NAME: BEATRICE ANN DAVID A23CS0055

LAB 2:
11.9.3: Packet Tracer - VLSM Design and Implementation Practice Topology

Topology

You will receive one of three possible topologies.

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
Remote-Site1	G0/0	10.11.48.1	255.255.255.192 (/26)	N/A
Remote-Site1	G0/1	10.11.48.65	255.255.255.224 (/27)	N/A
Remote-Site1	S0/0/0	10.11.48.121	255.255.255.252 (/30)	N/A
Remote-Site2	G0/0	10.11.48.97	255.255.255.240 (/28)	N/A
Remote-Site2	G0/1	10.11.48.113	255.255.255.248 (/29)	N/A
Remote-Site2	S0/0/0	10.11.48.122	255.255.255.252 (/30)	N/A
Sw1	VLAN 1	10.11.48.98	255.255.255.240 (/28)	10.11.48.97
Sw2	VLAN 1	10.11.48.66	255.255.255.224 (/27)	10.11.48.65
Sw3	VLAN 1	10.11.48.114	255.255.255.248 (/29)	10.11.48.113
Sw4	VLAN 1	10.11.48.2	255.255.255.192 (/26)	10.11.48.1
User-1	NIC	10.11.48.110	255.255.255.240 (/28)	10.11.48.97
User-2	NIC	10.11.48.94	255.255.255.224 (/27)	10.11.48.65
User-3	NIC	10.11.48.118	255.255.255.248 (/29)	10.11.48.113
User-4	NIC	10.11.48.62	255.255.255.192 (/26)	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.

Screenshots:

A. Result:

Cisco Packet Tracer - C:/Users/IDEAPAD SLIM/OneDrive/Desktop/UTM/Faculty of computing/YEAR 2 SE...

File Edit Options View Tools Extensions Window Help

Activity Results Time Elapsed: 01:

Congratulations BEATRICE ANN DAVID! You completed the activity.

Overall Feedback | Assessment Items | Connectivity Tests

Congratulations! You successfully completed the **Packet Tracer - Designing and Implementing a VLSM Addressing Scheme** activity. However, your score may change based on your answers to the questions in the Instructions. Consult your instructor.

Click **Reset Activity** to generate a new scenario.

Cisco Packet Tracer - C:/Users/IDEAPAD SLIM/OneDrive/Desktop/UTM/Faculty of computing/YEAR 2 SE...

File Edit Options View Tools Extensions Window Help

Activity Results Time Elapsed: 01:

Congratulations BEATRICE ANN DAVID! You completed the activity.

Overall Feedback | Assessment Items | Connectivity Tests

Expand/Collapse All | Show Incorrect Items

Assessment Items	Status	Points	Componer
Network			
Remote-Site1			
Ports			
GigabitEthernet0/0			
IP Address	Correct	3	VLSM Add
Port Status	Correct	1	Device Inte
Subnet Mask	Correct	3	VLSM Add
GigabitEthernet0/1			
IP Address	Correct	3	VLSM Add
Port Status	Correct	1	Device Inte
Subnet Mask	Correct	3	VLSM Add
Sw3			
Default Gateway	Correct	3	Default Ga
Ports			
Vlan1			
IP Address	Correct	3	VLSM Add
Port Status	Correct	1	Device Inte
Subnet Mask	Correct	3	VLSM Add
User-4			
Default Gateway	Correct	2	Default Ga
Ports			
FastEthernet0			
IP Address	Correct	2	VLSM Add
Subnet Mask	Correct	2	VLSM Add

Score : 30/30

Item Count : 13/13

Component	Items/Total
Default Gateway Configuration	2/2
Device Interface Configuration	3/3
VLSM Addressing Implementation	8/8

B. Working:

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:

- **Sw1** LAN will require **14** host IP addresses
- **Sw2** LAN will require **30** host IP addresses
- **Sw3** LAN will require **6** host IP addresses
- **Sw4** LAN will require **60** host IP addresses

How many subnets are needed in the network topology?

5 subnets

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

a. Which subnet mask will accommodate the number of IP addresses required for **Sw1**? How many usable host addresses will this subnet support?

255.255.255.240, 14

b. Which subnet mask will accommodate the number of IP addresses required for **Sw2**? How many usable host addresses will this subnet support?

255.255.255.224, 30

c. Which subnet mask will accommodate the number of IP addresses required for **Sw3**? How many usable host addresses will this subnet support?

255.255.255.248, 6

d. Which subnet mask will accommodate the number of IP addresses required for **Sw4**? How many usable host addresses will this subnet support?

