Lab - Building a Switch and Router Network (Instructor Version)

**Instructor Note**: Red font color or Gray highlights indicate text that appears in the instructor copy only.

1. Topology



1. Addressing Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Default Gateway |
| R1 | G0/0 | 192.168.0.1 | 255.255.255.0 | N/A |
|  | G0/1 | 192.168.1.1 | 255.255.255.0 | N/A |
| S1 | VLAN 1 | N/A | N/A | N/A |
| PC-A | NIC | 192.168.1.3 | 255.255.255.0 | 192.168.1.1 |
| PC-B | NIC | 192.168.0.3 | 255.255.255.0 | 192.168.0.1 |

1. Objectives

Part 1: Set Up the Topology and Initialize Devices

* Set up equipment to match the network topology.
* Initialize and restart the router and switch.

Part 2: Configure Devices and Verify Connectivity

* Assign static IP information to the PC interfaces.
* Configure the router.
* Verify network connectivity.

Part 3: Display Device Information

* Retrieve hardware and software information from the network devices.
* Interpret the output from the routing table.
* Display interface information on the router.
* Display a summary list of the interfaces on the router and switch.

1. Background / Scenario

This is a comprehensive lab to review previously covered IOS commands. In this lab, you will cable the equipment as shown in the topology diagram. You will then configure the devices to match the addressing table. After the configurations have been saved, you will verify your configurations by testing for network connectivity.

After the devices have been configured and network connectivity has been verified, you will use IOS commands to retrieve information from the devices to answer questions about your network equipment.

This lab provides minimal assistance with the actual commands necessary to configure the router. However, the required commands are provided in Appendix A. Test your knowledge by trying to configure the devices without referring to the appendix.

**Note**: The routers used with CCNA hands-on labs are Cisco 1941 Integrated Services Routers (ISRs) with Cisco IOS Release 15.2(4)M3 (universalk9 image). The switches used are Cisco Catalyst 2960s with Cisco IOS Release 15.0(2) (lanbasek9 image). Other routers, switches, and Cisco IOS versions can be used. Depending on the model and Cisco IOS version, the commands available and output produced might vary from what is shown in the labs. Refer to the Router Interface Summary Table at the end of this lab for the correct interface identifiers.

**Note**: Ensure that the routers and switches have been erased and have no startup configurations. Refer to Appendix B for the procedure to initialize and reload a router and switch.

1. Required Resources

* 1 Router (Cisco 1941 with Cisco IOS Release 15.2(4)M3 universal image or comparable)
* 1 Switch (Cisco 2960 with Cisco IOS Release 15.0(2) lanbasek9 image or comparable)
* 2 PCs (Windows 7, Vista, or XP with terminal emulation program, such as Tera Term)
* Console cables to configure the Cisco IOS devices via the console ports
* Ethernet cables as shown in the topology

**Note**: The Gigabit Ethernet interfaces on Cisco 1941 routers are autosensing and an Ethernet straight-through cable may be used between the router and PC-B. If using another model Cisco router, it may be necessary to use an Ethernet crossover cable.

1. Set Up Topology and Initialize Devices
   1. Cable the network as shown in the topology.
      1. Attach the devices shown in the topology diagram, and cable, as necessary.
      2. Power on all the devices in the topology.
   2. Initialize and reload the router and switch.

If configuration files were previously saved on the router and switch, initialize and reload these devices back to their basic configurations. For information on how to initialize and reload these devices, refer to Appendix B.

1. Configure Devices and Verify Connectivity

In Part 2, you will set up the network topology and configure basic settings, such as the interface IP addresses, device access, and passwords. Refer to the Topology and Addressing Table at the beginning of this lab for device names and address information.

**Note**: Appendix A provides configuration details for the steps in Part 2. You should attempt to complete Part 2 prior to reviewing this appendix.

