



# license accept end user agreement through request license new-udi

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# license accept end user agreement

To accept the end-user license agreement (EULA) for all Cisco IOS software packages and features at one time, use the **license accept end user agreement** command in global configuration mode.

## license accept end user agreement

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

**Command Default** EULA is not accepted.

**Command Modes** Global configuration (config)

### Command History

Release	Modification
15.0(1)M4	This command was introduced for the fixed Cisco ISR and the Cisco ISR G2 platforms.

### Usage Guidelines

The **license accept end user agreement** command is used to accept the EULA for all Cisco IOS software packages and features. After the command is issued and the EULA accepted, it is automatically applied for all Cisco IOS software packages and feature licenses.

- If this configuration command is part of the start-up configuration, it implies that the EULA is accepted. The EULA is automatically applied to any subsequent license that is activated; the EULA is not displayed and the user is not prompted to accept the EULA.
- A copy of the terms of the EULA is available at [http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN\\_.html](http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN_.html)

### Examples

The following example shows how to configure the EULA:

```
Router(config)# license accept end user agreement
```

### Related Commands

Command	Description
<b>license install</b>	Installs a stored license file.
<b>show license</b>	Displays information about a Cisco IOS software license.

# license agent default

To configure license agent authentication, use the **license agent default** command in global configuration mode.

**license agent default authenticate [none]**

Syntax Description	authenticate	Authenticates by using the HTTP mechanism.
	none	(Optional) Disables (bypasses) HTTP authentication.

**Command Default** The license agent is enabled, and it monitors the HTTP path /lic-agent by using plaintext.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	15.0(1)M	This command was introduced.
	15.0(1.1)M	This command was modified. The <b>no</b> form of the command was removed.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S and implemented on the Cisco ASR 903 router.

**Usage Guidelines** By default, the license agent starts automatically when the device boots up.

The agent responds to ConnectRequest XML messages and, depending on the configuration of the **license agent listener http** command, all other Cisco License Manager XML messages.

## Examples

The following example shows how to use the default HTTP mechanism for authentication:

```
Router(config)# license agent default authenticate
```

Related Commands	Command	Description
	<b>license agent listener</b>	Configures the path that the license agent authentication monitors.
	<b>license agent max-sessions</b>	Limits the number of HTTP sessions to the license agent.
	<b>license agent notify</b>	Specifies the URL to send license agent notifications.

# license agent listener

To configure the path that the license agent authentication monitors, use the **license agent listener** command in global configuration mode. To return to the default setting, use the **no** form of this command.

```
license agent listener http {encrypt|plaintext} url-path authenticate [acl access-list] [max-message size] [none]
no license agent listener http
```

## Syntax Description

<b>http</b>	Uses the HTTP listener transport.
<b>encrypt</b>	Accepts encrypted connections.
<b>plaintext</b>	Accepts plaintext connections.
<i>url-path</i>	The HTTP servlet path to respond to.
<b>authenticate</b>	Authenticates by using the default HTTP mechanism.
<b>acl access-list</b>	(Optional) Uses the specified access list for trusted clients on this session. The range is 1 to 65536.
<b>max-message size</b>	(Optional) Defines the maximum message size that the license agent accepts. The range is 1000 to 4294967295.
<b>none</b>	(Optional) Disables (bypasses) HTTP authentication.

## Command Default

The license agent authentication monitors the HTTP path /lic-agent by using plaintext.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.0(1)M	This command was introduced.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S and implemented on the Cisco ASR 903 router.

## Usage Guidelines

This command starts the license agent in listener mode.

If the value for the *url-path* argument is not **/lic-agent**, then /lic-agent (for example, license agent default) accepts only the ConnectRequest message. Otherwise, if the value for the *url-path* argument is **/lic-agent** (and **encrypt** is specified), then encrypt /lic-agent accepts all requests and plaintext /lic-agent accepts only the ConnectRequest message.

## Examples

The following example shows how to authenticate the license agent by using the HTTP encrypted authentication mechanism:

```
Router(config)# license agent listener http encrypt /lic-agent authenticate
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>license agent default</b>	Configures license agent authentication.
<b>license agent max-sessions</b>	Limits the number of HTTP sessions to the license agent.
<b>license agent notify</b>	Specifies the URL to send license agent notifications.

# license agent max-sessions

To limit the number of HTTP sessions to the license agent, use the **license agent max-sessions** command in global configuration mode. To return to the default setting, use the **no** form of this command.

**license agent max-sessions** *number*  
**no license agent max-sessions**

## Syntax Description

<i>number</i>	Maximum number of license agent sessions. The range is 4 to 25.
---------------	---

## Command Default

The default number of HTTP sessions is 9.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.0(1)M	This command was introduced.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S and implemented on the Cisco ASR 903 router.

## Examples

The following example shows how to limit the number of concurrent license agent sessions on a router:

```
Router(config)# license agent max-sessions 5
Router(config)# exit
Router# show license agent session
License Agent Sessions: 0 open, maximum is 5
```

## Related Commands

Command	Description
<b>license agent default</b>	Configures license agent authentication.
<b>license agent listener</b>	Configures the path that the license agent authentication monitors.
<b>license agent notify</b>	Specifies the URL to send license agent notifications.

# license agent notify

To specify the URL to send license agent notifications, use the **license agent notify** command in global configuration mode. To remove the configuration, use the **no** form of this command.

**license agent notify** *url-path* *user* *password* *version*  
**no license agent notify**

Syntax Description	
<i>url-path</i>	URL to use (for example, http://10.1.1.1/abc).
<i>user</i>	HTTP-level username to use.
<i>password</i>	HTTP-level password to use.
<i>version</i>	Notification version number.

**Command Default** The URL is not configured.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	15.0(1)M	This command was introduced.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S and implemented on the Cisco ASR 903 router.

**Usage Guidelines** You can also configure this command by using the Cisco License Manager message ConnectRequest.

**Examples** The following example shows how to specify the URL to send license agent notifications:

```
Router(config)# license agent notify http://10.1.1.1/abc users anonymous 1
```

Related Commands	Command	Description
	<b>license agent default</b>	Configures license agent authentication.
	<b>license agent listener</b>	Configures the path that the license agent authentication monitors.
	<b>license agent max-sessions</b>	Limits the number of HTTP sessions to the license agent

# license boot

To configure or change the boot license on the device, use the **license boot** command in global configuration mode. To remove a configured boot license, use the **no** form of this command. If you remove all boot license configurations on the device, the system reverts to the default value.

**license boot** { **level** *technology-package* | **suite** *suite* } [ **disable** ]

**no license boot** { **level** *technology-package* | **suite** *suite* } [ **disable** ]

## Syntax Description

<b>level</b> <i>technology-package</i>	Configures a technology package. A technology package is an image level license. You can configure one or more of the following technology packages: <b>appxk9</b> , <b>securityk9</b> , <b>uck9</b> . <b>Note</b> If a technology package is configured, do not configure the suite, which the technology package belongs to - even in releases where the system permits this. For example, if you configure <b>appxk9</b> , or <b>securityk9</b> , then don't also configure <b>FoundationSuiteK9</b> . For more information, see the <i>Usage Guidelines</i> below.
<b>suite</b> <i>suite</i>	Configures a suite license. A suite is a superset of one or more image level and feature licenses. If a suite is configured, you cannot additionally configure technology packages that are included in the suite. The system rejects such configuration if you do. You can configure the following suites: <ul style="list-style-type: none"> <li>• <b>FoundationSuiteK9</b>: This suite includes the “appxk9” and “securityk9” licenses.</li> <li>• <b>AdvUCSuiteK9</b>: This suite includes the "uck9", "cme-srst", and “cube” licenses.</li> </ul>
<b>disable</b>	Disables a PAK license and sets it to “not-in-use”. <b>Note</b> Although visible on the CLI, this keyword is not supported starting with Cisco IOS XE Gibraltar 16.10.1.

## Command Default

The **ipbasek9** technology package is activated by default. It is always enabled, and you can display it by using the **show version** privileged EXEC command. It is not displayed in any of the licensing related **show** command outputs .

You cannot disable it or enable it, using the command line interface.

No other boot license is configured by default.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
Cisco IOS XE Release 3.9.1S	This command was implemented on Cisco 4000 Series Integrated Services Routers.



Release	Modification
Cisco IOS XE Everest 16.6.2	This command was implemented on Cisco 1000 Series Integrated Services Routers.
Cisco IOS XE Gibraltar 16.10.1	The <b>disable</b> keyword is no longer supported.
Cisco IOS XE Cupertino 17.9.1a	Inconsistent system behavior was rectified. The system does not allow duplicate suite <i>and</i> technology package configuration to co-exist.

## Usage Guidelines

Use the **license boot** command to:

- Configure a the boot license.
- Change the boot license.
- Remove boot license configuration.

Depending on your requirements, configure the required technology packages, and suites. If you configure a technology package, do not also configure the suite it belongs to. If you configure a suite, do not configure the technology packages that are included in the suite. For example, if you configure the **appxk9**, or **securityk9** technology packages, do not configure the **FoundationSuiteK9** suite. But you can configure **AdvUCSuiteK9**.

After you configure the command, remember to save configuration changes. Only then does the configuration change take effect at the next reboot. When the device reloads, the licensing infrastructure checks the startup configuration for any licenses. If there is a license in the configuration, the device boots with that license. If there is no license, the licensing infrastructure follows the image hierarchy to check for licenses.

In scenarios where you change or remove existing boot license configurations, after you save and reload the first time, the changes are reflected correctly in the output of the **show running-config | include boot** privileged EXEC command, but not in certain other **show** command outputs, like **show version** or **show license summary**. *This has no functional impact, and it does not mean that the configuration changes have not taken effect.* You only have to save and reload a second time for the **show** command outputs to be synchronized.

### System Behaviour Change in Boot License Configuration

- *Prior to Cisco IOS XE Cupertino 17.9.1a:*

If you configure a suite followed by a technology package which belongs to the suite, the technology package configuration is rejected.

If you configure a technology package followed by the suite, which the technology package belongs to, the technology package configuration is permitted by the system, but *not* recommended. This inconsistent and incorrect system behaviour also causes license count to be reflected incorrectly.

- *Starting with Cisco IOS XE Cupertino 17.9.1a:* The system does not allow overlapping suite and technology package configuration to co-exist, regardless of the order in which you configure.

## Examples

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### Example 1: Configuring a Suite

The following example shows you how to configure a suite.

If you configure a suite, you cannot configure any of the technology packages that are included in the suite after that. In this example, we're configuring the AdvUCSuiteK9 suite. After this the "uck9", "cme-srst" and "cube" technology packages cannot be configured, but the "appxk9" and "securityk9" technology packages can.

