University of Asia Pacific

Department of Computer Science & Engineering

Computer Networks Lab

CSE 320

VLSM with RIP Report

Submitted to:

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VLSM:

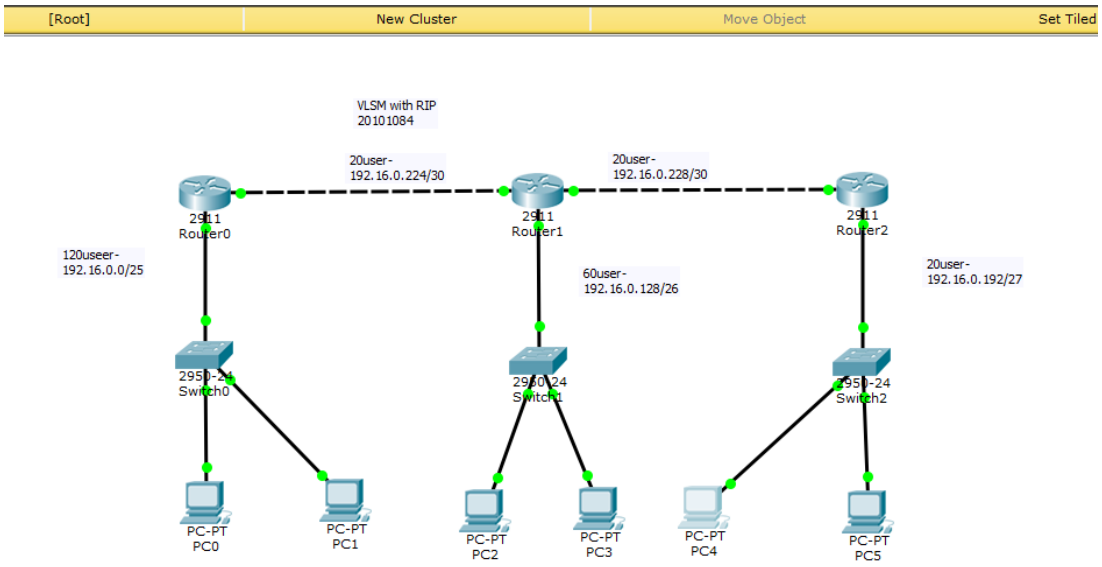
Variable Length Subnet Masking – VLSM – is a technique that allows network administrators to divide an IP address space into subnets of different sizes, unlike simple same-size Subnetting.

Variable Length Subnet Mask (VLSM) in a way, means subnetting a subnet. To simplify further, VLSM is the breaking down of IP addresses into subnets (multiple levels) and allocating them according to the individual need of a network. It can also be called a classless IP addressing. Classful addressing follows the general rule that has been proven to amount to IP address wastage.

VLSM fundamentals:

To fully understand VLSM, it's important to be familiar with several fundamental terms: subnet mask, subnetting and supernetting. In order to fully grasp the concept of VLSM, we first need to understand the term subnet mask, subnetting and Supernetting.

Structure:



Equipments:

- 2921 router
- 2960-24 switch
- PC-PT end devices
- Wire

Step:

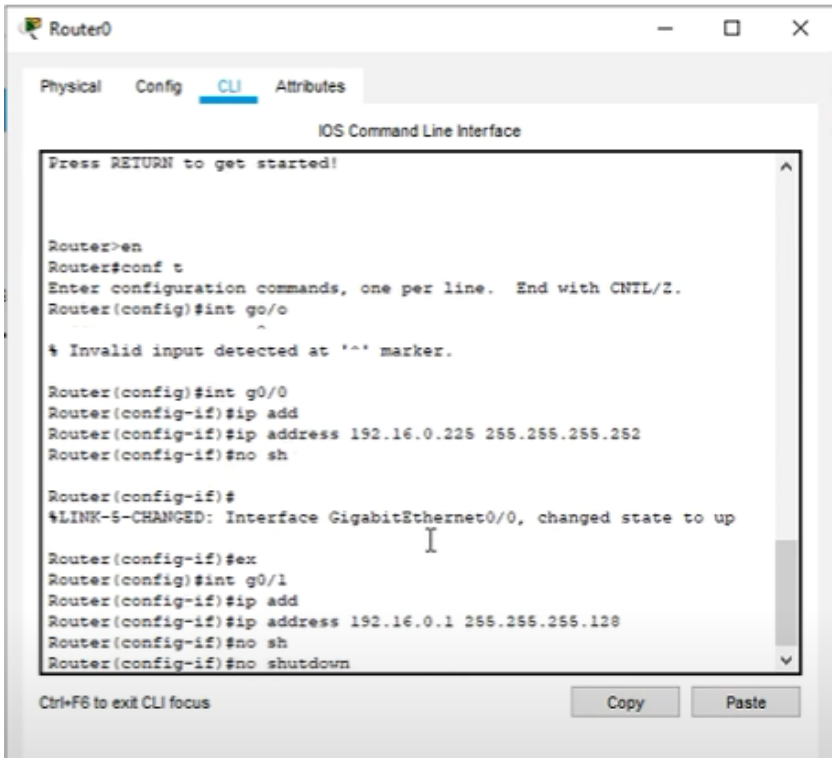
Step 1: Arrange the networks from the largest to the smallest.

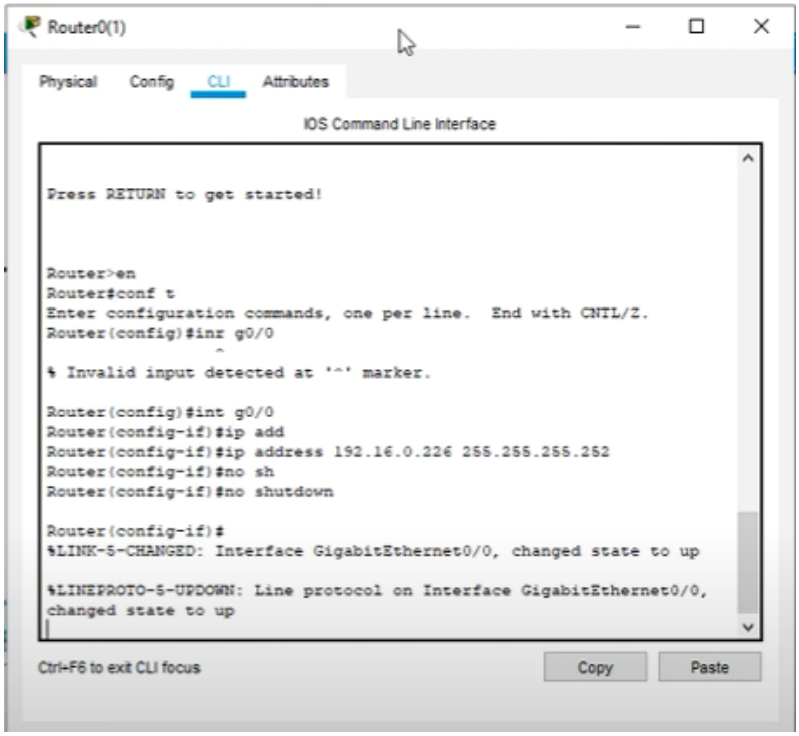
Step 2: Implement VLSM subnetting for the largest network (LAN A).