* 1. Assign static IP information to the PC interfaces.
     1. Configure the IP address, subnet mask, and default gateway settings on PC-A.
     2. Configure the IP address, subnet mask, and default gateway settings on PC-B.
     3. Ping PC-B from a command prompt window on PC-A.

Why were the pings not successful?

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The router interfaces (default gateways) have not been configured yet so Layer 3 traffic is not being routed between subnets.

* 1. Configure the router.
     1. Console into the router and enable privileged EXEC mode.
     2. Enter configuration mode.
     3. Assign a device name to the router.
     4. Disable DNS lookup to prevent the router from attempting to translate incorrectly entered commands as though they were host names.
     5. Assign **class** as the privileged EXEC encrypted password.
     6. Assign **cisco** as the console password and enable login.
     7. Assign **cisco** as the VTY password and enable login.
     8. Encrypt the clear text passwords.
     9. Create a banner that warns anyone accessing the device that unauthorized access is prohibited.
     10. Configure and activate both interfaces on the router.
     11. Configure an interface description for each interface indicating which device is connected to it.
     12. Save the running configuration to the startup configuration file.
     13. Set the clock on the router.

**Note**: Use the question mark (**?**) to help with the correct sequence of parameters needed to execute this command.

* + 1. Ping PC-B from a command prompt window on PC-A.

Were the pings successful? Why?

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Yes. The router is routing the ping traffic across the two subnets. The default settings for the 2960 switch will automatically turn up the interfaces that are connected to devices.

1. Display Device Information

In Part 3, you will use **show** commands to retrieve information from the router and switch.

* 1. Retrieve hardware and software information from the network devices.
     1. Use the **show version** command to answer the following questions about the router.

R1# **show version**

Cisco IOS Software, C1900 Software (C1900-UNIVERSALK9-M), Version 15.2(4)M3, RELEASE SOFTWARE (fc1)

Technical Support: http://www.cisco.com/techsupport

Copyright (c) 1986-2012 by Cisco Systems, Inc.

Compiled Thu 26-Jul-12 19:34 by prod\_rel\_team

ROM: System Bootstrap, Version 15.0(1r)M15, RELEASE SOFTWARE (fc1)

R1 uptime is 10 minutes

System returned to ROM by power-on

System image file is "flash0:c1900-universalk9-mz.SPA.152-4.M3.bin"

Last reload type: Normal Reload

Last reload reason: power-on

This product contains cryptographic features and is subject to United

States and local country laws governing import, export, transfer and

use. Delivery of Cisco cryptographic products does not imply

third-party authority to import, export, distribute or use encryption.

Importers, exporters, distributors and users are responsible for

compliance with U.S. and local country laws. By using this product you

agree to comply with applicable laws and regulations. If you are unable

to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to

export@cisco.com.

Cisco CISCO1941/K9 (revision 1.0) with 446464K/77824K bytes of memory.

Processor board ID FTX1636848Z

2 Gigabit Ethernet interfaces

2 Serial(sync/async) interfaces

1 terminal line

DRAM configuration is 64 bits wide with parity disabled.

255K bytes of non-volatile configuration memory.

250880K bytes of ATA System CompactFlash 0 (Read/Write)

License Info:

License UDI:

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Device# PID SN

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\*0 CISCO1941/K9 FTX1636848Z

Technology Package License Information for Module:'c1900'

-----------------------------------------------------------------

Technology Technology-package Technology-package

Current Type Next reboot

------------------------------------------------------------------

ipbase ipbasek9 Permanent ipbasek9

security None None None

data None None None

Configuration register is 0x2142 (will be 0x2102 at next reload)

What is the name of the IOS image that the router is running?

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Image version may vary, but answers should be something like c1900-universalk9-mz.SPA.152-4.M3.bin.

How much DRAM memory does the router have?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Answers may vary, but the default DRAM memory configuration on a 1941 router is 512MB or 524,288K bytes. The total can be calculated by adding the two DRAM numbers together from the output of the show version command: Cisco CISCO1941/K9 (revision 1.0) with 446464K/77824K bytes of memory.

