



Command Reference for Smart Licensing Using Policy

This chapter describes the commands used to configure Smart Licensing Using Policy for Cisco Catalyst 9000 Series Switches.

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license air level

To configure AIR licenses on a wireless controller that is connected to Cisco Catalyst Access, Core, and Aggregation Switches, enter the **license air level** command in global configuration mode. To revert to the default setting, use the **no** form of this command.

```
license air level { air-network-advantage [ addon air-dna-advantage ] | air-network-essentials [ addon air-dna-essentials ] }
```

```
no license air level
```

Syntax Description	air-network-advantage	Configures the AIR network advantage license level.
	addon air-dna-advantage	(Optional) Configures the add-on AIR DNA advantage license level. This add-on option is available with the AIR network advantage license, and is the default license.
	air-network-essentials	Configures the AIR network essential license level.
	addon air-dna-essentials	(Optional) Configures the add-on AIR DNA essentials license level. This add-on option is available with the AIR network essential license.

Command Default AIR DNA Advantage is the default license

Command Modes Global configuration (Device(config)#)

Command History	Release	Modification
		This command was introduced.
	Cisco IOS XE Amsterdam 17.3.2a	This command continues to be available and applicable with the introduction of Smart Licensing Using Policy in this release. See the <i>Usage Guidelines</i> section below for details.

Usage Guidelines In the Smart Licensing Using Policy environment, you can use the **license air level** command to change the license level being used on the product instance, or to additionally configure an add-on license on the product instance. The change is effective after a reload.

The licenses that can be configured are:

- AIR Network Essential
- AIR Network Advantage
- AIR DNA Essential
- AIR DNA Advantage

You can configure AIR DNA Essential or AIR DNA Advantage license level, and on term expiry, you can move to the Network Advantage or Network Essentials license level, if you do not want to renew the DNA license.

Every connecting Access Point requires a Cisco DNA Center License to leverage the unique value properties of the controller.

For more information, see the [Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide](#) for the required release.

Examples

The following example shows how to configure the AIR DNA Essential license level:

```
Device# configure terminal
Device(config)# license air level network-essentials addon air-dna-essentials
```

The following example shows how to configure the AIR DNA Advantage license level:

```
Device# configure terminal
Device(config)# license air level air-network-advantage addon air-dna-advantage
```

license boot level

To boot a new software license on the device, use the **license boot level** command in global configuration mode. Use the **no** form of this command to remove all software licenses from the device.

license boot level { **network-advantage** [**addon dna-advantage**] | **network-essentials** [**addon dna-essentials**] }

no license boot level

Syntax Description	network-advantage [addon dna-advantage]	Configures the Network Advantage license. Optionally, you can also configure the Digital Networking Architecture (DNA) Advantage license.
	network-essentials [addon dna-essentials]	Configures the Network Essentials license. Optionally, you can also configure the Digital Networking Architecture (DNA) Essentials license.
Command Default	Network Essentials	
Command Modes	Global configuration (config)	
Command History	Release	Modification
		This command was introduced.
	Cisco IOS XE Amsterdam 17.3.2a	This command continues to be available and applicable with the introduction of Smart Licensing Using Policy in this release. See the <i>Usage Guidelines</i> section below for details.

Usage Guidelines The software features available on Cisco Catalyst 9000 Series Switches fall under these base or add-on license levels:

Base Licenses:

- Network Advantage—Includes features available with the Network Essentials license and more.

Add-on Licenses:

- DNA Advantage—Includes features available with the Network Essentials license and more.

Base licenses are permanent or perpetual licenses.

Add-on licenses are subscription or term licenses and can be purchased for a three, five, or seven year period. Base licenses are a prerequisite for add-on licenses. See the release notes for more information about this.

The sections below provide information about using the **license boot level** command in the earlier Smart Licensing environment, and in the Smart Licensing Using Policy environment.

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, Smart Licensing is enabled by default and you can use the **license boot level** command for these purposes:

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

This command forces the licensing infrastructure to boot the configured license level instead of the license hierarchy maintained by the licensing infrastructure for a given module:

- When the switch reloads, the licensing infrastructure checks the configuration in the startup configuration for licenses, if any. If there is a license in the configuration, the switch boots with that license. If there is no license, the licensing infrastructure follows the image hierarchy to check for licenses.
- If the forced boot evaluation license expires, the licensing infrastructure follows the regular hierarchy to check for licenses.
- If the configured boot license has already expired, the licensing infrastructure follows the hierarchy to check for licenses.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, Smart Licensing Using Policy is enabled by default and you can use the **license boot level** command for these purposes:

- To change the base or add-on license levels being used on the product instance.

For example, if you are using Network Essentials and you want to use Network Advantage with the next reload, or if you are using DNA Advantage and you want to use DNA Essentials with the next reload.

- To add or remove add-on license levels being used on the product instance.

For example, if you are using only Network Essentials and you want to use DNA Essentials with the next reload, or if you are using DNA Advantage and you do not want to use the add-on after the next reload.

The notion of evaluation or expired licenses does not exist in Smart Licensing Using Policy.

After the command is configured, the configured license is effective after the next reload. License usage continues to be recorded on device and this changed licensing consumption information may have to be sent via the next Resource Utilization Measurement Report (RUM report), to CSSM. The reporting requirements and frequency are determined by the policy that is applied. See the *Usage Reporting*: section of the **show license status** command output. For more information about Smart Licensing Using Policy, in the software configuration guide of the required release, see *System Management > Smart Licensing Using Policy*.

Examples

The following example shows how to configure the Network Essentials license at the next reload:

```
Device# configure terminal
Device(config)# license boot level network-essentials
Device(config)# exit
Device# copy running-config startup-config
Device# reload
```

The following example shows how to activate the DNA Essentials license at the next reload:

```
Device# configure terminal
Device(config)# license boot level network-essentials add-on dna-essentials
Device(config)# exit
Device# copy running-config startup-config
Device# reload
```

license smart (global config)

To configure licensing-related settings such as the mode of transport and the URL that the product instance uses to communicate with Cisco Smart Software Manager (CSSM), or Cisco Smart Licensing Utility (CSLU), or Smart Software Manager On-Prem (SSM On-Prem), to configure the usage reporting interval, to configure the information that must be excluded or included in a license usage report (RUM report), enter the **license smart** command in global configuration mode. Use the **no** form of the command to revert to default values.

```
license smart { custom_id ID | enable | privacy { all | hostname | version } | proxy { address
address_hostname | port port } | reservation | server-identity-check | transport { automatic | callhome
| cslu | off | smart } | url { url | cslu cslu_or_on-prem_url | default | smart smart_url | utility
secondary_url } | usage { customer-tags { tag1 | tag2 | tag3 | tag4 } tag_value | interval interval_in_days
} | utility [ customer_info { city city | country country | postalcode postalcode | state state | street
street } ] }
```

```
no license smart { custom_id | enable | privacy { all | hostname | version } | proxy { address
address_hostname | port port } | reservation | server-identity-check | transport | url { url | cslu
cslu_or_on-prem_url | default | smart smart_url | utility secondary_url } | usage { customer-tags {
tag1 | tag2 | tag3 | tag4 } tag_value | interval interval_in_days } | utility [ customer_info { city city
| country country | postalcode postalcode | state state | street street } ] }
```

Syntax Description	custom_id <i>ID</i>	Although available on the CLI, this option is not supported.
	enable	Although visible on the CLI, configuring this keyword has no effect. Smart licensing is always enabled.

privacy { **all** | **hostname** | **version** }

Sets a privacy flag to prevent the sending of the specified data privacy related information.

When the flag is disabled, the corresponding information is sent in a message or offline file created by the product instance.

Depending on the topology this is sent to one or more components, including CSSM, CSLU, and SSM On-Prem.

All data privacy settings are disabled by default. You must configure the option you want to exclude from all communication:

- **all**: All data privacy related information is excluded from any communication.

The **no** form of the command causes all data privacy related information to be sent in a message or offline file.

Note The Product ID (PID) and serial number are *included in the RUM report* regardless of whether data privacy is enabled or not.

- **hostname**: Excludes hostname information from any communication. When hostname privacy is enabled, the *UDI* of the product instance is displayed on the applicable user interfaces (CSSM, CSLU, and SSM On-Prem).

The **no** form of the command causes hostname information to be sent in a message or offline file. The hostname is displayed on the applicable user interfaces (CSSM, CSLU, and SSM On-Prem).

- **version**: Excludes the Cisco IOS-XE software version running on the product instance and the Smart Agent version from any communication.

The **no** form of the command causes version information to be sent in a message or offline file.

proxy { address <i>address_hostname</i> port <i>port</i> }	<p>Configures a proxy for license usage synchronization with CSLU or CSSM. This means that you can use this option to configure a proxy only if the transport mode is license smart transport smart (CSSM), or license smart transport cslu (CSLU).</p> <p>However, you cannot configure a proxy for license usage synchronization in an SSM On-Prem deployment, which also uses license smart transport cslu as the transport mode.</p> <p>Configure the following options:</p> <ul style="list-style-type: none"> • address <i>address_hostname</i>: Configures the proxy address. For <i>address_hostname</i>, enter the IP address or hostname of the proxy. • port<i>port</i>: Configures the proxy port. For <i>port</i>, enter the proxy port number.
reservation	<p>Enables or disables a license reservation feature.</p> <p>Note Although available on the CLI, this option is not applicable because license <i>reservation</i> is not applicable in the Smart Licensing Using Policy environment.</p>
server-identity-check	Enables or disables the HTTP secure server identity check.
transport { automatic callhome cslu off smart }	<p>Configures the mode of transport the product instance uses to communicate with CSSM. Choose from the following options:</p> <ul style="list-style-type: none"> • automatic: Sets the transport mode cslu. • callhome: Enables Call Home as the transport mode. • cslu: Enables CSLU as the transport mode. This is the default transport mode. The same keyword applies to both CSLU <i>and</i> SSM On-Prem, but the URLs are different. See cslu<i>cslu_or_on-prem_url</i> in the following row. • off: Disables all communication from the product instance. • smart: Enables Smart transport.

url { *url* | **cslu** *cslu_url* | **default** | **smart**
smart_url | **utility** *secondary_url* }

Sets a URL for the configured transport mode. Choose from the following options:

- **url**: If you have configured the transport mode as **callhome**, configure this option. Enter the CSSM URL exactly as follows:

```
https://tools.cisco.com/its/service/odbe/services/DDCEService
```

The **no license smart url url** command reverts to the default URL.

- **cslu cslu_or_on-prem_url**: If you have configured the transport mode as **cslu**, configure this option, with the URL for CSLU or SSM On-Prem, as applicable:

- If you are using CSLU, enter the URL as follows:

```
http://<cslu_ip_or_host>:8182/cslu/v1/pi
```

For <cslu_ip_or_host>, enter the hostname or the IP address of the windows host where you have installed CSLU. 8182 is the port number and it is the only port number that CSLU uses.

The **no license smart url cslu**

cslu_or_on-prem_url command reverts to

```
http://cslu-local:8182/cslu/v1/pi
```

- If you are using SSM On-Prem, enter the URL as follows:

```
http://<ip>/cslu/v1/pi/<tenant ID>
```

For <ip>, enter the hostname or the IP address of the server where you have installed SSM On-Prem. The <tenantID> must be the default local virtual account ID.

Tip You can retrieve the entire URL from SSM On-Prem. In the software configuration guide of the required release (17.3.x onwards), see *System Management > Smart Licensing Using Policy > Task Library for Smart Licensing Using Policy > Retrieving the Transport URL (SSM On-Prem UI)*.

The **no license smart url cslu**

cslu_or_on-prem_url command reverts to

```
http://cslu-local:8182/cslu/v1/pi
```

- **default**: Depends on the configured transport mode. Only the **smart** and **cslu** transport modes are supported with this option.

If the transport mode is set to **cslu**, and you configure **license smart url default**, the CSLU URL is

configured automatically

(<https://cslu-local:8182/cslu/v1/pi>).

If the transport mode is set to **smart**, and you configure **license smart url default**, the Smart URL is configured automatically

(<https://smartreceiver.cisco.com/licservice/license>).

- **smart** *smart_url*: If you have configured the transport type as **smart**, configure this option. Enter the URL exactly as follows:

<https://smartreceiver.cisco.com/licservice/license>

When you configure this option, the system automatically creates a duplicate of the URL in **license smart url url**. You can ignore the duplicate entry, no further action is required.

The **no license smart url smartsmart_url** command reverts to the default URL.

- **utility** *smart_url*: Although available on the CLI, this option is not supported.
-

usage { **customer-tags** { **tag1** | **tag2** | **tag3** | **tag4** } *tag_value* | **interval** *interval_in_days* }

Configures usage reporting settings. You can set the following options:

- **customer-tags** { **tag1** | **tag2** | **tag3** | **tag4** } *tag_value*: Defines strings for inclusion in data models, for telemetry. Up to 4 strings (or tags) may be defined. For *tag_value*, enter the string value for each tag that you define.
- **interval** *interval_in_days*: Sets the reporting interval in days. By default the RUM report is sent every 30 days. The valid value range is 1 to 3650. If you set the value to zero, RUM reports are not sent, regardless of what the applied policy specifies - this applies to topologies where CSLU or CSSM may be on the receiving end. If you set a value that is greater than zero and the transport type is set to **off**, then, between the *interval_in_days* and the policy value for `Ongoing reporting frequency(days) :`, the lower of the two values is applied. For example, if *interval_in_days* is set to 100, and the value in the in the policy says `Ongoing reporting frequency (days):90`, RUM reports are sent every 90 days. If you do not set an interval, and the default is effective, the reporting interval is determined entirely by the policy value. For example, if the default value is effective and only unenforced licenses are in use, if the policy states that reporting is not required, then RUM reports are not sent.

utility [**customer_info** { **city** *city* | **country** *country* | **postalcode** *postalcode* | **state** *state* | **street** *street* }]

Although visible on the CLI, this option is not supported on any of the Cisco Catalyst Access, Core, and Aggregation Switches.

Command Default

Cisco IOS XE Amsterdam 17.3.1 or earlier: Smart Licensing is enabled by default
 Cisco IOS XE Amsterdam 17.3.2a and later: Smart Licensing Using Policy is enabled by default.

Command Modes

Global config (Device(config)#)

Command History

Release	Modification
	This command was introduced.

Release	Modification
Cisco IOS XE Amsterdam 17.3.2a	<p>The following keywords and variables were introduced with Smart Licensing Using Policy:</p> <ul style="list-style-type: none"> Under the url keyword, these options were introduced: <pre>{ cslu <i>cslu_url</i> smart <i>smart_url</i> }</pre> Under the transport keyword, these options were introduced: <pre>{ cslu off }</pre> <p>Further, the default transport type was changed from callhome, to cslu.</p> usage { customer-tags { tag1 tag2 tag3 tag4 } <i>tag_value</i> interval <i>interval_in_days</i> } <p>The following keywords and variables under the license smart global command are deprecated and no longer available on the CLI: enable and conversion automatic.</p>
Cisco IOS XE Amsterdam 17.3.3	<p>SSM On-Prem support was introduced. For product instance-initiated communication in an SSM On-Prem deployment, the existing [no] license smart url cslu <i>cslu_or_on-prem_url</i> command supports the configuration of a URL for SSM On-Prem as well. But the required URL format for SSM On-Prem is:</p> <pre>http://<ip>/cslu/v1/pi/<tenant ID>.</pre> <p>The corresponding transport mode that must be configured is also an existing command (license smart transport cslu).</p>
Cisco IOS XE Cupertino 17.7.1	<p>If version privacy is disabled (no license smart privacy version global configuration command), the Cisco IOS-XE software version running on the product instance and the Smart Agent version is <i>included</i> in the RUM report.</p> <p>To exclude version information from the RUM report, version privacy must be enabled (license smart privacy version).</p>
Cisco IOS XE Cupertino 17.9.1	<ul style="list-style-type: none"> Support for sending hostname information was introduced. <p>If the privacy setting for the hostname is disabled (no license smart privacy hostname global configuration command), hostname information is sent from the product instance, in a separate sync message, or offline file. Depending on the topology you have implemented, the hostname information is received by CSSM, CSLU, or SSM On-Prem. It is also displayed on the corresponding user interface.</p> A new mechanism to send all data privacy related information was introduced. This information is no longer included in a RUM report. <p>If data privacy is disabled (no license smart privacy {all hostname version} global configuration command), data privacy related information is sent in a separate sync message or offline file.</p>

When you disable a privacy setting, the topology you have implemented determines the recipient and how the information reaches its destination:

- The recipient of the information may be one or more of the following: CSSM, CSLU, and SSM On-Prem. The privacy setting has no effect on a controller (Cisco DNA Center).

