



System Management Commands

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arp

To display the contents of the Address Resolution Protocol (ARP) table, use the **arp** command in boot loader mode.

```
arp [ip_address]
```

Syntax Description	<i>ip_address</i> (Optional) Shows the ARP table or the mapping for a specific IP address.
---------------------------	--

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Boot loader
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Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines	The ARP table contains the IP-address-to-MAC-address mappings.
-------------------------	--

Examples	This example shows how to display the ARP table:
-----------------	--

```
Device: arp 172.20.136.8  
arp'ing 172.20.136.8...  
172.20.136.8 is at 00:1b:78:d1:25:ae, via port 0
```

boot

To load and boot an executable image and display the command-line interface (CLI), use the **boot** command in boot loader mode.

boot *flag filesystem:/file-url...*

Syntax Description

<i>filesystem:</i>	Alias for a file system. Use flash: for the system board flash device; use usbflash0: for USB memory sticks.
<i>/file-url</i>	Path (directory) and name of a bootable image. Separate image names with a semicolon.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

When you enter the **boot** command without any arguments, the device attempts to automatically boot the system by using the information in the BOOT environment variable, if any.

If you supply an image name for the *file-url* variable, the **boot** command attempts to boot the specified image.

When you specify boot loader **boot** command options, they are executed immediately and apply only to the current boot loader session.

These settings are not saved for the next boot operation.

Filenames and directory names are case sensitive.

Example

This example shows how to boot the device using the *new-image.bin* image:

```
Device: set BOOT flash:/new-images/new-image.bin
Device: boot
```

After entering this command, you are prompted to start the setup program.

boot system

To specify which system image to load during the next boot cycle, use the **boot system** command in global configuration mode. To remove the startup system image specification, use the **no** form of this command.

```
boot system {filesystem: /file-url | switch all filesystem: /file-url}
no boot system [{filesystem: /file-url | switch all [filesystem: /file-url]}]
```

Syntax Description

filesystem: Specifies a file system. The options are *bootflash:*, *flash:*, *ftp:*, *http:*, *sftp:*, and *tftp:*.

switch all Sets the system image for all devices in the stack.

/file-url The URL of the system image to load at system startup.

Command Default

No default behavior or values.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Examples

This example shows how to boot the system image file named `cat9k_lite_iosxe.16.09.03.SPA.bin` from the bootflash:

```
Device(config)# boot system bootflash:cat9k_lite_iosxe.16.09.03.SPA.bin
```

This example shows how to boots all devices in the stack from a network server with an IP address:

```
Device(config)# boot system switch all tftp://10.11.15.10/cat9k_lite_iosxe.16.09.03.SPA.bin
```

cat

To display the contents of one or more files, use the **cat** command in boot loader mode.

cat *filesystem:/file-url...*

Syntax Description

filesystem: Specifies a file system.

/file-url Specifies the path (directory) and name of the files to display. Separate each filename with a space.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

Filenames and directory names are case sensitive.

If you specify a list of files, the contents of each file appears sequentially.

Examples

This example shows how to display the contents of an image file:

```
Device: cat flash:image_file_name
version_suffix: universal-122-xx.SEx
version_directory: image_file_name
image_system_type_id: 0x00000002
image_name: image_file_name.bin
ios_image_file_size: 8919552
total_image_file_size: 11592192
image_feature: IP|LAYER_3|PLUS|MIN_DRAM_MEG=128
image_family: family
stacking_number: 1.34
board_ids: 0x00000068 0x00000069 0x0000006a 0x0000006b
info_end:
```

copy

To copy a file from a source to a destination, use the **copy** command in boot loader mode.

```
copy filesystem:/source-file-url filesystem:/destination-file-url
```

Syntax Description

<i>filesystem:</i>	Alias for a file system. Use usbflash0: for USB memory sticks.
<i>/source-file-url</i>	Path (directory) and filename (source) to be copied.
<i>/destination-file-url</i>	Path (directory) and filename of the destination.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

Filenames and directory names are case sensitive.

Directory names are limited to 127 characters between the slashes (/); the name cannot contain control characters, spaces, deletes, slashes, quotes, semicolons, or colons.

Filenames are limited to 127 characters; the name cannot contain control characters, spaces, deletes, slashes, quotes, semicolons, or colons.

If you are copying a file to a new directory, the directory must already exist.

Examples

This example shows how to copy a file at the root:

```
Device: copy usbflash0:test1.text usbflash0:test4.text  
File "usbflash0:test1.text" successfully copied to "usbflash0:test4.text"
```

You can verify that the file was copied by entering the **dir filesystem:** boot loader command.

copy startup-config tftp:

To copy the configuration settings from a switch to a TFTP server, use the **copy startup-config tftp:** command in Privileged EXEC mode.

copy startup-config tftp: *remote host {ip-address}/{name}*

Syntax Description	<i>remote host {ip-address}/{name}</i> Host name or IP-address of Remote host.
---------------------------	--

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Privileged EXEC
----------------------	-----------------

Command History	Release	Modification
	Cisco IOS XE Release 16.1	This command was introduced.

Usage Guidelines	To copy your current configurations from the switch, run the command copy startup-config tftp: and follow the instructions. The configurations are copied onto the TFTP server.
-------------------------	--

Then, login to another switch and run the command **copy tftp: startup-config** and follow the instructions. The configurations are now copied onto the other switch.

Examples	This example shows how to copy the configuration settings onto a TFTP server:
-----------------	---

```
Device: copy startup-config tftp:
Address or name of remote host []?
```


copy tftp: startup-config

To copy the configuration settings from a TFTP server onto a new switch, use the **copy tftp: startup-config** command in Privileged EXEC mode on the new switch.

copy tftp: startup-config *remote host {ip-address}/{name}*

Syntax Description	<i>remote host {ip-address}/{name}</i> Host name or IP-address of Remote host.
---------------------------	--

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Privileged EXEC
----------------------	-----------------

Command History	Release	Modification
	Cisco IOS XE Release 16.1	This command was introduced.

Usage Guidelines	After the configurations are copied, to save your configurations, use write memory command and then either reload the switch or run the copy startup-config running-config command.
-------------------------	---

Examples	This example shows how to copy the configuration settings from the TFTP server onto a switch:
-----------------	---

```
Device: copy tftp: startup-config
Address or name of remote host []?
```

debug voice diagnostics mac-address

To enable debugging of voice diagnostics for voice clients, use the **debug voice diagnostics mac-address** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug voice diagnostics mac-address *mac-address1* **verbose** **mac-address** *mac-address2* **verbose**
nodebug voice diagnostics mac-address *mac-address1* **verbose** **mac-address** *mac-address2* **verbose**

Syntax Description	voice diagnostics	Configures voice debugging for voice clients.
	mac-address <i>mac-address1</i> mac-address <i>mac-address2</i>	Specifies MAC addresses of the voice clients.
	verbose	Enables verbose mode for voice diagnostics.

Command Default No default behavior or values.

Command Modes Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

The following is sample output from the **debug voice diagnostics mac-address** command and shows how to enable debugging of voice diagnostics for voice client with MAC address of 00:1f:ca:cf:b6:60:

```
Device# debug voice diagnostics mac-address 00:1f:ca:cf:b6:60
```

dir

To display the list of files and directories on the specified file system, use the **dir** command in boot loader mode.

dir *filesystem:/file-url*

Syntax Description

filesystem: Alias for a file system. Use **flash:** for the system board flash device; use **usbflash0:** for USB memory sticks.

/file-url (Optional) Path (directory) and directory name that contain the contents you want to display. Separate each directory name with a space.

Command Default

No default behavior or values.

Command Modes

Boot Loader

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

Directory names are case sensitive.

Examples

This example shows how to display the files in flash memory:

```
Device: dir flash:
Directory of flash:/
  2  -rwx      561   Mar 01 2013 00:48:15  express_setup.debug
  3  -rwx    2160256  Mar 01 2013 04:18:48  c2960x-dmon-mz-150-2r.EX
  4  -rwx      1048   Mar 01 2013 00:01:39  multiple-fs
  6  drwx      512   Mar 01 2013 23:11:42  c2960x-universalk9-mz.150-2.EX
645 drwx      512   Mar 01 2013 00:01:11  dc_profile_dir
647 -rwx      4316   Mar 01 2013 01:14:05  config.text
648 -rwx        5    Mar 01 2013 00:01:39  private-config.text

96453632 bytes available (25732096 bytes used)
```

Table 1: dir Field Descriptions

Field	Description
2	Index number of the file.
-rwx	File permission, which can be any or all of the following: <ul style="list-style-type: none"> • d—directory • r—readable • w—writable • x—executable

Field	Description
1644045	Size of the file.
<date>	Last modification date.
env_vars	Filename.

exit

To return to the previous mode or exit from the CLI EXEC mode, use the **exit** command.

exit

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Privileged EXEC
Global configuration

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

This example shows how to exit the configuration mode:

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

help

To display the available commands, use the **help** command in boot loader mode.

help

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Boot loader

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Example

This example shows how to display a list of available boot loader commands:

```
Device:help
? -- Present list of available commands
arp -- Show arp table or arp-resolve an address
boot -- Load and boot an executable image
cat -- Concatenate (type) file(s)
copy -- Copy a file
delete -- Delete file(s)
dir -- List files in directories
emergency-install -- Initiate Disaster Recovery
...
...
...
unset -- Unset one or more environment variables
version -- Display boot loader version
```

history

To view the list of all the commands executed on the command-line interface (CLI) in boot loader mode, use the **history** command in boot loader mode.

history

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

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Boot loader
----------------------	-------------

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Example

This example shows how to view the command history executed on the CLI in boot loader mode:

```
Device: history
```

idprom

To display the identification programmable read-only memory (IDPROM) information for the device, use the **idprom** command in boot loader mode.

idprom

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Boot loader

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Example

This example shows how to view the IDPROM information for the device in boot loader mode:

Device: **idprom**

The following is a sample output of the **idprom** command in boot loader mode:

Device: **idprom**

```

=====
                        NAME  VALUE
=====
      Part Number - PCA : 73-19245-01
Revision number - PCA : 04
      Deviation number : 0x0
      Serial Number - PCA : JAE22080JWK
      RMA test history : 0x00
          RMA Number : 0-0-0-0
          RMA history : 0x00
Part Number - TAN(6-byte) : 68-101382-01
Revision number - TAN : 17
          CLEI codes : 1
ECI number - Alphanumeric : 0
Product number/identifier : C9200-48P-4X-E
      Version identifier : P2A
          Serial Number : JPG220700QD
          MAC address - Base : 682C.7BF7.0E80
MAC address - block size : 128
          RFID - chassis : E000000000000000
Manufacturing test data : 0000000000000000
          DB Info
          USB DB
=====

```



```
part number - USB : 73-18785-02
  rev number - USB : 02
serial number - USB : JAE22110914
  DB Info
  POE DB 1
part number - POE1 : 73-18775-01
  rev number - POE1 : 04
serial number - POE1 : JAE22080ACT
  UDI name/Base PID : C9200-48P-4X
  Controller Type : 0x313
Hardware Version <major.minor> : <0.2>
```

install

To install Software Maintenance Upgrade (SMU) packages, use the **install** command in privileged EXEC mode.

```
install {abort | activate | file {bootflash: | flash: | harddisk: | webui:} [{auto-abort-timer timer timer
prompt-level {all | none}}]} | add file {bootflash: | flash: | ftp: | harddisk: | http: | https: | rcp: | scp:
| tftp: | webui:} [{activate [{auto-abort-timer timer prompt-level {all | none}commit}}]}] | commit |
auto-abort-timer stop | deactivate file {bootflash: | flash: | harddisk: | webui:} | label id{description
description | label-name name} | remove {file {bootflash: | flash: | harddisk: | webui:} | inactive } |
rollback to {base | committed | id {install-ID} | label {label-name}}
```

Syntax Description

abort	Terminates the current install operation.
activate	Validates whether the SMU is added through the install add command. This keyword runs a compatibility check, updates package status, and if the package can be restarted, triggers post-install scripts to restart the necessary processes, or triggers a reload for nonrestartable packages.
file	Specifies the package to be activated.
{ bootflash: flash: harddisk: webui: }	Specifies the location of the installed package.
auto-abort-timer <i>timer</i>	(Optional) Installs an auto-abort timer.
prompt-level { all none }	(Optional) Prompts a user about installation activities. For example, the activate keyword automatically triggers a reload for packages that require a reload. Before activating the package, a message prompts users about wanting to continue or not. The all keyword allows you to enable prompts. The none keyword disables prompts.
add	Copies files from a remote location (through FTP or TFTP) to a device and performs SMU compatibility check for the platform and image versions. This keyword runs base compatibility checks to ensure that a specified package is supported on a platform.
{ bootflash: flash: ftp: harddisk: http: https: rcp: scp: tftp: webui: }	Specifies the package to be added.

commit	Makes SMU changes persistent over reloads. You can perform a commit after activating a package while the system is up, or after the first reload. If a package is activated, but not committed, it remains active after the first reload, but not after the second reload.
auto-abort-timer stop	Stops the auto-abort timer.
deactivate	Deactivates an installed package. Note Deactivating a package also updates the package status and might trigger a process restart or reload.
label id	Specifies the ID of the install point to label.
description	Adds a description to the specified install point.
label-name name	Adds a label name to the specified install point.
remove	Removes the installed packages. The remove keyword can only be used on packages that are currently inactive.
inactive	Removes all the inactive packages from the device.
rollback	Rolls back the data model interface (DMI) package SMU to the base version, the last committed version, or a known commit ID.
to base	Returns to the base image.
committed	Returns to the installation state when the last commit operation was performed.
id install-ID	Returns to the specific install point ID. Valid values are from 1 to 4294967295.