How much NVRAM memory does the router have?

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Answers may vary, but the output from the show version on 1941 router is: 255K bytes of non-volatile configuration memory.

How much Flash memory does the router have?

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Answers may vary, but the default output from the show version command on the 1941 router is 250880K bytes of ATA System CompactFlash 0 (Read/Write).

* + 1. Use the **show version** command to answer the following questions about the switch.

Switch# **show version**

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE, RELEASE SOFTWARE (fc1)

Technical Support: http://www.cisco.com/techsupport

Copyright (c) 1986-2012 by Cisco Systems, Inc.

Compiled Sat 28-Jul-12 00:29 by prod\_rel\_team

ROM: Bootstrap program is C2960 boot loader

BOOTLDR: C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(53r)SEY3, RELEASE SOFTWARE (fc1)

S1 uptime is 1 hour, 2 minutes

System returned to ROM by power-on

System image file is "flash:/c2960-lanbasek9-mz.150-2.SE.bin"

This product contains cryptographic features and is subject to United

States and local country laws governing import, export, transfer and

use. Delivery of Cisco cryptographic products does not imply

third-party authority to import, export, distribute or use encryption.

Importers, exporters, distributors and users are responsible for

compliance with U.S. and local country laws. By using this product you

agree to comply with applicable laws and regulations. If you are unable

to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to

export@cisco.com.

cisco WS-C2960-24TT-L (PowerPC405) processor (revision R0) with 65536K bytes of memory.

Processor board ID FCQ1628Y5LE

Last reset from power-on

1 Virtual Ethernet interface

24 FastEthernet interfaces

2 Gigabit Ethernet interfaces

The password-recovery mechanism is enabled.

64K bytes of flash-simulated non-volatile configuration memory.

Base ethernet MAC Address : 0C:D9:96:E2:3D:00

Motherboard assembly number : 73-12600-06

Power supply part number : 341-0097-03

Motherboard serial number : FCQ16270N5G

Power supply serial number : DCA1616884D

Model revision number : R0

Motherboard revision number : A0

Model number : WS-C2960-24TT-L

System serial number : FCQ1628Y5LE

Top Assembly Part Number : 800-32797-02

Top Assembly Revision Number : A0

Version ID : V11

CLEI Code Number : COM3L00BRF

Hardware Board Revision Number : 0x0A

Switch Ports Model SW Version SW Image

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\* 1 26 WS-C2960-24TT-L 15.0(2)SE C2960-LANBASEK9-M

Configuration register is 0xF

Switch#

What is the name of the IOS image that the switch is running?

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Image version may vary, but answers should be something like c2960-lanbasek9-mz.150-2.SE.bin.

How much dynamic random access memory (DRAM) does the switch have?

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Answers may vary, but the default DRAM memory configuration on a 2960-24TT-L switch is 65536K of memory.

How much nonvolatile random-access memory (NVRAM) does the switch have?

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Answers may vary, but the default non-volatile memory configuration on a 2960-24TT-L switch is 64K bytes.

What is the model number of the switch?

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Answers may vary, but the answer should appear in this form: WS-C2960-24TT-L.

* 1. Display the routing table on the router.

Use the **show ip route** command on the router to answer the following questions.

R1# **show ip route**

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2

ia - IS-IS inter area, \* - candidate default, U - per-user static route

o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP

+ - replicated route, % - next hop override

Gateway of last resort is not set

192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.0.0/24 is directly connected, GigabitEthernet0/0

L 192.168.0.1/32 is directly connected, GigabitEthernet0/0

192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.1.0/24 is directly connected, GigabitEthernet0/1

L 192.168.1.1/32 is directly connected, GigabitEthernet0/1

What code is used in the routing table to indicate a directly connected network? \_\_\_\_\_

The C designates a directly connected subnet. An L designates a local interface. Both answers are correct.

