System Management Commands

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

ip_address	(Optional) Shows the ARP table or the mapping for a specific IP address.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	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 [**-post** | **-n** | **-p** | *flag*] *filesystem:/file-url...*

Syntax Description

-post	(Optional) Run the loaded image with an extended or comprehensive power-on self-test (POST). Using this keyword causes POST to take longer to complete.
-n	(Optional) Pause for the Cisco IOS Debugger immediately after launching.
-p	(Optional) Pause for the JTAG Debugger right after loading the image.
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 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 3.3SECisco IOS XE 3.3SE	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.

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 3.3SECisco IOS XE 3.3SE	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:
```

clear location

To clear a specific radio frequency identification (RFID) tag or all of the RFID tags information in the entire database, use the **clear location** command in EXEC mode.

clear location [mac-address *mac-address* | **rfid]**

Syntax Description

mac-address *mac-address*	MAC address of a specific RFID tag.
rfid	Specifies all of the RFID tags in the database.

Command Default

No default behavior or values.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

This example shows how to clear information about all of the RFID tags in the database:

```
Device> clear location rfid
```

clear location statistics

To clear radio-frequency identification (RFID) statistics, use the **clear location statistics** command in EXEC mode.

clear location statistics

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	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

The following is sample output from the **clear location rfid** command and shows how to clear RFID statistics:

```
Device> clear location statistics
```

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

filesystem:	Alias for a file system. Use **usbflash0:** for USB memory sticks.
/source-file-url	Path (directory) and filename (source) to be copied.
/destination-file-url	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 3.3SECisco IOS XE 3.3SE	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

remote host {ip-address}/{name}	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

remote host {ip-address}/{name}	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 *mac-address1* **mac-address** *mac-address2*	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 3.3SECisco IOS XE 3.3SE	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
```

delete

To delete one or more files from the specified file system, use the **delete** command in boot loader mode.

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

Syntax Description

filesystem:	Alias for a file system. Use **usbflash0:** for USB memory sticks.
/file-url...	Path (directory) and filename to delete. Separate each filename with a space.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Filenames and directory names are case sensitive.

The device prompts you for confirmation before deleting each file.

Examples

This example shows how to delete two files:

```
Device: delete usbflash0:test2.text usbflash0:test5.text
Are you sure you want to delete "usbflash0:test2.text" (y/n)?y
File "usbflash0:test2.text" deleted
Are you sure you want to delete "usbflash0:test5.text" (y/n)?y
File "usbflash0:test2.text" deleted
```

You can verify that the files were deleted by entering the **dir usbflash0:** boot loader command.

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 3.3SECisco IOS XE 3.3SE	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: • d—directory • r—readable • w—writable • x—executable

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

emergency-install

To perform an emergency installation on your system, use the **emergency-install** command in boot loader mode.

emergency-install *url://<url>*

Syntax Description

<url>	URL and name of the file containing the emergency installation bundle image.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The boot flash is erased during the installation operation. After you perform the emergency install operation, run the **boot flash:packages.conf** command manually in boot loader mode, to boot the system.

Example

This example shows how to perform the emergency install operation using the contents of an image file:

```
Device: emergency-install tftp:<url>
The bootflash will be erased during install operation, continue (y/n)?y
Starting emergency recovery (tftp:<url> ...
Reading full image into memory.....................done
Nova Bundle Image
--------------------------------------
Kernel Address    : 0x6042d5c8
Kernel Size       : 0x317ccc/3243212
Initramfs Address : 0x60745294
Initramfs Size    : 0xdc6774/14444404
Compression Format: .mzip

Bootable image at @ ram:0x6042d5c8
Bootable image segment 0 address range [0x81100000, 0x81b80000] is in range          \
[0x80180000, 0x90000000].
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
File "sda9:c3850-recovery.bin" uncompressed and installed, entry point: 0x811060f0
Loading Linux kernel with entry point 0x811060f0 ...
Bootloader: Done loading app on core_mask: 0xf

### Launching Linux Kernel (flags = 0x5)


Initiating Emergency Installation of bundle                                      \
tftp:<url>
```

```
Downloading bundle tftp:<url>...

Validating bundle tftp:<url>...
Installing bundle tftp:<url>...
Verifying bundle tftp:<url>...
Package cat3k_caa-base.SPA.03.02.00SE.pkg is Digitally Signed
Package cat3k_caa-drivers.SPA.03.02.00.SE.pkg is Digitally Signed
Package cat3k_caa-infra.SPA.03.02.00SE.pkg is Digitally Signed
Package cat3k_caa-iosd-universalk9.SPA.150-1.EX.pkg is Digitally Signed
Package cat3k_caa-platform.SPA.03.02.00.SE.pkg is Digitally Signed
Package cat3k_caa-wcm.SPA.10.0.100.0.pkg is Digitally Signed
Preparing flash...
Syncing device...
Emergency Install successful... Rebooting
Restarting system.\ufffd


Booting...(use DDR clock 667 MHz)Initializing and Testing RAM                          \
+++@@@@@####...++@@++@@++@@++@@++@@++@@++@@++@@done.
Memory Test Pass!

Base ethernet MAC Address: 20:37:06:ce:25:80
Initializing Flash...

flashfs[7]: 0 files, 1 directories
flashfs[7]: 0 orphaned files, 0 orphaned directories
flashfs[7]: Total bytes: 6784000
flashfs[7]: Bytes used: 1024
flashfs[7]: Bytes available: 6782976
flashfs[7]: flashfs fsck took 1 seconds....done Initializing Flash.

The system is not configured to boot automatically. The
following command will finish loading the operating system
software:

    boot
```

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 3.3SECisco IOS XE 3.3SE	This command was introduced.

This example shows how to exit the configuration mode:

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

factory-reset

To remove all the customer specific data that has been added on the device since the time of shipping from the factory, use the **factory-reset** command in the Privileged EXEC mode.

factory-reset {**all** | **config** | **boot-vars**}

Syntax Description

all	Removes all the data from the device, including configuration data, crash information, log files, boot variables, core files, IOS images including the current boot image.
config	Removes all the configuration data, including user data, startup, and running configuration.
boot-vars	Resets boot variables.

Command Default

There are no defaults for this command.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 16.6.1	This command was introduced.

Usage Guidelines

No system configuration is required to use the **factory-reset** command. Use the command with all options enabled.

The **factory-reset** command erases IOS images, boot variables, configuration data and all user data. Data can be in the form of configuration, log files, boot variables, and core files.

The system reloads to perform the factory reset and boots into ROMMON mode.

After the **factory reset** command is executed, you can load the IOS image from ROMMON using USB or TFTP.

Note Do not unplug the power or interrupt the factory reset operation.

This command is used in the following two scenarios:

- Return Material Authorization (RMA) for a device: If you have to return a device to Cisco for RMA, remove all customer-specific data before obtaining a RMA certificate for the device.
- Recovering the compromised device: If the key material or credentials stored on a device is compromised, reset the device to factory configuration and then reconfigure the device.

flash_init

To initialize the flash: file system, use the **flash_init** command in boot loader mode.

flash_init

Syntax Description

This command has no arguments or keywords.

Command Default

The flash: file system is automatically initialized during normal system operation.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

During the normal boot process, the flash: file system is automatically initialized.

Use this command to manually initialize the flash: file system. For example, you use this command during the recovery procedure for a lost or forgotten password.

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 3.3SECisco IOS XE 3.3SE	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
```

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:** | **pram:** | **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, it triggers post-install scripts to restart the necessary processes, or triggers a reload for non-restartable packages.
file	Specifies the package to be activated.
{**bootflash:** | **flash:** | **harddisk:** | **webui:**}	Specifies the location of the installed package.
auto-abort-timer *timer*	(Optional) Installs an automatic timer to terminate the installation.
prompt-level {**all** | **none**}	(Optional) Prompts the 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 will prompt users as to whether they want to continue. The **all** keyword allows you to enable prompts. The **none** keyword disables prompts.
add	Copies files from a remote location (via FTP, TFTP) to a device and performs Software Maintenance Upgrade (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. It also adds an entry in the package file, so that the status can be monitored and maintained.
{ **bootflash:** | **flash:** |**ftp:** |**harddisk:** |**http:** |**https:** | **pram:** |**rcp:** | **scp:** | **tftp:** |**webui:**}	Specifies the package to be added.

commit	Makes SMU changes persistent over reloads. You can do 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 automatic timer for installation.
deactivate	Deactivates an installed package. Deactivating a package also updates the package status and triggers a process restart or a reload.
label *id*	Specifies the id of the install point to label.
description	Adds a description to specified install point.
label-name *name*	Adds a description to specified install point.
remove	Remove installed packages. The package file is removed from the file system. The **remove** keyword can only be used on packages that are currently inactive.
inactive	Removes all inactive packages from the device.
rollback	Rollbacks the data model interface (DMI) package (DMP) 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 Everest 16.6.1	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 contain a minimal set of files for patching the release along with some metadata that describes the contents of the package.

Packages must be added prior to activating the SMU.

A package must be deactivated, before it is removed from the bootflash. A removed packaged must be added again.

Example

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

```
Device# install add file tftp://172.16.0.1//tftpboot/folder1/cat3k-
universalk9.2017-01-10_13.15.1.CSCxxxxxxx.SSA.dmp.bin

install_add: START Sun Feb 26 05:57:04 UTC 2017
Downloading file tftp://172.16.0.1//tftpboot/folder1/cat3k-universalk9.2017-01-10_13.15.1.
CSCvb12345.SSA.dmp.bin
Finished downloading file
tftp://172.16.0.1//tftpboot/folder1/cat3k-universalk9.2017-01-10_13.15.1.
CSCxxxxxxx.SSA.dmp.bin to
bootflash:cat3k-universalk9.2017-01-10_13.15.1.CSCxxxxxxx.SSA.dmp.bin
SUCCESS: install_add /bootflash/cat3k-universalk9.2017-01-10_13.15.1.CSCxxxxxxx.SSA.dmp.bin

