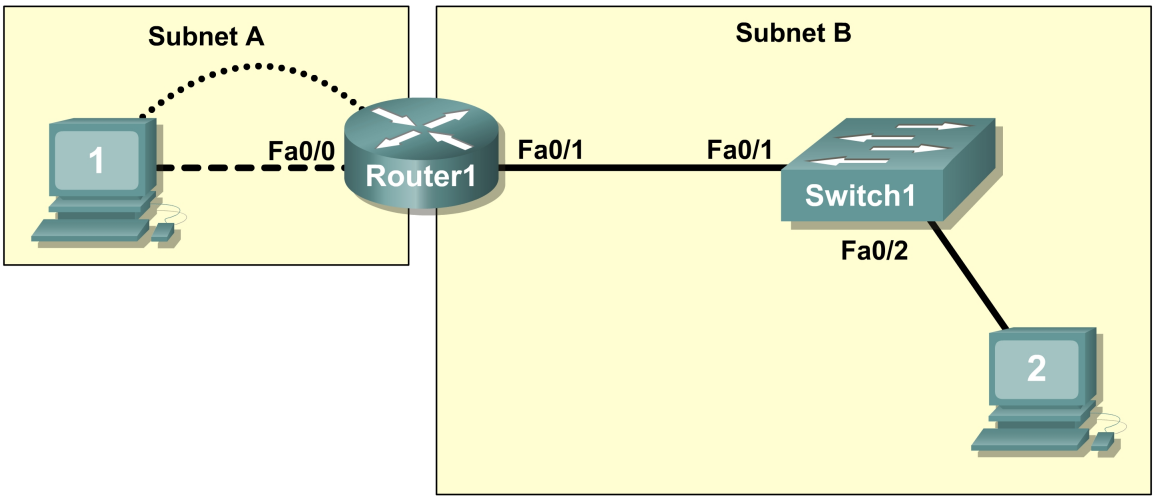
Lab 1.3.2: Review of Concepts from Exploration 1 - Challenge

Topology Diagram



Learning Objectives

Upon completion of this lab, you will be able to:

- Create a logical topology given network requirements
- Create subnets to meet host requirements
- Configure the physical topology
- Configure the logical topology
- Verify network connectivity
- Configure and verify passwords

Scenario

In this lab, you will design and configure a small routed network and verify connectivity across multiple network devices. This requires creating and assigning two subnetwork blocks, connecting hosts and network devices, and configuring host computers and one Cisco router for basic network connectivity. Switch1 has a default configuration and does not require additional configuration. You will use common commands to test and document the network. The zero subnet is used.

Task 1: Design a Logical LAN Topology

Step 1: Design an IP addressing scheme.

Given the IP address block of **192.168.30.0 /27**, design an IP addressing scheme that satisfies the following requirements:

Subnet	Number of Hosts
Subnet A	7
Subnet B	14

The 0 subnet is used. No subnet calculators may be used. Create the smallest possible number of subnets that satisfy the requirements for hosts. Assign the first usable subnet to Subnet A.

Subnet A	
Specification	**Student Input**
Number of bits in the subnet	
IP mask (binary)	
New IP mask (decimal)	
Maximum number of usable subnets (including the 0 subnet)	
Number of usable hosts per subnet	
IP subnetwork address	
First IP host address	
Last IP host address	

Subnet B	
Specification	**Student Input**
Number of bits in the subnet	
IP mask (binary)	
New IP mask (decimal)	
Maximum number of usable subnets (including the 0 subnet)	
Number of usable hosts per subnet	
IP subnetwork address	
First IP host address	
Last IP host address	

Host computers will use the first usable IP address in the subnet. The network router will use the last usable IP address in the subnet.

Step 2: Write down the IP address information for each device.

Device	IP address	Mask	Gateway
Host1			
Router1-Fa0/0			
Host2			
Router1-Fa0/1			

Before proceeding, verify your IP addresses with the instructor.

Task 2: Configure the Physical Topology

Step 1: Determine cabling requirements.

Referring to Figure 1, identify each cable type required and document it in the table.

