Packet Tracer - Designing and Implementing a VLSM Addressing Scheme

Topology

You will receive one of three possible topologies.

Note: You can use this document to record the random values (router names, addressing, etc.) that you will receive when launching the Packet Tracer activity.

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
	G0/0			N/A
	G0/1			N/A
	S0/0/0			N/A
	G0/0			N/A
	G0/1			N/A
	S0/0/0			N/A
	VLAN 1			
	VLAN 1			
	VLAN 1			
	VLAN 1			
	NIC			
	NIC			
	NIC			
	NIC			

Objectives

Part 1: Examine the Network Requirements

Part 2: Design the VLSM Addressing Scheme

Part 3: Assign IP Addresses to Devices and Verify Connectivity

Background

In this activity, you are given a network address to develop a VLSM addressing scheme for the network shown in the topology. The network has the following requirements:

- LAN will require host IP addresses
- LAN will require host IP addresses

- LAN will require host IP addresses
- LAN will require host IP addresses

Part 1: Examine the Network Requirements

Step 1: Determine the number of subnets needed.

How many subnets are needed in the network topology?

Step 2: Determine the subnet mask information for each subnet.

a. Which subnet mask will accommodate the number of IP addresses required for ?

How many usable host addresses will this subnet support?

b. Which subnet mask will accommodate the number of IP addresses required for ?

How many usable host addresses will this subnet support?

c. Which subnet mask will accommodate the number of IP addresses required for ?

How many usable host addresses will this subnet support?

d. Which subnet mask will accommodate the number of IP addresses required for ?

How many usable host addresses will this subnet support?

e. Which subnet mask will accommodate the number of IP addresses required for the connection between and ?

Part 2: Design the VLSM Addressing Scheme

Step 1: Divide the network based on the number of hosts per subnet.

a. Use the first subnet to accommodate the largest LAN.

b. Use the second subnet to accommodate the second largest LAN.

c. Use the third subnet to accommodate the third largest LAN.

d. Use the fourth subnet to accommodate the fourth largest LAN.

e. Use the fifth subnet to accommodate the connection between and .

Step 2: Document the VLSM subnets.

Complete the **Subnet Table**, listing the subnet descriptions (e.g. LAN), number of hosts needed, then network address for the subnet, the first usable host address, and the broadcast address. Repeat until all addresses are listed.

Subnet Table

Subnet Description	Number of Hosts Needed	Network Address/CIDR	First Usable Host Address	Broadcast Address

Step 3: Document the addressing scheme.

a. Assign the first usable IP addresses to for the two LAN links and the WAN link.

b. Assign the first usable IP addresses to for the two LANs links. Assign the last usable IP address for the WAN link.

c. Assign the second usable IP addresses to the switches.

d. Assign the last usable IP addresses to the hosts.

Part 3: Assign IP Addresses to Devices and Verify Connectivity

Most of the IP addressing is already configured on this network. Implement the following steps to complete the addressing configuration.

Step 1: Configure IP addressing on LAN interfaces.

Step 2: Configure IP addressing on , including the default gateway.

Step 3: Configure IP addressing on , including the default gateway.

Step 4: Verify connectivity.

You can only verify connectivity from , , and . However, you should be able to ping every IP address listed in the **Addressing Table**.

Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: Examine the Network Requirements	Step 1	1	
	Step 2a	1	
	Step 2b	1	
	Step 2c	1	
	Step 1 Total	**4**	
Part 2: Design the VLSM Addressing Scheme	Step 1a	1	
	Step 1b	1	
	Step 1c	1	
	Step 1d	1	
	Step 1e	1	
	Step 1f	1	
	Step 1g	1	
	Step 1h	1	
Complete Subnet Table	Step 1i	8	
Assign Subnets	Step 2	10	
Document Addressing	Step 3	40	
	Step 2 Total	**66**	
	Packet Tracer Score	**30**	
	Total Score	**100**	