Sun Feb 26 05:57:22 UTC 2017
```

The following example shows how to activate an install package:

```
Device# install activate file bootflash:cat3k-universalk9.2017-01-10_13.15.1.
CSCxxxxxxx.SSA.dmp.bin

install_activate: START Sun Feb 26 05:58:41 UTC 2017
DMP package.
Netconf processes stopped
SUCCESS: install_activate
/bootflash/cat3k-universalk9.2017-01-10_13.15.1.CSCxxxxxxx.SSA.dmp.bin
Sun Feb 26 05:58:58 UTC 2017
*Feb 26 05:58:47.655: %DMI-4-CONTROL_SOCKET_CLOSED:  SIP0: nesd:
Confd control socket closed Lost connection to ConfD (45): EOF on socket to ConfD.
*Feb 26 05:58:47.661: %DMI-4-SUB_READ_FAIL:  SIP0: vtyserverutild:
Confd subscription socket read failed Lost connection to ConfD (45):
EOF on socket to ConfD.
*Feb 26 05:58:47.667: %DMI-4-CONTROL_SOCKET_CLOSED:  SIP0: syncfd:
Confd control socket closed Lost connection to ConfD (45): EOF on socket to ConfD.
*Feb 26 05:59:43.269: %DMI-5-SYNC_START:  SIP0: syncfd:
External change to running configuration detected.
The running configuration will be synchronized to the NETCONF running data store.
*Feb 26 05:59:44.624: %DMI-5-SYNC_COMPLETE:  SIP0: syncfd:
The running configuration has been synchronized to the NETCONF running data store.
```

The following example shows how to commit an installed package:

```
Device# install commit

install_commit: START Sun Feb 26 06:46:48 UTC 2017
SUCCESS: install_commit  Sun Feb 26 06:46:52 UTC 2017
```

The following example shows how to rollback to the base SMU package:

```
Device# install rollback to base

install_rollback: START Sun Feb 26 06:50:29 UTC 2017
7 install_rollback: Restarting impacted processes to take effect
7 install_rollback: restarting confd

*Feb 26 06:50:34.957: %DMI-4-CONTROL_SOCKET_CLOSED:  SIP0: syncfd:
```

```
Confd control socket closed Lost connection to ConfD (45): EOF on socket to ConfD.
*Feb 26 06:50:34.962: %DMI-4-CONTROL_SOCKET_CLOSED:  SIP0: nesd:
Confd control socket closed Lost connection to ConfD (45): EOF on socket to ConfD.
*Feb 26 06:50:34.963: %DMI-4-SUB_READ_FAIL:  SIP0: vtyserverutild:
Confd subscription socket read failed Lost connection to ConfD (45):
EOF on socket to ConfD.Netconf processes stopped
7 install_rollback: DMP activate complete
SUCCESS: install_rollback  Sun Feb 26 06:50:41 UTC 2017
*Feb 26 06:51:28.901: %DMI-5-SYNC_START:  SIP0: syncfd:
External change to running configuration detected.
The running configuration will be synchronized to the NETCONF running data store.
*Feb 26 06:51:30.339: %DMI-5-SYNC_COMPLETE:  SIP0: syncfd:
The running configuration has been synchronized to the NETCONF running data store.
```

Related Commands

Command	Description
show install	Displays information about install packages.

l2 traceroute

To enable the Layer 2 traceroute server, use the **l2 traceroute** command in global configuration mode. Use the **no** form of this command to disable the Layer 2 traceroute server.

l2 traceroute
no l2 traceroute

Syntax Description

This command has no arguments or keywords.

Command Modes

Global configuration (config#)

Command History

Release	Modification
Cisco IOS XE 3.3SE	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 l2 traceroute** command in global configuration mode.

The following example shows how to configure Layer 2 traceroute using the **l2 traceroute** command.

```
Device# configure terminal
Device(config)# l2 traceroute
```

license right-to-use

To configure right-to-use access point adder licenses on the device, use the **license right-to-use** command in privileged EXEC mode.

license right-to-use {**activate** | **deactivate**} **apcount | ipbase | ipservices | lanbase**

Syntax Description

activate	Activates permanent or evaluation ap-count licenses.
deactivate	Deactivates permanent or evaluation ap-count licenses.
apcount *count*	Specifies the number of ap-count licenses added. You can configure the number of adder licenses from 5 to 50.
ipbase *count*	Activates ipbase licenses on the switch.
ipservices *count*	Activates ipservices licenses on the switch.
lanbase *count*	Activates lanbase licenses on the switch.

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

This example shows how to activate an ap-count evaluation license:

```
Device# license right-to-use activate apcount evaluation
Device# end
```

This example shows how to activate an ap-count permanent license:

```
Device# license right-to-use deactivate apcount evaluation
Device# end
```

This example shows how to add a new ap-count license:

```
Device# license right-to-use activate apcount 500 slot 1
Device# end
```

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

Syntax Description

admin-tag*string*	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.
id	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 3.3SE	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.

location plm calibrating

To configure path loss measurement (CCX S60) request for calibrating clients, use the **location plm calibrating** command in global configuration mode.

location plm calibrating {**multiband** | **uniband**}

Syntax Description

multiband	Specifies the path loss measurement request for calibrating clients on the associated 802.11a or 802.11b/g radio.
uniband	Specifies the path loss measurement request for calibrating clients on the associated 802.11a/b/g radio.

Command Default

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The uniband is useful for single radio clients (even if the radio is a dual band and can operate in the 2.4-GHz and the 5-GHz bands). The multiband is useful for multiple radio clients.

This example shows how to configure the path loss measurement request for calibrating clients on the associated 802.11a/b/g radio:

```
Device# configure terminal
Device(config)# location plm calibrating uniband
Device(config)# end
```

mac address-table move update

To enable the MAC address table move update feature, use the **mac address-table move update** command in global configuration mode on the switch stack or on a standalone switch. To return to the default setting, use the **no** form of this command.

mac address-table move update {**receive | transmit**}
no mac address-table move update {**receive | transmit**}

Syntax Description

receive	Specifies that the switch processes MAC address-table move update messages.
transmit	Specifies that the switch sends MAC address-table move update messages to other switches in the network if the primary link goes down and the standby link comes up.

Command Default

By default, the MAC address-table move update feature is disabled.

Command Modes

Global configuration

Command History

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

The MAC address-table move update feature allows the switch to provide rapid bidirectional convergence if a primary (forwarding) link goes down and the standby link begins forwarding traffic.

You can configure the access switch to send the MAC address-table move update messages if the primary link goes down and the standby link comes up. You can configure the uplink switches to receive and process the MAC address-table move update messages.

Examples

This example shows how to configure an access switch to send MAC address-table move update messages:

```
Device# configure terminal
Device(config)# mac address-table move update transmit
Device(config)# end
```

This example shows how to configure an uplink switch to get and process MAC address-table move update messages:

```
Device# configure terminal
Device(config)# mac address-table move update receive
Device(config)# end
```

You can verify your setting by entering the **show mac address-table move update** privileged EXEC command.

mgmt_init

To initialize the Ethernet management port, use the **mgmt_init** command in boot loader mode.

mgmt_init

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 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Use the **mgmt_init** command only during debugging of the Ethernet management port.

Examples

This example shows how to initialize the Ethernet management port:

```
Device: mgmt_init
```

mkdir

To create one or more directories on the specified file system, use the **mkdir** command in boot loader mode.

mkdir *filesystem:/directory-url...*

Syntax Description

filesystem:	Alias for a file system. Use **usbflash0:** for USB memory sticks.
/directory-url...	Name of the directories to create. Separate each directory name with a space.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

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.

Example

This example shows how to make a directory called Saved_Configs:

```
Device: mkdir usbflash0:Saved_Configs
Directory "usbflash0:Saved_Configs" created
```

more

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

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

Syntax Description

filesystem:	Alias for a file system. Use **flash:** for the system board flash device.
/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 3.3SECisco IOS XE 3.3SE	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 a file:

```
Device: more 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:
```

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.
```

rename

To rename a file, use the **rename** command in boot loader mode.

rename *filesystem:/source-file-url filesystem:/destination-file-url*

Syntax Description

filesystem:	Alias for a file system. Use **usbflash0:** for USB memory sticks.
/source-file-url	Original path (directory) and filename.
/destination-file-url	New path (directory) and filename.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	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.

Examples

This example shows a file named *config.text* being renamed to *config1.text*:

```
Device: rename usbflash0:config.text usbflash0:config1.text
```

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

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 Denali 16.1.1	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#
```

request platform software package clean

To remove media files that are not required, use the **request platform software package clean** command in privileged EXEC mode.

