

## 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
Building 1	G0/0	10.11.48.97	225.255.255.240	N/A
	G0/1	10.11.48.65	225.255.255.224	N/A
	S0/0/0	10.11.48.121	225.255.255.252	N/A
Building 2	G0/0	10.11.48.113	225.255.255.248	N/A
	G0/1	10.11.48.1	225.255.255.192	N/A
	S0/0/0	10.11.48.122	225.255.255.252	N/A
ASW1	VLAN 1	10.11.48.98	225.255.255.240	10.11.48.97
ASW2	VLAN 1	10.11.48.66	225.255.255.224	10.11.48.65
ASW3	VLAN 1	10.11.48.114	225.255.255.248	10.11.48.113
ASW4	VLAN 1	10.11.48.2	225.255.255.192	10.11.48.1
Host - A	NIC	10.11.48.110	225.255.255.240	10.11.48.97
Host - B	NIC	10.11.48.94	225.255.255.224	10.11.48.65
Host - C	NIC	10.11.48.118	225.255.255.248	10.11.48.113
Host - D	NIC	10.11.48.62	225.255.255.192	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? 5

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

- Which subnet mask will accommodate the number of IP addresses required for ?  
How many usable host addresses will this subnet support? 255.255.255.240/28
- Which subnet mask will accommodate the number of IP addresses required for ?  
How many usable host addresses will this subnet support? 255.255.255.224/27
- Which subnet mask will accommodate the number of IP addresses required for ?  
How many usable host addresses will this subnet support? 30 (10.11.48.65 – 10.11.48.94)
- Which subnet mask will accommodate the number of IP addresses required for ?  
How many usable host addresses will this subnet support? 255.255.255.248/29
- Which subnet mask will accommodate the number of IP addresses required for the connection between Building1 and Building2 ? 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.

- Use the first subnet to accommodate the largest LAN.
- Use the second subnet to accommodate the second largest LAN.
- Use the third subnet to accommodate the third largest LAN.
- Use the fourth subnet to accommodate the fourth largest LAN.
- 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	2	10.11.48.120/30	10.11.48.121	10.11.48.123

### Step 3: Document the addressing scheme.

- Assign the first usable IP addresses to \_\_\_\_\_ for the two LAN links and the WAN link.
- Assign the first usable IP addresses to \_\_\_\_\_ for the two LAN links. Assign the last usable IP address for the WAN link.
- Assign the second usable IP addresses to the switches.
- 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**.