



Software Entitlement Commands

For detailed information about software entitlement concepts, configuration tasks, and examples, see the *Software Entitlement on Cisco IOS XR Software* module in *Cisco IOS XR System Management Configuration Guide for the Cisco CRS Router*.

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clear license

To delete all licenses from the router persistent storage, use the **clear license** command in administration EXEC mode.

clear license

Command Default No default behavior or values

Command Modes Administration EXEC

Command History	Release	Modification
	Release 3.5.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **clear license** command removes all licenses from the router persistent storage.

Task ID	Task ID	Operations
	pkg-mgmt	execute

Examples In the following example, all licenses are removed from the router:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# clear license
```

clear license log

To clear the operational or administrative logs for the license system, use the **clear license log** command in administration EXEC mode.

clear license log {operational| administration}

Syntax Description	
operational	Clears the operational logs for the license system.
administration	Clears the administration logs for the license system.

Command Default No default behavior or values

Command Modes Administration EXEC

Command History	Release	Modification
	Release 3.5.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **clear license log** command to clear either the operational or administrative logs for the license system. To view the logs, use the **show license log** command. The license log does not persist between reloads.

Task ID	Task ID	Operations
	pkg-mgmt	read

Examples The following example illustrates how to use the **clear license log** command to clear the operational logs:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# clear license log operational
```

Related Commands

Command	Description
show license log	Displays the operational or administrative logs for the license system.

hw-module linecard throughput

To configure the throughput for a modular services card (MSC), use the **hw-module linecard throughput** command in global configuration mode. To revert to the default throughput, use the **no** form of this command.

hw-module linecard throughput {20g| 40g} location node-id

no hw-module linecard throughput {20g| 40g} location node-id

Syntax Description

20g 40g	Specifies whether the node should operate at 40 Gbps or 20 Gbps.
location node-id	Specifies the node to configure. The <i>node-id</i> argument is expressed in <i>rack/slot/module</i> notation.

Command Default

The default throughput is 20 Gbps.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The default throughput is 20 Gbps. If you upgrade your release from one that does not support software entitlement to one that does, and you have MSCs in your router operating at 40 Gbps, an implicit license is added to your router so that you can continue to operate at 40 Gbps for a limited period of time. You must, however, use the **hw-module linecard throughput** command to enable the MSC throughput to 40 Gbps. Otherwise, your cards continue to operate at 20 Gbps.

Implicit licenses expire after a set period of time. You should install permanent licenses for all MSCs that you want to operate at 40 Gbps. Refer to the *Software Entitlement on Cisco IOS XR Software* module in *Cisco IOS XR System Management Configuration Guide for the Cisco CRS Router*.

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to configure a node to operate at 40 Gbps:

```
RP/0/RP0/CPU0:router# configure  
RP/0/RP0/CPU0:router(config)# hw-module linecard throughput 40 location 0/6/0
```

Related Commands

Command	Description
show hw-module linecard throughput	Displays the throughput of linecards on your router.

license

To configure a license to be used for specific slots or for any slots, use the **license** command in administration configuration mode. To remove the configuration of the license, use the **no** form of this command.

license *feature-id* [**type** [**evaluation**| **permanent**]] [**location** *node-id*]

no license *feature-id* [**type** [**evaluation**| **permanent**]] [**location** *node-id*]

Syntax Description

<i>feature-id</i>	Identifier for the feature.
type [evaluation permanent]	(Optional) Specifies whether the license is evaluation or permanent.
location <i>node-id</i>	(Optional) Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

Licenses are not configured.

Command Modes

Administration configuration

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

If the **license** command is not configured during a license acquisition, the acquisition fails. This command is required to be configured for every licensed feature starting in Cisco IOS XR Release 4.0.0.

Licenses can be optionally configured as either permanent or evaluation. If no location is specified, the license is considered a flexible license available for any location. When a specific location is configured, the feature allowed by the license is considered slot-specific and bound to specific slots only.

Task ID

Task ID	Operation
pkg-mgmt	read, write

Examples

The following example shows how to configure a license to a specific slot:

```
RP/0/RSP0/CPU0:router(admin-config)# license A9K-ADV-VIDEO-LIC type permanent
location 0/1/cpu0
```

Related Commands

Command	Description
show license	Displays all license information.

license add

To add a license to a secure domain router (SDR) license pool, use the **license add** command in administration EXEC mode.

license add [**tar**] *license-name* [**sdr** *sdr-name*]

Syntax Description

tar	(Optional) Indicates that the license file is contained in a tar file.
<i>license-name</i>	Name and location of the license file to be added. The license file can be local to the system or a remote file on a TFTP server.
sdr <i>sdr-name</i>	(Optional) Adds the license to the specified SDR license pool. The default is owner. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

License is added to the owner SDR.