```
request platform software package clean [{file URL | pattern URL | switch switch-ID {file URL | pattern URL }}]
```

Syntax Description

file *URL*	(Optional) Specifies the URL to the file. The URL contains the file system, directories, and the filename.
pattern *URL*	(Optional) Specifies the pattern to clean one or more matching paths.
switch *switch-ID*	(Optional) Specifies the switch for provisioning.

Command Default

No default behavior or values

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

Example

The following example shows how to clean unused media files from the device:

```
Device# request platform software package clean

This operation may take several minutes...
Running command on switch 1
Cleaning up unnecessary package files
No path specified, will use booted path consolidated:packages.conf
Cleaning sw/isos
  Scanning boot directory for packages ... done.
  Preparing packages list to delete ...
    cat3k_caa-guestshell.BLD_V168_THROTTLE_LATEST_20180925_154546_V16_8_1_191_2.SSA.pkg
      File is in use, will not delete.
    cat3k_caa-rpbase.BLD_V168_THROTTLE_LATEST_20180925_154546_V16_8_1_191_2.SSA.pkg
      File is in use, will not delete.
    cat3k_caa-rpcore.BLD_V168_THROTTLE_LATEST_20180925_154546_V16_8_1_191_2.SSA.pkg
      File is in use, will not delete.
    cat3k_caa-srdriver.BLD_V168_THROTTLE_LATEST_20180925_154546_V16_8_1_191_2.SSA.pkg
      File is in use, will not delete.
    cat3k_caa-webui.BLD_V168_THROTTLE_LATEST_20180925_154546_V16_8_1_191_2.SSA.pkg
      File is in use, will not delete.
    packages.conf
```

```
    File is in use, will not delete.
  done.

SUCCESS: No extra package or provisioning files found on media. Nothing to clean.
```

Related Commands

Command	Description
request platform software package install file	Upgrades a consolidated package or sub-package.
request platform software package install rollback	Rolls back a previous software upgrade.

request platform software package copy

To copy a Cisco IOS XE image file, use the **request platform software package copy** command in privileged EXEC mode.

request platform software package copy switch *switch-ID* **file** *file-URL* **to** *file-URL*

Syntax Description

switch *switch-ID*	Specifies the switch for provisioning.
file *file-URL*	URL to the consolidated package or sub-package.
to	Specifies the destination URL to where the files are to be copied.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

Example

The following example shows how to copy an image file to a destination directory:

```
Device# request platform software package copy switch all file
tftp://10.10.11.250/cat3k_caa-universalk9.16.08.05.SPA.bin to
ftp:cat3k_caa-universalk9.16.08.05.SPA.bin
```

Command	Description
request platform software package install file	Upgrades a consolidated package or sub-package.
request platform software package install rollback	Rolls back a previous software upgrade.

request platform software package describe file

To gather descriptive information about an individual module or a Cisco IOS-XE image file, use the **request platform software package describe file**command in privileged EXEC or diagnostic mode.

request platform software package describe file *URL* [**detail**] [**verbose**]

Syntax Description

URL	Specifies the URL to the file. The *URL* contains the file system, directories, and the filename.
detail	(Optional) Specifies detailed output.
verbose	(Optional) Displays verbose information, meaning that all information about the file is displayed on the console.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

This command can only be used to gather information on individual module and Cisco IOS-XE image files. Using this command to collect information on any other file will generate output, but the generated output is useless.

The output of this command can be used for the following functions:

- To confirm the individual module files that are part of a Cisco IOS-XE image.
- To confirm whether or not a file is bootable.
- To confirm the contexts in which a file must be reloaded or booted.
- To confirm whether or not a file is corrupted.
- To confirm file and header sizes, build dates, and various other general information.

Examples

In the following example, this command is entered to gather information about an individual SIP Base module file on the bootflash: file system.

```
Device# request platform software package describe file
bootflash:cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin

Package: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin
  Size: 36954316
  Timestamp: 2018-11-07 15:36:27 UTC
  Canonical path: /bootflash/cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin

  Raw disk-file SHA1sum:
    3ee37cdbe276316968866b16df7d8a5733a1502e
```

```
  Computed SHA1sum:
    f2db80416a1245a5b1abf2988088860b38ce7898
  Contained SHA1sum:
    f2db80416a1245a5b1abf2988088860b38ce7898
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    10000
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: cc
    BuildTime: 2018-11-07_05.24
    ReleaseDate: Wed 07-Nov-18 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin


  Package is bootable on SIP when specified
  by packages provisioning file.
```

In the following example, this command is used to gather information about a Cisco IOS-XE image on the bootflash: file system.

```
Device# request platform software package describe file
bootflash:cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin

Package: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin
  Size: 218783948
  Timestamp: 2018-11-07 17:14:09 UTC
  Canonical path: /bootflash/cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin

  Raw disk-file SHA1sum:
    d2999fc7e27e01344903a42ffacd62c156eba4cc

  Computed SHA1sum:
    5f8cda8518d01d8282d80ecd34f7715783f4a813
  Contained SHA1sum:
    5f8cda8518d01d8282d80ecd34f7715783f4a813
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    30000
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: rp_super
    BuildTime: 2018-11-07_05.24
    ReleaseDate: Wed 07-Nov-18 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: cat3k_caa-universalk9_universalk9.16.09.02


  Package is bootable from media and tftp.
  Package contents:
```

```
Package: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin
  Size: 52072652
  Timestamp: 2018-11-07 13:33:13 UTC

  Raw disk-file SHA1sum:
    f1aad6d687256aa327a4efa84deab949fbed12b8

  Computed SHA1sum:
    15502fd1b8f9ffd4af4014ad4d8026c837929fe6
  Contained SHA1sum:
    15502fd1b8f9ffd4af4014ad4d8026c837929fe6
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    20000
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: fp
    BuildTime: 2018-11-07_05.24
    ReleaseDate: Wed 07-Nov-18 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin


  Package is bootable on ESP when specified
  by packages provisioning file.

Package: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin
  Size: 21844172
  Timestamp: 2018-11-07 13:33:01 UTC

  Raw disk-file SHA1sum:
    025e6159dd91cef9d254ca9fff2602d8ce065939

  Computed SHA1sum:
    ea1b358324ba5815b9ea623b453a98800eae1c78
  Contained SHA1sum:
    ea1b358324ba5815b9ea623b453a98800eae1c78
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    30004
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: ipbasek9
    BuildTime: 2018-11-07_05.24
    ReleaseDate: Wed 07-Nov-07 01:00
    RouteProcessor: rp1
    Platform: Cat3XXXX
    User: mcpre
    PackageName: ipbasek9
    Build: 16.9.20180925:160127


  Package is not bootable.
```

```
Package: cat3k_caa-universalk9.16.09.02.SPA.bin
  Size: 21520588
  Timestamp: 2007-12-04 13:33:06 UTC

  Raw disk-file SHA1sum:
    432dfa61736d8a51baefbb2d70199d712618dcd2

  Computed SHA1sum:
    83c0335a3adcea574bff237a6c8640a110a045d4
  Contained SHA1sum:
    83c0335a3adcea574bff237a6c8640a110a045d4
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    30001
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: rp_base
    BuildTime: 2007-12-04_05.24
    ReleaseDate: Tue 04-Dec-07 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: v_16.9.20180925:160127


  Package is bootable on RP when specified
  by packages provisioning file.

Package: cat3k_caa-universalk9_universalk9.16.09.02.SPA.bin
  Size: 24965324
  Timestamp: 2018-11-07 13:33:08 UTC

  Raw disk-file SHA1sum:
    eb964b33d4959c21b605d0989e7151cd73488a8f

  Computed SHA1sum:
    19b58886f97c79f885ab76c1695d1a6f4348674e
  Contained SHA1sum:
    19b58886f97c79f885ab76c1695d1a6f4348674e
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    30002
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: rp_daemons
    BuildTime: 2018-11-07_05.24
    ReleaseDate: Wed 07-Nov-07 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: v_16.9.20180925:160127


  Package is not bootable.

Package: cat3k_caa-universalk9.16.09.02.SPA.bin
```

```
  Size: 48515276
  Timestamp: 2007-12-04 13:33:13 UTC

  Raw disk-file SHA1sum:
    bc13462d6a4af7a817a7346a44a0ef7270e3a81b

  Computed SHA1sum:
    f1235d703cc422e53bce850c032ff3363b587d70
  Contained SHA1sum:
    f1235d703cc422e53bce850c032ff3363b587d70
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    30003
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: rp_iosd
    BuildTime: 2007-12-04_05.24
    ReleaseDate: Tue 04-Dec-07 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: v_16.9.20180925:160127


  Package is not bootable.

Package: cat3k_caa-universalk9.16.09.02.SPA.bin
  Size: 36954316
  Timestamp: 2007-12-04 13:33:11 UTC

  Raw disk-file SHA1sum:
    3ee37cdbe276316968866b16df7d8a5733a1502e

  Computed SHA1sum:
    f2db80416a1245a5b1abf2988088860b38ce7898
  Contained SHA1sum:
    f2db80416a1245a5b1abf2988088860b38ce7898
  Hashes match. Package is valid.

  Header size:     204 bytes
  Package type:    10000
  Package flags:   0
  Header version:  0

  Internal package information:
    Name: cc
    BuildTime: 2007-12-04_05.24
    ReleaseDate: Tue 04-Dec-07 01:00
    RouteProcessor: rp1
    Platform: Cat3XXX
    User: mcpre
    PackageName: ipbasek9
    Build: v_16.9.20180925:160127


  Package is bootable on SIP when specified
  by packages provisioning file.

Package: cat3k_caa-universalk9.16.09.02.SPA.bin
  Size: 19933388
```

```
Timestamp: 2007-12-04 13:33:06 UTC

Raw disk-file SHA1sum:
  44b6d15cba31fb0e9b27464665ee8a24b92adfd2

Computed SHA1sum:
  b1d5faf093b183e196c7c8e1023fe1f7aafdd36d
Contained SHA1sum:
  b1d5faf093b183e196c7c8e1023fe1f7aafdd36d
Hashes match. Package is valid.