Command Default Packages are not installed.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

Usage Guidelines An SMU is a package that can be installed on a system to provide a patch fix or security resolution to a released image. This package contains a minimal set of files for patching the release along with metadata that describes the contents of the package.

Packages must be added before the SMU is activated.

A package must be deactivated before it is removed from Flash. A removed packaged must be added again.

The following example shows how to add an install package to a device:

```
Device# install add file
flash:cat9k_iosxe.BLD_SMU_20180302_085005_TWIG_LATEST_20180306_013805.3.SSA.smu.bin

install_add: START Mon Mar  5 21:48:51 PST 2018
install_add: Adding SMU

--- Starting initial file syncing ---
Info: Finished copying
flash:cat9k_iosxe.BLD_SMU_20180302_085005_TWIG_LATEST_20180306_013805.3.SSA.smu.bin to the
selected switch(es)
Finished initial file syncing

Executing pre scripts....

Executing pre scripts done.
--- Starting SMU Add operation ---
Performing SMU_ADD on all members
  [1] SMU_ADD package(s) on switch 1
  [1] Finished SMU_ADD on switch 1
Checking status of SMU_ADD on [1]
SMU_ADD: Passed on [1]
Finished SMU Add operation

SUCCESS: install_add
/flash/cat9k_iosxe.BLD_SMU_20180302_085005_TWIG_LATEST_20180306_013805.3.SSA.smu.bin Mon
Mar  5 21:49:00 PST 2018
```

The following example shows how to activate an install package:

```
Device# install activate file
flash:cat9k_iosxe.BLD_SMU_20180302_085005_TWIG_LATEST_20180306_013805.3.SSA.smu.bin

install_activate: START Mon Mar  5 21:49:22 PST 2018
install_activate: Activating SMU
Executing pre scripts....

Executing pre sripts done.

--- Starting SMU Activate operation ---
Performing SMU_ACTIVATE on all members
  [1] SMU_ACTIVATE package(s) on switch 1
  [1] Finished SMU_ACTIVATE on switch 1
Checking status of SMU_ACTIVATE on [1]
SMU_ACTIVATE: Passed on [1]
Finished SMU Activate operation

SUCCESS: install_activate
/flash/cat9k_iosxe.BLD_SMU_20180302_085005_TWIG_LATEST_20180306_013805.3.SSA.smu.bin Mon
Mar  5 21:49:34 PST 2018
```

The following example shows how to commit an installed package:

```
Device# install commit

install_commit: START Mon Mar  5 21:50:52 PST 2018
install_commit: Committing SMU
Executing pre scripts....
```

```
Executing pre sripts done.
--- Starting SMU Commit operation ---
Performing SMU_COMMIT on all members
  [1] SMU_COMMIT package(s) on switch 1
  [1] Finished SMU_COMMIT on switch 1
Checking status of SMU_COMMIT on [1]
SMU_COMMIT: Passed on [1]
Finished SMU Commit operation

SUCCESS: install_commit
/flash/cat9k_iosxe.BLD_SMU_20180302_085005_TWIG_LATEST_20180306_013805.3.SSA.smu.bin Mon
Mar  5 21:51:01 PST 2018
```

Related Commands

Command	Description
show install	Displays information about the install packages.

I2 traceroute

To enable the Layer 2 traceroute server, use the **I2 traceroute** command in global configuration mode. Use the **no** form of this command to disable the Layer 2 traceroute server.

I2 traceroute
no I2 traceroute

Syntax Description This command has no arguments or keywords.

Command Modes Global configuration (config#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	The command was introduced.

Usage Guidelines Layer 2 traceroute is enabled by default and opens a listening socket on User Datagram Protocol (UDP) port 2228. To close the UDP port 2228 and disable Layer 2 traceroute, use the **no I2 traceroute** command in global configuration mode.

The following example shows how to configure Layer 2 traceroute using the **I2 traceroute** command.

```
Device# configure terminal
Device(config)# I2 traceroute
```

license boot level

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

license boot level *base-license-level* **addon** *addon-license-level*
no license boot level

Syntax Description

base-license-level Level at which the switch is booted, for example, **network-essentials**

Base licenses that are available are:

- Network Essentials
- Network Advantage (includes Network Essentials)

addon-license-level Additional licenses that can be subscribed for a fixed term of three, five, or seven years.

Add-on licenses that are available are:

- Digital Networking Architecture (DNA) Essentials
- DNA Advantage (includes DNA Essentials)

Command Default

The switch boots the configured image.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.1	This command was introduced.

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

Examples

The following example shows how to activate the *network-essentials* license on a switch at the next reload:

```
Device(config)# license boot level network-essentials
```


license smart deregister

To cancel device registration from Cisco Smart Software Manager (CSSM), use the **license smart deregister** command in privileged EXEC mode.

license smart deregister

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

Usage Guidelines Use the **license smart deregister** command for these purposes:

- When your device is taken off the inventory
- When your device is shipped elsewhere for redeployment
- When your device is returned to Cisco for replacement using the return merchandise authorization (RMA) process

Example

This example shows how to deregister a device from CSSM:

```
Device# license smart deregister
*Jun 25 00:20:13.291 PDT: %SMART_LIC-6-AGENT_DEREG_SUCCESS: Smart Agent for Licensing
De-registration with the Cisco Smart Software Manager or satellite was successful
*Jun 25 00:20:13.291 PDT: %SMART_LIC-5-EVAL_START: Entering evaluation period
*Jun 25 00:20:13.291 PDT: %SMART_LIC-6-EXPORT_CONTROLLED: Usage of export controlled features
is Not Allowed for udi PID:ISR4461/K9,SN:FDO2213A0GL
```

Related Commands	Command	Description
	license smart register idtoken	Registers a device in CSSM.
	show license all	Displays entitlements information.
	show license status	Displays compliance status of a license.
	show license summary	Displays summary of all active licenses.
	show license usage	Displays license usage information

license smart register idtoken

To register a device with the token generated from Cisco Smart Software Manager (CSSM), use the **license smart register idtoken** command in privileged EXEC mode.

license smart register idtoken *token_ID* {**force**}

Syntax Description		
	<i>token_ID</i>	Device with the token generated from CSSM.
	force	Forcefully registers your device irrespective of whether the device is registered or not.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

Example

This example shows how to register a device on CSSM:

```
Device# license smart register idtoken
$T14UytrNXBzbEs1ck8veUtWaG5abnZJOFdDa1FwbVRa%0Ab1RMbz0%3D%0A
Registration process is in progress. Use the 'show license status' command to check the
progress and result
Device#% Generating 2048 bit RSA keys, keys will be exportable...
[OK] (elapsed time was 0 seconds)
```

Related Commands	Command	Description
	license smart deregister	Cancels the device registration from CSSM.
	show license all	Displays entitlements information.
	show license status	Displays compliance status of a license.
	show license summary	Displays summary of all active licenses.
	show license usage	Displays license usage information

license smart renew

To manually renew your device's ID or authorization with Cisco Smart Software Manager (CSSM), use the **license smart renew** command in privileged EXEC mode.

license smart renew {**auth** | **id**}

Syntax Description		
	auth	Renews your authorization.
	id	Renews your ID.

Command Default Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

Usage Guidelines Authorization periods are renewed by the smart licensing system every 30 days. As long as the license is in an *Authorized* or *Out of compliance* state, the authorization period is renewed. The grace period starts when an authorization period expires. During the grace period or when the license is in the *Expired* state, the system continues to try and renew the authorization period. If a retry is successful, a new authorization period starts.

Example

This example shows how to renew a device license:

```
Device# license smart renew auth
```

Related Commands	Command	Description
	show license all	Displays entitlements information.
	show license status	Displays compliance status of a license.
	show license usage	Displays license usage information

location

To configure location information for an endpoint, use the **location** command in global configuration mode. To remove the location information, use the **no** form of this command.

```
location {admin-tag string | civic-location identifier {hostid} | civic-location identifier {hostid} |
elin-location {string | identifier id} | geo-location identifier {hostid} | prefer {cdp weight
priority-value | lldp-med weight priority-value | static config weight priority-value}
no location {admin-tag string | civic-location identifier {hostid} | civic-location identifier {hostid} |
elin-location {string | identifier id} | geo-location identifier {hostid} | prefer {cdp weight
priority-value | lldp-med weight priority-value | static config weight priority-value}
```

Syntax Description

admin-tag <i>string</i>	Configures administrative tag or site information. Site or location information in alphanumeric format.
civic-location	Configures civic location information.
identifier	Specifies the name of the civic location, emergency, or geographical location.
host	Defines the host civic or geo-spatial location.
<i>id</i>	Name of the civic, emergency, or geographical location. Note The identifier for the civic location in the LLDP-MED switch TLV is limited to 250 bytes or less. To avoid error messages about available buffer space during switch configuration, be sure that the total length of all civic-location information specified for each civic-location identifier does not exceed 250 bytes.
elin-location	Configures emergency location information (ELIN).
geo-location	Configures geo-spatial location information.
prefer	Sets location information source priority.

Command Default

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

After entering the **location civic-location identifier** global configuration command, you enter civic location configuration mode. After entering the **location geo-location identifier** global configuration command, you enter geo location configuration mode.

The civic-location identifier must not exceed 250 bytes.

The host identifier configures the host civic or geo-spatial location. If the identifier is not a host, the identifier only defines a civic location or geo-spatial template that can be referenced on the interface.

The **host** keyword defines the device location. The civic location options available for configuration using the **identifier** and the **host** keyword are the same. You can specify the following civic location options in civic location configuration mode:

- **additional-code**—Sets an additional civic location code.
- **additional-location-information**—Sets additional civic location information.
- **branch-road-name**—Sets the branch road name.
- **building**—Sets building information.
- **city**—Sets the city name.
- **country**—Sets the two-letter ISO 3166 country code.
- **county**—Sets the county name.
- **default**—Sets a command to its defaults.
- **division**—Sets the city division name.
- **exit**—Exits from the civic location configuration mode.
- **floor**—Sets the floor number.
- **landmark**—Sets landmark information.
- **leading-street-dir**—Sets the leading street direction.
- **name**—Sets the resident name.
- **neighborhood**—Sets neighborhood information.
- **no**—Negates the specified civic location data and sets the default value.
- **number**—Sets the street number.
- **post-office-box**—Sets the post office box.
- **postal-code**—Sets the postal code.
- **postal-community-name**—Sets the postal community name.
- **primary-road-name**—Sets the primary road name.
- **road-section**—Sets the road section.
- **room**—Sets room information.
- **seat**—Sets seat information.
- **state**—Sets the state name.
- **street-group**—Sets the street group.
- **street-name-postmodifier**—Sets the street name postmodifier.
- **street-name-premodifier**—Sets the street name premodifier.
- **street-number-suffix**—Sets the street number suffix.
- **street-suffix**—Sets the street suffix.
- **sub-branch-road-name**—Sets the sub-branch road name.
- **trailing-street-suffix**—Sets the trailing street suffix.
- **type-of-place**—Sets the type of place.
- **unit**—Sets the unit.

You can specify the following geo-spatial location information in geo-location configuration mode:

- **altitude**—Sets altitude information in units of floor, meters, or feet.
- **latitude**—Sets latitude information in degrees, minutes, and seconds. The range is from -90 degrees to 90 degrees. Positive numbers indicate locations north of the equator.