```
Device# show running-config | include boot
boot-start-marker
boot system flash bootflash: isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# license boot suite AdvUCSuiteK9
% use 'write' command to make license boot config take effect on next boot

Device(config)# exit
Device# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

Device# show running-config | include boot
boot-start-marker
boot system flash bootflash: isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot suite AdvUCSuiteK9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

Device# show version
Cisco IOS XE Software, Version 17.09.01a
Cisco IOS Software [Cupertino], ISR Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
17.9.1, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2022 by Cisco Systems, Inc.
Compiled Mon 07-Mar-22 01:36 by mcpre
.
.
.
Suite License Information for Module:'esg'

-----
Suite                Suite Current      Type                Suite Next reboot
-----
FoundationSuiteK9   None                Smart License      None
securityk9
appxk9
```

```
AdvUCSuiteK9      AdvUCSuiteK9      Smart License  AdvUCSuiteK9
uck9
cme-srst
cube
```

Technology Package License Information:

```
-----
Technology      Technology-package      Technology-package
Current          Type                    Next reboot
-----
appxk9          None                   Smart License      None
uck9            uck9                   Smart License      None
securityk9     None                   Smart License      None
ipbase         ipbasek9               Smart License      ipbasek9
-----
```

<output truncated>

```
Device# reload
Proceed with reload? [confirm]
```

```
*May 27 09:43:35.850: %SYS-5-RELOAD: Reload requested by test on console. Reload Reason:
Reload Command.
```

```
Initializing Hardware ...
<output truncated>
```

```
Device# show version
```

<output truncated>

Suite License Information for Module:'esg'

```
-----
Suite           Suite Current          Type                    Suite Next reboot
-----
FoundationSuiteK9  None                   Smart License      None
securityk9
appxk9

AdvUCSuiteK9     AdvUCSuiteK9          Smart License      AdvUCSuiteK9
uck9
cme-srst
cube
-----
```

Technology Package License Information:

```
-----
Technology      Technology-package      Technology-package
Current          Type                    Next reboot
-----
appxk9          None                   Smart License      None
uck9            None                   Smart License      None
securityk9     None                   Smart License      None
ipbase         ipbasek9               Smart License      ipbasek9
-----
```

```
Device# show license summary
```

```
Account Information:
  Smart Account: BU Production Test  As of May 20 18:53:04 2022 UTC
  Virtual Account: DLC-VA1
```

License Usage:

```
License          Entitlement Tag          Count Status
-----
```

```

booster_performance      (ISR_4431_BOOST)          1 IN USE
AdvUCSuiteK9             (ISR_4400_AdvancedUCSuite) 1 IN USE

```

## Example 2: Configuring a Technology Package Along With Existing Suite License Configuration

The following example shows how to configure a technology package, when a suite license configuration already exists. In this example, AdvUCSuiteK9 is already configured. Therefore, the only technology packages you can configure are the ones that are not included in AdvUCSuiteK9, that is, appxk9 and securityk9.

The sample configuration also shows you what happens if you try to configure a technology package (uck9) that is part of the already configured suite (AdvUCSuiteK9).

```

Device# show running-config | include boot
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
license boot suite AdvUCSuiteK9

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

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

Device(config)# license boot level appxk9
% use 'write' command to make license boot config take effect on next boot

Device(config)# license boot level uck9
      ^
% Invalid input detected at '^' marker.

Device(config)# exit
Device# show running-config | include boot
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
license boot suite AdvUCSuiteK9
license boot level appxk9

Device# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

Device# reload
Proceed with reload? [confirm]

*May 27 10:16:55.439: %SYS-5-RELOAD: Reload requested by test on console. Reload Reason:
Reload Command.
*May 27 10:17:07.137: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: process
exit with reload chassis code
<output truncated>

Device# show version
Cisco IOS XE Software, Version 17.09.01a
Cisco IOS Software [Cupertino], ISR Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
17.9.1, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2022 by Cisco Systems, Inc.
Compiled Mon 07-Mar-22 01:36 by mcpre
.
.
.
-----

```

Suite	Suite Current	Type	Suite Next reboot
FoundationSuiteK9 securityk9 appxk9	None	Smart License	None
AdvUCSuiteK9 uck9 cme-srst cube	AdvUCSuiteK9	Smart License	AdvUCSuiteK9

Technology Package License Information:

Technology	Technology-package Current	Type	Technology-package Next reboot
appxk9	appxk9	Smart License	appxk9
uck9	None	Smart License	None
securityk9	None	Smart License	None
ipbase	ipbasek9	Smart License	ipbasek9

<output truncated>

Device# **show license summary**

Account Information:

Smart Account: Eg-SA As of May 20 18:53:04 2022 UTC

Virtual Account: Eg-VA

License Usage:

License	Entitlement Tag	Count	Status
booster_performance	(ISR_4431_BOOST)	1	IN USE
appxk9	(ISR_4400_Application)	1	IN USE
AdvUCSuiteK9	(ISR_4400_AdvancedUCSuite)	1	IN USE

### Example 3: Configuring Multiple Technology Packages

The following example shows you how to configure multiple technology packages. In this example there are no existing boot license configurations on the device - technology packages or suites. The appxk9 and uck9 technology packages are configured.

Device# **show running-config | include boot**

boot-start-marker

boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin

boot-end-marker

diagnostic bootup level minimal

snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached

scheduled-test-fail

Device# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Device(config)# **license boot level appxk9**

% use 'write' command to make license boot config take effect on next boot

Device(config)# **license boot level uck9**

% use 'write' command to make license boot config take effect on next boot

Device(config)# **exit**

Device# **copy running-config startup-config**

Destination filename [startup-config]?

Building configuration...

[OK]

Device# **show running-config | include boot**

```
boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot level appxk9
license boot level uck9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail
```

Device# **reload**

```
Proceed with reload? [confirm]
*May 27 15:51:25.530: %SYS-5-RELOAD: Reload requested by test on console. Reload Reason:
Reload Command.
```

Device# **show version**

Suite License Information for Module:'esg'

Suite	Suite Current	Type	Suite Next reboot
FoundationSuiteK9 securityk9 appxk9	None	Smart License	None
AdvUCSuiteK9 uck9 cme-srst cube	None	Smart License	None

Technology Package License Information:

Technology	Technology-package Current	Technology-package Type	Technology-package Next reboot
appxk9	appxk9	Smart License	appxk9
uck9	uck9	Smart License	uck9
securityk9	None	Smart License	None
ipbase	ipbasek9	Smart License	ipbasek9

<output truncated>

Device# **show license summary**

Account Information:

```
Smart Account: Eg-SA As of May 20 18:53:04 2022 UTC
Virtual Account: Eg-VA
```

License Usage:

License	Entitlement Tag	Count	Status
booster_performance	(ISR_4431_BOOST)	1	IN USE
appxk9	(ISR_4400_Application)	1	IN USE
uck9	(ISR_4400_UnifiedCommun...)	1	IN USE

#### Example 4: Configuring a Technology Package, Followed By the Corresponding Suite

The following example shows you how the system behaves when you configure a technology package, followed by the suite, which the technology package belongs to.

In this example, the software version running on the device is Cisco IOS XE Cupertino 17.9.1a and there is no existing boot license configuration on the device. Here we configure technology package `appxk9`, and then the corresponding suite `FoundationSuiteK9`, followed by another technology package which is not part of configured suite (`uck9` is part of `AdvUCSuiteK9` and not `FoundationSuiteK9`).

Even though the system saves the configuration as displayed in the output of the `show running-config` command before reload, after reload, `appxk9` is removed from configuration and only `FoundationSuiteK9` is retained. The `uck9` technology package is not part of `FoundationSuiteK9`, so this configuration is retained after reload.



**Note** There is a difference in the system's behavior before and after 17.9.1 for this scenario. In releases prior to 17.9.1, `appxk9` and `FoundationSuiteK9` are retained even after reload.

Configuring a technology package *and* the suite it belongs to, is not recommended in any release.

```
Device# show running-config | include boot
boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# license boot level appxk9
% use 'write' command to make license boot config take effect on next boot
Device(config)# license boot suite FoundationSuiteK9
% use 'write' command to make license boot config take effect on next boot
Device(config)# license boot level uck9
% use 'write' command to make license boot config take effect on next boot

Device(config)# exit
Device# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

Device# show running-config | include boot
boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot suite FoundationSuiteK9
license boot level appxk9
license boot level uck9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

Device# reload
Proceed with reload? [confirm]
*May 27 16:39:43.657: %SYS-5-RELOAD: Reload requested by test on console. Reload Reason:
Reload Command.
*May 27 16:39:55.969: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: process
exit with reload chassis code
<output truncated>

Device# show running-config | include boot
```

```

boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot suite FoundationSuiteK9
license boot level uck9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

```

Output of the **show version** and **show romvar** privileged EXEC commands after the *first* reload:

```

Device# show version
Cisco IOS XE Software, Version 17.09.01a
Cisco IOS Software [Cupertino], ISR Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
17.9.1, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2022 by Cisco Systems, Inc.
Compiled Mon 07-Mar-22 01:36 by mcpre
.
.
.
Suite License Information for Module:'esg'

```

Suite	Suite Current	Type	Suite Next reboot
FoundationSuiteK9 securityk9 appxk9	FoundationSuiteK9	Smart License	FoundationSuiteK9
AdvUCSuiteK9 uck9 cme-srst cube	None	Smart License	None

Technology Package License Information:

Technology	Technology-package Current	Type	Technology-package Next reboot
appxk9	appxk9	Smart License	appxk9
uck9	uck9	Smart License	uck9
securityk9	None	Smart License	None
ipbase	ipbasek9	Smart License	ipbasek9

<output truncated>

```

Device# show romvar | include BOOT
FACTORY_BOOT_LEVEL =
BOOT = bootflash:isr4400-universalk9.17.09.01a.SPA.bin;
LICENSE_BOOT_LEVEL = appxk9,appxk9:esg;uck9,uck9:esg;

```

Saving configuration, a second time:

```

Device# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

```

```

Device# show romvar | include BOOT
FACTORY_BOOT_LEVEL =
BOOT = bootflash:isr4400-universalk9.17.09.01a.SPA.bin,1;
LICENSE_BOOT_LEVEL = uck9,uck9:esg;

```



## Reloading, a second time:

```
Device# reload
Proceed with reload? [confirm]

*May 27 17:56:31.606: %SYS-5-RELOAD: Reload requested by test on console. Reload Reason:
Reload Command.
May 27 17:56:43.839: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: process
exit with reload chassis code

Initializing Hardware ...
```

All **show** command outputs are synchronized after saving configuration *and* reloading a second time:

```
Device# show version
Cisco IOS XE Software, Version 17.09.01a
Cisco IOS Software [Cupertino], ISR Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
17.9.1, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2022 by Cisco Systems, Inc.
Compiled Mon 07-Mar-22 01:36 by mcpre
.
.
.
Suite License Information for Module:'esg'
```

Suite	Suite Current	Type	Suite Next reboot
FoundationSuiteK9 securityk9 appxk9	FoundationSuiteK9	Smart License	FoundationSuiteK9
AdvUCSuiteK9 uck9 cme-srst cube	None	Smart License	None

## Technology Package License Information:

Technology	Technology-package Current	Technology-package Type	Technology-package Next reboot
appxk9	None	Smart License	None
uck9	uck9	Smart License	uck9
securityk9	None	Smart License	None
ipbase	ipbasek9	Smart License	ipbasek9

Device# **show license summary**

```
Account Information:
Smart Account: Eg-SA As of May 20 18:53:04 2022 UTC
Virtual Account: Eg-VA
```

## License Usage:

License	Entitlement Tag	Count	Status
booster_performance	(ISR_4431_BOOST)	1	IN USE
uck9	(ISR_4400_UnifiedCommun...)	1	IN USE
FoundationSuiteK9	(ISR_4400_FoundationSuite)	1	IN USE

### Example 5: Configuring the No Form of the Command

The following example shows you how the system behaves when you configure the **no** form of the command.

In this example, the FoundationSuiteK9 suite and the uck9 technology package are already configured on the device. The **no** form of the command is used to remove only uck9. After saving the configuration change and reloading the device, FoundationSuiteK9 is the only boot license configuration remaining on the device.

If FoundationSuiteK9 configuration is also removed, then the device will revert to default.