Header size:     204 bytes
Package type:    10001
Package flags:   0
Header version:  0

Internal package information:
  Name: cc_spa
  BuildTime: 2007-12-04_05.24
  ReleaseDate: Tue 04-Dec-07 01:00
  RouteProcessor: rp1
  Platform: Cat3XXX
  User: mcpre
  PackageName: ipbasek9
  Build: v_16.9.20180925:160127


Package is not bootable.
```

Related Commands

Command	Description
request platform software package install file	Upgrades an individual package or a superpackage file.

request platform software package expand

To extract the individual modules from a Cisco IOS-XE image, use the **request platform software package expand** command in privileged EXEC mode.

request platform software package expand {**file** *source-URL* | **switch** *switch-ID* **file** *source-URL*}[**to** *destination-URL*] [**auto-copy**] [**force**] [**overwrite**] [**retain-source-file**] [**verbose**] [**wipe**]

Syntax Description

source-URL	Specifies the URL to the Cisco IOS-XE file that stores the contents that will be extracted.
switch *switch-ID*	Specifies the switch ID.
to *destination-URL*	(Optional) Specifies the destination URL where the files that were extracted from the Cisco IOS-XE file are left after the operation is complete. If this option is not entered, the Cisco IOS-XE image file contents are extracted onto the same directory where the Cisco IOS-XE image file is currently stored.
auto-copy	(Optional) Copies packages to provisioning directory.
force	(Optional) Specifies that the operation will be forced, meaning that the upgrade will proceed despite any warning messages.
over-write	(Optional) Overwrites non-identical packages and unused provisioning files.
retain-to-source	(Optional) Retains the source file after expansion.
verbose	(Optional) Displays verbose information, meaning all output that can be displayed on the console during the process will be displayed.
wipe	(Optional) Erases all content on the destination snapshot directory before extracting the files and placing them on the snapshot directory.

Command Default

No default behavior or values

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

This command only extracts individual module files and a provisioning file from the Cisco IOS-XE image. Additional configuration is needed to configure the router to boot using the provisioning files and run using the individual modules.

When this command is used, copies of each module and the provisioning file within the Cisco IOS-XE image are copied and placed on the destination directory. The Cisco IOS-XE image file is unchanged after the operation is complete.

If the **to** destination-URL option is not entered, the Cisco IOS-XE image contents will be extracted onto the same directory where the Cisco IOS-XE image is currently stored.

If this command is used to extract individual module files onto a directory that already contains individual module files, the files are extracted to an automatically created directory on the destination device.

Examples

The following example shows how to extract individual modules and the provisioning file from a Cisco IOS-XE image that has already been placed in the directory where the user wants to store the individual modules and the provisioning file.

Output of the directory before and after the extraction is given to confirm that files were extracted.

```
Device# dir bootflash:

Directory of bootflash:/
   11  drwx       16384   Dec 4 2018 11:26:07 +00:00  lost+found
14401  drwx        4096   Dec 4 2018 11:27:41 +00:00  .installer
   12  -rw-   218783948   Dec 4 2018 12:12:16 +00:00 cat3k_caa-universalk9.16.09.02.SPA.bin

Device# request platform software package expand file
bootflash:cat3k_caa-universalk9.16.09.02.SPA.bin

Verifying parameters
Validating package type
Copying package files

Device# dir bootflash:

Directory of bootflash:/
   11  drwx       16384   Dec 4 2018 11:26:07 +00:00  lost+found
14401  drwx        4096   Dec 4 2018 11:27:41 +00:00  .installer
   12  -rw-   218783948   Dec 4 2018 12:12:16 +00:00  cat3k_caa-universalk9.16.09.02.SPA.bin
28802  -rw-        7145   Dec 4 2018 12:14:22 +00:00  packages.conf
928833536 bytes total (483700736 bytes free)
```

Related Commands

Command	Description
request platform software package install file	Upgrades an individual module or a Cisco IOS-XE file.

request platform software package install auto-upgrade

To initiate automatic upgrade of software on all incompatible switches, use the **request platform software package install auto-upgrade** command in privileged EXEC mode.

request platform software package install auto-upgrade

Syntax Description

This command has no arguments or keywords.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Examples

The following example shows how to automatically upgrade the software:

```
Device# request platform software package install auto-upgrade
```

Related Commands

Command	Description
request platform software package install file	Upgrades a consolidated package or sub-package.
request platform software package install rollback	Rolls back a previous software upgrade.

request platform software package install commit

To cancel the rollback timer and commit a software upgrade, use the **request platform software package install commit** command in privileged EXEC mode.

request platform software package install switch *switch-ID***commit** [**verbose**]

Syntax Description

switch *switch-ID*	Specifies the switch ID.
verbose	(Optional) Displays verbose information, meaning all information that can be displayed on the console during the process will be displayed.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

This command is entered after the **request platform software package install switch** *switch-ID* **file auto-rollback** command is used to begin an individual sub-package or a consolidated package upgrade. When the **auto-rollback** *minutes* option is used, a rollback timer that cancels the upgrade after the number of specified *minutes*cancels the upgrade if the **request platform software package install switch** *switch-ID* **commit** command is not entered to commit the upgrade.

The rollback timer expires and the upgrade does not complete; and the device continues running the previous sub-package or consolidated package.

Examples

The following example shows how to commit an upgrade:

```
Device# request platform software package install switch all commit
```

Related Commands

Command	Description
request platform software package install file	Upgrades a consolidated package or sub-package.
request platform software package install rollback	Rolls back a previous software upgrade.

request platform software package install file

To upgrade a consolidated package or an individual sub-package, use the **request platform software package install file** command in privileged EXEC mode.

request platform software package install switch *switch-ID* **file** *file-URL* [**auto-rollback** *minutes*] [**interface-module-delay** *seconds*] [**provisioning-file** *provisioning-file-URL*] [**slot** *slot-number*] [**bay** *bay-number*] [**auto-copy**] [**force**] [**ignore-compact-check**] [**mdr**] [**new**] [**on-reboot**] [**retain-source-file**] [**verbose**]

Syntax Description

switch *switch-ID*	Specifies the switch for provisioning.
file-URL	URL to the consolidated package or sub-package.
auto-rollback *minutes*	(Optional) Specifies the setting of a rollback timer, and sets the number of minutes on the rollback timer before the rollback timer expires.
interface-module-delay *seconds*	(Optional) Specifies the interface module restart timeout delay.
provisioning-file *provisioning-file-URL*	(Optional) Specifies the URL to the provisioning file. A provisioning file is used for booting only when a device is booted using individual sub-packages.
slot *slot-number*	(Optional) Specifies the device slot number where a shared port adapter interface processor (SIP) can be installed.
bay *bay-number*	(Optional) Specifies the shared port adapter (SPA) bay number within a SIP.
auto-copy	(Optional) Specifies that the device will automatically copy packages to provisioning directory.
force	(Optional) Specifies that the operation will be forced, meaning that the upgrade will proceed despite any warning messages.
ignore-compact-check	(Optional) Specifies that the compatibility check is ignored.
mdr	(Optional) Specifies that minimal disruptive restart is used.
new	(Optional) Creates a new package provisioning file.
on-reboot	(Optional) Specifies that the installation will not be completed until the next RP reboot.
retain-source-file	(Optional) Retains the source file after installation.
verbose	(Optional) Displays verbose information, meaning all output that can be displayed on the console during the process will be displayed.

Command Default

If you do not enter the **request platform software package install file** command, the consolidated or sub package upgrades are not initiated on the device.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

This command is used to upgrade consolidated packages and individual sub-packages.

When the **auto-rollback** *minutes* option is used, the **request platform software package install switch** *switch-ID* **commit** command must be entered before the rollback timer expires to complete the upgrade. If this command is not entered, the device rolls back to the previous software version. The rollback timer expires after the number of specified *minutes*. If the **auto-rollback** *minutes* option is not used, the upgrade automatically happens.

In the following example, the **request platform software package install** command is used to upgrade a consolidated package. The **force** option, which forces the upgrade past any prompt (such as, already having the same consolidated package installed), is used in this example.

```
Device# request platform software package install rp 0 file
bootflash:cat3k_caa-universalk9.16.03.05.SPA.bin force

--- Starting installation state synchronization ---
Finished installation state synchronization
--- Starting file path checking ---
Finished file path checking
--- Starting image file verification ---
Checking image file names
Verifying image file locations
Locating image files and validating name syntax
Inspecting image file types
Processing image file constraints
Extracting super package content
Verifying parameters
Validating package type
Copying package files
Checking and verifying packages contained in super package
Creating candidate provisioning file

  WARNING:
  WARNING: Candidate software will be installed upon reboot
  WARNING:

Finished image file verification
--- Starting candidate package set construction ---
Verifying existing software set
Processing candidate provisioning file
Constructing working set for candidate package set
Constructing working set for running package set
Checking command output
Constructing merge of running and candidate packages
Finished candidate package set construction
--- Starting compatibility testing ---
Determining whether candidate package set is compatible
WARNING:
WARNING: Candidate software combination not found in compatibility database
WARNING:
Determining whether installation is valid
Determining whether installation is valid ... skipped
Checking IPC compatibility with running software
```

```
Checking IPC compatibility with running software ... skipped
Checking candidate package set infrastructure compatibility
Checking infrastructure compatibility with running software
Checking infrastructure compatibility with running software ... skipped
Finished compatibility testing
--- Starting commit of software changes ---
Updating provisioning rollback files
Creating pending provisioning file
Committing provisioning file
Finished commit of software changes
SUCCESS: Software provisioned.  New software will load on reboot.

