



Managing Configuration Files

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Prerequisites for Managing Configuration Files

- You should have at least a basic familiarity with the Cisco IOS environment and the command-line interface.
- You should have at least a minimal configuration running on your system. You can create a basic configuration file using the **setup** command.

Restrictions for Managing Configuration Files

- Many of the Cisco IOS commands described in this document are available and function only in certain configuration modes on the switch.
- Some of the Cisco IOS configuration commands are only available on certain switch platforms, and the command syntax may vary on different platforms.

Information About Managing Configuration Files

Types of Configuration Files

Configuration files contain the Cisco IOS software commands used to customize the functionality of your Cisco switch. Commands are parsed (translated and executed) by the Cisco IOS software when the system is booted (from the startup-config file) or when you enter commands at the CLI in a configuration mode.

Startup configuration files (startup-config) are used during system startup to configure the software. Running configuration files (running-config) contain the current configuration of the software. The two configuration

files can be different. For example, you may want to change the configuration for a short time period rather than permanently. In this case, you would change the running configuration using the **configure terminal** EXEC command but not save the configuration using the **copy running-config startup-config** EXEC command.

To change the running configuration, use the **configure terminal** command, as described in the [Modifying the Configuration File \(CLI\)](#) section. As you use the Cisco IOS configuration modes, commands generally are executed immediately and are saved to the running configuration file either immediately after you enter them or when you exit a configuration mode.

To change the startup configuration file, you can either save the running configuration file to the startup configuration using the **copy running-config startup-config** EXEC command or copy a configuration file from a file server to the startup configuration (see the [Copying a Configuration File from a TFTP Server to the Switch \(CLI\)](#) section for more information).

Configuration Mode and Selecting a Configuration Source

To enter configuration mode on the switch, enter the **configure** command at the privileged EXEC prompt. The Cisco IOS software responds with the following prompt asking you to specify the terminal, memory, or a file stored on a network server (network) as the source of configuration commands:

```
Configuring from terminal, memory, or network [terminal]?
```

Configuring from the terminal allows you to enter configuration commands at the command line, as described in the following section. See the [Re-executing the Configuration Commands in the Startup Configuration File \(CLI\)](#) section for more information.

Configuring from the network allows you to load and execute configuration commands over the network. See the [Copying a Configuration File from a TFTP Server to the Switch \(CLI\)](#) section for more information.

Configuration File Changes Using the CLI

The Cisco IOS software accepts one configuration command per line. You can enter as many configuration commands as you want. You can add comments to a configuration file describing the commands you have entered. Precede a comment with an exclamation point (!). Because comments are *not* stored in NVRAM or in the active copy of the configuration file, comments do not appear when you list the active configuration with the **show running-config** or **more system:running-config** EXEC command. Comments are not displayed when you list the startup configuration with the **show startup-config** or **more nvram:startup-config** EXEC mode command. Comments are stripped out of the configuration file when it is loaded onto the switch. However, you can list the comments in configuration files stored on a File Transfer Protocol (FTP), Remote Copy Protocol (RCP), or Trivial File Transfer Protocol (TFTP) server. When you configure the software using the CLI, the software executes the commands as you enter them.

Location of Configuration Files

Configuration files are stored in the following locations:

- The running configuration is stored in RAM.
- On all platforms except the Class A Flash file system platforms, the startup configuration is stored in nonvolatile random-access memory (NVRAM).

- On Class A Flash file system platforms, the startup configuration is stored in the location specified by the CONFIG_FILE environment variable (see the [Specifying the CONFIG_FILE Environment Variable on Class A Flash File Systems \(CLI\)](#) section). The CONFIG_FILE variable defaults to NVRAM and can be a file in the following file systems:
 - **nvr**am: (NVRAM)
 - **bootflash**: (internal flash memory)
 - **usbflash0**: (flash file system)

Copy Configuration Files from a Network Server to the Switch

You can copy configuration files from a TFTP, rcp, or FTP server to the running configuration or startup configuration of the switch. You may want to perform this function for one of the following reasons:

- To restore a backed-up configuration file.
- To use the configuration file for another switch. For example, you may add another switch to your network and want it to have a similar configuration to the original switch. By copying the file to the new switch, you can change the relevant parts rather than recreating the whole file.
- To load the same configuration commands on to all of the switches in your network so that all of the switches have similar configurations.

The **copy {ftp: | rcp: | tftp:}system:running-config** EXEC command loads the configuration files into the switch as if you were typing the commands on the command line. The switch does not erase the existing running configuration before adding the commands. If a command in the copied configuration file replaces a command in the existing configuration file, the existing command is erased. For example, if the copied configuration file contains a different IP address in a particular command than the existing configuration, the IP address in the copied configuration is used. However, some commands in the existing configuration may not be replaced or negated. In this case, the resulting configuration file is a mixture of the existing configuration file and the copied configuration file, with the copied configuration file having precedence.

To restore a configuration file to an exact copy of a file stored on a server, you need to copy the configuration file directly to the startup configuration (using the **copy ftp: | rcp: | tftp:} nvram:startup-config** command) and reload the switch.

To copy configuration files from a server to a switch, perform the tasks described in the following sections.

The protocol that you use depends on which type of server you are using. The FTP and rcp transport mechanisms provide faster performance and more reliable delivery of data than TFTP. These improvements are possible because the FTP and rcp transport mechanisms are built on and use the TCP/IP stack, which is connection-oriented.

Copying a Configuration File from the Switch to a TFTP Server

In some implementations of TFTP, you must create a dummy file on the TFTP server and give it read, write, and execute permissions before copying a file over it. Refer to your TFTP documentation for more information.

Copying a Configuration File from the Switch to an RCP Server

You can copy a configuration file from the switch to an RCP server.

One of the first attempts to use the network as a resource in the UNIX community resulted in the design and implementation of the remote shell protocol, which included the remote shell (rsh) and remote copy (rcp) functions. Rsh and rcp give users the ability to execute commands remotely and copy files to and from a file system residing on a remote host or server on the network. The Cisco implementation of rsh and rcp interoperates with standard implementations.

The rcp **copy** commands rely on the rsh server (or daemon) on the remote system. To copy files using rcp, you need not create a server for file distribution, as you do with TFTP. You need only have access to a server that supports the remote shell (rsh). (Most UNIX systems support rsh.) Because you are copying a file from one place to another, you must have read permission on the source file and write permission on the destination file. If the destination file does not exist, rcp creates it for you.

