



# Programmability

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# boot ipxe

To configure the iPXE boot, use the **boot ipxe** command in global configuration mode. To disable the configuration, use the **no** form of this command.

**boot ipxe forever** | **timeout** *seconds* **switch** *switch-number*  
**no boot ipxe forever** | **timeout** *seconds* **switch** *switch-number*

Syntax	Description
<b>forever</b>	Attempts iPXE boot forever.
<b>timeout</b> <i>seconds</i>	Configures a timeout in seconds for iPXE network boot. Valid values are from 1 to 2147483647.
<b>switch</b> <i>switch-number</i>	Enables iPXE boot for switches in the stack. Valid values are from 0 to 9.

**Command Default** Device boot is the default.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.2	This command was introduced.

**Usage Guidelines** iPXE is an open source implementation of the Preboot eXecution Environment (PXE). Bootloaders boot an image located on an HTTP, FTP, or a TFTP server.

If the **forever** keyword is configured, the switch sends Dynamic Host Configuration Protocol (DHCP) requests forever. If the **timeout** keyword is configured, DHCP requests are sent for the specified amount of time, and when the timeout expires, the switch reverts to device boot.

## Example

The following example shows how to configure an iPXE boot timeout for switch 2:

```
Device(config)# boot ipxe timeout 240 switch 2
```

Command	Description
<b>default boot</b>	Modifies the default boot system parameters.

# boot manual

To configure manual boot, use the **boot manual** command in global configuration mode. To remove the configuration, use the **no** form of this command.

```
boot manual switch switch-number
no boot manual switch switch-number
```

---

## Syntax Description

**switch** *switch-number* Configures manual boot for the switches in the stack.

---

## Command Default

Manual boot is enabled.

## Command Modes

Global configuration (config)

---

## Command History

Release	Modification
Cisco IOS XE Denali 16.3.2	This command was introduced.

---

## Usage Guidelines

When manual boot is disabled, and the switch reloads, the boot process starts automatically. When manual boot is disabled, the bootloader determines whether to execute a device boot or a network boot based on the configured value of the iPXE ROMMON variable.

## Example

The following example shows how to configure manual boot for switch 2:

```
Device(config)# boot manual switch 2
```

# boot system

To enable a system image boot, use the **boot system** command in global configuration mode. To disable the configuration, use the **no** form of this command.

**boot system switch all** *number* **flash:** | **ftp:** | **http:** | **tftp:**

**no boot system** [**switch** | **all** *number*] [**flash:** | **ftp:** | **http:** | **tftp:**]

Syntax Description	
<b>flash:</b>	Specifies the flash filesystem to boot an image.
<b>ftp:</b>	Specifies an FTP location to boot an image.
<b>http:</b>	Specifies an HTTP location to boot an image.
<b>tftp:</b>	Specifies a TFTP location to boot an image.
<b>switch</b> <i>number</i>	Enables booting for switches in a stack. Valid values are from 0 to 9.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.2	This command was introduced.

**Usage Guidelines** You can either use an IPv4 or an IPv6 address for the remote FTP/HTTP/TFTP servers. For an IPv6 address, you must enter the IPv6 address inside square brackets (as per RFC 2732); if not the device will not boot.

## Example

The following example shows how to boot an image file from an IPv4 HTTP server:

```
Device(config)# boot system switch 1 http://192.0.2.42/image-filename
```

The following example shows how to boot an image file from an IPv6 HTTP server:

```
Device(config)# boot system switch 1 http://[2001:db8::1]/image-filename
```

# default boot

To modify the default boot system parameters, use the **default boot** command in global configuration mode.

**default boot ipxe forever | timeout | seconds | manual | system flash: | ftp: | http: | tftp:switch number**

Syntax	Description
<b>ipxe</b>	Enables iPXE boot.
<b>forever</b>	Configures forever boot.
<b>timeout</b> <i>seconds</i>	Configures a boot timeout in seconds. Valid values are from 1 to 2147483647.
<b>manual</b>	Enables manual boot.
<b>system</b>	Enables a system image boot.
<b>flash:</b>	Specifies the flash filesystem to boot an image.
<b>ftp:</b>	Specifies an FTP location to boot an image.
<b>http:</b>	Specifies an HTTP location to boot an image.
<b>tftp:</b>	Specifies a TFTP location to boot an image.
<b>switch</b> <i>number</i>	Enables booting for switches in a stack. Valid values are from 0 to 9.

**Command Default** Device boot is the default.

**Command Modes** Global configuration (config)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.2	The command was introduced.