Device# reload
```

Note A reload must be performed to finish this procedure.

Related Commands

Command	Description
request platform software package install commit	Cancels the rollback timer and commits a software upgrade.
request platform software package install rollback	Rolls back a previous software upgrade.
request platform software package install snapshot	Creates a snapshot directory that will contain all the files extracted from a consolidated package.

request platform software package install rollback

To roll back a previous software upgrade, use the **request platform software package install rollback** command in privileged EXEC mode.

request platform software package install switch *switch-ID* **rollback** [{**as-booted** | **provisioning-file** *provisioning-file-URL*}] [**auto-copy**] [**force**] [**ignore-compact-check**] [**new**] [**on-reboot**] [**retain-source-file**] [**verbose**]

Syntax Description

switch *switch-ID*	Specifies the switch for provisioning.
as-booted	(Optional) Specifies that the software update will not occur, and that the device will instead boot using the same procedure that it used during the last reboot.
provisioning-file *provisioning-file-URL*	(Optional) Specifies that the software update will not occur, and that the device will instead boot using the specified provisioning file.
auto-copy	(Optional) Specifies that the device will automatically copy packages to provisioning directory.
force	(Optional) Specifies that the operation will be forced, meaning that the upgrade will proceed despite any warning messages.
ignore-compact-check	(Optional) Specifies that the compatibility check is ignored.
new	(Optional) Creates a new package provisioning file.
on-reboot	(Optional) Specifies that the installation will not be completed until the next reboot.
retain-source-file	(Optional) Retains the source file after installation,
verbose	(Optional) Displays verbose information, meaning all output that can be displayed on the console during the process will be displayed.

Command Default

No default behavior or values

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.1.1	This command was introduced.

Usage Guidelines

This command rolls back a configuration that has an active rollback timer. Active rollback timers are used when the **auto-rollback** option is entered when software is being upgraded using the **request platform software package install file**command.

Examples

The following example shows that an upgrade using a rollback timer is rolled back to the previous configuration:

```
Device# request platform software package install switch all rollback
```

Related Commands

Command	Description
request platform software package install commit	Cancel the rollback timer and commits a software upgrade.
request platform software package install file	Upgrades a consolidated package or an individual sub-package.

request platform software package install snapshot

To create a snapshot directory that contains all the files extracted from a consolidated package, use the **request platform software package install snapshot** command in privileged EXEC mode.

request platform software package install switch *switch-ID* **snapshot to** *URL* [**as** *snapshot-provisioning-filename*] [**force**] [**verbose**] [**wipe**]

Syntax Description

switch *switch-ID*	Specifies the switch for provisioning.
snapshot to *URL*	Creates a directory and extracts all files from the consolidated package into that directory. The directory is named in the command-line as part of the *URL_FS*. If the *URL_FS*is specified as a file system, the files in the consolidated package will be extracted onto the file system and not a directory on the file system.
as *snapshot-provisioning-filename*	(Optional) Renames the provisioning file in the snapshot directory. If this option is not used, the existing provisioning filename of the provisioning file in the consolidated package is used.
wipe	(Optional) Erases all content on the destination snapshot directory before extracting files and placing them on the snapshot directory.
force	(Optional) Specifies that the operation will be forced; meaning that the upgrade will proceed despite any warning messages.
verbose	(Optional) Displays verbose information, meaning all output is displayed on the console during the provisioning process.

Command Default

No default behavior or values

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Everest 16.1.1	This command was introduced.

Usage Guidelines

This command is used to create a directory at the destination device and extract the individual sub-packages in a consolidated package to that directory.

The **request platform software package expand** command is the only other command that can be used to extract individual sub-packages from a consolidated package.

Examples

In the following example, a snapshot directory named snapdir1_snap is created in the bootflash: file system, and the individual sub-package files from the consolidated package are extracted into the snapshot directory.

The second portion of the example first sets up the router to reboot using the files in the snapshot directory (deletes all previous boot system commands, configures the configuration register, then enters a boot system command to boot using the extracted provisioning file), saves the new configuration, then reboots so the device will boot using the extracted provisioning file, which allows the router to run using the extracted individual sub-package files.

```
Device# request platform software package install switch all snapshot to
bootflash:snapdir1_snap

--- Starting active image file snapshot --- Validating snapshot parameters Creating
destination directory
Copying files to destination media
   Copied provisioning file as packages.conf
Moving files into final location Finished active image file snapshot
Device(config)# no boot system
Device(config)# config-register 0x1
Device(config)# boot system harddisk:snapdir1_snap/packages.conf
Device(config)# exit
*May 11 01:31:04.815: %SYS-5-CONFIG_I: Configured from console by con
Device# write memory

Building configuration...
[OK]

Device# reload
```

Related Commands

Command	Description
request platform software package install file	Upgrades a consolidated package or an individual sub-package.

request platform software package verify

To verify the In-Service Software Upgrade (ISSU) software package compatibility, use the **requestplatform software package verify** command in privileged EXEC mode.

request platform software package verify switch *switch-ID* **file** *file-URL* [**bay** *bay-number*] [**slot** *slot-number*] [**auto-copy**] [**force**] [**mdr**]

Syntax Description

switch *switch-ID*	Specifies the switch for provisioning.
file-URL	URL to the consolidated package or sub-package.
bay *bay-number*	(Optional) Specifies the shared port adapter (SPA) bay number within a SIP.
slot *slot-number*	(Optional) Specifies the device slot number where a shared port adapter interface processor (SIP) can be installed.
auto-copy	(Optional) Specifies that the device will automatically copy packages to provisioning directory.
force	(Optional) Specifies that the operation will be forced, meaning that the upgrade will proceed despite any warning messages.
mdr	(Optional) Specifies that minimal disruptive restart is used.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Example

The following example shows how to verify Cisco IOS XE image:

```
Device# request platform software package verify switch all file
bootflash:cat3k_caa-universalk9.16.03.05.SPA.bin
```

Related Commands

Command	Description
request platform software package install commit	Cancels the rollback timer and commits a software upgrade.
request platform software package install rollback	Rolls back a previous software upgrade.
request platform software package install snapshot	Creates a snapshot directory that will contain all the files extracted from a consolidated package.

request platform software package uninstall

To uninstall a software package, use the **request platform software package uninstall** command in privileged EXEC mode.

request platform software package uninstall switch *switch-ID* **file** *file-URL* [**bay** *bay-number*] [**slot** *slot-number*] [**auto-copy**] [**force**] [**mdr**]

Syntax Description

switch *switch-ID*	Specifies the switch for provisioning.
file-URL	URL to the consolidated package or sub-package.
bay *bay-number*	(Optional) Specifies the shared port adapter (SPA) bay number within a SIP.
slot *slot-number*	(Optional) Specifies the device slot number where a shared port adapter interface processor (SIP) can be installed.
auto-copy	(Optional) Specifies that the device will automatically copy packages to provisioning directory.
force	(Optional) Specifies that the operation will be forced, meaning that the upgrade will proceed despite any warning messages.
mdr	(Optional) Specifies that minimal disruptive restart is used.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Example

The following example shows how to uninstall a software package:

```
Device# request platform software package uninstall
```

Related Commands

Command	Description
request platform software package install commit	Cancels the rollback timer and commits a software upgrade.
request platform software package install rollback	Rolls back a previous software upgrade.
request platform software package install snapshot	Creates a snapshot directory that will contain all the files extracted from a consolidated package.

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 3.3SECisco IOS XE 3.3SE	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...
```

rmdir

To remove one or more empty directories from the specified file system, use the **rmdir** command in boot loader mode.

rmdir *filesystem:/directory-url...*

Syntax Description

filesystem:	Alias for a file system. Use **usbflash0:** for USB memory sticks.
/directory-url...	Path (directory) and name of the empty directories to remove. Separate each directory name with a space.

Command Default

No default behavior or values.

Command Modes

Boot loader

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Directory names are case sensitive and limited to 45 characters between the slashes (/); the name cannot contain control characters, spaces, deletes, slashes, quotes, semicolons, or colons.

Before removing a directory, you must first delete all of the files in the directory.

The device prompts you for confirmation before deleting each directory.

Example

This example shows how to remove a directory:

```
Device: rmdir usbflash0:Test
```

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

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 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

In a device stack, all stack members must use the same SDM template that is stored on the active device.

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.

Example

This example shows how to configure the advanced template:

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

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

variable value	Use one of the following keywords for *variable* and the appropriate value for *value*: **MANUAL_BOOT**—Decides whether the device automatically or manually boots. 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.
	BOOT *filesystem:/file-url*—Identifies a semicolon-separated 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—Allows the automatic boot process to be interrupted when the user presses the **Break** key on the console. 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.
	HELPER *filesystem:/file-url*—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.
	PS1 *prompt*—Specifies a string that is used as the command-line prompt in boot loader mode.
	CONFIG_FILE flash: */file-url*—Specifies the filename that Cisco IOS uses to read and write a nonvolatile copy of the system configuration.
	BAUD *rate*—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. The most commonly used values are 300, 1200, 2400, 9600, 19200, 57600, and 115200.
	SWITCH_NUMBER *stack-member-number*—Changes the member number of a stack member.
	SWITCH_PRIORITY *priority-number*—Changes the priority value of a stack member.

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 3.3SECisco IOS XE 3.3SE	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 avc client

To display information about top number of applications, use the **show avc client** command in privileged EXEC mode.

show avc client *client-mac* **top** *n* **application** [**aggregate** | **upstream** | **downstream**]

Syntax Description

client *client-mac*	Specifies the client MAC address.
top *n* **application**	Specifies the number of top "N" applications for the given client.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SE	This command was introduced.