255.255.255.192, 62

e. Which subnet mask will accommodate the number of IP addresses required for the connection between **Remote-Site1** and **Remote-Site2**?

255.255.255.252

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 **Remote-Site1** and **Remote-Site2**.

Step 2: Document the VLSM subnets.

Complete the **Subnet Table**, listing the subnet descriptions (e.g. Sw1 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
Sw4 LAN	60	10.11.48.0	/26	10.11.48.1
Sw2 LAN	30	10.11.48.64	/27	10.11.48.65
Sw1 LAN	14	10.11.48.96	/28	10.11.48.97
Sw3 LAN	6	10.11.48.112	/29	10.11.48.113
WAN Link	2	10.11.48.120	/30	10.11.48.121

Step 3: Document the addressing scheme.

a. Assign the first usable IP addresses to **Remote-Site1** for the two LAN links and the WAN link.

b. Assign the first usable IP addresses to **Remote-Site2** 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.

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
Remote-Site1	G0/0	10.11.48.1	255.255.255.192 (/26)	N/A
Remote-Site1	G0/1	10.11.48.65	255.255.255.224 (/27)	N/A
Remote-Site1	S0/0/0	10.11.48.121	255.255.255.252 (/30)	N/A
Remote-Site2	G0/0	10.11.48.97	255.255.255.240 (/28)	N/A
Remote-Site2	G0/1	10.11.48.113	255.255.255.248 (/29)	N/A
Remote-Site2	S0/0/0	10.11.48.122	255.255.255.252 (/30)	N/A
Sw1	VLAN 1	10.11.48.98	255.255.255.240 (/28)	10.11.48.97
Sw2	VLAN 1	10.11.48.66	255.255.255.224 (/27)	10.11.48.65
Sw3	VLAN 1	10.11.48.114	255.255.255.248 (/29)	10.11.48.113
Sw4	VLAN 1	10.11.48.2	255.255.255.192 (/26)	10.11.48.1
User-1	NIC	10.11.48.110	255.255.255.240 (/28)	10.11.48.97
User-2	NIC	10.11.48.94	255.255.255.224 (/27)	10.11.48.65
User-3	NIC	10.11.48.118	255.255.255.248 (/29)	10.11.48.113
User-4	NIC	10.11.48.62	255.255.255.192 (/26)	10.11.48.1

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.