- **longitude**—Sets longitude information in degrees, minutes, and seconds. The range is from -180 degrees to 180 degrees. Positive numbers indicate locations east of the prime meridian.
- **resolution**—Sets the resolution for latitude and longitude. If the resolution value is not specified, default value of 10 meters is applied to latitude and longitude resolution parameters. For latitude and longitude, the resolution unit is measured in meters. The resolution value can also be a fraction.
- **default**—Sets the geographical location to its default attribute.
- **exit**—Exits from geographical location configuration mode.
- **no**—Negates the specified geographical parameters and sets the default value.

Use the **no lldp med-tlv-select location information** interface configuration command to disable the location TLV. The location TLV is enabled by default.

This example shows how to configure civic location information on the switch:

```
Device(config)# location civic-location identifier 1
Device(config-civic)# number 3550
Device(config-civic)# primary-road-name "Cisco Way"
Device(config-civic)# city "San Jose"
Device(config-civic)# state CA
Device(config-civic)# building 19
Device(config-civic)# room C6
Device(config-civic)# county "Santa Clara"
Device(config-civic)# country US
Device(config-civic)# end
```

You can verify your settings by entering the **show location civic-location** privileged EXEC command.

This example shows how to configure the emergency location information on the switch:

```
Device(config)# location elin-location 14085553881 identifier 1
```

You can verify your settings by entering the **show location elin** privileged EXEC command.

The example shows how to configure geo-spatial location information on the switch:

```
Device(config)# location geo-location identifier host
Device(config-geo)# latitude 12.34
Device(config-geo)# longitude 37.23
Device(config-geo)# altitude 5 floor
Device(config-geo)# resolution 12.34
```

You can use the **show location geo-location identifier** command to display the configured geo-spatial location details.

no debug all

To disable debugging on a switch, use the **no debug all** command in Privileged EXEC mode.

no debug all

Command Default No default behavior or values.

Command Modes Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Release 16.1	This command was introduced.

Examples

This example shows how to disable debugging on a switch.

```
Device: no debug all
All possible debugging has been turned off.
```

ping

To send ICMP ECHO REQUEST packets to a network host, use the **ping** command in boot loader mode.

ping*ip-address*

Syntax Description	<i>ip-address</i>	The IP address of the network host
---------------------------	-------------------	------------------------------------

Command Default	No default behavior or values.	
------------------------	--------------------------------	--

Command Modes	Boot loader	
----------------------	-------------	--

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Example

This example shows how to send an echo request packet to a network host:

Device: **ping 192.0.2.121 255.255.255.0**

ping6

To send ICMP ECHO REQUEST packets to an IPv6 network host, use the **ping6** command in boot loader mode.

ping6*ipv6-address*

Syntax Description	<i>ipv6-address</i> The IP address of the IPv6 network host
---------------------------	---

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Boot loader
----------------------	-------------

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Example

This example shows how to send an echo request packet to an IPv6 network host:

Device: **ping6 2001:0DB8:c18:1::/64**

request platform software console attach switch

To start a session on a member switch, use the **request platform software console attach switch** command in privileged EXEC mode.



Note On stacking switches (Catalyst 3650/3850/9200/9300 switches), this command can only be used to start a session on the standby console. On Catalyst 9500 switches, this command is supported only in a stackwise virtual setup. You cannot start a session on member switches. By default, all consoles are already active, so a request to start a session on the active console will result in an error.

request platform software console attach switch { *switch-number* | **active** | **standby** } { **0/0** | **R0** }

Syntax Description

switch-number Specifies the switch number. The range is from 1 to 9.

active Specifies the active switch.

Note This argument is not supported on Catalyst 9500 switches.

standby Specifies the standby switch.

0/0 Specifies that the SPA-Inter-Processor slot is 0, and bay is 0.

Note Do not use this option with stacking switches. It will result in an error.

R0 Specifies that the Route-Processor slot is 0.

Command Default

By default, all switches in the stack are active.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

To start a session on the standby switch, you must first enable it in the configuration.

Examples

This example shows how to session to the standby switch:

```
Device# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Device(config)# redundancy
Device(config-red)# main-cpu
Device(config-r-mc)# standby console enable
Device(config-r-mc)# end
```

```
Device# request platform software console attach switch standby R0
#
# Connecting to the IOS console on the route-processor in slot 0.
# Enter Control-C to exit.
#
Device-stby> enable
Device-stby#
```

reset

To perform a hard reset on the system, use the **reset** command in boot loader mode. A hard reset is similar to power-cycling the device; it clears the processor, registers, and memory.

reset

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Boot loader

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Examples

This example shows how to reset the system:

```
Device: reset
Are you sure you want to reset the system (y/n)? y
System resetting...
```

sdm prefer

To specify the SDM template for use on the switch, use the **sdm prefer** command in global configuration mode.

```
sdm prefer
{ advanced }
```

Syntax Description	advanced Supports advanced features such as NetFlow.
---------------------------	---

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines	<p>In a device stack, all stack members must use the same SDM template that is stored on the active device.</p> <p>When a new device is added to a stack, the SDM configuration that is stored on the active device overrides the template configured on an individual device.</p>
-------------------------	--

Example

This example shows how to configure the advanced template:

```
Device(config)# sdm prefer advanced
Device(config)# exit
Device# reload
```

service private-config-encryption

To enable private configuration file encryption, use the **service private-config-encryption** command. To disable this feature, use the **no** form of this command.

service private-config-encryption
no service private-config-encryption

Syntax Description This command has no arguments or keywords.

Command Default No default behavior or values.

Command Modes Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Examples

The following example shows how to enable private configuration file encryption:

```
Device> enable
Device# configure terminal
Device(config)# service private-config-encryption
```

Related Commands

Command	Description
show parser encrypt file status	Displays the private configuration encryption status.

set

To set or display environment variables, use the **set** command in boot loader mode. Environment variables can be used to control the boot loader or any other software running on the device.

set *variable value*

Syntax Description

<i>variable</i> <i>value</i>	<p>Use one of the following keywords for <i>variable</i> and the appropriate value for <i>value</i>:</p> <p>MANUAL_BOOT—Decides whether the device automatically or manually boots.</p> <p>Valid values are 1/Yes and 0/No. If it is set to 0 or No, the boot loader attempts to automatically boot the system. If it is set to anything else, you must manually boot the device from the boot loader mode.</p>
	<p>BOOT <i>filesystem:/file-url</i>—Identifies a semicolon-separated list of executable files to try to load and execute when automatically booting.</p> <p>If the BOOT environment variable is not set, the system attempts to load and execute the first executable image it can find by using a recursive, depth-first search through the flash: file system. If the BOOT variable is set but the specified images cannot be loaded, the system attempts to boot the first bootable file that it can find in the flash: file system.</p>
	<p>ENABLE_BREAK—Allows the automatic boot process to be interrupted when the user presses the Break key on the console.</p> <p>Valid values are 1, Yes, On, 0, No, and Off. If set to 1, Yes, or On, you can interrupt the automatic boot process by pressing the Break key on the console after the flash: file system has initialized.</p>
	<p>HELPER <i>filesystem:/file-url</i>—Identifies a semicolon-separated list of loadable files to dynamically load during the boot loader initialization. Helper files extend or patch the functionality of the boot loader.</p>
	<p>PS1 <i>prompt</i>—Specifies a string that is used as the command-line prompt in boot loader mode.</p>
	<p>CONFIG_FILE flash: <i>/file-url</i>—Specifies the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.</p>
	<p>BAUD <i>rate</i>—Specifies the number of bits per second (b/s) that is used for the baud rate for the console. The Cisco IOS software inherits the baud rate setting from the boot loader and continues to use this value unless the configuration file specifies another setting. The range is from 0 to 128000 b/s. Valid values are 50, 75, 110, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 56000, 57600, 115200, and 128000.</p> <p>The most commonly used values are 300, 1200, 2400, 9600, 19200, 57600, and 115200.</p>
	<p>SWITCH_NUMBER <i>stack-member-number</i>—Changes the member number of a stack member.</p>
	<p>SWITCH_PRIORITY <i>priority-number</i>—Changes the priority value of a stack member.</p>

Command Default

The environment variables have these default values:

MANUAL_BOOT: No (0)

BOOT: Null string

ENABLE_BREAK: No (Off or 0) (the automatic boot process cannot be interrupted by pressing the **Break** key on the console).

HELPER: No default value (helper files are not automatically loaded).

PS1 device:

CONFIG_FILE: config.text

BAUD: 9600 b/s

SWITCH_NUMBER: 1

SWITCH_PRIORITY: 1



Note Environment variables that have values are stored in the flash: file system in various files. Each line in the files contains an environment variable name and an equal sign followed by the value of the variable.

A variable has no value if it is not listed in these files; it has a value if it is listed even if the value is a null string. A variable that is set to a null string (for example, “”) is a variable with a value.

Many environment variables are predefined and have default values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

Environment variables are case sensitive and must be entered as documented.

Environment variables that have values are stored in flash memory outside of the flash: file system.

Under typical circumstances, it is not necessary to alter the setting of the environment variables.

The MANUAL_BOOT environment variable can also be set by using the **boot manual** global configuration command.

The BOOT environment variable can also be set by using the **boot system** *filesystem:/file-url* global configuration command.

The ENABLE_BREAK environment variable can also be set by using the **boot enable-break** global configuration command.

The HELPER environment variable can also be set by using the **boot helper** *filesystem: /file-url* global configuration command.

The CONFIG_FILE environment variable can also be set by using the **boot config-file flash:** */file-url* global configuration command.

The SWITCH_NUMBER environment variable can also be set by using the **switch** *current-stack-member-number* **renumber** *new-stack-member-number* global configuration command.

The SWITCH_PRIORITY environment variable can also be set by using the device *stack-member-number* **priority** *priority-number* global configuration command.

The boot loader prompt string (PS1) can be up to 120 printable characters not including the equal sign (=).

Example

This example shows how to set the SWITCH_PRIORITY environment variable:

```
Device: set SWITCH_PRIORITY 2
```

You can verify your setting by using the **set** boot loader command.

show debug

To display all the debug commands available on a switch, use the **show debug** command in Privileged EXEC mode.

show debug

show debug condition *Condition identifier* | *All conditions*

Syntax Description	<i>Condition identifier</i>	Sets the value of the condition identifier to be used. Range is between 1 and 1000.
	<i>All conditions</i>	Shows all conditional debugging options available.

Command Default No default behavior or values.

Command Modes Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Release 16.1	This command was introduced.

Usage Guidelines Because debugging output is assigned high priority in the CPU process, it can render the system unusable. For this reason, use debug commands only to troubleshoot specific problems or during troubleshooting sessions with Cisco technical support staff. Moreover, it is best to use debug commands during periods of lower network traffic and fewer users. Debugging during these periods decreases the likelihood that increased debug command processing overhead will affect system use.

Examples This example shows the output of a **show debug** command:

```
Device# show debug condition all
```

To disable debugging, use the **no debug all** command.

show flow monitor

To display the status and statistics for a Flexible NetFlow flow monitor, use the **show flow monitor** command in privileged EXEC mode.

```
show flow monitor [{broker [{detail | picture}] | [name] monitor-name [{cache [format {csv | record | table}]}] | provisioning | statistics}]
```

Syntax Description		
broker	(Optional)	Displays information about the state of the broker for the flow monitor
detail	(Optional)	Displays detailed information about the flow monitor broker.
picture	(Optional)	Displays a picture of the broker state.
name	(Optional)	Specifies the name of a flow monitor.
<i>monitor-name</i>	(Optional)	Name of a flow monitor that was previously configured.
cache	(Optional)	Displays the contents of the cache for the flow monitor.
format	(Optional)	Specifies the use of one of the format options for formatting the display output.
csv	(Optional)	Displays the flow monitor cache contents in comma-separated variables (CSV) format.
record	(Optional)	Displays the flow monitor cache contents in record format.
table	(Optional)	Displays the flow monitor cache contents in table format.
provisioning	(Optional)	Displays the flow monitor provisioning information.
statistics	(Optional)	Displays the statistics for the flow monitor.

Command Modes Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines The **cache** keyword uses the record format by default.

The uppercase field names in the display output of the **show flowmonitor** *monitor-name* **cache** command are key fields that Flexible NetFlow uses to differentiate flows. The lowercase field names in the display output of the **show flow monitor** *monitor-name* **cache** command are nonkey fields from which Flexible NetFlow collects values as additional data for the cache.

