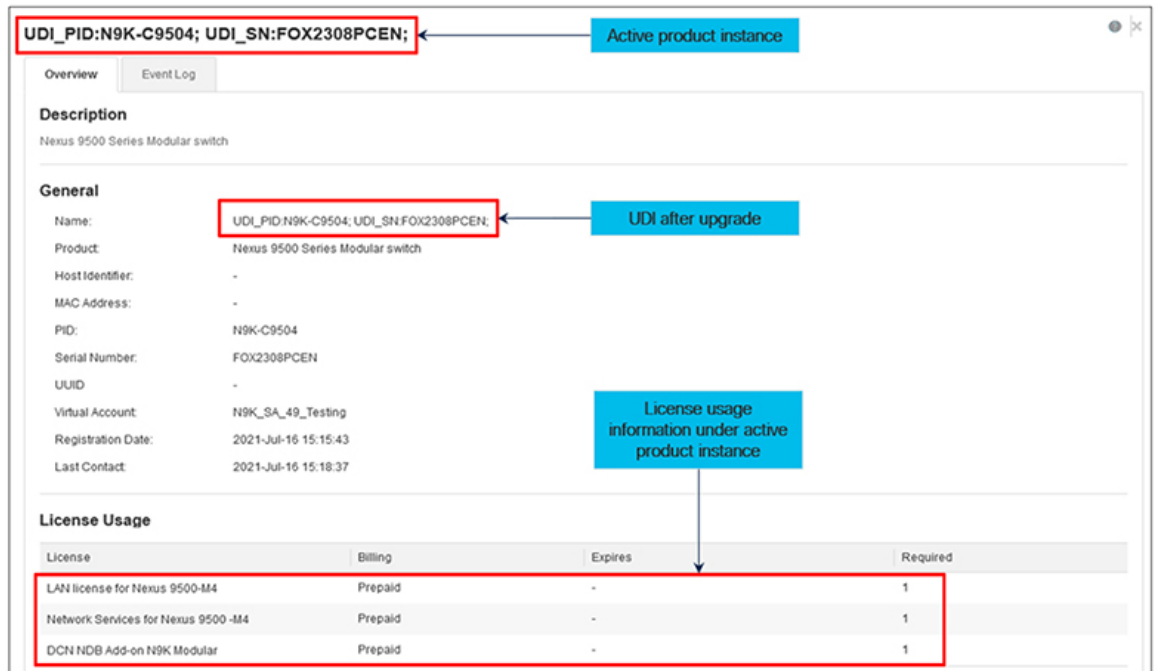


Figure 3: Smart Licensing to Smart Licensing Using Policy: DCN NDB/RTU Licenses Showing up After Upgrade

Product Instance	Product Type	Licenses used
UDI_PID:N9K-C9504; UDI_SN:FOX2308PCEN	N9500	1

Showing 1 Record

### Reporting After Migration

The product instance sends the next RUM report to CSSM, based on the policy.

If you want to change your reporting interval to report more frequently: on the product instance, configure the **license smart usage interval** command. For syntax details see the **license smart (global config)** command in the Command Reference for the corresponding release.

## RTU Licensing to Smart Licensing Using Policy

This section provides information about migrating a Cisco Nexus 9000 Series switch from Right-to-Use (RTU) licensing to Smart Licensing Using Policy.

RTU Licensing is available for Cisco Nexus 9000 Series Switches until Cisco NX-OS Release 10.1(2), and SLP is introduced from Cisco NX-OS Release 10.2(1)F.

When the software version is upgraded from a pre-SLP version to the SLP version, all licenses are displayed as IN USE and the Cisco default policy is applied on the product instance. If any add-on licenses are used, the Cisco default policy requires usage reporting in 90 days. As all licenses on Cisco Nexus Switches are unenforced, no functionality is lost.

### RTU Licensing to SLP Migration - Feature TAP Aggregation

In a scenario where a Cisco Nexus 9000 Series switch is migrated from a pre-SLP to an SLP-supported release, an NDB license, which is the only RTU license, cannot be consumed unless ACL is configured as below in the pre-SLP release. This is equivalent of the consumption of NDB RTU license in pre-SLP release.

