Migrating to Smart Licensing Using Policy

To upgrade to Smart Licensing Using Policy, you must upgrade the software version (image) on the product instance to a supported version.

Before you Begin

Ensure that you have read the Upgrades, on page 2 section, to understand how Smart Licensing Using Policy handles all earlier licensing models.

Smart Licensing Using Policy is introduced in Cisco IOS XE Amsterdam 17.3.2a. This is therefore the minimum required version for Smart Licensing Using Policy.

Note that all the licenses that you are using prior to migration will be available after upgrade. This means that not only registered and authorized licenses (including reserved licenses), but also evaluation licenses will be migrated. The advantage with migrating registered and authorized licenses is that you will have fewer configuration steps to complete after migration, because your configuration is retained after upgrade (transport type configuration and configuration for connection to CSSM, all authorization codes). This ensures a smoother transition to the Smart Licensing Using Policy environment.

Device-led conversion is not supported for migration to Smart Licensing Using Policy.

Upgrading the Wireless Controller Software

For information about the upgrade procedure:

- For Cisco Embedded Wireless Controller on Cisco Catalyst 9100 Access Points, see the *Software Upgrade* section in the Cisco Embedded Wireless Controller on Catalyst Access Points Online Help
- For all other supported wireless controllers, see the *System Upgrade > Upgrading the Cisco Catalyst 9800 Wireless Controller Software* section of the Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide for the required release.

  If you are upgrading a Cisco Catalyst 9800-CL Wireless Controller, ensure that you are familiar with the conditions for a mandatory ACK starting with Cisco IOS XE Cupertino 17.7.1. See RUM Reporting and Acknowledgment Requirement for Cisco Catalyst 9800-CL Wireless Controller.

You can use the procedure to upgrade in install mode or ISSU (ISSU only on supported platforms and supported releases)

After Upgrading the Software Version

- Complete topology implementation.

If a transport mode is available in your pre-upgrade set-up, this is retained after you upgrade. Only in some cases, like with evaluation licenses or with licensing models where the notion of a transport type does not exist, the default (**cslu**) is applied - in these cases you may have a few more steps to complete before you are set to operate in the Smart Licensing Using Policy environment.

No matter which licensing model you upgrade from, you can change the topology after upgrade.

- Synchronize license usage with CSSM

  No matter which licensing model you are upgrading from and no matter which topology you implement, synchronize your usage information with CSSM. For this you have to follow the reporting method that applies to the topology you implement. This initial synchronization ensures that up-to-date usage information is reflected in CSSM and a custom policy (if available), is applied. The policy that is applicable after this synchronization also indicates subsequent reporting requirements. These rules are also tabled here: How Upgrade Affects Reporting for Existing Licenses, on page 3

Note After initial usage synchronization is completed, reporting is required only if the policy, or, system messages indicate that it is.

Sample Migration Scenarios

Sample migration scenarios have been provided considering the various existing licensing models and licenses. All scenarios provide sample outputs before and after migration, any CSSM Web UI changes to look out for (as an indicator of a successful migration or further action), and how to identify and complete any necessary post-migration steps.

Note For SSM On-Prem, the sequence in which you perform the various upgrade-related activities is crucial. So only for this scenario, the migration sequence has been provided - and not an example.

- Upgrades, on page 2
- Downgrades, on page 4
- Sample Migration Scenarios, on page 7
- Migrating to a Version of SSM On-Prem That Supports Smart Licensing Using Policy, on page 25

Upgrades

This section explains the following aspects:

Migrating from earlier licensing models to Smart Licensing Using Policy. When migrating from earlier licensing models, also see the #unique_75 section for examples of migration scenarios that apply to Cisco Catalyst Wireless Controllers.

Upgrading in the Smart Licensing Using Policy environment - where the software version you are upgrading from and the software version you are upgrading to, both support Smart Licensing Using Policy.

Identifying the Current Licensing Model Before Upgrade

Before you upgrade to Smart Licensing Using Policy, if you want to know the current licensing model that is effective on the product instance, enter the **show license all** command in privileged EXEC mode.

How Upgrade Affects Enforcement Types for Existing Licenses

When you upgrade to a software version which supports Smart Licensing Using Policy, the way existing licenses are handled, depends primarily on the license enforcement type.

- An unenforced license that was being used before upgrade, continues to be available after the upgrade. All licenses on Cisco Catalyst Wireless Controllers are unenforced licenses. This includes licenses from all earlier licensing models:
  - Smart Licensing
  - Specific License Reservation (SLR), which has an accompanying authorization code. The authorization code continues to be valid after upgrade to Smart Licensing Using Policy and authorizes existing license consumption.
  - Evaluation or expired licenses from any of the above mentioned licensing models.
- An enforced or export-controlled license that was being used before upgrade, continues to be available after upgrade if the required authorization exists.

  There are no export-controlled or enforced licenses on any of the supported Cisco Catalyst Wireless Controllers, therefore, these enforcement types and the requisite SLAC do not apply.

How Upgrade Affects Reporting for Existing Licenses

Existing License	Reporting Requirements After Migration to Smart Licensing Using Policy
Specific License Reservation (SLR)	Required only if there is a change in license consumption. An existing SLR authorization code authorizes existing license consumption after upgrade to Smart Licensing Using Policy.
Smart Licensing (Registered and Authorized license)	Depends on the policy.
Evaluation or expired licenses	Based on the reporting requirements of the Cisco default policy.

How Upgrade Affects Transport Type for Existing Licenses

The transport type, if configured in your existing set-up, is retained after upgrade to Smart Licensing Using Policy.

When compared to the earlier version of Smart Licensing, additional transport types are available with Smart Licensing Using Policy. There is also a change in the default transport mode. The following table clarifies how this may affect upgrades:

Transport type Before Upgrade	License or License State Before Upgrade	Transport Type After Upgrade
Default (callhome)	evaluation	cslu (default in Smart Licensing Using Policy)
	SLR	off
	registered	callhome
smart	evaluation	off
	SLR	off
	registered	smart

How Upgrade Affects the Token Registration Process

In the earlier version of Smart Licensing, a token was used to register and connect to CSSM. ID token registration is not required in Smart Licensing Using Policy. The token generation feature is still available in CSSM, and is used to *establish trust* when a product instance is directly connected to CSSM. See Connected Directly to CSSM.

Upgrades Within the Smart Licensing Using Policy Environment

This section covers any release-specific considerations or actions that apply when you upgrade the product instance from one release where Smart Licensing Using Policy is supported to another release where Smart Licensing Using Policy is supported.

Starting with Cisco IOS XE Cupertino 17.7.1, RUM reports are stored in a format that reduces processing time. In order to ensure that there are no usage reporting inconsistencies resulting from the differences in the old and new formats, we recommend completing one round of usage reporting as a standard practice when upgrading from an earlier release that supports Smart Licensing Using Policy, to Cisco IOS XE Cupertino 17.7.1 or a later release.

Downgrades

This section provides information about downgrades to an earlier licensing model, for new deployments and existing deployments. It also covers information relevant to downgrades within in the Smart Licensing Using Policy environment.

New Deployment Downgrade

This section describes considerations and actions that apply if a newly purchased product instance with a software version where Smart Licensing Using Policy is enabled by default, is downgraded to a software version where Smart Licensing Using Policy is not supported.

