

Licenses and Licensing Models

This chapter provides information about the licenses that are available on Cisco 1100 Terminal Services Gateway and outlines the licensing models available on the platform.

For an overview on Cisco Licensing, go to https://cisco.com/go/licensingguide.

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Available Licenses

Cisco 1100 Terminal Server Gateway platforms support the following licenses:

- Appx (`appxk9`)
- Security (`securityk9`)
- IP Base (`ipbasek9`)

  This license is enabled by default.

- Booster Performance (`booster_performance`)

  This license is available from Cisco IOS XE Cupertino 17.8.1a only. You must enable it for unthrottled throughput of unencrypted traffic. By default (If the Booster Performance license is not enabled), unencrypted traffic is throttled at 500 Mbps.

How to Configure Available Licenses

Configuring a Boot Level License

This task shows you how to enable a boot level license. The available boot level licenses include: Appx and Security licenses.

Device reload is required before the configured changes are effective.

Before you begin

You can use this task to configure a boot level license in the Smart Licensing (Cisco IOS XE Amsterdam 17.2.x, Cisco IOS XE Amsterdam 17.3.x) and the Smart Licensing Using Policy environment (Cisco IOS XE Bengaluru 17.4.1 and later).

Note If the software version running on the device is one that supports *Smart Licensing*, you must register the device as per: Cisco Smart Licensing Guide for Cisco Enterprise Routing Platforms.

If the software version running on the device is one that supports *Smart Licensing Using Policy*, you can purchase and use the licenses you want and complete reporting (if applicable) at a later date, as per Smart Licensing Using Policy for Cisco Enterprise Routing Platforms.

Procedure

Step 1 **show version**

Example:

```
Device# show version
<output truncated>

Technology Package License Information:

------------------------------------------------------------------
Technology    Technology-package                  Technology-package
              Current               Type          Next reboot
------------------------------------------------------------------
appxk9        None                  Smart License   None
securityk9    None                  Smart License   None
ipbase        ipbasek9              Smart License   ipbasek9

The current throughput level is unthrottled

<output truncated>
```

Displays the currently configured boot level license. In the accompanying example, a boot level license is not configured yet.

Step 2 **configure terminal**

Example:

```
Device# configure terminal
```

Enters global configuration mode.

Step 3 **license boot level** { **appxk9** | **securityk9** }

Example:

```
Device(config)# license boot level ?
  appxk9      Appx License Level
  securityk9  Security License Level

Device(config)# license boot level securityk9
```

Configures a boot level license.

Step 4 **exit**

Example:

```
Device(config)# exit
```

Exits global configuration mode and returns to privileged EXEC mode.

Step 5 **copy running-config startup-config**

Example:

```
Device# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
<output truncated>
```

Saves your entries in the configuration file.

Step 6 **reload**

Example:

```
Device# reload
Proceed with reload? [confirm]
<output truncated>
```

Reloads the device. License levels configured in Step 2 are effective and displayed only after this reload.

Step 7 **show version**

Example:

```
Device# show version
 <output truncated>

Technology Package License Information:

------------------------------------------------------------------
Technology    Technology-package           Technology-package
              Current       Type           Next reboot
------------------------------------------------------------------
appxk9        None          Smart License    None
securityk9    securityk9    Smart License    securityk9
ipbase        ipbasek9      Smart License    ipbasek9

The current throughput level is unthrottled
<output truncated>
```

Reloads the device. License levels configured in Step 3 are effective and displayed only after this reload.

Step 8 Complete license usage reporting - if required.

Note
This step is applicable only if the software version running on the device is Cisco IOS XE Bengaluru 17.4.1 and later.

After you configure a license level, you may have to send a RUM report (Resource Utilization Measurement Report) to CSSM to report license usage information. To know if reporting is required, you can wait for a system message or refer to the policy using **show** commands.

- The system message, which indicates that reporting is required: `%SMART_LIC-6-REPORTING_REQUIRED: A Usage report acknowledgement will be required in [dec] days.`

  `[dec]` is the amount of time (in days) left to meet reporting requirements.

- If using **show** commands, refer to the output of the show license status privileged EXEC command and check the `Next ACK deadline` field. This means a RUM report must be sent and the acknolwedgement (ACK) from CSSM must be installed by this date.

How you send the RUM report, depends on the topology you have implemented in the Smart Licensing Using Policy environment. For more information, see How to Configure Smart Licensing Using Policy: Workflows by Topology

Enabling the Booster Performance License

This task shows you how enable the Booster Performance license. This license enables *unthrottled* throughput for unencrypted traffic. Without it, unencrypted traffic is restricted to 500 Mbps.



Note Enabling this license does not change the *cryptographic* throughput level. Cryptographic throughput is restricted to 100 Mbps on Cisco 1100 Terminal Services Gateway platforms.

Before you begin

The Booster Performance license is available on all Cisco 1100 Terminal Services Gateway platforms from Cisco IOS XE Cupertino 17.8.1a. Ensure that the software version running on the device is a supported version.

Procedure

Step 1 **show platform hardware throughput level**

Displays the currently configured throughput level.

