

# System Image, Microcode Image, and Configuration File Load Commands

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This chapter describes the function and displays the syntax of each command used to load and copy system images, microcode images, and configuration files. For more information about defaults and usage guidelines, see the corresponding chapter of the *Router Products Command Reference* publication.

**boot**  
**boot** *filename* [*ip-address*]  
**boot flash** [*filename*]  
**boot flash** [*device:*]*partition-number:*[*filename*]

To boot the router manually, use the **boot** ROM monitor command.

<i>filename</i>	Name of the system image you want to netboot.
<i>ip-address</i>	(Optional) IP address of the TFTP server on which the system image resides. If omitted, this value defaults to the IP broadcast address of 255.255.255.255.
<b>flash</b> <i>filename</i>	(Optional) Boots the router from Flash memory with the optional filename of the image you want loaded. The filename is case sensitive. Without a filename, the first valid file in Flash memory is loaded.
<i>device:</i>	(Optional) Valid value is <b>flash</b> .
<i>partition-number:</i>	Boots the router from Flash memory with the optional filename of the image you want loaded from the specified Flash partition. If you do not specify a filename, the first valid file in the specified partition of Flash memory is loaded.

[no] **boot bootstrap flash** *filename*  
[no] **boot bootstrap mop** *filename* *mac-address* *interface*  
[no] **boot bootstrap tftp** *filename* *ip-address*

To configure the filename that is used to boot a secondary bootstrap image, use the **boot bootstrap** global configuration command. Use the **no** form of this command to disable booting from a secondary bootstrap image.

<b>flash</b>	Indicates that the router will be booted from Flash memory.
<b>mop</b>	Indicates that the router will be netbooted from a system image stored on a Digital MOP server.
<b>tftp</b>	(Optional) Indicates that the router will be netbooted from a system image stored on a TFTP server.
<i>filename</i>	(Optional with <b>flash</b> ) Name of the system image from which you want to netboot. If you omit the filename when booting from Flash, the router uses the first system image stored in Flash memory.

<i>ip-address</i>	(Optional) IP address of the TFTP server on which the system image resides. If omitted, this value defaults to the IP broadcast address of 255.255.255.255.
<i>mac-address</i>	(Optional) MAC address of the MOP server on which the file resides. If the MAC address argument is not included, a broadcast message is sent to all MOP boot servers. The first MOP server to indicate that it has the file will be the server from which the router gets the boot image.
<i>interface</i>	(Optional) Interface out which the router should send MOP requests to reach the MOP server. The interface options are <b>async</b> , <b>dialer</b> , <b>ethernet</b> , <b>loopback</b> , <b>null</b> , <b>serial</b> , and <b>tunnel</b> . If the interface argument is not specified, a request will be sent on all interfaces that have MOP enabled, and the interface out which the first response is received will be used to load the software.

**boot buffersize** *bytes*  
**no boot buffersize**

To modify the buffer size used to load configuration files, use the **boot buffersize** global configuration command. Use the **no** form of this command to return to the default setting.

*bytes* Specifies the size of the buffer to be used. There is no minimum or maximum buffer size.

[no] **boot host mop** *filename* [*mac-address*] [*interface*]  
[no] **boot host** [**tftp** | **rcp**] *filename* [*ip-address*]

To change the default name of the host configuration filename from which you want to load configuration commands, use the **boot host** global configuration command. Use the **no** form of this command to restore the host configuration filename to the default.

<b>mop</b>	Indicates that the router will be configured from a configuration file stored on a Digital MOP server.
<b>tftp</b>	(Optional) Indicates that the router will be configured from a configuration file stored on a TFTP server.
<b>rcp</b>	(Optional) Indicates that the router will be configured from a configuration file stored on a rcp server.
<i>filename</i>	Name of the file from which you want to load configuration commands.
<i>ip-address</i>	(Optional) IP address of the TFTP server on which the file resides. If omitted, this value defaults to the IP broadcast address of 255.255.255.255.
<i>mac-address</i>	(Optional) MAC address of the MOP server on which the file resides. If the MAC address argument is not included, a broadcast message is sent to all MOP boot servers. The first MOP server to indicate that it has the file is the server from which the router gets the boot image.
<i>interface</i>	(Optional) Interface out which the router should send MOP requests to reach the MOP server. The interface options are <b>async</b> , <b>dialer</b> , <b>ethernet</b> , <b>serial</b> , and <b>tunnel</b> . If the interface argument is not specified, a request is sent on all interfaces that have MOP enabled, and the interface out which the first response is received is used to load the software.