Although the Cisco rcp implementation emulates the functions of the UNIX rcp implementation—copying files among systems on the network—the Cisco command syntax differs from the UNIX rcp command syntax. The Cisco rcp support offers a set of **copy** commands that use rcp as the transport mechanism. These rcp **copy** commands are similar in style to the Cisco TFTP **copy** commands, but they offer an alternative that provides faster performance and reliable delivery of data. These improvements are possible because the rcp transport mechanism is built on and uses the TCP/IP stack, which is connection-oriented. You can use rcp commands to copy system images and configuration files from the switch to a network server and vice versa.

You also can enable rcp support to allow users on remote systems to copy files to and from the switch.

To configure the Cisco IOS software to allow remote users to copy files to and from the switch, use the **ip rcmd rcp-enable** global configuration command.

Restrictions

The RCP protocol requires a client to send a remote username on each RCP request to a server. When you copy a configuration file from the switch to a server using RCP, the Cisco IOS software sends the first valid username it encounters in the following sequence:

1. The username specified in the **copy EXEC** command, if a username is specified.
2. The username set by the **ip rcmd remote-username** global configuration command, if the command is configured.
3. The remote username associated with the current tty (terminal) process. For example, if the user is connected to the switch through Telnet and was authenticated through the **username** command, the switch software sends the Telnet username as the remote username.
4. The switch host name.

For the RCP copy request to execute successfully, an account must be defined on the network server for the remote username. If the server has a directory structure, the configuration file or image is written to or copied from the directory associated with the remote username on the server. For example, if the system image resides in the home directory of a user on the server, you can specify that user name as the remote username.

Use the **ip rcmd remote-username** command to specify a username for all copies. (Rcmd is a UNIX routine used at the super-user level to execute commands on a remote machine using an authentication scheme based on reserved port numbers. Rcmd stands for “remote command”). Include the username in the **copy** command if you want to specify a username for that copy operation only.

If you are writing to the server, the RCP server must be properly configured to accept the RCP write request from the user on the switch. For UNIX systems, you must add an entry to the .rhosts file for the remote user on the RCP server. For example, suppose the switch contains the following configuration lines:

```
hostname Switch1
ip rcmd remote-username User0
```

If the switch IP address translates to switch1.example.com, then the .rhosts file for User0 on the RCP server should contain the following line:

```
Switch1.example.com Switch1
```

Requirements for the RCP Username

The RCP protocol requires a client to send a remote username on each RCP request to a server. When you copy a configuration file from the switch to a server using RCP, the Cisco IOS software sends the first valid username it encounters in the following sequence:

1. The username specified in the **copy EXEC** command, if a username is specified.
2. The username set by the **ip rcmd remote-username** global configuration command, if the command is configured.
3. The remote username associated with the current tty (terminal) process. For example, if the user is connected to the switch through Telnet and is authenticated through the **username** command, the switch software sends the Telnet username as the remote username.
4. The switch host name.

For the RCP copy request to execute, an account must be defined on the network server for the remote username. If the server has a directory structure, the configuration file or image is written to or copied from the directory associated with the remote username on the server. For example, if the system image resides in the home directory of a user on the server, specify that user name as the remote username.

Refer to the documentation for your RCP server for more information.

Copying a Configuration File from the Switch to an FTP Server

You can copy a configuration file from the switch to an FTP server.

Understanding the FTP Username and Password

The FTP protocol requires a client to send a remote username and password on each FTP request to a server. When you copy a configuration file from the switch to a server using FTP, the Cisco IOS software sends the first valid username it encounters in the following sequence:

1. The username specified in the **copy EXEC** command, if a username is specified.
2. The username set by the **ip ftp username** global configuration command, if the command is configured.
3. Anonymous.

The switch sends the first valid password it encounters in the following sequence:

1. The password specified in the **copy** command, if a password is specified.
2. The password set by the **ip ftp password** command, if the command is configured.

- The switch forms a password `username @switchname.domain`. The variable `username` is the username associated with the current session, `switchname` is the configured host name, and `domain` is the domain of the switch.

The username and password must be associated with an account on the FTP server. If you are writing to the server, the FTP server must be properly configured to accept the FTP write request from the user on the switch.

If the server has a directory structure, the configuration file or image is written to or copied from the directory associated with the username on the server. For example, if the system image resides in the home directory of a user on the server, specify that user name as the remote username.

Refer to the documentation for your FTP server for more information.

Use the **ip ftp username** and **ip ftp password** global configuration commands to specify a username and password for all copies. Include the username in the **copy EXEC** command if you want to specify a username for that copy operation only.

Configuration Files Larger than NVRAM

To maintain a configuration file that exceeds the size of NVRAM, you should be aware of the information in the following sections.

Compressing the Configuration File

The **service compress-config** global configuration command specifies that the configuration file be stored compressed in NVRAM. Once the configuration file has been compressed, the switch functions normally. When the system is booted, it recognizes that the configuration file is compressed, expands it, and proceeds normally. The **more nvram:startup-config EXEC** command expands the configuration before displaying it.

Before you compress configuration files, refer to the appropriate hardware installation and maintenance publication. Verify that your system's ROMs support file compression. If not, you can install new ROMs that support file compression.

The size of the configuration must not exceed three times the NVRAM size. For a 128-KB size NVRAM, the largest expanded configuration file size is 384 KB.

The **service compress-config** global configuration command works only if you have Cisco IOS software Release 10.0 or later release boot ROMs. Installing new ROMs is a one-time operation and is necessary only if you do not already have Cisco IOS Release 10.0 in ROM. If the boot ROMs do not recognize a compressed configuration, the following message is displayed:

```
Boot ROMs do not support NVRAM compression Config NOT written to NVRAM
```

Storing the Configuration in Flash Memory on Class A Flash File Systems

On class A Flash file system switches, you can store the startup configuration in flash memory by setting the **CONFIG_FILE** environment variable to a file in internal flash memory or flash memory in a PCMCIA slot.

See the [Specifying the CONFIG_FILE Environment Variable on Class A Flash File Systems \(CLI\)](#) section for more information.

Care must be taken when editing or changing a large configuration. Flash memory space is used every time a **copy system:running-config nvram:startup-config EXEC** command is issued. Because file management for flash memory (such as optimizing free space) is not done automatically, you must pay close attention to

available flash memory. Use the **squeeze** command to reclaim used space. We recommend that you use a large-capacity Flash card of at least 20 MB.

Loading the Configuration Commands from the Network

You can also store large configurations on FTP, RCP, or TFTP servers and download them at system startup. To use a network server to store large configurations, see the [Copying a Configuration File from the Switch to a TFTP Server \(CLI\)](#) and [Configuring the Switch to Download Configuration Files](#) sections for more information on these commands.