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 4.0.0	The tar keyword was added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **license add** command to add a license to an SDR license pool. The license file can be local to the system or a remote file on a TFTP server. The license file is stored in persistent storage on the router.

To acquire a license file, you must provide a manufacturing supplied product authorization key (PAK) and the license unique device identifier (UDI) of the chassis to the license registration tool at: <https://tools.cisco.com/SWIFT/Licensing/RegistrationServlet>. To obtain the UDI of your chassis, use the **show license udi** command.

By default, there is one license pool available. You can create specific license pools using the **license pool create** command. If a license is available for a specific SDR license pool, it cannot be used in another SDR, unless it is moved from one SDR license pool to another. Use the **license move** command.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to add a software license to the owner SDR:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license add disk1:/P1-LIC-8_TBA09370035_20070207195224661.lic
```

```
License command "license add disk1:/P1-LIC-8_TBA09370035_20070207195224661.lic
sdr Owner" completed successfully.
```

Related Commands

Command	Description
license move	Moves a license from one secure domain router license pool to another.
show license udi	Displays UDI information for the router.
license pool create	Creates a new SDR license pool.

license backup

To back up all licenses contained on the persistent storage of the router, use the **license backup** command in administration EXEC mode.

license backup *backup-file*

Syntax Description

<i>backup-file</i>	Name and location of the backup file to be created or modified. This can be a local file, or a remote file on a TFTP or rcp server.
--------------------	---

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **license backup** command to back up the licenses stored in the persistent storage on the router. We recommend this so that you can restore the licenses at one time while recovering from a failed disk situation. The destination location can be local to the system; in other words, a flash disk or hard disk. Alternatively, it can be a remote file on a TFTP or rcp server. The license information includes the licenses as well as the operational information, such as the slot the licenses are allocated to and the current license operation identifier.

If the backup file already exists, you are prompted to confirm before the file is overwritten.

When licenses are backed up, they can be restored as required using the **license restore** command.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to back up the licenses on a router:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license backup disk1:/license_back
```

License command "license backup disk1:/license_back" completed successfully.

Related Commands

Command	Description
license restore	Restores the licenses on a router using an earlier backup copy.
show license backup	Displays the backup license file.

license move

To move a license from one secure domain router (SDR) license pool to another, use the **license move** command in administration EXEC mode.

license move *feature-id* {**all**| *count*} **sdr** *source-sdr-name* **sdr** *dest-sdr-name*[**evaluation**| **permanent**]

Syntax Description

<i>feature-id</i>	Identifier for the feature entitled in the licenses to be moved. You can display available licenses using the show license command.
all	Specifies to move all available licenses with the specific feature identifier.
<i>count</i>	Number of licenses to move.
sdr <i>source-sdr-name</i>	Specifies the SDR license pool from which to move the specified licenses. The <i>source-sdr-name</i> argument is the name assigned to the SDR.
sdr <i>dest-sdr-name</i>	Specifies the SDR license pool to which the license should be moved. The <i>source-sdr-name</i> argument is the name assigned to the SDR.
evaluation	Specifies to move an evaluation license.
permanent	Specifies to move a permanent license.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.9.0	The evaluation and permanent keywords were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

By default, there is only one license pool available. If you have created multiple license pools, you can use the **license move** command to move the license to a different SDR license pool.

The **license move** command is used only to move licenses between SDR license pools on the same router. To move licenses between routers, you must first remove the license from the original router using the **license**

remove command, and then add it to the new router using the **license add** command. To move licenses between routers, you also need to generate a new license key on Cisco.com. The license registration tool is located at <https://tools.cisco.com/SWIFT/Licensing/RegistrationServlet>.

