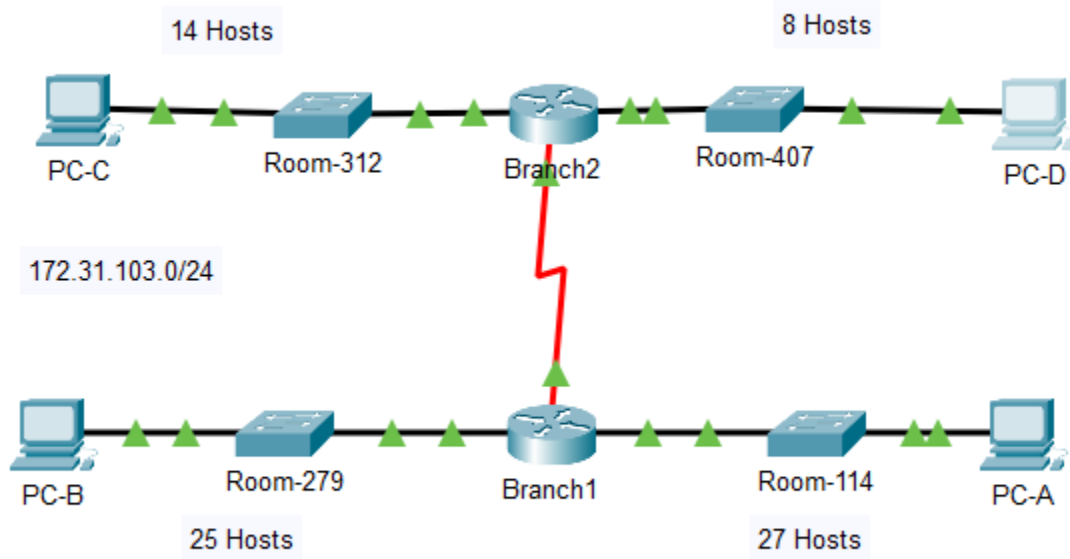


Experiment-14

VLSM Design and Implementation Practice Topology

Topology



Objectives

Part 1: Examine the Network Requirements

Part 2: Design the VLSM Addressing Scheme

Part 3: Assign IP Addresses to Devices and Verify Connectivity

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
Branch1	G0/0	172.31.103.1	255.255.255.224	N/A
	G0/1	172.31.103.33	255.255.255.224	N/A
	S0/0/0	172.31.103.97	255.255.255.252	N/A
Branch2	G0/0	172.31.103.65	255.255.255.240	N/A
	G0/1	172.31.103.81	255.255.255.240	N/A
	S0/0/0	172.31.103.98	255.255.255.252	N/A
Room-114	VLAN 1	172.31.103.2	255.255.255.224	172.31.103.1
Room-279	VLAN 1	172.31.103.34	255.255.255.224	172.31.103.33

Room-312	VLAN 1	172.31.103.66	255.255.255.240	172.31.103.65
Room-407	VLAN 1	172.31.103.82	255.255.255.240	172.31.103.81
PC-A	NIC	172.31.103.30	255.255.255.224	172.31.103.1
PC-B	NIC	172.31.103.62	255.255.255.224	172.31.103.33
PC-C	NIC	172.31.103.78	255.255.255.240	172.31.103.65
PC-D	NIC	172.31.103.94	255.255.255.240	172.31.103.81

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.

Part 1: Examine the Network Requirements

Step 1: Determine the number of subnets needed.

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

Part 2: Design the VLSM Addressing Scheme

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

Step 2: Document the VLSM subnets.

Step 3: Document the addressing scheme.