In case of the **hostname** keyword, after the hostname information is received by CSSM, CSLU, or SSM On-Prem, it is also displayed on the corresponding UIs – as applicable. If you then *enable* privacy the corresponding UIs revert to displaying the UDI of the product instance.

- How the information is sent.
 - In case of a topology where the product instance initiates communication, the product instance initiates the sending of this information in a message, to CSSM, or CSLU, or SSM On-Prem.

The product instance sends the hostname sent every time one of the following events occur: the product instance boots up, the hostname changes, there is a switchover in a High Availability set-up.
 - In case of a topology where CSLU or SSM On-Prem initiate communication, the corresponding component initiates the retrieval of privacy information from the product instance.

The hostname is retrieved at the frequency you configure in CSLU or SSM On-Prem, to retrieve information.
 - In case of a topology where the product instance is in an air-gapped network, privacy information is included in the offline file that is generated when you enter the **license smart save usage** privileged EXEC command.



Note For all topologies, data privacy related information is *not* included in the RUM report.

Data privacy related information it is not stored by the product instance *prior* to sending or saving. This ensures that if and when information is sent, it is consistent with the data privacy setting at the time of sending or saving.

Communication failure and reporting

The reporting interval that you configure (**license smart usage interval** *interval_in_days* command), determines the date and time at which the product instance sends out the RUM report. If the scheduled interval coincides with a communication failure, the product instance attempts to send out the RUM report for up to four hours after the scheduled time has expired. If it is still unable to send out the report (because the communication failure persists), the system resets the interval to 15 minutes. Once the communication failure is resolved, the system reverts the reporting interval to the value that you last configured.

The system message you may see in case of a communication failure is %SMART_LIC-3-COMM_FAILED. For information about resolving this error and restoring the reporting interval value, in the software configuration guide of the required release (17.3.x onwards), see *System Management > Smart Licensing Using Policy > Troubleshooting Smart Licensing Using Policy*.

Proxy server acceptance

When configuring the **license smart proxy** {**address** *address_hostname* | **port***port*} command, note the change in the criteria for the acceptance of proxy servers, starting with Cisco IOS XE Bengaluru 17.6.1: only the status code of the proxy server response is verified by the system and not the reason phrase. The RFC

format is `status-line = HTTP-version SP status-code SP reason-phrase CRLF`, where the status code is a three-digit numeric code. For more information about the status line, see [section 3.1.2 of RFC 7230](#).

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- [Examples for Transport Type and URL, on page 15](#)
- [Examples for Usage Reporting Options, on page 15](#)

Examples for Data Privacy

The following examples show how to configure data privacy related information using **license smart privacy** command in global configuration mode. The accompanying **show license status** output displays configured information.



Note The output of the **show** command only tells you if a particular option is enabled or disabled.

Here, no data privacy related information is sent:

```
Device# configure terminal
Device(config)# license smart privacy all
Device(config)# exit
Device# show license status
<output truncated>
Data Privacy:
  Sending Hostname: no
  Callhome hostname privacy: ENABLED
  Smart Licensing hostname privacy: ENABLED
  Version privacy: ENABLED

Transport:
  Type: Callhome
<output truncated>
```

Here, hostname is included and version information is excluded in the message initiated from the product instance. The product instance is directly connected to CSSM (transport type is **smart**, with the corresponding URL).

```
Device# configure terminal
Device(config)# license smart privacy version
Device(config)# no license smart privacy hostname
Device(config)# exit

Device# show license all
<output truncated>

Data Privacy:
  Sending Hostname: no
  Callhome hostname privacy: DISABLED
  Smart Licensing hostname privacy: ENABLED
  Version privacy: DISABLED

Transport:
  Type: Smart
  URL: https://smartreceiver.cisco.com/licservice/license
  Proxy:
  Not Configured
```

```
VRF:
  Not Configured
```

<output truncated>

Examples for Transport Type and URL

The following examples show how to configure some of the transport types using the **license smart transport** and the **license smart url** commands in global configuration mode. The accompanying **show license all** output displays configured information.

Transport: **cslu**:

```
Device# configure terminal
Device(config)# license smart transport cslu
Device(config)# license smart url default
Device(config)# exit
Device# show license all
<output truncated>
Transport:
  Type: cslu
  Cslu address: http://192.168.0.1:8182/cslu/v1/pi
  Proxy:
    Not Configured
<output truncated>
```

Transport: **smart**:

```
Device# configure terminal
Device(config)# license smart transport smart
Device(config)# license smart url smart https://smartreceiver.cisco.com/licservice/license
Device(config)# exit
Device# show license all
<output truncated>
Transport:
  Type: Smart
  URL: https://smartreceiver-stage.cisco.com/licservice/license
  Proxy:
    Not Configured
<output truncated>
```

Examples for Usage Reporting Options

The following examples show how to configure some of the usage reporting settings using the **license smart usage** command in global configuration mode. The accompanying **show running-config** output displays configured information.

Configuring the **customer-tag** option:

```
Device# configure terminal
Device(config)# license smart usage customer-tags tag1 SA/VA:01
Device(config)# exit
Device# show running-config | include tag1
license smart usage customer-tags tag1 SA/VA:01
```

Configuring a narrower reporting interval than the currently applied policy:

```
Device# show license status
<output truncated>
Usage Reporting:
Last ACK received: Sep 22 13:49:38 2020 PST
Next ACK deadline: Dec 21 12:02:21 2020 PST
Reporting push interval: 30 days
```

```

Next ACK push check: Sep 22 12:20:34 2020 PST
Next report push: Oct 22 12:05:43 2020 PST
Last report push: Sep 22 12:05:43 2020 PST
Last report file write: <none>
<output truncated>

Device# configure terminal
Device(config)# license smart usage interval 20
Device(config)# exit
Device# show license status
<output truncated>

Usage Reporting:
Last ACK received: Sep 22 13:49:38 2020 PST
Next ACK deadline: Nov 22 12:02:21 2020 PST
Reporting push interval: 20 days
Next ACK push check: Sep 22 12:20:34 2020 PST
Next report push: Oct 12 12:05:43 2020 PST
Last report push: Sep 22 12:05:43 2020 PST
Last report file write: <none>
<output truncated>

```

license smart (privileged EXEC)

To configure licensing functions such as requesting or returning authorization codes, saving Resource Utilization Measurement reports (RUM reports), importing a file on to a product instance, establishing trust with Cisco Smart Software Manager (CSSM), synchronizing the product instance with CSSM, or Cisco Smart License Utility (CSLU), or Smart Software Manager On-Prem (SSM On-Prem), and removing licensing information from the product instance, enter the **license smart** command in privileged EXEC mode with the corresponding keyword or argument.

```

license smart { authorization { request { add | replace | save path } feature_name { all | local } |
return { all | local } { offline [ path ] | online } } | clear eventlog | export return { all | local }
feature_name | factory reset | import file_path | save { trust-request filepath_filename | usage { all |
days days | rum-id rum-ID | unreported } { file file_path } } | sync { all | local } | trust idtoken
id_token_value { local | all } [ force ] }

```

Syntax Description	smart	Provides options for Smart Licensing.
	authorization	Provides the option to request for, or return, authorization codes. Authorization codes are required <i>only</i> if you use licenses with enforcement type: export-controlled or enforced.
	request	Requests an authorization code from CSSM, CSLU (CSLU in-turn fetches it from CSSM), or SSM On-Prem and installs it on the product instance.
	add	Adds the requested license to the existing authorization code. The new authorization code will contain all the licenses of the existing authorization code and the requested license.

replace	Replaces the existing authorization code. The new authorization code will contain only the requested license. All licenses in the current authorization code are returned. When you enter this option, the product instance verifies if licenses that correspond to the authorization codes that will be removed, are in-use. If licenses are being used, an error message tells you to first disable the corresponding features.
save <i>filepath_filename</i>	Saves the authorization code request to a file. For <i>filepath_filename</i> , specify the absolute path to the file, including the filename.
<i>feature_name</i>	Name of the license for which you are requesting an authorization code.
all	Performs the action for all product instances in a High Availability or stacking set-up.
local	Performs the action for the <i>active</i> product instance. This is the default option.
return	Returns an authorization code back to the license pool in CSSM.
offline <i>filepath_filename</i>	Means the product instance is not connected to CSSM. The authorization code is returned offline. This option requires you to print the return code to a file. Optionally, you can also specify a path to save the file. The file format can be any readable format, such as <code>.txt</code> If you choose the offline option, you must complete the additional step of copying the return code from the CLI or the saved file and entering it in CSSM.
online	Means that the product instance is in a connected mode. The authorization code is returned to CSLU or CSSM directly.
clear eventlog	Clears all event log files from the product instance.
export return	Although visible on the CLI, this command is not applicable in the Smart Licensing Using Policy environment. Use the license smart authorization return privileged EXEC command to return an authorization code instead.
factory reset	Clears all saved licensing information from the product instance.
import <i>filepath_filename</i>	Imports a file on to the product instance. The file may be that of an authorization code, a trust code, or, or a policy. For <i>filepath_filename</i> , specify the location, including the filename.
save	Provides options to save RUM reports or trust code requests.
trust-request <i>filepath_filename</i>	Saves the trust code request for the active product instance in the specified location. For <i>filepath_filename</i> , specify the absolute path to the file, including the filename.

usage { **all** | **days** *days* | **rum-id** *rum-ID* | **unreported** } { **file** *file_path* }

Saves RUM reports (license usage information) in the specified location. You must specify one of these options:

- **all**: Saves all RUM reports.
- **days** *days*: Saves RUM report for the last *n* number of days (excluding the current day). Enter a number. The valid range is 0 to 4294967295.
For example, if you enter 3, RUM reports of the last three days are saved.
- **rum-Id** *rum-ID*: Saves a specified RUM ID. The valid value range is 0 to 18446744073709551615.
- **unreported**: Saves all unreported RUM reports.

file *filepath_filename*: Saves the specified usage information to a file. Specify the absolute path to the file, including the filename.

sync { **all** | **local** }

Synchronizes with CSSM or CSLU, or SSM On-Prem, to send and receive any pending data. This includes uploading pending RUM reports, downloading the ACK response, any pending authorization codes, trust codes, and policies for the product instance.

Specify the product instance by entering one of these options:

- **all**: Performs synchronization for all the product instances in a High Availability or stacking set-up. If you choose this option, the product instance also sends the list of all the UDIs in the synchronization request.
- **local**: Performs synchronization only for the active product instance sending the request, that is, its own UDI. This is the default option.

trust idtoken
id_token_value

Establishes a trusted connection with CSSM.

To use this option, you must first generate a token in the CSSM portal. Provide the generated token value for *id_token_value*.

force

Submits a trust code request even if a trust code already exists on the product instance.

A trust code is node-locked to the UDI of a product instance. If the UDI is already registered, CSSM does not allow a new registration for the same UDI. Entering the **force** keyword overrides this behavior.

Command Default

Cisco IOS XE Amsterdam 17.3.1 and earlier: Smart Licensing is enabled by default.

Cisco IOS XE Amsterdam 17.3.2a and later: Smart Licensing Using Policy is enabled by default.

Command Modes

Privileged EXEC (Device#)

Command History

Release	Modification
---------	--------------

	This command was introduced.
--	------------------------------

Release	Modification
Cisco IOS XE Amsterdam 17.3.2a	<p>The following keywords and variables were introduced with Smart Licensing Using Policy:</p> <ul style="list-style-type: none"> • authorization { request { add replace } <i>feature_name</i> { all local } return { all local } { offline [<i>path</i>] online } } • import <i>file_path</i> • save { trust-request <i>filepath_filename</i> usage { all days <i>days</i> rum-id <i>rum-ID</i> unreported } { file <i>file_path</i> } } • sync { all local } • trust idtoken <i>id_token_value</i> { local all } [force] <p>The following keywords and variables under the license smart command are deprecated and no longer available on the CLI:</p> <ul style="list-style-type: none"> • register idtoken <i>token_id</i> [force] • deregister • renew id { ID auth } • debug { error debug trace all } • mfg reservation { request install install file cancel } • conversion { start stop }
Cisco IOS XE Amsterdam 17.3.3	Support for SSM On-Prem was introduced. You can perform licensing-related tasks such as saving Resource Utilization Measurement reports (RUM reports), importing a file on to a product instance, synchronizing the product instance, returning authorization codes, and removing licensing information from the product instance in an SSM On-Prem deployment.
Cisco IOS XE Bengaluru 17.6.2	Support for the Export Control Key for High Security (HSECK9 key) was introduced on the Cisco Catalyst 9300X Series Switches. The authorization code related commands (license smart authorization request and license smart authorization return) can be used to request and return the Smart Licensing Authorization Code (SLAC) for the HSECK9 key, on supported platforms.
Cisco IOS XE Cupertino 17.7.1	<p>The following enhancements were introduced in this release:</p> <ul style="list-style-type: none"> • The save path keyword and variable were added to the license smart authorization request command string. You can use this option to generate a SLAC request and save it to a file. The new options are displayed as follows: <ul style="list-style-type: none"> license smart authorization request { add replace save path } <i>feature_name</i> { all local } <i>request_count</i> • The existing license smart save usage command was enhanced to automatically include a trust code request if it doesn't already exist.

Release	Modification
Cisco IOS XE Cupertino 17.8.1	<p>The authorization code related commands (license smart authorization request and license smart authorization return) were implemented on the following products:</p> <ul style="list-style-type: none"> • Cisco Catalyst 9600 Series 40-Port 50G, 2-Port 200G, 2-Port 400G Line Card (C9600-LC-40YL4CD) • Cisco Catalyst 9500X Series Switches <p>You can use the above commands to request and return the Smart Licensing Authorization Code (SLAC) for the HSECK9 key on supported platforms.</p>
Cisco IOS XE Dublin 17.11.1	<p>The HSECK9 key was implemented on Cisco Catalyst 9400 Series Supervisor 2 and 2XL Modules (C9400X-SUP-2 and C9400X-SUP-2XL)</p> <p>The authorization code related commands (license smart authorization request and license smart authorization return) can be used to request and return the Smart Licensing Authorization Code (SLAC) for the HSECK9 key, on supported platforms.</p>

Usage Guidelines

Requesting a Trust Code in an Air-Gapped Network

Starting with Cisco IOS XE Cupertino 17.7.1 if a trust code is not available on the product instance, the product instance automatically includes a trust code request in the RUM report when you enter the **license smart save usage** command. This is supported in a standalone set-up, as well as a High Availability and stacking set-up. In a High Availability and stacking set-up, the active product instance requests and installs the trust code for all members or standbys where a trust code is missing. CSSM includes the trust code in the ACK which is available for download from the CSSM Web UI. You then have to install the ACK on the product instance. You can verify trust code installation by entering the **show license status** command in privileged EXEC mode - check for the updated timestamp in the `Trust Code Installed` field.

Overwriting a Trust Code

Use cases for the **force** option when configuring the **license smart trust idtoken** command:

- You use same token for all the product instances that are part of one Virtual Account. If the product instance has moved from one account to another (for instance, because it was added to a High Availability set-up, which is part of another Virtual Account), then there may be an existing trust code you have to overwrite.
- There is already a factory-installed trust code on the product instance, but you want to implement a topology where the product instance is directly connected to CSSM. A factory-installed trust code cannot be used for secure communication with CSSM. You must generate an ID token in the CSSM Web UI and download a trust code file. When you install this new trust code, you must overwrite the existing factory-installed trust code.

Removing Licensing Information

Entering the **license smart factory reset** command removes all licensing information (except the licenses in-use) from the product instance, including any authorization codes, RUM reports etc. Therefore, we recommend the use of this command only if the product instance is being returned (Return Material Authorization, or RMA), or being decommissioned permanently. We also recommend that you return any authorization codes and send a RUM report to CSSM, before you remove licensing information from the product instance - this is to ensure that CSSM has up-to-date usage information.