Licenses can be moved only if they are in the available state. In other words, you have to clear the feature configuration before a license can be released back to the appropriate license pool.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to move a license from one license pool to another:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license move crs-msc-40g sdr owner sdr mysdr
```

Related Commands

Command	Description
license add	Adds a license to a secure domain router (SDR) license pool.
show license	Displays all license information.

license move slot

To move a license from one slot to another, use the **license move slot** command in EXEC or administration EXEC mode.

license move *feature-id* **slot** [*count*] **from** {*node-id*} **allocated** } **to** {*node-id*} **available** } [**evaluation** | **permanent**]

Syntax Description

<i>feature-id</i>	Identifier for the feature entitled in the licenses to be moved. You can display available licenses using the show license, on page 30 command.
<i>count</i>	Number of licenses to move. This argument cannot be used in conjunction with the allocated and available keywords.
from	Specifies from where to move the specified licenses.
<i>node-id</i>	Specific node from which to move the license.
allocated	Specifies to move all allocated licenses with the specific feature identifier. This keyword must be used in conjunction with the available keyword.
to	Specifies to where to move the specified licenses.
<i>node-id</i>	Specific node to which to move the license.
available	Specifies to move the specified allocated licenses into the available state. This keyword must be used in conjunction with the allocated keyword.
evaluation	Specifies to move an evaluation license.
permanent	Specifies to move a permanent license.

Command Default

One license is moved.

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.9.0	The evaluation and permanent keywords were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **license move slot** command moves slot-based licenses from one slot to another slot on the same router.

Use the **allocated** keyword to move all allocated licenses into the available state. The **allocated** keyword must be used in conjunction with the **available** keyword. If no allocated licenses are available that match the feature identifier, the **license move slot** command revokes used licenses on the given slot.

If licenses are going to be revoked on the source card, a warning prompt is displayed.

Licenses can be moved only if they are in the available state. In other words, you have to clear the feature configuration before a license can be released back to the appropriate license pool.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to move a license from one slot to another:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license move crs-msc-40g slot 1 from 0/1/cpu0 to 0/4/cpu0
```

The following example shows how to move all licenses to the available state:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license move crs-msc-40g slot from allocated to available
```

Related Commands

Command	Description
license add	Adds a license to a secure domain router (SDR) license pool.
show license	Displays all license information.

license pool create

To create a new SDR license pool, use the **license pool create** command in administration EXEC mode.

license pool create sdr *sdr-name*

Syntax Description

sdr <i>sdr-name</i>	Creates a license pool on the specified SDR. The <i>sdr-name</i> argument is the name assigned to the SDR.
----------------------------	--

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Before the **license pool create** command can be used, the SDR must exist.

By default, there is only one license pool available. You can create a license pool for each SDR on the router. If there were any licenses in use on nodes in the SDR prior to creating the pool, the licenses are automatically moved to the newly created license pool.

When a license is associated with a specific SDR license pool, you cannot use it for entitlement on another SDR. To move a license from one license pool to another, use the **license move** command. Use the **license add** command to add licenses to the newly created license pool.

To remove an SDR license pool, use the **license pool remove** command.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to create a new license pool for an SDR:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license pool create sdr mysdr
```

License command "license pool create mysdr" completed successfully.

Related Commands

Command	Description
license add	Adds a license to a secure domain router (SDR) license pool.
license move	Moves a license from one secure domain router license pool to another.
license pool remove	Removes a secure domain router license pool.

license pool remove

To remove a secure domain router (SDR) license pool, use the **license pool remove** command in administration EXEC mode.

license pool remove sdr *sdr-name*

Syntax Description

sdr <i>sdr-name</i>	Creates a license pool on the SDR specified by <i>sdr-name</i> . The <i>sdr-name</i> argument is the name assigned to the SDR.
----------------------------	--

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

By default, there is only one license pool available. If you have created multiple license pools, you can use the **license pool remove** command to remove them as desired. You cannot remove the default license pool in the owner SDR.

If you remove a license pool that contains licenses, the licenses are automatically returned to the owner SDR license pool.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to remove an SDR license pool:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license pool remove sdr mysdr

License command "license pool remove sdr mysdr" completed successfully.
```

Related Commands

Command	Description
license pool create	Creates a new SDR license pool.

license remove

To remove a license permanently from a router, use the **license remove** command in administration EXEC mode.

```
license remove feature-id {id ticket permission-ticket rehost-ticket} [sdr sdr-name] {evaluation|permanent}
```

Syntax Description

<i>feature-id</i>	Identifier for the feature entitled in the licenses to be removed. You can display available features using the show license command.
id	Specifies to remove licenses using a unique identifier of the license.
sdr <i>sdr-name</i>	Removes the license from the specified SDR license pool.
evaluation	Specifies to move an evaluation license.
permanent	Specifies to move a permanent license.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.7.0	This command was introduced.
Release 3.9.0	The evaluation and permanent keywords were added.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **license remove** command permanently removes a license from the router and outputs a key or rehost ticket that can be used to prove that the license has been removed. This command accepts a permission ticket, obtained from CCO, that includes the UDI, feature ID and count of licenses to remove. Refer to the license registration tool on CCO for more information: <https://tools.cisco.com/SWIFT/Licensing/RegistrationServlet>.

If you use a permission ticket that was previously used, the same rehost ticket is created, but no licenses are removed.

Licenses can be removed only if they are in the available state. In other words, you have to clear the feature configuration before that the license can be released back to the appropriate license pool.

Task ID

Task ID	Operation
pkg-mgmt	execute

Examples

The following example shows how to remove a license from a license pool:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license remove crs-msc-40g ticket
disk1:/my_permission disk1:/40g_rehost
```

Related Commands

Command	Description
show license	Displays all license information.

license restore

To restore the licenses on a router using an earlier backup copy, use the **license restore** command in administration EXEC mode.

license restore *backup-file*

Syntax Description

<i>backup-file</i>	Name and location of the backup file to be used for the license restore. This can be a local file, or a remote file on a TFTP or rcp server.
--------------------	--

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **license restore** command restores the licenses on the router using an earlier backup copy that was created using the **license backup** command. The source location can be local to the system, in other words, a flash disk or hard disk. Alternatively, it can be a remote file on a TFTP or rcp server.