The outcome of the downgrade depends on whether a trust code was installed while still operating in the Smart Licensing Using Policy environment, and further action may be required depending on the release you downgrade to.

If the topology you implemented while in the Smart Licensing Using Policy environment was "Connected Directly to CSSM", then a trust code installation can be expected or assumed, because it is required as part of topology implementation. For any of the other topologies, trust establishment is not mandatory. Downgrading product instances with one of these other topologies will therefore mean that you have to restore licenses to a registered and authorized state by following the procedures that are applicable in the Smart Licensing environment. See the table (*Outcome and Action for New Deployment Downgrade to Smart Licensing*) below.

Table 1: Outcome and Action for New Deployment Downgrade to Smart Licensing

In the Smart Licensing Using Policy Environment	Downgrade to..	Outcome and Further Action
Standalone product instance, connected directly to CSSM, and trust established.	Cisco IOS XE Amsterdam 17.3.1 OR Cisco IOS XE Gibraltar 16.12.4 and later releases in Cisco IOS XE Gibraltar 16.12.x	No further action is required. The product instance attempts to renew trust with CSSM after downgrade. After a successful renewal, licenses are in a registered state and the earlier version of Smart Licensing is effective on the product instance.
	Any other release (other than the ones mentioned in the row above) that supports Smart Licensing	Action is required: You must reregister the product instance. Generate an ID token in the CSSM Web UI and on the product instance, configure the **license smart register idtoken** *idtoken* command in global configuration mode.
High Availability set-up, connected directly to CSSM, and trust established.	Any release that supports Smart Licensing	Action is required: You must reregister the product instance. Generate an ID token in the CSSM Web UI and on the product instance, configure the **license smart register idtoken** *idtoken* **all** command in global configuration mode.
Any other topology. (Connected to CSSM Through CSLU, CSLU Disconnected from CSSM, No Connectivity to CSSM and No CSLU)	Any release that supports Smart Licensing	Action is required. Restore licenses to a registered and authorized state by following the procedures that are applicable in the Smart Licensing environment.

Upgrade and Then Downgrade

This section describes considerations and actions that apply if a product instance is upgraded to a software version that supports Smart Licensing Using Policy and then downgraded to an earlier licensing model.

When you downgrade such a product instance, *license consumption does not change* and any product features you have configured on the product instance are preserved – only the features and functions that are available with Smart Licensing Using Policy are not available anymore. Refer to the corresponding section below to know more about reverting to an earlier licensing model.

Upgrade to Smart Licensing Using Policy and then Downgrade to Smart Licensing

The outcome of the downgrade depends on whether a trust code was installed while you were still operating in the Smart Licensing Using Policy environment, and further action may be required depending on the release you downgrade to. See the table below.

Table 2: Outcome and Action for Upgrade to Smart Licensing Using Policy and then Downgrade to Smart Licensing

In the Smart Licensing Using Policy Environment	Downgrade to..	Outcome and Further Action
Standalone product instance, connected directly to CSSM, and trust established.	Cisco IOS XE Amsterdam 17.3.1 OR Cisco IOS XE Gibraltar 16.12.4 and later releases in Cisco IOS XE Gibraltar 16.12.x	No further action is required. The system recognizes the trust code and converts it back to a registered ID token, and this reverts the license to an AUTHORIZED and REGISTERED state.
	Any other release (other than the ones mentioned in the row above) that supports Smart Licensing	Action is required: You must reregister the product instance. Generate an ID token in the CSSM Web UI and on the product instance, configure the **license smart register idtoken***idtoken* command in global configuration mode.
High Availability set-up, connected directly to CSSM, and trust established.	Any release that supports Smart Licensing	Action is required: You must reregister the product instance. Generate an ID token in the CSSM Web UI and on the product instance, configure the **license smart register idtoken** *idtoken* **all** command in global configuration mode.
Any other topology (Connected to CSSM Through CSLU, CSLU Disconnected from CSSM, No Connectivity to CSSM and No CSLU)	Any release that supports Smart Licensing.	Action is required. Restore licenses to a registered and authorized state by following the procedures that are applicable in the Smart Licensing environment.

Note Licenses that were in an evaluation or expired state in the Smart Licensing environment, revert to that same state after downgrade.

Upgrade to Smart Licensing Using Policy and then Downgrade to SLR

To revert to SLR, all that is required is for the image to be downgraded. The license remains reserved and authorized – no further action is required.

However, if you have returned an SLR while in the Smart Licensing Using Policy environment, then you must repeat the process of procuring an SLR as required, in the supported release.

Downgrades Within the Smart Licensing Using Policy Environment

This section covers any release-specific considerations or actions that apply when you downgrade the product instance from one release where Smart Licensing Using Policy is supported to another release where Smart Licensing Using Policy is supported.

Starting with Cisco IOS XE Cupertino 17.7.1, RUM reports are stored in a format that reduces processing time. In order to ensure that there are no usage reporting inconsistencies resulting from the differences in the old and new formats, we recommend completing one round of usage reporting as a standard practice when downgrading from Cisco IOS XE Cupertino 17.7.1 or a later release to an earlier release supporting Smart Licensing Using Policy.

Sample Migration Scenarios

Sample migration scenarios have been provided considering the various existing licensing models and licenses. All scenarios provide sample outputs before and after migration, any CSSM Web UI changes to look out for (as an indicator of a successful migration or further action), and how to identify and complete any necessary post-migration steps.

Note For SSM On-Prem, the sequence in which you perform the various upgrade-related activities is crucial. So only for this scenario, the migration sequence has been provided - and not an example.

Example: Smart Licensing to Smart Licensing Using Policy

The following is an example of a Cisco Catalyst 9800-CL Wireless Controller migrating from Smart Licensing to Smart Licensing Using Policy.

Table 3: Smart Licensing to Smart Licensing Using Policy: show Commands, on page 8

The CSSM Web UI After Migration, on page 11

Reporting After Migration, on page 14

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

Table 3: Smart Licensing to Smart Licensing Using Policy: show Commands

Before Upgrade (Smart Licensing)	After Upgrade (Smart Licensing Using Policy)

show license summary
The `Status` and `License Authorization` fields show that the license is `REGISTERED` and `AUTHORIZED`.
`Device# show license summary`
`Smart Licensing is ENABLED`
`Registration:`
`  Status: REGISTERED`
`  Smart Account: SA-Eg-Company-02`
`  Virtual Account: Dept-02`
`  Export-Controlled Functionality: ALLOWED`
`  Last Renewal Attempt: None`
`  Next Renewal Attempt: May 01 08:19:02 2021 IST`
`License Authorization:`
`  Status: AUTHORIZED`
`  Last Communication Attempt: SUCCEEDED`
`  Next Communication Attempt: Dec 02 08:19:09 2020 IST`
`License Usage:`
`  License  Entitlement tag  Count Status`
`---`
`  AP Perpetual Network... (DNA_NWSTACK_E)  1 AUTHORIZED`
`  Aironet DNA Essentia... (AIR-DNA-E)  1 AUTHORIZED`
	show license summary
	The `Status` field shows that the licenses are now `IN USE` instead of registered and authorized.
	`Device# show license summary`
	`License Usage:`
	`  License  Entitlement Tag  Count Status`
	`---`
	`  air-network-essentials  (DNA_NWSTACK_E)  1 IN USE`
	`  air-dna-essentials  (AIR-DNA-E)  1 IN USE`

Before Upgrade (Smart Licensing)	After Upgrade (Smart Licensing Using Policy)
show license usage One perpetual and one subscription license are being used before upgrade.	**show license usage** All licenses are migrated and the `Enforcement Type` field displays NOT ENFORCED. There are no export-controlled or enforced licenses on Cisco Catalyst Wireless Controllers.