In the accompanying example, the throughput level is currently 500 Mbps.

Example:

```
Device# show platform hardware throughput level
The current throughput level is 500000 kb/s
```

Step 2 **configure terminal**

Enters the global configuration mode.

Example:

```
Device# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
```

Step 3 **platform hardware throughput level boost**

Enables unthrottled throughput for unencrypted traffic.

Example:

```
Device(config)# platform hardware throughput level boost
% The config will take effect on next reboot
```

Step 4 **end**

Exits the global configuration mode and returns to the privileged EXEC mode.

Example:

```
Device# end
```

Step 5 **copy running-config startup-config**

Saves changes in the configuration file.

Example:

```
Device# copy running-config startup-config
Building configuration...
[OK]
```

Step 6 **reload**

Reloads the device.

Example:

```
Device# reload
Proceed with reload? [confirm]
Mar 17 17:04:01.704: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: process exit with
reload chassis code

Initializing Hardware …
<output truncated>
```

Step 7 **show platform hardware throughput level**

Displays currently configured throughput level.

Example:

```
Device# show platform hardware throughput level
The current throughput level is unthrottled
```

Step 8 **show license summary**

Displays a summary of the licenses being used. In the accompanying example, the Booster Performance license is displayed as IN USE.

Example:

```
Device# show license summary
Account Information:
  Smart Account: Eg-SA As of Feb 26 20:57:30 2022 CST
  Virtual Account: Eg-VA

License Usage:
  License                 Entitlement Tag               Count Status
  -----------------------------------------------------------------------------
  booster_performance     (ISR_1100TG_BOOST)                1 IN USE
  securityk9              (SL_1100TG_SEC_K9)                1 IN USE
```

Step 9 **show license status**

Displays currently configured transport settings, applicable policy information, and reporting requirements.

After you configure a license level, you may have to send a RUM report (Resource Utilization Measurement Report) to CSSM to report license usage information. To know if reporting is required, you can wait for a system message or refer to the policy using **show** commands.

- The system message, which indicates that reporting is required: %SMART_LIC-6-REPORTING_REQUIRED: A Usage report acknowledgement will be required in [dec] days. [dec] is the amount of time (in days) left to meet reporting requirements.
- If using **show** commands, refer to the output of the show license status privileged EXEC command and check the `Next ACK deadline` field. This means a RUM report must be sent and the acknolwedgement (ACK) from CSSM must be installed by this date.

How you send the RUM report, depends on the topology you have implemented in the Smart Licensing Using Policy environment. For more information, see How to Configure Smart Licensing Using Policy: Workflows by Topology

In the accompanying example, the device is connected directly to CSSM and is using Smart transport for communication with CSSM. The device is configured to send a Resource Utilization Measurement report (RUM report) every 30 days. It will automatically send the next RUM report on Mar 17 17:07:41 2022 CST.

Example:

```
Device# show license status
<output truncated>

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

Policy:
  Policy in use: Installed On Jan 27 18:47:22 2021 CST
  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): 150 (Customer Policy)
    Report on change (days): 120 (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)

Miscellaneous:
  Custom Id: <empty>

Usage Reporting:
  Last ACK received: Feb 26 21:25:57 2022 CST
  Next ACK deadline: Apr 27 21:25:57 2022 CST
  Reporting push interval: 30  days
  Next ACK push check: Feb 26 21:05:37 2022 CST
  Next report push: Mar 17 17:07:41 2022 CST
  Last report push: Feb 26 20:55:56 2022 CST
  Last report file write: <none>
```

```
Trust Code Installed: Nov 10 16:35:47 2021 CST
```

Supported Licensing Models

The licensing model defines *how* you account for or report the licenses that you use, to Cisco. The licensing model supported on Cisco 1100 Terminal Services Gateway platforms depends on the Cisco IOS XE software version running on the device.

- Cisco IOS XE Amsterdam 17.2.x to 17.3.x supports Smart Licensing.
- Cisco IOS XE Bengaluru 17.4.1 and later supports Smart Licensing Using Policy.

Refer to the corresponding section for more information about the licensing model.

Smart Licensing Using Policy

Smart Licensing Using Policy is an enhanced version of Smart Licensing.

With this licensing model, you purchase the licenses you want to use, configure them on the device, and then report license usage – as required. You do not have to complete any licensing-specific operations, such as registering or generating keys before you start using the software and the licenses that are tied to it - unless you are using export-controlled and enforced licenses.

Multiple options are available for license usage reporting. You can use the Cisco Smart Licensing Utility (CSLU), report usage information directly to CSSM, use a Controller (like Cisco DNA Center or Cisco vManage), deploy Smart Software Manager On-Prem (SSM On-Prem) to administer products and licenses on your premises. A provision for offline reporting for air-gapped networks, where you download usage information and upload to CSSM, is also available.

You can also migrate from an existing licensing model, to Smart Licensing Using Policy. To migrate, you must upgrade the software version (image) on the product instance to a supported version.

For more information, see Smart Licensing Using Policy for Cisco Enterprise Routing Platforms.