Before the licenses are restored, the license manager verifies the following:

- The backup format is valid.
- The licenses are issued for the chassis where the CLI is being run.
- The license operation identifier in the backup file matches the one on the router EEPROM.

Task ID

Task ID	Operations
pkg-mgmt	execute

Examples

The following example shows how to move a license from one license pool to another:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# license restore disk1:/license_back

Info: This command will erase all existing licenses.
Info: It is strongly recommended to backup existing licenses first. Do you wish to
proceed? [yes/no]: y

License command "license restore disk1:/license_back" completed successfully.
```

Related Commands

Command	Description
license backup	Backs up all licenses contained on the persistent storage of the router.

license save credential

To retrieve the router credentials and save them to a specified location, use the **license save credential** command in administration EXEC mode.

license save credential *file-name*

Syntax Description	
<i>file-name</i>	Name and location of file where the credentials are saved.

Command Default	None
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Command Modes	Administration EXEC
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Command History	Release	Modification
	Release 4.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The following device credentials are saved:

- OPID
- SN—Serial number attached to the chassis.
- UDI—Universal device identifier; the Cisco wide identifier that contains the product ID, serial number, and version.

Task ID	Task ID	Operation
	pkg-mgmt	execute

Examples

The following example shows how to save the credentials to a file:

```
RP/0/RP0/CPU0:router:router(admin)# license save credential disk1:/cred_file
```

The following example shows the typical information saved to the credential file:

```
Wed Aug  4 12:20:19.544 DST
Device credentials:
  OPID :5
  SN   :FOX1232H67M
  PID  :ASR-9010-AC
```

Related Commands

Command	Description
show license chassis	Displays all licenses with their serial number information.
show license udi	Displays UDI information for the router.

show hw-module linecard throughput



Note Effective with Cisco IOS XR Release 4.0.0, the **show hw-module linecard throughput** command was removed.

To display the throughput of modular services cards (MSCs) in the Cisco CRS-1 router , use the **show hw-module linecard throughput** command in EXEC mode.

show hw-module linecard throughput [*location node-id*]

Syntax Description

location <i>node-id</i>	Specifies the node for which to display the throughput. The <i>node-id</i> argument is expressed in <i>rack/slot/module</i> notation.
--------------------------------	---

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 4.0.0	This command was removed.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show hw-module linecard throughput** command to determine if MSCs are running at 40 Gbps or 20 Gbps throughput.

Task ID

Task ID	Operations
interface	read
drivers	read

Examples

The following example displays sample output from the **show linecard throughput** command:

```
RP/0/RP0/CPU0:router# show hw-module linecard throughput
```

```
Mon Aug 17 04:48:48.760 DST
```

```
----- Throughput -----
Location      Lic Acquired  Configured    Operating
-----
0/1/CPU0      Yes           --            40G
0/6/CPU0      Yes           --            40G
```

Table 1: show hw-module linecard throughput Field Descriptions

Field	Description
Location	Indicates the specific card location.
Configured	Indicates whether or not the feature is configured on this card.
Lic Acquired	Indicates whether or not a license is acquired for the card.
Operating	Indicates if the MSC is operating at 40 Gbps or 20 Gbps.

Related Commands

Command	Description
hw-module linecard throughput	Configures the throughput for a modular services card (MSC).

show license

To display all license information, use the **show license** command in EXEC or administration EXEC mode.

show license [*feature-id*] **location** *node-id* [**sdr** *sdr-name*]

Syntax Description

<i>feature-id</i>	(Optional) Identifier for the feature entitled in the licenses to be displayed.
location <i>node-id</i>	(Optional) Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
sdr <i>sdr-name</i>	(Optional) Displays the licenses in the specified SDR license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license** command displays all license information. Alternatively, you can display license information for a specific feature identifier, slot location, or SDR by using the available options.

If the feature process has supplied an opaque string while checking out the license, that string is displayed next to the feature identifier in the command output.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example shows sample output from the **show license** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license

FeatureID: CRS-MS-40G
(Slot based, Implicit[Remaining time: 81 days])
Total licenses 2

Available for use          0
Allocated to location     2
Active                    0

Pool: Owner
Total licenses in pool: 2
Status: Available         0 Operational:      2

Locations with licenses: (Active/Allocated) [SDR]
      0/0/CPU0             (0/1) [Owner]
      0/1/CPU0             (0/1) [Owner]
```