Configuring the Switch to Download Configuration Files

You can configure the switch to load one or two configuration files at system startup. The configuration files are loaded into memory and read in as if you were typing the commands at the command line. Thus, the configuration for the switch is a mixture of the original startup configuration and the one or two downloaded configuration files.

Network Versus Host Configuration Files

For historical reasons, the first file the switch downloads is called the network configuration file. The second file the switch downloads is called the host configuration file. Two configuration files can be used when all of the switches on a network use many of the same commands. The network configuration file contains the standard commands used to configure all of the switches. The host configuration files contain the commands specific to one particular host. If you are loading two configuration files, the host configuration file should be the configuration file you want to have precedence over the other file. Both the network and host configuration files must reside on a network server reachable via TFTP, RCP, or FTP, and must be readable.

How to Manage Configuration File Information

Displaying Configuration File Information (CLI)

To display information about configuration files, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **show boot**
3. **more *file-url***
4. **show running-config**
5. **show startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example:	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.

	Command or Action	Purpose
	Switch> enable	
Step 2	show boot Example: Switch# show boot	Lists the contents of the BOOT environment variable (if set), the name of the configuration file pointed to by the CONFIG_FILE environment variable, and the contents of the BOOTLDR environment variable.
Step 3	more file-url Example: Switch# more 10.1.1.1	Displays the contents of a specified file.
Step 4	show running-config Example: Switch# show running-config	Displays the contents of the running configuration file. (Command alias for the more system:running-config command.)
Step 5	show startup-config Example: Switch# show startup-config	Displays the contents of the startup configuration file. (Command alias for the more nvram:startup-config command.) On all platforms except the Class A Flash file system platforms, the default startup-config file usually is stored in NVRAM. On the Class A Flash file system platforms, the CONFIG_FILE environment variable points to the default startup-config file. The CONFIG_FILE variable defaults to NVRAM.

Modifying the Configuration File (CLI)

The Cisco IOS software accepts one configuration command per line. You can enter as many configuration commands as you want. You can add comments to a configuration file describing the commands you have entered. Precede a comment with an exclamation point (!). Because comments are *not* stored in NVRAM or in the active copy of the configuration file, comments do not appear when you list the active configuration with the **show running-config** or **more system:running-config** EXEC commands. Comments do not display when you list the startup configuration with the **show startup-config** or **more nvram:startup-config** EXEC mode commands. Comments are stripped out of the configuration file when it is loaded onto the switch. However, you can list the comments in configuration files stored on a File Transfer Protocol (FTP), Remote Copy Protocol (RCP), or Trivial File Transfer Protocol (TFTP) server. When you configure the software using the CLI, the software executes the commands as you enter them. To configure the software using the CLI, use the following commands in privileged EXEC mode:

SUMMARY STEPS

1. enable
2. configure terminal

3. **configuration command**
4. Do one of the following:
 - **end**
 - **^Z**
5. **copy system:running-config nvram:startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Switch# configure terminal</pre>	Enters global configuration mode.
Step 3	configuration command Example: <pre>Switch(config)# configuration command</pre>	Enter the necessary configuration commands. The Cisco IOS documentation set describes configuration commands organized by technology.
Step 4	Do one of the following: <ul style="list-style-type: none"> • end • ^Z Example: <pre>Switch(config)# end</pre>	Ends the configuration session and exits to EXEC mode. <p>Note When you press the Ctrl and Z keys simultaneously, ^Z is displayed to the screen.</p>
Step 5	copy system:running-config nvram:startup-config Example: <pre>Switch# copy system:running-config nvram:startup-config</pre>	Saves the running configuration file as the startup configuration file. <p>You may also use the copy running-config startup-config command alias, but you should be aware that this command is less precise. On most platforms, this command saves the configuration to NVRAM. On the Class A Flash file system platforms, this step saves the configuration to the location specified by the CONFIG_FILE environment variable (the default CONFIG_FILE variable specifies that the file should be saved to NVRAM).</p>

Examples

In the following example, the switch prompt name of the switch is configured. The comment line, indicated by the exclamation mark (!), does not execute any command. The **hostname** command is

used to change the switch name from `switch` to `new_name`. By pressing Ctrl-Z (^Z) or entering the **end** command, the user quits configuration mode. The **copy system:running-config nvram:startup-config** command saves the current configuration to the startup configuration.

```
Switch# configure terminal
Switch(config)# !The following command provides the switch host name.
Switch(config)# hostname new_name
new_name(config)# end
new_name# copy system:running-config nvram:startup-config
```

When the startup configuration is NVRAM, it stores the current configuration information in text format as configuration commands, recording only non-default settings. The memory is checksummed to guard against corrupted data.



Note Some specific commands might not get saved to NVRAM. You need to enter these commands again if you reboot the machine. These commands are noted in the documentation. We recommend that you keep a list of these settings so that you can quickly reconfigure your switch after rebooting.

Copying a Configuration File from the Switch to a TFTP Server (CLI)

To copy configuration information on a TFTP network server, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **copy system:running-config tftp: [[[/location]/directory]/filename]**
3. **copy nvram:startup-config tftp: [[[/location]/directory]/filename]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	copy system:running-config tftp: [[[/location]/directory]/filename] Example: Switch# copy system:running-config tftp: //server1/topdir/file10	Copies the running configuration file to a TFTP server.
Step 3	copy nvram:startup-config tftp: [[[/location]/directory]/filename] Example:	Copies the startup configuration file to a TFTP server.

	Command or Action	Purpose
	Switch# copy nvram:startup-config tftp://server1/1stidir/file10	

Examples

The following example copies a configuration file from a switch to a TFTP server:

```
Switch# copy system:running-config tftp://172.16.2.155/tokyo-config
Write file tokyo-config on host 172.16.2.155? [confirm] Y
Writing tokyo-config!!! [OK]
```

What to Do Next

After you have issued the **copy** command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the **copy** command and the current setting of the **file prompt** global configuration command.