How many route entries are coded with a C code in the routing table? \_\_\_\_\_\_\_\_\_ 2

What interface types are associated to the C coded routes?

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Answers may vary depending of router type, but on the 1941 the correct answer is G0/0 and G0/1.

* 1. Display interface information on the router.

Use the **show interface g0/1** to answer the following questions.

R1# **show interfaces g0/1**

GigabitEthernet0/1 is up, line protocol is up

Hardware is CN Gigabit Ethernet, address is fc99.4775.c3e1 (bia fc99.4775.c3e1)

Internet address is 192.168.1.1/24

MTU 1500 bytes, BW 100000 Kbit/sec, DLY 100 usec,

reliability 255/255, txload 1/255, rxload 1/255

Encapsulation ARPA, loopback not set

Keepalive set (10 sec)

Full Duplex, 100Mbps, media type is RJ45

output flow-control is unsupported, input flow-control is unsupported

ARP type: ARPA, ARP Timeout 04:00:00

Last input 00:00:06, output 00:00:04, output hang never

Last clearing of "show interface" counters never

Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0

Queueing strategy: fifo

Output queue: 0/40 (size/max)

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 0 bits/sec, 0 packets/sec

17 packets input, 5409 bytes, 0 no buffer

Received 17 broadcasts (0 IP multicasts)

0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored

0 watchdog, 13 multicast, 0 pause input

14 packets output, 1743 bytes, 0 underruns

0 output errors, 0 collisions, 1 interface resets

3 unknown protocol drops

0 babbles, 0 late collision, 0 deferred

0 lost carrier, 0 no carrier, 0 pause output

0 output buffer failures, 0 output buffers swapped out

What is the operational status of the G0/1 interface?

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GigabitEthernet0/1 is up, line protocol is up

What is the Media Access Control (MAC) address of the G0/1 interface?

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Answers will vary but will appear in the form of: xxxx.xxxx.xxxx, where each x will be replaced with a hexadecimal number.

How is the Internet address displayed in this command?

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Internet address is 192.168.1.1/24.

* 1. Display a summary list of the interfaces on the router and switch.

There are several commands that can be used to verify an interface configuration. One of the most useful of these is the **show ip interface brief** command. The command output displays a summary list of the interfaces on the device and provides immediate feedback to the status of each interface.

* + 1. Enter the **show ip interface brief** command on the router.

R1# **show ip interface brief**

Interface IP-Address OK? Method Status Protocol

Embedded-Service-Engine0/0 unassigned YES unset administratively down down

GigabitEthernet0/0 192.168.0.1 YES manual up up

GigabitEthernet0/1 192.168.1.1 YES manual up up

Serial0/0/0 unassigned YES unset administratively down down

Serial0/0/1 unassigned YES unset administratively down down

R1#

* + 1. Enter the **show ip interface brief** command on the switch.

Switch# **show ip interface brief**

Interface IP-Address OK? Method Status Protocol

Vlan1 unassigned YES manual up up

FastEthernet0/1 unassigned YES unset down down

FastEthernet0/2 unassigned YES unset down down

FastEthernet0/3 unassigned YES unset down down

FastEthernet0/4 unassigned YES unset down down

FastEthernet0/5 unassigned YES unset up up

FastEthernet0/6 unassigned YES unset up up

FastEthernet0/7 unassigned YES unset down down

FastEthernet0/8 unassigned YES unset down down

FastEthernet0/9 unassigned YES unset down down

FastEthernet0/10 unassigned YES unset down down

FastEthernet0/11 unassigned YES unset down down

FastEthernet0/12 unassigned YES unset down down

FastEthernet0/13 unassigned YES unset down down

FastEthernet0/14 unassigned YES unset down down

FastEthernet0/15 unassigned YES unset down down

FastEthernet0/16 unassigned YES unset down down

FastEthernet0/17 unassigned YES unset down down

FastEthernet0/18 unassigned YES unset down down

FastEthernet0/19 unassigned YES unset down down

FastEthernet0/20 unassigned YES unset down down

FastEthernet0/21 unassigned YES unset down down

FastEthernet0/22 unassigned YES unset down down

FastEthernet0/23 unassigned YES unset down down

FastEthernet0/24 unassigned YES unset down down

GigabitEthernet0/1 unassigned YES unset down down

GigabitEthernet0/2 unassigned YES unset down down

Switch#

1. Reflection
   1. If the G0/1 interface showed administratively down, what interface configuration command would you use to turn the interface up?