Table 2: show license Field Descriptions

Field	Description
FeatureID	Feature to which the licenses apply. The type of license is designated as one of the following: <ul style="list-style-type: none"> • Permanent licenses—Enable a designated feature permanently as long as the license resides on the router. • Evaluation or metered licenses—Enable a feature for a limited period of time. • Implicit licenses—Metered licenses that are included with the software image (upgrade or initial installation).
Total licenses	Number of licenses on the router.
Available for use	Number of licenses that are not currently active.
Allocated to location	Number of licenses allocated to a slot but not used.
Active	Number of licenses currently checked out or being used by applications.
Pool	License pool to which the licenses belong.
Total licenses in pool	Number of licenses in the specific pool.

Field	Description
Status	<p>Indicates the number of licenses in each state. Licenses can have the following states:</p> <p>Available—License is available in the pool and can be assigned to a slot/feature process. For example, a recently added 40-Gbps license to the router is available before it gets checked out by a card.</p> <p>Allocated—License is assigned to a slot but is unused. In other words, the feature process is not using the license. For example, a 40-Gbps license is allocated to slot 5 if the license was previously used but the card is currently in the shutdown state.</p> <p>Active—Feature process has checked out a license. Generally this happens when the feature is actively using the license. For example, if a card is in IOS XR RUN state and is passing traffic at 40 Gbps, a 40-Gbps license is in the used state in that slot.</p> <p>Operational—All licenses that are either active or allocated.</p> <p>Expired—License has expired. This is applicable only for evaluation licenses or licenses granted by Cisco.</p>
Locations with licenses	<p>Slot where the licenses are being used, followed by an indication of whether the license is active or allocated, and to which license pool it belongs.</p>

show license active

To display license information for all licenses that are currently checked out or being used by an application, use the **show license active** command in EXEC or administration EXEC mode.

show license active [*feature-id*] **location** *node-id* [**sdr** *sdr-name*]

Syntax Description

<i>feature-id</i>	(Optional) Identifier for the feature entitled in the licenses to be displayed.
location <i>node-id</i>	(Optional) Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
sdr <i>sdr-name</i>	(Optional) Displays the licenses in the specified secure domain router (SDR) license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license active** command displays all license information regarding licenses that are currently checked out or being used by an application. You can display the information for a specific feature identifier, slot location, or SDR by using the available options.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license active** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license active

FeatureID: CRS-MSC-40G

(Slot based, Implicit[Remaining time: 90 days])
  Status: Active           2
    SDR: Owner
      Operational:       2

Location: 0/1/CPU0        1
          0/6/CPU0        1
```

See [Table 2: show license Field Descriptions, on page 31](#) for a description of the significant fields shown in the display.

show license allocated

To display license information for all licenses allocated to a slot but not used, use the **show license allocated** command in EXEC or administration EXEC mode.

show license allocated [*feature-id*] **location** *node-id* **sdr** *sdr-name*]

Syntax Description

<i>feature-id</i>	(Optional) Identifier for the feature entitled in the licenses to be displayed.
location <i>node-id</i>	(Optional) Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
sdr <i>sdr-name</i>	(Optional) Displays the licenses in the specified secure domain router (SDR) license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license allocated** command displays all license information regarding licenses that are allocated to a slot but are not currently being used. You can display the information for a specific feature identifier, slot location, or SDR by using the available options.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license allocated** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license allocated

FeatureID: CRS-MS-40G

(Slot based, Permanent)
Status: Allocated 1
  SDR: Owner
    Status: Operational: 1
    Locations with licenses: (Active/Allocated)
                          0/1/CPU0 (0/1)

FeatureID: XC-L3VPN (Slot based, Permanent)
No allocated licenses.
```

See [Table 2: show license Field Descriptions, on page 31](#) for a description of the significant fields shown in the display.

show license available

To display all licenses that are not currently in use or allocated to specific slots, use the **show license available** command in EXEC or administration EXEC mode.

show license available *{feature-id}* **location** *node-id* **sdr** *sdr-name*}

Syntax Description

<i>feature-id</i>	Identifier for the feature entitled in the licenses to be displayed.
location <i>node-id</i>	Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
sdr <i>sdr-name</i>	Displays the licenses in the specified secure domain router (SDR) license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license available** command displays all licenses that currently are not being used or allocated to a specific slot. You can display only licenses with a specific feature identifier, slot location, or SDR by using the available options.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license available** command with only implicit licenses available:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license available