Examples

The following example displays the status for a flow monitor:

```
Device# show flow monitor FLOW-MONITOR-1

Flow Monitor FLOW-MONITOR-1:
  Description:          Used for basic traffic analysis
```

```

Flow Record:      flow-record-1
Flow Exporter:    flow-exporter-1
                  flow-exporter-2

Cache:
  Type:           normal
  Status:         allocated
  Size:           4096 entries / 311316 bytes
  Inactive Timeout: 15 secs
  Active Timeout: 1800 secs
  Update Timeout: 1800 secs

```

This table describes the significant fields shown in the display.

Table 2: show flow monitor monitor-name Field Descriptions

Field	Description
Flow Monitor	Name of the flow monitor that you configured.
Description	Description that you configured or the monitor, or the default description User defined.
Flow Record	Flow record assigned to the flow monitor.
Flow Exporter	Exporters that are assigned to the flow monitor.
Cache	Information about the cache for the flow monitor.
Type	Flow monitor cache type. The possible values are: <ul style="list-style-type: none"> • immediate—Flows are expired immediately. • normal—Flows are expired normally. • Permanent—Flows are never expired.
Status	Status of the flow monitor cache. The possible values are: <ul style="list-style-type: none"> • allocated—The cache is allocated. • being deleted—The cache is being deleted. • not allocated—The cache is not allocated.
Size	Current cache size.
Inactive Timeout	Current value for the inactive timeout in seconds.
Active Timeout	Current value for the active timeout in seconds.
Update Timeout	Current value for the update timeout in seconds.

The following example displays the status, statistics, and data for the flow monitor named FLOW-MONITOR-1:

```

Device# show flow monitor FLOW-MONITOR-1 cache
Cache type:                               Normal (Platform cache)
Cache size:                                Unknown
Current entries:                           1

Flows added:                               3
Flows aged:                                2
  - Active timeout      ( 300 secs)        2

DATALINK MAC SOURCE ADDRESS INPUT:         0000.0000.1000
DATALINK MAC DESTINATION ADDRESS INPUT:    6400.F125.59E6
IPV6 SOURCE ADDRESS:                       2001:DB8::1
IPV6 DESTINATION ADDRESS:                  2001:DB8:1::1
TRNS SOURCE PORT:                           1111
TRNS DESTINATION PORT:                      2222
IP VERSION:                                 6
IP PROTOCOL:                                6
IP TOS:                                     0x05
IP TTL:                                     11
tcp flags:                                  0x20
counter bytes long:                         132059538
counter packets long:                       1158417

```

This table describes the significant fields shown in the display.

Table 3: show flow monitor monitor-name cache Field Descriptions

Field	Description
Cache type	Flow monitor cache type. The value is always normal, as it is the only supported cache type.
Cache Size	Number of entries in the cache.
Current entries	Number of entries in the cache that are in use.
Flows added	Flows added to the cache since the cache was created.
Flows aged	Flows expired from the cache since the cache was created.
Active timeout	Current value for the active timeout in seconds.
Inactive timeout	Current value for the inactive timeout in seconds.
DATALINK MAC SOURCE ADDRESS INPUT	MAC source address of input packets.
DATALINK MAC DESTINATION ADDRESS INPUT	MAC destination address of input packets.
IPV6 SOURCE ADDRESS	IPv6 source address.
IPV6 DESTINATION ADDRESS	IPv6 destination address.
TRNS SOURCE PORT	Source port for the transport protocol.
TRNS DESTINATION PORT	Destination port for the transport protocol.

Field	Description
IP VERSION	IP version.
IP PROTOCOL	Protocol number.
IP TOS	IP type of service (ToS) value.
IP TTL	IP time-to-live (TTL) value.
tcp flags	Value of the TCP flags.
counter bytes	Number of bytes that have been counted.
counter packets	Number of packets that have been counted.

The following example displays the status, statistics, and data for the flow monitor named FLOW-MONITOR-1 in a table format:

```
Device# show flow monitor FLOW-MONITOR-1 cache format table
Cache type:                Normal (Platform cache)
Cache size:                Unknown
Current entries:          1

Flows added:              3
Flows aged:              2
  - Active timeout      ( 300 secs)  2

DATALINK MAC SRC ADDR INPUT  DATALINK MAC DST ADDR INPUT  IPV6 SRC ADDR  IPV6 DST ADDR
TRNS SRC PORT  TRNS DST PORT  IP VERSION  IP PROT  IP TOS  IP TTL  tcp flags  bytes long
pkts long
=====
0000.0000.1000          6400.F125.59E6          2001:DB8::1    2001:DB8:1::1
      1111          2222          6          6 0x05          11 0x20          132059538
1158417
```

The following example displays the status, statistics, and data for the flow monitor named FLOW-MONITOR-IPv6 (the cache contains IPv6 data) in record format:

```
Device# show flow monitor name FLOW-MONITOR-IPv6 cache format record
Cache type:                Normal (Platform cache)
Cache size:                Unknown
Current entries:          1

Flows added:              3
Flows aged:              2
  - Active timeout      ( 300 secs)  2

DATALINK MAC SOURCE ADDRESS INPUT:    0000.0000.1000
DATALINK MAC DESTINATION ADDRESS INPUT: 6400.F125.59E6
IPV6 SOURCE ADDRESS:                2001::2
IPV6 DESTINATION ADDRESS:            2002::2
TRNS SOURCE PORT:                    1111
TRNS DESTINATION PORT:                2222
IP VERSION:                          6
IP PROTOCOL:                         6
IP TOS:                               0x05
IP TTL:                               11
tcp flags:                           0x20
```

```
counter bytes long:          132059538
counter packets long:       1158417
```

The following example displays the status and statistics for a flow monitor:

```
Device# show flow monitor FLOW-MONITOR-1 statistics
Cache type:                Normal (Platform cache)
Cache size:                 Unknown
Current entries:           1

Flows added:                3
Flows aged:                 2
  - Active timeout        ( 300 secs)  2
```

show install

To display information about install packages, use the **show install** command in privileged EXEC mode.

show install {**active** | **committed** | **inactive** | **log** | **package** {**bootflash:** | **flash:** | **webui:**} | **rollback** | **summary** | **uncommitted**}

Syntax Description		
active		Displays information about active packages.
committed		Displays package activations that are persistent.
inactive		Displays inactive packages.
log		Displays entries stored in the logging installation buffer.
package		Displays metadata information about the package, including description, restart information, components in the package, and so on.
{ bootflash: flash: harddisk: webui: }		Specifies the location of the install package.
rollback		Displays the software set associated with a saved installation.
summary		Displays information about the list of active, inactive, committed, and superseded packages.
uncommitted		Displays package activations that are nonpersistent.

Command Modes Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Everest 16.6.1	This command was introduced.

Usage Guidelines Use the show commands to view the status of the install package.

Example

The following is sample output from the **show install package** command:

```
Device# show install package bootflash:cat3k-universalk9.2017-01-10_13.15.1.
CSCxxx.SSA.dmp.bin
Name: cat3k-universalk9.2017-01-10_13.15.1.CSCxxx.SS
Version: 16.6.1.0.199.1484082952..Everest
Platform: Catalyst3k
Package Type: dmp
Defect ID: CSCxxx
Package State: Added
Supersedes List: {}
Smu ID: 1
```


The following is sample output from the **show install summary** command:

```
Device# show install summary

Active Packages:
  bootflash:cat3k-universalk9.2017-01-10_13.15.1.CSCxxx.SSA.dmp.bin
Inactive Packages:
  No packages
Committed Packages:
  bootflash:cat3k-universalk9.2017-01-10_13.15.1.CSCxxx.SSA.dmp.bin
Uncommitted Packages:
  No packages
Device#
```

The table below lists the significant fields shown in the display.

Table 4: show install summary Field Descriptions

Field	Description
Active Packages	Name of the active install package.
Inactive Packages	List of inactive packages.
Committed Packages	Install packages that have saved or committed changes to the harddisk, so that the changes become persistent across reloads.
Uncommitted Packages	Intall package activations that are nonpersistent.

The following is sample output from the **show install log** command:

```
Device# show install log

[0|install_op_boot]: START Fri Feb 24 19:20:19 Universal 2017
[0|install_op_boot]: END SUCCESS Fri Feb 24 19:20:23 Universal 2017
[3|install_add]: START Sun Feb 26 05:55:31 UTC 2017
[3|install_add( FATAL)]: File path (scp) is not yet supported for this command
[4|install_add]: START Sun Feb 26 05:57:04 UTC 2017
[4|install_add]: END SUCCESS
/bootflash/cat3k-universalk9.2017-01-10_13.15.1.CSCvb12345.SSA.dmp.bin
Sun Feb 26 05:57:22 UTC 2017
[5|install_activate]: START Sun Feb 26 05:58:41 UTC 2017
```

Related Commands

Command	Description
install	Installs SMU packages.

show license all

To display the entitlement information, use the **show license all** command in privileged EXEC mode.

show license all

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

Usage Guidelines The command also displays whether smart licensing is enabled, all associated licensing certificates, compliance status, and so on.

Example

This example shows a sample output from the **show license all** command:

```
Device# show license allSmart Licensing Status
=====

Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: CISCO Systems
  Virtual Account: NPR
  Export-Controlled Functionality: Allowed
  Initial Registration: First Attempt Pending
  Last Renewal Attempt: SUCCEEDED on Jul 19 14:49:49 2018 IST
  Next Renewal Attempt: Jan 15 14:49:48 2019 IST
  Registration Expires: Jul 19 14:43:48 2019 IST

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

Utility:
  Status: DISABLED

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

Transport:
  Type: Callhome

License Usage
=====
```

```

C9200L DNA Advantage, 48-port Term license (C9200L-DNA-A-48):
  Description: C9200L DNA Advantage, 48-port Term license
  Count: 1
  Version: 1.0
  Status: AUTHORIZED

C9200L Network Advantage, 48-port license (C9200L-NW-A-48):
  Description: C9200L Network Advantage, 48-port license
  Count: 1
  Version: 1.0
  Status: AUTHORIZED

Product Information
=====
UDI: PID:C9200L-48P-4X,SN:JPG221300KP

Agent Version
=====
Smart Agent for Licensing: 4.4.13_rel/116
Component Versions: SA:(1_3_dev)1.0.15, SI:(dev22)1.2.1, CH:(rel15)1.0.3, PK:(dev18)1.0.3

Reservation Info
=====
License reservation: DISABLED

```

Related Commands

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

show license status

To display the compliance status of a license, use the **show license status** command in privileged EXEC mode.

show license status

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.1	This command was introduced.