**Usage Guidelines** You can either use the **no boot ipxe** or the **default boot ipxe** command to configure device boot.

If the **forever** keyword is configured, the switch sends Dynamic Host Configuration Protocol (DHCP) requests forever. If the **timeout** keyword is configured, DHCP requests are sent for the specified amount of time, and when the timeout expires, the switch reverts to device boot.

## Example

The following example shows how to enable the default boot mode:

```
Device(config)# default boot ipxe
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>boot ipxe</b>	Configures iPXE boot.

# install

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

**install activate** | **file bootflash:** | **flash:** | **webui:** [**prompt-level all** | **none**] | **add file bootflash:** | **flash:** | **ftp:** | **http:** | **https:** | **rcp:** | **scp:** | **tftp:** | **webui:** [**activate** [**prompt-level all** | **none**]] | **commit** | **deactivate file bootflash:** | **flash:** | **webui:** [**prompt-level all** | **none**] | **remove file bootflash:** | **flash:** | **ftp:** | **http:** | **https:** | **rcp:** | **scp:** | **tftp:** | **webui:** | **inactive** | **rollback to base** | **committed** | **id** *install-ID*

## Syntax Description

<b>activate</b>	Validates whether the SMU is added through the install add command, and restarts the Netconf processes.  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.
<b>file</b>	Specifies the package to be activated.
{ <b>bootflash:</b>   <b>flash:</b>   <b>http:</b>   <b>https:</b>   <b>rcp:</b>   <b>scp:</b>   <b>tftp:webui:</b> }	Specifies the location of the installed package.
<b>prompt-level</b> { <b>all</b>   <b>none</b> }	(Optional) Prompts the user about installation activities.  For example, the <b>activate</b> 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 <b>all</b> keyword allows you to enable prompts. The <b>none</b> keyword disables prompts.
<b>add</b>	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.
{ <b>http:</b>   <b>https:</b>   <b>rcp:</b>   <b>scp:</b>   <b>tftp:</b> }	Specifies the package to be added.

<b>commit</b>	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.
<b>deactivate</b>	Deactivates an installed package.  Deactivating a package also updates the package status and triggers a process restart or a reload.
<b>remove</b>	Remove installed packages.  The package file is removed from the file system. The <b>remove</b> keyword can only be used on packages that are currently inactive.
<b>inactive</b>	Removes all inactive packages from the device.
<b>rollback</b>	Rollbacks the SMU package to the base version, the last committed version, or a known commit ID, and restarts Netconf processes.
<b>to base</b>	Returns to the base image.
<b>committed</b>	Returns to the installation state when the last commit operation was performed.
<b>id <i>install-ID</i></b>	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 16.5.1	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 msut 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/
isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin

install_add: START Sun Feb 26 05:57:04 UTC 2017
Downloading file
tftp://172.16.0.1//tftpboot/folder1/isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Finished downloading file
tftp://172.16.0.1//tftpboot/folder1/isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
to bootflash:isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
SUCCESS: install_add /bootflash/isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Sun Feb 26 05:57:22 UTC 2017
Device#

```

The following example shows how to activate an install package:

```

Device# install activate file bootflash:isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin

install_activate: START Sun Feb 26 05:58:41 UTC 2017
DMP package.
Netconf processes stopped
SUCCESS: install_activate /bootflash/isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Sun Feb 26 05:58:58 UTC 2017*Feb 26 05:58:47.655: %DMI-4-CONTROL_SOCKET_CLOSED:
SIP0: need: 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.
Device#

```

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: need:
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.

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

<b>Command Modes</b>	Privileged EXEC (#)
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Command History	Release	Modification
	Cisco IOS XE Everest 16.5.1	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:isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin

Name: isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Version: 16.5.1.0.199.1484082952..Everest
Platform: ISR4300
Package Type: dmp
Defect ID: CSCxxxxxxx
Package State: Added
Supersedes List: {}
Smu ID: 1
```

Device#

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

```
Device# show install summary

Active Packages:
bootflash:isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Inactive Packages:
No packages
Committed Packages:
bootflash:isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Uncommitted Packages:
No packages
Device#
```

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

**Table 1: 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/isr4300-universalk9.16.05.01.CSCxxxxxxx.dmp.bin
Sun Feb 26 05:57:22 UTC 2017
[5|install_activate]: START Sun Feb 26 05:58:41 UTC 2017
Device#
```

**Related Commands**

Command	Description
<b>install</b>	Installs SMU packages.

# dig

To do a lookup of the Domain Name System (DNS) server, use the **dig** command in rommon mode.