FeatureID: CRS-MS-40G

(Slot based, Implicit[Remaining time: 90
days]) Status: Available 0 SDR: Owner Status: Available 0 Location: 0/1/CPU0 1 0/6/CPU0 1
```

The following example displays sample output from the **show license available** command with permanent licenses installed:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license available

FeatureID: CRS-MS-40G

(Slot based, Permanent)
Status: Available      7
  SDR: Owner Status:
    Available          7

FeatureID: XC-L3VPN (Slot based, Permanent)
Status: Available      8
  SDR: Owner
    Status: Available  8
```

See [Table 2: show license Field Descriptions, on page 31](#) for a description of the significant fields shown in the display.

show license backup

To display the backup license file, use the **show license backup** command in administration EXEC mode.

show license backup *file-name*

Syntax Description

<i>file-name</i>	Name of the backup license file.
------------------	----------------------------------

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license backup** command displays the UDI information and license summary of a backup database, so that you can confirm the contents of a particular backup file before restoring it. Create the backup license file using the **license backup** command. Restore licenses from a backup using the **license restore** command.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example shows sample output from the **show license backup** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license backup disk1:/license_back

Local Chassis UDI Information:
  S/N           : TBA09370035
  Operation ID  : 5
  Licenses      :

FeatureID      Type                #installed
CRS-MS-40G    Slot based, Permanent    2
XC-L3VPN      Slot based, Permanent    1
```

Table 3: show license backup Field Descriptions

Field	Description
S/N	Chassis serial number.
Operation ID	License operation ID number. The license operation ID is incremented by the license manager every time there is a successful license add or remove operation.
FeatureID	Feature to which the licenses apply.
Type	Type of license: slot-based or chassis-based; permanent, evaluation, or implicit.
#installed	Number of such licenses installed.

Related Commands

Command	Description
license backup	Backs up all licenses contained on the persistent storage of the router.
license restore	Restores the licenses on a router using an earlier backup copy.

show license chassis

To display all licenses with their serial number information, use the **show license chassis** command in administration EXEC mode.

show license chassis

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes Administration EXEC

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	pkg-mgmt	read

Examples The following example illustrates sample output from the **show license chassis** command:

```
RP/0/RP0/CPU0:router(admin)# show license chassis
Fri Sep 25 03:50:28.152 DST

FeatureID: CRS-MSC-40G-IMP (Slot based, Implicit[Remaining time: unlimited])
Total licenses 2
  Available for use          0
  Allocated to location     0
  Active                    2
  Pool: Owner
    Total licenses in pool: 2
    Status: Available       0   Operational:   2
    Locations with licenses: (Active/Allocated) [SDR]
      0/6/CPU0              (1/0) [Owner]
      0/1/CPU0              (1/0) [Owner]

S/N Information:
S/N TBA09370035:   0 licenses
```

show license evaluation

To display information about any evaluation licenses currently allocated, available, or in use, use the **show license evaluation** command in EXEC or administration EXEC mode.

show license evaluation [*feature-id*] **location** *node-id* **sdr** *sdr-name*]

Syntax Description

<i>feature-id</i>	(Optional) Identifier for the feature entitled in the licenses to be displayed.
location <i>node-id</i>	(Optional) Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
sdr <i>sdr-name</i>	(Optional) Displays the licenses in the specified secure domain router (SDR) license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license evaluation** command displays information regarding any evaluation licenses that are currently allocated, available, or in use, including the number of days left until they expire. You can display the information for a specific feature identifier, slot location, or SDR by using the available options.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license evaluation** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license evaluation

FeatureID: XC-L3VPN (Non slot based, Evaluation[Valid])
Valid for 2day(s) from 15:13:16 Nov 17 2006
Remaining time: 1 day(s) 21:07:46
Status: Available      6   Allocated      0   Active      0
   SDR: Owner
      Status: Available      6   Operational:      0
```

See [Table 2: show license Field Descriptions](#), on page 31 for a description of the significant fields shown in the display.

show license expired

To display information regarding evaluation licenses that have expired, use the **show license expired** command in EXEC or administration EXEC mode.

show license expired [*feature-id*] **location** *node-id* **sdr** *sdr-name*]

Syntax Description

<i>feature-id</i>	(Optional) Identifier for the feature entitled in the licenses to be displayed.
location <i>node-id</i>	(Optional) Specifies the location of the card. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
sdr <i>sdr-name</i>	(Optional) Displays the licenses in the specified secure domain router (SDR) license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license expired** command displays information regarding evaluation licenses that have expired. You can display the information for a specific feature identifier, slot location, or SDR by using the available options.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license expired** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license expired

FeatureID: XC-L3VPN (Non slot based, Evaluation[Expired])