Before Upgrade (Smart Licensing)	After Upgrade (Smart Licensing Using Policy)

Device# **show license usage**
 	
License Authorization:
  Status: AUTHORIZED on Nov 02 08:21:29 2020 IST
 	
AP Perpetual Networkstack Essentials (DNA_NWSTACK_E):
  Description: AP Perpetual Network Stack entitled with DNA-E
  Count: 1
  Version: 1.0
  Status: AUTHORIZED
  Export status: NOT RESTRICTED
 	
Aironet DNA Essentials Term Licenses (AIR-DNA-E):
  Description: DNA Essentials for Wireless
  Count: 1
  Version: 1.0
  Status: AUTHORIZED
  Export status: NOT RESTRICTED
	Device# **show license usage**
	
	License Authorization:
	  Status: Not Applicable
	
	air-network-essentials (DNA_NWSTACK_E):
	  Description: air-network-essentials
	  Count: 1
	  Version: 1.0
	  Status: IN USE
	  Export status: NOT RESTRICTED
	  Feature Name: air-network-essentials
	  Feature Description: air-network-essentials
	  Enforcement type: NOT ENFORCED
	  License type: Perpetual
	
	air-dna-essentials (AIR-DNA-E):
	  Description: air-dna-essentials
	  Count: 1
	  Version: 1.0
	  Status: IN USE
	  Export status: NOT RESTRICTED
	  Feature Name: air-dna-essentials
	  Feature Description: air-dna-essentials
	  Enforcement type: NOT ENFORCED
	  License type: Perpetual

Before Upgrade (Smart Licensing)	After Upgrade (Smart Licensing Using Policy)
show license status	**show license status** The `Transport:` field shows that the transport type, which was configured before update, is retained after upgrade. The `Policy:` header and details show that a custom policy was available in the Smart Account or Virtual Account – this has also been automatically installed on the product instance. (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 product instance will send the next RUM report to CSSM. The `Trust Code Installed:` field shows that the ID token is successfully converted and a trusted connected has been established with CSSM.

Before Upgrade (Smart Licensing)	After Upgrade (Smart Licensing Using Policy)

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: SA-Eg-Company-02
  Virtual Account: Dept-02
  Export-Controlled Functionality: ALLOWED
  Initial Registration: SUCCEEDED on Nov 02 08:19:02 2020 IST
  Last Renewal Attempt: None
  Next Renewal Attempt: May 01 08:19:01 2021 IST
  Registration Expires: Nov 02 08:14:06 2021 IST
 	
License Authorization:
  Status: AUTHORIZED on Nov 02 08:21:29 2020 IST
  Last Communication Attempt: SUCCEEDED on Nov 02 08:21:29 2020 IST
  Next Communication Attempt: Dec 02 08:19:09 2020 IST
  Communication Deadline: Jan 31 08:14:15 2021 IST
 	
Export Authorization Key:
  Features Authorized:
  <none>
	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: Installed On Nov 02 09:09:47 2020 IST
	  Policy name: **SLE Policy**
	  Reporting ACK required: yes (Customer Policy)
	  Unenforced/Non-Export Perpetual Attributes:
	  First report requirement (days): 60 (Customer Policy)
	  Reporting frequency (days): 60 (Customer Policy)
	  Report on change (days): 60 (Customer Policy)
	  Unenforced/Non-Export Subscription Attributes:
	  First report requirement (days): 30 (Customer Policy)
	  Reporting frequency (days): 30 (Customer Policy)
	  Report on change (days): 30 (Customer Policy)
	  Enforced (Perpetual/Subscription) License Attributes:
	  First report requirement (days): 0 (CISCO default)
	  Reporting frequency (days): 90 (Customer Policy)
	  Report on change (days): 90 (Customer Policy)
	  Export (Perpetual/Subscription) License Attributes:
	  First report requirement (days): 0 (CISCO default)
	  Reporting frequency (days): 90 (Customer Policy)
	  Report on change (days): 90 (Customer Policy)
	
	Miscellaneous:
	  Custom Id: <empty>
	
	Usage Reporting:
	  Last ACK received: Nov 02 09:09:47 2020 IST
	  Next ACK deadline: Jan 01 09:09:47 2021 IST
	  Reporting push interval: 30 days
	  Next ACK push check: Nov 02 09:13:54 2020 IST
	  Next report push: Dec 02 09:05:45 2020 IST
	  Last report push: Nov 02 09:05:45 2020 IST
	  Last report file write: <none>
	
	Trust Code Installed:
	  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
	  INSTALLED on Nov 02 08:59:26 2020 IST
	  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
	  INSTALLED on Nov 02 09:00:45 2020 IST

Before Upgrade (Smart Licensing)	After Upgrade (Smart Licensing Using Policy)
show license udi	**show license udi** This is a High Availability set-up and the command displays all UDIs in the set-up. There is no change in the sample output before and after migration.

`Device# show license udi`
`UDI: PID:C9800-CL-K9,SN:93BBAH93MGS`
 	
`HA UDI List:`
`Active:PID:C9800-CL-K9,SN:93BBAH93MGS`
`Standby:PID:C9800-CL-K9,SN:9XECPSUU4XN`
	`Device# show license udi`
	`UDI: PID:C9800-CL-K9,SN:93BBAH93MGS`
	
	`HA UDI List:`
	`Active:PID:C9800-CL-K9,SN:93BBAH93MGS`
	`Standby:PID:C9800-CL-K9,SN:9XECPSUU4XN`

The CSSM Web UI After Migration

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

The product instance previously displayed with the host name (Catalyst 9800CL Cloud Wireless Controller in this example) is now displayed with the UDI instead. All migrated UDIs are displayed, that is, PID:C9800-CL-K9,SN:93BBAH93MGS, and PID:C9800-CL-K9,SN:9XECPSUU4XN.

Only the active product instance reports usage, therefore, PID:C9800-CL-K9,SN:93BBAH93MGS displays license consumption information under **License Usage**. The standby does not report usage and the **License Usage** for the standby displays No Records Found.

