

Migrating to Smart Licensing Using Policy

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.

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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.

Note Ensure that the **license smart reservation** command is disabled before upgrading to Smart Licensing Using Policy.

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

show license summary (Smart Licensing)
 	
`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`
`LAN license for Nexus 9...`
`(LAN_ENTERPRISE_SERVICES_PKG)  1  AUTHORIZED`
`Network Services for Ne...`
`(NETWORK_SERVICES_PKG)  1  AUTHORIZED`
 	
The **Status** and **License Authorization** fields show that the license is **REGISTERED** and **AUTHORIZED**.
	show license summary (SLP)
	
	`Device# show license summary`
	
	`License Usage:`
	`License  Entitlement tag  Count  Status`
	`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`
	
	The **Status** field shows that the licenses are now **IN USE** instead of registered and authorized.

Before Upgrade	After Upgrade

show license usage (Smart Licensing)
`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`
	show license usage (SLP)
	`License Authorization: Status: Not Applicable`
	
	`(DCN_NDB):`
	`Description: DCN NDB Add-On License N9K Modular <<< 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`
	
	The license counts remain the same.
	
	The **Enforcement Type** field displays NOT ENFORCED. (There are no export-controlled or enforced licenses on Cisco Nexus Switches).

Before Upgrade	After Upgrade

show license status (Smart Licensing)
 	
`Device# show license status`
`Smart Licensing is ENABLED`
 	
`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`
 	
`License Authorization:`
`  Status: AUTHORIZED on Jul 16 14:26:01 2021 UTC`
 	
`  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`
 	
`Smart License Conversion:`
`  Automatic Conversion Enabled: False`
`  Status: Not started`	

Before Upgrade	After Upgrade

	show license status (SLP)
	`Device# show license status`
	
	`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`
	
	`Transport:`
	`  Type: Callhome`
	
	`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: <empty>`
	
	`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: <none>`
	`  Next report push: Aug 15 15:18:28 2021 UTC`
	`  Last report push: Jul 16 15:18:28 2021 UTC`
	`  Last report file write: <none>`
	
	`Trust Code installed: Jul 16 15:15:47 2021`

Before Upgrade	After Upgrade
	UTC Active: PID: N9K-C9504, SN: FOX2308PCEN Jul 16 15:15:47 2021 UTC Standby: PID: N9K-C9504, SN: FOX2308PCEN Jul 16 15:15:47 2021 UTC The Transport: **field**: A transport type was configured and therefore retained after upgrade. 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.) The `Usage Reporting: header: The Next report push:` field provides information about when the switch will send the next RUM report to CSSM. The `Trust Code Installed: field:` The ID token is successfully converted and a trusted connected has been established with CSSM.

show license udi (Smart Licensing)
 	
`Device# show license udi`
`UDI: PID:N9K-C9504, SN:FOX2308PCEN`
	show license udi (SLP)
	
	`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`
	
	This is a High Availability setup, and the command displays all UDIs in the setup.

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

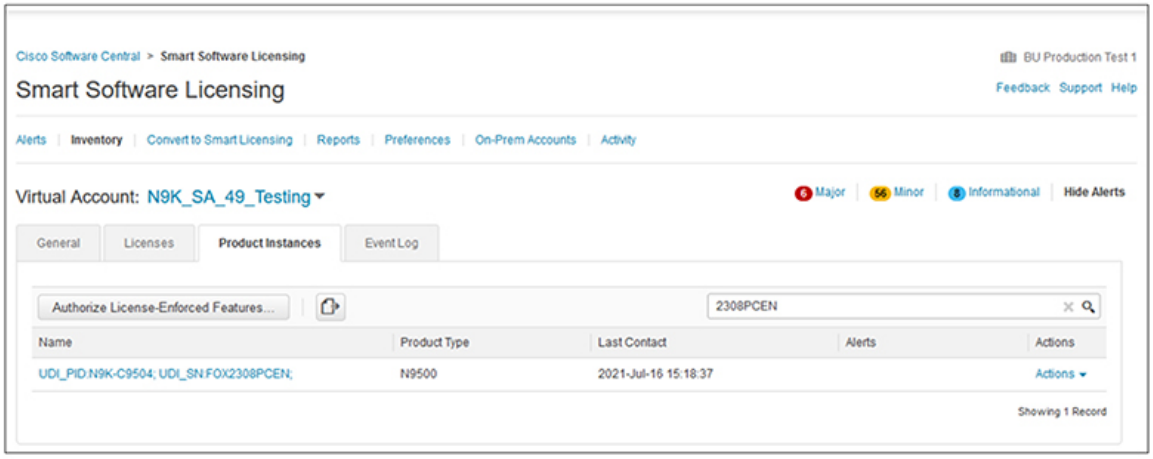


Figure 2: Smart Licensing to Smart Licensing Using Policy: UDI and License Usage under Active Product Instance