**dig** *hostname v4 v6 [dns-server-address]*

Syntax Description		
	<i>hostname</i>	DNS host name
	<i>v4</i>	IPv4 address.
	<i>v6</i>	IPv6 address.
	<i>dns-server-address</i>	(Optional) DNS Server IP address.

Command Modes	Rommon
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Command History	Release	Modification
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** This command does a look up of the DNS name and displays the IP/IPv6 address of the DNS server.

### Example

The following is sample output from the **dig hostname** command:

```
Device: dig example.org

DNS lookup using 2001:DB8::1
addr = 2001:DB8:0000:0000:0000:0000:0001
```

The following is sample output from the **dig hostname v4** command:

```
Device: dig example.org v4

DNS lookup using 10.29.27.5
addr = 172.16.0.1
```

The following is sample output from the **dig hostname v4 dns-server-address** command:

```
Device: dig example.org v4 10.29.27.5

DNS lookup using 10.29.27.5
addr = 172.16.0.1
```

The following is sample output from the **dig hostname v6** command:

```
Device: dig example.org v6

DNS lookup using 2001:DB::1
addr = 2001:DB8:0000:0000:0000:0000:0001
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>net-debug</b>	Displays or changes the network debug values.

# mlog

To direct log messages to a memory buffer instead of the serial port, use the **mlog** command in rommon mode.

**mlog** [show | reset | ctrl [on | off | toggle]]

Syntax Description		
	<b>show</b>	(Optional) Displays memory log messages.
	<b>reset</b>	(Optional) Resets the logging of messages to the memory log.
	<b>ctrl</b>	(Optional) Turns memory logging on, off, or toggles it.
	<b>on</b>	(Optional) Turns memory logging on.
	<b>off</b>	(Optional) Turns off memory logging.
	<b>toggle</b>	(Optional) Toggles between memory logging on and off.

Command Modes	Rommon
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Command History	Release	Modification
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** This command directs protocol log (that is all logs controlled by the **net-debug** command) messages to a memory buffer instead of the serial port.

With memory logging, log messages are displayed after a test is run. For example, HTTP debugs can be enabled through memory logging. Log messages are displayed in the memory buffer after running a copy from http://server/name to null: command.

### Example

The following example shows how to direct log messages to the memory buffer:

Device: **mlog show**

Related Commands	Command	Description
	<b>net-debug</b>	Displays or changes the network debug values.

# net-debug

To display or change the network debug values use the **net-debug** command in rommon mode.

**net-debug** [*new-value*]

<b>Syntax Description</b>	<i>new-value</i>	(Optional) New debug value to use.
<b>Command Modes</b>	Rommon	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** This command enables or disables log levels for each of the following functional areas:

- Domain Name System (DNS)
- Dynamic Host Control Protocol (DHCP)
- File Transfer Protocol (FTP)
- Hypertext Transfer Protocol (HTTP)
- IP
- TCP
- UDP
- Uniform Resource Identifier (URI)

## Example

This following is sample output from the **net-debug** command:

```
Device: net-debug

ether: 0
  ip: 0
  dhcp: 0
  udp: 0
  tcp: 0
http: 0
  dns: 0
  uri: 0
t/ftp: 2
  ip6: 0
dhcp6: 0:000 200 000 000
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>mlog</b>	Directs log messages to a memory buffer instead of the serial port.

# net-dhcp

To initiate an IPv4 Dynamic Host Control Protocol (DHCP) request for remote configuration, use the **net-dhcp** command in rommon mode.

**net-dhcp** [**timeout**]

<b>Syntax Description</b>	<b>timeout</b>	(Optional) Timeout in seconds.
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<b>Command Modes</b>	Rommon	
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** This command initiates an IPv4 DHCP request and processes the reply.

### Example

The following example shows how to enable the **net-dhcp** command:

Device: **net-dhcp**

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>net-debug</b>	Displays or changes the network debug values.
	<b>net-show</b>	Displays network parameters.
	<b>net6-dhcp</b>	Initiates an IPv6 DHCP request for remote configuration.

# net6-dhcp

To initiate an IPv6 Dynamic Host Control Protocol (DHCP) request for remote configuration, use the **net6-dhcp** command in rommon mode.

**net6-dhcp** [**timeout**]

<b>Syntax Description</b>	<b>timeout</b>	(Optional) Timeout in seconds.
---------------------------	----------------	--------------------------------

<b>Command Modes</b>	Rommon	
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** You can change the timeout by specifying a time in seconds

### Example

The following example shows how to enable the **net6-dhcp** command:

Device: **net6-dhcp**

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>net-debug</b>	Displays or changes the network debug values.
	<b>net-dhcp</b>	Initiates an IPv4 DHCP request and processes the reply.
	<b>net-show</b>	Displays network parameters.