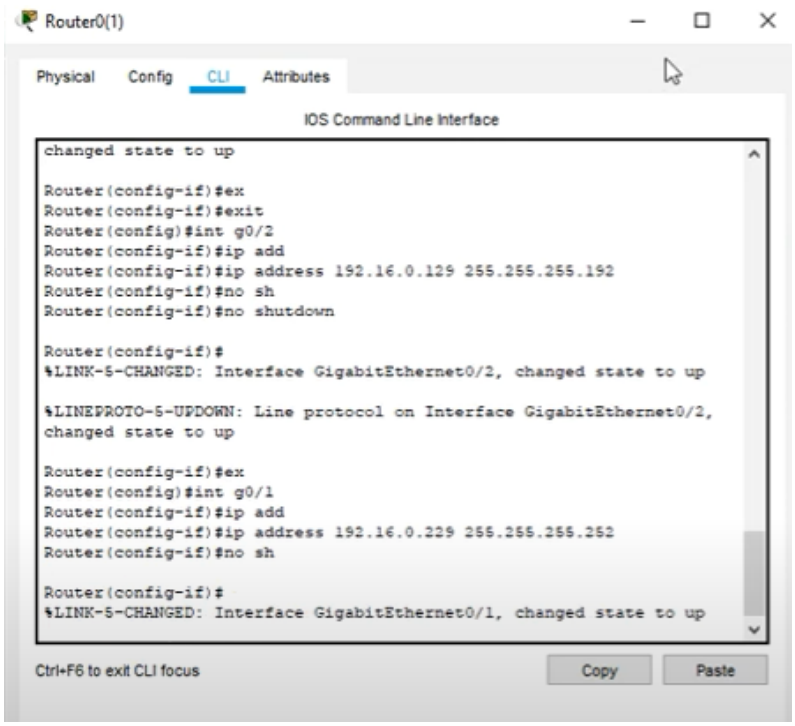
Step 3: Implement VLSM subnetting for the second-largest network (LAN B).

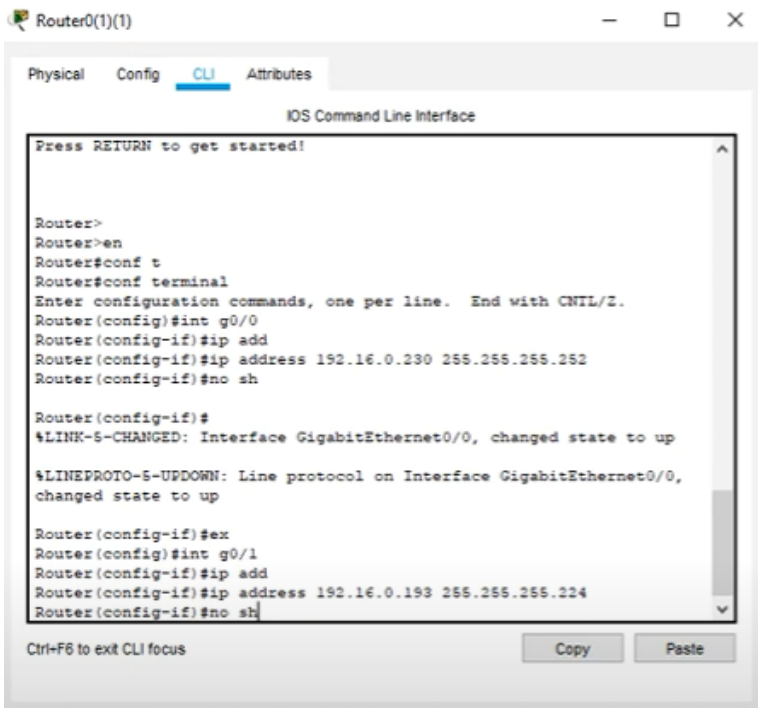
Step 4: Implement VLSM subnetting for LAN C.