Figure 1: Smart Licensing to Smart Licensing Using Policy: Hostname of Product Instance on the CSSM Web UI Before Migration

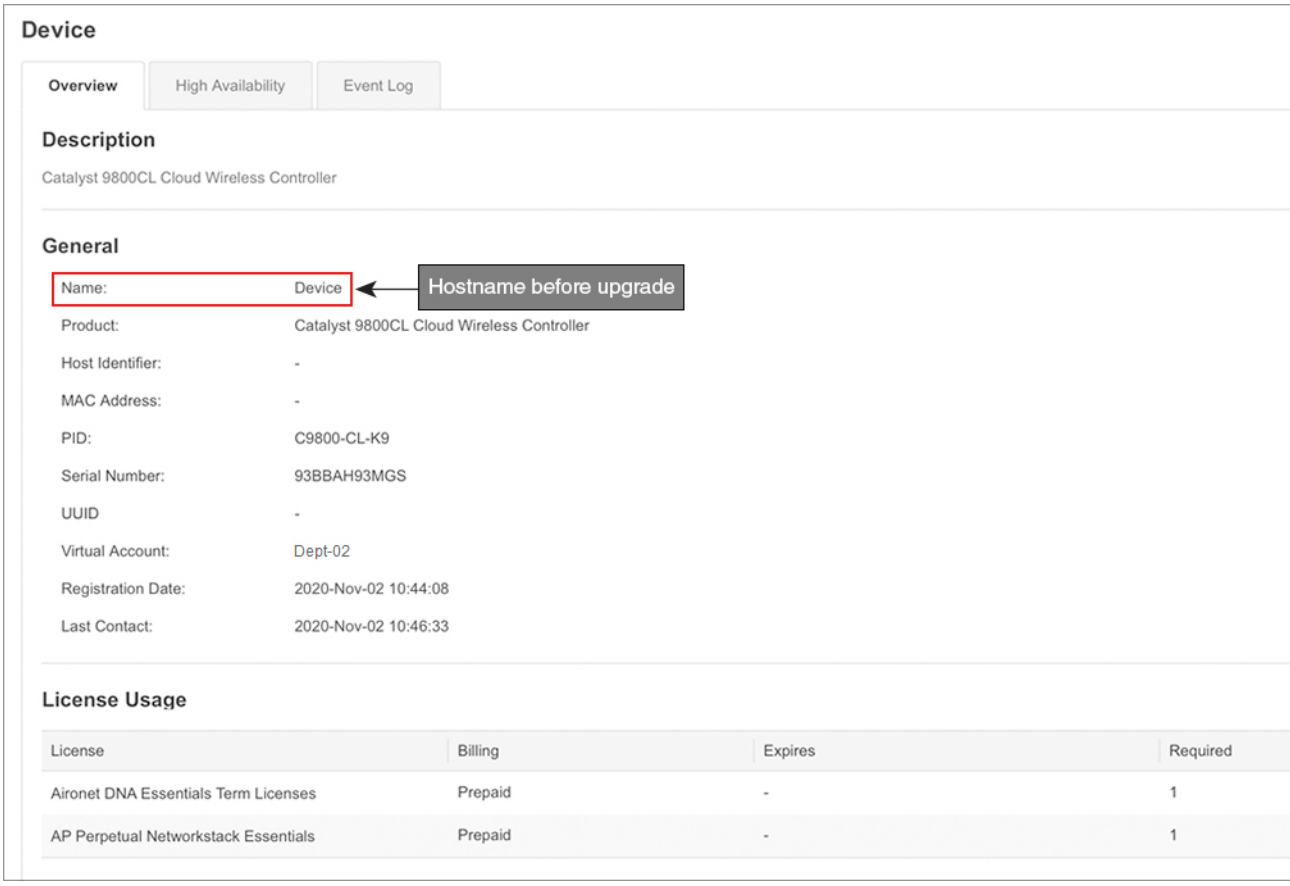


Figure 2: Smart Licensing to Smart Licensing Using Policy: UDI and License Usage Under Active Product Instance After Migration

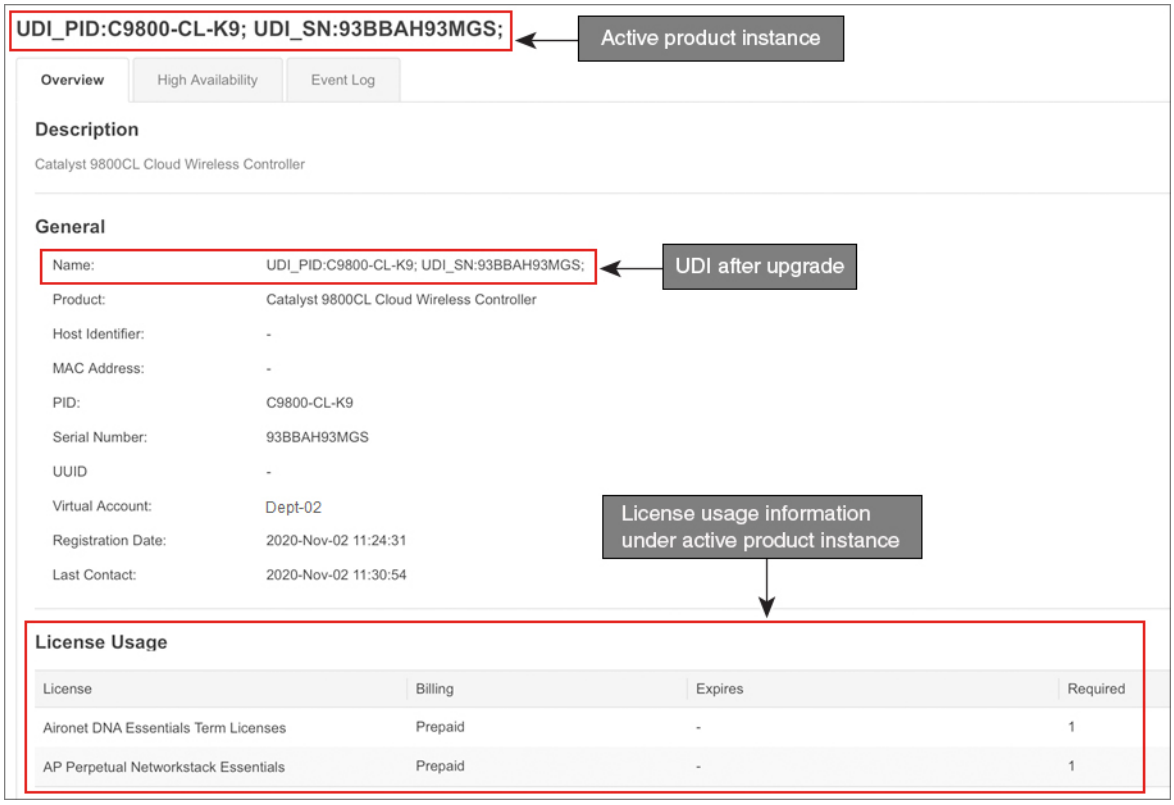
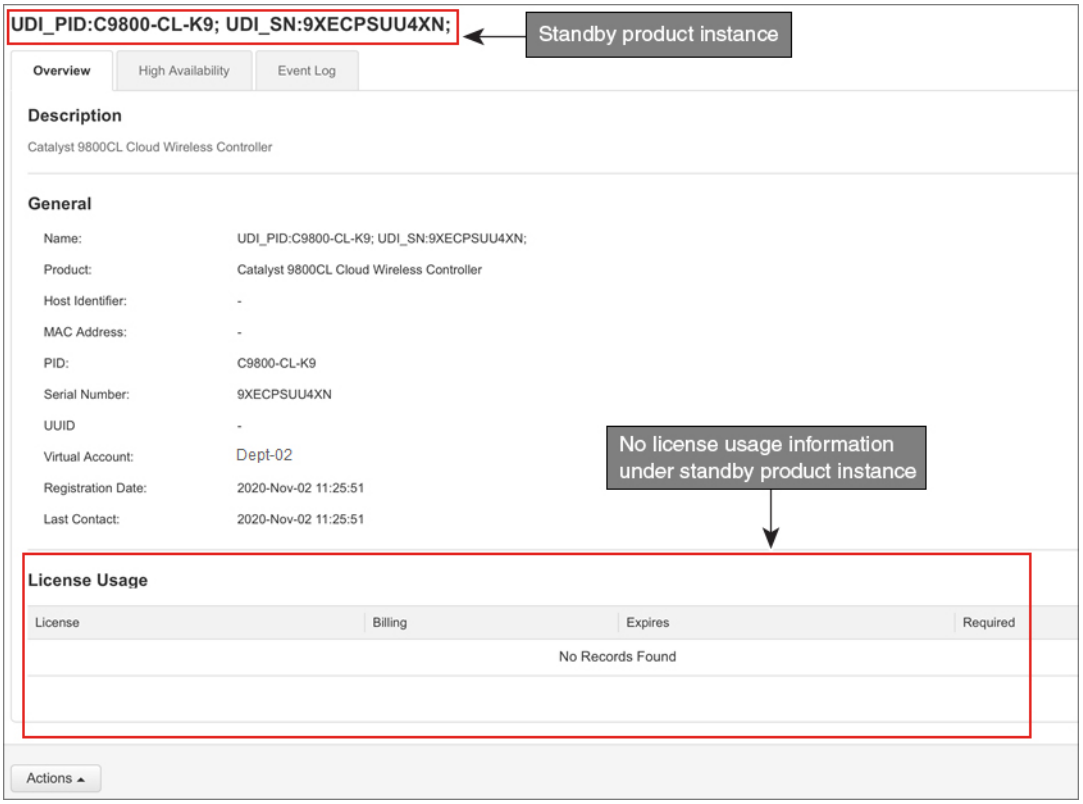