Copying a Configuration File from the Switch to an RCP Server (CLI)

To copy a startup configuration file or a running configuration file from the switch to an RCP server, use the following commands beginning in privileged EXEC mode:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip rcmd remote-username *username***
4. **end**
5. Do one of the following:
 - **copy system:running-config rcp: [[[/[*username@*]*location*]/*directory*]/*filename*]**
 - **copy nvram:startup-config rcp: [[[/[*username@*]*location*]/*directory*]/*filename*]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Switch# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
Step 3	ip rcmd remote-username <i>username</i> Example: Switch(config)# ip rcmd remote-username NetAdmin1	(Optional) Changes the default remote username.
Step 4	end Example: Switch(config)# end	(Optional) Exits global configuration mode.
Step 5	Do one of the following: <ul style="list-style-type: none"> • copy system:running-config rcp: [[[//[username@]location]/directory]/filename] • copy nvram:startup-config rcp: [[[//[username@]location]/directory]/filename] Example: Switch# copy system:running-config rcp: //NetAdmin1@example.com/dir-files/file1	<ul style="list-style-type: none"> • Specifies that the switch running configuration file is to be stored on an RCP server or • Specifies that the switch startup configuration file is to be stored on an RCP server

Examples

Storing a Running Configuration File on an RCP Server

The following example copies the running configuration file named runfile2-config to the netadmin1 directory on the remote host with an IP address of 172.16.101.101:

```
Switch# copy system:running-config rcp://netadmin1@172.16.101.101/runfile2-config
Write file runfile2-config on host 172.16.101.101?[confirm]
Building configuration...[OK]
Connected to 172.16.101.101
Switch#
```

Storing a Startup Configuration File on an RCP Server

The following example shows how to store a startup configuration file on a server by using RCP to copy the file:

```
Switch# configure terminal

Switch(config)# ip rcmd remote-username netadmin2

Switch(config)# end

Switch# copy nvram:startup-config rcp:

Remote host[ ]? 172.16.101.101

Name of configuration file to write [start-config]?
Write file start-config on host 172.16.101.101?[confirm]
![OK]
```

What to Do Next

After you have issued the **copy EXEC** command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the **copy** command and the current setting of the **file prompt** global configuration command.

Copying a Configuration File from the Switch to the FTP Server (CLI)

To copy a startup configuration file or a running configuration file from the switch to an FTP server, complete the following tasks:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip ftp username** *username*
4. **ip ftp password** *password*
5. **end**
6. Do one of the following:
 - **copy system:running-config ftp:** [[[/[*username* [:*password*]@]*location*]/*directory*]/*filename*]
 - or
 - **copy nvram:startup-config ftp:** [[[/[*username* [:*password*]@]*location*]/*directory*]/*filename*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Switch# configure terminal	Enters global configuration mode on the switch.
Step 3	ip ftp username <i>username</i> Example: Switch(config)# ip ftp username NetAdmin1	(Optional) Specifies the default remote username.
Step 4	ip ftp password <i>password</i> Example: Switch(config)# ip ftp password adminpassword	(Optional) Specifies the default password.

	Command or Action	Purpose
Step 5	end Example: Switch(config)# end	(Optional) Exits global configuration mode. This step is required only if you override the default remote username or password (see Steps 2 and 3).
Step 6	Do one of the following: <ul style="list-style-type: none"> • copy system:running-config ftp: [[[/[username[:password]@]location]/directory]/filename] or • copy nvram:startup-config ftp: [[[/[username[:password]@]location]/directory]/filename] Example: Switch# copy system:running-config ftp:	Copies the running configuration or startup configuration file to the specified location on the FTP server.

Examples

Storing a Running Configuration File on an FTP Server

The following example copies the running configuration file named runfile-config to the netadmin1 directory on the remote host with an IP address of 172.16.101.101:

```
Switch# copy system:running-config ftp://netadmin1:mypass@172.16.101.101/runfile-config
Write file runfile-config on host 172.16.101.101?[confirm]
Building configuration...[OK]
Connected to 172.16.101.101
Switch#
```

Storing a Startup Configuration File on an FTP Server

The following example shows how to store a startup configuration file on a server by using FTP to copy the file:

```
Switch# configure terminal

Switch(config)# ip ftp username netadmin2

Switch(config)# ip ftp password mypass

Switch(config)# end

Switch# copy nvram:startup-config ftp:

Remote host[ ]? 172.16.101.101

Name of configuration file to write [start-config]?
Write file start-config on host 172.16.101.101?[confirm]
![OK]
```

What to Do Next

After you have issued the **copy EXEC** command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the **copy** command and the current setting of the **file prompt** global configuration command.

Copying a Configuration File from a TFTP Server to the Switch (CLI)

To copy a configuration file from a TFTP server to the switch, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **copy tftp:** [[[//location]/directory]/filename] **system:running-config**
3. **copy tftp:** [[[//location]/directory]/filename] **nvrn:startup-config**
4. **copy tftp:** [[[//location]/directory]/filename] **flash-[n]:/directory/startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	copy tftp: [[[//location]/directory]/filename] system:running-config Example: <pre>Switch# copy tftp://server1/dir10/datasource system:running-config</pre>	Copies a configuration file from a TFTP server to the running configuration.
Step 3	copy tftp: [[[//location]/directory]/filename] nvrn:startup-config Example: <pre>Switch# copy tftp://server1/dir10/datasource nvrn:startup-config</pre>	Copies a configuration file from a TFTP server to the startup configuration.
Step 4	copy tftp: [[[//location]/directory]/filename] flash-[n]:/directory/startup-config Example: <pre>Switch# copy tftp://server1/dir10/datasource flash:startup-config</pre>	Copies a configuration file from a TFTP server to the startup configuration.

Examples

In the following example, the software is configured from the file named `tokyo-config` at IP address 172.16.2.155:

```
Switch# copy tftp://172.16.2.155/tokyo-config system:running-config

Configure using tokyo-config from 172.16.2.155? [confirm] Y

Booting tokyo-config from 172.16.2.155:!!! [OK - 874/16000 bytes]
```

What to Do Next

After you have issued the `copy EXEC` command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the `copy` command and the current setting of the `file prompt` global configuration command.

Copying a Configuration File from the rcp Server to the Switch (CLI)

To copy a configuration file from an rcp server to the running configuration or startup configuration, complete the following tasks:

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `ip rcmd remote-username username`
4. `end`
5. Do one of the following:
 - `copy rcp:[[//[username@]location]/directory]/filename]system:running-config`
 - `copy rcp:[[//[username@]location]/directory]/filename]nvram:startup-config`

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><code>enable</code></p> <p>Example:</p> <pre>Switch> enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<p><code>configure terminal</code></p> <p>Example:</p> <pre>Switch# configure terminal</pre>	<p>(Optional) Enters configuration mode from the terminal. This step is required only if you override the default remote username (see Step 3).</p>
Step 3	<p><code>ip rcmd remote-username username</code></p> <p>Example:</p>	<p>(Optional) Specifies the remote username.</p>

	Command or Action	Purpose
	Switch(config)# ip rcmd remote-username NetAdmin1	
Step 4	end Example: Switch(config)# end	(Optional) Exits global configuration mode. This step is required only if you override the default remote username (see Step 2).
Step 5	Do one of the following: <ul style="list-style-type: none"> • copy rcp:[username@]location\directory\filename system:running-config • copy rcp:[username@]location\directory\filename nvram:startup-config Example: Switch# copy rcp://[user1@example.com/dir10/fileone] nvram:startup-config	Copies the configuration file from an rcp server to the running configuration or startup configuration.