For R1,R2 & R3:

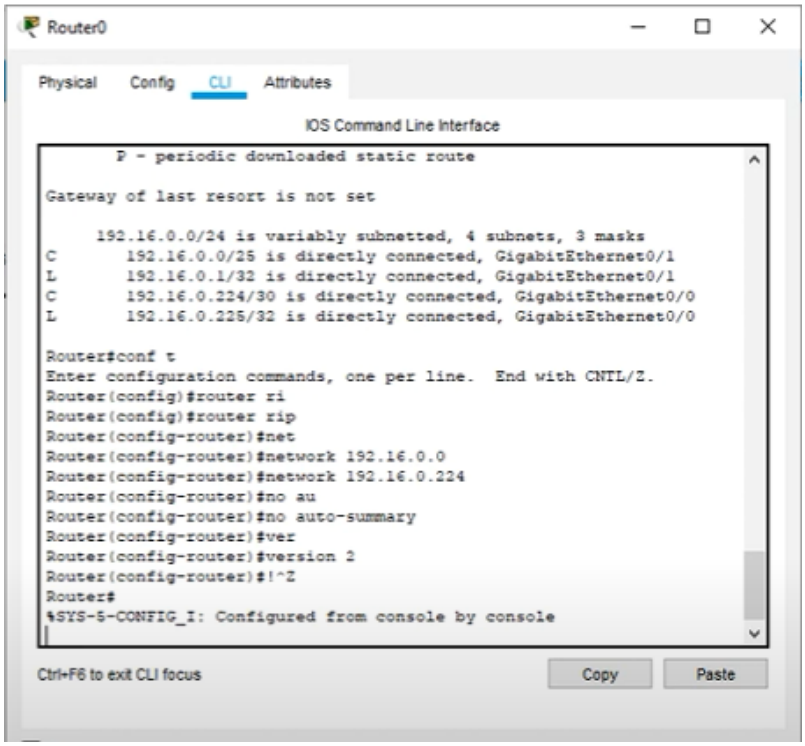


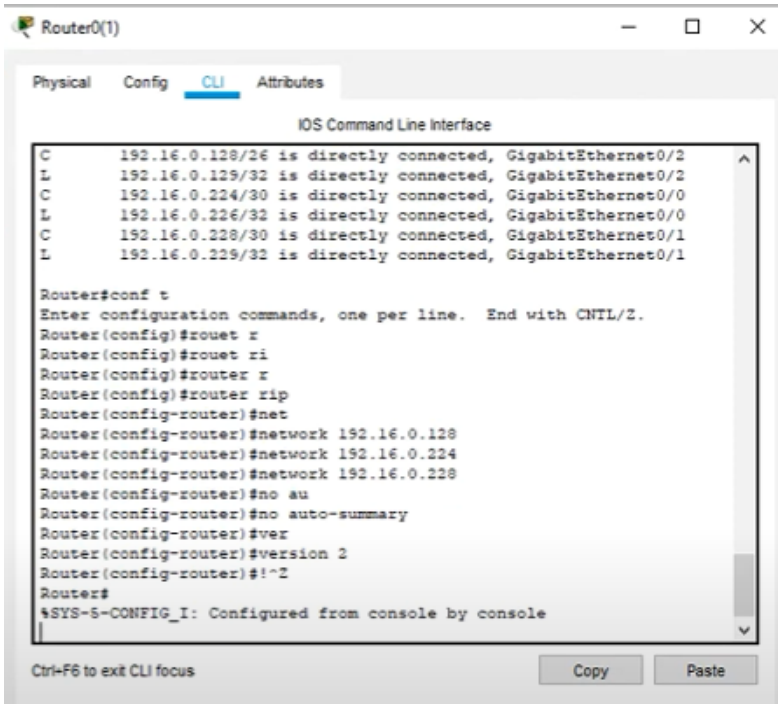

Router0(1)
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started!
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#inz g0/0
% Invalid input detected at '^' marker.
Router(config)#int g0/0
Router(config-if)#ip add
Router(config-if)#ip address 192.16.0.226 255.255.255.252
Router(config-if)#no sh
Router(config-if)#no shutdown
Router(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
Ctrl+F6 to exit CLI focus
Copy
Paste