**[no] boot network mop** *filename* [*mac-address*] [*interface*]  
**[no] boot network [tftp | rcp]** *filename* [*ip-address*]

To change the default name of the network configuration file from which you want to load configuration commands, use the **boot network** global configuration command. Use the **no** form of this command to restore the network configuration filename to the default.

<b>mop</b>	Configures the router to download the configuration file from a network server using the Digital MOP protocol.
<b>rcp</b>	(Optional) Configures the router to download the configuration file from a network server using rcp. If omitted, defaults to <b>tftp</b> .
<b>tftp</b>	(Optional) Configures the router to download the configuration file from a network server using TFTP. If omitted and <b>rcp</b> is not specified, defaults to <b>tftp</b> .
<i>filename</i>	Name of the file from which you want to load configuration commands. The default filename is <i>network-config</i> .
<i>ip-address</i>	(Optional) If <b>rcp</b> or <b>tftp</b> is specified, the IP address of the network server on which the compressed image file resides. If omitted, this value defaults to the IP broadcast address of 255.255.255.255.
<i>mac-address</i>	(Optional) If <b>MOP</b> is specified, the MAC address of the network server on which the file resides. If the MAC address argument is not included, a broadcast message is sent to all MOP boot servers. The first server to indicate that it has the file will be the server from which the router gets the boot image.

*interface* (Optional) If MOP is specified, interface out which the router should send MOP requests to reach the server. The interface options are **async**, **dialer**, **ethernet**, **serial**, and **tunnel**. If the interface argument is not specified, a request will be sent on all interfaces that have MOP enabled, and the interface out which the first response is received will be used to load the software.

**boot system flash** [*device:*][*partition-number:*][*filename*]  
**[no] boot system mop** *filename* [*mac-address*] [*interface*]  
**[no] boot system rom**  
**[no] boot system** [**tftp** | **rcp**] *filename* [*ip-address*]

**no boot system flash** [*filename*]  
**no boot system**

To change the filename of the system image that is loaded onto the router at reboot time, use the **boot system** global configuration command. Use the **no boot system** command to remove the name.

<b>flash</b>	Boots the router from Flash memory.
<b>mop</b>	Boots the router from a system image stored on a Digital MOP server.
<b>rom</b>	Boots the router from ROM.
<b>rcp</b>	(Optional) Boots the router from a system image stored on a network server using rcp. If you omit this keyword, the transport mechanism defaults to <b>tftp</b> .
<b>tftp</b>	(Optional) Boots the router from a system image stored on a TFTP server. If omitted and <b>rcp</b> is not specified, the transport mechanism defaults to <b>tftp</b> .

<i>filename</i>	(Optional with <b>flash</b> .) Name of the configuration file from which you want to netboot. It is case sensitive. If you do not specify a system image file with the <b>boot system</b> command, the router uses the configuration register settings to determine the default system image filename to boot from the network server. The router forms the default boot filename by starting with the word <i>cisco</i> and then appending the octal equivalent of the boot field number in the configuration register, followed by a hyphen, and the processor type name ( <i>cisco nn-cpu</i> ).
<i>ip-address</i>	(Optional) IP address of the rcp or TFTP server on which the image file resides. Defaults to the IP broadcast address of 255.255.255.255.
<i>mac-address</i>	(Optional) If MOP is used, the MAC address of the server on which the file resides. If the MAC address argument is not included, a broadcast message is sent to all MOP boot servers. The first server to indicate that it has the file will be the server from which the router gets the boot image.
<i>interface</i>	(Optional) Interface out which the router should send MOP requests to reach the server. The interface options are <b>async</b> , <b>dialer</b> , <b>ethernet</b> , <b>serial</b> , and <b>tunnel</b> . If the interface argument is not specified, a request will be sent on all interfaces that have MOP enabled, and the interface out which the first response is received will be used to load the software.
<i>device:</i>	(Optional) Valid value is <b>flash</b> .

*partition-number:* (Optional) Boots the router from Flash memory with the optional filename of the image you want loaded from the specified Flash partition. If you do not specify a filename, the first valid file in the specified partition of Flash memory is loaded.

**config-register** *value*

To change the router configuration register settings, use the **config-register** global configuration command.

