Packet Tracer - VLSM Design and Implementation Practice Topology

You will receive one of three possible topologies.

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
	G0/0	10.11.48.97	255.255.255.240	N/A
	G0/1	10.11.48.65	255.255.255.224	N/A
	S0/0/0	10.11.48.121	255.255.255.252	N/A
	G0/0	10.11.48.113	255.255.255.248	N/A
	G0/1	10.11.48.1	255.255.255.192	N/A
	S0/0/0	10.11.48.122	255.255.255.252	N/A
	VLAN 1	10.11.48.98	255.255.255.240	10.11.48.97
	VLAN 1	10.11.48.66	255.255.255.224	10.11.48.65
	VLAN 1	10.11.48.114	255.255.255.248	10.11.48.113
	VLAN 1	10.11.48.2	255.255.255.192	10.11.48.1
	NIC	10.11.48.110	255.255.255.240	10.11.48.97
	NIC	10.11.48.94	255.255.255.224	10.11.48.65
	NIC	10.11.48.118	255.255.255.248	10.11.48.113
	NIC	10.11.48.62	255.255.255.192	10.11.48.1

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 /24 network address to use to design a VLSM addressing scheme. Based on a set of requirements, you will assign subnets and addressing, configure devices and verify connectivity.

Instructions

Part 1: Examine the Network Requirements

Step 1: Determine the number of subnets needed.

You will subnet the network address . 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

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 ?
255.255.255.240/28
How many usable host addresses will this subnet support?
14 (10.11.48.97 - 10.11.48.110)

b. Which subnet mask will accommodate the number of IP addresses required for ?
255.255.255.224 /27
How many usable host addresses will this subnet support?
30 (10.11.48.65 - 10.11.48.94)

c. Which subnet mask will accommodate the number of IP addresses required for ?
255.255.255.248 /29
How many usable host addresses will this subnet support?
6 (10.11.48.113 - 10.11.48.118)

d. Which subnet mask will accommodate the number of IP addresses required for ?
255.255.255.192 /26
How many usable host addresses will this subnet support?
62 (10.11.48.1 - 10.11.48.62)

e. Which subnet mask will accommodate the number of IP addresses required for the connection between and ?
255.255.255.252/30

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. [[S1Name]] 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
Host-D LAN	60	10.11.48.0/26	10.11.48.1	10.11.48.63
Host-B LAN	30	10.11.48.64/27	10.11.48.65	10.11.48.95
Host-A LAN	14	10.11.48.96/28	10.11.48.97	10.11.48.111
Host-C LAN	6	10.11.48.112/29	10.11.48.113	10.11.48.119
WAN Link	2	10.11.48.120/30	10.11.48.121	10.11.48.123

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 LAN 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 the router LAN interfaces.

Step 2: Configure IP addressing on the , switch 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**.

Building 1
en
conf t
int g0/0
ip add 10.11.48.97 255.255.255.240
no shut
int g0/1
ip add 10.11.48.65 255.255.255.224
no shut

ASW3
en
conf t
int vlan 1
ip add 10.11.48.114 255.255.255.248
no shut
ip def 10.11.48.113

Host-D
IP Address: 10.11.48.62
Subnet Mask: 255.255.255.192
Default Gateway: 10.11.48.1