The following is sample output from the **show avc client** command:

```
Device# sh avc client 0040.96ae.65ec top 10 application aggregate

Cumulative Stats:

No.  AppName      Packet-Count    Byte-Count       AvgPkt-Size     usage%
---------------------------------------------------------------------------
1    skinny          7343           449860           61              94
2    unknown         99             13631            137             3
3    dhcp            18             8752             486             2
4    http            18             3264             181             1
5    tftp            9              534              59              0
6    dns             2              224              112             0

Last Interval(90 seconds) Stats:

No.  AppName     Packet-Count     Byte-Count       AvgPkt-Size      usage%
---------------------------------------------------------------------------
1    skinny          9              540              60               100
```

show cable-diagnostics tdr

To display the Time Domain Reflector (TDR) results, use the **show cable-diagnostics tdr** command in privileged EXEC mode.

show cable-diagnostics tdr interface *interface-id*

Syntax Description

interface-id	Specifies the interface on which TDR is run.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

TDR is supported only on 10/100/100 copper Ethernet ports. It is not supported on 10-Gigabit Ethernet ports and small form-factor pluggable (SFP) module ports.

Examples

This example shows the output from the **show cable-diagnostics tdr interface** *interface-id* command on a device:

```
Device# show cable-diagnostics tdr interface gigabitethernet1/0/23
  TDR test last run on: March 01 00:04:08
  Interface  Speed  Local pair  Pair length         Remote pair   Pair status
  ---------  -----  ----------  ------------------  -----------  --------------------
  Gi1/0/23   1000M  Pair A      1    +/- 1 meters   Pair A        Normal
                    Pair B      1    +/- 1 meters   Pair B        Normal
                    Pair C      1    +/- 1 meters   Pair C        Normal
                    Pair D      1    +/- 1 meters   Pair D        Normal
```

Table 2: Field Descriptions for the show cable-diagnostics tdr Command Output

Field	Description
Interface	The interface on which TDR is run.
Speed	The speed of connection.
Local pair	The name of the pair of wires that TDR is testing on the local interface.

Field	Description
Pair length	The location of the problem on the cable, with respect to your device. TDR can only find the location in one of these cases: • The cable is properly connected, the link is up, and the interface speed is 1000 Mb/s. • The cable is open. • The cable has a short.
Remote pair	The name of the pair of wires to which the local pair is connected. TDR can learn about the remote pair only when the cable is properly connected and the link is up.
Pair status	The status of the pair of wires on which TDR is running: • Normal—The pair of wires is properly connected. • Not completed—The test is running and is not completed. • Not supported—The interface does not support TDR. • Open—The pair of wires is open. • Shorted—The pair of wires is shorted. • ImpedanceMis—The impedance is mismatched. • Short/Impedance Mismatched—The impedance mismatched or the cable is short. • InProgress—The diagnostic test is in progress.

This example shows the output from the **show interface** *interface-id* command when TDR is running:

```
Device# show interface gigabitethernet1/0/2
  gigabitethernet1/0/2 is up, line protocol is up (connected: TDR in Progress)
```

This example shows the output from the **show cable-diagnostics tdr interface** *interface-id* command when TDR is not running:

```
Device# show cable-diagnostics tdr interface gigabitethernet1/0/2
  % TDR test was never issued on gigabitethernet1/0/2
```

If an interface does not support TDR, this message appears:

```
% TDR test is not supported on device 1
```

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

Condition identifier	Sets the value of the condition identifier to be used. Range is between 1 and 1000.
All conditions	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 env

To display fan, temperature, and power information for the switch (standalone switch, active switch, or standby switch), use the **show env** command in EXEC modes.

show env { **all** | **fan** | **power** [**all** | **switch** [*switch-number*]] | **stack** [*stack-number*] | **temperature** [**status**] }

Syntax Description

all	Displays fan, temperature and power environmental status.
fan	Displays the switch fan status.
power	Displays the power supply status.
all	(Optional) Displays the status for all power supplies.
switch *switch-number*	(Optional) Displays the power supply status for a specific switch.
stack *switch-number*	(Optional) Displays all environmental status for each switch in the stack or for a specified switch. The range is 1 to 9, depending on the switch member numbers in the stack.
temperature	Displays the switch temperature status.
status	(Optional) Displays the temperature status and threshold values.

Command Default

No default behavior or values.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

Use the **show env stack** [*switch-number*] command to display information about any switch in the stack from any member switch.

Use the **show env temperature status** command to display the switch temperature states and threshold levels.

Examples

This example shows how to display information about member switch 1 from the active switch:

```
Device> show env stack 1
Device 1:
Device Fan 1 is OK
Device Fan 2 is OK
Device Fan 3 is OK
FAN-PS1 is OK
```

```
FAN-PS2 is NOT PRESENT
Device 1: SYSTEM TEMPERATURE is OK
Temperature Value: 32 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 41 Degree Celsius
Red Threshold : 56 Degree Celsius

Device>
```

This example shows how to display temperature value, state, and threshold values:

```
Device> show env temperature status
Temperature Value: 32 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 41 Degree Celsius
Red Threshold : 56 Degree Celsius

Device>
```

Table 3: States in the show env temperature status Command Output

State	Description
Green	The switch temperature is in the *normal* operating range.
Yellow	The temperature is in the *warning* range. You should check the external temperature around the switch.
Red	The temperature is in the *critical* range. The switch might not run properly if the temperature is in this range.

show env xps

To display budgeting, configuration, power, and system power information for the Cisco eXpandable Power System (XPS) 2200, use the **show env xps** command in privileged EXEC mode.

show env xps { **budgeting** | **configuration** | **port** [**all** | *number*] | **power** | **system** | **thermal** | **upgrade** | **version** }

Syntax Description

budgeting	Displays XPS power budgeting, the allocated and budgeted power of all switches in the power stack.
configuration	Displays the configuration resulting from the power xps privileged EXEC commands. The XPS configuration is stored in the XPS. Enter the show env xps configuration command to retrieve the non-default configuration.
port [**all** | *number*]	Displays the configuration and status of all ports or the specified XPS port. Port numbers are from 1 to 9.
power	Displays the status of the XPS power supplies.
system	Displays the XPS system status.
thermal	Displays the XPS thermal status.
upgrade	Displays the XPS upgrade status.
version	Displays the XPS version details.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(55)SE1	This command was introduced.

Usage Guidelines

Use the **show env xps** privileged EXEC command to display the information for XPS 2200.

Examples

This is an example of output from the show env xps budgeting command:

```
Switch#
=======


XPS 0101.0100.0000 :
============================================================
Data                  Current    Power     Power Port  Switch #  PS A  PS B  Role-State
Committed
Budget
----  --------  ----  ----  ---------- ---------  ------ 1     -        -    715  SP-PS
   223
    1543
```

```
2     -        -    -    SP-PS      223       223
3     -        -    -    -          -         -
4     -        -    -    -          -         -
5     -        -    -    -          -         -
6     -        -    -    -          -         -
7     -        -    -    -          -         -
8     -        -    -    -          -         -
9     1        1100 -    RPS-NB     223        070
XPS  -        -    1100  -          -
```

This is an example of output from the show env xps configuration command:

```
Switch# show env xps configuration
===========================================
XPS 0101.0100.0000 :
===========================================
power xps port 4 priority 5
power xps port 5 mode disable
power xps port 5 priority 6
power xps port 6 priority 7
power xps port 7 priority 8
power xps port 8 priority 9
power xps port 9 priority 4
```

This is an example of output from the show env xps port all command:

```
Switch#
XPS 010



----------------------------------------
Port name          : -
Connected          : Yes
Mode               : Enabled (On)
Priority           : 1
Data stack switch # : - Configured role    : Auto-SP
Run mode            : SP-PS : Stack Power Power-Sharing Mode
Cable faults        : 0x0 XPS 0101.0100.0000 Port 2
----------------------------------------
Port name          : -
Connected          : Yes
Mode               : Enabled (On)
Priority           : 2
Data stack switch # : - Configured role    : Auto-SP
Run mode            : SP-PS : Stack Power Power-Sharing Mode
Cable faults        : 0x0 XPS 0101.0100.0000 Port 3
----------------------------------------
Port name          : -
Connected          : No
Mode               : Enabled (On)
Priority           : 3
Data stack switch # : - Configured role    : Auto-SP Run mode            : -
Cable faults
<output truncated>
```

This is an example of output from the show env xps power command:

```
================================================================================
XPS 0101.0100.0000 :
================================================================================
Port-Supply SW PID                 Serial#     Status          Mode Watts
----------- -- ------------------  ----------- --------------  ---- -----
XPS-A           Not present
XPS-B           NG3K-PWR-1100WAC   LIT13320NTV OK              SP   1100
1-A         -  -                   -           -
```

```
1-B         -  -                   -           -               SP    715
2-A         -  -                   -           -
2-B         -  -                   -           -
9-A                      100WAC    LIT141307RK OK              RPS  1100
9-B                   esent
```

This is an example of output from the show env xps system command:

```
Switch#
=======


XPS 0101.0100.0000 :
================================================================================
XPS                        Cfg  Cfg      RPS Switch  Current    Data Port  XPS Port Name

Mode Role    Pri Conn    Role-State  Switch #
----  --------------------  ---- --------  --- ------  ----------  --------
1     -                    On   Auto-SP  1   Yes     SP-PS      -
2     -                    On   Auto-SP  2   Yes     SP-PS      -
3     -                    On   Auto-SP  3   No      -          -
4     none                 On   Auto-SP  5   No      -          -
5     -                    Off  Auto-SP  6   No      -          -
6     -                    On   Auto-SP  7   No      -          -
7     -                    On   Auto-SP  8   No      -          -
8     -                    On   Auto-SP  9   No      -
9     test                 On   Auto-SP  4   Yes     RPS-NB
```