# net-show

To display network parameters, use the **net-show** command in rommon mode.

## net-show

This command has no arguments or keywords.

### Command Modes

Rommon

### Command History

Release	Modification
Cisco IOS XE Everest 16.5.1	This command was introduced.

### Usage Guidelines

This command displays network configuration such as IP address, gateway, MAC address and so on.

### Example

The following is sample output from the **net-show** command:

```
Device: net-show
Network params:
IPv4:
    ip addr 10.29.27.150
    netmask 255.255.0.0
    gateway 10.29.0.1
IPv6:
link-local addr fe80::366f:90ff:feb8:cb80
site-local addr fec0::366f:90ff:feb8:cb80
    DHCP addr 2001:dead:beef:cafe::9999
    router addr fe80::7ada:6eff:fe13:8580
    SLAAC addr 2001:dead:beef:cafe:366f:90ff:feb8:cb80 /64
    SLAAC addr f00d::366f:90ff:feb8:cb80 /64
    SLAAC addr feed::366f:90ff:feb8:cb80 /64
Common:
    macaddr 34:6f:90:b8:cb:80
    dns 2001:dead:beef:cafe::5
    bootfile http://www.example.org/ed10m
    domain ip6.example.org
```

Command	Description
net6-show	Displays IPv6 network parameters.

# net6-show

To display IPv6 network parameters, use the **net6-show** command in rommon mode.

## net6-show

This command has no arguments or keywords.

### Command Modes

Rommon

### Command History

Release	Modification
Cisco IOS XE Everest 16.5.1	This command was introduced.

### Usage Guidelines

#### Example

The following is sample output from the **net6-show** command:

```

Device: net6-show

switch: net6-show
IP6 addresses
link-local addr fe80::366f:90ff:feb8:cb80
site-local addr fec0::366f:90ff:feb8:cb80
    DHCP addr 2001:dead:beef:cafe::9999
    router addr fe80::7ada:6eff:fe13:8580
    SLAAC addr 2001:dead:beef:cafe:366f:90ff:feb8:cb80 /64
    SLAAC addr f00d::366f:90ff:feb8:cb80 /64
    SLAAC addr feed::366f:90ff:feb8:cb80 /64
--
    null addr ::
    all-nodes addr ff02::1
all-routers addr ff02::2
    all-dhcp addr ff02::1:2
    Slct-node addr ff02::1:ffb8:cb80
    ll mmac addr 33:33:00:00:00:01
    sl mmac addr 33:33:00:00:00:02
    sn mmac addr 33:33:ff:b8:cb:80
    dhcp mmac addr 33:33:ff:00:99:99
router mac addr 78:da:6e:13:85:80

IP6 neighbour table
0: ip6 fec0::366f:90ff:feb8:cb80 MAC 34:6f:90:b8:cb:80
1: ip6 fe80::366f:90ff:feb8:cb80 MAC 34:6f:90:b8:cb:80
2: ip6 fe80::7ada:6eff:fe13:8580 MAC 78:da:6e:13:85:80
3: ip6 2001:dead:beef:cafe::5 MAC 30:f7:0d:08:7e:bd
4: ip6 fe80::32f7:dff:fe08:7ebd MAC 30:f7:0d:08:7e:bd
    
```

### Related Commands

Command	Description
net-show	Displays network parameters.

# net-tcp-bufs

To display TCP buffers, use the **net-tcp-bufs** command in rommon mode.

**net-tcp-bufs** [*mss*]

<b>Syntax Description</b>	<i>mss</i>	(Optional) The Maximum Segment Size (MSS) of TCP buffers.
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<b>Command Modes</b>	Rommon
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** You can set the MSS of TCP buffers using the *mss* argument.

## Example

The following is sample output from the **net-tcp-bufs** command:

```
Device: net tcp-bufs
```

```
tcp_num_bufs 4
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>net-tcp-mss</b>	View or set the TCP MSS.

# net-tcp-mss

To view or set the TCP Maximum Segment Size (MSS), use the **net-tcp-mss** command in rommon mode.

**net-tcp-mss** [*mss*]

<b>Syntax Description</b>	<i>mss</i>	(Optional) The Maximum Segment Size (MSS) of TCP buffers.
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<b>Command Modes</b>	Rommon
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** Use the *mss* argument to change the MSS size.

### Example

The following is sample output from the **net-tcp-mss** command:

```
Device: net-tcp-mss
switch: net-tcp-mss
tcp_segment_size 1024
```

The following is sample output from the **net-tcp-mss mss** command:

```
Device: net-tcp-mss 700
switch: net-tcp-mss 700
tcp_segment_size 700
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>net-tcp-bufs</b>	Displays TCP buffers.

