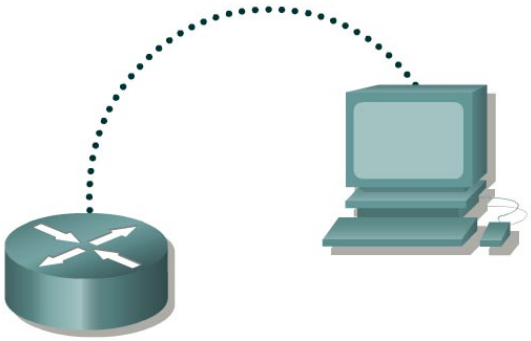
Lab 3.1.4 Using Router `show` Commands – Instructor Version 2500



Straight-through cable	
Serial cable	
Console (Rollover)	
Crossover cable	

Objective

- Become familiar with the basic router **`show`** commands.
- Retrieve the current running configuration from RAM using **`show running-config`**.
- View the backup configuration file in NVRAM using **`show startup-config`**.
- View the IOS file information using **`show flash`** and **`show version`**.
- View the current status of the router interfaces using **`show interface`**.
- View the status of any configured Layer 3 protocol using **`show protocols`**.

Background/Preparation

This lab helps the student become familiar with the router **`show`** commands. The **`show`** commands are the most important information-gathering commands available for the router.

- **`show running-config`** (or **`show run`**) is probably the single most valuable command to help determine the current status of a router, because it displays the active configuration file running in RAM.
- **`show startup-config`** (or **`show start`**) displays the backup configuration file that is stored in non-volatile RAM (NVRAM). This is the file that will be used to configure the router when it is first started or rebooted with the **`reload`** command. All the detailed router interface settings are contained in this file.
- **`show flash`** is used to view the available flash memory and the amount used. Flash is where the Cisco Internetwork Operating System (IOS) file or image is stored.

- **show arp** displays the routers address resolution table.
- **show interfaces** displays statistics for all interfaces configured on the router.
- **show protocols** displays global and interface-specific status of configured Layer 3 protocols, such as IP and IPX.

Any router that meets the interface requirements may be used. Possible routers include 800, 1600, 1700, 2500, 2600 routers, or a combination. Refer to the chart at the end of the lab to correctly identify the interface identifiers to be used based on the equipment in the lab. The configuration output used in this lab is produced from 1721 series routers. Any other router used may produce slightly different output. The following steps are intended to be executed on each router unless specifically instructed otherwise.

Start a HyperTerminal session as performed in the Establishing a HyperTerminal session lab.

Step 1 Log on to the router

a. Connect to the router and log on. If prompted, enter the password **cisco**.

Step 2 Enter the help command

a. Enter the **help** command by typing **?** at the router prompt. The router responds with all commands available in user mode.

b. What did the router reply with? A list of available commands was displayed

c. Are all router commands available at the current prompt? No, only those available at the command level.

d. Is **show** one of the options available? Yes.

Step 3 Display help for the show command

a. Enter the **show ?** command. The router responds with the **show** subcommands available in user mode.

b. List three user mode **show** subcommands.

show Subcommand	Description
clock	Display the system clock.
flash:	Display information about the flash: filesystem.
users	Display informationabout the terminal lines.

Step 4 Display IOS version and other important information with the show version command

a. Enter the **show version** command. The router will return information about the IOS that is running in RAM.

b. What is the IOS version? Results will vary

c. What is the name of the system image (IOS) file? Results will vary

d. Where was the router IOS image booted from? Results will vary

e. What type of processor (CPU) and how much RAM does this router have?

Results will vary

f. How many Ethernet interfaces does this router have? 1 or 2 How many serial interfaces? 1 or 2

g. The router backup configuration file is stored in non-volatile random access memory (NVRAM). How much NVRAM does this router have? Results will vary.

h. The router operating system (IOS) is stored in Flash memory. How much Flash memory does this router have? Results will vary.

i. What is the configuration register set to? 0x2104

Step 5 Display the time and date for the router

a. Enter the **show clock** command. What information is displayed? Results will vary.

Step 6 Display a cached list of host names and addresses

a. Enter the **show hosts** command. What information is displayed with **show hosts**?

Results will vary.

Step 7 Display users who are connected to the router

a. Enter the **show users** command. What information is displayed with **show users**?

Results will vary.

Step 8 Show the command buffer

a. Enter the **show history** command. What information is displayed with **show history**?

A list of the commands entered

Step 9 Enter privileged EXEC mode

a. From user EXEC mode, enter privileged EXEC mode using the **enable** command.

b. Enter the enable password **class**. (If required)

c. What command did you use to enter privileged EXEC mode? Enable

d. How do you know if you are in privileged EXEC mode? The prompt has changed to #.

Step 10 Enter the help command

a. Enter the **show ?** command at the router prompt. What did the router reply with?

A list of commands available in privileged EXEC mode.

b. How is this output different from the one you got in user EXEC mode in Step 3?

The list of available commands is different.

Step 11 Show the router ARP table

a. Enter the **show arp** command at the router prompt. What is the ARP table?

The ARP table is a list of IP address to MAC address mappings.

Step 12 Show information about the Flash memory device

a. Enter **show flash** at the router prompt.

b. How much Flash memory is available and used? Results will vary.

c. What is the file that is stored in Flash memory? Results will vary.

d. What is the size in bytes of the Flash memory? Results will vary.

Step 13 Show information about the active configuration file

a. Enter **show running-config** (or **show run**) at the router prompt. What important information is displayed with **show run**?

The list of commands that make up the router configuration that are loaded in to RAM.

Step 14 Show information about the backup configuration file

a. Enter **show startup-config** (or **show start**) at the router prompt. What important information is displayed with **show start**, and where is this information kept?