Example

This example shows a sample output from the **show license status** command:

```
Device# show license status

Smart Licensing is ENABLED

Utility:
  Status: DISABLED

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

Transport:
  Type: Callhome

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

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

Related Commands

Command	Description
show license all	Displays entitlements information.

Command	Description
show license summary	Displays summary of all active licenses.
show license udi	Displays UDI.
show license usage	Displays license usage information
show tech-support license	Displays the debug output.

show license summary

To display a summary of all active licenses, use the **show license summary** command in privileged EXEC mode.

show license summary

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

This example shows a sample output from the **show license summary** command:

```
Device# show license summary
Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: CISCO Systems
  Virtual Account: NPR
  Export-Controlled Functionality: Allowed
  Last Renewal Attempt: SUCCEEDED
  Next Renewal Attempt: Jan 15 14:49:48 2019 IST

License Authorization:
  Status: AUTHORIZED
  Last Communication Attempt: SUCCEEDED
  Next Communication Attempt: Aug 27 07:02:56 2018 IST

License Usage:
  License                               Entitlement tag                Count Status
  -----
  C9200L DNA Advantage... (C9200L-DNA-A-48)      1 AUTHORIZED
  C9200L Network Advan... (C9200L-NW-A-48)      1 AUTHORIZED
```

Related Commands

Command	Description
show license all	Displays entitlements information.
show license status	Displays compliance status of a license.
show license udi	Displays UDI.
show license usage	Displays license usage information
show tech-support license	Displays the debug output.

show license udi

To display the Unique Device Identifier (UDI), use the **show license udi** command in privileged EXEC mode.

show license udi

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

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

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.1	This command was introduced.

Example

This example shows a sample output from the **show license udi** command:

```
Device# show license udi
UDI: PID:C9200L-48P-4X, SN:JPG221300KP
```

show license usage

To display license usage information, use the **show license usage** command in privileged EXEC mode.

show license usage

This command has no arguments or keywords.

Command Default

Privileged EXEC (#)

Release	Modification
Cisco IOS XE Fuji 16.9.1	This command was introduced.

Example

This example shows a sample output from the **show license usage** command:

```
Device# show license usage
License Authorization:
  Status: AUTHORIZED on Jul 28 07:02:56 2018 IST

C9200L DNA Advantage, 48-port Term license (C9200L-DNA-A-48):
  Description: C9200L DNA Advantage, 48-port Term license
  Count: 1
  Version: 1.0
  Status: AUTHORIZED

C9200L Network Advantage, 48-port license (C9200L-NW-A-48):
  Description: C9200L Network Advantage, 48-port license
  Count: 1
  Version: 1.0
  Status: AUTHORIZED
```

Related Commands

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

show location

To display location information for an endpoint, use the **show location** command in privileged EXEC mode.

show location

```
[{admin-tag | civic-location{identifier identifier-string | interface type number | static} |
custom-location{identifier identifier-string | interface type number | static} | elin-location{identifier
identifier-string | interface type number | static} | geo-location{identifier identifier-string | interface
type number | static} | host}]
```

Syntax Description		
admin-tag		Displays administrative tag or site information.
civic-location		Specifies civic location information.
identifier <i>identifier-string</i>		Information identifier of the civic location, custom location, or geo-spatial location.
interface <i>type number</i>		Interface type and number. For information about the numbering syntax for your device, use the question mark (?) online help function.
static		Displays configured civic, custom, or geo-spatial location information.
custom-location		Specifies custom location information.
elin-location		Specifies emergency location information (ELIN).
geo-location		Specifies geo-spatial location information.
host		Specifies the civic, custom, or geo-spatial host location information.

Command Default No default behavior or values.

Command Modes Privileged EXEC

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

The following sample output of the **show location civic-location** command displays civic location information for the specified identifier (*identifier 1*):

```
Device# show location civic-location identifier 1
Civic location information
-----
Identifier           : 1
County              : Santa Clara
Street number       : 3550
Building            : 19
Room                : C6
Primary road name    : Example
```

show location

```
City           : San Jose
State          : CA
Country        : US
```

Related Commands

Command	Description
location	Configures location information for an endpoint.

show mac address-table

To display the MAC address table, use the **show mac address-table** command in privileged EXEC mode.

```
show mac address-table [{ address mac-addr [ interface type/number | vlan vlan-id ] | aging-time
[ routed-mac | vlan vlan-id ] | control-packet-learn | count [ summary | vlan vlan-id ] | dynamic
| secure | static ][ address mac-addr ][ interface type/number | vlan vlan-id ] | interface type/number
| learning [ vlan vlan-id ] | multicast [ count ] [ igmp-snooping | mld-snooping | user ][ vlan
vlan-id ] | notification { change [ interface [ type/number ] ] | mac-move | threshold } | vlan
vlan-id }
```

Syntax	Description
address <i>mac-addr</i>	(Optional) Displays information about the MAC address table for a specific MAC address.
interface <i>type/number</i>	(Optional) Displays addresses for a specific interface.
vlan <i>vlan-id</i>	(Optional) Displays addresses for a specific VLAN.
aging-time [routed-mac vlan <i>vlan-id</i>]	(Optional) Displays the aging time for the routed MAC or VLAN.
control-packet-learn	(Optional) Displays the controlled packet MAC learning parameters.
count	(Optional) Displays the number of entries that are currently in the MAC address table.
dynamic	(Optional) Displays only the dynamic addresses.
secure	(Optional) Displays only the secure addresses.
static	(Optional) Displays only the static addresses.
learning	(Optional) Displays learnings of a VLAN or interface.
multicast	(Optional) Displays information about the multicast MAC address table entries only.
igmp-snooping	(Optional) Displays the addresses learned by Internet Group Management Protocol (IGMP) snooping.
mld-snooping	(Optional) Displays the addresses learned by Multicast Listener Discover version 2 (MLDv2) snooping.
user	(Optional) Displays the manually entered (static) addresses.
notification change	Displays the MAC notification parameters and history table.
notification mac-move	Displays the MAC-move notification status.
notification threshold	Displays the Counter-Addressable Memory (CAM) table utilization notification status.

show mac address-table

Command Modes Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines The *mac-addr* value is a 48-bit MAC address. The valid format is H.H.H.

The interface *number* argument designates the module and port number. Valid values depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

The following is sample output from the **show mac address-table** command:

```
Device# show mac address-table

                Mac Address Table
-----
Vlan    Mac Address      Type    Ports
-----
  All   0100.0ccc.cccc   STATIC  CPU
  All   0100.0ccc.cccd   STATIC  CPU
  All   0180.c200.0000   STATIC  CPU
  All   0180.c200.0001   STATIC  CPU
  All   0180.c200.0002   STATIC  CPU
  All   0180.c200.0003   STATIC  CPU
  All   0180.c200.0004   STATIC  CPU
  All   0180.c200.0005   STATIC  CPU
  All   0180.c200.0006   STATIC  CPU
  All   0180.c200.0007   STATIC  CPU
  All   0180.c200.0008   STATIC  CPU
  All   0180.c200.0009   STATIC  CPU
  All   0180.c200.000a   STATIC  CPU
  All   0180.c200.000b   STATIC  CPU
  All   0180.c200.000c   STATIC  CPU
  All   0180.c200.000d   STATIC  CPU
  All   0180.c200.000e   STATIC  CPU
  All   0180.c200.000f   STATIC  CPU
  All   0180.c200.0010   STATIC  CPU
  All   0180.c200.0021   STATIC  CPU
  All   ffff.ffff.ffff   STATIC  CPU
    1   780c.f0e1.1dc3   STATIC  Vl1
    51  0000.1111.2222   STATIC  Vl51
    51  780c.f0e1.1dc6   STATIC  Vl51
 1021  0000.0c9f.f45c   STATIC  Vl1021
 1021  0002.02cc.0002   STATIC  Gi6/0/2
 1021  0002.02cc.0003   STATIC  Gi6/0/3
 1021  0002.02cc.0004   STATIC  Gi6/0/4
 1021  0002.02cc.0005   STATIC  Gi6/0/5
 1021  0002.02cc.0006   STATIC  Gi6/0/6
 1021  0002.02cc.0007   STATIC  Gi6/0/7
 1021  0002.02cc.0008   STATIC  Gi6/0/8
 1021  0002.02cc.0009   STATIC  Gi6/0/9
 1021  0002.02cc.000a   STATIC  Gi6/0/10
```

<output truncated>

The following example shows how to display MAC address table information for a specific MAC address:

```
Device# show mac address-table address fc58.9a02.7382
```

```

          Mac Address Table
-----
Vlan    Mac Address      Type        Ports
----    -
1       fc58.9a02.7382   DYNAMIC     Te1/0/1
Total Mac Addresses for this criterion: 1

```

The following example shows how to display the currently configured aging time for a specific VLAN:

```
Device# show mac address-table aging-time vlan 1
```

```

Global Aging Time: 300
Vlan    Aging Time
----    -
1       300

```

The following example shows how to display the information about the MAC address table for a specific interface:

```
Device# show mac address-table interface TenGigabitEthernet1/0/1
```

```

          Mac Address Table
-----
Vlan    Mac Address      Type        Ports
----    -
1       fc58.9a02.7382   DYNAMIC     Te1/0/1
Total Mac Addresses for this criterion: 1

```

The following example shows how to display the MAC-move notification status:

```
Device# show mac address-table notification mac-move
```

```
MAC Move Notification: Enabled
```

The following example shows how to display the CAM-table utilization-notification status:

```
Device# show mac address-table notification threshold
```

```

      Status      limit      Interval
-----+-----+-----
enabled          50          120

```

The following example shows how to display the MAC notification parameters and history table for a specific interface:

```
Device# show mac address-table notification change interface tenGigabitEthernet1/0/1
```

```

MAC Notification Feature is Disabled on the switch
Interface                               MAC Added Trap  MAC Removed Trap
-----
TenGigabitEthernet1/0/1                 Disabled        Disabled

```

The following example shows how to display the information about the MAC-address table for a specific VLAN:

show mac address-table

```
Device# show mac address-table vlan 1021
```

```

-----
                Mac Address Table
-----
Vlan      Mac Address      Type      Ports
----      -
1021     0000.0c9f.f45c   STATIC    Vl1021
1021     0002.02cc.0002   STATIC    Gi6/0/2
1021     0002.02cc.0003   STATIC    Gi6/0/3
1021     0002.02cc.0004   STATIC    Gi6/0/4
1021     0002.02cc.0005   STATIC    Gi6/0/5
1021     0002.02cc.0006   STATIC    Gi6/0/6
1021     0002.02cc.0007   STATIC    Gi6/0/7
1021     0002.02cc.0008   STATIC    Gi6/0/8
1021     0002.02cc.0009   STATIC    Gi6/0/9
1021     0002.02cc.000a   STATIC    Gi6/0/10
1021     0002.02cc.000b   STATIC    Gi6/0/11
1021     0002.02cc.000c   STATIC    Gi6/0/12
1021     0002.02cc.000d   STATIC    Gi6/0/13
1021     0002.02cc.000e   STATIC    Gi6/0/14
1021     0002.02cc.000f   STATIC    Gi6/0/15
1021     0002.02cc.0010   STATIC    Gi6/0/16
1021     0002.02cc.0011   STATIC    Gi6/0/17
1021     0002.02cc.0012   STATIC    Gi6/0/18
1021     0002.02cc.0013   STATIC    Gi6/0/19
1021     0002.02cc.0014   STATIC    Gi6/0/20

```

<output truncated>

The table below describes the significant fields shown in the **show mac address-table** display.

Table 5: show mac address-table Field Descriptions

Field	Description
VLAN	VLAN number.
Mac Address	MAC address of the entry.
Type	Type of address.
Ports	Port type.
Total MAC addresses	Total MAC addresses in the MAC address table.

Related Commands

Command	Description
clear mac address-table	Deletes dynamic entries from the MAC address table.

show mac address-table move update

To display the MAC address-table move update information on the device, use the **show mac address-table move update** command in EXEC mode.

show mac address-table move update

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

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	User EXEC Privileged EXEC
----------------------	------------------------------

Command History	Release Cisco IOS XE Fuji 16.9.2
------------------------	--

Example

This example shows the output from the **show mac address-table move update** command:

```
Device# show mac address-table move update

Switch-ID : 010b.4630.1780
Dst mac-address : 0180.c200.0010
Vlans/Macs supported : 1023/8320
Default/Current settings: Rcv Off/On, Xmt Off/On
Max packets per min : Rcv 40, Xmt 60
Rcv packet count : 10
Rcv conforming packet count : 5
Rcv invalid packet count : 0
Rcv packet count this min : 0
Rcv threshold exceed count : 0
Rcv last sequence# this min : 0
Rcv last interface : Po2
Rcv last src-mac-address : 0003.fd6a.8701
Rcv last switch-ID : 0303.fd63.7600
Xmt packet count : 0
Xmt packet count this min : 0
Xmt threshold exceed count : 0
Xmt pak buf unavail cnt : 0
Xmt last interface : None
```

show parser encrypt file status

To view the private configuration encryption status, use the **show parser encrypt file status** command.

show parser encrypt file status

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes User EXEC

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Examples

The following command output indicates that the feature is available and the file is encrypted. The file is in 'cipher text' format.

```
Device> enable
Device# show parser encrypt file status
Feature:           Enabled
File Format:       Cipher text
Encryption Version: ver1
```

Related Commands

Command	Description
service private-config-encryption	Enables private configuration file encryption.

show platform integrity

To display checksum record for the boot stages , use the **show platform integrity** command in privileged EXEC mode.