Requesting and Returning Authorization Codes:

- Requesting and returning SLAC - when the product instance is connected to CSSM, or CSLU or SSM On-Prem:
 - Use the following command to request SLAC on supported product instances. In a stacking set-up, you can request SLAC for either the active (**local**), or the entire stack (**all**). You cannot request SLAC for just one member or standby. Here the product instance is connected to CSSM, or CSLU or SSM On-Prem. For air-gapped networks, you must enter the required details directly in CSSM to generated SLAC.

license smart authorization request { **add** | **replace** } *feature_name* { **all** | **local** }

- Use the following command to return a SLAC or an SLR authorization code:

license smart authorization return { **all** | **local** } { **online** }

- Requesting and returning a SLAC when the product instance is in an air-gapped network.

- Starting from Cisco IOS XE Cupertino 17.7.1

You can request and install a SLAC without having to enter the required PIDs or generating a SLAC in the CSSM Web UI. Instead, save a SLAC request in a file by configuring the **license smart authorization request** { **add** | **replace** } *feature_name* { **all** | **local** }, followed by the **license smart authorization request save** [*path*] commands.

Upload the SLAC request file, to the CSSM Web UI (in the same location and just as you would, a RUM report). After the request is processed, a SLAC file is available on the CSSM Web UI. Download, and import the SLAC file into the product instance.

Similarly, to return a SLAC configure the **license smart authorization return** command with the **offline** [*path*] option to save the file. Upload the file to the CSSM Web UI in the same location and just as you would, a RUM report).

- Prior to Cisco IOS XE Cupertino 17.7.1:

To request SLAC on a product instance in an air-gapped network, you must enter the required details directly in the CSSM Web UI to generate SLAC.

To return a SLAC or an SLR authorization code:

license smart authorization return { **all** | **local** } { **offline** [*path*] | **online** }

Copy the return code that is displayed on the CLI and enter it in CSSM. If you save the return code to a file, you can copy the code from the file and enter the same in CSSM.

For SLR authorization codes in the Smart Licensing Using Policy environment, note that you cannot request a new SLR in the Smart Licensing Using Policy environment, because the notion of “reservation” does not apply. If you are in an air-gapped network, the *No Connectivity to CSSM and No CSLU* topology applies instead.

Authorization Codes in an SSM On-Prem Deployment

When requesting SLAC in an SSM On-Prem Deployment, ensure that you meet the following prerequisites before you configure the **license smart authorization request** command:

- The product instance must be added to SSM On-Prem. The process of addition validates and maps the product instance to the applicable Smart Account and Virtual account in CSSM.

- The authorization codes required for export-controlled and enforced licenses must be generated in CSSM and imported into SSM On-Prem.

Examples

- [Example for Requesting SLAC \(Connected Directly to CSSM\), on page 22](#)
- [Example for Saving Licensing Usage Information, on page 23](#)
- [Example for Installing a Trust Code, on page 23](#)
- [Example for Returning an SLR Authorization Code, on page 24](#)

Example for Requesting SLAC (Connected Directly to CSSM)

The following example shows how you can request and install SLAC on a product instance that is directly connected to CSSM. This example is of a stacking set-up with an active, a standby, and a member - all the devices in the stack are C9300X and support the HSECK9 key and IPsec. IPsec is a cryptographic feature which requires the HSECK9 key. A SLAC is requested for all the product instances in the set-up.

```
Device# license smart authorization request add hseck9 all
Device#
Oct 19 15:49:47.888: %SMART_LIC-6-AUTHORIZATION_INSTALL_SUCCESS: A new licensing authorization
code was successfully installed on PID:C9300X-24HX,SN:FOC2519L8R7
Oct 19 15:49:47.946: %SMART_LIC-6-AUTHORIZATION_INSTALL_SUCCESS: A new licensing authorization
code was successfully installed on PID:C9300X-48HXN,SN:FOC2524L39P
Oct 19 15:49:48.011: %SMART_LIC-6-AUTHORIZATION_INSTALL_SUCCESS: A new licensing authorization
code was successfully installed on PID:C9300X-48HX,SN:FOC2516LC92

Device# show license authorization
Overall status:
  Active: PID:C9300X-24HX,SN:FOC2519L8R7
        Status: SMART AUTHORIZATION INSTALLED on Oct 19 15:49:47 2021 UTC
        Last Confirmation code: 4e740fb8
  Standby: PID:C9300X-48HXN,SN:FOC2524L39P
        Status: SMART AUTHORIZATION INSTALLED on Oct 19 15:49:47 2021 UTC
        Last Confirmation code: 086d28d7
  Member: PID:C9300X-48HX,SN:FOC2516LC92
        Status: SMART AUTHORIZATION INSTALLED on Oct 19 15:49:48 2021 UTC
        Last Confirmation code: beb51aal

Authorizations:
C9K HSEC (Cat9K HSEC):
  Description: HSEC Key for Export Compliance on Cat9K Series Switches
  Total available count: 3
  Enforcement type: EXPORT RESTRICTED
  Term information:
    Active: PID:C9300X-24HX,SN:FOC2519L8R7
      Authorization type: SMART AUTHORIZATION INSTALLED
      License type: PERPETUAL
      Term Count: 1
    Standby: PID:C9300X-48HXN,SN:FOC2524L39P
      Authorization type: SMART AUTHORIZATION INSTALLED
      License type: PERPETUAL
      Term Count: 1
    Member: PID:C9300X-48HX,SN:FOC2516LC92
      Authorization type: SMART AUTHORIZATION INSTALLED
      License type: PERPETUAL
      Term Count: 1
```

```
Purchased Licenses:
  No Purchase Information Available
```

Example: Requesting a SLAC and Returning a SLAC (No Connectivity to CSSM and No CSLU)

The following examples show you how to generate and save a SLAC request on the product instance and also how to return a SLAC to the CSSM Web UI, for a product instance in an air-gapped network. The software version running on the product instance is Cisco IOS XE Cupertino 17.7.1, which introduces support for a more simplified way of requesting and returning SLAC in an air-gapped network.

Requesting a SLAC

```
Device# license smart authorization request add hseck9 local
Device# license smart authorization request save bootflash:slac-request.txt
```

After the above steps, upload the file to the CSSM Web UI. From the CSSM Web UI, download the file containing the SLAC. To import and install the file on the product instance, enter the following commands:

```
Device# copy tftp://10.8.0.6/user01/slac_code.txt bootflash:
Device# license smart import bootflash:slac_code.txt
```

Returning a SLAC

```
Device# license smart authorization return local offline bootflash:auth_return.txt
```

After the above step, upload the file to the CSSM Web UI. A file is available for download after this, but import and installation of this file is optional.

Example for Saving Licensing Usage Information

The following example shows how you can save license usage information on the product instance. You can use this option to fulfil reporting requirements in an air-gapped network. In the example, the file is first save to flash memory and then copied to a TFTP location:

```
Device> enable
Device# license smart save usage unreported file flash:RUM-unrep.txt
Device# copy flash:RUM-unrep.txt tftp://192.168.0.1//auto/tftp-user/user01/
Address or name of remote host [192.168.0.1]?
Destination filename [//auto/tftp-user/user01/RUM-unrep.txt]?
!!
15128 bytes copied in 0.161 secs (93963 bytes/sec)
```

After you save RUM reports to a file, you must upload it to CSSM (from a workstation that has connectivity to the internet, and Cisco).

Example for Installing a Trust Code

The following example shows how to install a trust code even if one is already installed on the product instance. This requires connectivity to CSSM. The accompanying **show license status** output shows sample output after successful installation:

Before you can install a trust code, you must generate a token and download the corresponding file from CSSM.

Use the **show license status** command (Trust Code Installed:) to verify results.

```
Device> enable
Device# license smart trust idtoken
```

```

NGMwMjk5mYtNZaxMS00NzMZmtgWm local force
Device# show license status
<output truncated>
Trust Code Installed:
  Active:  PID:C9500-24Y4C,SN:CAT2344L4GH
           INSTALLED on Sep 04 01:01:46 2020 EDT
  Standby: PID:C9500-24Y4C,SN:CAT2344L4GJ
           INSTALLED on Sep 04 01:01:46 2020 EDT
<output truncated>

```

Example for Returning an SLR Authorization Code

The following example shows how to remove and return an SLR authorization code. Here the code is returned offline (no connectivity to CSSM). The accompanying **show license all** output shows sample output after successful return:

```

Device> enable
Device# license smart authorization return local offline
Enter this return code in Cisco Smart Software Manager portal:
UDI:  PID:C9500-16X,SN:FCW2233A5ZV
Return code: Cr9JHx-L1x5Rj-ftwzgj-h9QZAU-LE5DT1-babWeL-FABPt9-Wr1Dn7-Rp7
Device# configure terminal
Device(config)# no license smart reservation

Device# show license all
<output truncated>
License Authorizations
=====
Overall status:
  Active:  UDI:  PID:C9500-16X,SN:FCW2233A5ZV
           Status: NOT INSTALLED
           Last return code: Cr9JHx-L1x5Rj-ftwzgj-h9QZAU-LE5DT1-babWeL-FABPt9-Wr1Dn7-Rp7
<output truncated>

```

Since the product instance is in an air-gapped network, you must copy the return code from the CLI, locate the product instance in the CSSM Web UI and enter the return code there to complete the return process.

show license all

To display all licensing information enter the **show license all** command in privileged EXEC mode. This command displays status, authorization, UDI, and usage information, all combined.

show license all

Syntax Description	This command has no arguments or keywords.
---------------------------	--

Command Default	Privileged EXEC (#)
------------------------	---------------------

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.2a	Command output was updated to display information relating to Smart Licensing Using Policy. Command output no longer displays Smart Account and Virtual account information.

Release	Modification
Cisco IOS XE Cupertino 17.7.1	<p>The output of the command was enhanced to display the following information:</p> <ul style="list-style-type: none"> • RUM report statistics, in section <code>Usage Report Summary</code>. • Smart Account and Virtual Account information, in section <code>Account Information</code>.

Usage Guidelines

This command concatenates the output of other `show license` commands, enabling you to display different kinds of licensing information together. For field descriptions, refer to the corresponding commands.

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing (whether smart licensing is enabled, all associated licensing certificates, compliance status, and so on).

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

- The `Smart Licensing Status` section corresponds with the output of the **show license status** command.
- The `License Usage` section corresponds with the output of the **show license usage** command.
- The `Product Information` section corresponds with the output of the **show license udi** command.
- The `Agent Version` section of the `show license all` command displays the Smart Agent version and is available only in this command.
- The `License Authorizations` section corresponds with the output of the **show license authorization** command.
- The `Usage Report Summary` section corresponds with the output in the **show license tech** command.

Examples

- [show license all for Smart Licensing Using Policy \(Cisco Catalyst 9300 Series Switches\), on page 25](#)
- [show license all for Smart Licensing Using Policy \(Cisco Catalyst 9500 Series Switches\), on page 28](#)
-

show license all for Smart Licensing Using Policy (Cisco Catalyst 9300 Series Switches)

The following is sample output of the **show license all** command in a stacking set-up. All the product instances in the stack are C9300X switches, which support the Export Control Key for High Security (HSECK9) starting from Cisco IOS XE Bengaluru 17.6.2. An HSECK9 key is used here and the requisite Smart Licensing Authorization Code (SLAC) is installed (SMART AUTHORIZATION INSTALLED on Oct 29 17:45:28 2021 UTC).

```
Device# show license all

Smart Licensing Status
=====
```

```

Smart Licensing is ENABLED

Export Authorization Key:
  Features Authorized:
    <none>

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

Miscellaneous:
  Custom Id: <empty>

Policy:
  Policy in use: Installed On Oct 29 17:44:15 2021 UTC
  Policy name: Custom Policy
  Reporting ACK required: yes (Customer Policy)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (Customer Policy)
    Reporting frequency (days): 0 (Customer Policy)
    Report on change (days): 90 (Customer Policy)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (Customer Policy)
    Reporting frequency (days): 90 (Customer Policy)
    Report on change (days): 90 (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)

Usage Reporting:
  Last ACK received: Oct 29 17:48:51 2021 UTC
  Next ACK deadline: Jan 27 17:48:51 2022 UTC
  Reporting push interval: 30 days
  Next ACK push check: <none>
  Next report push: Oct 29 18:32:43 2021 UTC
  Last report push: Oct 29 17:44:50 2021 UTC
  Last report file write: <none>

Trust Code Installed:
  Active: PID:C9300X-24HX,SN:FOC2519L8R7
    INSTALLED on Oct 29 17:44:15 2021 UTC
  Standby: PID:C9300X-48HXN,SN:FOC2524L39P
    INSTALLED on Oct 29 17:44:15 2021 UTC
  Member: PID:C9300X-48HX,SN:FOC2516LC92
    INSTALLED on Oct 29 17:44:15 2021 UTC

```

```
License Usage
=====

network-advantage (C9300-24 Network Advantage):
  Description: C9300-24 Network Advantage
  Count: 1
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: C9300-24 Network Advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9300-24 DNA Advantage):
  Description: C9300-24 DNA Advantage
  Count: 1
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9300-24 DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription

network-advantage (C9300-48 Network Advantage):
  Description: C9300-48 Network Advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: C9300-48 Network Advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9300-48 DNA Advantage):
  Description: C9300-48 DNA Advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9300-48 DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription

hseck9 (Cat9K HSEC):
  Description: hseck9
  Count: 1
  Version: 1.0
  Status: IN USE
  Export status: RESTRICTED - ALLOWED
  Feature Name: hseck9
  Feature Description: hseck9
  Enforcement type: EXPORT RESTRICTED
  License type: Perpetual

Product Information
=====
UDI: PID:C9300X-24HX,SN:FOC2519L8R7

HA UDI List:
```

show license all

```

Active:PID:C9300X-24HX,SN:FOC2519L8R7
Standby:PID:C9300X-48HXN,SN:FOC2524L39P
Member:PID:C9300X-48HX,SN:FOC2516LC92

Agent Version
=====
Smart Agent for Licensing: 5.1.23_rel/104

License Authorizations
=====
Overall status:
Active: PID:C9300X-24HX,SN:FOC2519L8R7
Status: SMART AUTHORIZATION INSTALLED on Oct 29 17:45:28 2021 UTC
Last Confirmation code: 6746c5b5
Standby: PID:C9300X-48HXN,SN:FOC2524L39P
Status: NOT INSTALLED
Member: PID:C9300X-48HX,SN:FOC2516LC92
Status: NOT INSTALLED

Authorizations:
C9K HSEC (Cat9K HSEC):
Description: HSEC Key for Export Compliance on Cat9K Series Switches
Total available count: 1
Enforcement type: EXPORT RESTRICTED
Term information:
Active: PID:C9300X-24HX,SN:FOC2519L8R7
Authorization type: SMART AUTHORIZATION INSTALLED
License type: PERPETUAL
Term Count: 1

Purchased Licenses:
No Purchase Information Available

```

show license all for Smart Licensing Using Policy (Cisco Catalyst 9500 Series Switches)

The following is sample output of the **show license all** command on a Cisco Catalyst 9500 switch. The software version running on the product instance here is Cisco IOS XE Cupertino 17.7.1. Similar output is displayed on all Cisco Catalyst Access, Core, and Aggregation Switches.

```

Device# show license all

Smart Licensing Status
=====

Smart Licensing is ENABLED

Export Authorization Key:
Features Authorized:
<none>

Utility:
Status: DISABLED

Smart Licensing Using Policy:
Status: ENABLED

Account Information:
Smart Account: <none>
Virtual Account: <none>

Data Privacy:
Sending Hostname: no

```

```
Callhome hostname privacy: DISABLED
Smart Licensing hostname privacy: ENABLED
Version privacy: DISABLED

Transport:
Type: Smart
URL: https://smartreceiver.cisco.com/licservice/license
Proxy:
  Not Configured
VRF:
  Not Configured

Miscellaneous:
  Custom Id: <empty>

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)

Usage Reporting:
Last ACK received: <none>
Next ACK deadline: Mar 30 22:32:22 2020 EST
Reporting push interval: 30 days
Next ACK push check: <none>
Next report push: Oct 19 04:39:08 2021 EST
Last report push: <none>
Last report file write: <none>

Trust Code Installed: <none>

License Usage
=====

network-advantage (C9500 Network Advantage):
  Description: C9500 Network Advantage
  Count: 1
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: C9500 Network Advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9500-40X DNA Advantage):
  Description: C9500-40X DNA Advantage
  Count: 1
  Version: 1.0
```

show license authorization

```

Status: IN USE
Export status: NOT RESTRICTED
Feature Name: dna-advantage
Feature Description: C9500-40X DNA Advantage
Enforcement type: NOT ENFORCED
License type: Subscription

Product Information
=====
UDI: PID:C9500-40X,SN:FCW2227A4NC

Agent Version
=====
Smart Agent for Licensing: 5.3.9_rel/22

License Authorizations
=====
Overall status:
  Active: PID:C9500-40X,SN:FCW2227A4NC
          Status: NOT INSTALLED

Purchased Licenses:
  No Purchase Information Available

Derived Licenses:
  Entitlement Tag:
  regid.2017-03.com.cisco.advantagek9-Nyquist-C9500,1.0_f1563759-2e03-4a4c-bec5-5feec525a12c
  Entitlement Tag:
  regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9

Usage Report Summary:
=====
Total: 26, Purged: 0
Total Acknowledged Received: 0, Waiting for Ack: 0
Available to Report: 26 Collecting Data: 2

```

Related Commands

Command	Description
show license status	Displays compliance status of a license.
show license authorization	Displays authorization code-related information.
show license summary	Displays summary of all active licenses.
show license udi	Displays UDI.
show license usage	Displays license usage information
show license tech support	Displays the debug output.

show license authorization

To display authorization-related information for (export-controlled and enforced) licenses, enter the **show license authorization** command in privileged EXEC mode.

show license authorization

This command has no arguments or keywords.

