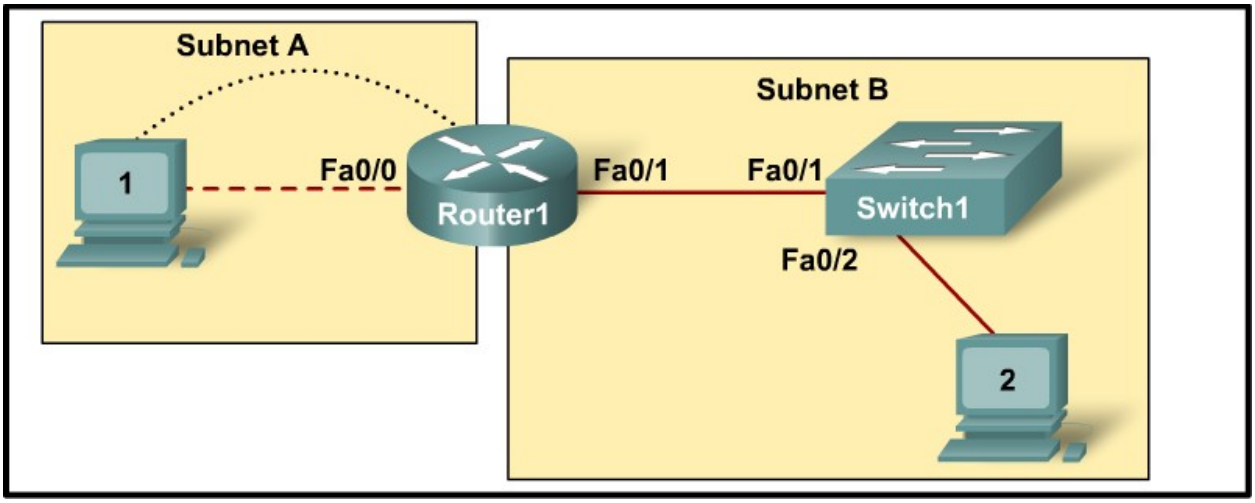
Exploration Network Fundamentals: Skills Based Final Option 1

Name: _____ **Date:** _____ **Instructor:** _____

Topology Diagram



Assessment Objectives

- Design the Logical topology. 35 points, 20 minutes.
- Configure the physical topology. 15 points, 5 minutes.
- Configure the logical topology. 30 points, 20 minutes.
- Verify network connectivity. 20 points, 15 minutes.

Background

Hardware	Qty	Description
Cisco Router	1	Part of CCNA Lab bundle.
Cisco Switch	1	Part of CCNA Lab bundle.
*Computer (host)	2	Lab computers.
CAT-5 or better straight-through UTP cables	2	
CAT-5 cross-over UTP cable	2	
Console (rollover) cable	1	

Table 1. Equipment and hardware for Eagle 1 lab.

Gather the necessary equipment and cables. To configure the Skills Based Final, make sure the equipment listed in Table 1 is available.

Scenario

In this Skills Based Assessment students will create a small network that requires connecting 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. Common utility commands will be used to test and document the network. The 0^{th} subnet is used.

Task 1: Design the Logical LAN Topology.

Total points: 35
Time: 20 minutes.

Given an IP address and mask of _____ (address / mask), design an IP addressing scheme that satisfies the following requirements:

Subnet	Number of Hosts
Subnet A	Check diagram
Subnet B	Between 20 & 30

The 0th subnet is used. No subnet calculators may be used. All work must be shown on the reverse of this Final.

Subnet A		
Specification	**Student Input**	**Points**
Number of bits in the subnet		(12 points)
IP mask (binary)		
New IP mask (decimal)		
Maximum number of usable subnets (including the 0th subnet)		
Number of usable hosts per subnet		
IP Subnet		
First IP Host address		
Last IP Host address		

Subnet B		
Specification	**Student Input**	**Points**
Number of bits in the subnet		(12 points)
IP mask (binary)		
New IP mask (decimal)		
Maximum number of usable subnets (including the 0th subnet)		
Number of usable hosts per subnet		
IP Subnet		
First IP Host address		
Last IP Host address		

Host computers will use the first IP address in the subnet. The network router will use the LAST network host address.

Write down the IP address information for each device:

Device	IP address	Mask	Gateway	Points
Host1				(11 points)
Router1-Fa0/0			----------	
Host2				
Router1-Fa0/1			----------	

Before proceeding, verify your IP addresses with the instructor.

Instructor Sign-off Task 1: _____
points: _____ of 35

Task 2: Configure the Physical Topology.

Total points: 15
Time: 5 minutes.

Step 1: Physically connect lab devices.