Status: Available 6 Allocated 0 Active 0

SDR: Owner

Status: Available 6 Operational: 0
```

See [Table 2: show license Field Descriptions, on page 31](#) for a description of the significant fields shown in the display.

show license features

To display all features that can be licensed on the router, use the **show license features** command in administration EXEC mode.

show license features

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes Administration EXEC

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	pkg-mgmt	read

show license file

To display all the XML license files that have been added to a router, use the **show license file** command in administration EXEC mode.

show license file

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes Administration EXEC

Command History	Release	Modification
	Release 4.0.0	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Task ID	Operation
	pkg-mgmt	read

Examples The following example shows sample output from the **show license file** command:

```
RP/0/RSP0/CPU0:router(admin)# show license file

Wed Aug  4 03:01:53.506 DST
License File Info:

Store Name: Permanent
Store Index: 1
License Line:11 A9K-ADV-OPTIC-LIC 3.9 LONG NORMAL STANDALONE EXCL 1_KEYS INFINITE_KEYS
NEVER NEVER NiL SLM_CODE CL_ND LCK NiL *14BF288N4WTJ7GU400 NiL NiL NiL 5_MINS
<UDI><PID>ASR-9010-AC</PID><SN>FOX1232H67M</SN></UDI><SEQ>0</SEQ>
q:ljk6WAO14odlxDXWnQ3J6xDiU1o1aCgQLgCXrnqsLmnGFo78DkiH9E0GWQzabIVe4jB9EUrAe5u:
N8eDRPXcfzjGwcgBECfKU40PobqbfQVkeVa:LRYQG2poKwPPHYaRVym0MMluk7n46Awe6GZJcBLX
Store Name: Permanent
Store Index: 2
License Line:11 A9K-ADV-VIDEO-LIC 3.9 LONG NORMAL STANDALONE EXCL 1_KEYS INFINITE_KEYS
NEVER NEVER NiL SLM_CODE CL_ND LCK NiL *14BF288N4WTJ7GU400 NiL NiL NiL 5_MINS
<UDI><PID>ASR-9010-AC</PID><SN>FOX1232H67M</SN></UDI><SEQ>1</SEQ>
,WGRw73h2JqIhAwAt6dqVhKICQaivZh:eW4ZYJ2c6wL1E1ln0f9eEsU2hwv6V1KKLro0S2AeLSrBp85nJLO
```

show license file

```

8yCVmzUnQrCYojsFHAcpu2aRmfFVxR1BNBMUf7Ik,Urcg16fMaLQc58X0JFUUpwM86Hkz2LV

Store Name: Permanent
Store Index: 3
License Line:11 A9K-AIP-LIC-B 3.9 LONG NORMAL STANDALONE EXCL 1 KEYS INFINITE KEYS
NEVER NEVER NiL SLM_CODE CL_ND LCK NiL *14BFZ88N4WTJ7GU400 NiL NiL NiL 5_MINS
<UDI><PID>ASR-9010-AC</PID><SN>FOX1232H67M</SN></UDI><SEQ>2</SEQ>
7:Pr2QJwiHdoYnhjRPs13i09kpWoj:
,sNex7JziswOf7A9IDCzuZ48e4qRl4QSFELQHLwT6rfWUbKt4Yt,OoXV876r1M:3APZS4pPxzNQd03NWWak0HP,
YZq7jRh8H,HEVwf2FrNcwqEpVdEpkS4tiufs

Store Name: Permanent
Store Index: 4
License Line:11 A9K-AIP-LIC-E 3.9 LONG NORMAL STANDALONE EXCL 1 KEYS INFINITE KEYS
NEVER NEVER NiL SLM_CODE CL_ND LCK NiL *14BFZ88N4WTJ7GU400 NiL NiL NiL 5_MINS
<UDI><PID>ASR-9010-AC</PID><SN>FOX1232H67M</SN></UDI><SEQ>3</SEQ> F44b2Phw6KdqjSnFPU,
QL7oJjk9q1syjplXuD3wZBGfDb0TsUx:QPDKx5ee:xbOf7ib,OxtDNOjwpFbdGMQt8Vo02sAkpaK7ezSyVD:I:
46VvFYd4:WsO87aa8kVgRJGM3RsixQ1tiKk7deWfIygtlofr

Store Name: Permanent
Store Index: 5
License Line:11 A9K-ivRF-LIC 3.9 LONG NORMAL STANDALONE EXCL 1 KEYS INFINITE KEYS NEVER
NEVER NEVER NiL SLM_CODE CL_ND LCK NiL *14BFZ88N4WTJ7GU400 NiL NiL NiL 5_MINS
<UDI><PID>ASR-9010-AC</PID><SN>FOX1232H67M</SN></UDI><SEQ>4</SEQ> oYkhxBsT:bmcqh3CU9EbLb,
1LKLToknjPwjf7k83X7f0Xy:DZf1BXjgnTozUn7FCf0Jaya9L81hhhS73k4AtrtVOsKvDmh7EdGWAu2WI78E3VnEfZka:
uSHTBxhNpQ1Blpf0qj5UTH8QxLz6psFsi,KwVd

```


show license log

To display the operational or administrative logs for the license system, use the **show license log** command in EXEC or administration EXEC mode.