Command Modes Privileged EXEC (Device#)

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.2a	This command was introduced.

Usage Guidelines Use this command to display information about authorization codes. This includes SLR authorization codes and Smart Licensing Authorization Codes (SLAC).

Examples

For information about fields shown in the display, see [Table 1: show license authorization Field Descriptions, on page 31](#).

For sample outputs, see:

- [Displaying SLAC, on page 33](#)
- [Displaying SLR Authorization Code, on page 33](#).

Table 1: show license authorization Field Descriptions

Field	Description
Overall Status	Header for UDI information for all product instances in the set-up, the type of authorization that is installed, and configuration errors, if any. In a High Availability set-up, all UDIs in the set-up are listed.
Active: Status:	The active product instance UDI, followed by the status of the authorization code installation for this UDI. If the status indicates that the authorization code is installed and there is a confirmation code, this is also displayed.
Standby: Status:	The standby product instance UDI, followed by the status of the authorization code installation for this UDI. If the status indicates that the authorization code is installed and there is a confirmation code, this is also displayed.
Member: Status:	The member product instance UDI, followed by the status of the authorization code installation for this UDI. If the status indicates that the authorization code is installed and there is a confirmation code, this is also displayed.
ERROR:	Configuration errors or discrepancies in the High Availability set-up, if any.

Field	Description
Authorizations	<p>Header for detailed license authorization information. All licenses, their enforcement types, and validity durations are displayed. Errors are displayed for each product instance if its authorization or mode does not match what is installed on the active.</p> <p>This section is displayed only if the product instance is using a license with an authorization code.</p>
():	License name and a shortened form of the license name.
Description	License description.
Total available count:	<p>Total count of licenses that are <i>available</i> to consume.</p> <p>This includes licenses of all durations (perpetual and subscription), including expired subscription licenses, for all the product instances in a High Availability setup.</p>
Enforcement type	<p>Enforcement type for the license. This may be one of the following:</p> <ul style="list-style-type: none"> • Enforced • Not enforced • Export-Controlled
Term information:	<p>Header providing license duration information. The following fields maybe included under this header:</p> <ul style="list-style-type: none"> • Active: The active product instance UDI, followed by the status of the authorization code installation for this UDI. • Authorization type: Type of authorization code installed and date of installation. The type can be: SLAC, UNIVERSAL, SPECIFIED, PAK, RTU. • Start Date: Displays validity start date if the license is for a specific term or time period. • Start Date: Displays validity end date if the license is for a specific term or time period. • Term Count: License count. • Subscription ID: Displays ID if the license is for a specific term or time period. • License type: License duration. This can be: SUBSCRIPTION or PERPETUAL. • Standby: The standby product instance UDI, followed by the status of the authorization code installation for this UDI. • Member: The member product instance UDI, followed by the status of the authorization code installation for this UDI.

Field	Description
Purchased Licenses	Header for license purchase information.
Active:	The active product instance and its the UDI.
Count:	License count.
Description:	License description.
License type:	License duration. This can be: SUBSCRIPTION or PERPETUAL.
Standby:	The standby product instance UDI.
Member:	The member product instance UDI.

Displaying SLAC

The following is sample output of the **show license authorization** command on a C9300X model switch. Here SLAC is installed only on the active product instance in a stacking set-up:

```
Device# show license authorization
Overall status:
  Active: PID:C9300X-24HX,SN:FOC2519L8R7
           Status: SMART AUTHORIZATION INSTALLED on Oct 29 17:45:28 2021 UTC
           Last Confirmation code: 6746c5b5
  Standby: PID:C9300X-48HXN,SN:FOC2524L39P
           Status: NOT INSTALLED
  Member: PID:C9300X-48HX,SN:FOC2516LC92
           Status: NOT INSTALLED

Authorizations:
  C9K HSEC (Cat9K HSEC):
    Description: HSEC Key for Export Compliance on Cat9K Series Switches
    Total available count: 1
    Enforcement type: EXPORT RESTRICTED
    Term information:
      Active: PID:C9300X-24HX,SN:FOC2519L8R7
      Authorization type: SMART AUTHORIZATION INSTALLED
      License type: PERPETUAL
      Term Count: 1

Purchased Licenses:
  No Purchase Information Available
```

Displaying SLR Authorization Code

The following is sample output of the **show license authorization** command showing SLR authorization codes (Last Confirmation code:). An SLR authorization code is supported after upgrade to Smart Licensing Using Policy. While existing SLRs are carried over after upgrade, you cannot request a new SLR in the Smart Licensing Using Policy environment. If you are in an air-gapped network, the *No Connectivity to CSSM and No CSLU* topology applies instead.

```
Device# show license authorization

Overall status:
  Active: PID:C9500-16X,SN:FCW2233A5ZV
```

```

Status: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
Last Confirmation code: 184ba6d6
Standby: PID:C9500-16X,SN:FCW2233A5ZY
Status: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
Last Confirmation code: 961d598f

Specified license reservations:
C9500 Network Advantage (C9500 Network Advantage):
  Description: C9500 Network Advantage
  Total reserved count: 2
  Enforcement type: NOT ENFORCED
  Term information:
    Active: PID:C9500-16X,SN:FCW2233A5ZV
      Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
      License type: PERPETUAL
      Term Count: 1
    Standby: PID:C9500-16X,SN:FCW2233A5ZY
      Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
      License type: PERPETUAL
      Term Count: 1
C9500-DNA-16X-A (C9500-16X DNA Advantage):
  Description: C9500-DNA-16X-A
  Total reserved count: 2
  Enforcement type: NOT ENFORCED
  Term information:
    Active: PID:C9500-16X,SN:FCW2233A5ZV
      Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
      License type: PERPETUAL
      Term Count: 1
    Standby: PID:C9500-16X,SN:FCW2233A5ZY
      Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
      License type: PERPETUAL
      Term Count: 1

Purchased Licenses:
  No Purchase Information Available

Derived Licenses:
  Entitlement Tag:
  regid.2017-03.com.cisco.advantagek9-Nyquist-C9500,1.0_f1563759-2e03-4a4c-bec5-5feec525a12c
  Entitlement Tag:
  regid.2017-07.com.cisco.C9500-DNA-16X-A,1.0_ef3574d1-156b-486a-864f-9f779ff3ee49

```

show license data conversion

To display license data conversion information, enter the **show license data** command in privileged EXEC mode.

show license data conversion

Syntax Description

This command has no keywords or arguments

Command Modes Privileged EXEC (Device#)

Command History	Release	Modification
		This command was introduced.
	Cisco IOS XE Amsterdam 17.3.2a	Command output was updated to display information relating to Smart Licensing Using Policy. Command output no longer displays Smart Account and Virtual account information.

Usage Guidelines

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

Device-led conversion is not supported on Cisco Catalyst Access, Core, and Aggregation Switches.

show license eventlog

To display event logs relating to Smart Licensing Using Policy, enter the **show license eventlog** command in privileged EXEC mode.

```
show license eventlog [ days ]
```

Syntax Description

days Enter the number of days for which you want to display event logs. The valid value range is from 0 to 2147483647.

Command Modes

Privileged EXEC (Device#)

Command History

Release	Modification
	This command was introduced.
Cisco IOS XE Amsterdam 17.3.2a	Additional events were added with the introduction of Smart Licensing Using Policy: <ul style="list-style-type: none"> • Installation and removal of a policy • Request, installation and removal of an authorization code. • Installation and removal of a trust code. • Addition of authorization source information for license usage.

Usage Guidelines

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

Examples

[show license eventlog for One Day, for Smart Licensing Using Policy, on page 36](#)

[show license eventlog for All Events, for Smart Licensing Using Policy, on page 36](#)

show license eventlog for One Day, for Smart Licensing Using Policy

The following is sample output from the **show license eventlog** command on a Cisco Catalyst 9500 switch. Similar output is displayed on all supported Cisco Catalyst Access, Core, and Aggregation Switches. The command is configured to display events for one day.

```

Device# show license eventlog 1
**** Event Log ****

2020-09-11 00:50:17.693 EDT SAEVT_PLATFORM eventSource="INFRA_SL"
eventName="INFRA_SL_EVLOG_ERM_RESET" MSG="ERM-Reset: Client 0, AP-GROUP group, 2 features
air-network-advantage,air-dna-advantage"
2020-09-11 00:50:17.695 EDT SAEVT_ENDPOINT_USAGE count="0"
entitlementTag="regid.2018-06.com.cisco.DNA_NWStack,1.0_e7244e71-3ad5-4608-8bf0-d12f67c80896"
2020-09-11 00:50:17.695 EDT SAEVT_ENDPOINT_USAGE count="0"
entitlementTag="regid.2017-08.com.cisco.AIR-DNA-A,1.0_b6308627-3ab0-4a11-a3d9-586911a0d790"
2020-09-11 00:50:50.175 EDT SAEVT_POLL_MESSAGE messageType="LICENSE_USAGE"
2020-09-11 08:50:17.694 EDT SAEVT_PLATFORM eventSource="INFRA_SL"
eventName="INFRA_SL_EVLOG_ERM_RESET" MSG="ERM-Reset: Client 0, AP-GROUP group, 2 features
air-network-advantage,air-dna-advantage"
2020-09-11 08:50:17.696 EDT SAEVT_ENDPOINT_USAGE count="0"
entitlementTag="regid.2018-06.com.cisco.DNA_NWStack,1.0_e7244e71-3ad5-4608-8bf0-d12f67c80896"
2020-09-11 08:50:17.696 EDT SAEVT_ENDPOINT_USAGE count="0"
entitlementTag="regid.2017-08.com.cisco.AIR-DNA-A,1.0_b6308627-3ab0-4a11-a3d9-586911a0d790"
2020-09-11 08:50:52.804 EDT SAEVT_POLL_MESSAGE messageType="LICENSE_USAGE"

```

show license eventlog for All Events, for Smart Licensing Using Policy

The following is sample output from the **show license eventlog** command on a Cisco Catalyst 9500 switch. Similar output is displayed on all supported Cisco Catalyst Access, Core, and Aggregation Switches. The command is configured to display all events.

```

Device# show license eventlog
**** Event Log ****

2020-09-01 15:43:42.300 UTC SAEVT_INIT_START version="4.13.14_rel/41"
2020-09-01 15:43:42.301 UTC SAEVT_INIT_CRYPT0 success="False" error="Crypto Initialization
has not been completed"
2020-09-01 15:43:42.301 UTC SAEVT_HA_EVENT eventType="SmartAgentEvtHarmfRegister"
2020-09-01 15:43:45.055 UTC SAEVT_READY
2020-09-01 15:43:45.055 UTC SAEVT_ENABLED
2020-09-01 15:43:45.088 UTC SAEVT_PLATFORM eventSource="INFRA_SL"
eventName="INFRA_SL_EVLOG_SYSDATA_FAIL" MSG="Get-SDL: not the active switch"
2020-09-01 15:43:45.089 UTC SAEVT_PLATFORM eventSource="INFRA_SL"
eventName="INFRA_SL_EVLOG_SYSDATA_FAIL" MSG="Get-SDL: not the active switch"
2020-09-01 15:43:45.089 UTC SAEVT_PLATFORM eventSource="INFRA_SL"
eventName="INFRA_SL_EVLOG_SYSDATA_FAIL" MSG="Get-SDL: not the active switch"
2020-09-01 15:43:45.089 UTC SAEVT_LICENSE_USAGE count="0" type="destroy"
entitlementTag="regid.2018-01.com.cisco.C9500-24Y4C-A,1.0_6b065611-6552-472a-8859-ab3339550166"
2020-09-01 15:43:45.098 UTC SAEVT_PLATFORM eventSource="INFRA_SL"
eventName="INFRA_SL_EVLOG_SYSDATA_FAIL" MSG="Get-SDL: not the active switch"

```

show license history message

To display communication history between the product instance and CSSM or CSLU (as the case may be), enter the **show license history message** command in privileged EXEC mode. The output of this command is used by the technical support team, for troubleshooting.

show license history message

Syntax Description

This command has no keywords or arguments.

Command Modes

Privileged EXEC (Device#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.3.2a	This command was introduced.

Usage Guidelines

When you encounter an error message that you are not able to resolve, along with a copy of the message that appears on the console or in the system log, provide your Cisco technical support representative with sample output of these commands: **show license tech support**, **show license history message**, and the **show platform software sl-infra all** privileged EXEC commands.

show license reservation

To display license reservation information, enter the **show license reservation** command in privileged EXEC mode.

show license reservation

This command has no arguments or keywords.

Command Modes

Privileged EXEC (Device#)

Command History

Release	Modification
	This command was introduced.
Cisco IOS XE Amsterdam 17.3.2a	The command continues to be available on the CLI, but is no longer applicable because the notion of reservation does not exist in the Smart Licensing Using Policy environment.

Usage Guidelines

The command continues to be available on the CLI and corresponding output is displayed, but with the introduction of Smart Licensing Using Policy, the notion of reservation is not longer applicable. Use the **show license all** command in privileged EXEC mode, to display *migrated* SLR licenses instead (the SLR authorization code is migrated to Smart Licensing Using Policy).

show license rum

To display information about Resource Utilization Measurement reports (RUM report) available on the product instance, including report IDs, the current processing state of a report, error information (if any), and to save the detailed or summarized view that is displayed, enter the **show license rum** command in privileged EXEC mode.

```
show license rum { feature { license_name | all } | id { rum_id | all } } [ detail ] [ save path ]
```

Syntax Description

feature { <i>license_name</i> all }	Displays RUM report information based on the license name. Specify a particular license name to display all RUM reports for that license, or use the all keyword to display all RUM reports available on the product instance.
id { <i>rum_id</i> all }	Displays RUM report information based on the RUM report ID. Specify a report ID to display information for a single report, or use the all keyword to display all RUM reports available on the product instance.
detail	Displays detailed RUM report information. You can use this to display detailed information by license name and detailed information by RUM report ID.
save path	Saves the information that is displayed. This can be the simplified or detailed version and depends on the preceding keywords you have entered. Information about 200 RUM reports can be displayed. If there are more 200 RUM reports on the product instance, you can view information about all the RUM reports by saving it to a text (.txt) file. Note This option saves the information <i>about</i> RUM reports and is not for reporting purposes. It does not save the RUM report, which is an XML file containing usage information.

Command Modes

Privileged EXEC (Device#)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.7.1	This command was introduced.

Usage Guidelines

A RUM report is a license usage report, which the product instance generates, to fulfil reporting requirements as specified by the policy. An acknowledgement (ACK) is a response from CSSM and provides information about the status of a RUM report. Once the ACK for a report is available on the product instance, it indicates

that the corresponding RUM report is no longer required and can be deleted. You can use the **show license rum** command to:

- Display information about the available RUM reports on the product instance - filtered by ID or license name.
- Display a short summary of the information or display a detailed view of the information.
- Track a RUM report throughout its lifecycle (from the time it is first generated until its acknowledgement from CSSM). By displaying the current processing state and condition of a report you can ascertain if and when there is a problem in the reporting workflow.
- Save the displayed information. The CLI displays information about up to 200 reports. If there are more than 200 reports on the product instance and you want to view information about all of them, save the displayed info in a .txt file and export to the desired location to view.