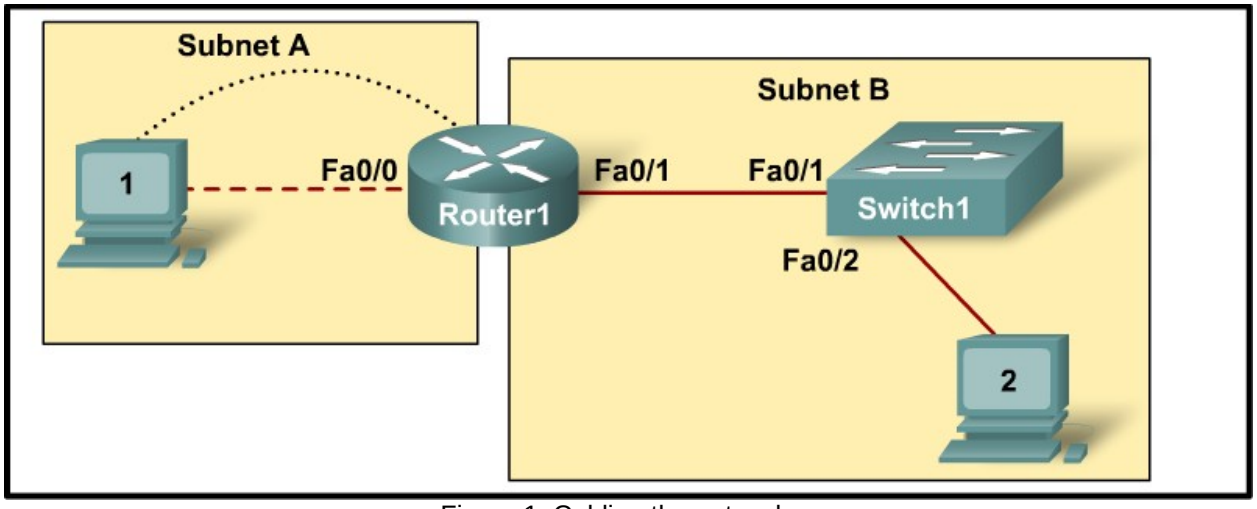


Figure 1. Cabling the network.

Cable the network devices as shown in Figure 1. If not already enabled, turn power on to all devices.

Step 2. Visually inspect network connections

After cabling the network devices, take a moment to verify the connections.

Correct Cabling	Points
LAN cable between Host1 and Router1 Fa0/0	(3 ¾ points)
LAN cable between Switch1 and Router1 Fa0/1	(3 ¾ points)
LAN cable between Switch1 and Host2	(3 ¾ points)
Console cable between Host1 and Router1	(3 ¾ points)

Instructor Sign-off Task 2: _____
Points: _____ **of 15**

Task 3: Configure the Logical Topology.

Total points: 30
Time: 20 minutes.

Step 1: Configure host computers.

After configuring each host computer, record the host network settings with the **`ipconfig /all`** command.

Host1 Network Configuration		Points
Description		(7 points)
Physical Address		
IP Address		
Subnet Mask		
Default Gateway		

Host2 Network Configuration		Points
Description		(7 points)
Physical Address		
IP Address		
Subnet Mask		
Default Gateway		

Step 2: Configure Router1.

Configuration tasks for Router1 include the following:

Task	Specification	Points
Router name	`Router1`	(16 points)
Encrypted privileged exec password	`cisco`	
Console access password	`class`	
Telnet access password	`class`	
Configure the MOTD banner.		
Router1 interface Fa0/0	set the description set the Layer 3 address	
Router1 interface Fa0/1	set the description set the Layer 3 address	

Instructor Sign-off Task 3: _____
Points: _____ **of 30**

Task 4: Verify network connectivity.

Total points: 20
Time: 15 minutes.

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

Network connectivity can be verified with the **`ping`** command.
**NOTE: If pings to host computers fail, temporarily disable the computer firewall and retest. To disable a Windows firewall, select Start | Control Panel | Windows Firewall, select OFF, and OK.

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

From	To	IP Address	Ping results	Points
Host1	NIC IP address			(8 points)
Host1	Router1, Fa0/0			
Host1	Router1, Fa0/1			
Host1	Host2			
Host2	NIC IP address			(8 points)
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?
Answer: _____(4 points)

Instructor Sign-off Task 4: _____
Points: _____ **of 20**

Task 5: Cleanup

NOTE: DO NOT PROCEED WITH CLEANUP UNTIL YOUR INSTRUCTOR HAS GRADED YOUR SKILLS BASED FINAL AND HAS INFORMED YOU THAT YOU MAY BEGIN CLEANUP.

Unless directed otherwise by the instructor, restore host computer network connectivity, then turn off power to the host computers.

Before turning off power to the router and switch, remove the NVRAM configuration file (if saved) from Router1 with the privileged exec command **`erase startup-config`**.

Disconnect and neatly put away all LAN cables that were used in the Final.

Remove anything that was brought into the lab, and leave the room ready for the next class.