<i>value</i>	Hexadecimal or decimal value that represents the 16-bit configuration register value you want to use the next time the router is restarted. The value range is from 0x0 to 0xFFFF (0 to 65535 in decimal). The default is 0x101 for the router models without Flash memory; default is 0x10F for router models with Flash memory.
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**configure** { **terminal** | **memory** | **network** }

To enter global configuration mode, use the **configure** privileged EXEC command.

<b>terminal</b>	Executes configuration commands from the terminal.
<b>memory</b>	Executes the configuration commands stored in nonvolatile random-access memory (NVRAM).
<b>network</b>	Retrieves the configuration commands stored in a file on a server.

**configure overwrite-network**

To load a configuration file directly into NVRAM, use the **configure overwrite-network** privileged EXEC command.



### **copy bootflash rcp**

To use rcp to copy a bootstrap image from Flash memory on a Cisco 4500 router to a network server, use the **copy bootflash rcp** EXEC command.

### **copy bootflash tftp**

To copy a boot image from Flash memory to a TFTP server, use the **copy bootflash tftp** EXEC command.

### **copy flash rcp**

To copy a system image from Flash memory to a network server using rcp, use the **copy flash rcp** EXEC command.

### **copy flash tftp**

To copy a system image from Flash memory to a TFTP server, use the **copy flash tftp** EXEC command.

### **copy mop bootflash**

To copy a boot image from a MOP server to Flash memory on the Cisco 4500, use the **copy mop bootflash** EXEC command.

### **copy mop flash**

To use MOP to copy a system image to Flash memory, use the **copy mop flash** EXEC command.

### **copy rcp bootflash**

To copy a bootstrap image from a network server to Flash memory on a Cisco 4500 router using rcp, use the **copy rcp bootflash** EXEC command.

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### **copy rcp flash**

To copy a system image from a network server into Flash memory using rcp, use the **copy rcp flash** EXEC command.

### **copy rcp running-config**

To copy a configuration file from a network server to the router using rcp and run that configuration, use the **copy rcp running-config** EXEC command.

### **copy rcp startup-config**

To copy a configuration file from a network server to the router's NVRAM using rcp, use the **copy rcp startup-config** EXEC command.

### **copy running-config {rcp | tftp}**

To copy the running configuration file from the router to a network server using rcp or TFTP, use the **copy running-config** EXEC command.

### **copy startup-config {rcp | tftp}**

To copy a startup configuration file to a network server using rcp or TFTP, use the **copy startup-config rcp** EXEC command.

### **copy tftp bootflash**

To copy a boot image from a TFTP server to Flash memory on the Cisco 4500, use the **copy tftp bootflash** EXEC command.

### **copy tftp flash**

To copy a system image using TFTP into Flash memory, use the **copy tftp flash** EXEC command.

### **copy verify**

To verify the checksum of a system image in Flash memory, use the **copy verify EXEC** command.

### **copy verify bootflash**

To verify the checksum of a boot image in Flash memory, use the **copy verify bootflash EXEC** command.

### **erase bootflash**

To erase the boot image in Flash memory on the Cisco 4500, use the **erase bootflash EXEC** command.

### **erase flash**

To erase Flash memory, use the **erase flash EXEC** command.

### **[no] ip rarp-server *ip-address***

Use the **ip rarp-server** interface configuration command to allow the router to act as a Reverse Address Resolution Protocol (RARP) server. Use the **no** form of this command to restore the interface to the default of no RARP server support.

<i>ip-address</i>	IP address to be provided in the source protocol address field of the RARP response packet. Normally, this is set to the address you configure as the primary address for the interface.
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### **[no] ip rcmd domain-lookup**

Use the **ip rcmd domain-lookup** global configuration command to enable DNS security for rcp and rsh. To bypass DNS security for rcp and rsh, use the **no** form of this command.

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## **System Image, Microcode Image, and Configuration File Load**

**[no] ip rcmd rcp-enable**

To configure the router to allow remote users to copy files to and from the router, use the **ip rcmd rcp-enable** global configuration command. Use the **no rcp-enable** command to disable a router that is enabled for rcp.

**[no] ip rcmd remote-host *local-username* {*ip-address* | *host*}  
*remote-username* [enable]**

To allow remote users to execute commands on the router using rsh or rcp, use the **ip rcmd remote-host** global configuration command to create an entry for the remote user in a local authentication database. Use the **no** form of this command to remove an entry for a remote user from the local authentication database.