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R1(config-if)# **no shut**

* 1. What would happen if you had incorrectly configured interface G0/1 on the router with an IP address of 192.168.1.2?

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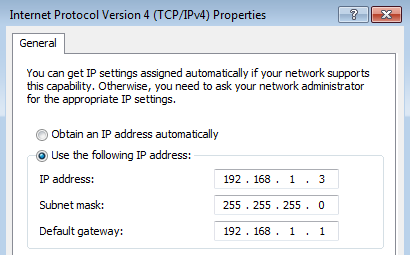
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PC-A would not be able to ping PC-B. This is because PC-B is on a different network than PC-A which requires the default-gateway router to route these packets. PC-A is configured to use the IP address of 192.168.1.1 for the default-gateway router, but this address is not assigned to any device on the LAN. Any packets that need to be sent to the default-gateway for routing will never reach their destination.

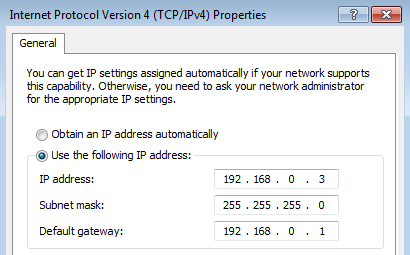
1. Router Interface Summary Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Router Interface Summary | | | | |
| Router Model | Ethernet Interface #1 | Ethernet Interface #2 | Serial Interface #1 | Serial Interface #2 |
| 1800 | Fast Ethernet 0/0 (F0/0) | Fast Ethernet 0/1 (F0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| 1900 | Gigabit Ethernet 0/0 (G0/0) | Gigabit Ethernet 0/1 (G0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| 2801 | Fast Ethernet 0/0 (F0/0) | Fast Ethernet 0/1 (F0/1) | Serial 0/1/0 (S0/1/0) | Serial 0/1/1 (S0/1/1) |
| 2811 | Fast Ethernet 0/0 (F0/0) | Fast Ethernet 0/1 (F0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| 2900 | Gigabit Ethernet 0/0 (G0/0) | Gigabit Ethernet 0/1 (G0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| **Note**: To find out how the router is configured, look at the interfaces to identify the router type and how many interfaces the router has. There is no way to effectively list all the combinations of configurations for each router class. This table includes identifiers for the possible combinations of Ethernet and Serial interfaces in the device. The table does not include any other type of interface, even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in Cisco IOS commands to represent the interface. | | | | |

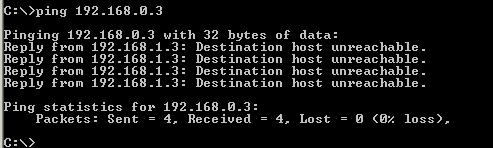
1. Appendix A: Configuration Details for Steps in Part 2
   1. Configure the PC interfaces.
      1. Configure the IP address, subnet mask, and default gateway settings on PC-A.



* + 1. Configure the IP address, subnet mask, and default gateway settings on PC-B.



* + 1. Ping PC-B from a command prompt window on PC-A.



* 1. Configure the router.
     1. Console into the router and enable privileged EXEC mode.

Router> **enable**

Router#

* + 1. Enter configuration mode.

Router# **conf t**

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#

* + 1. Assign a device name to the router.

Router(config)# **hostname R1**

* + 1. Disable DNS lookup to prevent the router from attempting to translate incorrectly entered commands as though they were host names.