Examples

Copy RCP Running-Config

The following example copies a configuration file named host1-config from the netadmin1 directory on the remote server with an IP address of 172.16.101.101, and loads and runs the commands on the switch:

```
Switch# copy rcp://netadmin1@172.16.101.101/host1-config system:running-config
Configure using host1-config from 172.16.101.101? [confirm]
Connected to 172.16.101.101
Loading 1112 byte file host1-config:![OK]
Switch#
%SYS-5-CONFIG: Configured from host1-config by rcp from 172.16.101.101
```

Copy RCP Startup-Config

The following example specifies a remote username of netadmin1. Then it copies the configuration file named host2-config from the netadmin1 directory on the remote server with an IP address of 172.16.101.101 to the startup configuration.

```
Switch# configure terminal
Switch(config)# ip rcmd remote-username netadmin1
Switch(config)# end
Switch# copy rcp: nvram:startup-config
Address of remote host [255.255.255.255]? 172.16.101.101
Name of configuration file[rtr2-config]? host2-config
Configure using host2-config from 172.16.101.101?[confirm]
Connected to 172.16.101.101
Loading 1112 byte file host2-config:![OK]
[OK]
Switch#
%SYS-5-CONFIG_NV:Non-volatile store configured from host2-config by rcp from 172.16.101.101
```

What to Do Next

After you have issued the **copy EXEC** command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the **copy** command and the current setting of the **file prompt** global configuration command.

Copying a Configuration File from an FTP Server to the Switch (CLI)

To copy a configuration file from an FTP server to the running configuration or startup configuration, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip ftp username** *username*
4. **ip ftp password** *password*
5. **end**
6. Do one of the following:
 - **copy ftp:** `[[[//[username[:password]@]location] /directory]/filename]system:running-config`
 - **copy ftp:** `[[[//[username[:password]@]location]/directory]/filename]nvram:startup-config`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Switch# configure terminal	(Optional) Allows you to enter global configuration mode. This step is required only if you want to override the default remote username or password (see Steps 3 and 4).
Step 3	ip ftp username <i>username</i> Example: Switch(config)# ip ftp username NetAdmin1	(Optional) Specifies the default remote username.
Step 4	ip ftp password <i>password</i> Example: Switch(config)# ip ftp password adminpassword	(Optional) Specifies the default password.

	Command or Action	Purpose
Step 5	end Example: Switch(config)# end	(Optional) Exits global configuration mode. This step is required only if you override the default remote username or password (see Steps 3 and 4).
Step 6	Do one of the following: <ul style="list-style-type: none"> • copy ftp: [[[/[username]:password]@]location] /directory]/filename]system:running-config • copy ftp: [[[/[username]:password]@]location] /directory]/filename]nvram:startup-config Example: Switch# copy ftp:nvram:startup-config	Using FTP copies the configuration file from a network server to running memory or the startup configuration.

Examples

Copy FTP Running-Config

The following example copies a host configuration file named host1-config from the netadmin1 directory on the remote server with an IP address of 172.16.101.101, and loads and runs the commands on the switch:

```
Switch# copy ftp://netadmin1:mypass@172.16.101.101/host1-config system:running-config
Configure using host1-config from 172.16.101.101? [confirm]
Connected to 172.16.101.101
Loading 1112 byte file host1-config:[OK]
Switch#
%SYS-5-CONFIG: Configured from host1-config by ftp from 172.16.101.101
```

Copy FTP Startup-Config

The following example specifies a remote username of netadmin1. Then it copies the configuration file named host2-config from the netadmin1 directory on the remote server with an IP address of 172.16.101.101 to the startup configuration:

```
Switch# configure terminal
Switch(config)# ip ftp username netadmin1
Switch(config)# ip ftp password mypass
Switch(config)# end
Switch# copy ftp: nvram:startup-config
Address of remote host [255.255.255.255]? 172.16.101.101
Name of configuration file[host1-config]? host2-config
Configure using host2-config from 172.16.101.101?[confirm]
Connected to 172.16.101.101
Loading 1112 byte file host2-config:[OK]
[OK]
Switch#
%SYS-5-CONFIG_NV:Non-volatile store configured from host2-config by ftp from 172.16.101.101
```

What to Do Next

After you have issued the **copy EXEC** command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the **copy** command and the current setting of the **file prompt** global configuration command.

Maintaining Configuration Files Larger than NVRAM

To maintain a configuration file that exceeds the size of NVRAM, perform the tasks described in the following sections:

Compressing the Configuration File (CLI)

To compress configuration files, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **service compress-config**
4. **end**
5. Do one of the following:
 - Use FTP, RCP, or TFTP to copy the new configuration.
 - **configure terminal**
6. **copy system:running-config nvram:startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Switch# configure terminal	Enters global configuration mode.
Step 3	service compress-config Example: Switch(config)# service compress-config	Specifies that the configuration file be compressed.
Step 4	end Example: Switch(config)# end	Exits global configuration mode.

	Command or Action	Purpose
Step 5	Do one of the following: <ul style="list-style-type: none"> • Use FTP, RCP, or TFTP to copy the new configuration. • configure terminal Example: <pre>Switch# configure terminal</pre>	Enters the new configuration: <ul style="list-style-type: none"> • If you try to load a configuration that is more than three times larger than the NVRAM size, the following error message is displayed: “[buffer overflow - <i>file-size</i> /<i>buffer-size</i> bytes].”
Step 6	copy system:running-config nvram:startup-config Example: <pre>Switch(config)# copy system:running-config nvram:startup-config</pre>	When you have finished changing the running-configuration, save the new configuration.