```
show license log {operational| administration} {request-id|feature-id} sdr sdr-name}
```

Syntax Description

operational	Displays the operational logs for the license system.
administration	Displays the administration logs for the license system.
<i>request-id</i>	Identifier of a particular log entry.
<i>feature-id</i>	Identifier for the feature entitled in the licenses to be displayed.
sdr sdr-name	Displays the licenses in the specified secure domain router (SDR) license pool. The <i>sdr-name</i> argument is the name assigned to the SDR.

Command Default

No default behavior or values

Command Modes

Administration EXEC
EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license log** command displays the operational or administrative logs for the license system. The administrative log displays all licenses that are added, removed, or moved along with a timestamp and username of the person who initiated the request. This log persists across reloads. The operation log displays when a license was checked out or released by a feature. The license release can be done by the license manager if it detects that the feature is not responding. This log does not persist between reloads.

You can display license information for a specific feature identifier or SDR by using the available options.

Task ID	Task ID	Operations
	pkg-mgmt	read

Examples

The following example displays sample output from the **show license log** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license log operational
#ID  :SDR      :FeatureID   :NodeID     :Time:    Log
1    :Owner    :CRS-MSC-40G
      :0/6/CPU0  :Tue Feb  6 21:33:16 2007:
      license_acquire: opaque_string , result(No error)
2    :Owner    :CRS-MSC-40G
      :0/1/CPU0  :Tue Feb  6 21:33:16 2007:
      license_acquire: opaque_string , result(No error)
```

See [Table 2: show license Field Descriptions, on page 31](#) for a description of the significant fields shown in the display.

show license pools

To display the currently configured set of license pools, use the **show license pools** command in administration EXEC mode.

show license pools [detail]

Syntax Description

detail	(Optional) Displays the locations of the licenses in each pool.
---------------	---

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license pools** command displays all license pools, and the features that are enabled with the licenses in each pool. By default, all licenses are contained in the owner SDR pool. If you have created SDR license pools with the **license pool create** command, you can place licenses in separate pools.

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license pools** command. In this example, the owner SDR has both 40-Gbps and Layer_3 VPN licenses, while the SDR sdr2 has only 40-Gbps licenses.

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license pools

Pool Name      Feature
=====
Owner          CRS-MSC-40G XC-L3VPN
```

sdr2

CRS-MS-40G

Table 4: show license pools Field Descriptions

Field	Description
Owner	SDR license pool.
Feature	Feature that is enabled in the specified license pool.

Related Commands

Command	Description
license pool create	Creates a new SDR license pool.

show license udi

To display unique device identifier (UDI) information for the router, use the **show license udi** command in administration EXEC mode.

show license udi

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show license udi** command displays the complete UDI of the router to which any license is associated. The UDI comprises the chassis serial number, along with a license operation ID number. The UDI is used to acquire a license file using the license registration tool on CCO. The license tool is located at <https://tools.cisco.com/SWIFT/Licensing/RegistrationServlet?>

Task ID

Task ID	Operations
pkg-mgmt	read

Examples

The following example displays sample output from the **show license udi** command:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# show license udi

Local Chassis UDI Information:
PID          : CRS-8-LCC
S/N          : TBA09370035
Operation ID : 1
```

Table 5: show license udi Field Descriptions

Field	Description
PID	Product ID number.
S/N	Chassis serial number.
Operation ID	License operation ID number. The license operation ID is incremented by the license manager every time there is a successful license add or remove operation.

show license status

To display the status of all relevant licenses, use the **show license status** command in administration EXEC mode.

show license status

Usage Guidelines

This command has no keywords or arguments.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
pkg-mgmt	read

Examples

The following example shows output from the **show license status** command:

```
RP/0/RSP0/CPU0:router(admin)# show license status

Sun Jul 18 05:25:09.855 DST
License Type Supported
  permanent  Non-expiring node-locked licenses
  evaluation  Expiring node-locked licenses

License Operation Supported
  add        Add license file to the system
  backup     Backup License
  move       Move licenses
  pool       License pool creation
  remove     Remove license file
  restore    Restore backedup licenses

Device Status
  Device Credential type: IMAGE
  Device Credential Verification: PASS
```

```
Rehost Type: Hardware
```