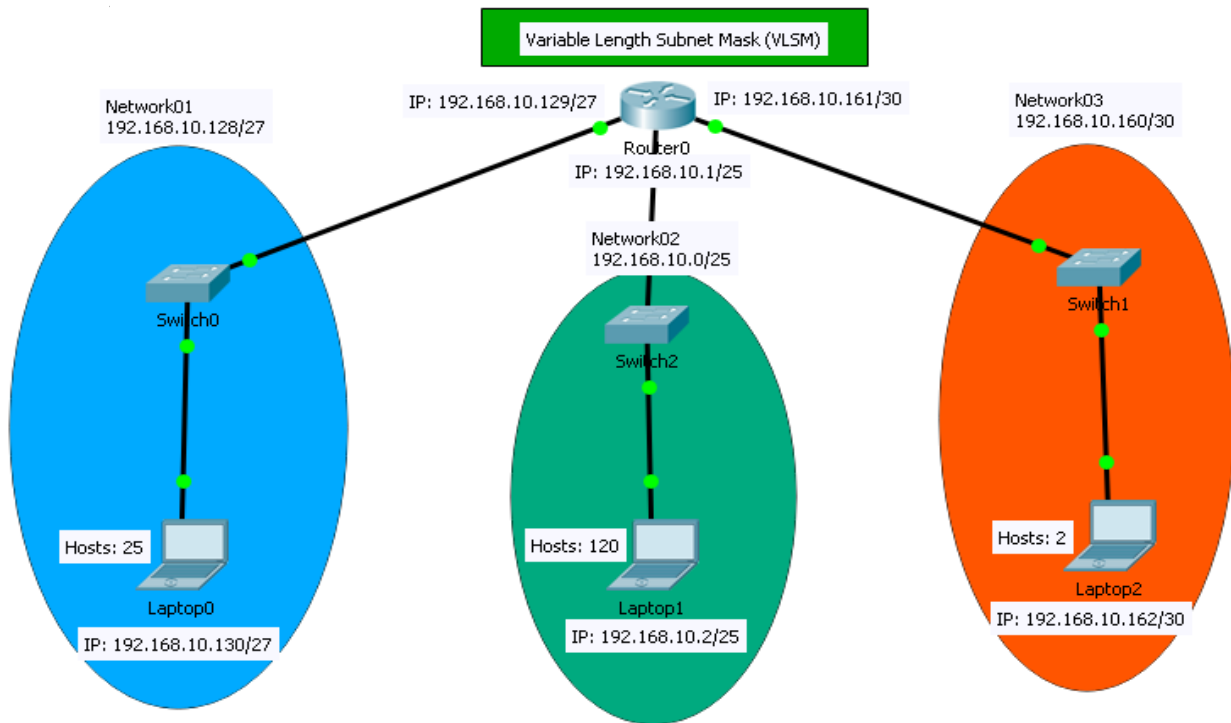


Lab05 Topology (VLSM)



Setup topology

Step 1: Connect topology devices as shown in figure.

- 1- Select straight-through Cable from connections in Cisco Packet Tracer.

Step 2: Variable Length Subnet Mask (VLSM)

- VLSM allows a network space to be divided in unequal parts.
- Subnet mask will vary depending on how many bits have been borrowed for a particular subnet.
- Network is first subnetted (Starting by a network which has the largest number of hosts), and then the subnets are subnetted again.
- Process repeated as necessary to create subnets of various sizes.
- Formula to determine number of useable hosts

CCNA Sem01 Lab#05

$$2^n - 2$$

- **n** (where **n** is the number of zeros in the last octet) is used to calculate the number of hosts.
- **-2** for subnetwork ID and broadcast address cannot be used on each subnet.

In this topology, we will start by Network02 (The largest number of hosts).

- The initial network is 192.168.10.0/24
- # hosts = 120
- $2^n - 2 \geq 120 \rightarrow n = 7$ (# of zeros in the last octet)
- Subnet mask in binary: 11111111.11111111.11111111.10000000
- Subnet mask in decimal: 255.255.255.128

We will do the same for the other networks starting by network 192.168.10.128

Step 3: Configure Router Router0.

- 1- Open router Router0
- 2- Select CLI tab.
- 3- Type "no" and Enter.

Step 4: Enter privileged EXEC mode of Router0.

You can access all Router commands in privileged EXEC mode.
Enter privileged EXEC mode by entering the **enable** command.

1. Router> **enable**
2. Router#

The prompt changed from Router > to Router# which indicates privileged EXEC mode.

Step 5: Enter configuration mode of Router0.

Use the **configuration terminal** command to enter configuration mode.

1. Router# **configure terminal**
2. Router(config)#

The prompt changed to reflect global configuration mode.

Step 6: Set a password on the privileged EXEC mode of the Router0

Encrypted, limits access to the privileged EXEC mode of the Router

1. Router(config)# **enable secret** cisco

Step 7: Set IPs for the interfaces of the Router0.

1. Router(config)# **interface** G0/1
2. Router(config-if)# **ip address** 192.168.10.1 255.255.255.128
3. Router(config-if)# **no shutdown**
4. Router(config-if)# **exit**
5. Router(config)# **interface** G0/0
6. Router(config-if)# **ip address** 192.168.10.129 255.255.255.224
7. Router(config-if)# **no shutdown**
8. Router(config-if)# **exit**
9. Router(config)# **interface** G0/2
10. Router(config-if)# **ip address** 192.168.10.161 255.255.255.252

CCNA Sem01 Lab#05

11. Router(config-if) # **no shutdown**
12. Router(config-if) # **exit**
13. Router(config) # **exit**

Show interfaces status:

1. Router# **show ip interface brief**

Step 8: Configure Laptops

- 1- Set IP for Laptop0(Desktop -> IP configuration)
 - a. IP address: 192.168.10.130
 - b. Subnet Mask: 255.255.255.224
 - c. Default Gateway: 192.168.10.129
- 2- Set IP for Laptop1(Desktop -> IP configuration)
 - a. IP address: 192.168.10.2
 - b. Subnet Mask: 255.255.255.128
 - c. Default Gateway: 192.168.10.1
- 3- Set IP for Laptop2(Desktop -> IP configuration)
 - a. IP address: 192.168.20.162
 - b. Subnet Mask: 255.255.255.252
 - c. Default Gateway: 192.168.20.161

Step 9: Test Connectivity of laptops

- 1- Open Laptop0(Desktop ->CMD)
 - a. Ping 192.168.10.2
 - b. Ping 192.168.10.162
- 2- Open Laptop1(Desktop ->CMD)
 - a. Ping 192.168.10.130
 - b. Ping 192.168.10.162
- 3- Open Laptop2(Desktop ->CMD)
 - a. Ping 192.168.10.2
 - b. Ping 192.168.10.130

Step 10: Save running configuration

1. Router# **copy running-config startup-config.**