<i>local-username</i>	Name of the user on the local router. You can specify the router host name as the username. This name needs to be communicated to the network administrator or the user on the remote system. To be allowed to remotely execute commands on the router, the remote user must specify this value correctly.
<i>ip-address</i>	IP address of the remote host from which the local router will accept remotely executed commands. Either the IP address or the host name is required.
<i>host</i>	Name of the remote host from which the local router will accept remotely executed commands. Either the host name or the IP address is required.
<i>remote-username</i>	Name of the user on the remote host from which the router will accept remotely executed commands.
<b>enable</b>	(Optional) Enables the remote user to execute privileged EXEC commands using rsh. This keyword does not apply to rcp.

**[no] ip rcmd remote-username** *username*

To configure the remote username to be used when requesting a remote copy using rcp, use the **ip rcmd remote-username** global configuration command. To remove the remote username from the configuration, use the **no** form of this command.

<i>username</i>	Name of the remote user on the server. This name is used for rcp copy requests. All files and images to be copied are searched for or written relative to the directory of the remote user's account.
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**[no] ip rcmd rsh-enable**

To configure the router to allow remote users to execute commands on the router using rsh, use the **ip rcmd rsh-enable** global configuration command. Use the **no** form of this command to disable a router that is enabled for rsh.

**[no] microcode interface** [**flash** | **rom** | **system**] [**flash** *filename*]

To specify the location of the microcode you want to download from Flash memory into the writable control store (WCS) on a Cisco 7000 series router, use the **microcode** interface configuration command.

<i>interface</i>	One of the following interface processor names: <b>aip</b> , <b>fiip</b> , <b>fsip</b> , <b>hip</b> , <b>mip</b> , <b>trip</b> , <b>eip</b> , or <b>sp</b> .
<b>flash</b>	(Optional) If the <b>flash</b> keyword is specified, a <i>filename</i> argument is required, unless you are using the <b>no microcode interface-type flash</b> command.

<b>rom</b>	(Optional) If the <b>rom</b> keyword is specified, no further arguments are necessary. For example, the command <b>microcode fip rom</b> specifies that all FDDI Interface Processors (FIPs) should be loaded from their onboard ROM microcode. This onboard ROM microcode is not the same as the eight ROMs on the RP that contain the system image.
<b>system</b>	(Optional) If specified, the router loads the microcode from the microcode bundled into the system image you are running for that interface type.
<i>filename</i>	(Optional) Filename of the microcode in Flash memory you want to download. This argument is used only with the <b>flash</b> keyword. If you use the <b>flash</b> keyword, the name of the microcode file in Flash is required unless the command is <b>no microcode interface flash</b> . (This command results in the same default condition as the command <b>microcode interface rom</b> , which indicates that the card should be loaded from its onboard ROM microcode.)

### microcode reload

To signal to the Cisco 7000 series router that all microcode configuration commands have been entered and the processor cards should be reloaded, use the **microcode reload** interface configuration command.

### [no] mop device-code { cisco | ds200 }

To identify the type of device sending MOP sysid messages and request program messages, use the **mop device-code** global configuration command. Use the **no** form of this command to set the identity to the default value.

<b>cisco</b>	Denotes a Cisco device code.
<b>ds200</b>	Denotes a DECserver 200 device code.

**mop retransmit-timer** *seconds*

**no mop retransmit-timer**

To configure the length of time the router waits before retransmitting boot requests to a MOP server, use the **mop retransmit-timer** global configuration command. Use the **no** form of this command to reinstate the default value.

*seconds*      Sets the length of time, in seconds, that the router waits before retransmitting a message. The value is a number from 1 to 20.

**mop retries** *count*

**no mop retries**

To configure the number of times a router will retransmit boot requests to a MOP server, use the **mop retries** global configuration command. Use the **no** form of this command to reinstate the default value.

*count*      Indicates the number of times a router will retransmit a MOP boot request. The value is a number from 3 to 24.

**o**

**o/r**

To list the value of the boot field (bits 0-3) in the configuration register, use the ROM monitor **o** command. To reset the value of the boot field so that the router boots from ROM, use the ROM monitor **o/r** command.

**partition flash** *partitions* [*size1* *size2*]

**no partition flash**

To separate Flash memory into two partitions, use the **partition flash** global configuration command. Use the **no** form of this command to undo partitioning, and restore Flash memory to one partition.

*partitions*      Number of partitions in Flash memory. Can be 1 or 2.

*size1*            (Optional) Size of the first partition in megabytes.

*size2*            (Optional) Size of the second partition in megabytes.

## **reload**

To reload the operating system, use the **reload** EXEC command.

