



Host Services and Applications Commands

This chapter describes the commands used to configure and monitor host services and applications, such as Domain Name System (DNS), Telnet, File Transfer Protocol (FTP), Trivial File Transfer Protocol (TFTP).

For detailed information about host services and applications concepts, configuration tasks, and examples, refer to the *IP Addresses and Services Configuration Guide for Cisco NCS 6000 Series Routers*.

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cinetd rate-limit

To configure the rate limit at which service requests are accepted by Cisco inetd (Cinetd), use the **cinetd rate-limit** command in XR Config mode. To restore the default, use the **no** form of this command.

cinetd rate-limit *value*
no cinetd rate-limit *value*

Syntax Description

value Number of service requests that are accepted per second. Range is 1 to 100. Default is 1.

Command Default

One service request per second is accepted.

Command Modes

XR Config mode

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

Any service request that exceeds the rate limit is rejected. The rate limit is applied to individual applications.

Task ID

Task ID	Operations
ip-services	read, write

Examples

The following example shows the **cinetd rate-limit** being set to 10:

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# cinetd rate-limit 10
```

clear host

To delete temporary entries from the hostname-to-address cache, use the **clear host** command in XR EXEC mode.

```
clear host {host-name | *}
```

Syntax Description

host-name	Name of host to be deleted.
*	Specifies that all entries in the local cache be deleted.

Command Default

No default behavior or values

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

The dynamic host entries in the cache are cleared.

The temporary entries in the cache are cleared; the permanent entries that were entered with the [domain ipv4 host, on page 4](#) or the [domain ipv6 host, on page 5](#) command are not cleared.

By default, no static mapping is configured.

Task ID

Task ID	Operations
ip-services	execute

Examples

The following example shows how to clear all temporary entries from the hostname-and-address cache:

```
RP/0/RP0/CPU0:router# clear host *
```

Related Commands

Command	Description
domain ipv4 host, on page 4	Defines a static IPv4 hostname-to-address mapping in the host cache.
domain ipv6 host, on page 5	Defines a static IPv6 hostname-to-address mapping in the host cache.
show hosts, on page 25	Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.

domain ipv4 host

To define a static hostname-to-address mapping in the host cache using IPv4, use the **domain ipv4 host** command in XR Config mode. To remove the **domain ipv4 host** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

```
domain ipv4 host host-name v4address2.....v4address8
no domain ipv4 host host-name v4address1
```

Syntax Description		
	host-name	Name of the host. The first character can be either a letter or a number.
	v4address1	Associated IP address.
	v4address2...v4address8	(Optional) Additional associated IP address. You can bind up to eight addresses to a hostname.

Command Default No static mapping is configured.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The first character can be either a letter or a number. If you use a number, the operations you can perform (such as **ping**) are limited.

Task ID	Task ID	Operations
	ip-services	read, write
	basic-services	read, write

Examples

The following example shows how to define two IPv4 static mappings:

```
RP/0/RP0/CPU0:router(config)# domain ipv4 host host1 192.168.7.18
RP/0/RP0/CPU0:router(config)# domain ipv4 host host2 10.2.0.2 192.168.7.33
```

domain ipv6 host

To define a static hostname-to-address mapping in the host cache using IPv6, use the **domain ipv6 host** command in XR Config mode. To remove the **domain ipv6 host** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

```
domain ipv6 host host-name v6address1 [v6address2 .....v6address4]
no domain ipv6 host host-name v6address1
```

Syntax Description		
host-name	Name of the host. The first character can be either a letter or a number.	
v6address1	Associated IP address.	
v6address2...v6address4	(Optional) Additional associated IP address. You can bind up to four addresses to a hostname.	

Command Default No static mapping is configured. IPv6 address prefixes are not enabled.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The first character can be either a letter or a number. If you use a number, the operations you can perform (such as **ping**) are limited.

Task ID	Task ID	Operations
	ip services	read, write

Examples

The following example shows how to define two IPv6 static mappings:

```
RP/0/RP0/CPU0:router(config)# domain ipv6 host host1 ff02::2
RP/0/RP0/CPU0:router(config)# domain ipv6 host host2 ff02::1
```

domain list

To define a list of default domain names to complete unqualified hostnames, use the **domain list** command in XR Config mode. To delete a name from a list, use the **no** form of this command.

domain list *domain-name*
no domain list *domain-name*

Syntax Description	domain-name Domain name. Do not include the initial period that separates an unqualified name from the domain name.
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Command Default	No domain names are defined.
------------------------	------------------------------

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines	If there is no domain list, the domain name that you specified with the domain name (IPAddr), on page 9 command is used to complete unqualified hostnames. If there is a domain list, the default domain name is not used. The domain list command is similar to the domain name (IPAddr), on page 9 command, except that you can use the domain list command to define a list of domains, each to be tried in turn.
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Task ID	Task ID	Operations
	ip-service	read, write

Examples	The following example shows how to add several domain names to a list:
-----------------	------------------------------------------------------------------------

```
RP/0/RP0/CPU0:router(config)# domain list domain1.com
RP/0/RP0/CPU0:router(config)# domain list domain2.edu
```

The following example shows how to add a name to and then delete a name from the list:

```
RP/0/RP0/CPU0:router(config)# domain list domain3.edu
RP/0/RP0/CPU0:router(config)# no domain list domain2.edu
```

Related Commands	Command	Description
	domain name (IPAddr), on page 9	Defines a default domain name to complete unqualified hostnames (names without a dotted-decimal domain name).

Command	Description
show hosts, on page 25	Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.

domain lookup disable

To disable the IP Domain Name System (DNS)-based hostname-to-address translation, use the **domain lookup disable** command in XR Config mode. To remove the specified command from the configuration file and restore the system to its default condition, use the **no** form of this command.

domain lookup disable
no domain lookup disable

Syntax Description This command has no keywords or arguments.

Command Default The IP DNS-based host-to-address translation is enabled.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Using the **no** command removes the specified command from the configuration file and restores the system to its default condition. The **no** form of this command is not stored in the configuration file.

Task ID	Task ID	Operations
	ip-services	read, write

Examples The following example shows how to enable the IP DNS-based hostname-to-address translation:

```
RP/0/RP0/CPU0:router(config)# domain lookup disable
```

Related Commands	Command	Description
	domain name (IPAddr), on page 9	Defines a default domain name to complete unqualified hostnames (names without a dotted-decimal domain name).
	domain name-server, on page 10	Specifies the address of one or more name servers to use for name and address resolution.
	show hosts, on page 25	Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.

domain name (IPAddr)

To define a default domain name that the software uses to complete unqualified hostnames, use the **domain name** command in the appropriate mode. To remove the name, use the **no** form of this command.

domain name *domain-name*
no domain name *domain-name*

Syntax Description

domain-name Default domain name used to complete unqualified hostnames. Do not include the initial period that separates an unqualified name from the domain name.

Command Default

There is no default domain name.

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

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

If a hostname does not contain a domain name, then a dot and the domain name configured by the **domain name** command are appended to the hostname before it is added to the host table.

If no domain name is configured by the **domain name** command and the user provides only the hostname, then the request is not looked up.

Task ID

Task ID	Operations
ip-services	read, write

Related Commands

Command	Description
domain list, on page 6	Defines a list of default domain names to complete unqualified hostnames.
domain name-server, on page 10	Specifies the address of one or more name servers to use for name and address resolution.
show hosts, on page 25	Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.

domain name-server

To specify the address of one or more name servers to use for name and address resolution, use the **domain name-server** command in XR Config mode. To remove the address specified, use the **no** form of this command.

domain name-server *server-address*
no domain name-server *server-address*

Syntax Description	<i>server-address</i> IP address of a name server.
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Command Default	If no name server address is specified, the default name server is 255.255.255.255. IPv4 and IPv6 address prefixes are not enabled.
------------------------	-------------------------------------------------------------------------------------------------------------------------------------

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines	<p>You can enter up to six addresses, but only one for each command.</p> <p>If no name server address is specified, the default name server is 255.255.255.255 so that the DNS lookup can be broadcast to the local network segment. If a DNS server is in the local network, it replies. If not, there might be a server that knows how to forward the DNS request to the correct DNS server.</p>
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Task ID	Task ID	Operations
	ip-services	read, write

Examples	The following example shows how to specify host 192.168.1.111 as the primary name server and host 192.168.1.2 as the secondary server:
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```
RP/0/RP0/CPU0:router(config)# domain name-server 192.168.1.111
RP/0/RP0/CPU0:router(config)# domain name-server 192.168.1.2
```

Related Commands	Command	Description
	domain lookup disable, on page 8	Disables the domain lookup.
	domain name (IPAddr), on page 9	Defines a default domain name to complete unqualified hostnames (names without a dotted-decimal domain name).

ftp client anonymous-password

To assign a password for anonymous users, use the **ftp client anonymous-password** command in XR Config mode. To remove the **ftp client anonymous-password** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

```
ftp client anonymous-password password
no ftp client anonymous-password
```

Syntax Description	password Password for the anonymous user.
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Command Default	No default behavior or values
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Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines	The ftp client anonymous-password command is File Transfer Protocol (FTP) server dependent.
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Task ID	Task ID	Operations
	ip-services	read, write

Examples	The following example shows how to set the anonymous password to <i>xxxx</i> :
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```
RP/0/RP0/CPU0:router(config)# ftp client anonymous-password xxxx
```

Related Commands	Command	Description
	ftp client passive, on page 12	Configures the software to use only passive File Transfer Protocol (FTP) connections.
	ftp client password, on page 13	Specifies the password for the File Transfer Protocol (FTP) connections.
	ftp client source-interface, on page 15	Specifies the source IP address for File Transfer Protocol (FTP) connections.
	ftp client username, on page 17	Specifies the username for File Transfer Protocol (FTP) connections.

ftp client passive

To configure the software to use only passive File Transfer Protocol (FTP) connections, use the **ftp client passive** command in XR Config mode. To remove the **ftp client passive** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

ftp client passive
no ftp client passive

Syntax Description This command has no keywords or arguments.

Command Default FTP data connections are active.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Using the **ftp client passive** command allows you to make only passive-mode FTP connections. To specify the source IP address for FTP connections, use the **ftp client source-interface** command.

Task ID	Task ID	Operations
	ip-services	read, write

Examples The following example shows how to configure the networking device to use only passive FTP connections:

```
RP/0/RP0/CPU0:router(config)# ftp client passive

1d:3h:54:47: ftp_fs[16437]: FTP: verifying tuple passive (SET).
1d:3h:54:47: ftp_fs[16437]: FTP: applying tuple passive (SET).
1d:3h:54:47: ftp_fs[16437]: FTP: passive mode has been enabled.
```

Related Commands	Command	Description
	ftp client anonymous-password, on page 11	Assigns a password for anonymous users.
	ftp client password, on page 13	Specifies the password for the File Transfer Protocol (FTP) connections.
	ftp client source-interface, on page 15	Specifies the source IP address for File Transfer Protocol (FTP) connections.
	ftp client username, on page 17	Specifies the username for File Transfer Protocol (FTP) connections.

ftp client password

To specify the password for the File Transfer Protocol (FTP) connections, use the **ftp client password** command in XR Config mode. To disable this feature, use the **no** form of this command.

ftp client password {*clear-text-password* | **clear** *clear-text password* | **encrypted** *encrypted-text password*}

no ftp client password {*clear-text-password* | **clear** *clear-text password* | **encrypted** *encrypted-text password*}

Syntax Description		
	<code>clear-text-password</code>	Specifies an unencrypted (cleartext) user password
	<code>clear</code> <i>clear-text password</i>	Specifies an unencrypted (cleartext) shared password.
	<code>encrypted</code> <i>encrypted-text password</i>	Specifies an encrypted shared password.

Command Default No default behavior or values

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	ip-services	read, write

Examples The following example shows how to specify the password for the File Transfer Protocol (FTP) connections:

```
RP/0/RP0/CPU0:router(config)# ftp client password lab
```

Related Commands	Command	Description
	ftp client anonymous-password, on page 11	Assigns a password for anonymous users.
	ftp client passive, on page 12	Configures the software to use only passive File Transfer Protocol (FTP) connections.
	ftp client source-interface, on page 15	Specifies the source IP address for File Transfer Protocol (FTP) connections.

Command	Description
ftp client username, on page 17	Specifies the username for File Transfer Protocol (FTP) connections.

ftp client source-interface

To specify the source IP address for File Transfer Protocol (FTP) connections, use the **ftp client source-interface** command in XR Config mode. To remove the **ftp client source-interface** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

```
ftp client source-interface type interface-path-id
no ftp client source-interface type interface-path-id
```

Syntax Description	type	Interface type. For more information, use the question mark (?) online help function.
	interface-path-id	Physical interface or virtual interface.
	Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (?) online help function.

Command Default The FTP source address is the IP address of the interface used by the FTP packets to leave the networking device.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Use this command to set the same source address for all FTP connections. To configure the software to use only passive FTP connections, use the **ftp client passive** command.

Task ID	Task ID	Operations
	ip-services	read, write

Examples The following example shows how to configure the IP address associated with HundredGigEinterface 0/1/2/1 as the source address on all FTP packets, regardless of which interface is actually used to send the packet:

```
RP/0/RP0/CPU0:router(config)# ftp client source-interface HundredGigE0/1/2/1
```

Related Commands	Command	Description
	ftp client anonymous-password, on page 11	Assigns a password for anonymous users.

Command	Description
ftp client passive, on page 12	Configures the software to use only passive File Transfer Protocol (FTP) connections.
ftp client password, on page 13	Specifies the password for the File Transfer Protocol (FTP) connections.
ftp client username, on page 17	Specifies the username for File Transfer Protocol (FTP) connections.

ftp client username

To specify the username for File Transfer Protocol (FTP) connections, use the **ftp client username** command in XR Config mode. To disable this feature, use the **no** form of this command.

ftp client username *username*
no ftp client username *username*

Syntax Description

username Name for FTP user.

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
ip-services	read, write

Examples

The following example shows how to specify the username for FTP connections:

```
RP/0/RP0/CPU0:router(config)# ftp client username brownfox
```

Related Commands

Command	Description
ftp client anonymous-password, on page 11	Assigns a password for anonymous users.
ftp client passive, on page 12	Configures the software to use only passive File Transfer Protocol (FTP) connections.
ftp client password, on page 13	Specifies the password for the File Transfer Protocol (FTP) connections.
ftp client source-interface, on page 15	Specifies the source IP address for File Transfer Protocol (FTP) connections

ping (network)

To check host reachability and network connectivity on IP networks, use the **ping** command in XR EXEC mode.