R1(config)# **no ip domain-lookup**

* + 1. Assign **class** as the privileged EXEC encrypted password.

R1(config)# **enable secret class**

* + 1. Assign **cisco** as the console password and enable login.

R1(config)# **line con 0**

R1(config-line)# **password cisco**

R1(config-line)# **login**

R1(config-line)# **exit**

R1(config)#

* + 1. Assign **cisco** as the vty password and enable login.

R1(config)# **line vty 0 4**

R1(config-line)# **password cisco**

R1(config-line)# **login**

R1(config-line)# **exit**

R1(config)#

* + 1. Encrypt the clear text passwords.

R1(config)# **service password-encryption**

* + 1. Create a banner that warns anyone accessing the device that unauthorized access is prohibited.

R1(config)# **banner motd #**

Enter TEXT message. End with the character '#'.

**Unauthorized access prohibited!**

**#**

R1(config)#

* + 1. Configure and activate both interfaces on the router.

R1(config)# **int g0/0**

R1(config-if)# **description Connection to PC-B.**

R1(config-if)# **ip address 192.168.0.1 255.255.255.0**

R1(config-if)# **no shut**

R1(config-if)#

\*Nov 29 23:49:44.195: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to down

\*Nov 29 23:49:47.863: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up

\*Nov 29 23:49:48.863: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

R1(config-if)# **int g0/1**

R1(config-if)# **description Connection to S1.**

R1(config-if)# **ip address 192.168.1.1 255.255.255.0**

R1(config-if)# **no shut**

R1(config-if)# **exit**

R1(config)# **exit**

\*Nov 29 23:50:15.283: %LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to down

\*Nov 29 23:50:18.863: %LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to up

\*Nov 29 23:50:19.863: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

R1#

* + 1. Save the running configuration to the startup file.

R1# **copy running-config startup-config**

Destination filename [startup-config]?

Building configuration...

[OK]

R1#

* + 1. Set the clock on the router.

R1# **clock set 17:00:00 29 Nov 2012**

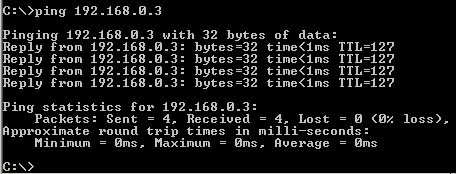
R1#

\*Nov 29 17:00:00.000: %SYS-6-CLOCKUPDATE: System clock has been updated from 23:55:46 UTC Thu Nov 29 2012 to 17:00:00 UTC Thu Nov 29 2012, configured from console by console.

R1#

**Note**: Use the question mark (**?**) to help determine the correct sequence of the parameters needed to execute this command.

* + 1. Ping PC-B from a command prompt window on PC-A.



1. Appendix B: Initializing and Reloading a Router and Switch
2. Initialize the Router and Reload
   1. Connect to the router.

Console into the router and enter privileged EXEC mode using the **enable** command.

Router> **enable**

Router#

* 1. Erase the startup configuration file from NVRAM.

Type the **erase startup-config** command to remove the startup configuration from nonvolatile random-access memory (NVRAM).

Router# **erase startup-config**

Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]

[OK]

Erase of nvram: complete

Router#

* 1. Reload the router.

Issue the **reload** command to remove an old configuration from memory. When prompted to Proceed with reload, press Enter to confirm the reload. Pressing any other key will abort the reload.

Router# **reload**

Proceed with reload? [confirm]

\*Nov 29 18:28:09.923: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload Command.

**Note**: You may receive a prompt to save the running configuration prior to reloading the router. Respond by typing **no** and press Enter.

System configuration has been modified. Save? [yes/no]: **no**

* 1. Bypass the initial configuration dialog.

After the router reloads, you are prompted to enter the initial configuration dialog. Enter **no** and press Enter.

Would you like to enter the initial configuration dialog? [yes/no]: **no**

* 1. Terminate the autoinstall program.