```
show platform integrity [sign [nonce <nonce>]]
```

Syntax Description	sign	(Optional) Show signature
	nonce	(Optional) Enter a nonce value
Command Modes	Privileged EXEC (#)	
Command History	Release	Modification
		This command was introduced.

Examples

This example shows how to view the checksum record for boot stages :

```
Device# show platform integrity sign

PCR0: EE47F8644C2887D9BD4DE3E468DD27EB93F4A606006A0B7006E2928C50C7C9AB
PCR8: E7B61EC32AFA43DA1FF4D77F108CA266848B32924834F5E41A9F6893A9CB7A38
Signature version: 1
Signature:
816C5A29741BBAC1961C109FFC36DA5459A44DBF211025F539AFB4868EF91834C05789
5DAFBC7474F301916B7D0D08ABE5E05E66598426A73E921024C21504383228B6787B74
8526A305B17DAD3CF8705BACFD51A2D55A333415CABC73DAFDEEFD8777AA77F482EC4B
731A09826A41FB3EFC46DC02FBA666534DBEC7DCC0C029298DB8462A70DBA26833C2A
1472D1F08D721BA941CB94A418E43803699174572A5759445B3564D8EAE57D64AE304
EE1D2A9C53E93E05B24A92387E261199CED8D8A0CE7134596FF8D2D6E6DA773757C70C
D3BA91C43A591268C248DF32658999276FB972153ABE823F0ACFE9F3B6F0AD1A00E257
4A4CC41C954015A59FB8FE
Platform: WS-C3650-12X48UZ
```

show platform sudi certificate

To display checksum record for the specific SUDI, use the **show platform sudi certificate** command in privileged EXEC mode.

show platform sudi certificate [**sign** [**nonce** <nonce>]]

Syntax Description	sign	(Optional) Show signature
	nonce	(Optional) Enter a nonce value

Command Modes Privileged EXEC (#)

Command History	Release	Modification
		This command was introduced.

Examples

This example shows how to view the checksum record for a specific SUDI :

```
Device# show platform sudi certificate

-----BEGIN CERTIFICATE-----
MIIDQzCCAiuqAwIBAgIQX/h7KctU3I1CoxW1aMmt/zANBgkqhkiG9w0BAQUFADA1
MRYwFAYDVQQKEw1DaXNjbyBTeXN0ZW1zMRswGQYDVQQDExJDaXNjbyBSb290IENB
IDIwNDgwHhcNMDQwNTE0MjAxNzEyWhcNMjkwNTE0MjAyNTQyWjA1MRYwFAYDVQQK
Ew1DaXNjbyBTeXN0ZW1zMRswGQYDVQQDExJDaXNjbyBSb290IENBIDIwNDgwggEg
MA0GCSqGSIb3DQEBAQUAA4IBDQAwggEIAoIBAQCwmrmrp68Kd6ficba0ZmKUeIhH
xmJVhEAYv8CrLqUccda8bnuoqrpu0hWISEwDovyD0My5jOamaHBKeN8hF570YQXJ
FcjPFto1YYmUQ6iEqDGYeJu5Tm8sUxJsZR2tKys7McQr/4NEb7Y9JHcJ6r8qqB9q
VvYgDxFU14F1pyXOWWqCZe+36ufijXWLBvLdT6ZeYpzPEApk0E5tziVMW/VgpSDH
jWn0f84bcN5wGyDWbs2mAg8EtKpP6BrXruOIIt6ke01a06g58QBdKhTcYtKmg9l
Eg6CTY5j/e/rmxxrbU6YTYK/CfdFhbBcl1HP7R2RQgYCUTOG/rksc35LtLgXfAgED
o1EwtzALBgnVHQ8EBAMCAyYwDwYDVR0TAQH/BAUwAwEB/zAdBgnVHQ4EFgQUJ/PI
FR5umgIJFq0roIlgX9p7L6owEAYJKwYBBAGCNxUBBAMCAQAwDQYJKoZIhvcNAQEF
BQADggEBAJ2dhIsjQal8dwy3U8pORFbi71R803UXHOjgkxhLtv5MOhmBvRbW7hmW
Yqpao2TB9k5UM8Z3/sUcuVdJcr18JOagxEu5sv4dEX+5wW4q+ffY0vhN4TauYuX
cB7w4ovXsNgOnbFp1iqRe6lJT37mjpxYgyc81WhJdTsd9i7rp77rMKsSH0T8lasz
Bvt9YAretIpjsJyp8qS5UwGH0GikJ3+r/+n6yUA4iGe00caEb1fJU9u6ju7Aq7L4
CYNu/2bPPu8Xs1gYJQk0XuPL1hS27PKSb3TkL4Eq1ZKR4OCXPDJoBYVL0fdX41Id
kxpUnwVwwEpxYB5DC2Ae/qPOgRnhCzU=
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIEPDCCAYsGAWIBAgIKYQlufQAAAAAADANBgkqhkiG9w0BAQUFADA1MRYwFAYD
VQQKEw1DaXNjbyBTeXN0ZW1zMRswGQYDVQQDExJDaXNjbyBSb290IENBIDIwNDgw
HhcNMTcwNTE0MjAxNzEyWhcNMjkwNTE0MjAyNTQyWjA1MRYwFAYDVQQKEw1DaXNj
bzEVMmBGA1UEAxMMQUNUMiBTVURJENBMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8A
MIIBCgKCAQEAM5l3THIx9tN/hS5qR/6UZRpdd+9aE2JbFkNjht6gfHKd477Aks
5XAtUs5oxDYvt/zEbs1Zq3+LR6qrqKQVv6JYvH05UYLBqCj38s76NLk53905Wzp
9pRcmRCPuX+a6tHF/qRuOiJ44mdeDYZo3qPCpxzprWJDPc1M4iYKHuMQMqmgmg+
xghHIooWS80BOccdiynEbeP5rZ7qRuewKmp11TiI3WdBNjZjnpfjg66F+P4SaDkGb
BXdgJ13oVeF+EyFWLrFjj97fL2+8oauV43Qrvnf3d/GfqXj7ew+z/sX1XtEOjSXJ
URsyMEj53Rid9tJwHky8neapszS+r+kdVQIDAQABo4IBWjCCAVYwCwYDVR0PBAQD
AgHGMB0GA1UdDgQWBbRI2PHxwnDVW7t8cwmTr7i4MAP4fzAfBgnVHSMEGDAWgBQn
88gVHm6aAgkWrSugiWBf2nsvqjBDBgnVHR8EPDA6MDiNgA0hjJodHRwOi8vd3d3
LmNpc2NvLmNvbS9zZW51cml0eS9wa2kvY3JsL2NyY2EyMDQ4LmNybDBQBggrBgEF
```

```

BQcBAQREMEIwQAYIKwYBBQUHMAKGNGh0dHA6Ly93d3cuY2l2Y28uY29tL3N1Y3Vy
aXR5L3BraS9jZXJ0cy9jcmNhMjA0OC5jZXIwXAYDVR0gBFUwUzBRBgorBgEAAQkV
AQwAMEMwQQYIKwYBBQUHAgEWNWh0dHA6Ly93d3cuY2l2Y28uY29tL3N1Y3VyXR5
L3BraS9wb2xpY2l1cy9pbmRleC5odG1sMBIGAlUdEwEB/wQIMAYBAf8CAQAwDQYJ
KoZlIhvcNAQEFBQADggEBAGh1qclr9tx4hzWgDERm371yeuEmqcIfi9b9+GbMSJbi
ZHc/CcC101Ju0a9zTXA9w47H9/t61eduGxb4WeLxcwCiUgvFtCa51IklT8NbcKY
/4dw1ex+7amATUQO4QggIE67wVlPu6bgAE3Ja/nRS3xKYSnj8H5TehimBSv6TECi
i5jUhOwryAK4dVo8hCjkjEkzu3ufBTJapnv89g9OE+H3VKM4L+/KdkUO+52djFKn
hy147d7cZR4DY4LIuFM2P1As8YyJzoNpK/urSRI14WdI1plR1nH7KND15618yfVp
0IFJZBGrooCRBjOSwFv8cpWCbmWdPaCQT2nwIjTfY8c=
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIDhjCCAm6gAwIBAgIDctWkMA0GCSqGSIb3DQEBCwUAMCcxDjAMBgNVBAoTBUNp
c2NvMRUwEwYDVQQDEwxQ1QyIFNVREkgQ0EwHhcNMjUwODA2MDgwODI5WhcNMjUw
ODA2MDgwODI5WjBzMSwwKgYDVQQFEyNQSUQ6V1MtQzM2NTAtMTJYNdhVWjBTtjPjG
RE8xOTMyWDAwQzEOMAwGA1UEChMFQ2l2Y28xGDAwBGNVBASTDFDVC0yIExpDGUg
U1VESTZMBcGA1UEAxMQV1MtQzM2NTAtMTJYNdhVWjCCASIdDQYJKoZIhvcNAQEB
BQADggEPADCCAQoCggEBANZxOGYI0eUl4HcSwjL4HO75qTj19C2BHG3ufce9ikkN
xwGXi8qq8vKxub9tRYRaJC5bP1Wmoq7+ZJtQA079xE4X14soNbkq5NaUhh7RB1wD
iRUJvTfCOzVICbNfbzvtB30I75tCarFNmpd0K6AFrIa41U988QGqaCj7R1JrYNaj
nc73UXXM/hc0HtNR5mhyqer5Y2qjjzo6tHZYqrrx2eS1X0a262ZSQriAxmaH/KLC
K97ywyRBdJlxBRX3hGtKlog8nASB8WpXqB9NVCERzUajwU3L/kg2BsCqw9Y2m7HW
U1cerTxgthuyUkdNI+Jg6iGApM2+s8E9hsHPBPMCdIsCAwEAAANvMG0wDgYDVR0P
AQH/BAQDAgXgMAWGA1UdEwEB/wQCMAAwTQYDVDR0RBeywRKBCBgkrBgEAAQkVAgOg
NRMzQ2hpcE1EPVVZSk5ORmRRR1FvN1ZIVmxJRTlqZENBeU9DQXhPRG93T1RveE1T
QVg5eWc9MA0GCSqGSIb3DQEBCwUAA4IBAQBKicTRZbVCRjVIR5MQcWXUT086v6Ej
HahDHTts3YpQoyAVfioNg2x8J6EXcEau4voyVu+eMUuoNL4szPhmmDcULfiCGBcA
/R3EFuoVMIzNT0geziytsCf728KGw1oGuosgVjNGOOahUELu4+F/My7bIJNBH+PD
KjIFmhJpJg0F3q17yClAeXvd13g3W393i35d0Lm5L1WbBfQTyBaOLAbxsHvutrX
ulVZ5sdqSTwTkk09vKMaQjh7a8J/AmJi93jvzM69pe5711P1zqZfYfpiJ3cyJ0xf
I4brQ1smdczl0FD4asF7A+1vor5e4VDBP0ppmeFAJvCQ52JTpj0M0o1D
-----END CERTIFICATE-----

```

show running-config

To display the contents of the current running configuration file or the configuration for a specific module, Layer 2 VLAN, class map, interface, map class, policy map, or virtual circuit (VC) class, use the **show running-config** command in privileged EXEC mode.

show running-config [*options*]

Syntax Description

options (Optional) Keywords used to customize output. You can enter more than one keyword.

- **aaa** [**accounting** | **attribute** | **authentication** | **authorization** | **diameter** | **group** | **ldap** | **miscellaneous** | **radius-server** | **server** | **tacacs-server** | **user-name** | **username**]: Displays AAA configurations.
 - **all**: Expands the output to include the commands that are configured with default parameters. If the **all** keyword is not used, the output does not display commands configured with default parameters.
 - **bridge-domain** {**id** | **parameterized vlan**}: Displays the running configuration for bridge domains.
 - **brief**: Displays the configuration without certification data and encrypted filter details.
 - **class-map** [*name*] [**linenum**]: Displays class map information.
 - **cts** [**interface** | **policy-server** | **rbm-rbac** | **server** | **sxp**]: Displays Cisco TrustSec configurations.
 - **deprecated**: Displays deprecated configuration along with the running configuration.
 - **eap** {**method** | **profiles**}: Displays EAP method configurations and profiles.
 - **flow** {**exporter** | **monitor** | **record**}: Displays global flow configuration commands.
 - **full**: Displays the full configuration.
 - **identity** {**policy** | **profile**}: Displays identity profile or policy information.
-

- **interface** *type number*: Displays interface-specific configuration information. If you use the **interface** keyword, you must specify the interface type and the interface number (for example, **interface GigabitEthernet 1/0/1**). Use the **show run interface ?** command to determine the interfaces available on your system.
- **ip dhcp pool** [*name*]: Displays IPv4 DHCP pool configuration.
- **ipv6 dhcp pool** [*name*]: Displays IPv6 DHCP pool configuration.
- **linenum** [**brief** | **full** | **partition**]: Displays line numbers in the output.
- **map-class** [**atm** | **dialer** | **frame-relay**] [*name*]: Displays map class information.
- **mdns-sd** [**gateway** | **location-group** | **service-definition** | **service-list** | **service-peer** | **service-policy**]: Displays Multicast DNS Service Discovery (mDNS-SD) configurations.
- **partition** {**access-list** | **class-map** | **common** | **global-cdp** | **interface** | **ip-as-path** | **ip-community** | **ip-prefix-list** | **ip-static-routes** | **line** | **policy-map** | **route-map** | **router** | **snmp** | **tacacs**}: Displays the configuration corresponding to a partition.
- **policy-map** [*name*] [**linenum**]: Displays policy map information.
- **switch** *number*: Displays configuration for the specified switch.
- **view** [**full**]: Enables the display of a full running configuration. This is for view-based users who typically can only view the configuration commands that they are entitled to access for that particular view.
- **vlan** [*vlan-id*]: Displays the specific VLAN information; valid values are from 1 to 4094.
- **vrf** [*vrf-name*]: Displays the Virtual routing and forwarding (VRF)-aware configuration module number .

Command Default

The default syntax, **show running-config**, displays the contents of the running configuration file, except commands configured using the default parameters.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

The **show running-config** command is technically a command alias (substitute or replacement syntax) of the **more system:running-config** command. Although the use of more commands is recommended (because of their uniform structure across platforms and their expandable syntax), the **show running-config** command remains enabled to accommodate its widespread use, and to allow typing shortcuts such as **show run**.

The **show running-config interface** command is useful when there are multiple interfaces and you want to look at the configuration of a specific interface.

The **linenum** keyword causes line numbers to be displayed in the output. This option is useful for identifying a particular portion of a very large configuration.

You can enter additional output modifiers in the command syntax by including a pipe character (|) after the optional keyword. For example, **show running-config interface GigabitEthernet 1/0/1 linenum | begin 3**.

To display the output modifiers that are available for a keyword, enter `| ?` after the keyword. Depending on the platform you are using, the keywords and the arguments for the *options* argument may vary.

The **show running-config all** command displays complete configuration information, including the default settings and values. For example, if the Cisco Discovery Protocol (abbreviated as CDP in the output) hold-time value is set to its default of 180:

- The **show running-config** command does not display this value.
- The **show running-config all** displays the following output: `cdp holdtime 180`.

If the Cisco Discovery Protocol holdtime is changed to a nondefault value (for example, 100), the output of the **show running-config** and **show running-config all** commands is the same; that is, the configured parameter is displayed.

The **show running-config** command displays ACL information. To exclude ACL information from the output, use the **show running | section exclude ip access | access list** command.

Examples

The following example shows the configuration for GigabitEthernet0/0 interface. The fields are self-explanatory.