```
ping [{ipv4 | ipv6}] [{host-nameip-address}] [count number] [size number] [source
ip-addressinterface-name | type number] [timeout seconds] [pattern number] [type number]
[verbose] [donnotfrag] [validate] [sweep]
```

Syntax Description		
ipv4	(Optional)	Specifies IPv4 address prefixes.
ipv6	(Optional)	Specifies IPv6 address prefixes.
host-name	(Optional)	Hostname of the system to ping.
ip-address	(Optional)	IP address of the system to ping.
count <i>number</i>	(Optional)	Sets the repeat count. Range is 0 to 2147483647.
size <i>number</i>	(Optional)	Sets the datagram size. Range is 36 to 18024
source	(Optional)	Identifies the source address or source interface.
type <i>number</i>	(Optional)	Sets the type of service. Range is 0 to 255. Available when the ipv4 keyword is specified.
timeout <i>seconds</i>	(Optional)	Sets the timeout in seconds. Range is 0 to 3600.
pattern <i>number</i>	(Optional)	Sets the data pattern. Range is 0 to 65535.
verbose	(Optional)	Sets verbose output.
donnotfrag	(Optional)	Sets the Don't Fragment (DF) bit in the IP header.
validate	(Optional)	Validates the return packet.
sweep	(Optional)	Sets the sweep ping.

Command Default No default behavior or values

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The default value for the **ping** command refers only to the target IP address. No default value is available for the target IP address.

The ping program sends an echo request packet to an address and then waits for a reply. Ping output can help you evaluate path-to-host reliability, delays over the path, and whether the host can be reached or is functioning.



Note The **ping** (EXEC) command is supported only on IP networks.

If you enter the command without specifying either a hostname or an IP address, the system prompts you to specify the target IP address and several other command parameters. After specifying the target IP address, you can specify alternate values for the remaining parameters or accept the displayed default for each parameter.

If the system cannot map an address for a hostname, it returns an “%Unrecognized host or address, or protocol not running” error message.

To abnormally terminate a ping session, enter the escape sequence, which is, by default, Ctrl-C. Simultaneously press and release the Ctrl and C keys.

This table describes the test characters sent by the ping facility.

Table 1: ping Test Characters

Character	Description
!	Each exclamation point indicates receipt of a reply.
.	Each period indicates that the network server timed out while waiting for a reply.
?	Unknown packet type.
U	A “destination unreachable” error protocol data unit (PDU) was received.
C	A “congestion experienced” packet was received.
M	Fragmentation is needed, but the “don’t fragment” bit in the IP header is set. When this bit is set, the IP layer does not fragment the packet and returns an Internet Control Message Protocol (ICMP) error message to the source if the packet size is larger than the maximum transmission size. When this bit is not set, the IP layer fragments the packet to forward it to the next hop.
Q	A source quench packet was received.

Task ID	Task ID	Operations
	basic-services	read, write, execute

Examples

Although the precise dialog varies somewhat between IPv4 and IPv6, all are similar to the ping session, using default values shown in the following output:

```
RP/0/RP0/CPU0:router# ping

Protocol [ipv4]:
Target IP address: 10.0.0.1
Repeat count [5]:
Datagram size [100]:
Timeout in seconds [2]:
Extended commands? [no]: yes
Source address or interface: 10.0.0.2
Type of service [0]:
```

```
Set DF bit in IP header? [no]:
Validate reply data? [no]: yes
Data pattern [0xABCD]:
Loose, Strict, Record, Timestamp, Verbose[none]:
Sweep range of sizes? [no]:
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.25.58.21, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/11/49 ms
```

If you enter a hostname or an address on the same line as the **ping** command, the command performs the default actions appropriate for the protocol type of that hostname or address, as shown in the following output:

```
RP/0/RP0/CPU0:router# ping server01

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.7.27, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/8/9 ms
```

ping bulk (network)

To check reachability and network connectivity to multiple hosts on IP networks, use the **ping bulk** command in XR EXEC mode.

```
ping bulk ipv4 [input cli [{batch | inline}]]
```

Syntax Description	
ipv4	Specifies IPv4 address prefixes.
input	Specifies input mode.
cli	Specifies input via CLI.
batch	Pings after all destinations are input.
inline	Pings after each destination is input.

Command Default	
	No default behavior or values

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines	
	You must hit the Enter button and then specify one destination address per line. Maximum number of destinations you can specify in the cli or batch mode is 2000.

Task ID	Task ID	Operation
	basic-services	read, write, execute

Related Commands	Command	Description
	ping (network), on page 18	Checks host reachability and network connectivity on IP networks.

scp

To securely transfer a file from a local directory to a remote directory or from a remote directory to a local directory, use the **scp** command in XR EXEC mode.

```
scp {local-directory username@location/directory} /filename {username@location/directory local-directory} /filename
```

Syntax Description

<i>local-directory</i>	Specifies the local directory on the device.
<i>username@location/directory</i>	Specifies the remote directory where <i>location</i> is the IP address of the remote device.
<i>filename</i>	Specifies the file name to be transferred.

Command Default

None

Usage Guidelines

Secure Copy Protocol (SCP) is a file transfer protocol which provides a secure and authenticated method for transferring files. SCP relies on SSHv2 to transfer files from a remote location to a local location or from local location to a remote location.

Use the **scp** command to copy a file from the local device to a destination device or from a destination device to the local device.

Using SCP, you can only transfer individual files. You cannot transfer a file from a remote device to another remote device.

SSH server process must be running on the remote device.

Task ID

Task ID	Operations
ip-services	read, write

Examples

The following example shows how to copy a file using the **scp** command from a local directory to a remote directory:

```
RP/0/RP0/CPU0:router# scp /usr/file1.txt root@209.165.200.1:/root/file3.txt

Connecting to 209.165.200.1...
Password:
  Transferred 553065 Bytes
  553065 bytes copied in 0 sec (7576232)bytes/sec
```

The following example shows how to copy a file using the **scp** command from a remote directory to a local directory:

```
RP/0/RP0/CPU0:router# scp root@209.165.200.1:/root/file4.txt /usr/file.txt

Connecting to 209.165.200.1...
Password:
  Transferred 553065 Bytes
  553065 bytes copied in 0 sec (7576232)bytes/sec
```

show cinetd services

To display the services whose processes are spawned by Cinetd when a request is received, use the **show cinetd services** command in XR EXEC mode.

show cinetd services

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	ip-services	read

Examples

The following is sample is output from the **show cinetd services** command:

```
RP/0/RP0/CPU0:router# show cinetd services
Family Service  Proto  Port  ACL  max_cnt  curr_cnt  wait  Program  Option
=====
v4    telnet  tcp    23  unlimited  0        nowait   telnet
v4    tftp    udp    69  unlimited  0        wait     tftpd   disk0
```

This table describes the significant fields shown in the display.

Table 2: show cinetd services Command Field Descriptions

Field	Description
Family	Version of the network layer (IPv4 or IPv6).
Service	Network service (for example, FTP, Telnet, and so on).
Proto	Transport protocol used by the service (tcp or udp).
Port	Port number used by the service.
ACL	Access list used to limit the service from some hosts.
max_cnt	Maximum number of concurrent servers allowed for a service.
curr_cnt	Current number of concurrent servers for a service.

Field	Description
wait	Status of whether Cinetd has to wait for a service to finish before serving the next request.
Program	Name of the program for a service.
Option	Service-specific options.

Related Commands

Command	Description
telnet server, on page 33	Enables Telnet services on a networking device.
tftp server, on page 36	Enables or disables the TFTP server or a feature running on the TFTP server.

show hosts

To display the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses, use the **show hosts** command in XR EXEC mode.

show hosts [*host-name*]

Syntax Description	host-name (Optional) Name of the host about which to display information. If omitted, all entries in the local cache are displayed.
---------------------------	-------------------------------------------------------------------------------------------------------------------------------------

Command Default	Unicast address prefixes are the default when IPv4 address prefixes are configured.
------------------------	-------------------------------------------------------------------------------------

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--------------------------------------------------------

Task ID	Task ID	Operations
	ip-services	read

Examples

The following is sample output from the **show hosts** command:

```
RP/0/RP0/CPU0:router# show hosts

Default domain is cisco.com
Name/address lookup uses domain service
Name servers are 255.255.255.255
Host          Flags      Age(hr)  Type      Address(es)
host1.cisco.com (temp, OK)  1        IP        192.168.4.10
abc           (perm, OK)  0        IP        10.0.0.0 10.0.0.2 10.0.0.3
```

This table describes the significant fields shown in the display.

Table 3: show hosts Command Field Descriptions

Field	Description
Default domain	Default domain used to complete the unqualified hostnames.
Name/address lookup	Lookup is disabled or uses domain services.
Name servers	List of configured name servers.
Host	Hostname.

Field	Description
Flags	<p>Indicates the status of an entry.</p> <ul style="list-style-type: none"> • temp—Temporary entry entered by a name server; the software removes the entry after 72 hours of inactivity. • perm—Permanent entry entered by a configuration command; does not time out. • OK—Entry is believed to be valid. • ??—Entry is considered suspect and subject to revalidation. • EX—Entry has expired.
Age(hr)	Number of hours since the software most recently referred to the cache entry.
Type	Type of address (IPv4 or IPv6).
Address(es)	Address of the host. One host may have up to eight addresses.

Related Commands

Command	Description
clear host, on page 3	Deletes entries from the host-name-and-address cache.
domain list, on page 6	Defines a list of default domain names to complete unqualified hostnames.
domain lookup disable, on page 8	Disables the IP DNS-based hostname-to-address translation.
domain name (IPAddr), on page 9	Defines a default domain name to complete unqualified hostnames (names without a dotted-decimal domain name).
domain name-server, on page 10	Specifies the address of one or more name servers to use for name and address resolution.

telnet

To log in to a host that supports Telnet, use the **telnet** command in XR EXEC mode.