Figure 3: Smart Licensing to Smart Licensing Using Policy: Standby Product Instance After Migration



It is always the active that reports usage, so if the active in this High Availability set-up changes, the new active product instance will display license consumption information and report usage.

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 in global configuration mode. For syntax details see the *license smart (global config)* command in the Command Reference for the corresponding release.

Example: SLR to Smart Licensing Using Policy

The following is an example of a Cisco Catalyst 9800-CL Wireless Controller migrating from Specific License Reservation (SLR) to Smart Licensing Using Policy. This is a High Availability set-up with an active and standby.

License conversion is automatic and authorization codes are migrated. No further action is required to complete migration. After migration the No Connectivity to CSSM and No CSLU topology is effective. For information about the SLR authorization code in the Smart Licensing Using Policy environment, see Authorization Code.

Table 4: SLR to Smart Licensing Using Policy: show Commands, on page 15

The CSSM Web UI After Migration, on page 19

Reporting After Migration, on page 21

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

Table 4: SLR to Smart Licensing Using Policy: show Commands

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)

show license summary
 	
The `Registration` and `License Authorization` status fields show that the license was `REGISTERED - SPECIFIC LICENSE RESERVATION` and `AUTHORIZED - RESERVED`.
 	
`Device# show license summary`
 	
`Smart Licensing is ENABLED`
`License Reservation is ENABLED`
 	
`Registration:`
 	
`  Status: REGISTERED - SPECIFIC LICENSE RESERVATION`
`  Export-Controlled Functionality: ALLOWED`
 	
`License Authorization:`
`  Status: AUTHORIZED - RESERVED`
 	
`License Usage:`
`  License  Entitlement tag  Count Status`
 	
`---`
 	
`  AP Perpetual Network... (DNA_NWStack)`
`1 AUTHORIZED`
`  Aironet DNA Advantag... (AIR-DNA-A)`
`1 AUTHORIZED`
	show license summary
	
	Licenses are migrated , but none of the APs have joined the controller, current consumption (Count) is therefore zero, and the `Status` field shows that the licenses are `NOT IN USE`.
	
	`Device# show license summary`
	`License Reservation is ENABLED`
	
	`License Usage:`
	`  License  Entitlement Tag  Count Status`
	
	`---`
	
	`  Aironet DNA Advantag... (AIR-DNA-A)  0 NOT IN USE`
	`  AP Perpetual Network... (DNA_NWStack)  0 NOT IN USE`

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)
show license reservation	**show license authorization** The `Last Confirmation code:` field shows that the SLR authorization code is successfully migrated for the active and standby product instances in the High Availability set-up. The `Specified license reservations:` header shows that a perpetual license (AP Perpetual Networkstack Advantage) and a subscription license (Aironet DNA Advantage Term Licenses) are the migrated SLR licenses.

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)

```
Device# show license reservation
License reservation: ENABLED

Overall status:
  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
       Reservation status: SPECIFIC INSTALLED on Nov 02
 03:16:01 2020 IST
       Export-Controlled Functionality: ALLOWED
       Last Confirmation code: 102fc949
  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
       Reservation status: SPECIFIC INSTALLED on Nov 02
 03:15:45 2020 IST
       Export-Controlled Functionality: ALLOWED
       Last Confirmation code: ad4382fe

Specified license reservations:
  Aironet DNA Advantage Term Licenses (AIR-DNA-A):
    Description: DNA Advantage for Wireless
    Total reserved count: 20
    Term information:
      Active: PID:C9800-CL-K9,SN:93BBAH93MGS
        License type: TERM
          Start Date: 2020-OCT-14 UTC
          End Date: 2021-APR-12 UTC
          Term Count: 5
        License type: TERM
          Start Date: 2020-JUN-18 UTC
          End Date: 2020-DEC-15 UTC
          Term Count: 5
      Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
        License type: TERM
          Start Date: 2020-OCT-14 UTC
          End Date: 2021-APR-12 UTC
          Term Count: 10
  AP Perpetual Networkstack Advantage (DNA_NWStack):
    Description: AP Perpetual Network Stack entitled
with DNA-A
    Total reserved count: 20
    Term information:
      Active: PID:C9800-CL-K9,SN:93BBAH93MGS
        License type: TERM
          Start Date: 2020-OCT-14 UTC
          End Date: 2021-APR-12 UTC
          Term Count: 5
        License type: TERM
          Start Date: 2020-JUN-18 UTC
          End Date: 2020-DEC-15 UTC
          Term Count: 5
      Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
        License type: TERM
          Start Date: 2020-OCT-14 UTC
          End Date: 2021-APR-12 UTC
          Term Count: 10
```

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)

	Device# **show license authorization**
	Overall status:
	  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
	  Status: SPECIFIC INSTALLED on Nov 02 03:16:01 2020 IST
	  Last Confirmation code: 102fc949
	  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
	  Status: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  Last Confirmation code: ad4382fe
	
	Specified license reservations:
	  Aironet DNA Advantage Term Licenses (AIR-DNA-A):
	  Description: DNA Advantage for Wireless
	  Total reserved count: 20
	  Enforcement type: NOT ENFORCED
	  Term information:
	  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
	  Authorization type: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  License type: TERM
	  Start Date: 2020-OCT-14 UTC
	  End Date: 2021-APR-12 UTC
	  Term Count: 5
	  Authorization type: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  License type: TERM
	  Start Date: 2020-JUN-18 UTC
	  End Date: 2020-DEC-15 UTC
	  Term Count: 5
	  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
	  Authorization type: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  License type: TERM
	  Start Date: 2020-OCT-14 UTC
	  End Date: 2021-APR-12 UTC
	  Term Count: 10
	  AP Perpetual Networkstack Advantage (DNA_NWStack):
	  Description: AP Perpetual Network Stack entitled with DNA-A
	  Total reserved count: 20
	  Enforcement type: NOT ENFORCED
	  Term information:
	  Active: PID:C9800-CL-K9,SN:93BBAH93MGS
	  Authorization type: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  License type: TERM
	  Start Date: 2020-OCT-14 UTC
	  End Date: 2021-APR-12 UTC
	  Term Count: 5
	  Authorization type: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  License type: TERM
	  Start Date: 2020-JUN-18 UTC
	  End Date: 2020-DEC-15 UTC
	  Term Count: 5
	  Standby: PID:C9800-CL-K9,SN:9XECPSUU4XN
	  Authorization type: SPECIFIC INSTALLED on Nov 02 03:15:45 2020 IST
	  License type: TERM
	  Start Date: 2020-OCT-14 UTC
	  End Date: 2021-APR-12 UTC

