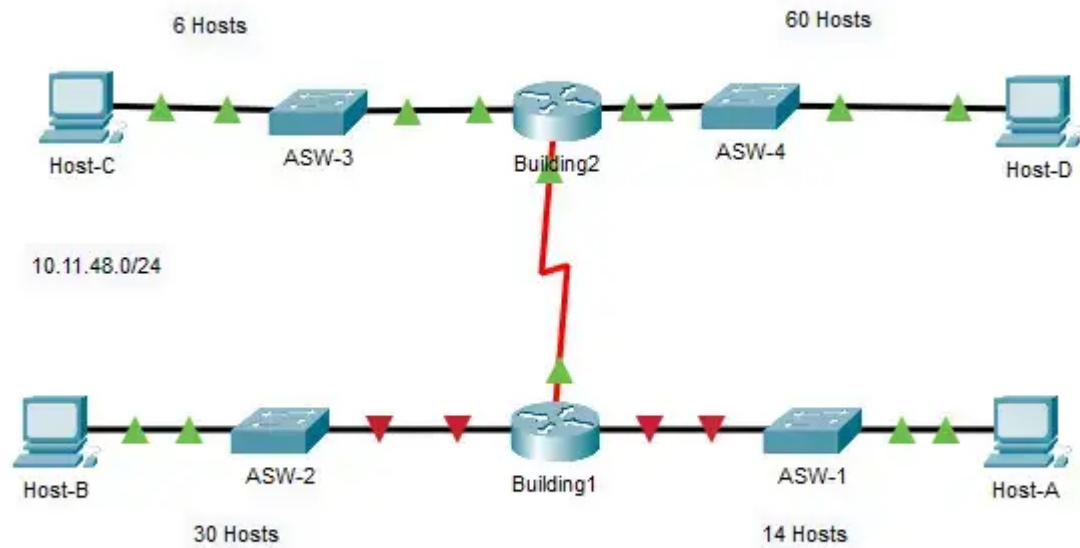


## Packet Tracer - VLSM Design and Implementation Practice

### Topology



## Addressing Table

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Device	Interface	Address	Subnet Mask	Default Gateway
Building1	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
Building2	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
ASW1	VLAN 1	10.11.48.98	255.255.255.240	10.11.48.97
ASW2	VLAN 1	10.11.48.66	255.255.255.224	10.11.48.65
ASW3	VLAN 1	10.11.48.114	255.255.255.248	10.11.48.113
ASW4	VLAN 1	10.11.48.2	255.255.255.192	10.11.48.1

<b>Host-A</b>	NIC	10.11.48.110	255.255.255.240	10.11.48.97
<b>Host-B</b>	NIC	10.11.48.94	255.255.255.224	10.11.48.65
<b>Host-C</b>	NIC	10.11.48.118	255.255.255.248	10.11.48.113
<b>Host-D</b>	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 10.11.48.0/24. The network has the following requirements:-

**ASW-1 LAN will require 14 host IP addresses**

**ASW-2 LAN will require 30 host IP addresses**

**ASW-3 LAN will require 6 host IP addresses**

**ASW-4 LAN will require 60 host IP addresses**

How many subnets are needed in the network topology?

**Answer: 5**

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

- a. Which subnet mask will accommodate the number of IP addresses required for ASW-1?

**Answer: 255.255.255.240/28**

How many usable host addresses will this subnet support?

**Answer: 14**

- b. Which subnet mask will accommodate the number of IP addresses required for ASW-2?

**Answer: 255.255.255.224 /27**

How many usable host addresses will this subnet support?

**Answer: 30**

- c. Which subnet mask will accommodate the number of IP addresses required for ASW-3?

**Answer: 255.255.255.248 /29**

How many usable host addresses will this subnet support?

**Answer: 6**

- d. Which subnet mask will accommodate the number of IP addresses required for ASW4?

**Answer: 255.255.255.192 /26**

How many usable host addresses will this subnet support?

**Answer: 62**

- e. Which subnet mask will accommodate the number of IP addresses required for the connection between Building1 and Building2?

**Answer: 255.255.255.252/30**

## Part 2: Design the VLSM Addressing Scheme

### Step 1: Divide the 10.11.48.0/24 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 **Building1** and **Building2**?

## Packet Tracer - VLSM Design and Implementation Practice

### Step 2: Document the VLSM subnets.

Complete the Subnet Table, listing the subnet descriptions (e.g. ASW-1 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	Last Usable Host Address	Broadcast Address
Host D	60	10.11.48.0/26	10.11.48.1	10.11.48.62k	10.11.48.63
Host B	30	10.11.48.64/27	10.11.48.65	10.11.48.94	10.11.48.95
Host A	14	10.11.48.96/28	10.11.48.97	10.11.48.110	10.11.48.111
Host C	6	10.11.48.112/29	10.11.48.113	10.11.48.118	10.11.48.119
WAN Link	2	10.11.48.120/30	10.11.48.121	10.11.48.122	10.11.48.123

### Step 3: Document the addressing scheme.

- Assign the first usable IP addresses to Building1 for the two LAN links and the WAN link.
- Assign the first usable IP addresses to Building2 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 Building1 router LAN interfaces.

Step 2: Configure IP addressing on the ASW-3, switch including the default gateway.

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

Step 4: Verify connectivity.

You can only verify connectivity from Building1, ASW-3, and Host-D. However, you should be able to ping every IP address listed in the **Addressing Table**.