```
Device# show running-config interface gigabitEthernet0/0

Building configuration...

Current configuration : 130 bytes
!
interface GigabitEthernet0/0
 vrf forwarding Mgmt-vrf
 ip address 10.5.20.10 255.255.0.0
 negotiation auto
 ntp broadcast
end
```

The following example shows how to set line numbers in the command output and then use the output modifier to start the display at line 10. The fields are self-explanatory.

```
Device# show running-config linenum | begin 10

10 : boot-start-marker
11 : boot-end-marker
12 : !
13 : no logging buffered
14 : enable password #####
15 : !
16 : spe 1/0 1/7
17 :  firmware location bootflash:mica-modem-pw.10.16.0.0.bin
18 : !
19 : !
20 : resource-pool disable
21 : !
22 : no aaa new-model
23 : ip subnet-zero
24 : ip domain name cisco.com
25 : ip name-server 172.16.11.48
26 : ip name-server 172.16.2.133
27 : !
28 : !
29 : isdn switch-type primary-5ess
30 : !
.
```

```
.
.
126 : end
```

In the following sample output from the **show running-config** command, the **shape average** command indicates that the traffic shaping overhead accounting for ATM is enabled. The BRAS-DSLAM encapsulation type is qinq and the subscriber line encapsulation type is snap-rbe based on the ATM adaptation layer 5 (AAL5) service. The fields are self-explanatory.

```
Device# show running-config
.
.
.
subscriber policy recording rules limit 64
no mpls traffic-eng auto-bw timers frequency 0
call rsvp-sync
!
controller T1 2/0
framing sf
linecode ami
!
controller T1 2/1
framing sf
linecode ami
!
!
policy-map unit-test
class class-default
shape average percent 10 account qinq aal5 snap-rbe
!
```

The following is sample output from the **show running-config class-map** command. The fields in the display are self-explanatory.

```
Device# show running-config class-map

Building configuration...

Current configuration : 2157 bytes
!
class-map match-any system-cpp-police-ewlc-control
  description EWLC Control
class-map match-any system-cpp-police-topology-control
  description Topology control
class-map match-any system-cpp-police-sw-forward
  description Sw forwarding, L2 LVX data packets, LOGGING, Transit Traffic
class-map match-any system-cpp-default
  description EWLC Data, Inter FED Traffic
class-map match-any system-cpp-police-sys-data
  description Openflow, Exception, EGR Exception, NFL Sampled Data, RPF Failed
class-map match-any system-cpp-police-punt-webauth
  description Punt Webauth
class-map match-any system-cpp-police-l2lvx-control
  description L2 LVX control packets
class-map match-any system-cpp-police-forus
  description Forus Address resolution and Forus traffic
class-map match-any system-cpp-police-multicast-end-station
  description MCAST END STATION
class-map match-any system-cpp-police-high-rate-app
  description High Rate Applications
class-map match-any system-cpp-police-multicast
  description MCAST Data
class-map match-any system-cpp-police-l2-control
  description L2 control
```

```

class-map match-any system-cpp-police-dot1x-auth
  description DOT1X Auth
class-map match-any system-cpp-police-data
  description ICMP redirect, ICMP_GEN and BROADCAST
class-map match-any system-cpp-police-stackwise-virt-control
  description Stackwise Virtual OOB
...

```

The following example shows that the teletype (tty) line 2 is reserved for communicating with the second core:

```

Device# show running

Building configuration...

Current configuration:
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname device
!
enable password lab
!
no ip subnet-zero
!
!
!
interface Ethernet0
 ip address 10.25.213.150 255.255.255.128
 no ip directed-broadcast
 no logging event link-status
!
interface Serial0
 no ip address
 no ip directed-broadcast
 no ip mroute-cache
 shutdown
 no fair-queue
!
interface Serial1
 no ip address
 no ip directed-broadcast
 shutdown
!
ip default-gateway 10.25.213.129
ip classless
ip route 0.0.0.0 0.0.0.0 10.25.213.129
!
!
line con 0
  transport input none
line 1 6
  no exec
  transport input all
line 7
  no exec
  exec-timeout 300 0
  transport input all
line 8 9
  no exec
  transport input all

```



```

line 10
  no exec
  transport input all
  stopbits 1
line 11 12
  no exec
  transport input all
line 13
  no exec
  transport input all
  speed 115200
line 14 16
  no exec
  transport input all
line aux 0
line vty 0 4
  password cisco
  login
!
end

```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration. (Command alias for the copy system:running-config nvram:startup-config command.)
show startup-config	Displays the contents of NVRAM (if present and valid) or displays the configuration file pointed to by the CONFIG_FILE environment variable. (Command alias for the more:nvram startup-config command.)

show sdm prefer

To display information about the templates that can be used to maximize system resources for a particular feature, use the **show sdm prefer** command in privileged EXEC mode. To display the current template, use the command without a keyword.

show sdm prefer [**advanced**]

Syntax Description	advanced (Optional) Displays information on the advanced template.
---------------------------	---

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Privileged EXEC
----------------------	-----------------

Command History	Release	Modification
	Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines	If you did not reload the switch after entering the sdm prefer global configuration command, the show sdm prefer privileged EXEC command displays the template currently in use and not the newly configured template.
-------------------------	--

The numbers displayed for each template represent an approximate maximum number for each feature resource. The actual number might vary, depending on the actual number of other features configured. For example, in the default template if your device had more than 16 routed interfaces (subnet VLANs), the number of possible unicast MAC addresses might be less than 6000.

Example

The following is sample output from the **show sdm prefer** command:

```
Device# show sdm prefer

Showing SDM Template Info

This is the Advanced template.
Number of VLANs:                               4094
Unicast MAC addresses:                          32768
Overflow Unicast MAC addresses:                 512
IGMP and Multicast groups:                     8192
Overflow IGMP and Multicast groups:             512
Directly connected routes:                     32768
Indirect routes:                               7680
Security Access Control Entries:                3072
QoS Access Control Entries:                     3072
Policy Based Routing ACEs:                      1024
Netflow ACEs:                                  1024
Input Microflow policer ACEs:                   256
Output Microflow policer ACEs:                  256
Flow SPAN ACEs:                                256
Tunnels:                                        256
```

```
Control Plane Entries:          512
Input Netflow flows:           8192
Output Netflow flows:         16384
SGT/DGT entries:              4096
SGT/DGT Overflow entries:     512
These numbers are typical for L2 and IPv4 features.
Some features such as IPv6, use up double the entry size;
so only half as many entries can be created.
```

```
Device#
```

show tech-support license

To display the debug output, use the **show license tech support** command in privileged EXEC mode.

show tech-support license

Syntax Description This command has no arguments or keywords.

Command Default Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.1	This command was introduced.

Example

This example shows a sample output from the **show tech-support license** command:

```
Device# show tech-support license

----- show clock -----

*12:35:48.561 EDT Tue Jul 17 2018

----- show version -----

Cisco IOS XE Software, Version 16.09.01prd7
Cisco IOS Software [Fuji], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 16.9.1prd7,
RELEASE SOFTWARE (fcl)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2018 by Cisco Systems, Inc.
Compiled Tue 10-Jul-18 08:47 by mcpre

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documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
!
!
!
```

Related Commands

Command	Description
show license all	Displays entitlements information.
show license status	Displays compliance status of a license.

Command	Description
show license summary	Displays summary of all active licenses.
show license udi	Displays UDI.
show license usage	Displays license usage information

system env temperature threshold yellow

To configure the difference between the yellow and red temperature thresholds that determines the value of yellow threshold, use the **system env temperature threshold yellow** command in global configuration mode. To return to the default value, use the **no** form of this command.

```
system env temperature threshold yellow value
no system env temperature threshold yellow value
```

Syntax Description

value Specifies the difference between the yellow and red threshold values (in Celsius). The range is 10 to 25.

Command Default

These are the default values

Table 6: Default Values for the Temperature Thresholds

Device	Difference between Yellow and Red	Red ¹
	14°C	60°C

¹ You cannot configure the red temperature threshold.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

You cannot configure the green and red thresholds but can configure the yellow threshold. Use the **system env temperature threshold yellow** *value* global configuration command to specify the difference between the yellow and red thresholds and to configure the yellow threshold. For example, if the red threshold is 66 degrees C and you want to configure the yellow threshold as 51 degrees C, set the difference between the thresholds as 15 by using the **system env temperature threshold yellow 15** command. For example, if the red threshold is 60 degrees C and you want to configure the yellow threshold as 51 degrees C, set the difference between the thresholds as 9 by using the **system env temperature threshold yellow 9** command.



Note The internal temperature sensor in the device measures the internal system temperature and might vary ± 5 degrees C.

Examples

This example sets 15 as the difference between the yellow and red thresholds:

```
Device(config)# system env temperature threshold yellow 15
Device(config)#
```

traceroute mac

To display the Layer 2 path taken by the packets from the specified source MAC address to the specified destination MAC address, use the **traceroute mac** command in privileged EXEC mode.