```
telnet {ip-addresshost-name} [options]
```

Syntax Description		
ip-address		IP address of a specific host on a network. <ul style="list-style-type: none"> IPv4 address format—Must be entered in the (x.x.x.x) format. IPv6 address format— Must be in the form documented in RFC 2373 where the address is specified in hexadecimal using 16-bit values between colons.
host-name		Name of a specific host on a network.
options		(Optional) Telnet connection options. See Table 4: Telnet Connection Options, on page 27 for a list of supported options.

Command Default Telnet client is in Telnet connection options nostream mode.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines If the Telnet server is enabled, you should be able to start a Telnet session as long as you have a valid username and password.

This table lists the supported Telnet connection options.

Table 4: Telnet Connection Options

Option	Description
/stream	Turns on stream processing, which enables a raw TCP stream with no Telnet control sequences. A stream connection does not process Telnet options and can be appropriate for connections to ports running UNIX-to-UNIX copy program (UUCP) and other non-Telnet protocols.
/nostream	Turns off stream processing.

Option	Description
port number	Port number. Range is 0 to 65535.
/source-interface	Specifies source interface.

To display a list of the available hosts, use the **show hosts** command. To display the status of all TCP connections, use the **show tcp** command.

The software assigns a logical name to each connection, and several commands use these names to identify connections. The logical name is the same as the hostname, unless that name is already in use or you change the connection name with the **name-connection EXEC** command. If the name is already in use, the software assigns a null name to the connection.

The Telnet software supports special Telnet commands in the form of Telnet sequences that map generic terminal control functions to operating system-specific functions. To issue a special Telnet command, enter the escape sequence and then a command character. The default escape sequence is Ctrl-^ (press and hold the Control and Shift keys and the 6 key). You can enter the command character as you hold down Ctrl or with Ctrl released; you can use either uppercase or lowercase letters. [Table 5: Special Telnet Escape Sequences, on page 28](#) lists the special Telnet escape sequences.

Table 5: Special Telnet Escape Sequences

Escape Sequence ¹	Purpose
Ctrl-^ c	Interrupt Process (IP).
Ctrl-^ o	Terminate Output (AO).
Ctrl-^ u	Erase Line (EL).

¹ The caret (^) symbol refers to Shift-6 on your keyboard.

At any time during an active Telnet session, you can list the Telnet commands by pressing the escape sequence keys followed by a question mark at the system prompt:

ctrl-^?

A sample of this list follows. In this sample output, the first caret (^) symbol represents the Control key, and the second caret represents Shift-6 on your keyboard:

```
RP/0/RP0/CPU0:router# ^^?
[Special telnet escape help]
^^B sends telnet BREAK
^^C sends telnet IP
^^H sends telnet EC
^^O sends telnet AO
^^T sends telnet AYT
^^U sends telnet EL
```

You can have several concurrent Telnet sessions open and switch among them. To open a subsequent session, first suspend the current connection by pressing the escape sequence (Ctrl-Shift-6 and then x [Ctrl^x] by default) to return to the system command prompt. Then open a new connection with the **telnet** command.

To terminate an active Telnet session, issue any of the following commands at the prompt of the device to which you are connecting:

- close
- disconnect
- exit
- logout
- quit

Task ID	Task ID	Operations
	basic-services	read, write, execute

Examples

The following example shows how to establish a Telnet session to a remote host named host1:

```
RP/0/RP0/CPU0:router# telnet host1
```

Related Commands	Command	Description
	aaa authentication login default local	Sets AAA authentication at login. For more information, see <i>System Management Command Reference for Cisco NCS 6000 Series Routers</i> .
	telnet server, on page 33	Enables Telnet services on a networking device.
	terminal length	Sets the number of lines on the current terminal screen for the current session. For more information, see <i>System Management Command Reference for Cisco NCS 6000 Series Routers</i> .
	terminal width	Sets the number of character columns on the terminal screen for the current session. For more information, see <i>System Management Command Reference for Cisco NCS 6000 Series Routers</i> .

telnet client source-interface

To specify the source IP address for a Telnet connection, use the **telnet client source-interface** command in XR Config mode. To remove the **telnet client source-interface** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

```
telnet {ipv4 | ipv6} client source-interface type interface-path-id
no telnet client source-interface type interface-path-id
```

Syntax Description		
ipv4	Specifies IPv4 address prefixes.	
ipv6	Specifies IPv6 address prefixes.	
type	Interface type. For more information, use the question mark (?) online help function.	
interface-path-id	Physical interface or virtual interface.	
	Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (?) online help function.

Command Default The IP address of the best route to the destination is used as the source IP address.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Use the **telnet client source-interface** command to set the IP address of an interface as the source for all Telnet connections.

Task ID	Task ID	Operations
	ipv4	read, write
	ip-services	read, write

Examples

The following example shows how to set the IP address for HundredGigE interface 1/0/2/1 as the source address for Telnet connections:

```
RP/0/RP0/CPU0:router (config) # telnet ipv4 client source-interface HundredGigE1/0/2/1
```

Related Commands

Command	Description
telnet server, on page 33	Enables Telnet services on a networking device.

telnet dscp

To define the differentiated services code point (DSCP) value and IPv4 precedence to specifically set the quality-of-service (QoS) marking for Telnet traffic on a networking device, use the **telnet dscp** command in XR Config mode. To disable DSCP, use the **no** form of this command.

```
telnet ipv4 dscp dscp-value
no telnet ipv4 dscp dscp-value
```

Syntax Description

ipv4	Specifies IPv4 address prefixes.
dscp-value	Value for DSCP. The range is from 0 to 63. The default value is 0.

Command Default

If DSCP is disabled or not configured, the following default values are listed:

- The default value for the server is 16.
- The default value for the client is 0.

Command History

Release	Modification
Release 5.0.0	This command was introduced.

Usage Guidelines

IPv4 is the supported protocol for defining a DSCP value for locally originated Telnet traffic.

Task ID

Task ID	Operations
ipv4	read, write
ip-services	read, write

Examples

The following example shows how to define the DSCP value and IPv4 precedence:

```
RP/0/RP0/CPU0:router(config)# telnet ipv4 dscp 40
RP/0/RP0/CPU0:router(config)# telnet ipv4 dscp 10
```

Related Commands

Command	Description
telnet, on page 27	Logs in to a host that supports Telnet.

telnet server

To enable Telnet services on a networking device, use the **telnet server** command in XR Config mode. To disable Telnet services, use the **no** form of this command.