The list of commands that make up the router configuration that are loaded in to NVRAM. This information is stored in NVRAM.

Step 15 Display statistics for all interfaces configured on the router

a. Enter **show interfaces** at the router prompt.

b. Find the following information for interface ~~Fast~~Ethernet 0: (Refer to the chart at the end of the lab to correctly identify the interface based on equipment)

1. What is MTU? Message Transfer Unit, the size in bytes of the largest packet to be created by the interface.
2. What is rely? The reliability of the interface.
3. What is load? The level of utilization of the interface.

c. Find the following information for interface Serial 0

1. What is the IP address and subnet mask? Results will vary.
2. What data link layer encapsulation is being used? HDLC

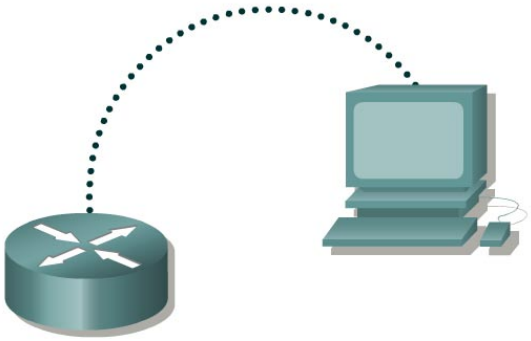
Step 16 Display the protocols configured on the router

a. Enter **show protocols** at the router prompt. What important information is displayed?

The protocols supported by the router and the staus of the router interfaces.

Upon completion of the previous steps, logoff by typing **exit**. Turn the router off.

Lab 3.1.4 Using Router `show` Commands – Instructor Version 2600



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- **`show startup-config`** (or **`show start`**) displays the backup configuration file that is stored in non-volatile RAM (NVRAM). This is the file that will be used to configure the router when it is first started or rebooted with the **`reload`** command. All the detailed router interface settings are contained in this file.
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- **`show arp`** displays the routers address resolution table.
- **`show interfaces`** displays statistics for all interfaces configured on the router.
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a. Enter the **`help`** command by typing **?** at the router prompt. The router responds with all commands available in user mode.

b. What did the router reply with? A list of available commands was displayed.

c. Are all router commands available at the current prompt? No only those available at that command level.

d. Is **`show`** one of the options available? Yes

Step 3 Display help for the `show` command

a. Enter the **`show ?`** command. The router responds with the **`show`** subcommands available in user mode.

b. List three user mode **`show`** subcommands.

show Subcommand	Description
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users	Display information about terminal lines

Step 4 Display IOS version and other important information with the `show version` command

a. Enter the **`show version`** command. The router will return information about the IOS that is running in RAM.

b. What is the IOS version? Results will vary

c. What is the name of the system image (IOS) file? Results will vary.

d. Where was the router IOS image booted from? Results will vary.

e. What type of processor (CPU) and how much RAM does this router have?

M860 processor 64 mbytes of RAM (may vary).

f. How many Ethernet interfaces does this router have? 1 or 2 How many serial interfaces? 1 or 2

g. The router backup configuration file is stored in non-volatile random access memory (NVRAM). How much NVRAM does this router have? 32 kbytes

h. The router operating system (IOS) is stored in Flash memory. How much Flash memory does this router have? 16 mbytes

i. What is the configuration register set to? 0x2104

Step 5 Display the time and date for the router

a. Enter the **show clock** command. What information is displayed? Results will vary.

Step 6 Display a cached list of host names and addresses

a. Enter the **show hosts** command. What information is displayed with **show hosts**?

Results will vary.

Step 7 Display users who are connected to the router

a. Enter the **show users** command. What information is displayed with **show users**?

Results will vary.

Step 8 Show the command buffer

a. Enter the **show history** command. What information is displayed with **show history**?

A list of the commands entered.

Step 9 Enter privileged EXEC mode

a. From user EXEC mode, enter privileged EXEC mode using the **enable** command.

b. Enter the enable password **class** If required.

c. What command did you use to enter privileged EXEC mode? enable

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a. Enter the **show arp** command at the router prompt. What is the ARP table?

The ARP table is a list of IP address to MAC address mappings.

Step 12 Show information about the Flash memory device

a. Enter **show flash** at the router prompt.

b. How much Flash memory is available and used? 9 mbytes available and 7 mbytes used.

c. What is the file that is stored in Flash memory? Results will vary.

d. What is the size in bytes of the Flash memory? 16 mbytes.

Step 13 Show information about the active configuration file

a. Enter **show running-config** (or **show run**) at the router prompt. What important information is displayed with **show run**?

The list of commands that make up the router configuration that are loaded in to RAM.

Step 14 Show information about the backup configuration file

a. Enter **show startup-config** (or **show start**) at the router prompt. What important information is displayed with **show start**, and where is this information kept?

The list of commands that make up the router configuration that are loaded in to NRAM. This information is stored in NVRAM

Step 15 Display statistics for all interfaces configured on the router

a. Enter **show interfaces** at the router prompt.

b. Find the following information for interface FastEthernet 0: (Refer to the chart at the end of the lab to correctly identify the interface based on equipment)

1. What is MTU? Message Transfer Unit, the size in bytes of the largest packet to be created by the interface.
2. What is rely? The reliability of the interface.
3. What is load? The level of utilization of the interface.

c. Find the following information for interface Serial 0

1. What is the IP address and subnet mask? Results will vary.
2. What data link layer encapsulation is being used? HDLCv

Step 16 Display the protocols configured on the router

a. Enter **show protocols** at the router prompt. What important information is displayed?

The protocols supported by the router and the status of the router interfaces..

Upon completion of the previous steps, logoff by typing **exit**. Turn the router off.