# ping

To diagnose basic network connectivity, use the **ping** command in rommon mode.

**ping** [*host\_ip\_address*] [*retries*]

Syntax Description		
	<i>host_ip_address</i>	(Optional) IP address of the host.
	<i>retries</i>	(Optional) Number of retries.

Command Modes	Rommon
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Command History	Release	Modification
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** The **ping** and **ping4** commands are the same.

The **ping** command is a very common method for troubleshooting the accessibility of devices

A timeout is implemented at the bootloader device prompt, that allows the bootloader to poll the TCP stack every 200 ms. As a result, the bootloader may take up to 200 ms to respond to pings. However, when the bootloader is downloading a file, and thus actively polling for new packets, it responds to ping quickly.

### Example

The following is sample output from the **ping** command:

```
Device: ping 10.29.27.5

Ping 10.29.27.5 with 32 bytes of data ...
Host 10.29.27.5 is alive.
```

The following is sample output from the **ping host\_ip\_address retries** command:

```
Device: ping 10 6.29.27.5 6

Ping 10.29.27.5 with 32 bytes of data ... reply received in 0 ms
Ping 10.29.27.5 with 32 bytes of data ... reply received in 0 ms
Ping 10.29.27.5 with 32 bytes of data ... reply received in 0 ms
Ping 10.29.27.5 with 32 bytes of data ... reply received in 1 ms
Ping 10.29.27.5 with 32 bytes of data ... reply received in 0 ms
Ping 10.29.27.5 with 32 bytes of data ... reply received in 0 ms
```

Related Commands	Command	Description
	<b>ping4</b>	Diagnoses basic network connectivity.
	<b>ping6</b>	Determines the network connectivity to another device using IPv6 addressing.

# ping4

To diagnose basic network connectivity, use the **ping4** command in rommon mode.

**ping4** [*host\_ip\_address* ][*retries*]

<b>Syntax Description</b>	<i>host_ip_address</i>	(Optional) IP address of the host to be pinged.
	<i>retries</i>	(Optional) Number of retries.

**Command Modes** Rommon

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** The **ping** and **ping4** commands are the same

A timeout is implemented at the bootloader device prompt, that allows the bootloader to poll the TCP stack every 200 ms. As a result, the bootloader may take up to 200 ms to respond to pings. However, when the bootloader is downloading a file, and thus actively polling for new packets, it responds to ping quickly.

### Example

The following is sample output from the **ping4** *host\_ip\_address* command:

```
Device: ping4 10.29.27.5

Ping 10.29.27.5 with 32 bytes of data ...
Host 10.29.27.5 is alive.
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>ping</b>	Diagnoses basic network connectivity.
	<b>ping6</b>	Determines the network connectivity to another device using IPv6 addressing.

# ping6

To determine the network connectivity to another device using IPv6 addressing, use the **ping6** command, rommon mode.

**ping6** [*host*] [*repeats*] [*len*]

<b>Syntax Description</b>	<i>host</i>	(Optional) IP address of the host to be pinged.
	<i>repeats</i>	(Optional) Number of times to repeat the ping.

<b>Command Modes</b>	Rommon
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Everest 16.5.1	This command was introduced.

**Usage Guidelines** A timeout is implemented at the bootloader device prompt, that allows the bootloader to poll the TCP stack every 200 ms. As a result, the bootloader may take up to 200 ms to respond to pings. However, when the bootloader is downloading a file, and thus actively polling for new packets, it responds to ping quickly.

### Example

The following is sample output from the **ping6** *host retries len* command:

```
Device: ping6 2001:dead:beef:cafe::5 6 1000

Ping host 2001:dead:beef:cafe::5, 6 times, 1000 bytes
Pinging 2001:dead:beef:cafe::5 ... reply in 0 ms
Pinging 2001:dead:beef:cafe::5 ... reply in 1 ms
Pinging 2001:dead:beef:cafe::5 ... reply in 1 ms
Pinging 2001:dead:beef:cafe::5 ... reply in 0 ms
Pinging 2001:dead:beef:cafe::5 ... reply in 0 ms
Pinging 2001:dead:beef:cafe::5 ... reply in 0 ms
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>ping</b>	Diagnoses basic network connectivity.
	<b>ping4</b>	Diagnoses basic network connectivity.