Examples

The following example compresses a 129-KB configuration file to 11 KB:

```
Switch# configure terminal
Switch(config)# service compress-config
Switch(config)# end
Switch# copy tftp://172.16.2.15/tokyo-config system:running-config
Configure using tokyo-config from 172.16.2.155? [confirm] y
Booting tokyo-config from 172.16.2.155:!!! [OK - 874/16000 bytes]
Switch# copy system:running-config nvram:startup-config
Building configuration...
Compressing configuration from 129648 bytes to 11077 bytes
[OK]
```

Storing the Configuration in Flash Memory on Class A Flash File Systems (CLI)

To store the startup configuration in flash memory, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **copy nvram:startup-config** *flash-filesystem:filename*
3. **configure terminal**
4. **boot config flash-filesystem:** *filename*
5. **end**
6. Do one of the following:

- Use FTP, RCP, or TFTP to copy the new configuration. If you try to load a configuration that is more than three times larger than the NVRAM size, the following error message is displayed: “[buffer overflow - *file-size* /*buffer-size* bytes].”
- **configure terminal**

7. copy system:running-config nvram:startup-config

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	copy nvram:startup-config <i>flash-filesystem:filename</i> Example: Switch# copy nvram:startup-config usbflash0:switch-config	Copies the current startup configuration to the new location to create the configuration file.
Step 3	configure terminal Example: Switch# configure terminal	Enters global configuration mode.
Step 4	boot config flash-filesystem: <i>filename</i> Example: Switch(config)# boot config usbflash0:switch-config	Specifies that the startup configuration file be stored in flash memory by setting the CONFIG_FILE variable.
Step 5	end Example: Switch(config)# end	Exits global configuration mode.
Step 6	Do one of the following: <ul style="list-style-type: none"> • Use FTP, RCP, or TFTP to copy the new configuration. If you try to load a configuration that is more than three times larger than the NVRAM size, the following error message is displayed: “[buffer overflow - <i>file-size</i> /<i>buffer-size</i> bytes].” • configure terminal Example: Switch# configure terminal	Enters the new configuration.

	Command or Action	Purpose
Step 7	copy system:running-config nvram:startup-config Example: <pre>Switch(config)# copy system:running-config nvram:startup-config</pre>	When you have finished changing the running-configuration, save the new configuration.

Examples

The following example stores the configuration file in usbflash0:

```
Switch# copy nvram:startup-config usbflash0:switch-config

Switch# configure terminal

Switch(config)# boot config usbflash0:switch-config

Switch(config)# end

Switch# copy system:running-config nvram:startup-config
```

Loading the Configuration Commands from the Network (CLI)

To use a network server to store large configurations, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **copy system:running-config {ftp: | rcp: | tftp:}**
3. **configure terminal**
4. **boot network {ftp:[[/[username [:password]@]location]/directory]/filename] | rcp:[[/[username@]location]/directory]/filename] | tftp:[[/location]/directory]/filename }**
5. **service config**
6. **end**
7. **copy system:running-config nvram:startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	copy system:running-config {ftp: rcp: tftp:} Example: <pre>Switch# copy system:running-config ftp:</pre>	Saves the running configuration to an FTP, RCP, or TFTP server.

	Command or Action	Purpose
Step 3	configure terminal Example: Switch# configure terminal	Enters global configuration mode.
Step 4	boot network { ftp :[[[//[<i>username</i> [: <i>password</i>]@] <i>location</i>]/ <i>directory</i>]/ <i>filename</i>] rcp :[[[//[<i>username</i> @] <i>location</i>]/ <i>directory</i>]/ <i>filename</i>] tftp :[[[//[<i>location</i>]/ <i>directory</i>]/ <i>filename</i>]} Example: Switch(config)# boot network ftp://user1:guessme@example.com/dir10/file1	Specifies that the startup configuration file be loaded from the network server at startup.
Step 5	service config Example: Switch(config)# service config	Enables the switch to download configuration files at system startup.
Step 6	end Example: Switch(config)# end	Exits global configuration mode.
Step 7	copy system:running-config nvram:startup-config Example: Switch# copy system:running-config nvram:startup-config	Saves the configuration.

Copying Configuration Files from Flash Memory to the Startup or Running Configuration (CLI)

To copy a configuration file from flash memory directly to your startup configuration in NVRAM or your running configuration, enter one of the commands in Step 2:

SUMMARY STEPS

1. **enable**
2. Do one of the following:
 - **copy filesystem:** [*partition-number*:][*filename*] **nvram:startup-config**
 - **copy filesystem:** [*partition-number*:][*filename*] **system:running-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	Do one of the following: <ul style="list-style-type: none"> • copy filesystem: [partition-number:][filename] nvram:startup-config • copy filesystem: [partition-number:][filename] system:running-config Example: <pre>Switch# copy usbflash0:4:ios-upgrade-1 nvram:startup-config</pre>	<ul style="list-style-type: none"> • Loads a configuration file directly into NVRAM or • Copies a configuration file to your running configuration

Examples

The following example copies the file named ios-upgrade-1 from partition 4 of the flash memory PC Card in usbflash0 to the switch startup configurations:

```
Switch# copy usbflash0:4:ios-upgrade-1 nvram:startup-config
Copy 'ios-upgrade-1' from flash device as 'startup-config' ? [yes/no] yes
[OK]
```

Copying Configuration Files Between Flash Memory File Systems (CLI)

On platforms with multiple flash memory file systems, you can copy files from one flash memory file system, such as internal flash memory to another flash memory file system. Copying files to different flash memory file systems lets you create backup copies of working configurations and duplicate configurations for other switches. To copy a configuration file between flash memory file systems, use the following commands in EXEC mode:

SUMMARY STEPS

1. **enable**
2. **show source-filesystem:**
3. **copy source-filesystem: [partition-number:][filename] dest-filesystem:[partition-number:][filename]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.

Copying a Configuration File from an FTP Server to Flash Memory Devices (CLI)

To copy a configuration file from an FTP server to a flash memory device, complete the task in this section:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip ftp username** *username*
4. **ip ftp password** *password*
5. **end**
6. **copy ftp:** `[[//location]/directory]/bundle_name flash:`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Switch# configure terminal</pre>	(Optional) Enters global configuration mode. This step is required only if you override the default remote username or password (see Steps 3 and 4).
Step 3	ip ftp username <i>username</i> Example: <pre>Switch(config)# ip ftp username Admin01</pre>	(Optional) Specifies the remote username.
Step 4	ip ftp password <i>password</i> Example: <pre>Switch(config)# ip ftp password adminpassword</pre>	(Optional) Specifies the remote password.
Step 5	end Example: <pre>Switch(config)# end</pre>	(Optional) Exits configuration mode. This step is required only if you override the default remote username (see Steps 3 and 4).
Step 6	copy ftp: <code>[[//location]/directory]/bundle_name flash:</code> Example: <pre>Switch>copy ftp:/cat3k_caa-universalk9.SSA.03.12.02.EZP.150-12.02.EZP.150-12.02.EZP.bin flash:</pre>	Copies the configuration file from a network server to the flash memory device using FTP.

What to Do Next

After you have issued the **copy EXEC** command, you may be prompted for additional information or for confirmation of the action. The prompt displayed depends on how much information you provide in the **copy** command and the current setting of the **file prompt** global configuration command.