```
traceroute mac [interface interface-id] source-mac-address [interface interface-id]
destination-mac-address [vlan vlan-id] [detail]
```

Syntax Description

interface <i>interface-id</i>	(Optional) Specifies an interface on the source or destination device.
<i>source-mac-address</i>	The MAC address of the source device in hexadecimal format.
<i>destination-mac-address</i>	The MAC address of the destination device in hexadecimal format.
vlan <i>vlan-id</i>	(Optional) Specifies the VLAN on which to trace the Layer 2 path that the packets take from the source device to the destination device. Valid VLAN IDs are 1 to 4094.
detail	(Optional) Specifies that detailed information appears.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

For Layer 2 traceroute to function properly, Cisco Discovery Protocol (CDP) must be enabled on all of the devices in the network. Do not disable CDP.

When the device detects a device in the Layer 2 path that does not support Layer 2 traceroute, the device continues to send Layer 2 trace queries and lets them time out.

The maximum number of hops identified in the path is ten.

Layer 2 traceroute supports only unicast traffic. If you specify a multicast source or destination MAC address, the physical path is not identified, and an error message appears.

The **traceroute mac** command output shows the Layer 2 path when the specified source and destination addresses belong to the same VLAN.

If you specify source and destination addresses that belong to different VLANs, the Layer 2 path is not identified, and an error message appears.

If the source or destination MAC address belongs to multiple VLANs, you must specify the VLAN to which both the source and destination MAC addresses belong.

If the VLAN is not specified, the path is not identified, and an error message appears.

The Layer 2 traceroute feature is not supported when multiple devices are attached to one port through hubs (for example, multiple CDP neighbors are detected on a port).

When more than one CDP neighbor is detected on a port, the Layer 2 path is not identified, and an error message appears.

This feature is not supported in Token Ring VLANs.

Examples

This example shows how to display the Layer 2 path by specifying the source and destination MAC addresses:

```
Device# tracert mac 0000.0201.0601 0000.0201.0201
Source 0000.0201.0601 found on con6[WS-C3750E-24PD] (2.2.6.6)
con6 (2.2.6.6) :Gi0/0/1 => Gi0/0/3
con5          (2.2.5.5       ) :   Gi0/0/3 => Gi0/0/1
con1          (2.2.1.1       ) :   Gi0/0/1 => Gi0/0/2
con2          (2.2.2.2       ) :   Gi0/0/2 => Gi0/0/1
Destination 0000.0201.0201 found on con2[WS-C3550-24] (2.2.2.2)
Layer 2 trace completed
```

This example shows how to display the Layer 2 path by using the **detail** keyword:

```
Device# tracert mac 0000.0201.0601 0000.0201.0201 detail
Source 0000.0201.0601 found on con6[WS-C3750E-24PD] (2.2.6.6)
con6 / WS-C3750E-24PD / 2.2.6.6 :
      Gi0/0/2 [auto, auto] => Gi0/0/3 [auto, auto]
con5 / WS-C2950G-24-EI / 2.2.5.5 :
      Fa0/3 [auto, auto] => Gi0/1 [auto, auto]
con1 / WS-C3550-12G / 2.2.1.1 :
      Gi0/1 [auto, auto] => Gi0/2 [auto, auto]
con2 / WS-C3550-24 / 2.2.2.2 :
      Gi0/2 [auto, auto] => Fa0/1 [auto, auto]
Destination 0000.0201.0201 found on con2[WS-C3550-24] (2.2.2.2)
Layer 2 trace completed.
```

This example shows how to display the Layer 2 path by specifying the interfaces on the source and destination devices:

```
Device# tracert mac interface fastethernet0/1 0000.0201.0601 interface fastethernet0/3
0000.0201.0201
Source 0000.0201.0601 found on con6[WS-C3750E-24PD] (2.2.6.6)
con6 (2.2.6.6) :Gi0/0/1 => Gi0/0/3
con5          (2.2.5.5       ) :   Gi0/0/3 => Gi0/0/1
con1          (2.2.1.1       ) :   Gi0/0/1 => Gi0/0/2
con2          (2.2.2.2       ) :   Gi0/0/2 => Gi0/0/1
Destination 0000.0201.0201 found on con2[WS-C3550-24] (2.2.2.2)
Layer 2 trace completed
```

This example shows the Layer 2 path when the device is not connected to the source device:

```
Device# tracert mac 0000.0201.0501 0000.0201.0201 detail
Source not directly connected, tracing source ....
Source 0000.0201.0501 found on con5[WS-C3750E-24TD] (2.2.5.5)
con5 / WS-C3750E-24TD / 2.2.5.5 :
      Gi0/0/1 [auto, auto] => Gi0/0/3 [auto, auto]
```



```
con1 / WS-C3550-12G / 2.2.1.1 :
    Gi0/1 [auto, auto] => Gi0/2 [auto, auto]
con2 / WS-C3550-24 / 2.2.2.2 :
    Gi0/2 [auto, auto] => Fa0/1 [auto, auto]
Destination 0000.0201.0201 found on con2[WS-C3550-24] (2.2.2.2)
Layer 2 trace completed.
```

This example shows the Layer 2 path when the device cannot find the destination port for the source MAC address:

```
Device# traceroute mac 0000.0011.1111 0000.0201.0201
Error:Source Mac address not found.
Layer2 trace aborted.
```

This example shows the Layer 2 path when the source and destination devices are in different VLANs:

```
Device# traceroute mac 0000.0201.0601 0000.0301.0201
Error:Source and destination macs are on different vlans.
Layer2 trace aborted.
```

This example shows the Layer 2 path when the destination MAC address is a multicast address:

```
Device# traceroute mac 0000.0201.0601 0100.0201.0201
Invalid destination mac address
```

This example shows the Layer 2 path when source and destination devices belong to multiple VLANs:

```
Device# traceroute mac 0000.0201.0601 0000.0201.0201
Error:Mac found on multiple vlans.
Layer2 trace aborted.
```

tracroute mac ip

To display the Layer 2 path taken by the packets from the specified source IP address or hostname to the specified destination IP address or hostname, use the **tracroute mac ip** command in privileged EXEC mode.

tracroute mac ip {*source-ip-address source-hostname*} {*destination-ip-address destination-hostname*} [**detail**]

Syntax Description

<i>source-ip-address</i>	The IP address of the source device as a 32-bit quantity in dotted-decimal format.
<i>source-hostname</i>	The IP hostname of the source device.
<i>destination-ip-address</i>	The IP address of the destination device as a 32-bit quantity in dotted-decimal format.
<i>destination-hostname</i>	The IP hostname of the destination device.
detail	(Optional) Specifies that detailed information appears.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

For Layer 2 traceroute to function properly, Cisco Discovery Protocol (CDP) must be enabled on each device in the network. Do not disable CDP.

When the device detects a device in the Layer 2 path that does not support Layer 2 traceroute, the device continues to send Layer 2 trace queries and lets them time out.

The maximum number of hops identified in the path is ten.

The **tracroute mac ip** command output shows the Layer 2 path when the specified source and destination IP addresses are in the same subnet.

When you specify the IP addresses, the device uses Address Resolution Protocol (ARP) to associate the IP addresses with the corresponding MAC addresses and the VLAN IDs.

- If an ARP entry exists for the specified IP address, the device uses the associated MAC address and identifies the physical path.
- If an ARP entry does not exist, the device sends an ARP query and tries to resolve the IP address. The IP addresses must be in the same subnet. If the IP address is not resolved, the path is not identified, and an error message appears.

The Layer 2 traceroute feature is not supported when multiple devices are attached to one port through hubs (for example, multiple CDP neighbors are detected on a port).

When more than one CDP neighbor is detected on a port, the Layer 2 path is not identified, and an error message appears.

This feature is not supported in Token Ring VLANs.

Examples

This example shows how to display the Layer 2 path by specifying the source and destination IP addresses and by using the **detail** keyword:

```
Device# traceroute mac ip 2.2.66.66 2.2.22.22 detail
Translating IP to mac .....
2.2.66.66 => 0000.0201.0601
2.2.22.22 => 0000.0201.0201

Source 0000.0201.0601 found on con6[WS-C2950G-24-EI] (2.2.6.6)
con6 / WS-C3750E-24TD / 2.2.6.6 :
    Gi0/0/1 [auto, auto] => Gi0/0/3 [auto, auto]
con5 / WS-C2950G-24-EI / 2.2.5.5 :
    Fa0/3 [auto, auto] => Gi0/1 [auto, auto]
con1 / WS-C3550-12G / 2.2.1.1 :
    Gi0/1 [auto, auto] => Gi0/2 [auto, auto]
con2 / WS-C3550-24 / 2.2.2.2 :
    Gi0/2 [auto, auto] => Fa0/1 [auto, auto]
Destination 0000.0201.0201 found on con2[WS-C3550-24] (2.2.2.2)
Layer 2 trace completed.
```

This example shows how to display the Layer 2 path by specifying the source and destination hostnames:

```
Device# traceroute mac ip con6 con2
Translating IP to mac .....
2.2.66.66 => 0000.0201.0601
2.2.22.22 => 0000.0201.0201

Source 0000.0201.0601 found on con6
con6 (2.2.6.6) :Gi0/0/1 => Gi0/0/3
con5          (2.2.5.5      ) :   Gi0/0/3 => Gi0/1
con1          (2.2.1.1      ) :   Gi0/0/1 => Gi0/2
con2          (2.2.2.2      ) :   Gi0/0/2 => Fa0/1
Destination 0000.0201.0201 found on con2
Layer 2 trace completed
```

This example shows the Layer 2 path when ARP cannot associate the source IP address with the corresponding MAC address:

```
Device# traceroute mac ip 2.2.66.66 2.2.77.77
Arp failed for destination 2.2.77.77.
Layer2 trace aborted.
```

type

To display the contents of one or more files, use the **type** command in boot loader mode.

type *filesystem:/file-url...*

Syntax Description

filesystem: Alias for a file system. Use **flash:** for the system board flash device; use **usbflash0:** for USB memory sticks.

/file-url... Path (directory) and name of the files to display. Separate each filename with a space.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

Filenames and directory names are case sensitive.

If you specify a list of files, the contents of each file appear sequentially.

Examples

This example shows how to display the contents of a file:

```
Device: type flash:image_file_name
version_suffix: universal-122-xx.SEx
version_directory: image_file_name
image_system_type_id: 0x00000002
image_name: image_file_name.bin
ios_image_file_size: 8919552
total_image_file_size: 11592192
image_feature: IP|LAYER_3|PLUS|MIN_DRAM_MEG=128
image_family: family
stacking_number: 1.34
board_ids: 0x00000068 0x00000069 0x0000006a 0x0000006b
info_end:
```

unset

To reset one or more environment variables, use the **unset** command in boot loader mode.

unset *variable*...

Syntax Description

variable

Use one of these keywords for *variable*:

MANUAL_BOOT—Specifies whether the device automatically or manually boots.

BOOT—Resets the list of executable files to try to load and execute when automatically booting. If the BOOT environment variable is not set, the system attempts to load and execute the first executable image it can find by using a recursive, depth-first search through the flash: file system. If the BOOT variable is set but the specified images cannot be loaded, the system attempts to boot the first bootable file that it can find in the flash: file system.

ENABLE_BREAK—Specifies whether the automatic boot process can be interrupted by using the **Break** key on the console after the flash: file system has been initialized.

HELPER—Identifies the semicolon-separated list of loadable files to dynamically load during the boot loader initialization. Helper files extend or patch the functionality of the boot loader.

PS1—Specifies the string that is used as the command-line prompt in boot loader mode.

CONFIG_FILE—Resets the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.

BAUD—Resets the rate in bits per second (b/s) used for the console. The Cisco IOS software inherits the baud rate setting from the boot loader and continues to use this value unless the configuration file specifies another setting.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE Fuji 16.9.2	This command was introduced.

Usage Guidelines

Under typical circumstances, it is not necessary to alter the setting of the environment variables.

The **MANUAL_BOOT** environment variable can also be reset by using the **no boot manual** global configuration command.

The **BOOT** environment variable can also be reset by using the **no boot system** global configuration command.

The **ENABLE_BREAK** environment variable can also be reset by using the **no boot enable-break** global configuration command.

The HELPER environment variable can also be reset by using the **no boot helper** global configuration command.

The CONFIG_FILE environment variable can also be reset by using the **no boot config-file** global configuration command.

Example

This example shows how to unset the SWITCH_PRIORITY environment variable:

```
Device: unset SWITCH_PRIORITY
```

version

To display the boot loader version, use the **version** command in boot loader mode.

version [-v]

Syntax Description	-v Displays Hardware Anchor, Microloader, Firmware-DDR and ROMMON Revision versions.				
Command Default	No default behavior or values.				
Command Modes	Boot loader				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Fuji 16.9.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Fuji 16.9.2	This command was introduced.
Release	Modification				
Cisco IOS XE Fuji 16.9.2	This command was introduced.				

Examples

This example shows how to display the boot loader version on a device:

```
Device: version -v
System Bootstrap, Version 16.10.1r, RELEASE SOFTWARE (P)
Compiled Tue 09/04/2018 22:58:10 by rel

Current ROMMON image : Primary
C9200-48P-4X platform with 2097152 Kbytes of main memory

HARDWARE ANCHOR : v027.0  crayprod_20160517 20160517-2135
MICROLOADER      : v061.0  rel_16_10_1r 20180904-2252
FIRMWARE-DDR    : v011.0  rel_16_10_1r 20180904-2254
ROMMON REVISION : v010.003
```