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)

	`Term Count: 10`
	
	`Purchased Licenses:`
	`No Purchase Information Available`

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)
show license status	**show license status** Under the `Transport:` header, the `Type:` field displays that the transport type is set to off. Under the `Usage Reporting:` header, the `Next report push:` field displays if and when the next RUM report must be uploaded to CSSM.

Before Upgrade (SLR)	After Upgrade (Smart Licensing Using Policy)

-	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: Transport Off
	
	Policy:
	  Policy in use: Merged from multiple sources.
	  Reporting ACK required: yes (CISCO default)
	  Unenforced/Non-Export Perpetual Attributes:
	  First report requirement (days): 365 (CISCO default)
	
	  Reporting frequency (days): 0 (CISCO default)
	  Report on change (days): 90 (CISCO default)
	  Unenforced/Non-Export Subscription Attributes:
	  First report requirement (days): 90 (CISCO default)
	
	  Reporting frequency (days): 90 (CISCO default)
	  Report on change (days): 90 (CISCO default)
	  Enforced (Perpetual/Subscription) License Attributes:
	
	  First report requirement (days): 0 (CISCO default)
	  Reporting frequency (days): 0 (CISCO default)
	  Report on change (days): 0 (CISCO default)
	  Export (Perpetual/Subscription) License Attributes:
	  First report requirement (days): 0 (CISCO default)
	  Reporting frequency (days): 0 (CISCO default)
	  Report on change (days): 0 (CISCO default)
	
	Miscellaneous:
	  Custom Id: <empty>
	
	Usage Reporting:
	  Last ACK received: <none>
	  Next ACK deadline: <none>
	  Reporting push interval: 0 (no reporting)
	  Next ACK push check: Nov 01 20:31:46 2020 IST
	  Next report push: <none>
	  Last report push: <none>
	  Last report file write: <none>
	
	Trust Code Installed: <none>

The CSSM Web UI After Migration

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

There are no changes in the **Product Instances** tab. The Last Contact column displays "Reserved Licenses" since there has been no usage reporting yet. After the requisite RUM report is uploaded and acknowledged "Reserved Licenses" is no longer displayed and license usage is displayed only in the active product instance.

Figure 4: SLR to Smart Licensing Using Policy: Active Product Instance Before Upgrade

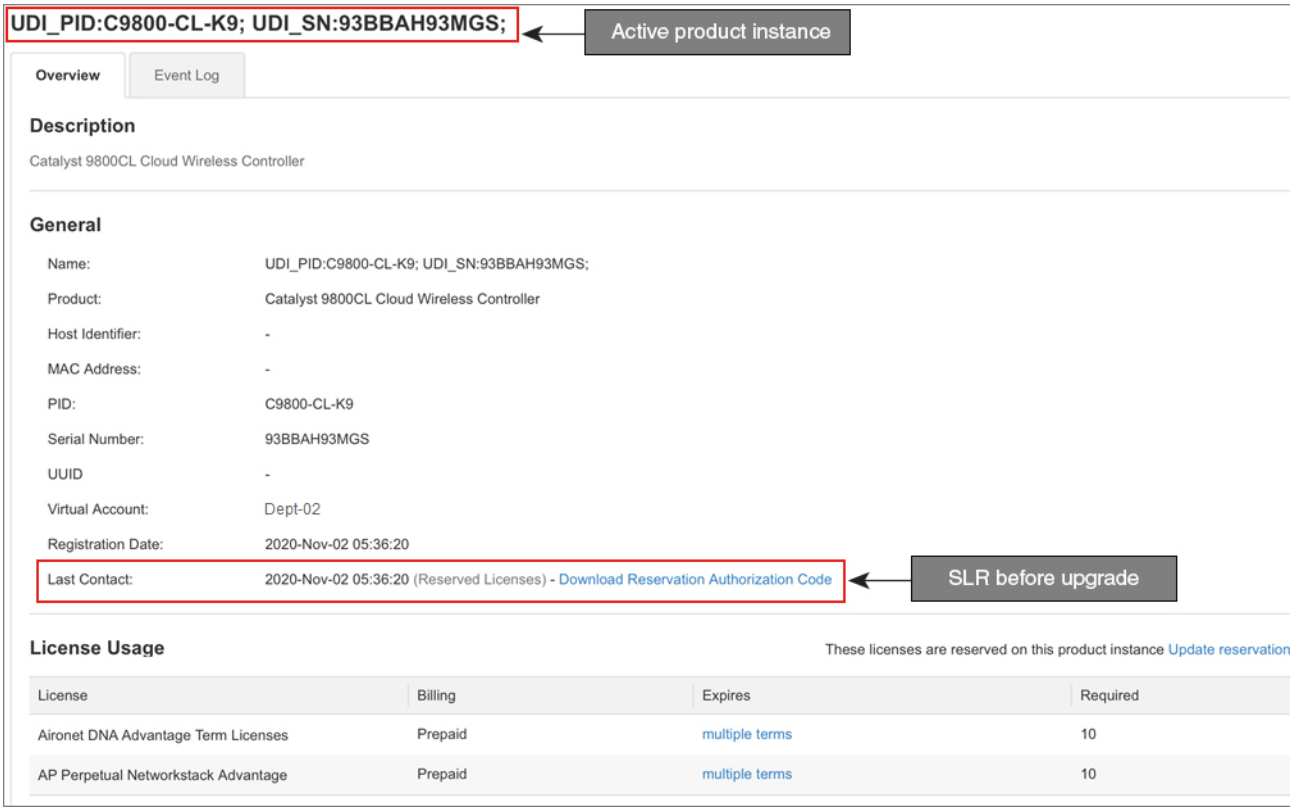
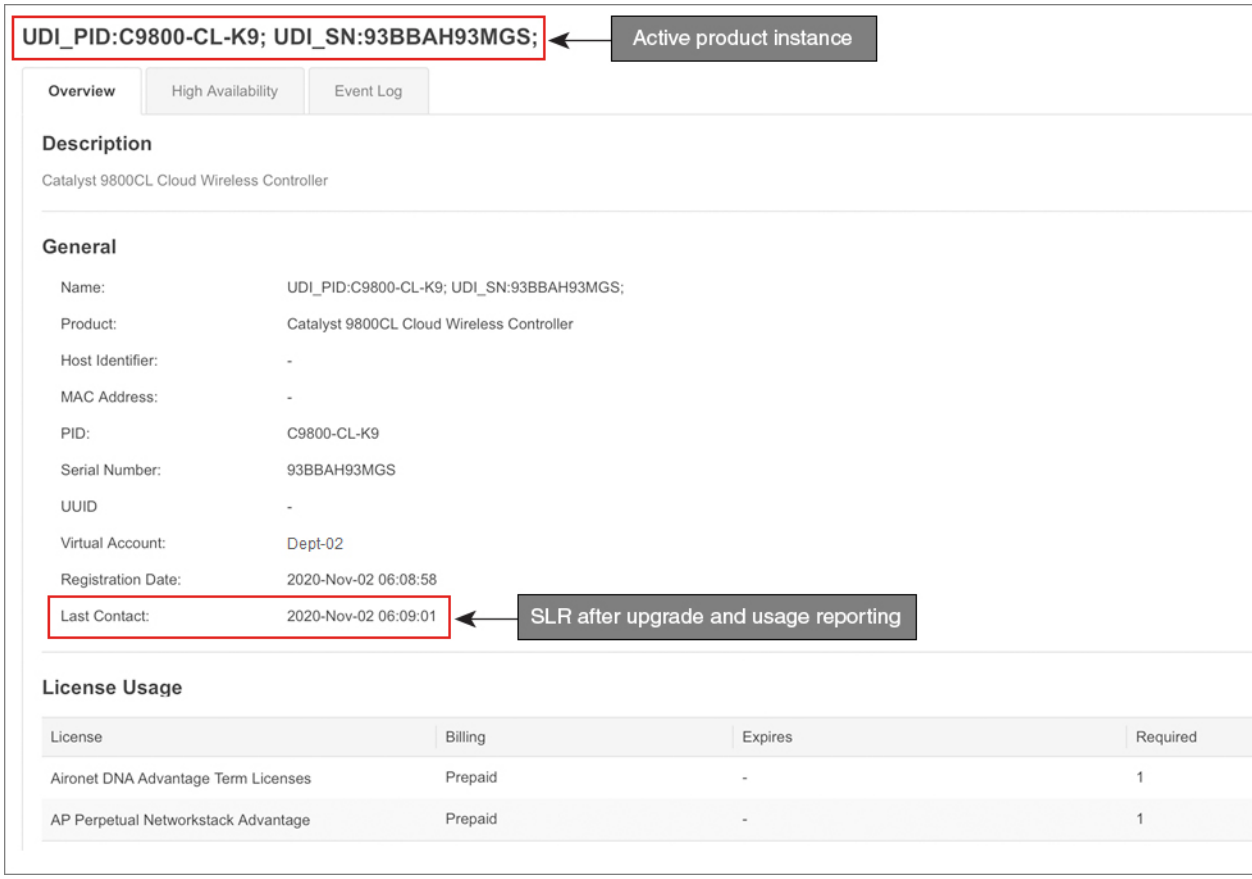