To display a statistical view of RUM report information (the total number of reports on the product instance, the number of reports that have a corresponding ACK, the number of reports waiting for an ACK etc.) refer to the `Usage Report Summary`: section of the **show license all** and **show license tech** privileged EXEC commands.

The **show license tech** command also provides RUM report related information that the Cisco technical support team can use to troubleshoot, if there are problems with RUM reporting.

Examples

For information about fields shown in the display, see [Table 2: show license rum \(simplified view\) Field Descriptions, on page 39](#) and [Table 3: show license rum \(detailed view\) Field Descriptions, on page 41](#)

For examples of the **show license rum** command, see:

- [show license rum feature: Simplified and Detailed View, on page 42](#)
- [Saving RUM Report View, on page 45](#)

Table 2: show license rum (simplified view) Field Descriptions

Field Name	Description
Report Id	A numeric field that identifies a RUM report. The product instance automatically assigns an ID to every RUM report it generates. An ID may be up to 20 characters long.

Field Name	Description
State	<p>This field displays the current processing state of a RUM report, and can be only one of the following:</p> <ul style="list-style-type: none"> • OPEN: This means new measurements are being added to this report. • CLOSED: This means no further measurements can be added to this report, and the report is ready for communication to CSSM. • PENDING: This is a transitional status that you may see if you display a report while it is being transmitted. • UNACK: This means the report was transmitted and is waiting for confirmation from CSSM, that it is processed. • ACK: This means the report was processed or acknowledged by CSSM and is eligible for deletion.
Flag	<p>Indicates the condition of the RUM report, and is displayed in the form of a character. Each character represents a specific condition, and can be only one of the following values:</p> <ul style="list-style-type: none"> • N: Normal; This means no errors have been detected and the report is going through normal operation. • P: Purged; This means the report was removed due to system resource limitation, and can refer to a shortage of disk space or insufficient memory. If this flag is displayed, refer to the <code>State Change Reason</code> field in the detailed view for more information. • E: Error; This means an error was detected in the RUM report. If this flag is displayed, refer to the detailed view for more information. Possible workflow issues include and are not limited to the following: <ul style="list-style-type: none"> • RUM report was dropped by CSSM. If this is the issue, the <code>State</code> field displays value <code>ACK</code>, but the <code>State Change Reason</code> does not change to <code>ACKED</code>. • RUM Report data is missing. If this is the issue, the <code>Storage State</code> field displays value <code>MISSING</code>. • Tracking information is missing. If this is the case the <code>State</code> field displays value <code>UNACK</code> and the <code>Transaction ID</code> field has no information. <p>Note Occasional errors in RUM reports do not require any action from you and are not an indication of a problem. It is only if you see a large number of reports (greater than 10) with errors that you must contact the Cisco technical support team.</p>
Feature Name	The name of the license that the RUM report applies to.

Table 3: show license rum (detailed view) Field Descriptions

Field Name	Description
Report Id	A numeric field that identifies a RUM report. The product instance automatically assigns an ID to every RUM report it generates. An ID may be up to 20 characters long.
Metric Name:	Shows the type of data that is recorded. For a RUM report, the only possible value is ENTITLEMENT, and refers to measurement of license usage.
Feature Name:	The name of the license that the RUM report applies to.
Metric Value	A unique identifier for the data that is recorded. This is the same as the “Entitlement Tag” in the output of the show license tech commad and it displays information about the license being tracked.
UDI	Composed of the Product ID (PID) and serial number of the product instance.
Previous Report Id:	ID of the previous RUM report that the product instance generated for a license.
Next Report Id:	The ID that the product instance will use for the next RUM report it generates for a llicense.
State:	Displays the current processing state of a RUM report. The value displayed here is always the same as the value displayed in the simplified view. For the list of possible values see Table 2: show license rum (simplified view) Field Descriptions, on page 39 above.
State Change Reason:	Displays the reason for a RUM report state change. Not all state changes provide a reason. <ul style="list-style-type: none"> • NONE: This means the RUM report is going through its normal lifecycle (for instance, from OPEN → CLOSED → ACK). This state change reason is usually accompanied by an N flag (meaning Normal) in the simplified view and requires no action from you. • ACKED: RUM report was processed normally by CSSM. • REMOVED: RUM report was received and requested to be removed by CSSM. • RELOAD: RUM report state was changed due to some type of device reload. • DECONFIG: License was removed from configuration.
Start Time:	Timestamps for measurement start and measurement end for a RUM report.
End Time:	Together, the start time and end time provide the time duration that the measurements cover.

Field Name	Description
Storage State:	<p>Displays current storage state of the RUM report and can be one of the following values:</p> <ul style="list-style-type: none"> • EXIST: This means the data for the RUM report is located in storage. • DELETED: This means the data was intentionally deleted. Refer to the <code>Storage State Change Reason</code> in the output of the show license tech command for more information about this storage state. • PURGED: This means the data was deleted due to a system resource limitation. Refer to the <code>Storage State Change Reason</code> in the output of the show license tech command for more information about this storage state. • MISSING: This means data is missing from storage. If reports are identified as missing, there is no recovery process.
Transaction ID:	<p>Contains tracking information for the RUM report. This information can be either polling information or ACK import information.</p> <p>The Transaction Message contains the error message, if the product instance receives one when importing an ACK.</p> <p>The information in these fields is used by the Cisco technical support team when troubleshooting problems with RUM reports.</p>
Transaction Message:	

show license rum feature: Simplified and Detailed View

The following is sample output of the **show license rum feature *license-name*** and **show license rum feature *license-name* detail** commands on a Cisco Catalyst 9500 Series Switch. Similar output is displayed on all other Catalyst switches.

The output is filtered to display all RUM reports for the DNA Advantage license, followed by a detailed view of all RUM reports for the DNA Advantage license.

```
Device# show license rum feature dna-advantage
```

```
Smart Licensing Usage Report:
```

```
=====
```

```
Report Id,      State,   Flag,  Feature Name
1574560487     CLOSED  N      dna-advantage
1574560489     CLOSED  N      dna-advantage
1574560491     CLOSED  N      dna-advantage
1574560493     CLOSED  N      dna-advantage
1574560495     CLOSED  N      dna-advantage
1574560497     CLOSED  N      dna-advantage
1574560499     CLOSED  N      dna-advantage
1574560501     CLOSED  N      dna-advantage
1574560503     CLOSED  N      dna-advantage
1574560505     CLOSED  N      dna-advantage
1574560507     CLOSED  N      dna-advantage
1574560509     CLOSED  N      dna-advantage
1574560511     OPEN    N      dna-advantage
```

```
Device# show license rum feature dna-advantage detail
```

```
Smart Licensing Usage Report Detail:
```

```
=====
Report Id: 1574560487
  Metric Name: ENTITLEMENT
  Feature Name: dna-advantage
  Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
  UDI: PID:C9500-40X,SN:FCW2227A4NC
  Previous Report Id: 0,      Next Report Id: 1574560489
  State: CLOSED,      State Change Reason: None
  Start Time: Sep 02 00:11:55 2020 EST,      End Time: Sep 02 20:12:04 2020 EST
  Storage State: EXIST
  Transaction ID: 0
  Transaction Message: <none>

Report Id: 1574560489
  Metric Name: ENTITLEMENT
  Feature Name: dna-advantage
  Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
  UDI: PID:C9500-40X,SN:FCW2227A4NC
  Previous Report Id: 1574560487,      Next Report Id: 1574560491
  State: CLOSED,      State Change Reason: None
  Start Time: Sep 02 20:24:46 2020 EST,      End Time: Sep 02 22:24:56 2020 EST
  Storage State: EXIST
  Transaction ID: 0
  Transaction Message: <none>

Report Id: 1574560491
  Metric Name: ENTITLEMENT
  Feature Name: dna-advantage
  Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
  UDI: PID:C9500-40X,SN:FCW2227A4NC
  Previous Report Id: 1574560489,      Next Report Id: 1574560493
  State: CLOSED,      State Change Reason: None
  Start Time: Sep 02 22:34:27 2020 EST,      End Time: Sep 03 14:34:37 2020 EST
  Storage State: EXIST
  Transaction ID: 0
  Transaction Message: <none>

Report Id: 1574560493
  Metric Name: ENTITLEMENT
  Feature Name: dna-advantage
  Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
  UDI: PID:C9500-40X,SN:FCW2227A4NC
  Previous Report Id: 1574560491,      Next Report Id: 1574560495
  State: CLOSED,      State Change Reason: None
  Start Time: Sep 03 14:45:16 2020 EST,      End Time: Sep 03 15:30:49 2020 EST
  Storage State: EXIST
  Transaction ID: 0
  Transaction Message: <none>

Report Id: 1574560495
  Metric Name: ENTITLEMENT
  Feature Name: dna-advantage
  Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
  UDI: PID:C9500-40X,SN:FCW2227A4NC
  Previous Report Id: 1574560493,      Next Report Id: 1574560497
  State: CLOSED,      State Change Reason: None
  Start Time: Sep 03 15:47:29 2020 EST,      End Time: Dec 21 17:02:39 2020 EST
  Storage State: EXIST
  Transaction ID: 0
```

```
Transaction Message: <none>

Report Id: 1574560497
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560495, Next Report Id: 1574560499
State: CLOSED, State Change Reason: None
Start Time: Jan 05 14:02:34 2021 EST, End Time: Feb 19 21:02:21 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560499
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560497, Next Report Id: 1574560501
State: CLOSED, State Change Reason: None
Start Time: Feb 19 21:17:57 2021 EST, End Time: Jul 05 14:03:07 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560501
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560499, Next Report Id: 1574560503
State: CLOSED, State Change Reason: None
Start Time: Jul 05 14:19:30 2021 EST, End Time: Jul 06 14:34:40 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560503
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560501, Next Report Id: 1574560505
State: CLOSED, State Change Reason: None
Start Time: Jul 06 14:39:42 2021 EST, End Time: Jul 06 15:10:14 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560505
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560503, Next Report Id: 1574560507
State: CLOSED, State Change Reason: RELOAD
Start Time: Jul 06 15:25:36 2021 EST, End Time: Aug 05 15:55:46 2021 EST
Storage State: EXIST
```

```

Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560507
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560505, Next Report Id: 1574560509
State: CLOSED, State Change Reason: REPORTING
Start Time: Aug 05 16:15:11 2021 EST, End Time: Aug 05 16:15:14 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560509
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560507, Next Report Id: 1574560511
State: CLOSED, State Change Reason: REPORTING
Start Time: Aug 05 16:15:14 2021 EST, End Time: Aug 05 19:38:43 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

Report Id: 1574560511
Metric Name: ENTITLEMENT
Feature Name: dna-advantage
Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
Previous Report Id: 1574560509, Next Report Id: 0
State: OPEN, State Change Reason: None
Start Time: Aug 05 19:38:43 2021 EST, End Time: Oct 18 02:53:39 2021 EST
Storage State: EXIST
Transaction ID: 0
Transaction Message: <none>

```

Saving RUM Report View

The following example shows you how to save a simplified view of the **show license rum feature all** command.

By using the **feature** and **all** keywords, the output is filtered to display all RUM reports for all licenses being used on the product instance. You can then transfer it to a location from where you can open the text file and view the information.

```

Device# show license rum feature all save bootflash:all-rum-stats.txt
Device# copy bootflash:all-rum-stats.txt tftp://10.8.0.6/user01/

```

show license status

To display information about licensing settings such as data privacy, policy, transport, usage reporting and trust codes, enter the **show license status** command in privileged EXEC mode.

show license status

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History	Release	Modification
		This command was introduced.
	Cisco IOS XE Amsterdam 17.3.2a	Command output was updated to reflect new fields that are applicable to Smart Licensing Using Policy. This includes <code>Trust code installed:</code> , <code>Policy in use</code> , <code>Policy name:</code> , reporting requirements as in the policy, and <code>Usage Reporting:</code> . Command output no longer displays Smart Account and Virtual account information.
	Cisco IOS XE Cupertino 17.7.1	Command output was updated to display Smart Account and Virtual account information.

Usage Guidelines

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

Account Information in the output

Starting with Cisco IOS XE Cupertino 17.7.1, every ACK includes the Smart Account and Virtual Account that was reported to, in CSSM. When it receives the ACK, the product instance securely stores only the latest version of this information - as determined by the timestamp in the ACK. The Smart Account and Virtual Account information that is displayed in the `Account Information` section of this command's output is therefore always as per the latest available ACK on the product instance.

If a product instance is moved from one Smart Account and Virtual Account to another, the next ACK after the move will have this updated information. The output of this command is updated once this ACK is available on the product instance.

The ACK may be received directly (where the product instance is connected to CSSM), or indirectly (where the product instance is connect to CSSM through CSLU, Cisco DNA Center, or SSM On-Prem), or by manually importing the ACK (where a product instance is in an air-gapped network).

Examples

For information about fields shown in the display, see [Table 4: show license status Field Descriptions for Smart Licensing Using Policy, on page 47](#)

For sample outputs, see:

- [show license status for Smart Licensing Using Policy, on page 52](#)
- [show license status for Smart Licensing, on page 53](#)

Table 4: show license status Field Descriptions for Smart Licensing Using Policy

Field	Description
Utility	Header for utility settings that are configured on the product instance.
	Status: Status
	Utility report: Last attempt:
	Customer Information: The following fields are displayed: <ul style="list-style-type: none"> • Id: • Name: • Street • City: • State: • Country: • Postal Code:
Smart Licensing Using Policy:	Header for policy settings on the product instance.
	Status: Indicates if Smart Licensing Using Policy is enabled. Smart Licensing Using Policy is supported starting from Cisco IOS XE Amsterdam 17.3.2 and is always enabled on supported software images.
Account Information:	Header for account information that the product instance belongs to, in CSSM. This section is displayed only if the software version on the product instance is Cisco IOS XE Cupertino 17.7.1 or a later release. If an ACK is not installed on the product instance, these fields display <none>.
	Smart Account: The Smart Account that the product instance is part of. This information is always as per the latest available ACK on the product instance.
	Virtual Account: The Virtual Account that the product instance is part of. This information is always as per the latest available ACK on the product instance.

Field	Description
Data Privacy:	Header for privacy settings that are configured on the product instance.
Sending Hostname:	A <i>yes</i> or <i>no</i> value which shows if the hostname is sent in usage reports.
Callhome hostname privacy:	Indicates if the Call Home feature is configured as the mode of transport for reporting. If configured, one of these values is displayed: <ul style="list-style-type: none"> • ENABLED • DISABLED
Smart Licensing hostname privacy:	One of these values is displayed: <ul style="list-style-type: none"> • ENABLED • DISABLED
Version privacy:	One of these values is displayed: <ul style="list-style-type: none"> • ENABLED • DISABLED
Transport:	Header for transport settings that are configured on the product instance.
Type:	Mode of transport that is in use. Additional fields are displayed for certain transport modes. For example, if transport type is set to CSLU, the CSLU address is also displayed.