This is an example of output from the show env xps thermal command:

```
Switch#
=======



XPS 0101.0100.0000 :
============================================
Fan  Status
----  -----------
1     OK
2     OK
3     NOT PRESENT PS-1  NOT PRESENT PS-2  OK Temperature is OK
```

This is an example of output from the show env xps upgrade command when no upgrade is occurring:

```
Switch# show env xps upgrade
No XPS is connected and upgrading.
```

These are examples of output from the show env xps upgrade command when an upgrade is in process:

```
Switch# show env xps upgrade
XPS Upgrade Xfer

SW Status Prog
-- ----------- ----
1 Waiting 0%
Switch#
*Mar 22 03:12:46.723: %PLATFORM_XPS-6-UPGRADE_START: XPS 0022.bdd7.9b14 upgrade has
started through the Service Port.
Switch# show env xps upgrade
XPS Upgrade Xfer
SW Status Prog
-- ----------- ----
1 Receiving 1%
Switch# show env xps upgrade
```

```
XPS Upgrade Xfer
SW Status Prog
-- ----------- ----
1 Receiving 5%
Switch# show env xps upgrade
XPS Upgrade Xfer
SW Status Prog
-- ----------- ----
1 Reloading 100%
Switch#
*Mar 22 03:16:01.733: %PLATFORM_XPS-6-UPGRADE_DONE: XPS 0022.bdd7.9b14 upgrade has
completed and the XPS is reloading.
```

This is an example of output from the show env xps version command:

```
Switch# show env xps version
============================================
XPS 0022.bdd7.9b14:
============================================
Serial Number: FDO13490KUT
Hardware Version: 8
Bootloader Version: 7
Software Version: 18
```

Table 4: Related Commands

Command	Description
power xps(global configuration command)	Configures XPS and XPS port names.
power xps(privileged EXEC command)	Configures the XPS ports and system.

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.
monitor-name	(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 3.3SE	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 5: 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: • 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: • 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 6: 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 7: 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 right-to-use

To display detailed information for licenses installed on the device, use the **show license right-to-use** command in EXEC modes.

show license right-to-use {**default** | **detail** | **eula** | **mismatch** | **slot** | **summary** | **usage**}

Syntax Description

default	Displays the default license information.
detail	Displays details of all the licenses in the stack.
eula	Displays the EULA text.
mismatch	Displays mismatch license information.
slot	Specifies the switch number.
summary	Displays consolidated stack-wide license information.
usage	Displays the usage details of all licenses.

Command Default

No default behavior or values.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

The following is sample output from the **show license right-to-use usage** command and displays all the detailed information:

```
Device# show license right-to-use usage

 Slot#       License Name         Type  usage-duration(y:m:d)   In-Use   EULA
--------------------------------------------------------------------------------
    1         ipservices    Permanent               00:00:00       no     no
    1         ipservices   Evaluation               00:00:00       no     no
    1             ipbase    Permanent               01:11:12      yes    yes
    1             ipbase   Evaluation               00:00:00       no     no
    1            lanbase    Permanent               00:00:00       no     no
--------------------------------------------------------------------------------
```

The following is sample output from the **show license right-to-use detail** command and displays the detailed information of licenses:

```
Device# show license right-to-use detail

show license right-to-use detail
Index 1
```

```
  License Name    : ipservices
  Period left     : Lifetime
  License Type    : Permanent
  License State   : Not Activated
  License Location: Slot 1
Index 2
  License Name    : ipservices
  Period left     : 90
  License Type    : Evaluation
  License State   : Not Activated
  License Location: Slot 1
Index 3
  License Name    : ipbase
  Period left     : Lifetime
  License Type    : Permanent
  License State   : Active, In use
  License Location: Slot 1
Index 4
  License Name    : ipbase
  Period left     : 90
  License Type    : Evaluation
  License State   : Not Activated
  License Location: Slot 1
Index 5
  License Name    : lanbase
  Period left     : Lifetime
  License Type    : Permanent
  License State   : Not Activated
  License Location: Slot 1
```

The following is sample output from the **show license right-to-use summary** command when the evaluation license is active:

```
Device# show license right-to-use summary

License Name       Type      Period left
---------------------------------------
      ipbase  Permanent         Lifetime
dna-advantage Subscription Subscription      Active
-------------------------------------------------------


License Level In Use: ipbase+dna-advantage Subscription
License Level on Reboot: ipbase+dna-advantage Subscription
```

show location

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

show location {**detail** *mac-addr* | **plm** | **statistics**| **summary** **rfid** | **rfid** {**client** | **config** | **detail** *MAC-addr* | **summary**}}

Syntax Description

detail *mac-addr*	Displays detailed location information with the RSSI table for a particular client.
plm	Displays location path loss measurement (CCX S60) configuration.
statistics	Displays location-based system statistics.
summary	Displays location-based system summary information.
rfid	Displays the RFID tag tracking information.
client	Displays the summary of RFID tags that are clients.
config	Displays the configuration options for RFID tag tracking.
detail *MAC-addr*	Displays the detailed information for one rfid tag.
summary	Displays summary information for all known rfid tags.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

The following is sample output from the **show location plm** command:

```
Device# show location plm
Location Path Loss Configuration

Calbration client      : Disabled, Radio: Multiband
Normal clients         : Disabled
Burst interval         : 60
```

show location ap-detect

To display the location information detected by specified access point, use the **show location ap-detect** command in privileged EXEC mode.

show location ap-detect {**all** | **client** | **rfid** | **rogue-ap** | **rogue-client**} *ap-name*

Syntax Description

all	Displays information of the client, RFID, rogue access point, and rogue client.
client	Displays the client information.
rfid	Displays RFID information.
rogue-ap	Displays rogue access point information.
rogue-client	Displays rogue client information.
ap-name	Specified access point name.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

The following is sample output from the **show location ap-detect client** command:

```
Device# show location ap-detect client AP02
Clients

MAC Address       Status            Slot  Antenna     RSSI
------------------------------------------------------------
2477.0389.96ac    Associated           1        0      -60
2477.0389.96ac    Associated           1        1      -61
2477.0389.96ac    Associated           0        0      -46
2477.0389.96ac    Associated           0        1      -41


RFID Tags



Rogue AP's



Rogue Clients

MAC Address         State               Slot     Rssi
------------------------------------------------------------
0040.96b3.bce6      Alert               1        -58
586d.8ff0.891a      Alert               1        -72
```

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	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

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 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
Cisco IOS XE Denali 16.3.2	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
731A09826A41FB3EFFC46DC02FBA666534DBEC7DCC0C029298DB8462A70DBA26833C2A
1472D1F08D721BA941CB94A418E43803699174572A5759445B3564D8EAEE57D64AE304
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
Cisco IOS XE Denali 16.3.2	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-----
MIIDQzCCAiugAwIBAgIQX/h7KCtU3I1CoxW1aMmt/zANBgkqhkiG9w0BAQUFADA1
MRYwFAYDVQQKEw1DaXNjbyBTeXN0ZW1zMRswGQYDVQQDExJDaXNjbyBSb290IENB
IDIwNDgwHhcNMDQwNTE0MjAxNzEyWhcNMjkwNTE0MjAyNTQyWjA1MRYwFAYDVQQK
Ew1DaXNjbyBTeXN0ZW1zMRswGQYDVQQDExJDaXNjbyBSb290IENBIDIwNDgwggEg
MA0GCSqGSIb3DQEBAQUAA4IBDQAwggEIAoIBAQCwmrmrp68Kd6ficba0ZmKUeIhH
xmJVhEAyv8CrLqUccda8bnuoqrpu0hWISEWdovyD0My5jOAmaHBKeN8hF570YQXJ
FcjPFto1YYmUQ6iEqDGYeJu5Tm8sUxJszR2tKyS7McQr/4NEb7Y9JHcJ6r8qqB9q
VvYgDxFUl4F1pyXOWWqCZe+36ufijXWLbvLdT6ZeYpzPEApk0E5tzivMW/VgpSdH
jWn0f84bcN5wGyDWbs2mAag8EtKpP6BrXruOIIt6keO1aO6g58QBdKhTCytKmg9l
Eg6CTY5j/e/rmxrbU6YTYK/CfdfHbBcl1HP7R2RQgYCUTOG/rksc35LtLgXfAgED
o1EwTzALBgNVHQ8EBAMCAYYwDwYDVR0TAQH/BAUwAwEB/zAdBgNVHQ4EFgQUJ/PI
FR5umgIJFq0roIlgX9p7L6owEAYJKwYBBAGCNxUBBAMCAQAwDQYJKoZIhvcNAQEF
BQADggEBAJ2dhISjQal8dwy3U8pORFBi71R803UXHOjgxkhLtv5MOhmBVrBW7hmW
Yqpao2TB9k5UM8Z3/sUcuuVdJcr18JOagxEu5sv4dEX+5wW4q+ffy0vhN4TauYuX
cB7w4ovXsNgOnbFp1iqRe6lJT37mjpXYgyc81WhJDtSd9i7rp77rMKSsH0T81lasz
Bvt9YAretIpjsJyp8qS5UwGH0GikJ3+r/+n6yUA4iGe0OcaEb1fJU9u6ju7AQ7L4
CYNu/2bPPu8Xs1gYJQk0XuPL1hS27PKSb3TkL4Eq1ZKR4OCXPDJoBYVL0fdX4lId
kxpUnwVwwEpxYB5DC2Ae/qPOgRnhCzU=
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIEPDCCAySgAwIBAgIKYQlufQAAAAADDANBgkqhkiG9w0BAQUFADA1MRYwFAYD
VQQKEw1DaXNjbyBTeXN0ZW1zMRswGQYDVQQDExJDaXNjbyBSb290IENBIDIwNDgw
HhcNMTEwNjMwMTc1NjU3WhcNMjkwNTE0MjAyNTQyWjAnMQ4wDAYDVQQKEwVDaXNj
bzEVMBMGA1UEAxMMQUNUMiBTVURJIENBMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8A
MIIBCgKCAQEA0m5l3THIxA9tN/hS5qR/6UZRpdd+9aE2JbFkNjht6gfHKd477AkS
5XAtUs5oxDYVt/zEbslZq3+LR6qrqKKQVu6JYvH05UYLBqCj38s76NLk53905Wzp
9pRcmRCPuX+a6tHF/qRuOiJ44mdeDYZo3qPCpxzprWJDPclM4iYKHumMQMqmgmg+
xghHIooWS80BOcdiynEbeP5rZ7qRuewKMpl1TiI3WdBNjZjnpfjg66F+P4SaDkGb
BXdGj13oVeF+EyFWLrFjj97fL2+8oauV43Qrvnf3d/GfqXj7ew+z/sXlXtEOjSXJ
URsyMEj53Rdd9tJwHky8neapszS+r+kdVQIDAQABo4IBWjCCAVYwCwYDVR0PBAQD
AgHGMB0GA1UdDgQWBBRI2PHxwnDVW7t8cwmTr7i4MAP4fzAfBgNVHSMEGDAWgBQn
88gVHm6aAgkWrSugiWBf2nsvqjBDBgNVHR8EPDA6MDigNqA0hjJodHRwOi8vd3d3
LmNpc2NvLmNvbS9zZWN1cml0eS9wa2kvY3JsL2NyY2EyMDQ4LmNybDBQBggrBgEF
```