Part 3: Assign IP Addresses to Devices and Verify Connectivity

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

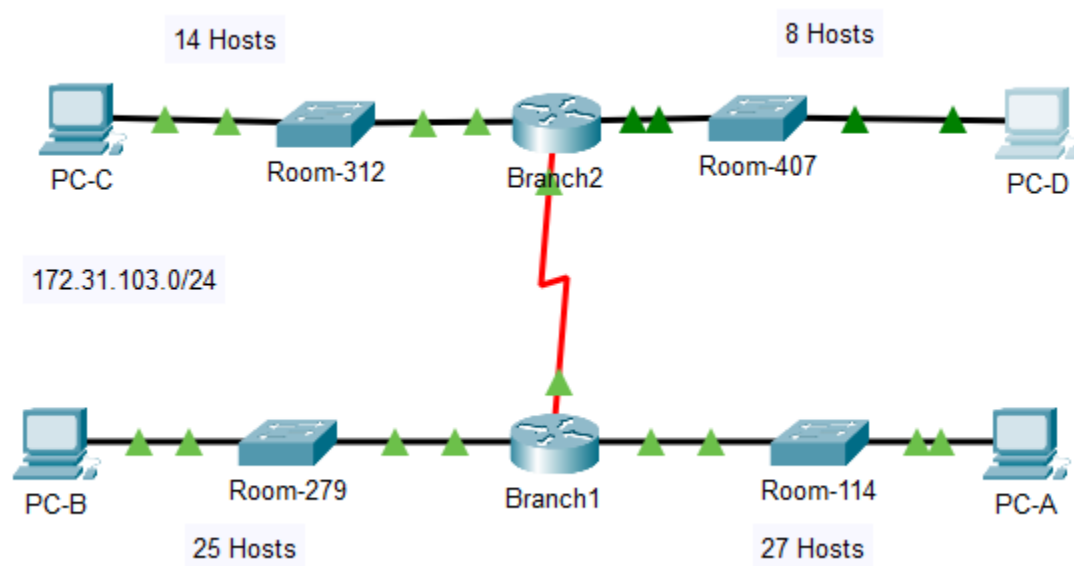
Step 2: Configure IP addressing on the, switch including the default gateway.

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

Step 4: Verify connectivity.

Subnet Description	Number of Hosts Needed	Network Address/CIDR	First Usable Host Address	Broadcast Address
PC-A LAN	27	172.31.103.0/27	172.31.103.1/27	172.31.103.31
PC-B LAN	25	172.31.103.32/27	172.31.103.33/27	172.31.103.63
PC-C LAN	14	172.31.103.64/27	172.31.103.65/27	172.31.103.79
PC-D LAN	8	172.31.103.80/27	172.31.103.81/27	172.31.103.95
WAN Link	2	172.31.103.96/27	172.31.103.97/27	172.31.103.99

Final Output:



```
Room-312>enable
Room-312#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Room-312(config)#interface vlan 1
Room-312(config-if)#ip address 172.31.103.66 255.255.255.240
Room-312(config-if)#no shutdown

Room-312(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

Room-312(config-if)#ip default 172.31.103.65
Room-312(config)#
```

```
Branch1>enable
Branch1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Branch1(config)#interface gigabitEthernet 0/0
Branch1(config-if)#ip address 172.31.103.1 255.255.255.224
Branch1(config-if)#no shutdown

Branch1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Branch1(config-if)#interface gigabitEthernet 0/1
Branch1(config-if)#ip address 172.31.103.33 255.255.255.224
Branch1(config-if)#no shutdown

Branch1(config-if)#
```

```

C:\>ping 172.31.103.66

Pinging 172.31.103.66 with 32 bytes of data:

Reply from 172.31.103.66: bytes=32 time<1ms TTL=254
Reply from 172.31.103.66: bytes=32 time<1ms TTL=254
Reply from 172.31.103.66: bytes=32 time<1ms TTL=254
Reply from 172.31.103.66: bytes=32 time<1ms TTL=254

Ping statistics for 172.31.103.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 172.31.103.66

Pinging 172.31.103.66 with 32 bytes of data:

Reply from 172.31.103.66: bytes=32 time<1ms TTL=254
Reply from 172.31.103.66: bytes=32 time<1ms TTL=254
Reply from 172.31.103.66: bytes=32 time<1ms TTL=254
Reply from 172.31.103.66: bytes=32 time<1ms TTL=254

Ping statistics for 172.31.103.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>172.31.103.1
Invalid Command.

C:\>ping 172.31.103.1

Pinging 172.31.103.1 with 32 bytes of data:

Reply from 172.31.103.1: bytes=32 time=16ms TTL=254
Reply from 172.31.103.1: bytes=32 time=1ms TTL=254
Reply from 172.31.103.1: bytes=32 time=17ms TTL=254
Reply from 172.31.103.1: bytes=32 time=17ms TTL=254

Ping statistics for 172.31.103.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 17ms, Average = 12ms

```

Result: Hence, the VLSM Design and Implementation Practice Topology hence been designed