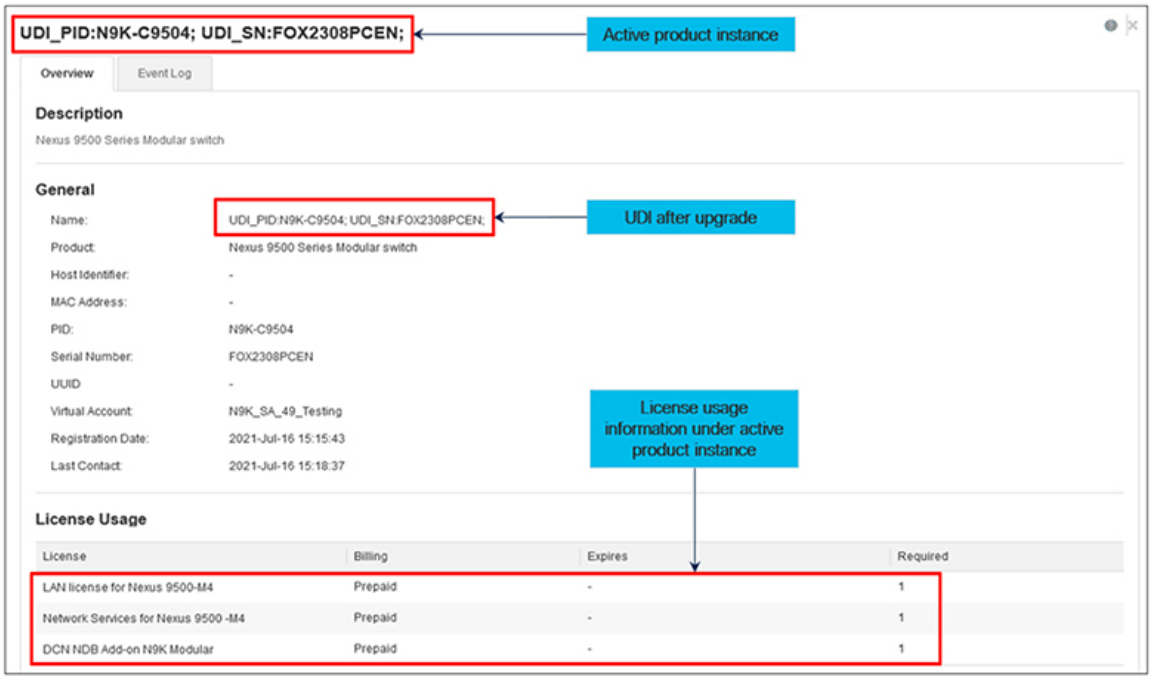
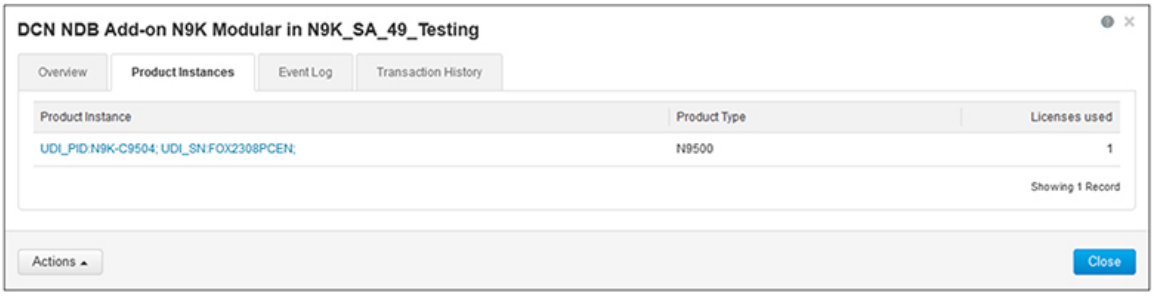


Figure 3: Smart Licensing to Smart Licensing Using Policy: DCN NDB/RTU Licenses Showing up After Upgrade



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 Nexus 9000 Series switch from Right-to-Use (RTU) licensing to Smart Licensing Using Policy.