**rsh** {*ip-address* | *host*} [/user *username*] *remote-command*

To execute a command remotely on a remote rsh host, use the **rsh** EXEC command.

*ip-address*            IP address of the remote host on which to execute the rsh command. Either the IP address or the host name is required.



<i>host</i>	Name of the remote host on which to execute the command. Either the host name or the IP address is required.
<i>/user username</i>	(Optional) Remote username. If you do not specify a remote username, the router software uses the configured remote username, if one exists. Otherwise, the router software uses the username associated with the current TTY, if it is a valid name. If this name is invalid, the router software uses the host name as the username.
<i>remote-command</i>	Command to be executed remotely. This is a required parameter. Unlike UNIX, the router software does not default to a remote login. Instead, the router provides Telnet and connect services.

#### **[no] service compress-config**

To compress configuration files on the Cisco 7000 series, Cisco 4000, Cisco 3000, and AGS+ routers, which have NVRAM, use the **service compress-config** global configuration command. To disable compression, use the **no** form of this command.

#### **[no] service config**

To enable autoloading of configuration files from a network server, use the **service config** global configuration command. Use the **no** form of this command to restore the default.

#### **show async-bootp**

Use the **show async-bootp** privileged EXEC command to display the parameters that have been configured for SLIP extended BOOTP requests.

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### **System Image, Microcode Image, and Configuration File Load**

### **show bootflash**

To verify boot Flash memory, use the **show bootflash** EXEC command.

### **show configuration**

Use the **show configuration** EXEC command to display the contents of NVRAM, if present and valid.

NVRAM stores the configuration information in the network server in text form as configuration commands. The **show configuration** command shows the version number of the software used when you last executed the **write memory** command.

### **show flash [all | chips | detailed | err | partition number [all | chips | detailed | err] | summary]**

Use the **show flash** EXEC command to verify Flash memory. The **show flash** command displays the type of Flash memory present, any files that might currently exist in Flash memory, and the amounts of Flash memory used and remaining.

<b>all</b>	(Optional) Shows complete information about Flash memory, including information about the individual ROM devices in Flash memory and the names and sizes of all system image files stored in Flash, including those that are invalidated.
<b>chips</b>	(Optional) Shows information per partition and per chip, including which bank the chip is in, its code, size, and name.
<b>detailed</b>	(Optional) Shows detailed file directory information per partition, including file length, address, name, Flash checksum, computer checksum, bytes used, bytes available, total bytes, and bytes of system Flash memory.
<b>err</b>	(Optional) Shows write or erase failures in the form of number of retries.

<b>partition</b> <i>number</i>	(Optional) Shows output for the specified partition number. If you specify the <b>partition</b> keyword, you must specify a partition number. You can use this keyword only when Flash memory has multiple partitions.
<b>summary</b>	(Optional) Shows summary information per partition, including the partition size, bank size, state, and method by which files can be copied into a particular partition. You can use this keyword only when Flash memory has multiple partitions.

### **show flh-log**

To view the system console output generated during the Flash load helper operation, use the **show flh-log** privileged EXEC command.

### **show microcode**

To show the microcode bundled into a Cisco 7000 series system, use the **show microcode** EXEC command.

### **show version**

Use the **show version** EXEC command to display the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images.

**tftp-server system** [**flash:**][*partition-number:*]*filename*  
[*access-list-number*]

**no tftp-server system** [**flash:**] *filename* [*access-list-number*]

To specify TFTP server operation for a router, use the **tftp-server system** global configuration command. To remove a previously defined filename, use the **no** form of this command with the appropriate filename and, optionally, access-list number.

<i>filename</i>	Name you give the router ROM file.
<i>access-list-number</i>	(Optional) IP access list number.
<b>flash:</b>	(Optional) Specifies TFTP server operation from the file in the first partition of Flash memory.
<i>partition-number:</i>	(Optional) Specifies TFTP server operation from the file in the specified partition of Flash memory. If the partition number is not specified, the file in the first partition is used.

### **verify flash**

To verify the checksums of files in Flash memory, use the **verify flash** EXEC command.

### **write erase**

To erase the configuration information in NVRAM, use the **write erase** EXEC command.

### **write memory**

To copy the current configuration information to NVRAM, use the **write memory** EXEC command.

### **write network**

To copy the current configuration information to a network server, use the **write network** EXEC command.

### **write terminal**

To display the current configuration information on the terminal, use the **write terminal** EXEC command.