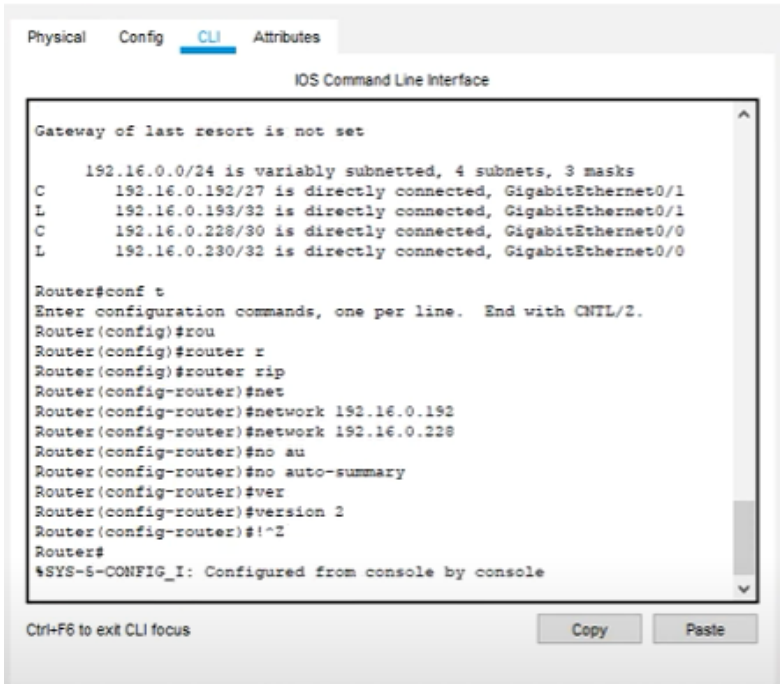

Router0(1)
Physical
Config
CLI
Attributes
IOS Command Line Interface
changed state to up
Router(config-if)#ex
Router(config-if)#exit
Router(config)#int g0/2
Router(config-if)#ip add
Router(config-if)#ip address 192.16.0.129 255.255.255.192
Router(config-if)#no sh
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2,
changed state to up
Router(config-if)#ex
Router(config)#int g0/1
Router(config-if)#ip add
Router(config-if)#ip address 192.16.0.229 255.255.255.252
Router(config-if)#no sh
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
Ctrl+F6 to exit CLI focus
Copy
Paste



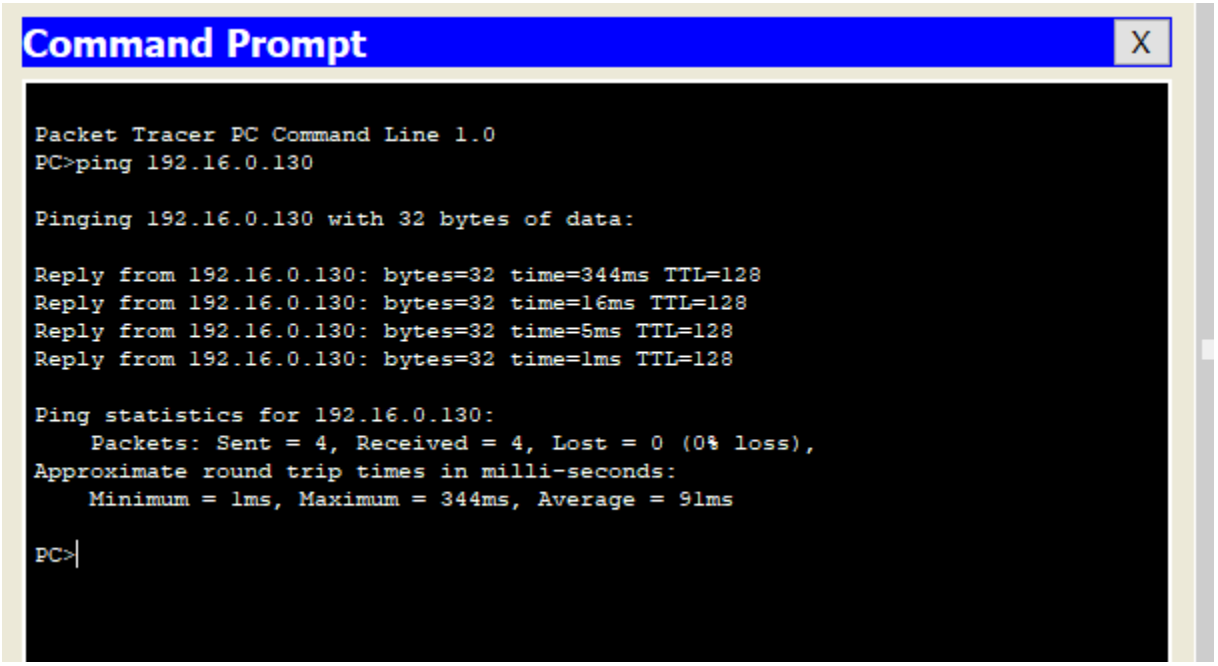
For Switch S1,S2 & S3:

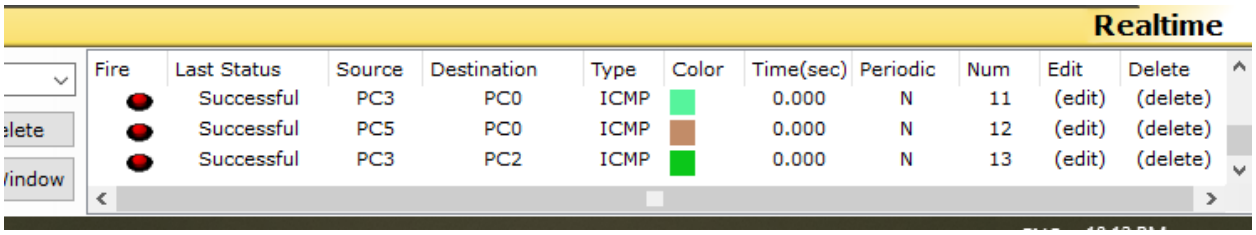



Router0(1)
Physical
Config
CLI
Attributes
IOS Command Line Interface
C 192.16.0.128/26 is directly connected, GigabitEthernet0/2
L 192.16.0.129/32 is directly connected, GigabitEthernet0/2
C 192.16.0.224/30 is directly connected, GigabitEthernet0/0
L 192.16.0.226/32 is directly connected, GigabitEthernet0/0
C 192.16.0.228/30 is directly connected, GigabitEthernet0/1
L 192.16.0.229/32 is directly connected, GigabitEthernet0/1
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#rouet r
Router(config)#rouet ri
Router(config)#router r
Router(config)#router rip
Router(config-router)#net
Router(config-router)#network 192.16.0.128
Router(config-router)#network 192.16.0.224
Router(config-router)#network 192.16.0.228
Router(config-router)#no au
Router(config-router)#no auto-summary
Router(config-router)#ver
Router(config-router)#version 2
Router(config-router)#!^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
Ctrl+F6 to exit CLI focus
Copy
Paste


Physical
Config
CLI
Attributes
IOS Command Line Interface
Gateway of last resort is not set
192.16.0.0/24 is variably subnetted, 4 subnets, 3 masks
C 192.16.0.192/27 is directly connected, GigabitEthernet0/1
L 192.16.0.193/32 is directly connected, GigabitEthernet0/1
C 192.16.0.228/30 is directly connected, GigabitEthernet0/0
L 192.16.0.230/32 is directly connected, GigabitEthernet0/0
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#rou
Router(config)#router r
Router(config)#router rip
Router(config-router)#net
Router(config-router)#network 192.16.0.192
Router(config-router)#network 192.16.0.228
Router(config-router)#no au
Router(config-router)#no auto-summary
Router(config-router)#ver
Router(config-router)#version 2
Router(config-router)#!^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console
Ctrl+F6 to exit CLI focus
Copy
Paste

Connection Between PCs:





Here, we see the message will be sent properly. We have successfully done VLSM with RIP.