A sample configuration for pre-SLP release is as follows:

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ip access-list iptest
switch(config-acl)# permit ip any any redirect Ethernet1/1
switch(config-acl)#
```

A sample show command output after ACL configuration for a pre-SLP release is as follows:

#### sh ip access-lists iptest

```
IP access list iptest
10 permit ip any any redirect Ethernet1/1
```

A sample show command output for license verification after upgrading to an SLP-supported release is as follows and the show feature command shows that the feature tap-aggregation is enabled, and NDB license is consumed:



```

show license usage
Device# show license usage
License Authorization:
  Status: Not Applicable
(DCN_NDB):
  Description: DCN NDB Add-On License N9K Modular
  Count: 1
  Version: 1.0
  Status: IN USE
  Enforcement Type: NOT ENFORCED
  License Type: Generic

show feature
sh feature | inc tap
tap-aggregation      1          enabled

```




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**Note** Beginning with Cisco NX-OS Release 10.2(1)F, feature tap-aggregation is licensed, supported on all Cisco Nexus 9000 Series switches, and requires you to configure feature tap-aggregation before configuring related commands.

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### CSSM Web UI After Migration

No changes in the CSSM Web UI.

### Reporting After Migration

Implement any one of the supported topologies and fulfil reporting requirements. See [Supported Topologies](#) and [Configuring Smart Licensing Using Policy](#). The reporting method you can use depends on the topology you implement.

## Evaluation or Eval Expired to Smart Licensing Using Policy

The following is an example of a Cisco Nexus 9000 switch with evaluation licenses (Smart Licensing) that are migrated to SLP.

The notion of evaluation licenses does not apply to SLP. When the software version is upgraded to one that supports SLP, all licenses are displayed as IN USE and the Cisco default policy is applied to the product instance. Since all licenses on Cisco Nexus Switches are unenforced, no functionality is lost.

The table below calls out key changes or new fields to check for in the show command outputs, after upgrade to SLP:

Table 2: Evaluation or Eval Expired to Smart Licensing Using Policy: show Commands

Before Upgrade	After Upgrade
<p><b>PGBL-FX2-203(config)# show license usage</b></p> <pre> License Authorization:   Status: EVAL MODE   Evaluation Period Remaining: 86 days, 11 hours, 49 minutes, 40 seconds  (LAN_ENTERPRISE_SERVICES_PKG):   Description: &lt;empty&gt;   Count: 1   Version: 1.0   Status: EVAL MODE  (NETWORK_SERVICES_PKG):   Description: &lt;empty&gt;   Count: 1   Version: 1.0   Status: EVAL MODE  (VPN_FABRIC):   Description: &lt;empty&gt;   Count: 1   Version: 1.0   Status: EVAL MODE                     </pre>	<p><b>PGBL-FX2-203# show license usage</b></p> <pre> License Authorization:   Status: Not Applicable  (NETWORK_SERVICES_PKG):   Description: Network Services for Nexus9300-XF   Count: 1   Version: 1.0   <b>Status: IN USE</b>      Enforcement Type: NOT ENFORCED   License Type: Generic  (VPN_FABRIC):   Description: FAB License for Nexus 9300-XF   Count: 1   Version: 1.0   <b>Status: IN USE</b>      Enforcement Type: NOT ENFORCED   License Type: Generic  (LAN_ENTERPRISE_SERVICES_PKG):   Description: LAN license for Nexus 9300-XF   Count: 1   Version: 1.0   <b>Status: IN USE</b>      Enforcement Type: NOT ENFORCED   License Type: Generic                     </pre>

Before Upgrade	After Upgrade																																								