Copying a Configuration File from an RCP Server to Flash Memory Devices (CLI)

To copy a configuration file from an RCP server to a flash memory device, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip rcmd remote-username *username***
4. **end**
5. **copy rcp: [[[/[*username@*]/*location*]/*directory*] /*bundle_name*] flash:**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Switch# configure terminal</pre>	(Optional) Enters global configuration mode. This step is required only if you override the default remote username or password (see Step 3).
Step 3	ip rcmd remote-username <i>username</i> Example: <pre>Switch(config)# ip rcmd remote-username Admin01</pre>	(Optional) Specifies the remote username.
Step 4	end Example: <pre>Switch(config)# end</pre>	(Optional) Exits configuration mode. This step is required only if you override the default remote username or password (see Step 3).
Step 5	copy rcp: [[[/[<i>username@</i>]/<i>location</i>]/<i>directory</i>] /<i>bundle_name</i>] flash: Example: <pre>Switch# copy rcp://netadmin@172.16.101.101/bundle1 flash:</pre>	Copies the configuration file from a network server to the flash memory device using RCP. Respond to any switch prompts for additional information or confirmation. Prompting depends on how much information you provide in the copy command and the current setting of the file prompt command.

Copying a Configuration File from a TFTP Server to Flash Memory Devices (CLI)

To copy a configuration file from a TFTP server to a flash memory device, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **copy tftp:** [[[//location]/directory]/bundle_name **flash:**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	copy tftp: [[[//location]/directory]/bundle_name flash: Example: <pre>Switch# copy tftp://cat3k_caa-universalk9.SSA.03.12.02.EZP.150-12.02.EZP.150-12.02.EZP.bin flash:</pre>	Copies the file from a TFTP server to the flash memory device. Reply to any switch prompts for additional information or confirmation. Prompting depends on how much information you provide in the copy command and the current setting of the file prompt command.

Examples

The following example shows the copying of the configuration file named switch-config from a TFTP server to the flash memory card inserted in usbflash0. The copied file is renamed new-config.

```
Switch#
copy tftp:switch-config usbflash0:new-config
```

Re-executing the Configuration Commands in the Startup Configuration File (CLI)

To re-execute the commands located in the startup configuration file, complete the task in this section:

SUMMARY STEPS

1. **enable**
2. **configure memory**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure memory Example: Switch# configure memory	Re-executes the configuration commands located in the startup configuration file.

Clearing the Startup Configuration (CLI)

You can clear the configuration information from the startup configuration. If you reboot the switch with no startup configuration, the switch enters the Setup command facility so that you can configure the switch from scratch. To clear the contents of your startup configuration, complete the task in this section:

SUMMARY STEPS

1. enable
2. erase nvram

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	erase nvram Example: Switch# erase nvram	Clears the contents of your startup configuration. <p>Note For all platforms except the Class A Flash file system platforms, this command erases NVRAM. The startup configuration file cannot be restored once it has been deleted. On Class A Flash file system platforms, when you use the erase startup-config EXEC command, the switch erases or deletes the configuration pointed to by the CONFIG_FILE environment variable. If this variable points to NVRAM, the switch erases NVRAM. If the CONFIG_FILE environment variable specifies a flash memory device and configuration filename, the switch deletes the configuration file. That is, the switch marks the file as “deleted,” rather than erasing it. This feature allows you to recover a deleted file.</p>

Deleting a Specified Configuration File (CLI)

To delete a specified configuration on a specific flash device, complete the task in this section:

SUMMARY STEPS

1. **enable**
2. **delete** *flash-filesystem:filename*

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	delete <i>flash-filesystem:filename</i> Example: <pre>Switch# delete usbflash0:myconfig</pre>	Deletes the specified configuration file on the specified flash device. <p>Note On Class A and B Flash file systems, when you delete a specific file in flash memory, the system marks the file as deleted, allowing you to later recover a deleted file using the undelete EXEC command. Erased files cannot be recovered. To permanently erase the configuration file, use the squeeze EXEC command. On Class C Flash file systems, you cannot recover a file that has been deleted. If you attempt to erase or delete the configuration file specified by the CONFIG_FILE environment variable, the system prompts you to confirm the deletion.</p>

Specifying the CONFIG_FILE Environment Variable on Class A Flash File Systems (CLI)

On Class A flash file systems, you can configure the Cisco IOS software to load the startup configuration file specified by the CONFIG_FILE environment variable. The CONFIG_FILE variable defaults to NVRAM. To change the CONFIG_FILE environment variable, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **copy** [*flash-url* | *ftp-url* | *rcp-url* | *tftp-url* | **system:running-config** | **nvram:startup-config**] *dest-flash-url*
3. **configure terminal**
4. **boot config** *dest-flash-url*
5. **end**
6. **copy** **system:running-config** **nvram:startup-config**

7. show boot

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Switch> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	copy [<i>flash-url</i> <i>ftp-url</i> <i>rcp-url</i> <i>tftp-url</i> system:running-config nvrnram:startup-config] <i>dest-flash-url</i> Example: Switch# copy system:running-config nvrnram:startup-config	Copies the configuration file to the flash file system from which the switch loads the file on restart.
Step 3	configure terminal Example: Switch# configure terminal	Enters global configuration mode.
Step 4	boot config <i>dest-flash-url</i> Example: Switch(config)# boot config 172.16.1.1	Sets the CONFIG_FILE environment variable. This step modifies the runtime CONFIG_FILE environment variable.
Step 5	end Example: Switch(config)# end	Exits global configuration mode.
Step 6	copy system:running-config nvrnram:startup-config Example: Switch# copy system:running-config nvrnram:startup-config	Saves the configuration performed in Step 3 to the startup configuration.
Step 7	show boot Example: Switch# show boot	(Optional) Allows you to verify the contents of the CONFIG_FILE environment variable.

Examples

The following example copies the running configuration file to the switch. This configuration is then used as the startup configuration when the system is restarted:


```
Switch# copy system:running-config usbflash0:config2
Switch# configure terminal
Switch(config)# boot config usbflash0:config2
Switch(config)# end
Switch# copy system:running-config nvram:startup-config
[ok]
Switch# show boot
BOOT variable = usbflash0:rsp-boot-m
CONFIG_FILE variable = nvram:
Current CONFIG_FILE variable = usbflash0:config2
Configuration register is 0x010F
```

What to Do Next

After you specify a location for the startup configuration file, the **nvram:startup-config** command is aliased to the new location of the startup configuration file. The **more nvram:startup-config EXEC** command displays the startup configuration, regardless of its location. The **erase nvram:startup-config EXEC** command erases the contents of NVRAM and deletes the file pointed to by the CONFIG_FILE environment variable.