```
BQcBAQREMEIwQAYIKwYBBQUHMAKGNGh0dHA6Ly93d3cuY2lzY28uY29tL3NlY3Vy
aXR5L3BraS9jZXJ0cy9jcmNhMjA0OC5jZXIwXAYDVR0gBFUwUzBRBgorBgEEAQkV
AQwAMEMwQQYIKwYBBQUHAgEWNWh0dHA6Ly93d3cuY2lzY28uY29tL3NlY3VyaXR5
L3BraS9wb2xpY2llcy9pbmRleC5odG1sMBIGA1UdEwEB/wQIMAYBAf8CAQAwDQYJ
KoZIhvcNAQEFBQADggEBAGh1qclr9tx4hzWgDERm371yeuEmqcIfi9b9+GbMSJbi
ZHc/CcCl0lJu0a9zTXA9w47H9/t6leduGxb4WeLxcwCiUgvFtCa51Iklt8nNbcKY
/4dw1ex+7amATUQO4QggIE67wVIPu6bgAE3Ja/nRS3xKYSnj8H5TehimBSv6TECi
i5jUhOWryAK4dVo8hCjkjEkzu3ufBTJapnv89g9OE+H3VKM4L+/KdkUO+52djFKn
hyl47d7cZR4DY4LIuFM2P1As8YyjzoNpK/urSRI14WdIlplR1nH7KNDl5618yfVP
0IFJZBGrooCRBjOSwFv8cpWCbmWdPaCQT2nwIjTfY8c=
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIDhjCCAm6gAwIBAgIDctWkMA0GCSqGSIb3DQEBCwUAMCcxDjAMBgNVBAoTBUNp
c2NvMRUwEwYDVQQDEwxBQ1QyIFNVREkgQ0EwHhcNMTUwODA2MDgwODI5WhcNMjUw
ODA2MDgwODI5WjBzMSwwKgYDVQQFEyNQSUQ6V1MtQzM2NTAtMTJYNDhVWiBTTjpG
RE8xOTMyWDAwQzEOMAwGA1UEChMFQ2lzY28xGDAWBgNVBAsTD0FDVC0yIExpdGUg
U1VESTEZMBcGA1UEAxMQV1MtQzM2NTAtMTJYNDhVWjCCASIwDQYJKoZIhvcNAQEB
BQADggEPADCCAQoCggEBANZxOGYI0eUl4HcSwjL4HO75qTjl9C2BHG3ufce9ikkN
xwGXi8qg8vKxuB9tRYRaJC5bP1WMoq7+ZJtQA079xE4X14soNbkq5NaUhh7RB1wD
iRUJvTfCOzVICbNfbzvtB30I75tCarFNmpd0K6AFrIa41U988QGqaCj7R1JrYNaj
nC73UXXM/hC0HtNR5mhyqer5Y2qjjzo6tHZYqrrx2eS1XOa262ZSQriAxmaH/KLC
K97ywyRBdJlxBRX3hGtKlog8nASB8WpXqB9NVCERzUajwU3L/kg2BsCqw9Y2m7HW
U1cerTxgthuyUkdNI+Jg6iGApm2+s8E9hsHPBPMCdIsCAwEAAaNvMG0wDgYDVR0P
AQH/BAQDAgXgMAwGA1UdEwEB/wQCMAAwTQYDVR0RBEYwRKBCBgkrBgEEAQkVAgOg
NRMzQ2hpcElEPVVZSk5ORmRRRlFvN1ZIVmxJRTlqZENBeU9DQXhPRG93TlRveE1T
QVg5eWc9MA0GCSqGSIb3DQEBCwUAA4IBAQBKicTRZbVCRjVIR5MQcWXUT086v6Ej
HahDHTts3YpQoyAVfioNg2x8J6EXcEau4voyVu+eMUuoNL4szPhmmDcULfiCGBcA
/R3EFuoVMIzNT0geziytsCf728KGw1oGuosgVjNGOOahUELu4+F/My7bIJNbH+PD
KjIFmhJpJg0F3q17yClAeXvd13g3W393i35d00Lm5L1WbBfQtyBaOLAbxsHvutrX
u1VZ5sdqSTwTkkO9vKMaQjh7a8J/AmJi93jvzM69pe5711P1zqZfYfpiJ3cyJ0xf
I4brQ1smdczloFD4asF7A+1vor5e4VDBP0ppmeFAJvCQ52JTpj0M0o1D
-----END CERTIFICATE-----
```

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 3.3SECisco IOS XE 3.3SE	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#
```

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 8: Default Values for the Temperature Thresholds

Device	Difference between Yellow and Red	Red[1]
Catalyst 3650	14°C	60°C

[1] You cannot configure the red temperature threshold.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	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 15 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)#
```

test cable-diagnostics tdr

To run the Time Domain Reflector (TDR) feature on an interface, use the **test cable-diagnostics tdr** command in privileged EXEC mode.

test cable-diagnostics tdr interface *interface-id*

Syntax Description

interface-id	The interface on which to run TDR.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

TDR is supported only on 10/100/100 copper Ethernet ports. It is not supported on 10-Gigabit Ethernet ports or small form-factor pluggable (SFP) module ports.

After you run TDR by using the **test cable-diagnostics tdr interface** *interface-id* command, use the **show cable-diagnostics tdr interface** *interface-id* privileged EXEC command to display the results.

This example shows how to run TDR on an interface:

```
Device# test cable-diagnostics tdr interface gigabitethernet1/0/2
TDR test started on interface Gi1/0/2
A TDR test can take a few seconds to run on an interface
Use 'show cable-diagnostics tdr' to read the TDR results
```

If you enter the **test cable-diagnostics tdr interface** *interface-id* command on an interface that has an link up status and a speed of 10 or 100 Mb/s, these messages appear:

```
Device# test cable-diagnostics tdr interface gigabitethernet1/0/3
TDR test on Gi1/0/9 will affect link state and traffic
TDR test started on interface Gi1/0/3
A TDR test can take a few seconds to run on an interface
Use 'show cable-diagnostics tdr' to read the TDR results.
```

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 *interface-id*	(Optional) Specifies an interface on the source or destination device.
source-mac-address	The MAC address of the source device in hexadecimal format.
destination-mac-address	The MAC address of the destination device in hexadecimal format.
vlan *vlan-id*	(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 3.3SECisco IOS XE 3.3SE	This command was introduced.

Usage Guidelines

For Layer 2 traceroute to function properly, Cisco Discovery Protocol (CDP) must be enabled on all of the devicees 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# traceroute 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# traceroute 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 devicees:

```
Device# traceroute 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# traceroute 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 devicees belong to multiple VLANs:

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

traceroute 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 **traceroute mac ip** command in privileged EXEC mode.

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

Syntax Description

source-ip-address	The IP address of the source device as a 32-bit quantity in dotted-decimal format.
source-hostname	The IP hostname of the source device.
destination-ip-address	The IP address of the destination device as a 32-bit quantity in dotted-decimal format.
destination-hostname	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 3.3SECisco IOS XE 3.3SE	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 **traceroute 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 3.3SECisco IOS XE 3.3SE	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 3.3SECisco IOS XE 3.3SE	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

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 3.3SECisco IOS XE 3.3SE	This command was introduced.

Examples

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

```
Device: version
CAT3K_CAA Boot Loader (CAT3K_CAA-HBOOT-M) Version 1.2, RELEASE SOFTWARE (P)
Compiled Sun Jul 14 20:22:00 PDT 2013 by rel
```