```
Device# show running-config | include boot
boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot suite FoundationSuiteK9
license boot level uck9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# no license boot level uck9
% use 'write' command to make license boot config take effect on next boot

Device(config)# exit
Device# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

Device# show running-config | include boot
boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot suite FoundationSuiteK9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail

Device# reload
Proceed with reload? [confirm]
*May 31 05:37:52.350: %SYS-5-RELOAD: Reload requested by test on console. Reload Reason:
Reload Command.
May 31 05:38:04.863: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: process
exit with reload chassis code

Initializing Hardware ...
<output truncated>

Device# show running-config | include boot
boot-start-marker
boot system flash bootflash:isr4400-universalk9.17.09.01a.SPA.bin
boot-end-marker
license boot suite FoundationSuiteK9
diagnostic bootup level minimal
snmp-server enable traps entity-diag boot-up-fail hm-test-recover hm-thresh-reached
scheduled-test-fail
```

# license boot level

To boot a new software license on switching platforms, use the **license boot level** command in global configuration mode. To return to the previously configured license level, use the **no** form of this command.

## Cisco ASR 903 Router

**license boot level** *license-level*

**no license boot level** *license-level*

## Cisco ASR 1000 Router

**license boot level** *license-level*

**no license boot level** *license-level*

## Cisco CSR 1000V Router

**license boot level** *license-level*

**no license boot level** *license-level*

## Cisco Catalyst 3560-E Switch Platforms

**license boot level** *license-level*

**no license boot level** *license-level*

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

**license boot level** *license-level* [**switch** *switch-num*]

**no license boot level** *license-level* [**switch** *switch-num*]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license boot level** *license-level* **switch** *switch-num*

**no license boot level** *license-level* **switch** *switch-num*

## Cisco Catalyst 4500E Series Switch Platforms

**license boot level** *license-level*

<b>Syntax Description</b>	<i>license-level</i>	<p>Level at which the switch is booted (for example, ipservices).</p> <p>The license levels available in a universal/universalk9 image are:</p> <ul style="list-style-type: none"> <li>• entservices</li> <li>• ipbase</li> <li>• lanbase</li> </ul> <p>The license levels available in a universal-lite/universal-litek9 image are:</p> <ul style="list-style-type: none"> <li>• ipbase</li> <li>• lanbase</li> </ul> <p>The license levels available for the Cisco ASR 903 router are:</p> <ul style="list-style-type: none"> <li>• metroaggrservices</li> <li>• metroipservices</li> <li>• metroservices</li> </ul> <p>The license levels available for the Cisco ASR 1000 router are:</p> <ul style="list-style-type: none"> <li>• adventerprise</li> <li>• advipservices</li> <li>• ipbase</li> </ul> <p>The license levels available for the Cisco CSR 1000V router in Cisco IOS XE 3.12S and earlier are:</p> <ul style="list-style-type: none"> <li>• standard</li> <li>• advanced</li> <li>• premium</li> </ul> <p>The license levels available for the Cisco CSR 1000V router in Cisco IOS XE 3.13S and later are:</p> <ul style="list-style-type: none"> <li>• ipbase</li> <li>• security</li> <li>• AX</li> <li>• APPX</li> </ul>
	<b>switch</b> <i>switch-num</i>	Switch or slot ID in a stackable environment.

**Command Default** The switch boots the configured image.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	12.4(15)XZ	This command was introduced.
	12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
	Cisco IOS XE Release 3.1.0SG	This command was integrated into Cisco IOS XE Release 3.1.0SG on Catalyst 4500E series switches.
	Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S and implemented on the Cisco ASR 903 router.
	Cisco IOS XE Release 3.10S	This command was integrated into Cisco IOS XE Release 3.10S and implemented on the Cisco CSR 1000V router.

### Usage Guidelines

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 any licenses. 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 is already expired, the licensing infrastructure follows the hierarchy to check for licenses.

This command takes effect at the next reboot of any of the supervisors (Act or stby). This configuration must be saved to the startup configuration for it to be effective. After you configure the level, the next time the standby supervisor boots up, this configuration is applied to it.

To boot the standby supervisor to a different level than active, configure that level by using this command and then bring up the standby.

If the **show license all** command displays the license as "Active, Not in Use, EULA not accepted," you can use the **license boot level** command to enable the license and accept the end-user license agreement (EULA).

### Examples

The following example shows how to activate the *ibase* license on the switch upon the next reload:

```
Switch(config)# license boot level ibase
```

### Related Commands

Command	Description
<b>license install</b>	Installs a stored license file.

<b>Command</b>	<b>Description</b>
<b>license save</b>	Saves a copy of a permanent license to a specified license file.
<b>show license all</b>	Shows information about all licenses in the system.

# license boot module

To boot a new software license on routing platforms, use the **license boot module** command in global configuration mode. Use the **no** form of this command to return to the default setting.

## Cisco ASR 1001 Router Platforms

```
license boot module module-name group {all | feature} level license-level
no license boot module
```

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

```
license boot module module-name level license-level
no license boot module module-name level license-level
```

## Cisco uBR10012 Universal Broadband Routers

```
license boot module module-name technology-package package-name [disable]
no license boot module module-name technology-package package-name [disable]
```

### Syntax Description

<i>module-name</i>	Router or module to be configured (for example: c880-data or c3900).
<b>group</b>	Selects a specific group that contains the image and feature licenses for the device.
<b>all</b>	Groups by all features.
<b>feature</b>	Groups by feature.
<b>level</b> <i>license-level</i>	Boots the device or module at the specified level (for example, advipservices).
<b>technology-package</b>	Upgrades or downgrades a software license, or enables or disables an evaluation license.
<i>package-name</i>	Package or feature set the given module should boot (for example, data).
<b>disable</b>	(Optional) Disables the package or the feature set.

### Command Default

The router boots the configured image.

### Command Modes

Global configuration (config)

### Command History

Release	Modification
12.4(15)XZ	This command was introduced.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
15.0(1)M	This command was modified. The <b>technology-package</b> keyword was added for the Cisco 1900, 2900, and on the 3900 series integrated services router platforms.
Cisco IOS XE Release 3.2S	This command was modified. The <b>group</b> , <b>all</b> , <b>feature</b> , and <b>level</b> keywords were added for the Cisco ASR 1001 router.

**Usage Guidelines**

Use the **license boot module** 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 router reboots, the licensing infrastructure checks the configuration in the startup configuration/rommon for any licenses. If there is a license in the configuration, the router 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 is already expired, the licensing infrastructure follows the hierarchy to check for licenses.

To make the evaluation license inactive, use the **no license boot module technology-package** command. To re-activate the evaluation license, use the **license boot module technology-package** command.

If the **show license all** command displays the license as "Active, Not in Use, EULA not accepted," you can use the **license boot module** command to enable the license and accept the EULA. Do not confuse the **license boot module** global configuration command with a similarly named command available in privileged EXEC mode.

**Examples**

The following example shows how to activate the *ibase* image license that is part of the group *all* on the ASR 1001 module at the next reboot:

```
Router(config)# license boot module asr1001 group all level ibase
```

The following example shows how to activate the *advipservices* license on the c880-data module at the next reboot:

```
Router(config)# license boot module c880-data level advipservices
```

The following example shows how to enable an evaluation license:

```
Router(config)# license boot module c3900 technology-package data
```

The following example shows how to make an evaluation license inactive:

```
Router(config)# no license boot module c3900 technology-package data
```

**Related Commands**

Command	Description
<b>license install</b>	Installs a stored license file.
<b>license save</b>	Saves a copy of a permanent license to a specified license file.



Command	Description
show license all	Shows information about all licenses in the system.

# license call-home install pak

To install a license by using a product authorization key (PAK) and the Cisco License Call Home feature, use the **license call-home install pak** command in privileged EXEC mode.

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

**license call-home install pak** *pak-id*

## Cisco Catalyst 3560-E Switch Platforms

**license call-home install pak** *pak-id*

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

**license call-home install pak** *pak-id* [**switch** *switch-num*]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license call-home install pak** *pak-id* **switch** *switch-num*

## Cisco Catalyst 4500E Series Switch Platforms

**license call-home install pak** *pak-id*

### Syntax Description

<i>pak-id</i>	A product authorization key sent through e-mail or through regular mail by manufacturing to authorize software upgrades.
<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The switch number range is 1 to 9.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
12.2(35)SE2	This command was introduced.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG and implemented on the Cisco Catalyst 4500E series switch.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG and implemented on the Cisco Catalyst 4500E series switch.

### Usage Guidelines

The Cisco License Call Home feature allows a Cisco router to communicate with the Cisco licensing infrastructure through the Internet and retrieve licensing information. This command requires that the router be connected to the Internet.

This command requires the following:

- The router or switch must have an Internet connection and use HTTPS to connect to the Cisco licensing infrastructure. To set up a secure HTTP connection, see the HTTP 1.1 Web Server and Client module in the *Cisco IOS Network Management Configuration Guide*.
- Only certain platforms support the Cisco License Call Home feature, and those devices must be running a Cisco IOS crypto K9 image.
- You must obtain the device certificate from the Cisco licensing infrastructure.
- You must have a Cisco.com user login account.

The PAK is a unique token supplied to allow partial fulfillment of licenses. A PAK is not tied to any particular device, but rather to a product identifier (PID).

When you issue the **license call-home install pak** command, these events occur:

1. Information about the stock keeping unit (SKU) is displayed. SKUs map to one or more Cisco software features.
2. You receive prompts at the command line for required fields such as an e-mail address, username, and password to access the Cisco website and SKU quantities.
3. The user-entered data is validated and processed, and then the license is installed on the router. If data is not validated, warning messages are displayed.

## Examples

The following example shows the commands, prompts, and responses required to install a license by using a PAK and the Cisco License Call Home feature. Use the **show license clear** command to verify the installation.