You will be prompted to terminate the autoinstall program. Respond **yes** and then press Enter.

Would you like to terminate autoinstall? [yes]: **yes**

Router>

1. Initialize the Switch and Reload
   1. Connect to the switch.

Console into the switch and enter privileged EXEC mode.

Switch> **enable**

Switch#

* 1. Determine if there have been any virtual local-area networks (VLANs) created.

Use the **show flash** command to determine if any VLANs have been created on the switch.

Switch# **show flash**

Directory of flash:/

2 -rwx 1919 Mar 1 1993 00:06:33 +00:00 private-config.text

3 -rwx 1632 Mar 1 1993 00:06:33 +00:00 config.text

4 -rwx 13336 Mar 1 1993 00:06:33 +00:00 multiple-fs

5 -rwx 11607161 Mar 1 1993 02:37:06 +00:00 c2960-lanbasek9-mz.150-2.SE.bin

6 -rwx 616 Mar 1 1993 00:07:13 +00:00 vlan.dat

32514048 bytes total (20886528 bytes free)

Switch#

* 1. Delete the VLAN file.
     1. If the **vlan.dat** file was found in flash, then delete this file.

Switch# **delete vlan.dat**

Delete filename [vlan.dat]?

You will be prompted to verify the file name. At this point, you can change the file name or just press Enter if you have entered the name correctly.

* + 1. When you are prompted to delete this file, press Enter to confirm the deletion. (Pressing any other key will abort the deletion.)

Delete flash:/vlan.dat? [confirm]

Switch#

* 1. Erase the startup configuration file.

Use the **erase startup-config** command to erase the startup configuration file from NVRAM. When you are prompted to remove the configuration file, press Enter to confirm the erase. (Pressing any other key will abort the operation.)

Switch# **erase startup-config**

Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]

[OK]

Erase of nvram: complete

Switch#

* 1. Reload the switch.

Reload the switch to remove any old configuration information from memory. When you are prompted to reload the switch, press Enter to proceed with the reload. (Pressing any other key will abort the reload.)

Switch# **reload**

Proceed with reload? [confirm]

**Note**: You may receive a prompt to save the running configuration prior to reloading the switch. Type **no** and press Enter.

System configuration has been modified. Save? [yes/no]: **no**

* 1. Bypass the initial configuration dialog.

After the switch reloads, you should see a prompt to enter the initial configuration dialog. Type **no** at the prompt and press Enter.

Would you like to enter the initial configuration dialog? [yes/no]: **no**

Switch>

1. Device Configs
2. Router R1

R1#show run

Building configuration...

Current configuration : 1360 bytes

!

version 15.2

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

!

hostname R1

!

boot-start-marker

boot-end-marker

!

!

enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2

!

no aaa new-model

memory-size iomem 15

!

!

!

!

!

!

!

no ip domain lookup

ip cef

no ipv6 cef

multilink bundle-name authenticated

!

!

!

!

!

!

!

!

!

!

!

interface Embedded-Service-Engine0/0

no ip address

shutdown

!

interface GigabitEthernet0/0

description Connection to PC-B.

ip address 192.168.0.1 255.255.255.0

duplex auto

speed auto

!

interface GigabitEthernet0/1

description Connection to S1.

ip address 192.168.1.1 255.255.255.0 duplex auto

speed auto

!

interface Serial0/0/0

no ip address

shutdown

clock rate 2000000

!

interface Serial0/0/1

no ip address

shutdown

!

ip forward-protocol nd

!

no ip http server

no ip http secure-server

!

!

!

!

!

control-plane

!

!

banner motd ^C

Unauthorized access prohibited!

^C

!

line con 0

password 7 13061E010803

login

line aux 0

line 2

no activation-character

no exec

transport preferred none

transport input all

transport output pad telnet rlogin lapb-ta mop udptn v120 ssh

stopbits 1

line vty 0 4

password 7 070C285F4D06

login

transport input all

!

scheduler allocate 20000 1000

!

end