When you save the configuration using the **copy system:running-config nvram:startup-config** command, the switch saves a complete version of the configuration file to the location specified by the CONFIG_FILE environment variable and a distilled version to NVRAM. A distilled version is one that does not contain access list information. If NVRAM contains a complete configuration file, the switch prompts you to confirm your overwrite of the complete version with the distilled version. If NVRAM contains a distilled configuration, the switch does not prompt you for confirmation and proceeds with overwriting the existing distilled configuration file in NVRAM.



Note If you specify a file in a flash device as the CONFIG_FILE environment variable, every time you save your configuration file with the **copy system:running-config nvram:startup-config** command, the old configuration file is marked as “deleted,” and the new configuration file is saved to that device. Eventually, Flash memory fills up as the old configuration files still take up memory. Use the **squeeze EXEC** command to permanently delete the old configuration files and reclaim the space.

Configuring the Switch to Download Configuration Files

You can specify an ordered list of network configuration and host configuration filenames. The Cisco IOS XE software scans this list until it loads the appropriate network or host configuration file.

To configure the switch to download configuration files at system startup, perform at least one of the tasks described in the following sections:

- [Configuring the Switch to Download the Network Configuration File \(CLI\)](#)
- [Configuring the Switch to Download the Host Configuration File \(CLI\)](#)

If the switch fails to load a configuration file during startup, it tries again every 10 minutes (the default setting) until a host provides the requested files. With each failed attempt, the switch displays the following message on the console terminal:

```
Booting host-config... [timed out]
```

If there are any problems with the startup configuration file, or if the configuration register is set to ignore NVRAM, the switch enters the Setup command facility.

Configuring the Switch to Download the Network Configuration File (CLI)

To configure the Cisco IOS software to download a network configuration file from a server at startup, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **boot network** {**ftp**:[[[//*username* [:*password*]@]*location*]/*directory*]/*filename*] | **rcp**:[[[//*username*@]*location*]/*directory*]/*filename*] | **tftp**:[[[//*location*]/*directory*]/*filename*]}
4. **service config**
5. **end**
6. **copy system:running-config nvram:startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Switch# configure terminal</pre>	Enters global configuration mode.
Step 3	boot network { ftp :[[[// <i>username</i> [: <i>password</i>]@] <i>location</i>]/ <i>directory</i>]/ <i>filename</i>] rcp :[[[// <i>username</i> @] <i>location</i>]/ <i>directory</i>]/ <i>filename</i>] tftp :[[[// <i>location</i>]/ <i>directory</i>]/ <i>filename</i>]} Example: <pre>Switch(config)# boot network tftp:hostfile1</pre>	Specifies the network configuration file to download at startup, and the protocol to be used (TFTP, RCP, or FTP). <ul style="list-style-type: none"> • If you do not specify a network configuration filename, the Cisco IOS software uses the default filename <code>network-config</code>. If you omit the address, the switch uses the broadcast address. • You can specify more than one network configuration file. The software tries them in order entered until it loads one. This procedure can be useful for keeping files with different configuration information loaded on a network server.
Step 4	service config Example: <pre>Switch(config)# service config</pre>	Enables the system to automatically load the network file on restart.

	Command or Action	Purpose
Step 5	end Example: <pre>Switch(config)# end</pre>	Exits global configuration mode.
Step 6	copy system:running-config nvram:startup-config Example: <pre>Switch# copy system:running-config nvram:startup-config</pre>	Saves the running configuration to the startup configuration file.

Configuring the Switch to Download the Host Configuration File (CLI)

To configure the Cisco IOS software to download a host configuration file from a server at startup, complete the tasks in this section:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **boot host {ftp:[[/[username [:password]@]location]/directory]/filename] | rcp:[[/[username@]location]/directory]/filename] | tftp:[[/location]/directory]/filename } }**
4. **service config**
5. **end**
6. **copy system:running-config nvram:startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: <pre>Switch> enable</pre>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Switch# configure terminal</pre>	Enters global configuration mode.
Step 3	boot host {ftp:[[/[username [:password]@]location]/directory]/filename] rcp:[[/[username@]location]/directory]/filename] tftp:[[/location]/directory]/filename } } Example: <pre>Switch(config)# boot host tftp:hostfile1</pre>	Specifies the host configuration file to download at startup, and the protocol to be used (FTP, RCP, or TFTP): <ul style="list-style-type: none"> • If you do not specify a host configuration filename, the switch uses its own name to form a host configuration filename by converting the name to all lowercase letters, removing all domain information, and appending “-config.” If no host name information

	Command or Action	Purpose
		<p>is available, the software uses the default host configuration filename <code>switch-config</code>. If you omit the address, the switch uses the broadcast address.</p> <ul style="list-style-type: none"> You can specify more than one host configuration file. The Cisco IOS software tries them in order entered until it loads one. This procedure can be useful for keeping files with different configuration information loaded on a network server.
Step 4	<p>service config</p> <p>Example:</p> <pre>Switch(config)# service config</pre>	Enables the system to automatically load the host file upon restart.
Step 5	<p>end</p> <p>Example:</p> <pre>Switch(config)# end</pre>	Exits global configuration mode.
Step 6	<p>copy system:running-config nvram:startup-config</p> <p>Example:</p> <pre>Switch# copy system:running-config nvram:startup-config</pre>	Saves the running configuration to the startup configuration file.

Example

In the following example, a switch is configured to download the host configuration file named `hostfile1` and the network configuration file named `networkfile1`. The switch uses TFTP and the broadcast address to obtain the file:

```
Switch# configure terminal
Switch(config)# boot host tftp:hostfile1
Switch(config)# boot network tftp:networkfile1
Switch(config)# service config
Switch(config)# end
Switch# copy system:running-config nvram:startup-config
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases

Related Topic	Document Title
Cisco IOS configuration commands	<i>Cisco IOS Configuration Fundamentals Command Reference</i>

Error Message Decoder

Description	Link
To help you research and resolve system error messages in this release, use the Error Message Decoder tool.	https://www.cisco.com/cgi-bin/Support/Errordecoder/index.cgi

Standards

Standard	Title
No new or modified standards are supported, and support for existing standards has not been modified	--

MIBs

MIB	MIBs Link
<ul style="list-style-type: none"> No new or modified MIBs are supported, and support for existing MIBs has not been modified. 	<p>To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p>http://www.cisco.com/go/mibs</p>

RFCs

RFC	Title
No new or modified RFCs are supported, and support for existing RFCs has not been modified.	--

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