```
Router# license call-home install pak 3XPXR9E7D30
CCO User name: User1
CCO password : *****
Pak Number      : 3XPXR9E7D30
Pak Fulfillment type: SINGLE
  1. SKU Name      : Gatekeeper
     SKU Type      : Product
     Description   : Gatekeeper
     Ordered Qty   : 1
     Available Qty : 1
     Feature List  :
       Feature name: gatekeeper Count: Uncounted
     Platform Supported : N/A
                        5400
                        5350
                        2800
                        3800
Do you want to install the above listed SKU(s)? [yes/no]: yes
Please enter the user's detail:
First Name : First-name
Last Name  : Last-name
Title     : Software Engineer
Company Name : Cisco Systems
Address1  : 510 McCarthy Blvd.
Address2  [Optional]:
City     : Milpitas
State    : CA
Province [Optional]:
Zipcode  : 95134
```

Country : USA  
Phone : 408 526-4000  
Fax [Optional]:  
Email : User1@cisco.com  
Installing...Feature:gatekeeper...Successful

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>license call-home resend</b>	Restores a lost license by using the Cisco License Call Home feature.
<b>license call-home revoke</b>	Rehosts (revokes and transfers) a license by using the Cisco License Call Home feature.
<b>show license call-home</b>	Displays the SKU list and features available in a PAK by using the Cisco License Call Home feature.
<b>show license feature</b>	Shows a list of licensed features available in an image.

# license call-home resend

To request a license be re-sent by using the Cisco License Call Home feature, use the **license call-home resend** command in privileged EXEC mode.

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

**license call-home resend** *dest-lic-location*

## Cisco Catalyst 3560-E Switch Platforms

**license call-home resend** *dest-lic-location*

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

**license call-home resend** *dest-lic-location* [**switch** *switch-num*]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license call-home resend** *dest-lic-location* **switch** *switch-num*

## Cisco Catalyst 4500E Series Switch Platforms

**license call-home resend** *dest-lic-location*

### Syntax Description

<i>dest-lic-location</i>	The location where the Cisco IOS software license is to be stored. Valid location file systems are <b>archive</b> , <b>bs</b> , <b>flash</b> , <b>flash n</b> , <b>ftp</b> , <b>http</b> , <b>https</b> , <b>null</b> , <b>nvr</b> , <b>pram</b> , <b>rcp</b> , <b>scp</b> , <b>syslog</b> , <b>system</b> , <b>tftp</b> , <b>tmpsys</b> , <b>vb</b> . The license location can also be a directory. <ul style="list-style-type: none"> <li>The <b>bs://</b>, <b>null://</b>, and <b>vb://</b> file systems do not accept filenames.</li> <li>The <b>bs</b> file system is available only on mixed Cisco 3750-E switch stacks.</li> <li>The <b>archive</b>, <b>pram</b> <b>scp</b>, and <b>syslog</b> file systems are available only on router platforms.</li> <li>The <b>flash n</b> file system, where <i>n</i> is an integer in the range from 1 to 9, is available only on Cisco 3750-E switches and stacks.</li> <li>The <b>https</b> file system is not available on mixed Cisco 3750-E switch stacks and the Cisco 3560-E switch.</li> </ul>
<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The switch number range is 1 to 9.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
12.2(35)SE2	This command was introduced.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Release	Modification
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG and implemented on the Cisco Catalyst 4500E series switch.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG and implemented on the Cisco Catalyst 4500E series switch.

### Usage Guidelines

The Cisco License Call Home feature allows a Cisco router to communicate with the Cisco licensing infrastructure through the Internet and retrieve licensing information. This command requires that the router be connected to the Internet.

This command contacts the Cisco licensing back-end fulfillment system and obtains licenses that are valid for a specified unique device identifier (UDI). The **license call-home resend** command also stores the received license lines in the specified destination URL.

This command requires the following:

- The router or switch must have an Internet connection and use HTTPS to connect to the Cisco licensing infrastructure. To set up a secure HTTP connection, see the HTTP 1.1 Web Server and Client module in the *Cisco IOS Network Management Configuration Guide*.
- Only certain platforms support the Cisco License Call Home feature, and those devices must be running a Cisco IOS crypto K9 image.
- You must obtain the device certificate from the Cisco licensing infrastructure before starting.
- You must have a Cisco.com user login account.

This command initiates these actions:

1. The device credential is retrieved from the device and sent to the Cisco licensing infrastructure.
2. This command invokes the Cisco licensing infrastructure to request all licenses with the device credential information be sent to the device. The Cisco licensing infrastructure provides all purchased licenses for the given UDI.
3. This command stores all licenses in the destination URL (filesystem).

### Examples

The following example shows the commands, prompts, and responses required to request a license to be sent from the Cisco licensing infrastructure and to be stored in the requested destination file system:

```
Router# license call-home resend flash:licenseresend.xml
CCO User name: User1
CCO password : *****
Email Address: User1@cisco.com
Alternate Email Address: User1@cisco.com
Getting Licenses from SWIFT .....
Saving it to flash:licenseresend.xml.....Done
```

### Related Commands

Command	Description
<b>license call-home install</b>	Installs a license by using the Cisco License Call Home feature.

Command	Description
<b>license call-home revoke</b>	Rehosts (revokes and transfers) a license by using the Cisco License Call Home feature.
<b>show license call-home</b>	Displays the SKU list and features available in a PAK by using the Cisco License Call Home feature.

# license call-home revoke

To rehost (revoke and transfer) a license by using unique device identifiers (UDIs) and the Cisco License Call Home feature, use the **license call-home revoke** command in privileged EXEC mode.

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

**license call-home revoke** [**udi** *target-udi*] *output-of-rehosted-license-url* [**permission-ticket** *permission-ticket-url*] [**rehost-ticket** *rehost-ticket-url*]

## Cisco Catalyst 3560-E Switch Platforms

**license call-home revoke** [**udi** *target-udi*] *output-of-rehosted-license-url* [**permission-ticket** *permission-ticket-url*] [**rehost-ticket** *rehost-ticket-url*]

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

**license call-home revoke** [**udi** *target-udi*] *output-of-rehosted-license-url* [**permission-ticket** *permission-ticket-url*] [**rehost-ticket** *rehost-ticket-url*] [**switch** *switch-num*]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license call-home revoke** [**udi** *target-udi*] *output-of-rehosted-license-url* [**permission-ticket** *permission-ticket-url*] [**rehost-ticket** *rehost-ticket-url*] **switch** *switch-num*

## Cisco Catalyst 4500E Series Switch Platforms

**license call-home revoke** [**udi** *target-udi*] *output-of-rehosted-license-url* [**permission-ticket** *permission-ticket-url*] [**rehost-ticket** *rehost-ticket-url*]

### Syntax Description

<b>udi</b> <i>target-udi</i>	(Optional) Revokes license information for this target UDI.
<i>output-of-rehosted-license-url</i>	(Optional) Output received from the rehosted process, which saves the rehost ticket or the license file in the specified file system.
<b>permission-ticket</b> <i>permission-ticket-url</i>	(Optional) Revokes license information by using the permission ticket in the specified URL.
<b>rehost-ticket</b> <i>rehost-ticket-url</i>	(Optional) Revokes license information by using the rehost ticket in the specified URL.
<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The switch number range is 1 to 9.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
12.4(15)XZ	This command was introduced.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG and implemented on the Cisco Catalyst 4500E series switch.



Release	Modification
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1) SG and implemented on the Cisco Catalyst 4500E series switch.

## Usage Guidelines

The Cisco License Call Home feature allows a Cisco router to communicate with the Cisco licensing infrastructure through the Internet and retrieve licensing information. This command requires that the router be connected to the Internet.

If you do not specify a target UDI, the rehost ticket is stored in the specified URL. If you do specify a target UDI, this command sends the rehost ticket to the Cisco licensing infrastructure with the target UDI, converts it to a license file, and stores it in the specified URL. If one of the operations fails in the call-home revoke operations, the intermediate results are stored at the specified URL and a message explaining what to do next is displayed.

This command requires the following:

- The router or switch must have an Internet connection and use HTTPS to connect to the Cisco licensing infrastructure. To set up a secure HTTP connection, see the HTTP 1.1 Web Server and Client module in the *Cisco IOS Network Management Configuration Guide*.
- Only certain platforms support the Cisco License Call Home feature, and those devices must be running a Cisco IOS crypto K9 image.
- You must obtain the device certificate from the Cisco licensing infrastructure.
- You must have a Cisco.com user login account.

The **license call-home revoke EXEC** command performs this sequence of operations:

1. The Cisco licensing module establishes communication with the Cisco licensing infrastructure to start the rehost operation.
2. The Cisco licensing infrastructure sends a signed request to obtain the SKU details for this UDI from the Cisco licensing portal. The request contains the source UDI.
3. The Cisco licensing portal responds that either the target UDI is not correct or lists the stock keeping units (SKUs) available on the device for rehosting.
4. The Cisco licensing infrastructure requests the permission ticket from the licensing portal by providing the SKU and the e-mail address of the user.
5. The Cisco licensing portal provides the permission file to the Cisco licensing infrastructure.
6. The software uses this permission ticket file to generate the rehost ticket.
7. This rehost ticket is sent to the licensing back end along with the target UDI and optional e-mail address.
8. The Cisco licensing back end generates a new license file and sends it by using the e-mail address collected in the prompts.

## Examples

The following example shows how to use the **license call-home revoke** command to revoke a license on the device with the specified UDI. In the display, the user selects the SKU called SL-LWAPP= to revoke the license for the *lwapp* feature. This command sends the rehost ticket to the Cisco licensing

infrastructure with the target UDI, converts it to a license file, and stores it in the specified URL (flash: REHOSTED\_LICENSE):.