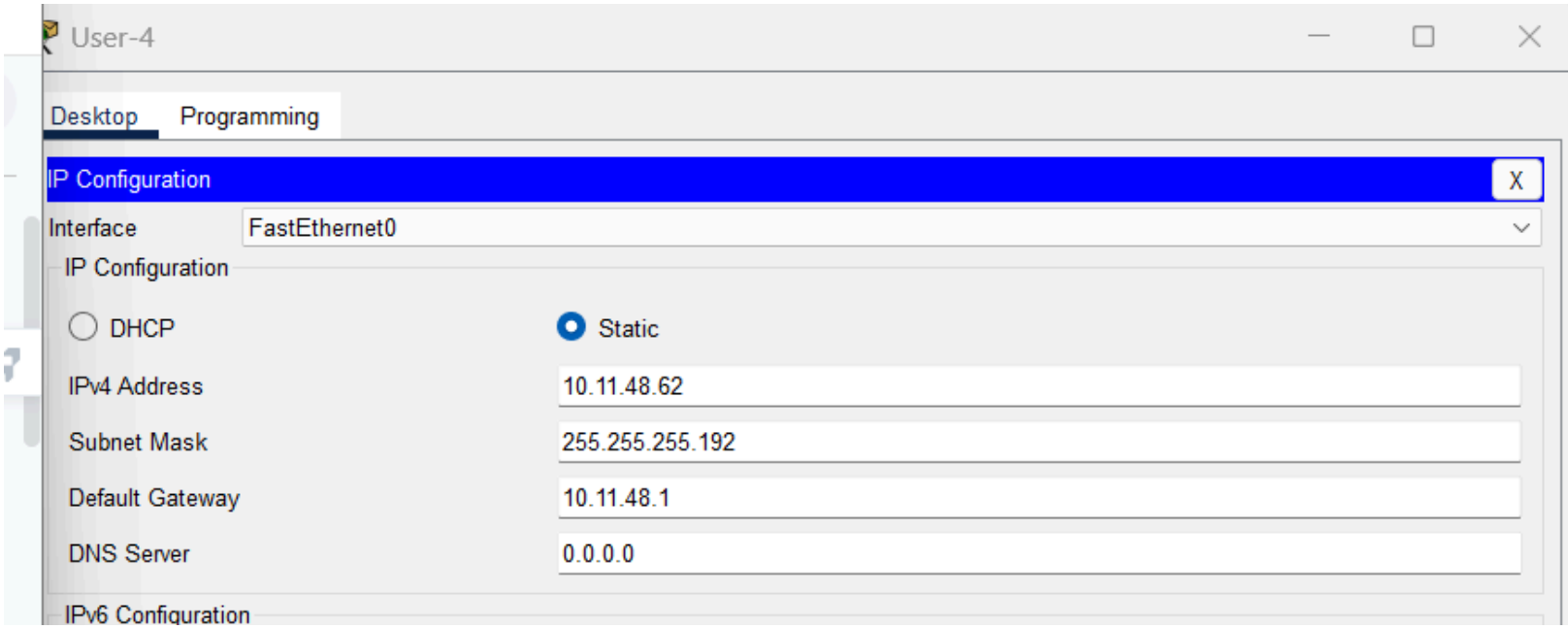
Step 1: Configure IP addressing on the Remote-Site1 router LAN interfaces.

```
Remote-Sitel>enable
Remote-Sitel#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Remote-Sitel(config)#interface gigabitEthernet0/0
Remote-Sitel(config-if)#ip address 10.11.48.97
% Incomplete command.
Remote-Sitel(config-if)#255.255.255.240 (/28)
                        ^
% Invalid input detected at '^' marker.

Remote-Sitel(config-if)#
Remote-Sitel(config-if)#10.11.48.97
                        ^
% Invalid input detected at '^' marker.

Remote-Sitel(config-if)#10.11.48.97 255.255.255.240
                        ^
% Invalid input detected at '^' marker.

Remote-Sitel(config-if)#ip address 10.11.48.97 255.255.255.240
Remote-Sitel(config-if)#no shutdown
Remote-Sitel(config-if)#exit
Remote-Sitel(config)#
Remote-Sitel(config)#interface gigabitEthernet0/1
Remote-Sitel(config-if)#ip address 10.11.48.65 255.255.255.22
Bad mask 0xFFFFFF16 for address 10.11.48.65
Remote-Sitel(config-if)#ip address 10.11.48.65 255.255.255.224
Remote-Sitel(config-if)#no shutdown
Remote-Sitel(config-if)#exit
Remote-Sitel(config)#
```

Step 2: Configure IP addressing on the Sw3, switch including the default gateway.

```
Sw3>enable
Sw3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Sw3(config)#interface vlan 1
Sw3(config-if)#ip address 10.11.48.114 255.255.255.248
Sw3(config-if)#no shutdown
Sw3(config-if)#ip default-gateway 10.11.48.113
Sw3(config)#
```

Step 3: Configure IP addressing on User-4, including the default gateway.



Step 4: Verify connectivity.

You can only verify connectivity from Remote-Site1, Sw3, and User-4. However, you should be able to ping every IP address listed in the **Addressing Table**.

ID:021

```
Pinging 10.11.48.65 with 32 bytes of data:

Reply from 10.11.48.65: bytes=32 time=8ms TTL=254
Reply from 10.11.48.65: bytes=32 time=11ms TTL=254
Reply from 10.11.48.65: bytes=32 time=15ms TTL=254
Reply from 10.11.48.65: bytes=32 time=9ms TTL=254

Ping statistics for 10.11.48.65:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 8ms, Maximum = 15ms, Average = 10ms

C:\>ping 10.11.48.6510.11.48.66
Ping request could not find host 10.11.48.6510.11.48.66. Please check the name and try again.
C:\>ping 10.11.48.66

Pinging 10.11.48.66 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 10.11.48.66: bytes=32 time=1ms TTL=253
Reply from 10.11.48.66: bytes=32 time=7ms TTL=253

Ping statistics for 10.11.48.66:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 7ms, Average = 4ms

C:\>ping 10.11.48.66

Pinging 10.11.48.66 with 32 bytes of data:

Reply from 10.11.48.66: bytes=32 time=18ms TTL=253
Reply from 10.11.48.66: bytes=32 time=8ms TTL=253
Reply from 10.11.48.66: bytes=32 time=8ms TTL=253
Reply from 10.11.48.66: bytes=32 time=1ms TTL=253

Ping statistics for 10.11.48.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 18ms, Average = 8ms

C:\>
```