```
telnet {ipv4 | ipv6} server max-servers limit [access-list list-name]
no telnet {ipv4 | ipv6} server max-servers limit [access-list list-name]
```

Syntax Description	
ipv4	Specifies IPv4 address prefixes.
ipv6	Specifies IPv6 address prefixes.
max-servers	Sets the number of allowable Telnet servers.
no-limit	Specifies that there is no maximum number of allowable Telnet servers.
limit	Specifies the maximum number of allowable Telnet servers. Range is 1 to 200.
access-list	(Optional) Specifies an access list.
<i>list-name</i>	(Optional) Access list name.

Command Default Telnet services are disabled.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Disable Telnet services to prevent inbound Telnet connections from being accepted into a networking device using the **telnet** command. After Telnet services are disabled, no new inbound connections are accepted, and the Cisco Internet services daemon (Cinetd) stops listening on the Telnet port.

Enable Telnet services by setting the **max-servers** keyword to a value of one or greater. This allows inbound Telnet connections into a networking device.

This command affects only inbound Telnet connections to a networking device. Outgoing Telnet connections can be made regardless of whether Telnet services are enabled.

Using the **no** form of the command disables the connection and restores the system to its default condition.



Note Before establishing communications with the router through a Telnet session, configure the telnet server and vty-pool functions (see System Management Command Reference Guide, System Management Configuration Guide, and IP Addresses and Services Configuration Guide).

Task ID	Task ID	Operations
	ipv4	read, write
	ip-services	read, write

Examples

The following example shows how to enable Telnet services for one server:

```
RP/0/RP0/CPU0:router(config)# telnet ipv4 server max-servers 1
```

Related Commands

Command	Description
telnet, on page 27	Logs in to a host that supports Telnet.

tftp client source-interface

To specify the source IP address for a TFTP connection, use the **tftp client source-interface** command in XR Config mode. To remove the **tftp client source-interface** command from the configuration file and restore the system to its default condition, use the **no** form of this command.

```
tftp client source-interface type interface-path-id
no tftp client source-interface type interface-path-id
```

Syntax Description	type	Interface type. For more information, use the question mark (?) online help function.
	<i>interface-path-id</i>	Physical interface or virtual interface.
	Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (?) online help function.

Command Default The IP address of the best route to the destination is used as the source IP address.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Use the **tftp client source-interface** command to set the IP address of an interface as the source for all TFTP connections.

Task ID	Task ID	Operations
	ip-services	read, write

Examples The following example shows how to set the IP address for HundredGigE interface 1/0/2/1 as the source address for TFTP connections:

```
RP/0/RP0/CPU0:router(config)# tftp client source-interface HundredGigE1/0/2/1
```

Related Commands	Command	Description
	tftp server, on page 36	Enables or disables the TFTP server or a feature running on the TFTP server.

tftp server

To enable or disable the TFTP server or a feature running on the TFTP server, use the **tftp server** command in XR Config mode. To restore the system to its default condition, use the **no** form of this command.

```
tftp {ipv4 | ipv6} server homedir tftp-home-directory max-servers {number | no-limit} access-list
name
no tftp {ipv4 | ipv6} server homedir tftp-home-directory max-servers {number | no-limit} access-list
name
```

Syntax Description		
	ipv4	Specifies IPv4 address prefixes.
	ipv6	Specifies IPv6 address prefixes.
	homedir <i>tftp-home-directory</i>	Specifies the home directory.
	max-servers <i>number</i>	Sets the maximum number of concurrent TFTP servers. The range is from 1 to 2147483647.
	max-servers no-limit	Sets no limit to process a number of allowable TFTP server.
	access-list <i>name</i>	Specifies the name of the access list associated with the TFTP server.

Command Default The TFTP server is disabled by default. When not specified, the default value for the **max-servers** keyword is unlimited.

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Using the **no** form of the **tftp server** command removes the specified command from the configuration file and restores the system to its default condition. The **no** form of the command is not stored in the configuration file.

Task ID	Task ID	Operations
	ipv4	read, write
	ip-services	read, write

Examples The following example shows that the TFTP server is enabled for the access list named test:

```
RP/0/RP0/CPU0:router(config)# tftp ipv4 server homedir disk0 access-list test max-servers
100
```

traceroute

To discover the routes that packets actually take when traveling to their destination across an IP network, use the **traceroute** command in XR EXEC mode.