```
Router# license call-home revoke udi CISCO887W:FHH1124P02Y flash:REHOSTED_LICENSE
```

```
CCO User name : xxxxx
```

```
CCO password :
```

```
Retrieving the sku from swift .....!.....
```

```
1. SKU Name      : SA-LWAPP
```

```
   SKU Type      : Product
   Description    : For Internal purposes only
   Ordered Qty   : 1
   Available Qty  : 1
   Feature List   :
   Feature name:          lwapp Count: Uncounted
   Platform Supported : N/A
```

```
2. SKU Name      : SA880-AIS
```

```
   SKU Type      : Product
   Description    : For Internal purposes only
   Ordered Qty   : 1
   Available Qty  : 1
   Feature List   :
   Feature name:          advservices Count: Uncounted
   Platform Supported : N/A
```

```
3. SKU Name      : SL-LWAPP=
```

```
   SKU Type      : Product
   Description    : For Internal purposes only
   Ordered Qty   : 1
   Available Qty  : 1
   Feature List   :
   Feature name:          lwapp Count: Uncounted
   Platform Supported : N/A
```

```
4. SKU Name      : SL-AV
```

```
   SKU Type      : Product
   Description    : For Internal purposes only
   Ordered Qty   : 1
   Available Qty  : 1
   Feature List   :
   Feature name:          advsecurity Count: Uncounted
   Platform Supported : N/A
```

```
5. All of the above
```

```
Please select the sku number you want to revoke : 3
```

```
Retrieving the permission ticket from swift .....!... Output file saved ..... to flash:
```

```
REHOSTED_LICENSE
```

```
Retrieving the rehost ticket from the device .....!.
```

```
Following Permanent license(s) will be revoked from this device
```

```
Feature Name: lwapp
```

```
Following Extension license(s) will be installed on this device
```

```
Feature Name: lwapp
```

```
PLEASE READ THE FOLLOWING TERMS CAREFULLY. INSTALLING THE LICENSE OR
LICENSE KEY PROVIDED FOR ANY CISCO PRODUCT FEATURE OR USING SUCH
PRODUCT FEATURE CONSTITUTES YOUR FULL ACCEPTANCE OF THE FOLLOWING
TERMS. YOU MUST NOT PROCEED FURTHER IF YOU ARE NOT WILLING TO BE BOUND
BOUND BY ALL THE TERMS SET FORTH HEREIN.
```

```
You hereby acknowledge and agree that the product feature license
is terminable and that the product feature enabled by such license
may be shut down or terminated by Cisco after expiration of the
applicable term of the license (e.g., 30-day trial period). Cisco
reserves the right to terminate or shut down any such product feature
electronically or by any other means available. While alerts or such
messages may be provided, it is your sole responsibility to monitor
your terminable usage of any product feature enabled by the license
and to ensure that your systems and networks are prepared for the shut
```

down of the product feature. You acknowledge and agree that Cisco will not have any liability whatsoever for any damages, including, but not limited to, direct, indirect, special, or consequential damages related to any product feature being shutdown or terminated. By clicking the "accept" button or typing "yes" you are indicating you have read and agree to be bound by all the terms provided herein.

ACCEPT? [yes/no]: **yes**

Output file saved ..... to flash: REHOSTED\_LICENSE

Retrieving the revoked license line from the swift .....Output file saved ..... to flash: REHOSTED\_LICENSE

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>license call-home install</b>	Installs a license by using the Cisco License Call Home feature.
<b>license call-home resend</b>	Restores a lost license by using the Cisco License Call Home feature.
<b>show license call-home</b>	Displays the SKU list and features available in a PAK by using the Cisco License Call Home feature.

## license call-home url

To configure a new URL for accessing the Cisco licensing infrastructure, use the **license call-home url** command in global configuration mode. To change the URL, use the **no** form of this command.

**license call-home url** *licensing-infrastructure-url*  
**no license call-home url**

### Syntax Description

<i>licensing-infrastructure-url</i>	The HTTP address where the Cisco licensing infrastructure can be accessed.
-------------------------------------	--

### Command Default

The default URL is <https://tools.cisco.com/SWIFT/licensing>.

### Command Modes

Global configuration (config)

### Command History

Release	Modification
12.4(15)XZ	This command was introduced.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.3SG	This command was integrated into Cisco IOS XE Release 3.3SG and implemented on the Cisco Catalyst 4500E series switch.
15.1(1)SG	This command was integrated into Cisco IOS Release 15.1(1)SG and implemented on the Cisco Catalyst 4500E series switch.

### Usage Guidelines

Use this command to configure a new URL for accessing the Cisco licensing infrastructure.

This feature requires that:

- The router or switch must have an Internet connection and use HTTPS to connect to the Cisco licensing infrastructure. To set up a secure HTTP connection, see the HTTP 1.1 Web Server and Client module in the *Cisco IOS Network Management Configuration Guide*.
- Only certain platforms support the Cisco License Call Home feature, and those devices must be running a Cisco IOS crypto K9 image.
- You must obtain the device certificate from the Cisco licensing infrastructure.
- You must have a Cisco.com user login account.

### Examples

The following example shows how to change the URL to <http://cisco.com/newserver>:

```
Router(config)# license call-home url http://cisco.com/newserver
```

### Related Commands

Command	Description
<b>license call-home install</b>	Installs a license by using the Cisco License Call Home feature.

<b>Command</b>	<b>Description</b>
<b>license call-home resend</b>	Restores a lost license by using the Cisco License Call Home feature.
<b>license call-home revoke</b>	Rehosts (revokes and transfers) a license by using the Cisco License Call Home feature.
<b>show license call-home</b>	Displays the SKU list and features available in a PAK by using the Cisco License Call Home feature.
<b>show license status</b>	Displays license status information.

# license clear

To remove a license entry from license storage, use the **license clear** command in privileged EXEC mode.

## Cisco ASR 903 Routers

```
license clear feature-name
standby
```

## Cisco ASR 1001 Routers, Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

```
license clear feature-name
```

## Cisco Catalyst 3560-E Switch Platforms

```
license clear feature-name
```

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

```
license clear feature-name [{switch switch-num}]
```

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

```
license clear feature-name switch switch-num
```

### Syntax Description

<i>feature-name</i>	Name of the feature to be removed.
<b>standby</b>	(Optional) Clears license information on the standby processor.
<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The switch number range is 1 to 9.

### Command Default

Licenses are not removed.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
12.2(35)SE2	This command was introduced.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.2S	This command was integrated into Cisco IOS XE Release 3.2S on the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was modified. The <b>standby</b> keyword was added for the Cisco ASR 903 router.

### Usage Guidelines

For the ASR 1001 router, the **license clear** command clears only image-level licenses that are not in-use. Once the throughput feature license is in-use, it cannot be cleared.

The **license clear** command clears all licenses, but some licenses, such as built-in licenses, cannot be cleared.

If a license is not in-use, the **license clear** command displays all the licenses related to this feature and prompts you to make a selection. Different prompts are displayed, depending upon whether single or multiple licenses are available in the device. The selected licenses are removed from the router or switch.

If a license is in-use, the **license clear** command might fail. However, depending on the application policy using the license, some licenses might be cleared.

For some devices, the **license clear** command verifies that the license line is valid and explicitly installed. Only licenses that have been added using the **license install** command are removed. Evaluation licenses are not removed.

When a switch is specified, the **license clear** command is executed only on that switch. When a mixed stack platform is used, the primary switch has installed the minimum licensing feature required to support the licensing operations of the secondary switches. The **license clear** command clears a license from license storage, which a primary switch does not have. When the command is issued from the primary switch, the switch number is required to clear a license on a specific switch.

## Examples

The following example shows how to display the installed licenses on an ASR 1001 router and how to clear the throughput license. Note that active, in-use licenses cannot be cleared:

```
Router# show license all
License Store: Primary License Storage
StoreIndex: 0 Feature: throughput Version: 1.0
License Type: Evaluation
License State: Active, Not in Use, EULA accepted
Evaluation total period: 4 weeks 2 days
Evaluation period left: 0 minute 0 second
License Count: Non-Counted
License Priority: Low
Router# license clear throughput
Feature: throughput
1 License Type: Evaluation
License State: Active, Not in Use, EULA accepted
Evaluation total period: 4 weeks 2 days
Evaluation period left: 0 minute 0 second
License Addition: Additive
License Count: Non-Counted
Comment:
Store Name: Primary License Storage
Are you sure you want to clear? (yes/[no]): yes
Router#
```

The following example shows how to clear a license associated with the advsecurity feature:

```
Router# license clear advsecurity
Feature: advsecurity
1 License Type: Permanent
License State: Active, In Use
License Addition: Exclusive
Comment: Permanent License
Store Index: 0
Store Name: Primary License Storage
2 License Type: Evaluation
License State: Inactive
Evaluation total period: 8 weeks 4 days
Evaluation period left: 8 weeks 4 days
License Addition: Additive
Comment:
Store Index: 1
```

```
Store Name: Primary License Storage
Select Index to Clear [1-2]: 2
Are you sure you want to clear? (yes/[no]): yes
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>license install</b>	Installs a stored license file.
<b>license save</b>	Saves a copy of a permanent license to a specified license file.
<b>show license file</b>	Displays information in a Cisco IOS software license file.



# license comment

To add or remove a comment about a feature license, use the **license comment** command in privileged EXEC mode.

## Cisco ASR 903 Routers

**license comment** {**add** *feature-name comment* | **delete** *feature-name*}[**{standby}**]

## Cisco ASR 1001 Router Platforms

**license comment** {**add feature** *feature-name comment* | **delete feature** *feature-name*}

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

**license comment** {**add** *feature-name comment* | **delete** *feature-name*}

## Cisco Catalyst 3560-E Switch Platforms

**license comment** {**add** *feature-name comment* | **delete** *feature-name*}

## Cisco Catalyst 3750-E Switch Platforms

**license comment** {**add** *feature-name comment* | **delete** *feature-name*} [**{switch** *switch-num*}]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license comment** {**add** *feature-name comment* | **delete** *feature-name*} **switch** *switch-num*

### Syntax Description

<b>add</b>	Adds a comment about a feature license.
<b>feature</b>	Specifies the feature name.
<i>feature-name</i>	Name of the licensed feature.
<i>comment</i>	String of a maximum of 99 characters, including special characters.
<b>delete</b>	Deletes a comment about a licensed feature.
<b>standby</b>	(Optional) Specifies license information on the standby processor.
<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The switch number range is 1 to 9.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
12.2(35)SE2	This command was introduced.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Release	Modification
Cisco IOS XE Release 3.2S	This command was modified. The <b>feature</b> keyword was added for the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was modified. The <b>standby</b> keyword was added for the Cisco ASR 903 router.

### Usage Guidelines

This command is useful for tracking a license when multiple licenses are stored on a device, and for adding or deleting information about a specific license. You can also use the **license comment** command to verify that a license associated with the specified feature is present in license storage.

Use the **show license file** command to display comments added to the license file.

The **license comment** command performs these operations:

- Verifies that the license associated with the specified feature is present in the license storage.
- If there are multiple license lines, the command prompts for license line selection.
- If a comment exists in the license line, the command displays the comment first before prompting for a new comment. Up to 99 characters are stored in license storage.
- If a switch number is specified, this command is executed on the specified switch.