Field	Description
Policy:	Header for policy information that is applicable to the product instance.
Policy in use:	Policy that is applied This can be one of the following: Cisco default, Product default, Permanent License Reservation, Specific License Reservation, PAK license, Installed on <date>, Controller.
Policy name:	Name of the policy
Reporting ACK required:	A <i>yes</i> or <i>no</i> value which specifies if the report for this product instance requires CSSM acknowledgement (ACK) or not. The default policy is always set to “yes”.
Unenforced/Non-Export Perpetual Attributes	Displays policy values for perpetual licenses. <ul style="list-style-type: none"> • First report requirement (days): The maximum amount of time available before the first report must be sent, followed by policy name. • Reporting frequency (days): The maximum amount of time available before the subsequent report must be sent, followed by policy name. • Report on change (days): he maximum amount of time available to send a report in case of a change in license usage, followed by policy name
Unenforced/Non-Export Subscription Attributes	Displays policy values for subscription licenses. <ul style="list-style-type: none"> • First report requirement (days): The maximum amount of time available before the first report must be sent, followed by policy name. • Reporting frequency (days): The maximum amount of time available before the subsequent report must be sent, followed by policy name. • Report on change (days): he maximum amount of time available to send a report in case of a change in license usage, followed by policy name
Enforced (Perpetual/Subscription) License Attributes	

Field		Description
		<p>Displays policy values for enforced licenses.</p> <ul style="list-style-type: none"> • First report requirement (days): The maximum amount of time available before the first report must be sent, followed by policy name. • Reporting frequency (days): The maximum amount of time available before the subsequent report must be sent, followed by policy name. • Report on change (days): The maximum amount of time available to send a report in case of a change in license usage, followed by policy name
	Export (Perpetual/Subscription) License Attributes	<p>Displays policy values for export-controlled licenses.</p> <ul style="list-style-type: none"> • First report requirement (days): The maximum amount of time available before the first report must be sent, followed by policy name. • Reporting frequency (days): The maximum amount of time available before the subsequent report must be sent, followed by policy name. • Report on change (days): The maximum amount of time available to send a report in case of a change in license usage, followed by policy name
Miscellaneous	Header for custom ID.	
	Custom Id:	ID

Field	Description
Usage Reporting:	Header for usage reporting (RUM reports) information.
Last ACK received:	Date and time of last ACK received, in the local time zone.
Next ACK deadline:	Date and time for next ACK. If the policy states that an ACK is not required then this field displays <code>none</code> . Note If an ACK is required and is not received by this deadline, a syslog is displayed.
Reporting Interval:	Reporting interval in days The value displayed here depends on what you configure in the license smart usage interval <code>interval_in_days</code> and the policy value. For more information, see the corresponding Syntax Description: Table 4: show license status Field Descriptions for Smart Licensing Using Policy, on page 47 .
Next ACK push check:	Date and time when the product instance will submit the next polling request for an ACK. Date and time are in the local time zone. This applies only to product instance- initiated communication to CSSM or CSLU. If the reporting interval is zero, or if no ACK polling is pending, then this field displays <code>none</code> .
Next report push:	Date and time when the product instance will send the next RUM report. Date and time are in the local time zone. If the reporting interval is zero, or if there are no pending RUM reports, then this field displays <code>none</code> .
Last report push:	Date and time for when the product instance sent the last RUM report. Date and time are in the local time zone.
Last report file write:	Date and time for when the product instance last saved an offline RUM report. Date and time are in the local time zone.
Last report pull:	Date and time for when usage reporting information was retrieved using data models. Date and time are in the local time zone.

Field	Description
Trust Code Installed:	Header for trust code-related information. Displays date and time if trust code is installed. Date and time are in the local time zone. If a trust code is not installed, then this field displays <i>none</i> .
Active:	Active product instance. In a High Availability set-up, the the UDIs of all product instances in the set-up, along with corresponding trust code installation dates and times are displayed.
Standby:	Standby product instance.
Member:	Member product instance

show license status for Smart Licensing Using Policy

The following is sample output of the **show license status** command on a Cisco Catalyst 9500 switch where the software version running on the product instance is Cisco IOS XE Cupertino 17.7.1. Note the Smart Account and Virtual Account fields in the output starting from this release.

An ACK has not been installed on this product instance (Last ACK received: <none>). The account information fields therefore display <none>:

```
Device# show license status

Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

Account Information:
  Smart Account: <none>
  Virtual Account: <none>

Data Privacy:
  Sending Hostname: no
  Callhome hostname privacy: DISABLED
  Smart Licensing hostname privacy: ENABLED
  Version privacy: DISABLED

Transport:
  Type: Smart
  URL: https://smartreceiver.cisco.com/licservice/license
  Proxy:
    Not Configured
  VRF:
    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: Mar 30 22:32:22 2020 EST
  Reporting push interval: 30 days
  Next ACK push check: <none>
  Next report push: Oct 21 04:39:08 2021 EST
  Last report push: <none>
  Last report file write: <none>

Trust Code Installed: <none>

```

show license status for Smart Licensing

The following is sample output of the **show license status** command.

```

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: Cisco Systems
  Virtual Account: NPR
  Export-Controlled Functionality: Allowed
  Initial Registration: First Attempt Pending
  Last Renewal Attempt: SUCCEEDED on Jul 19 14:49:49 2018 IST
  Next Renewal Attempt: Jan 15 14:49:47 2019 IST
  Registration Expires: Jul 19 14:43:47 2019 IST

License Authorization:
  Status: AUTHORIZED on Jul 28 07:02:56 2018 IST
  Last Communication Attempt: SUCCEEDED on Jul 28 07:02:56 2018 IST
  Next Communication Attempt: Aug 27 07:02:56 2018 IST
  Communication Deadline: Oct 26 06:57:50 2018 IST

```

Related Commands	Command	Description
	show license all	Displays entitlements information.
	show license authorization	Displays authorization code-related information.
	show license summary	Displays summary of all active licenses.
	show license udi	Displays UDI.
	show license usage	Displays license usage information
	show tech-support license	Displays the debug output.

show license summary

To display a brief summary of license usage, which includes information about licenses being used, the count, and status, use the **show license summary** command in privileged EXEC mode.

show license summary

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History	Release	Modification
		This command was introduced.
	Cisco IOS XE Amsterdam 17.3.2a	Command output was updated to reflect valid license status for Smart Licensing Using Policy. Valid license statuses are now only IN USE, NOT IN USE, NOT AUTHORIZED. Command output was also updated to remove registration and authorization information. Command output no longer displays Smart Account and Virtual account information.
	Cisco IOS XE Cupertino 17.7.1	Command output was updated to display Smart Account and Virtual account information.

Usage Guidelines **Smart Licensing:** If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

License status

- The **unenforced licenses** that are available on Cisco Catalyst Access, Core, and Aggregation Switches are `never NOT AUTHORIZED OR NOT IN USE`.
- The **export-controlled license**, Export Control Key for High Security (HSECK9 key), which is supported on the switches listed below, displays status `NOT IN USE` if an HSECK9 key is available on the product instance and the requisite Smart Licensing Authorization Code (SLAC) is installed, but the cryptographic feature that requires the HSECK9 key is not configured.
 - Cisco Catalyst 9300X Series Switches, from Cisco IOS XE Bengaluru 17.6.2
 - Cisco Catalyst 9600 Series 40-Port 50G, 2-Port 200G, 2-Port 400G Line Card (C9600-LC-40YL4CD) from Cisco IOS XE Cupertino 17.8.1
 - Cisco Catalyst 9500X Series Switches from Cisco IOS XE Cupertino 17.8.1

Configure the applicable cryptographic feature for the count and status fields to change to 1 and IN USE respectively.

For more detailed license usage information, see the output of the **show license usage** privileged EXEC command.

Usage Count

In a stacking setup, even if you install SLAC on more than one device, the usage count remains 1. This is because only one HSECK9 key is used at a given point in time - the one on the active. The license on the standby comes into effect when a switchover occurs. The count remains 1 with the new active as well, because it is still only one HSECK9 key that is being used.

In case of a modular chassis, the usage count must display only 1 because only one HSECK9 key is required for each chassis UDI - regardless of the number of supervisors installed.

Account information in the output

Starting with Cisco IOS XE Cupertino 17.7.1, every ACK includes the Smart Account and Virtual Account that was reported to, in CSSM. When it receives the ACK, the product instance securely stores only the latest version of this information - as determined by the timestamp in the ACK. The Smart Account and Virtual Account information that is displayed in the `Account Information` section of this command's output is therefore always as per the latest available ACK on the product instance.

If a product instance is moved from one Smart Account and Virtual Account to another, the next ACK after the move will have this updated information. The output of this command is updated once this ACK is available on the product instance.

The ACK may be received directly (where the product instance is connected to CSSM), or indirectly (where the product instance is connect to CSSM through CSLU, Cisco DNA Center, or SSM On-Prem), or by manually importing the ACK (where a product instance is in an air-gapped network).

Examples

For information about fields shown in the display, see [Table 5: show license summary Field Descriptions for Smart Licensing Using Policy](#), on page 56

For sample outputs, see:

- [show license summary \(Cisco Catalyst 9500 Series Switches\)](#), on page 56
- [show license summary \(Cisco Catalyst 9300X Series Switches\)](#), on page 56

Table 5: show license summary Field Descriptions for Smart Licensing Using Policy

Field	Description
Account Information: Smart Account: Virtual Account:	The Smart Account and Virtual Account that the product instance is part of. This information is always as per the latest available ACK on the product instance. This field is displayed only if the software version on the product instance is Cisco IOS XE Cupertino 17.7.1 or a later release. If an ACK is not installed on the product instance, these fields display <none>.
License	Name of the licenses in use
Entitlement Tag	Short name for license
Count	License count
Status	License status can be one of the following <ul style="list-style-type: none"> • In-Use: Valid license, and in-use. • Not In-Use: An HSECK9 key is available on the product instance and the requisite Smart Licensing Authorization Code (SLAC) is installed, but the cryptographic feature that requires the HSECK9 key is disabled or not configured. This status is a prerequisite when you want to <i>return</i> the SLAC for an HSECK9 license to CSSM. • Not Authorized: Means that the license requires installation of SLAC before use.

show license summary (Cisco Catalyst 9500 Series Switches)

The following is sample output of the **show license summary** command, on a product instance where the software version is Cisco IOS XE Cupertino 17.7.1. Note the account information fields displayed from this release onwards:

```
Device# show license summary
```

```
Account Information:
  Smart Account: Eg-SA
  Virtual Account: Eg-VA
```

```
License Usage:
License                               Entitlement Tag                Count Status
-----
network-advantage_250M (ESR_P_250M_A)                1 IN USE
dna-advantage_250M      (DNA_P_250M_A)                1 IN USE
```

show license summary (Cisco Catalyst 9300X Series Switches)

The following are sample outputs of the **show license summary** command, on a C9300X stack.

The Status and Count columns here, display `NOT IN USE` and `0` for the HSECK9 key. This means the HSECK9 key is available and SLAC is installed, but the cryptographic feature that requires the license is not configured:


```
Device# show license summary
License Usage:
License                Entitlement Tag                Count Status
-----
network-advantage     (C9300-24 Network Advan...)    1 IN USE
dna-advantage         (C9300-24 DNA Advantage)       1 IN USE
network-advantage     (C9300-48 Network Advan...)    2 IN USE
dna-advantage         (C9300-48 DNA Advantage)       2 IN USE
C9K HSEC             (Cat9K HSEC)                  0 NOT IN USE
```

The Status and Count columns here display IN USE and 1 for the HSECK9 key. This means the cryptographic feature, which requires an HSECK9 key, is configured.

```
Device# show license summary
License Usage:
License                Entitlement Tag                Count Status
-----
network-advantage     (C9300-24 Network Advan...)    1 IN USE
dna-advantage         (C9300-24 DNA Advantage)       1 IN USE
network-advantage     (C9300-48 Network Advan...)    2 IN USE
dna-advantage         (C9300-48 DNA Advantage)       2 IN USE
hseck9               (Cat9K HSEC)                  1 IN USE
```

show license tech

To display licensing information to help the technical support team troubleshoot a problem, enter the **show license tech** command in privileged EXEC mode. The output for this command includes outputs of several other **show license** commands and more.

```
show license tech { message | rum { feature { license_name | all } | id { rum_id | all } } [ detail ] [ save_path ] | support }
```

Syntax Description

message	Displays messages concerning trust establishment, usage reporting, result polling, authorization code requests and returns, and trust synchronization. This is the same information as displayed in the output of the show license history message command.
rum { feature { license_name all } id { rum_id all } } [detail] [save_path]	Displays information about Resource Utilization Measurement reports (RUM reports) on the product instance, including report IDs, the current processing state of a report, error information (if any), and an option save the displayed RUM report information. Note This option saves the information <i>about</i> RUM reports and is not for reporting purposes. It does not save the RUM report, which is an XML file containing usage information.
support	Displays licensing information that helps the technical support team to debug a problem.

Command Modes

Privileged EXEC (Device#)

Command History

Release	Modification
	This command was introduced.

Release	Modification
Cisco IOS XE Amsterdam 17.3.2a	Command output was updated to reflect new fields that are applicable to Smart Licensing Using Policy.
Cisco IOS XE Cupertino 17.7.1	<p>The rum keyword and additional options under this keyword were added:</p> <pre>{ feature { license_name all } id { rum_id all } }</pre> <p>The output of the show license tech support command was enhanced to display the following information:</p> <ul style="list-style-type: none"> • RUM report information, in section <code>License Usage</code> and <code>Usage Report Summary</code>. • Smart Account and Virtual account information, in section <code>Account Information</code>. <p>The data conversion, eventlog and reservation keywords were removed from this command. They continue to be available as separate show commands, that is, show license data, show license eventlog, and show license reservation respectively.</p>

Usage Guidelines

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing (whether smart licensing is enabled, all associated licensing certificates, compliance status, and so on).

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

- Troubleshooting with a Support Representative

When you encounter an error message that you are not able to resolve, along with a copy of the message that appears on the console or in the system log, provide your Cisco technical support representative with sample output of these commands: **show license tech support**, **show license history message**, and the **show platform software sl-infra all** privileged EXEC commands.

- RUM Report Information in the output

- The output of the **show license tech support** command displays the following sections pertaining to RUM reports:

[Table 6: show license tech support: Field Descriptions for Header "License Usage", on page 59](#)

```
License Usage
=====
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 1
    Current Report: 1574560510      Previous: 1574560508
```

Table 6: show license tech support: Field Descriptions for Header "License Usage"

Field Name	Description
Interval:	This is a fixed measurement duration and is always 15 minutes.
Current Value:	Information about the current license count.
Current Report:	ID of the currently OPEN report for the license.
Previous:	ID of the last OPEN report for the license. This report will have state CLOSED now.

[Table 7: show license tech support: Field Descriptions for Header "Usage Report Summary", on page 59](#)

```
Usage Report Summary:
=====
Total: 26, Purged: 0(0)
Total Acknowledged Received: 0, Waiting for Ack: 0(26)
Available to Report: 26 Collecting Data: 2
Maximum Display: 26 In Storage: 26, MIA: 0(0)
```

Table 7: show license tech support: Field Descriptions for Header "Usage Report Summary"

Field Name	Description
Total:	Total number of reports that the product instance has ever generated. Note This total does not refer to the total number of reports <i>currently available</i> on and being tracked by the product instance. For this you must sum up the <code>Total Acknowledged Received:</code> and <code>Available to Report</code> fields.
Purged:	The number of reports deleted due to a system resource limitation. This number includes RUM reports where the product instance no longer has tracking information.
Total Acknowledged Received:	The number of RUM reports acknowledged on this product instance.
Waiting for Ack:	The number of RUM reports waiting for an ACK. This is the total number of reports in an <code>UNACK</code> state, where the product instance still has tracking information.
Available to Report:	The number of RUM reports that are available to send to CSSM. This is the total number of reports in an <code>OPEN</code> or <code>CLOSED</code> state, where the product instance still has tracking information.
Collecting Data:	Number of reports where the product instance is currently collecting measurements.

Field Name	Description
Maximum Display:	Number of reports available for display in a show command's output.
In Storage:	Number of reports currently stored on the disk
MIA:	The number of reports missing.

- The output of the **show license tech rum** command displays the following fields pertaining to RUM reports: [Table 8: show license tech rum: Field Descriptions for Header "Smart Licensing Usage Report Detail"](#), on page 60

The options available under the **show license tech rum** keyword are the same as the options available with the **show license rum** privileged EXEC command. The sample output that is displayed in the *simplified view* is also the same. But if you use the **detail** keyword (for example if you enter **show license tech rum feature license_name detail**), the detailed view is displayed and this has a few *additional* fields when compared to **show license rum**.

```
Smart Licensing Usage Report Detail:
=====
Report Id: 1574560509
  Metric Name: ENTITLEMENT
  Feature Name: dna-advantage
  Metric Value:
regid.2017-07.com.cisco.C9500-DNA-40X-A,1.0_7eb18f4c-2d44-4077-8346-818defbd9ad9
UDI: PID:C9500-40X,SN:FCW2227A4NC
  Previous Report Id: 1574560507,   Next Report Id: 1574560511
Version: 2.0
  State: CLOSED,           State Change Reason: REPORTING
  Start Time: Aug 05 16:15:14 2021 EST,   End Time: Aug 05 19:38:43 2021 EST
Storage State: EXIST, Storage State Change Reason: None
Transaction ID: 0
Transaction Message: <none>
Report Size: 1086(1202)
```

Table 8: show license tech rum: Field Descriptions for Header "Smart Licensing Usage Report Detail"

Field Name	Description
Version:	Displays the format of the report during transmission. Starting with Cisco IOS XE Cupertino 17.7.1, RUM reports are stored in a new format that reduces processing time. This field indicates if the product instance is using the old format or the new format.
Storage State:	Indicates if a given report is currently in storage. In addition to the displaying the current storage state of the RUM report, with these possible values: EXIST, DELETED, PURGED, MISSING, if a "(1)" is displayed next to the label (<i>Storage State (1)</i>), this means the RUM report is in the older (pre-17.7.1 format) and will be processed accordingly. If the RUM report is in the new format, the field is displayed as <i>Storage State</i> - without any extra information.