Figure 5: SLR to Smart Licensing Using Policy: Active Product Instance After Upgrade



Reporting After Migration

SLR licenses require reporting only when there is a change in license consumption (For example, when using a subscription license which is for specified term).

In an air-gapped network, use the `Next report push:` date in the **show license status** output to know when the next usage report must be sent. This ensures that the product instance and CSSM are synchronized.

Since all communication to and from the product instance is disabled, to report license usage you must save RUM reports to a file and upload it to CSSM (from a workstation that has connectivity to the internet, and Cisco):

1. Generate and save RUM reports

   Enter the **license smart save usage** command in privileged EXEC mode. In the example below, all RUM reports are saved to the flash memory of the product instance, in file `all_rum.txt`. For syntax details see the *license smart (privileged EXEC)* command in the Command Reference. In the example, the file is first saved to bootflash and then copied to a TFTP location:

   ```
   Device# license smart save usage all bootflash:all_rum.txt
   Device# copy bootflash:all_rum.txt tftp://10.8.0.6/all_rum.txt
   ```

2. Upload usage data to CSSM: Uploading Data or Requests to CSSM and Downloading a File.

3. Install the ACK on the product instance: Installing a File on the Product Instance.

Example: Evaluation or Expired to Smart Licensing Using Policy

The following is an example of a Cisco Catalyst 9800-CL Wireless Controller with evaluation expired licenses (Smart Licensing) that are migrated to Smart Licensing Using Policy.

The notion of evaluation licenses does not apply to Smart Licensing Using Policy. When the software version is upgraded to one that supports Smart Licensing Using Policy, all licenses are displayed as IN USE and the Cisco default policy is applied to the product instance. Since all licenses on Cisco Catalyst Wireless Controllers are unenforced (enforcement type), no functionality is lost.

Migration information is covered in these sections:

Table 5: Evaluation or Expired to Smart Licensing Using Policy: show Commands, on page 22

The CSSM Web UI After Migration, on page 25

Reporting After Migration, on page 25

The table below calls out key changes or new fields to check for in the **show** command outputs, after upgrade to Smart Licensing Using Policy

Table 5: Evaluation or Expired to Smart Licensing Using Policy: show Commands

Before Upgrade (Smart Licensing, Evaluation Mode)	After Upgrade (Smart Licensing Using Policy)

show license summary
Licenses are UNREGISTERED and in `EVAL MODE`.
 	
`Device# show license summary`
`Smart Licensing is ENABLED`
 	
`Registration:`
`  Status: UNREGISTERED`
`  Export-Controlled Functionality: NOT ALLOWED`
 	
`License Authorization:`
`  Status: EVAL EXPIRED`
 	
`License Usage:`
`  License  Entitlement tag  Count Status`
 	
`----------`
 	
`  (DNA_NWStack)  1 EVAL EXPIRED`
`  (AIR-DNA-A)  1 EVAL EXPIRED`
	show license summary
	All licenses are migrated and `IN USE`. There are no EVAL MODE licenses.
	
	`Device# show license summary`
	`License Usage:`
	`  License  Entitlement Tag  Count Status`
	
	`----------`
	
	`  air-network-advantage  (DNA_NWStack)  1 IN USE`
	`  air-dna-advantage  (AIR-DNA-A)  1 IN USE`

Before Upgrade (Smart Licensing, Evaluation Mode)	After Upgrade (Smart Licensing Using Policy)
show license usage	**show license usage** The `Enforcement Type` field displays NOT ENFORCED. (There are no export-controlled or enforced licenses on Cisco Catalyst Wireless Controllers).

Before Upgrade (Smart Licensing, Evaluation Mode)	After Upgrade (Smart Licensing Using Policy)

`Device# show license usage`
`License Authorization:`
`  Status: EVAL EXPIRED on Apr 14 18:20:46 2020 UTC`
 	
`(DNA_NWStack):`
`  Description:`
`  Count: 1`
`  Version: 1.0`
`  Status: EVAL EXPIRED`
`  Export status: NOT RESTRICTED`
 	
`(AIR-DNA-A):`
`  Description:`
`  Count: 1`
`  Version: 1.0`
`  Status: EVAL EXPIRED`
`  Export status: NOT RESTRICTED`
	`Device# show license usage`
	`License Authorization:`
	`  Status: Not Applicable`
	
	`air-network-advantage (DNA_NWStack):`
	`  Description: air-network-advantage`
	`  Count: 1`
	`  Version: 1.0`
	`  Status: IN USE`
	`  Export status: NOT RESTRICTED`
	`  Feature Name: air-network-advantage`
	`  Feature Description: air-network-advantage`
	`  Enforcement type: NOT ENFORCED`
	`  License type: Perpetual`
	
	`air-dna-advantage (AIR-DNA-A):`
	`  Description: air-dna-advantage`
	`  Count: 1`
	`  Version: 1.0`
	`  Status: IN USE`
	`  Export status: NOT RESTRICTED`
	`  Feature Name: air-dna-advantage`
	`  Feature Description: air-dna-advantage`
	`  Enforcement type: NOT ENFORCED`
	`  License type: Perpetual`

Before Upgrade (Smart Licensing, Evaluation Mode)	After Upgrade (Smart Licensing Using Policy)
show license status	**show license status** The `Transport:` field displays that the default type is set, but a URL or a method for the product instance to discover CSLU is not specified. The `Trust Code Installed:` field displays that a trust code is not installed. The `Policy:` header and details show that the `Cisco default` policy is applied. Under the `Usage Reporting:` header, the `Next report push:` field provides information about when the next RUM report must be sent to CSSM.