### Examples

The following example shows how to add a comment to a license file on the Cisco ASR 1001 router by using the **license comment** command and by verifying it with the **show license file** command:

```
Router# license comment add feature throughput newest
Feature: throughput
  1 License Type: Permanent
    License State: Active, In Use
    License Addition: Exclusive
    License Count: Non-Counted
    Comment: --
    Store Name: Primary License Storage
% Success: Updating comment "--" with "newest" succeeded
Router# show license file
License Store: Primary License Storage
Store Index: 0
License: 11 throughput 1.0 LONG NORMAL STANDALONE EXCL INFINITE_KEYS INFIN
ITE_KEYS NEVER NEVER NiL SLM_CODE CL_ND_LCK NiL *12MDFXFBE6TEQR54
00 NiL NiL NiL 5_MINS <UDI><PID>ASR1001</PID><SN>JAE14020AT5</SN>
</UDI> :0oy5aopCvhfLBBk3:10fBb4Kr3EwMLaYAHDV93ClpLXhJGOUe1ZuBusC,
0B2QIQLV06eUrKn27faF3zOYTTyjLRCGA8UMkemMyqmvjcg0Jhfm$<WLC>AQEBIQA
B//8szae77QGOnFBXBoP02Obx6Fq2XtGPUJnh5pGplTkDzw9J5aqkUjTNkuO4sv4
FYORqwInXo3s+nsLU7rOtdOxoIxYZAo3LYmUJ+MFzsqlhKoJVlPyEvQ8H21MNUjVb
hoN0gyIWsyiJaM8AQIkVBQFzhr10GYo1VzdzfJfEPQIx6tZ++/Vtc/q3SF/5Ko8XC
Y=</WLC>
Comment: newest
Hash: ZJz5MveEOPePQA3ATs6+OxF4bw=
```

The following example shows how to add a comment to a license file. You are prompted to select the index number of the license to add the comment to.

```
Router# license comment add advsecurity "Permanent License"
Feature: advsecurity
```

```

1 License Type: Permanent
  License State: Active, In Use
  License Addition: Exclusive
  Comment:
  Store Index: 0
  Store Name: Primary License Storage
2 License Type: Evaluation
  License State: Inactive
  Evaluation total period: 8 weeks 4 days
  Evaluation period left: 8 weeks 4 days
  License Addition: Additive
  Comment:
  Store Index: 1
  Store Name: Primary License Storage
Select Index to Add Comment [1-2]: 1
% Success: Adding comment "Permanent License" succeeded

```

The following example shows the output from **show license file** command for verification purposes:

```

Router# show license file
License Store: Primary License Storage
Store Index: 0
License: 11 advsecurity 1.0 LONG NORMAL STANDALONE EXCL INFINITE_KEYS INFI
NITE_KEYS NEVER NEVER NiL SLM_CODE CL_ND_LCK NiL *1F8CTTRHMU8DBMZ
400 NiL NiL NiL 5 MINS <UDI><PID>CISCO861W</PID><SN>FHH112400KA</
SN></UDI> DjRM8tEsBrR7ayv1U6CWL7JIe1Nmu60biRNQuFWM8sV2dUQhQSS,iB4
WgUgos4KILZJ,4xrseQQCwOQeASii:SVNCL1Cdffc,OpH8TQkzxbX3q$<WLC>AQEB
IQAB//9fp/DSeV2xPKc+d4T/DiUhG8UQwBA786dE+HuT2GMU3uDvMbIOdbpmBQ00Q
tQTGTRqWInXo3s+nsLU7rOtdOxoIxYZAo3LYmUJ+MFzsqlhKoJVlPyEvQ8H21MNU
jVbhoN0gyIWsyiJaM8AQIkVBQFzhr10GYo1VzdzfJfEPQIx6tZ++/Vtc/q3SF/5Ko
8XCY=</WLC>
Comment: Permanent License
Hash: Mx0Sy+VmbfaB7uRctuPLsblzpBU=

```

## Related Commands

Command	Description
<b>license clear</b>	Removes a license entry from a permanent license file.
<b>license install</b>	Installs a stored license file.
<b>license save</b>	Saves a copy of a permanent license to a specified license file.
<b>show license file</b>	Displays information in a Cisco IOS software license file.

# license expand nvram

To expand the memory allocation for license storage in NVRAM for Cisco 2800 and Cisco 3800 series integrated services router platforms, use the **license expand nvram** command in privileged EXEC mode.

## license expand nvram

### Syntax Description

This command has no arguments or keywords.

### Command Default

No license storage expansion is configured.

### Command Modes

Privileged EXEC (#)

### Command History

Release	Modification
12.4(20)T	This command was introduced for the Cisco 2800 and Cisco 3800 series integrated services router platforms

### Usage Guidelines

License storage expansion reduces the amount of NVRAM available for configuration file storage. If the configuration files are too large to fit into the reduced NVRAM, you must run file compression on the configuration files by using the **service compress-config** command.

### Examples

The following example shows how to expand the allocation for license storage in NVRAM:

```
Router# license expand nvram
Caution: IOS configuration space will be re-partitioned in NVRAM.
You must back up your IOS configuration before running this command.
Do you wish to continue NVRAM re-partition?[confirm]
Router# y
```

The following response indicates that the operation was successful:

```
License storage expanded successfully.
IOS must be restarted for changes to take effect.
```

The following response shows that the existing configuration files need compression before the licensing file system can be expanded:

```
Error: startup-config is too large. Compress the config with "service compress-config"
followed by "copy system:running-config nvram:startup-config" and rerun "license expand
nvram".
```

The following response shows that a configuration file is still too large for the resized NVRAM:

```
Error: cannot expand the license storage. Insufficient NVRAM to store compressed
configuration.
```

The following response shows that expansion cannot take place because the size of the block files is too large:

```
Error: cannot expand the license storage. Existing block files are too large. Back up
existing block files, delete them from nvram and reissue "license expand nvram".
```

The following response indicates that this command is being issued on an already expanded NVRAM:

```
Error: license storage already expanded to maximum size.
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>service compress-config</b>	Compresses startup configuration files.

# license feature

To activate the specified license feature, use the **license feature** command in global configuration mode. To deactivate the specified license feature, use the **no** form of this command.

**license feature** *feature-name*  
**no license feature** *feature-name*

## Syntax Description

<i>feature-name</i>	Software feature name.
---------------------	------------------------

## Command Default

The license feature is not activated.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.0(1)M	This command was introduced for the Cisco 1905 integrated services router platform.
XE 3.5S	This command was integrated into Cisco IOS XE Release 3.5S and implemented on the Cisco ASR 903 router.

## Usage Guidelines

Use the **license feature** command to activate the specified license feature.

## Examples

The following example shows how to activate the memory license feature on the Cisco 1905 router:

```
Router(config)# license feature MEM-1900-256U512MB
      Feature Name:MEM-1900-256U512MB
PLEASE READ THE FOLLOWING TERMS CAREFULLY. INSTALLING THE LICENSE OR
LICENSE KEY PROVIDED FOR ANY CISCO PRODUCT FEATURE OR USING SUCH
PRODUCT FEATURE CONSTITUTES YOUR FULL ACCEPTANCE OF THE FOLLOWING
TERMS. YOU MUST NOT PROCEED FURTHER IF YOU ARE NOT WILLING TO BE BOUND
BY ALL THE TERMS SET FORTH HEREIN.
You hereby acknowledge and agree that the product feature license
is terminable and that the product feature enabled by such license
may be shut down or terminated by Cisco after expiration of the
applicable term of the license (e.g., 30-day trial period). Cisco
reserves the right to terminate or shut down any such product feature
electronically or by any other means available. While alerts or such
messages may be provided, it is your sole responsibility to monitor
your terminable usage of any product feature enabled by the license
and to ensure that your systems and networks are prepared for the shut
down of the product feature. You acknowledge and agree that Cisco will
not have any liability whatsoever for any damages, including, but not
limited to, direct, indirect, special, or consequential damages related
to any product feature being shutdown or terminated. By clicking the
"accept" button or typing "yes" you are indicating you have read and
agree to be bound by all the terms provided herein.
ACCEPT? [yes/no]: yes
Router(config)#
*Nov 17 23:48:18.891: %XFR_EXT_MEMORY_LICENSING-6-LICENSE_NOT_ACTIVATED: License
MEM-1900-256U512MB will take effect af reboot.
*Nov 17 23:48:19.779: %LICENSE-6-EULA_ACCEPTED: EULA for feature MEM-1900-256U512MB 1.0 has
been accepted. UDI=CISCO1920B; StoreIndex=3:Evaluation License Storage
```

```

Router# license install tftp://223.255.254.254/FCW1345000B_20091118190946245.lic
Installing licenses from "tftp://223.255.254.254/FCW1345000B_20091118190946245.lic"
Loading colbywen/FCW1345000B_20091118190946245.lic from 223.255.254.254 (via
GigabitEthernet0/0): !
[OK - 1171 bytes]
Installing...Feature:MEM-1900-256U512MB...Successful:Supported
1/1 licenses were successfully installed
0/1 licenses were existing licenses
0/1 licenses were failed to install
Router#
*Nov 19 00:14:48.603: %XFR_EXT_MEMORY_LICENSING-6-LICENSE_NOT_ACTIVATED: License
MEM-1900-256U512MB will take effect after the system reboot.
*Nov 19 00:14:48.607: %LICENSE-6-INSTALL: Feature MEM-1900-256U512MB 1.0 was installed in
this device. UDI=CISCO1921/K9:FCW1345000B; StoreIndex=0:Primary License Storage

```

**Related Commands**

Command	Description
<b>license install</b>	Installs a stored license file.
<b>license revoke</b>	Revokes a software license from one device and transfers it to another.

## license feature snasw

To activate the SNA Switching (SNASw) feature license, use the **license feature snasw** command in global configuration mode. To deactivate the SNASw feature license, use the **no** form of this command.

**license feature snasw**  
**no license feature snasw**

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

**Command Default** The SNASw feature license is not activated.

**Command Modes** Global configuration (config)

Release	Modification
15.0(1)M	This command was introduced for the Cisco 3900, 2900, and the 1900 series integrated services router platforms.

**Usage Guidelines** The **license feature snasw** command is used to activate the SNASw feature license.

**Examples** The following example shows how to enable the SNASw feature license:

```
Router(config)# license feature snasw
```

Command	Description
<b>license install</b>	Installs a stored license file.



# license install

To install a stored license file, use the **license install** command in privileged EXEC mode.

**license install** *stored-location-url*

## ASR 1001 Router Platforms

**license install file** *stored-location-url*

## Cisco Catalyst 4500E Series Switch Platforms

**license install** *stored-location-url*

**standby**

Syntax Description	
<i>stored-location-url</i>	The location within a device where Cisco IOS software licenses are stored. Depending on the hardware platform, valid URL location file systems might be: <b>archive</b> , <b>bootflash</b> , <b>bs</b> , <b>flash</b> , <b>flash n</b> , <b>ftp</b> , <b>http</b> , <b>https</b> , <b>null</b> , <b>nvr</b> , <b>pram</b> , <b>rcp</b> , <b>scp</b> , <b>syslog</b> , <b>system</b> , <b>tftp</b> , <b>tmpsys</b> , <b>usb0</b> , <b>vb</b> . <ul style="list-style-type: none"> <li>• The <b>bs://</b>, <b>null://</b>, and <b>vb://</b> file systems do not accept filenames.</li> <li>• The <b>bs</b> file system is available only on mixed Cisco 3750-E switch stacks.</li> <li>• The <b>archive</b>, <b>pram scp</b>, and <b>syslog</b> file systems are available only on router platforms.</li> <li>• The <b>flash n</b> file system, where <i>r</i>, is an integer in the range from 1 to 9, is available only on Cisco 3750-E switches and stacks.</li> <li>• The <b>https</b> file system is not available on mixed Cisco 3750-E switch stacks and the Cisco 3560-E switch.</li> </ul>
<b>file</b>	Installs a license file.
<b>standby</b>	(Optional) Specifies that the installation occurs on the standby device only.

**Command Default** A license is not installed.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	12.2(35)SE2	This command was introduced.
	12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
	12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
	Cisco IOS XE Release 3.1.0.SG	This command was modified. The <b>standby</b> keyword was added for the Cisco Catalyst 4500E series switches.

Release	Modification
Cisco IOS XE Release 3.2S	This command was modified. The <b>file</b> keyword was added for the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was implemented on the Cisco ASR 903 router.

### Usage Guidelines

You must have already purchased the license and obtained the license file from either the Cisco licensing portal or by using the **license save EXEC** command.

For Cisco Catalyst 6500 series switches, the active supervisor allows the license to be installed on both the active and the standby supervisors. The license keys are stored in NVRAM for both the active and standby supervisors. Each supervisor requires a separate license key.

When the **license install** command is issued, these actions are initiated:

- The license module parses the license file and retrieves the unique device identifier (UDI), license line, and license comments.
- If the UDI in the license file is not local, this command passes the license line and user comments to the specified switch where the information is provided to the license security application.
- If the license is a trial license, this command initiates an end-user license agreement prompting you to accept it. If you do not accept the end-user license agreement, the license line installation is stopped.
- Upon successful completion, the application notifies you about the installation of the license.
- The command displays an information message stating that the license installation is successful and whether the licensed feature is present in the current image.

The installation process does not install duplicate licenses. This message appears when duplicate licenses are detected:

```
Installing...Feature:xxx-xxx-xxx...Skipped:Duplicate
```

On some hardware platforms, you must reload (or reboot) the device to make a newly installed license active.

When the **standby** keyword is specified, the license is available only on the standby device. The active supervisor is not able to use it.

### Examples

The following example shows how to install a license from the bootflash system on the Cisco ASR 1001 router. The license is a duplicate and is not installed as shown in the display:

```
Router# license install file bootflash:lru_bu2-throughput-license
Installing...Feature:throughput...Skipped:Duplicate
0/1 licenses were successfully installed
1/1 licenses were existing licenses
0/1 licenses failed to install
```

The following example shows how to install a license saved in TFTP. You might need to read and accept an end-user license agreement during the installation. The following output has been truncated for easier readability.

```
Router# license install tftp://infra-sun/rifu/2800/normal_better_2.lic00
Installing licenses from "tftp://infra-sun/rifu/2800/normal_better_2.lic00"
Loading rifu/2800/normal_better_2.lic00 from 172.19.211.47 (via GigabitEthernet0/0): !
```

```

[OK - 2361 bytes]
Expiring licenses are being installed in the device with
UDI "CISCO2851:FTX1018A21R" for the following features:
  Feature Name: ios-ips-update
  Start Date:      N/A, End Date: Oct 01 2009
  Feature Name: ios-ips-update
  Start Date:      N/A, End Date: Oct 01 2008
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PRODUCT FEATURE CONSTITUTES YOUR FULL ACCEPTANCE OF THE FOLLOWING
TERMS. YOU MUST NOT PROCEED FURTHER IF YOU ARE NOT WILLING TO BE BOUND
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your terminable usage of any product feature enabled by the license
and to ensure that your systems and networks are prepared for the shut
down of the product feature. You acknowledge and agree that Cisco will
not have any liability whatsoever for any damages, including, but not
limited to, direct, indirect, special, or consequential damages related
to any product feature being shutdown or terminated. By clicking the
"accept" button or typing "yes" you are indicating you have read and
agree to be bound by all the terms provided herein.
ACCEPT? [yes/no]: yes
Installing...Feature:ios-ips-update...Successful:Supported
Installing...Feature:ios-ips-update...Failed:
% Error: Better license exists
1/2 licenses were successfully installed
0/2 licenses were existing licenses
1/2 licenses were failed to install
Router#
Apr 22 23:24:45.727: %LICENSE-6-EULA_ACCEPTED: EULA for feature ios-ips-update 1.0 has been
  accepted. UDI=CISCO2851:FTX1018A21R; StoreIndex=2:Primary License Storage
Apr 22 23:24:46.263: %LICENSE-6-EULA_ACCEPTED: EULA for feature ios-ips-update 1.0 has been
  accepted. UDI=CISCO2851:FTX1018A21R; StoreIndex=-1:UNKNOWN License Store
Apr 22 23:24:46.267: %LICENSE-6-INSTALL: Feature ios-ips-update 1.0 was installed in this
  device. UDI=CISCO2851:FTX1018A21R; StoreIndex=2:Primary License Storage

```

The following example shows how to initiate license installation from a flash file system on a Cisco switch:

```
Switch# license install flash:flash//test.lic
```

#### Related Commands

Command	Description
<b>license clear</b>	Removes a license entry from a permanent license file.
<b>license comment</b>	Adds or removes a comment about a feature license.
<b>license save</b>	Saves a copy of a permanent license to a specified license file.
<b>license save credential</b>	Saves license identity information associated with a device to a specified URL.
<b>show license</b>	Displays information about a Cisco IOS software license.

# license modify priority

To modify a license priority, use the **license modify priority** command in privileged EXEC mode.

**license modify priority** *feature-name* {**high** | **low**}

## Cisco ASR 903 Routers

**license modify priority** *feature-name* {**high** | **low**} [{**standby**}]

Syntax Description	
<i>feature-name</i>	Name of the feature whose priority you want to modify.
<b>high</b>	Changes priority to high.
<b>low</b>	Changes priority to low.
<b>standby</b>	(Optional) Applies the priority change to the license on the standby processor.

**Command Modes** Privileged EXEC (#)

## Command History

Release	Modification
12.4(24)T	This command was introduced.
Cisco IOS XE Release 3.2S	This command was integrated into Cisco IOS XE Release 3.2S for the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was modified. The <b>standby</b> keyword was added for the Cisco ASR 903 router.

## Usage Guidelines

This command adjusts the priority of a license. This command generates a list of metered licenses available for a feature and prompts you to select one from the list. If only one license is present, it is automatically selected. If the selected license is an evaluation license and the feature has not been activated, the end-user license agreement (EULA) is shown, and you are prompted to accept or reject the agreement. If you accept the EULA, the priority of the selected license to the permanent license increases or decreases, and the selected license becomes the active license.

## Examples

The following example shows how the **license modify priority** command is used to modify the priority of a license:

```
Router# license modify priority lcabcv10 high
Feature: lcabcv10
Index: 1      License type   : Evaluation
          Lock type       : Locked
          License Count    : 10
          License Priority: None
Index: 2      License type   : Evaluation
          Lock type       : Locked
          License Count    : 5
          License Priority: None
Select Index to Adjust [1-2]2
Are you sure you want to modify priority? (yes/[no]): yes
```

## Increase Precedence of Evaluation License

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ACCEPT? [y/n]: **y**

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show license</b>	Displays information about a Cisco IOS software license.

# license purge

To purge unneeded licenses (licenses that are not associated with the current chassis unique device identifier [UDI]), use the **license purge** command in privileged EXEC mode.

**license purge**

**Cisco ASR 903 Routers**

**license purge  
standby**

## Syntax Description

<b>standby</b>	(Optional) Purges license information on the standby processor.
----------------	---

## Command Default

Licenses are retained.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
Cisco IOS XE Release 3.1.0SG	This command was introduced for the Cisco Catalyst 4500E series switches.
Cisco IOS XE Release 3.5S	This command was modified. The <b>standby</b> keyword was added for the Cisco ASR 903 router.

## Usage Guidelines

Use this command to remove licenses that are not associated with the current chassis UDI. Removing these licenses frees up additional space.

When supervisors are moved from one chassis to another, the licenses that were installed on the supervisor might be tied to the old chassis. These license are not usable when the supervisor is present on the new chassis. This command removes licenses from storage that do not belong to the current chassis.

## Examples

The following example shows how to purge unneeded licenses:

```
Switch# license purge
Are you sure you want to purge licenses? [y] y
```

## Related Commands

Command	Description
<b>license install</b>	Installs a stored license file.
<b>license save credential</b>	Saves the identity information associated with a license to a specified URL.

# license revoke

To revoke a software license from one device and transfer it to another, use the **license revoke** command in privileged EXEC mode.

**license revoke** *permission-file-url* *output-rehost-ticket-url*

## Syntax Description

<i>permission-file-url</i>	URL of the location to get to the permission ticket.
<i>output-rehost-ticket-url</i>	URL of the location to save the rehost ticket.

## Command Modes

Privileged EXEC (#)

## Command History

Release	Modification
12.4(15)XZ	This command was introduced.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.2S	This command was integrated into Cisco IOS XE Release 3.2S for the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was implemented on the Cisco ASR 903 router.

## Usage Guidelines

The **license revoke** command removes the original, permanent license from the device and provides a license for the new device by accomplishing these operations:

- Obtains a permission ticket from the Cisco licensing infrastructure portal that allows the license to be moved.
- Parses the permission ticket file to extract data related to generating the rehosting ticket.
- Uploads the rehost ticket to the Cisco licensing infrastructure portal so you can obtain the final license.
- The license security application processes the data and offers a grace-period license.
- Once you accept the end-user license agreement, the licensing infrastructure processes the permission ticket and generates the rehost ticket.



### Note

Cisco IOS licensing requires that the license files generated by the Cisco licensing back end for its devices be secure and tamper-resistant. Security features are in place to authenticate a license by means of encrypted license credentials. Rehosting requires a permission ticket. To generate the permission ticket, the Cisco licensing back end requires the device credential information. Use the **license save credential** command to save device credential information to a specified file system.

## Examples

The following example shows how to revoke a license stored in TFTP and how to transfer it to a license stored in flash memory. You might need to read and accept the terms and conditions of the license type being transferred. The following example is truncated for readability:

```

Router# license revoke tftp://infra-sun/ramanp/pt.lic flash:rt.lic
Following Permanent license(s) will be revoked from this device
  Feature Name: gsmamrnb-codec-pack
Following Extension license(s) will be installed on this device
  Feature Name: gsmamrnb-codec-pack
PLEASE READ THE FOLLOWING TERMS CAREFULLY. . .
ACCEPT? [yes/no]: yes
Issue 'license feature gsmamrnb-codec-pack' command to enable the license
Rehost ticket saved ..... to flash:rt.lic

```

**Related Commands**

Command	Description
<b>license install</b>	Installs a stored license file.
<b>license save</b>	Saves a copy of a permanent license to a specified license file.



# license right-to-use activate

To display information about right-to-use licenses and their states on a switch, use the **show license right-to-use** command in privileged EXEC mode.

**Cisco Catalyst 3560-E Switch and Switch Stack Platforms**

**Cisco Catalyst 3750-E Switch Platforms**

**show license right-to-use** [**switch** *switch-num*]

## Syntax Description

<b>switch</b>	
<i>switch-num</i>	(Optional) Specifies a switch in a switch stack or in a mixed switch stack. The range is 1 to 9.

## Command Default

## Command Modes

## Command History

Release	Modification

## Usage Guidelines

## Examples

## Related Commands

Command	Description

# license right-to-use deactivate

**Syntax Description** 

**Command Default**

**Command Modes**

**Command History**

Release	Modification

**Usage Guidelines**

**Examples**

**Related Commands**

Command	Description

# license save

To save a copy of a permanent license in a Cisco IOS device to a specified license file, use the **license save** command in privileged EXEC mode.

## Cisco ASR 903 Router

**license save** *file-sys:filename* [{standby}]

## Cisco ASR 1001 Router Platforms

**license save file** *file-sys:filename*

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

**license save file** *file-sys//lic-location*

## Cisco Catalyst 3560-E Switch Platforms

**license save file** *file-sys//lic-location*

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

**license save file** *file-sys//lic-location* [{switch *switch-num*}]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license save file** *file-sys//lic-location* **switch** *switch-num*

Syntax Description	file	Saves a license file.
	<i>file-sys:filename</i>	The location and filename within a device where Cisco IOS software licenses are stored. For Cisco ASR 1001 routers, valid file systems are <b>bootflash</b> and <b>usb0</b> .
	<i>file-sys://lic-location</i>	<p>The location within a device where Cisco IOS software licenses are stored. Depending on the hardware platform, valid file system values might be: <b>archive</b>, <b>bootflash</b>, <b>bs</b>, <b>flash</b>, <b>flash n</b>, <b>http</b>, <b>https</b>, <b>null</b>, <b>nvr</b>, <b>pram</b>, <b>rcp</b>, <b>scp</b>, <b>syslog</b>, <b>system</b>, <b>tftp</b>, <b>tmpsys</b>, <b>vb</b>.</p> <p>The license location can also be a directory with these restrictions:</p> <ul style="list-style-type: none"> <li>• The <b>bs://</b>, <b>null://</b>, and <b>vb://</b> URLs do not accept filenames.</li> <li>• The <b>bs</b> file system is available only on mixed Cisco 3750-E switch stacks.</li> <li>• The <b>archive</b>, <b>pram</b>, <b>scp</b>, and <b>syslog</b> file systems are available only on router platforms.</li> <li>• The <b>flash n</b> file system, where <i>r</i>, is an integer in the range of 1 to 9, is available only on Cisco 3750-E switches and stacks.</li> <li>• The <b>https</b> file system is not available on Cisco 3750-E switch mixed stacks or on the Cisco 3560-E switch.</li> </ul>
	<b>standby</b>	(Optional) Saves license information to the standby processor.

<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The switch number range is 1 to 9.
---------------------------------	---

**Command Default**

Licenses are not saved.

**Command Modes**

Privileged EXEC (#)

**Command History**

Release	Modification
12.2(35)SE2	This command was introduced.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.2S	This command was modified. The <b>file</b> <i>file-sys:filename</i> keyword and argument were added for the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was modified. The <b>standby</b> keyword was added for the Cisco ASR 903 router.

**Usage Guidelines**

Issuing this command stores the license line and comment in XML format as required by the command. Issuing this command saves copies of all permanent licenses.

Saved licenses can be restored by using the **license install** command.

**Examples**

The following example shows how to save a license named throughput-license to the bootflash on the Cisco ASR 1001 router:

```
Router# license save file bootflash:throughput-license
license lines saved ..... to bootflash/throughput-license
```

The following example shows how to save a license named feat1.lic in the FTP file system:

```
Router# license save ftp:feat1.lic
license lines saved ..... to ftp:feat1.lic
```

**Related Commands**

Command	Description
<b>license install</b>	Installs a stored license file.
<b>license save credential</b>	Saves the identity information associated with a license to a specified URL.

# license save credential

To save the identity information associated with a device to a specified URL, use the **license save credential** command in privileged EXEC mode.

## Cisco ASR 903 Routers

**license save credential** *file-sys:filename*  
**standby**

## Cisco ASR 1001 Routers

**license save credential file** *file-sys:filename*

## Cisco 860, 880, and 890 Series Routers, and Cisco 1900, 2900, and 3900 Series Integrated Services Router Platforms

**license save credential file** *file-sys//lic-location*

## Cisco Catalyst 3560-E Switch Platforms

**license save credential file** *file-sys//lic-location*

## Cisco Catalyst 3750-E Switch and Switch Stack Platforms

**license save credential file** *file-sys//lic-location* [{**switch** *switch-num*}]

## Cisco Catalyst 3750-E Switch Mixed Stack Platforms

**license save credential file** *file-sys//lic-location* **switch** *switch-num*

### Syntax Description

<b>file</b>	Saves a license credential file.
<i>file-sys:filename</i>	The location and filename within a device where Cisco IOS software licenses are stored. For Cisco ASR 1001 routers, valid file systems are <b>bootflash</b> and <b>usb0</b> .
<i>file-sys://lic-location</i>	The location within a device where Cisco IOS software license credentials are stored. Depending on the hardware platform, valid file system values might be: <b>archive</b> , <b>bootflash</b> , <b>bs</b> , <b>flash</b> , <b>flash n</b> , <b>ftp</b> , <b>http</b> , <b>https</b> , <b>null</b> , <b>nvr</b> , <b>pram</b> , <b>rcp</b> , <b>scp</b> , <b>syslog</b> , <b>system</b> , <b>tftp</b> , <b>tmpsys</b> , <b>vb</b> . <ul style="list-style-type: none"> <li>• The <b>bs://</b>, <b>null://</b>, and <b>vb://</b> URLs do not accept filenames.</li> <li>• The <b>bs</b> file system is available only on mixed Cisco 3750-E switch stacks.</li> <li>• The <b>archive</b>, <b>pram</b>, <b>scp</b>, and <b>syslog</b> file systems are available only on router platforms.</li> <li>• The <b>flash n</b> file system, where <i>n</i> is an a number from 1 to 9, is available only on Cisco 3750-E switches and stacks.</li> <li>• The <b>https</b> file system is not available on Cisco 3750-E switch mixed stacks or on the Cisco 3560-E switch.</li> </ul>
<b>standby</b>	(Optional) Saves identity information to the standby processor.
<b>switch</b> <i>switch-num</i>	Specifies a switch in a switch stack or in a mixed switch stack. The range is 1 to 9.

**Command Default** License credentials are not saved.

**Command Modes** Privileged EXEC (#)

Release	Modification
12.2(35)SE2	This command was introduced.
12.4(15)XZ	This command was integrated into Cisco IOS Release 12.4(15)XZ.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 3.2S	This command was modified. The <b>file</b> <i>file-sys:filename</i> keyword and argument were added for the Cisco ASR 1001 router.
Cisco IOS XE Release 3.5S	This command was modified. The <b>standby</b> keyword was added for the Cisco ASR 903 router.

**Usage Guidelines** Use this command to save credential information about a device.

### Examples

The following example shows how to save identity information about a license named tput-license to the bootflash system on the Cisco ASR 1001 router:

```
Router# license save credential file bootflash:tput-license
Device credential saved ..... to /bootflash/tput-license
```

The following example shows how to save identity information about a license named feat1.lic in the http file system:

```
Switch# license save credential http:feat1.lic
Device credential saved ..... to http:feat1.lic
```

The following example shows how to save identity information about a license named feat2.lic in the scp file system:

```
Router# license save credential scp:feat2.lic
Device credential saved ..... to scp:feat2.lic
```

### Related Commands

Command	Description
<b>license install</b>	Installs a stored license file.
<b>license save</b>	Saves a copy of a permanent license to a specified license file.

# platform enable controller

To enable the ports on the interface module, use the **platform enable controller** command in global configuration mode. To disable the ports, use the **no** form of this command.

```
platform enable controller controller-type slot/subslot/port
no platform enable controller controller-type slot/subslot/port
```

## Syntax Description

*controller-type* Type of controller.

*slot/subslot/port* Specifies the location of the interface.

## Command Default

This command is disabled by default.

## Command Modes

Global Configuration (config)

## Command History

Release	Modification
Cisco IOS XE Release 3.9S	This command is introduced.

## Usage Guidelines

Use the **platform enable controller sonet** command before performing an ISSU upgrade from the Cisco IOS XE Release 3.9S to Cisco IOS XE Release 3.10S.

Use the **platform enable controller sonet** command to enable the ports after the license is installed on the router.



**Note** The slot number for the **controller sonet** is always zero on the Cisco ASR 903 Router.

Example:

## Example

This example shows how to enable the controller sonet on the router.

```
Router# configure terminal
Router(config)# platform enable controller sonet 0/1/2
```

## Related Commands

Command	Description
<b>license install</b>	Installs the license on the router.
<b>controller sonet</b>	Selects the controller to configure and enters the controller configuration mode.
<b>show license detail</b>	Displays detailed license information.

# request license new-udi

To request that the Cisco CSR 1000V feature license be mapped to a new virtual unique device identifier (UDI), use the **request license new-udi** command in privileged EXEC mode.

## request license new-udi

**Command Modes** Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Release 3.8S controlled availability release	This command was introduced on the Cisco CSR 1000V.

**Usage Guidelines** A virtual UDI (vUDI) is generated when the Cisco CSR 1000V is first booted. The vUDI contains the format ProductID:SerialNumber.

If you plan to clone the VM, you must also request a new virtual UDI on the cloned VM; if a new virtual UDI is not requested, you have two Cisco CSR 1000V VM instances using the same vUDI and license in both VMs, violating the terms of the Cisco EULA.



**Caution** If the Cisco CSR 1000V software is copied illegally to another physical host, then the vUDI becomes invalid and the license is invalidated. You will receive a notice about the pending expiration of the license.

## Example

The following example requests that a new vUDI be assigned to the Cisco CSR 1000V license:

```
se-10-0-0-0# request license new-udi
```

```
Executing this command will invalidate the existing license,
proceed with generating new-udi?[confirm]
```

```
New udi CSR1000V:9MF19951DMU
Router#
*Aug 21 11:24:27.275: found an eval license info: csrlkv_medium
*Aug 21 11:24:27.276: Step 3. deletion of NOT-in-use licenses
*Aug 21 11:24:27.276: Step 4. deletion of in-use licenses
*Aug 21 11:24:27.440: %LICENSE-2-UDI_CHANGED: UDI of this instance changed from OLD:
CSR1000V:9YA3086B993 to New: CSR1000V:9MF19951DMU
```

Related Commands	Command	Description
	<b>show license</b>	