Field Name	Description
Storage State Change Reason:	<p>Displays the reason for the change in the storage state change. Not all state changes provide a reason.</p> <ul style="list-style-type: none"> • NONE: This means no reason was recorded for the the storage state change. • PROCESSED: This means the RUM report was deleted after CISCO has processed the data. • LIMIT_STORAGE: This means the RUM report was deleted because the product instance reached it's storage limit. • LIMIT_TIME: This means the RUM report was deleted because the report reached the persisted time limit.
Transaction ID: Transaction Message:	<p>If the transaction ID displays a correlation ID and an error status is displayed, the product instance displays the error code field in this section. If there are no errors, no data is displayed here.</p>
Report Size	<p>This field displays two numbers. The first number is the size of raw report for communication, in bytes. The second number is the disk space used for saving the report, also in bytes. The second number is displayed only if report is stored in the new format.</p>

Examples

Example: show license tech support (Cisco Catalyst 9400 Series Switches)

The following is sample output from the **show license tech support** command on a Cisco Catalyst 9400 switch running software version Cisco IOS XE Cupertino 17.7.1. Similar output is displayed on all supported Cisco Catalyst Access, Core, and Aggregation Switches.

```
Device# show license tech support

Smart Licensing Tech Support info

Smart Licensing Status
=====

Smart Licensing is ENABLED

Export Authorization Key:
  Features Authorized:
    <none>

Utility:
  Status: DISABLED

Smart Licensing Using Policy:
```

```

Status: ENABLED

Account Information:
  Smart Account: Eg-SA
  Virtual Account: Eg-VA

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

Transport:
  Type: Smart
  URL: https://smartreceiver.cisco.com/licservice/license
  Proxy:
    Address: <empty>
    Port: <empty>
    Username: <empty>
    Password: <empty>
  Server Identity Check: True
  VRF: <empty>

Miscellaneous:
  Custom Id: <empty>

Policy:
  Policy in use: Installed On Nov 20 12:10:02 2021 PDT
  Policy name: SLE Policy
  Reporting ACK required: yes (Customer Policy)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 30 (Customer Policy)
    Reporting frequency (days): 60 (Customer Policy)
    Report on change (days): 60 (Customer Policy)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 120 (Customer Policy)
    Reporting frequency (days): 111 (Customer Policy)
    Report on change (days): 111 (Customer Policy)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 30 (Customer Policy)
    Reporting frequency (days): 90 (Customer Policy)
    Report on change (days): 60 (Customer Policy)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 30 (Customer Policy)
    Reporting frequency (days): 30 (Customer Policy)
    Report on change (days): 30 (Customer Policy)

Usage Reporting:
  Last ACK received: Dec 03 12:12:10 2021 PDT
  Next ACK deadline: Feb 01 12:12:10 2022 PDT
  Reporting push interval: 30 days State(4) InPolicy(60)
  Next ACK push check: Dec 04 04:12:06 2021 PDT
  Next report push: Dec 03 20:08:05 2021 PDT
  Last report push: Dec 03 12:08:08 2021 PDT
  Last report file write: <none>

License Usage
=====
Handle: 1
  License: network-advantage
  Entitlement Tag:
  regid.2017-05.com.cisco.advantagek9-C9400,1.0_61a546cd-1037-47cb-bbe6-7cad3217a7b3
  Description: C9400 Network Advantage
  Count: 2

```

```
Version: 1.0
Status: IN USE(15)
Status time: Nov 20 19:07:28 2021 PDT
Request Time: Nov 20 19:08:05 2021 PDT
Export status: NOT RESTRICTED
Feature Name: network-advantage
Feature Description: C9400 Network Advantage
Enforcement type: NOT ENFORCED
License type: Perpetual
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 2
    Current Report: 1637348082          Previous: 1637348080
Soft Enforced: True

Handle: 2
License: dna-essentials
Entitlement Tag:
regid.2017-05.com.cisco.dna_essentials-C9400,1.0_74d47865-1bf3-4f00-a06b-edbe18b049b3
Description: C9400 DNA Essentials
Count: 1
Version: 1.0
Status: IN USE(15)
Status time: Nov 20 19:07:28 2021 PDT
Request Time: Nov 20 19:07:28 2021 PDT
Export status: NOT RESTRICTED
Feature Name: dna-essentials
Feature Description: C9400 DNA Essentials
Enforcement type: NOT ENFORCED
License type: Subscription
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 1
    Current Report: 1637348083          Previous: 1637348081
Soft Enforced: True

Handle: 7
License: air-network-advantage
Entitlement Tag:
regid.2018-06.com.cisco.DNA_NWStack,1.0_e7244e71-3ad5-4608-8bf0-d12f67c80896
Description: air-network-advantage
Count: 0
Version: 1.0
Status: NOT IN USE(1)
Status time: Dec 03 20:07:35 2021 PDT
Request Time: None
Export status: NOT RESTRICTED
Feature Name: air-network-advantage
Feature Description: air-network-advantage
Enforcement type: NOT ENFORCED
License type: Perpetual
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 0
    Current Report: 0          Previous: 0
Soft Enforced: True

Handle: 8
License: air-dna-advantage
Entitlement Tag: regid.2017-08.com.cisco.AIR-DNA-A,1.0_b6308627-3ab0-4a11-a3d9-586911a0d790
```

```

Description: air-dna-advantage
Count: 0
Version: 1.0
Status: NOT IN USE(1)
Status time: Dec 03 20:07:35 2021 PDT
Request Time: None
Export status: NOT RESTRICTED
Feature Name: air-dna-advantage
Feature Description: air-dna-advantage
Enforcement type: NOT ENFORCED
License type: Subscription
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 0
    Current Report: 0      Previous: 0
  Soft Enforced: True

```

Product Information

```
=====
```

```
UDI: PID:C9407R,SN:FXS2119Q2U7
```

HA UDI List:

```

Active:PID:C9407R,SN:FXS2119Q2U7
Standby:PID:C9407R,SN:FXS2119Q2U7

```

Agent Version

```
=====
```

```
Smart Agent for Licensing: 5.3.16_rel/55
```

Upcoming Scheduled Jobs

```
=====
```

```

Current time: Dec 03 22:58:47 2021 PDT
Daily: Dec 04 19:07:31 2021 PDT (20 hours, 8 minutes, 44 seconds remaining)
Authorization Renewal: Expired Not Rescheduled
Init Flag Check: Expired Not Rescheduled
Reservation configuration mismatch between nodes in HA mode: Expired Not Rescheduled
Retrieve data processing result: Dec 04 04:12:06 2021 PDT (5 hours, 13 minutes, 19 seconds
remaining)
Start Utility Measurements: Dec 03 23:08:06 2021 PDT (9 minutes, 19 seconds remaining)
Send Utility RUM reports: Dec 04 20:08:05 2021 PDT (21 hours, 9 minutes, 18 seconds remaining)
Save unreported RUM Reports: Dec 03 23:53:16 2021 PDT (54 minutes, 29 seconds remaining)
Process Utility RUM reports: Dec 04 12:17:10 2021 PDT (13 hours, 18 minutes, 23 seconds
remaining)
Data Synchronization: Expired Not Rescheduled
External Event: Jan 19 11:53:19 2022 PDT (46 days, 12 hours, 54 minutes, 32 seconds remaining)
Operational Model: Expired Not Rescheduled

```

Communication Statistics:

```
=====
```

```
Communication Level Allowed: DIRECT
```

```
Overall State: <empty>
```

Trust Establishment:

```
Attempts: Total=0, Success=0, Fail=0 Ongoing Failure: Overall=0 Communication=0
```

```
Last Response: <none>
```

```
Failure Reason: <none>
```

```
Last Success Time: <none>
```

```
Last Failure Time: <none>
```

Trust Acknowledgement:

```
Attempts: Total=0, Success=0, Fail=0 Ongoing Failure: Overall=0 Communication=0
```

```
Last Response: <none>
```

```
Failure Reason: <none>
```

```
Last Success Time: <none>
```

```
Last Failure Time: <none>
```



```

Usage Reporting:
  Attempts: Total=45, Success=22, Fail=23 Ongoing Failure: Overall=1 Communication=1
  Last Response: NO REPLY on Dec 03 20:08:05 2021 PDT
  Failure Reason: <none>
  Last Success Time: Dec 03 12:08:07 2021 PDT
  Last Failure Time: Dec 03 20:08:05 2021 PDT
Result Polling:
  Attempts: Total=85, Success=25, Fail=60 Ongoing Failure: Overall=3 Communication=3
  Last Response: NO REPLY on Dec 03 20:12:19 2021 PDT
  Failure Reason: <none>
  Last Success Time: Dec 03 12:29:18 2021 PDT
  Last Failure Time: Dec 03 20:12:19 2021 PDT
Authorization Request:
  Attempts: Total=0, Success=0, Fail=0 Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>
Authorization Confirmation:
  Attempts: Total=0, Success=0, Fail=0 Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>
Authorization Return:
  Attempts: Total=0, Success=0, Fail=0 Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>
Trust Sync:
  Attempts: Total=5, Success=1, Fail=4 Ongoing Failure: Overall=0 Communication=0
  Last Response: OK on Nov 20 19:17:37 2021 PDT
  Failure Reason: <none>
  Last Success Time: Nov 20 19:17:37 2021 PDT
  Last Failure Time: Nov 20 19:17:02 2021 PDT
Hello Message:
  Attempts: Total=0, Success=0, Fail=0 Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>

License Certificates
=====
Production Cert: True
Not registered. No certificates installed

HA Info
=====
RP Role: Active
Chassis Role: Active
Behavior Role: Active
RMF: True
CF: True
CF State: Stateless
Message Flow Allowed: False

Reservation Info
=====
License reservation: DISABLED

Overall status:
  Active: PID:C9407R,SN:FXS2119Q2U7

```

```

Reservation status: NOT INSTALLED
Request code: <none>
Last return code: <none>
Last Confirmation code: <none>
Reservation authorization code: <none>
Standby: PID:C9407R,SN:FXS2119Q2U7
Reservation status: NOT INSTALLED
Request code: <none>
Last return code: <none>
Last Confirmation code: <none>
Reservation authorization code: <none>

```

Specified license reservations:

Purchased Licenses:

No Purchase Information Available

Usage Report Summary:

=====

```

Total: 137, Purged: 0(0)
Total Acknowledged Received: 98, Waiting for Ack: 34(39)
Available to Report: 4 Collecting Data: 2
Maximum Display: 137 In Storage: 59, MIA: 0(0)
Report Module Status: Ready

```

Other Info

=====

```

Software ID: regid.2017-05.com.cisco.C9400,v1_ad928212-d182-407e-ac85-29e213602efa
Agent State: authorized
TS enable: True
Transport: Smart
  Default URL: https://smartreceiver.cisco.com/licservice/license
Locale: en_US.UTF-8
Debug flags: 0x7
Privacy Send Hostname: True
Privacy Send IP: True
Build type:: Production
sizeof(char)   : 1
sizeof(int)    : 4
sizeof(long)   : 4
sizeof(char *) : 8
sizeof(time_t) : 4
sizeof(size_t) : 8
Endian: Big
Write Erase Occurred: False
XOS version: 0.12.0.0
Config Persist Received: True
Message Version: 1.3
connect_info.name: <empty>
connect_info.version: <empty>
connect_info.additional: <empty>
connect_info.prod: False
connect_info.capabilities: <empty>
agent.capabilities: UTILITY, DLC, AppHA, MULTITIER, EXPORT_2, OK_TRY_AGAIN, POLICY_USAGE
Check Point Interface: True
Config Management Interface: False
License Map Interface: True
HA Interface: True
Trusted Store Interface: True
Platform Data Interface: True
Crypto Version 2 Interface: False
SAPPluginMgmtInterfaceMutex: True
SAPPluginMgmtIPDomainName: True
SmartTransportVRFSupport: True

```

```

SmartAgentClientWaitForServer: 2000
SmartAgentCmRetrySend: True
SmartAgentClientIsUnified: True
SmartAgentCmClient: True
SmartAgentClientName: UnifiedClient
builtInEncryption: True
enableOnInit: True
routingReadyByEvent: True
systemInitByEvent: True
SmartTransportServerIdCheck: True
SmartTransportProxySupport: True
SmartAgentPolicyDisplayFormat: 0
SmartAgentReportOnUpgrade: False
SmartAgentIndividualRUMEncrypt: 2
SmartAgentMaxRumMemory: 50
SmartAgentConcurrentThreadMax: 10
SmartAgentPolicyControllerModel: False
SmartAgentPolicyModel: True
SmartAgentFederalLicense: True
SmartAgentMultiTenant: False
attr365DayEvalSyslog: True
checkPointWriteOnly: False
SmartAgentDelayCertValidation: False
enableByDefault: False
conversionAutomatic: False
conversionAllowed: False
storageEncryptDisable: False
storageLoadUnencryptedDisable: False
TSPluginDisable: False
bypassUDICheck: False
loggingAddTStamp: False
loggingAddTid: True
HighAvailabilityOverrideEvent: UnknownPlatformEvent
platformIndependentOverrideEvent: UnknownPlatformEvent
platformOverrideEvent: SmartAgentSystemDataListChanged
WaitForHaRole: False
standbyIsHot: True
chkPtType: 2
delayCommInit: False
roleByEvent: True
maxTraceLength: 150
traceAlwaysOn: True
debugFlags: 0
Event log max size: 5120 KB
Event log current size: 58 KB
P:C9407R,S:FXS2119Q2U7: P:C9407R,S:FXS2119Q2U7, state[2], Trust Data INSTALLED TrustId:412
P:C9407R,S:FXS2119Q2U7: P:C9407R,S:FXS2119Q2U7, state[2], Trust Data INSTALLED TrustId:412
Overall Trust: INSTALLED (2)
Clock sync-ed with NTP: True

Platform Provided Mapping Table
=====
C9407R: Total licenses found: 198
Enforced Licenses:
P:C9407R,S:FXS2119Q2U7:
No PD enforced licenses

```

show license tech support for Smart Licensing Using Policy (Cisco Catalyst 9500 Series Switches)

The following is sample output from the **show license tech support** command on a Cisco Catalyst 9500 switch. Similar output is displayed on all supported Cisco Catalyst Access, Core, and Aggregation Switches.

```

Device# show license tech support
Smart Licensing Tech Support info

Smart Licensing Status
=====

Smart Licensing is ENABLED
License Reservation is ENABLED

Export Authorization Key:
  Features Authorized:
    <none>

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

Miscellaneous:
  Custom Id: <empty>

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)

Usage Reporting:
  Last ACK received: <none>
  Next ACK deadline: Jan 27 09:49:33 2021 PST
  Reporting push interval: 30 days State(2) InPolicy(90)
  Next ACK push check: <none>
  Next report push: Oct 29 09:51:33 2020 PST
  Last report push: <none>
  Last report file write: <none>

License Usage
=====
Handle: 1
  License: network-advantage