<p><b>PGBL-FX2-203(config)# show license summary</b></p> <p>Registration:            Status: UNREGISTERED            Smart Account: VDANI-ON-PREM-004            Virtual Account: Default            Export-Controlled Functionality: Allowed</p> <p>License Authorization:            Status: EVAL MODE            Evaluation Period Remaining: 86 days, 11 hours, 49 minutes, 6 seconds</p> <p>Smart License Conversion:            Automatic Conversion Enabled: False            Status: Successful on Aug 13 17:19:07 2021 UTC</p> <p>License Usage:</p> <table border="1"> <thead> <tr> <th>License</th> <th>Count</th> <th>Entitlement tag</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>&lt;empty&gt;</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(LAN_ENTERPRISE_SERVICES_PKG)</td> <td>1</td> <td></td> <td>EVAL MODE</td> </tr> <tr> <td>&lt;empty&gt;</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(NETWORK_SERVICES_PKG)</td> <td>1</td> <td></td> <td>EVAL MODE</td> </tr> <tr> <td>&lt;empty&gt;</td> <td></td> <td>(VPN_FABRIC)</td> <td>1 EVAL MODE</td> </tr> </tbody> </table>	License	Count	Entitlement tag	Status	<empty>				(LAN_ENTERPRISE_SERVICES_PKG)	1		EVAL MODE	<empty>				(NETWORK_SERVICES_PKG)	1		EVAL MODE	<empty>		(VPN_FABRIC)	1 EVAL MODE	<p><b>PGBL-FX2-203# show license summary</b></p> <p>License Usage:</p> <table border="1"> <thead> <tr> <th>License</th> <th>Count</th> <th>Entitlement tag</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Network Services for Ne... (NETWORK_SERVICES_PKG)</td> <td>1</td> <td></td> <td>IN USE</td> </tr> <tr> <td>FAB License for Nexus 9... (VPN_FABRIC)</td> <td>1</td> <td></td> <td>IN USE</td> </tr> <tr> <td>LAN license for Nexus 9... (LAN_ENTERPRISE_SERVICES_PKG)</td> <td>1</td> <td></td> <td>IN USE</td> </tr> </tbody> </table>	License	Count	Entitlement tag	Status	Network Services for Ne... (NETWORK_SERVICES_PKG)	1		IN USE	FAB License for Nexus 9... (VPN_FABRIC)	1		IN USE	LAN license for Nexus 9... (LAN_ENTERPRISE_SERVICES_PKG)	1		IN USE
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<p><b>PGBL-FX2-203(config)# show license status</b></p> <p>Smart Licensing is ENABLED</p> <p>Registration:            Status: UNREGISTERED            Smart Account: VDANI-ON-PREM-004            Virtual Account: Default            Export-Controlled Functionality: Allowed</p> <p>License Authorization:            Status: EVAL MODE            Evaluation Period Remaining: 86 days, 11 hours, 49 minutes, 3 seconds</p> <p>Smart License Conversion:            Automatic Conversion Enabled: False            Status: Successful on Aug 13 17:19:07 2021 UTC</p>	<p><b>PGBL-FX2-203# show license status</b></p> <p>Utility:            Status: DISABLED</p> <p>Smart Licensing using Policy:            Status: ENABLED</p> <p>Data Privacy:            Sending Hostname: yes            Callhome Hostname Privacy: DISABLED            Smart Licensing Hostname Privacy: DISABLED            Version Privacy: DISABLED</p> <p>Transport:            Type: CSLU            Cslu address: cslu-local</p> <p>Policy:            Policy in use: Merged from multiple sources            Reporting ACK required: Yes            Unenforced/Non-Export:                First report requirement (days): 90 (CISCO default)                Ongoing reporting frequency (days): 365 (CISCO default)                On change reporting (days): 90 (CISCO default)            Enforced (Perpetual/Subscription):                First report requirement (days): 0 (CISCO default)                Ongoing reporting frequency (days): 0 (CISCO default)                On change reporting (days): 0 (CISCO default)            Export (Perpetual/Subscription):                First report requirement (days): 0 (CISCO default)                Ongoing reporting frequency (days): 0 (CISCO default)                On change reporting (days): 0 (CISCO default)</p> <p>Miscellaneous:            Custom Id: &lt;empty&gt;</p> <p>Usage reporting:            Last ACK received: &lt;none&gt;            Next ACK deadline: Nov 16 09:38:37 2021 UTC            Reporting push interval: 30 days            Next ACK push check: &lt;none&gt;            Next report push: Aug 18 09:39:14 2021 UTC            Last report push: &lt;none&gt;            Last report file write: &lt;none&gt;</p> <p>Trust Code installed: &lt;none&gt;</p>

**CSSM Web UI After Migration**

No changes in the CSSM Web UI.

**Reporting After Migration**

Implement any one of the supported topologies and fulfill reporting requirements. See [Supported Topologies](#) and [Configuring Smart Licensing Using Policy](#). The reporting method that you can use depends on the topology you implement.