Correct Cabling	Cable Type
LAN cable between Host1 and Router1 Fa0/0	
LAN cable between Switch1 and Router1 Fa0/1	
LAN cable between Switch1 and Host2	
Console cable between Host1 and Router1	

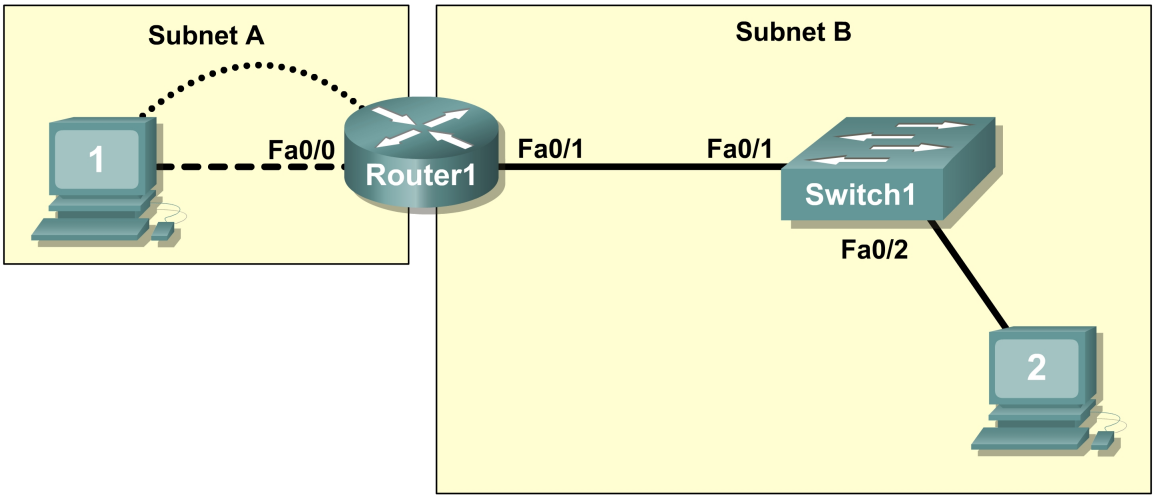


Figure 1. Cabling the network.

Step 2. Physically connect lab devices.

Cable the network devices as shown in Figure 1. Turn power on to all devices if it is not already on.

Step 3: Inspect the network connections.

After cabling the network devices, verify the connections..

Task 3: Configure the Logical Topology

Step 1: Configure the host computers.

Configure the static IP address, subnet mask, and gateway for each host computer. After configuring each host computer, display and verify the host network settings with the **ipconfig /all** command.

Host1 Network Configuration	
Physical address	
IP address	
Subnet mask	
Default gateway	

Host2 Network Configuration	
Physical address	
IP address	
Subnet mask	
Default gateway	

Step 2: Configure Router1.

From Host1, connect to the console of Router 1 and configure the following:

Task	Specification
Router name	`Router1`
Encrypted privileged exec password	`class`
Console access password	`cisco`
Telnet access password	`cisco`
Router1 interface Fa0/0	Set the description Set the Layer 3 address
Router1 interface Fa0/1	Set the description Set the Layer 3 address

Task 4: Verify Network Connectivity

Step 1: Use the ping command to verify network connectivity.

You can verify network connectivity using the **ping** command.

Note: If pings to the host computers fail, verify the existence of a firewall program running on the hosts. If a firewall is running on the host temporarily disable it and retest. To disable a Windows firewall, select **Start > Control Panel > Windows Firewall**, select **OFF**, and then **OK**.

Use the following table to verify connectivity with each network device. Take corrective action to establish connectivity if a test fails.

From	To	IP Address	Ping Results
Host1	NIC IP address		
Host1	Router1, Fa0/0		
Host1	Router1, Fa0/1		
Host1	Host2		
Host2	NIC IP address		

Host2	Router1, Fa0/1		
Host2	Router1, Fa0/0		
Host2	Host1		

In addition to the **ping** command, what other Windows command is useful in displaying network delay and breaks in the path to the destination?_____

Task 5: Verify Passwords

Step 1: Telnet to the router from Host2 and verify the Telnet password.

You should be able to telnet to either Fast Ethernet interface of the router.

Step 2: Verify that the enable secret password has been set.

From the Telnet session, enter privilege exec mode and verify that it is password protected.

Step 3: Verify that the console is password protected.

Terminate and then re-establish the console connection from Host1 to the router to verify that the console is password protected.

Depending on the Telnet client that you are using, the session can usually be terminated with Ctrl-].

Task 6: Clean Up

Unless directed otherwise by your instructor, erase the configurations and reload the switches. Disconnect and store the cabling. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