Before Upgrade (Smart Licensing, Evaluation Mode)	After Upgrade (Smart Licensing Using Policy)

`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 EXPIRED on Apr 14 18:20:46 2020 UTC`
 	
`Export Authorization Key:`
`  Features Authorized:`
`    <none>`
	`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: cslu`
	`  Cslu address: <empty>`
	`  Proxy:`
	`    Not Configured`
	
	`Policy:`
	`  Policy in use: Merged from multiple sources.`
	`  Reporting ACK required: yes (CISCO default)`
	`  Unenforced/Non-Export Perpetual Attributes:`
	`    First report requirement (days): 365 (CISCO default)`
	
	`    Reporting frequency (days): 0 (CISCO default)`
	`    Report on change (days): 90 (CISCO default)`
	`  Unenforced/Non-Export Subscription Attributes:`
	`    First report requirement (days): 90 (CISCO default)`
	
	`    Reporting frequency (days): 90 (CISCO default)`
	`    Report on change (days): 90 (CISCO default)`
	`  Enforced (Perpetual/Subscription) License Attributes:`
	
	`    First report requirement (days): 0 (CISCO default)`
	`    Reporting frequency (days): 0 (CISCO default)`
	`    Report on change (days): 0 (CISCO default)`
	`  Export (Perpetual/Subscription) License Attributes:`
	`    First report requirement (days): 0 (CISCO default)`
	`    Reporting frequency (days): 0 (CISCO default)`
	`    Report on change (days): 0 (CISCO default)`
	
	`Miscellaneous:`
	`  Custom Id: <empty>`
	
	`Usage Reporting:`
	`  Last ACK received: <none>`
	`  Next ACK deadline: <none>`
	`  Reporting push interval: 0 (no reporting)`
	`  Next ACK push check: <none>`
	`  Next report push: <none>`
	`  Last report push: <none>`
	`  Last report file write: <none>`
	
	`Trust Code Installed: <none>`

The CSSM Web UI After Migration

Log in to the CSSM Web UI at https://software.cisco.com and click **Smart Software Licensing**. Under **Inventory** > **Product Instances**, the Last Contact field for the migrated product instances display an updated timestamp after migration.

Reporting After Migration

Implement any one of the supported topologies, and fulfil reporting requirements. See Connecting to Cisco SSM and Implementing Smart Licensing Using Policy. The reporting method you can use depends on the topology you implement.

Migrating to a Version of SSM On-Prem That Supports Smart Licensing Using Policy

If you are using a version of SSM On-Prem that is earlier than the minimum required version (See Cisco Smart Software Manager On-Prem (SSM On-Prem)), you can use this section as an outline of the process and sequence you have to follow to migrate the SSM On-Prem version and the product instance.

1. Upgrade SSM On-Prem.

   Upgrade to the minimum required Version 8, Release 202102 or a later version.

   Refer to the Cisco Smart Software Manager On-Prem Migration Guide.

2. Upgrade the product instance.

   For information about the minimum required software version, see Cisco Smart Software Manager On-Prem (SSM On-Prem).

   For information about the upgrade procedure, refer to the pointers provided in Migrating to Smart Licensing Using Policy, on page 1, *Upgrading the Wireless Controller Software*.

3. Re-Register a local account with CSSM

   Online and Offline options are available. Refer to the Cisco Smart Software Manager On-Prem Migration Guide > *Re-Registering a local Account (Online Mode)* or *Manually Re-Registering a Local Account (Offline Mode)* .

   Once re-registration is complete, the following events occur automatically:

   - SSM On-Prem responds with new transport URL that points to the tenant in SSM On-Prem.
   - The transport type configuration on the product instance changes from **call-home** or **smart**, to **cslu**. The transport URL is also updated automatically.

4. Save configuration changes on the product instance, by entering the **copy running-config startup-config** command in privileged EXEC mode.

5. Clear older On-Prem Smart Licensing certificates on the product instance and reload the product instance. Do not save configuration changes after this.

Note This step is required only if the software version running on the product instance is Cisco IOS XE Amsterdam 17.3.x or Cisco IOS XE Bengaluru 17.4.x.

Enter the **license smart factory reset** and then the **reload** commands in privileged EXEC mode.

```
Device# license smart factory reset
Device# reload
```

6. Perform usage synchronization

   a. On the product instance, enter the **license smart sync** {**all**|**local**} command, in privileged EXEC mode. This synchronizes the product instance with SSM On-Prem, to send and receive any pending data.

      ```
      Device(config)# license smart sync local
      ```

      You can verify this in the SSM On-Prem UI. Go to **Inventory** > **SL Using Policy**. In the **Alerts** column, the following message is displayed: Usage report from product instance.

   b. Synchronize usage information with CSSM (*choose one*)

      - Option 1:

        SSM On-Prem is connected to CSSM: In the SSM On-Prem UI, Smart Licensing workspace, navigate to **Reports** > **Usage Schedules** > **Synchronize now with Cisco**.

      - Option 2:

        SSM On-Prem is not connected to CSSM. See Exporting and Importing Usage Data (SSM On-Prem UI).

Result:

You have completed migration and initial usage synchronization. Product instance and license usage information is now displayed in SSM On-Prem.

For subsequent reporting, you have the following options:

- To synchronize data between the product instance and SSM On-Prem:
  - Schedule periodic synchronization between the product instance and SSM On-Prem, by configuring the reporting interval. Enter the **license smart usage interval** *interval_in_days* command in global configuration mode.

    To know when the product instance will be sending the next RUM report, enter the **show license all** command in privileged EXEC mode and in the output, check the `Next report push:` field.

  - Enter the **license smart sync** privileged EXEC command, for ad hoc or on-demand synchronization between the product instance and SSM On-Prem.

- To synchronize usage information with CSSM:
  - Schedule periodic synchronization with CSSM. In the SSM On-Prem UI, navigate to **Reports** > **Usage Schedules** > **Synchronization schedule with Cisco**. Enter the following frequency information and save:

- **Days**: Refers to how *often* synchronization occurs. For example, if you enter 2, synchronization occurs once every two days.
- **Time of Day:**: Refers to the time at which synchronization occurs, in the 24-hour notation system. For example, if you enter 14 hours and 0 minutes, synchronization occurs at 2 p.m. (1400) in your local time zone.

- Upload and download the required files for reporting. See Exporting and Importing Usage Data (SSM On-Prem UI).