```
traceroute [{ipv4 | ipv6}] [{host-nameip-address}] [source {ip-addressinterface-name}] [numeric]
[timeout seconds] [probe count] [minttl seconds] [maxttl seconds] [port number] [verbose]
```

Syntax Description	
ipv4	(Optional) Specifies IPv4 address prefixes.
ipv6	(Optional) Specifies IPv6 address prefixes.
<i>host-name</i>	(Optional) Hostname of system to use as the destination of the trace attempt.
<i>ip-address</i>	(Optional) Address of system to use as the destination of the trace attempt.
source	(Optional) Source address.
<i>ip-address-name</i>	(Optional) IP address A.B.C.D or hostname.
numeric	(Optional) Numeric display only.
timeout <i>seconds</i>	(Optional) Timeout value. Range is 0 to 3600.
probe <i>count</i>	(Optional) Probe count. Range is 0 to 65535.
minttl <i>seconds</i>	(Optional) Minimum time to live. Range is 0 to 255.
maxttl <i>seconds</i>	(Optional) Maximum time to live. Range is 0 to 255.
port <i>number</i>	(Optional) Port number. Range is 0 to 65535.
priority <i>number</i>	(Optional) Packet priority. Range is 0 to 15. Available when the ipv6 keyword is specified.
verbose	(Optional) Verbose output.

Command Default No default behavior or values

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The default value for the **traceroute** command refers only to the destination. No default value is available for the destination address.

The **traceroute** command works by taking advantage of the error messages generated by networking devices when a datagram exceeds its time-to-live (TTL) value.

The **tracert** command starts by sending probe datagrams with a TTL value of 1, which causes the first networking device to discard the probe datagram and send back an error message. The **tracert** command sends several probes at each TTL level and displays the round-trip time for each.

The **tracert** command sends out one probe at a time. Each outgoing packet may result in one or two error messages. A “time-exceeded” error message indicates that an intermediate networking device has seen and discarded the probe. A “destination-unreachable” error message indicates that the destination node has received the probe and discarded it because it could not deliver the packet. If the timer goes off before a response comes in, the **tracert** command prints an asterisk (*).

The **tracert** command terminates when the destination responds, when the maximum TTL is exceeded, or when the user interrupts the trace with the escape sequence, which is, by default, Ctrl-C. Simultaneously press and release the Ctrl and C keys.

To use nondefault parameters and invoke an extended **tracert** test, enter the command without a *host-name* or *ip-address* argument. You are stepped through a dialog to select the desired parameter values for the **tracert** test.

Because of how IP is implemented on various networking devices, the IP **tracert** command may behave in unexpected ways.

Not all destinations respond correctly to a probe message by sending back an “ICMP port unreachable” message. A long sequence of TTL levels with only asterisks, terminating only when the maximum TTL has been reached, may indicate this problem.

There is a known problem with the way some hosts handle an “ICMP TTL exceeded” message. Some hosts generate an “ICMP” message, but they reuse the TTL of the incoming packet. Because this value is zero, the ICMP packets do not succeed in returning. When you trace the path to such a host, you may see a set of TTL values with asterisks (*). Eventually the TTL is raised high enough that the “ICMP” message can get back. For example, if the host is six hops away, the **tracert** command times out on responses 6 through 11.

Task ID	Task ID	Operations
	basic-services	read, write, execute

Examples

The following output shows a sample **tracert** session when a destination hostname has been specified:

```
RP/0/RP0/CPU0:router# tracert host8-sun

Type escape sequence to abort.
Tracing the route to 192.168.0.73
 0 192.168.1.6 (192.168.1.6) 10 msec 0 msec 10 msec
 1 gateway01-gw.gateway.cisco.com (192.168.16.2) 0 msec 10 msec 0 msec
 2 host8-sun.cisco.com (192.168.0.73) 10 msec * 0 msec
```

The following display shows a sample extended **tracert** session when a destination hostname is not specified:

```
tracert# tracert

Protocol [ipv4]:
Target IP address: ena-view3
Source address or interface: 10.0.58.29
Numeric display? [no]:
Timeout in seconds [3]:
```

```

Probe count [3]:
Minimum Time to Live [1]:
Maximum Time to Live [30]:
Port Number [33434]:
Loose, Strict, Record, Timestamp, Verbose[none]:

Type escape sequence to abort.
Tracing the route to 171.71.164.199
 1  sjc-jpxlnock-vpn.cisco.com (10.25.0.1) 30 msec  4 msec  4 msec
 2  15lab-vlan725-gx1.cisco.com (173.19.72.2) 7 msec  5 msec  5 msec
 3  stc15-00lab-gw1.cisco.com (173.24.114.33) 5 msec  6 msec  6 msec
 4  stc5-lab4-gw1.cisco.com (173.24.114.89) 5 msec  5 msec  5 msec
 5  stc5-sbb4-gw1.cisco.com (172.71.241.162) 5 msec  6 msec  6 msec
 6  stc5-dc5-gw1.cisco.com (172.71.241.10) 6 msec  6 msec  5 msec
 7  stc5-dc1-gw1.cisco.com (172.71.243.2) 7 msec  8 msec  8 msec
 8  ena-view3.cisco.com (172.71.164.199) 6 msec  *  8 msec

```

This table describes the characters that can appear in traceroute output.

Table 6: traceroute Text Characters

Character	Description
xx msec	For each node, the round-trip time in milliseconds for the specified number of probes.
*	Probe time out.
?	Unknown packet type.
A	Administratively unreachable. This output usually indicates that an access list is blocking traffic.
H	Host unreachable.
N	Network unreachable.
P	Protocol unreachable.
Q	Source quench.
U	Port unreachable.

