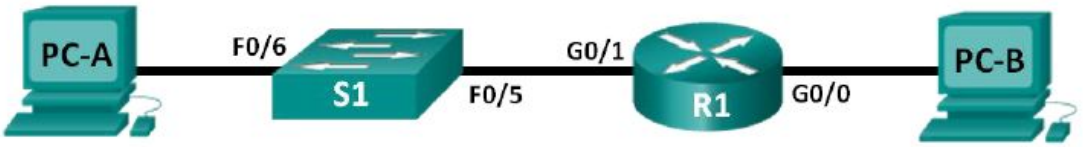
Lab - Building a Switch and Router Network

Topology



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

Part 2: Configure Devices and Verify Connectivity

Step 1: Assign static IP information to the PC interfaces.

c. Ping PC-B from a command prompt window on PC-A.

Why were the pings not successful?

Because the interfaces getaways from the router have not been configured yet

Step 2: Configure the router.

n. Ping PC-B from a command prompt window on PC-A.

Were the pings successful? Why?

Yes, because the router is now configured.

```
Pinging 192.168.0.3 with 32 bytes of data:

Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time<1ms TTL=127
Reply from 192.168.0.3: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Part 3: Display Device Information

Step 1: Retrieve hardware and software information from the network devices.

a. Use the show version command to answer the following questions about the router.

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

How much DRAM memory does the router have?

The total is calculated by adding these numbers: 491520K/32768K bytes of memory and the result is 524288K of DRAM memory.

How much NVRAM memory does the router have?

255K bytes

How much Flash memory does the router have?

249856K bytes of ATA System CompactFlash

b. Use the show version command to answer the following questions about the switch.

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

c2960-lanbase-mz

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

21039K bytes of memory

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

63488K bytes

What is the model number of the switch?

WS-C2960-24TT

Step 2: Display the routing table on the router.

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

C - connected

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

```
      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 interface types are associated to the C coded routes?

Gigabitethernet0/0 and Gigabitethernet0/1

Step 3: Display interface information on the router.

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

GigabitEthernet0/1 is up, line protocol is up (connected)

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

Mac: 0050.0f13.a702

How is the Internet address displayed in this command?

Internet address is 192.168.1.1/24

Step 4: Display a summary list of the interfaces on the router and switch.

a. Enter the show ip interface brief command on the router.

```
R1>show ip interface brief
Interface              IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0     192.168.0.1     YES manual up
up
GigabitEthernet0/1     192.168.1.1     YES manual up
up
Vlan1                  unassigned      YES unset
administratively down down
```

b. Enter the show ip interface brief command on the switch.

```
Switch# show ip interface brief
Interface              IP-Address      OK? Method Status                Protocc
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
```

Reflection

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

R1(config-if)#no shutdown

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

PC-A would not be able to ping PC-B as PC-B is on a different network. A default-gateway is required to send these packets to PC-B.

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