RTU Licensing is available for Nexus 9000 Series Switches until NX-OS Release 10.1(2), and SLP is introduced from 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 default policy requires usage reporting in 90 days. As all licenses on Nexus switches are unenforced, no functionality is lost.

RTU licensing to SLP migration - feature TAP aggregation

In a scenario where a 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:

```
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)#
```

Here is a sample show command output after ACL configuration for a pre-SLP release.

show ip access-lists iptest

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

Here is a sample show command output for license verification after upgrading to an SLP-supported release 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
show feature | inc tap
tap-aggregation        1          enabled
```

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

CSSM web user interface after migration

No changes in the CSSM web user interface.

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 you can use depends on the topology you implement.

Evaluation or Eval Expired to Smart Licensing Using Policy

Here is an example of a 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 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: Show commands for Evaluation or Eval Expired to Smart Licensing Using Policy

Before Upgrade	After Upgrade

switch(config)# show license usage
License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 86 days, 11 hours, 49 minutes, 40 seconds
 	
(LAN_ENTERPRISE_SERVICES_PKG):
  Description: <empty>
  Count: 1
  Version: 1.0
  Status: EVAL MODE
 	
(NETWORK_SERVICES_PKG):
  Description: <empty>
  Count: 1
  Version: 1.0
  Status: EVAL MODE
 	
(VPN_FABRIC):
  Description: <empty>
  Count: 1
  Version: 1.0
  Status: EVAL MODE
	switch# show license usage
	License Authorization:
	  Status: Not Applicable
	
	(NETWORK_SERVICES_PKG):
	  Description: Network Services for Nexus9300-XF
	  Count: 1
	  Version: 1.0
	  Status: IN USE Enforcement Type: NOT ENFORCED
	  License Type: Generic
	
	(VPN_FABRIC):
	  Description: FAB License for Nexus 9300-XF
	  Count: 1
	  Version: 1.0
	  Status: IN USE
	  Enforcement Type: NOT ENFORCED
	  License Type: Generic
	
	(LAN_ENTERPRISE_SERVICES_PKG):
	  Description: LAN license for Nexus 9300-XF
	  Count: 1
	  Version: 1.0
	  Status: IN USE Enforcement Type: NOT ENFORCED
	  License Type: Generic

Before Upgrade	After Upgrade

switch(config)# show license summary
 	
Registration:
  Status: UNREGISTERED
  Smart Account: SA1
  Virtual Account: VA1
  Export-Controlled Functionality: Allowed
 	
License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 86 days, 11 hours, 49 minutes, 6 seconds
 	
Smart License Conversion:
  Automatic Conversion Enabled: False
  Status: Successful on Aug 13 17:19:07 2021 UTC
 	
License Usage:
License Entitlement tag
Count Status
--- 	
<empty>
(LAN_ENTERPRISE_SERVICES_PKG) 1 EVAL MODE
<empty>
(NETWORK_SERVICES_PKG) 1 EVAL MODE
<empty> (VPN_FABRIC)
1 EVAL MODE
	switch# show license summary
	
	License Usage:
	License Entitlement tag
	Count 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

Before Upgrade	After Upgrade

switch(config)# show license status
Smart Licensing is ENABLED
 	
Registration:
  Status: UNREGISTERED
  Smart Account: SA1
  Virtual Account: VA1
  Export-Controlled Functionality: Allowed
 	
License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 86 days, 11 hours, 49 minutes, 3 seconds
 	
Smart License Conversion:
  Automatic Conversion Enabled: False
  Status: Successful on Aug 13 17:19:07 2021 UTC
	switch# show license status
	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
	
	Transport:
	  Type: CSLU
	  Cslu address: cslu-local
	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: <empty>
	
	Usage reporting:
	  Last ACK received: <none>
	  Next ACK deadline: Nov 16 09:38:37 2021 UTC
	  Reporting push interval: 30 days
	  Next ACK push check: <none>
	  Next report push: Aug 18 09:39:14 2021 UTC
	  Last report push: <none>
	  Last report file write: <none>
	
	Trust Code installed: <none>

CSSM web user interface after migration

No changes in the CSSM web user interface.

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.