Smart Licensing

Cisco Smart Licensing is a flexible licensing model that provides you with an easier, faster, and more consistent way to purchase and manage software across the Cisco portfolio and across your organization. And it’s secure – you control what users can access. With Smart Licensing, you get:

- Easy Activation: Smart Licensing establishes a pool of software licenses that can be used across the entire organization—no more PAKs (Product Activation Keys).
- Unified Management: Cisco License Central provides a complete view into all of your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.
- License Flexibility: Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.

To use Smart Licensing, you must first set up a Smart Account on Cisco License Central. For a more detailed overview on Cisco Licensing, visit the Licensing Hub.

For Smart Licensing configuration information for access and edge routers, see the https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/smart-licensing/qsg/b_Smart_Licensing_QuickStart/b_Smart_Licensing_QuickStart_chapter_01.html.

- Smart Licensing feature provides users an experience of a single, standardized licensing solution for all Cisco products. Adding support for CiscoONE suites in the Cisco IOS Software License (CISL) and Smart Licensing mode, including the Foundation Suite and Active Directory Users and Computers (ADUC) Suite.
- Smart Licensing provides the ability to switch between traditional licensing (CSL) and Smart Licensing mode.
- Smart Licensing supports four software universal images NPE, NO-LI, NPE-NO-LI, and Non-NPE images.

Prerequisites for Smart Licensing

- Ensure that the software version running on the device is one that supports Smart Licensing. Smart Licensing is supported from Cisco IOS XE Amsterdam 17.2.x to 17.3.x.
- Ensure that Call Home is enabled before using Smart Licensing.

  The Smart Call Home Transport Gateway helps to complete product registration and authorization based on the desired performance and technology levels of Cisco products. To know more about Call Home, refer to *Call Home* .

Transitioning from CSL to Smart Licensing

In the Smart Licensing Model, customers can activate licensed objects without the use of a special software key or upgrade license file. Customers simply activate the new functionality using the appropriate product commands and configurations and the functionality is activated. A software reboot may or may not be required depending on the product capabilities and requirements.

Similarly, downgrading or removing an advanced feature, performance, or functionality would require removal of the configuration or command.

After either of the above actions has been taken, the change in license state is noted by the Smart Software Manager upon next synchronization and an appropriate action is taken.

Cisco ONE Suites

Cisco ONE Suites is a new way for customers to purchase infrastructure software. Cisco ONE offers a simplified purchasing model, centered on common customer scenarios in the data center, wide area network, and local access networks.

Smart Licensing supports Smart License Cisco ONE suite level licenses and image licenses, such as ipbase, Advanced IP Services (AIS), Advanced Enterprise Services (AES) and feature license and throughput performance, crypto throughput and port licensing on ASR 1000 Aggregation Series Routers.

To know more about Cisco One Suites, please refer to Cisco ONE Suites.

Troubleshooting for Cisco Smart Licensing Client

You can troubleshoot Smart Licensing enabling issues using the following commands on the device:

- **show version**
- **show running-config**
- **show license summary**
- **show license all**
- **show license tech support**
- **debug smart_lic error**
- **debug smart_lic trace**

Example: Displays summary information about all licenses

The following example shows how to use the **show license all** command to display summary information about all licenses.

```
Device#show license all
Smart Licensing Status
======================

Smart Licensing is ENABLED

Registration:
Status: REGISTERED
Smart Account: BU Production Test
Virtual Account: ISR4K
Export-Controlled Functionality: Allowed
Initial Registration: SUCCEEDED on Sep 04 15:40:03 2015 PDT
Last Renewal Attempt: None
Next Renewal Attempt: Mar 02 15:40:02 2016 PDT
Registration Expires: Sep 03 15:34:53 2016 PDT

License Authorization:
Status: AUTHORIZED on Sep 04 15:40:09 2015 PDT
Last Communication Attempt: SUCCEEDED on Sep 04 15:40:09 2015 PDT
Next Communication Attempt: Oct 04 15:40:08 2015 PDT
Communication Deadline: Dec 03 15:35:01 2015 PDT

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

ISR_4400_FoundationSuite (ISR_4400_FoundationSuite):
Description: Cisco ONE Foundation Perpetual License ISR 4400
Count: 1
Version: 1.0
Status: AUTHORIZED

ISR_4400_AdvancedUCSuite (ISR_4400_AdvancedUCSuite):
Description: Cisco ONE Advanced UC Perpetual License ISR 4400
Count: 1
Version: 1.0
Status: AUTHORIZED

ISR_4451_2G_Performance (ISR_4451_2G_Performance):
Description: Performance on Demand License for 4450 Series
```

Example: Displays summary information about all licenses

```
Count: 1
Version: 1.0
Status: AUTHORIZED

Product Information
===================
UDI: PID:ISR4451-X/K9,SN:FOC17042FJ9

Agent Version
=============
Smart Agent for Licensing: 1.4.0_rel/16
Component Versions: SA:(1_4_rel)1.0.15, SI:(dev22)1.2.6, CH:(dev5)1.0.32, PK:(dev18)1.0.17


Device#
```