```

```
Entitlement Tag:
regid.2017-03.com.cisco.advantagek9-Nyquist-C9500,1.0_f1563759-2e03-4a4c-bec5-5feec525a12c
Description: network-advantage
Count: 2
Version: 1.0
Status: IN USE(15)
Status time: Oct 29 09:48:54 2020 PST
Request Time: Oct 29 09:49:18 2020 PST
Export status: NOT RESTRICTED
Feature Name: network-advantage
Feature Description: network-advantage
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 2
  Soft Enforced: True

Handle: 2
License: dna-advantage
Entitlement Tag:
regid.2017-07.com.cisco.C9500-DNA-16X-A,1.0_ef3574d1-156b-486a-864f-9f779ff3ee49
Description: C9500-16X DNA Advantage
Count: 2
Version: 1.0
Status: IN USE(15)
Status time: Oct 29 09:48:54 2020 PST
Request Time: Oct 29 09:49:18 2020 PST
Export status: NOT RESTRICTED
Feature Name: dna-advantage
Feature Description: C9500-16X DNA Advantage
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 2
  Soft Enforced: True

Handle: 7
License: air-network-advantage
Entitlement Tag:
regid.2018-06.com.cisco.DNA_NWStack,1.0_e7244e71-3ad5-4608-8bf0-d12f67c80896
Description: air-network-advantage
Count: 0
Version: 1.0
Status: IN USE(15)
Status time: Oct 29 10:49:09 2020 PST
Request Time: None
Export status: NOT RESTRICTED
Feature Name: air-network-advantage
Feature Description: air-network-advantage
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 0
  Soft Enforced: True

Handle: 8
License: air-dna-advantage
Entitlement Tag: regid.2017-08.com.cisco.AIR-DNA-A,1.0_b6308627-3ab0-4a11-a3d9-586911a0d790

Description: air-dna-advantage
Count: 0
Version: 1.0
Status: IN USE(15)
Status time: Oct 29 10:49:09 2020 PST
```

```

Request Time: None
Export status: NOT RESTRICTED
Feature Name: air-dna-advantage
Feature Description: air-dna-advantage
Measurements:
  ENTITLEMENT:
    Interval: 00:15:00
    Current Value: 0
    Soft Enforced: True

Product Information
=====
UDI: PID:C9500-16X,SN:FCW2233A5ZV

HA UDI List:
  Active:PID:C9500-16X,SN:FCW2233A5ZV
  Standby:PID:C9500-16X,SN:FCW2233A5ZY

Agent Version
=====
Smart Agent for Licensing: 5.0.5_rel/42

Upcoming Scheduled Jobs
=====
Current time: Oct 29 11:04:46 2020 PST
Daily: Oct 30 09:48:56 2020 PST (22 hours, 44 minutes, 10 seconds remaining)
Init Flag Check: Expired Not Rescheduled
Reservation configuration mismatch between nodes in HA mode: Nov 05 09:52:25 2020 PST (6
days, 22 hours, 47 minutes, 39 seconds remaining)
Start Utility Measurements: Oct 29 11:19:09 2020 PST (14 minutes, 23 seconds remaining)
Send Utility RUM reports: Oct 30 09:53:10 2020 PST (22 hours, 48 minutes, 24 seconds
remaining)
Save unreported RUM Reports: Oct 29 12:04:19 2020 PST (59 minutes, 33 seconds remaining)
Process Utility RUM reports: Oct 30 09:49:33 2020 PST (22 hours, 44 minutes, 47 seconds
remaining)
Data Synchronization: Expired Not Rescheduled
External Event: Nov 28 09:49:33 2020 PST (29 days, 22 hours, 44 minutes, 47 seconds remaining)
Operational Model: Expired Not Rescheduled

Communication Statistics:
=====
Communication Level Allowed: INDIRECT
Overall State: <empty>
Trust Establishment:
  Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>
Trust Acknowledgement:
  Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>
Usage Reporting:
  Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>
  Failure Reason: <none>
  Last Success Time: <none>
  Last Failure Time: <none>
Result Polling:
  Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
  Last Response: <none>

```

```

    Failure Reason: <none>
    Last Success Time: <none>
    Last Failure Time: <none>
Authorization Request:
    Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
    Last Response: <none>
    Failure Reason: <none>
    Last Success Time: <none>
    Last Failure Time: <none>
Authorization Confirmation:
    Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
    Last Response: <none>
    Failure Reason: <none>
    Last Success Time: <none>
    Last Failure Time: <none>
Authorization Return:
    Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
    Last Response: <none>
    Failure Reason: <none>
    Last Success Time: <none>
    Last Failure Time: <none>
Trust Sync:
    Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
    Last Response: <none>
    Failure Reason: <none>
    Last Success Time: <none>
    Last Failure Time: <none>
Hello Message:
    Attempts: Total=0, Success=0, Fail=0   Ongoing Failure: Overall=0 Communication=0
    Last Response: <none>
    Failure Reason: <none>
    Last Success Time: <none>
    Last Failure Time: <none>

```

```

License Certificates
=====
Production Cert: True
Not registered. No certificates installed

```

```

HA Info
=====
RP Role: Active
Chassis Role: Active
Behavior Role: Active
RMF: True
CF: True
CF State: Stateless
Message Flow Allowed: False

```

```

Reservation Info
=====
License reservation: ENABLED

```

```

Overall status:
  Active: PID:C9500-16X,SN:FCW2233A5ZV
    Reservation status: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
    Request code: <none>
    Last return code: <none>
    Last Confirmation code: 184ba6d6
    Reservation authorization code:
    <tagDisplayName>C9500-16X</tagDisplayName>
    Network Advantage</displayName><tagDescription>C9500 Network

```

```

Standby: PID:C9500-16X,SN:FCW2233A5ZY
Reservation status: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST
Request code: <none>
Last return code: <none>
Last Confirmation code: 961d598f
Reservation authorization code:
Network Advantage</displayName><tagDescription>C9500 Network

```

Specified license reservations:

C9500 Network Advantage (C9500 Network Advantage):

Description: C9500 Network Advantage

Total reserved count: 2

Enforcement type: NOT ENFORCED

Term information:

Active: PID:C9500-16X,SN:FCW2233A5ZV

Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST

License type: PERPETUAL

Start Date: <none>

End Date: <none>

Term Count: 1

Subscription ID: <none>

Standby: PID:C9500-16X,SN:FCW2233A5ZY

Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST

License type: PERPETUAL

Start Date: <none>

End Date: <none>

Term Count: 1

Subscription ID: <none>

C9500-DNA-16X-A (C9500-16X DNA Advantage):

Description: C9500-DNA-16X-A

Total reserved count: 2

Enforcement type: NOT ENFORCED

Term information:

Active: PID:C9500-16X,SN:FCW2233A5ZV

Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST

License type: PERPETUAL

Start Date: <none>

End Date: <none>

Term Count: 1

Subscription ID: <none>

Standby: PID:C9500-16X,SN:FCW2233A5ZY

Authorization type: SPECIFIC INSTALLED on Oct 29 09:44:06 2020 PST

License type: PERPETUAL

Start Date: <none>

End Date: <none>

Term Count: 1

Subscription ID: <none>

Purchased Licenses:

No Purchase Information Available

Other Info

=====

Software ID: regid.2017-05.com.cisco.C9500,v1_7435cf27-0075-4bfb-b67c-b42f3054e82a

Agent State: authorized

TS enable: True

Transport: Transport Off

Locale: en_US.UTF-8

Debug flags: 0x7

Privacy Send Hostname: True


```
Privacy Send IP: True
Build type:: Production
sizeof(char) : 1
sizeof(int) : 4
sizeof(long) : 4
sizeof(char *): 8
sizeof(time_t): 4
sizeof(size_t): 8
Endian: Big
Write Erase Occurred: False
XOS version: 0.12.0.0
Config Persist Received: False
Message Version: 1.3
connect_info.name: <empty>
connect_info.version: <empty>
connect_info.additional: <empty>
connect_info.prod: False
connect_info.capabilities: <empty>
agent.capabilities: UTILITY, DLC, AppHA, MULTITIER, EXPORT_2, OK_TRY_AGAIN, POLICY_USAGE
Check Point Interface: True
Config Management Interface: False
License Map Interface: True
HA Interface: True
Trusted Store Interface: True
Platform Data Interface: True
Crypto Version 2 Interface: False
SAPPluginMgmtInterfaceMutex: True
SAPPluginMgmtIPDomainName: True
SmartAgentClientWaitForServer: 2000
SmartAgentCmRetrySend: True
SmartAgentClientIsUnified: True
SmartAgentCmClient: True
SmartAgentClientName: UnifiedClient
builtInEncryption: True
enableOnInit: True
routingReadyByEvent: True
systemInitByEvent: True
SmartTransportServerIdCheck: False
SmartTransportProxySupport: False
SmartAgentMaxRumMemory: 50
SmartAgentConcurrentThreadMax: 10
SmartAgentPolicyControllerModel: False
SmartAgentPolicyModel: True
SmartAgentFederalLicense: True
SmartAgentMultiTenant: False
attr365DayEvalSyslog: True
checkPointWriteOnly: False
SmartAgentDelayCertValidation: False
enableByDefault: False
conversionAutomatic: False
conversionAllowed: False
storageEncryptDisable: False
storageLoadUnencryptedDisable: False
TSPluginDisable: False
bypassUDICheck: False
loggingAddTStamp: False
loggingAddTid: True
HighAvailabilityOverrideEvent: UnknownPlatformEvent
platformIndependentOverrideEvent: UnknownPlatformEvent
platformOverrideEvent: SmartAgentSystemDataListChanged
WaitForHaRole: False
standbyIsHot: True
chkPtType: 2
delayCommInit: False
```

```

roleByEvent: True
maxTraceLength: 150
traceAlwaysOn: True
debugFlags: 0
Event log max size: 5120 KB
Event log current size: 109 KB
P:C9500-16X,S:FCW2233A5ZV: No Trust Data
P:C9500-16X,S:FCW2233A5ZY: No Trust Data
Overall Trust: No ID

```

Platform Provided Mapping Table

```

=====
C9500-16X: Total licenses found: 143
Enforced Licenses:
P:C9500-16X,S:FCW2233A5ZV:
  No PD enforced licenses
P:C9500-16X,S:FCW2233A5ZY:
  No PD enforced licenses

```

show license udi

To display Unique Device Identifier (UDI) information for a product instance, enter the **show license udi** command in Privileged EXEC mode. In a High Availability set-up, the output displays UDI information for all connected product instances.

show license udi

Syntax Description

This command has no arguments or keywords.

Command Default

Privileged EXEC (#)

Command History

Release	Modification
	This command was introduced.
Cisco IOS XE Amsterdam 17.3.2a	The command continues to be available and applicable in the Smart Licensing Using Policy environment.

Usage Guidelines

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

In a High Availability or stacking set-up, the output of the **show license udi** command displays the UDI information for all connected product instances.

Examples

[show licensing udi for Smart Licensing Using Policy, on page 75](#)

show licensing udi for Smart Licensing Using Policy

The following is sample output of the **show license udi** command for a High Availability set-up on a Catalyst 9500 switch. Similar output is displayed on all supported Cisco Catalyst Access, Core, and Aggregation Switches.

```
Device# show license udi

UDI: PID:C9500-16X,SN:FCW2233A5ZV
HA UDI List:
Active:PID:C9500-16X,SN:FCW2233A5ZV
Standby:PID:C9500-16X,SN:FCW2233A5ZY
```

show license usage

To display license usage information such as status, a count of licenses being used, and enforcement type, enter the **show license usage** command in privileged EXEC mode.

show license usage

This command has no arguments or keywords.

Command Default

Privileged EXEC (#)

Command History

Release	Modification
	This command was introduced.
Cisco IOS XE Amsterdam 17.3.2a	Command output was updated to reflect new fields that are applicable to Smart Licensing Using Policy. This includes the <code>Status</code> , <code>Enforcement type</code> fields. Command output was also updated to remove reservation related information, authorization status information, and export status information.

Usage Guidelines

Smart Licensing: If the software version on the device is Cisco IOS XE Amsterdam 17.3.1 or an earlier release, command output displays fields pertinent to Smart Licensing.

Smart Licensing Using Policy: If the software version on the device (also referred to as a product instance) is Cisco IOS XE Amsterdam 17.3.2a or a later release, command output displays fields pertinent to Smart Licensing Using Policy.

License status

- The **unenforced licenses** that are available on Cisco Catalyst Access, Core, and Aggregation Switches are never `NOT AUTHORIZED` or `NOT IN USE`.
- The **export-controlled license**, Export Control Key for High Security (HSECK9 key), which is supported on the switches listed below, displays status `NOT IN USE` if an HSECK9 key is available on the product instance and the requisite Smart Licensing Authorization Code (SLAC) is installed, but the cryptographic feature that requires the HSECK9 key is not configured.
 - Cisco Catalyst 9300X Series Switches, from Cisco IOS XE Bengaluru 17.6.2

- Cisco Catalyst 9600 Series 40-Port 50G, 2-Port 200G, 2-Port 400G Line Card (C9600-LC-40YL4CD) from Cisco IOS XE Cupertino 17.8.1
- Cisco Catalyst 9500X Series Switches from Cisco IOS XE Cupertino 17.8.1

Configure the applicable cryptographic feature for the count and status fields to change to 1 and IN USE respectively.

Usage Count

In a stacking setup, even if you install SLAC on more than one device, the usage count remains 1. This is because only one HSECK9 key is used at a given point in time - the one on the active. The license on the standby comes into effect when a switchover occurs. The count remains 1 with the new active as well, because it is still only one HSECK9 key that is being used.

In case of a modular chassis, the usage count must display only 1 because only one HSECK9 key is required for each chassis UDI - regardless of the number of supervisors installed.

Examples

See [Table 9: show license usage Field Descriptions for Smart Licensing Using Policy, on page 76](#) for information about fields shown in the display.

[show license usage for Smart Licensing Using Policy, on page 77](#)

Table 9: show license usage Field Descriptions for Smart Licensing Using Policy

Field	Description
License Authorization: Status:	Displays overall authorization status.
():	Name of the license as in CSSM. If this license is one that requires an authorization code, the name of the license and the code.
Description	Description of the license as in CSSM.
Count	License count. If the license is not in-use, the count is reflected as zero.
Version	Version.
Status	License status can be one of the following <ul style="list-style-type: none"> • In-Use: Valid license, and in-use. • Not In-Use: An HSECK9 key is available on the product instance and a Smart Licensing Authorization Code (SLAC) is installed, but the cryptographic key that requires the HSECK9 key is disabled or not configured. This status is a prerequisite when you want to <i>return</i> the SLAC for the license to CSSM. • Not Authorized: The license requires installation of a SLAC before use.

Field	Description
Export Status:	Indicates if the license is export-controlled or not. Accordingly, one of the following is displayed: <ul style="list-style-type: none"> • RESTRICTED - ALLOWED • RESTRICTED - NOT ALLOWED • NOT RESTRICTED
Feature name	Name of the feature that uses this license.
Feature Description:	Description of the feature that uses this license.
Utility Subscription id:	ID Not applicable, because the corresponding configuration option is not applicable.
Enforcement type	Enforcement type status for the license. This may be one of the following: <ul style="list-style-type: none"> • ENFORCED: A license, which requires authorization before use. • NOT ENFORCED: A license, which does not require authorization. • EXPORT RESTRICTED - ALLOWED: An export-controlled license that requires export authorization, that is, a SLAC is installed. • EXPORT RESTRICTED - NOT ALLOWED: An export-controlled license that does not require the required authorization. An export-controlled license requires export authorization before use.

show license usage for Smart Licensing Using Policy

The following is sample output of the **show license usage** command on a Cisco Catalyst 9500 switch. Unenforced licenses are in-use here. Similar output is displayed on all supported Cisco Catalyst Access, Core, and Aggregation Switches.

```
Device# show license usage
License Authorization:
  Status: Not Applicable
network-advantage (C9500 Network Advantage):
  Description: network-advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: network-advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual
dna-advantage (C9500-16X DNA Advantage):
  Description: C9500-16X DNA Advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9500-16X DNA Advantage
```

```
Enforcement type: NOT ENFORCED
License type: Subscription
```

Related Commands	Command	Description
	show license all	Displays entitlements information.
	show license status	Displays compliance status of a license.
	show license summary	Displays summary of all active licenses.
	show license udi	Displays UDI.
	show tech-support license	Displays the debug output.

show platform software sl-infra

To display troubleshooting information and for debugging, enter the **show platform software sl-infra** command in privileged EXEC mode. The output of this command is used by the technical support team, for troubleshooting and debugging.

```
show platform software sl-infra { all | current | debug | stored }
```

Syntax Description	
	all Displays current, debugging, and stored information.
	current Displays current license-related information.
	debug Enables debugging
	stored Displays information that is stored on the product instance.

Command Modes Privileged EXEC (Device#)

Command History	Release	Modification
	Cisco IOS XE Amsterdam 17.3.2a	This command was introduced.

Usage Guidelines When you encounter an error message that you are not able to resolve, along with a copy of the message that appears on the console or in the system log, provide your Cisco technical support representative with sample output of these commands: **show license tech support**, **show license history message**, and the **show platform software sl-infra all** privileged EXEC commands.