DEPARTMENT OF TELECOMMUNICATION ENGINEERING
MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
COMPUTER COMMUNICATION & NETWORKING
(6th Term, 3th Year)
LAB EXPERIMENT # 16/1

Name:_____Roll No: _____

Score:_____Signature of the Lab Tutor:_____Date: _____

OBJECTIVES

#	Topic	#. Of Lectures	CLO	Taxonomy level
16	Open Ended Lab(OEL):University/Campus-Networking Project using Packet Tracer	3	1,2	C3, P3

OUTCOME(S)

a. An ability to apply knowledge of math, science, and engineering	PLO1: Engineering Knowledge:
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	**PLO5:** Modern Tool Usage

RUBRICS:

Performance Metric	Exceeds expectation (4-5)	Meets expectations (2-3)	Does not meet expectations (0-1)	Score
Knowledge and application [PLO1]	Applies the appropriate knowledge and concepts to the problem with accuracy and proficiency; shows precise understanding of these knowledge and concepts.	Applies the relevant knowledge and concept to the problem, possibly in a roundabout way; understands the major points of the knowledge, with possible misunderstanding or failure to recall minor points;	Fails to apply relevant knowledge and concepts to the problem; misunderstands or fails to recall critical points.	
Modern Tool Usage [PLO5]	Computer and software are extensively used in the course	Computer and software are somewhat utilized, effort was put into learning new software	Computer and software are not utilized, no attempt was made at learning new software	
			Total Score	

DISCUSSION:

This task is self-learning task, the knowledge acquired during the session on Computer networks. Sort out some kind of difficulty you experience in your session then advise thesolution to that problem.

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LAB EXPERIMENT # 16/2

COURSEWORK BRIEF:

In this Project we have created two campuses of a University that are situated 20miles away.The University students & staff are distributed in 4 faculties. Each members of staff has a PC & students have access to PC's in the Las

REQUIREMENTS:

a). Create a network topology with the main components to support the following:

- Main-campus:
  - (i) Building A: Administrative staff in the department of management, HR and finance. The admin staff PC's are distributed in the building offices and it is expected that they will share some networking equipment (VLAN's). The faculty of business is also situated in this building.
  - (ii) Building B: Telecommunication and Computer science departments.
  - (iii) Building C: Students labs and IT department. The IT department hosts the University Web server and other servers.
  - (iv) There is also an email server hosted externally on the cloud.
- Smaller campus:
  - (i) Faculty of Health and Sciences (staff and students labs are situated on separate floors)

b). We will configure the core devices and few end devices to provide end-to-end connectivity and access to the internal servers and the external servers.

- Each department/faculty is expected to be on its own separate IP network.
- The switches are configured with appropriate VLAN's and security settings.
- RIPv2 is used to provide routing for the routers in the internal network and static routing for the external server.
- The devices in building A will require dynamic IP addresses from a router based DHCP server

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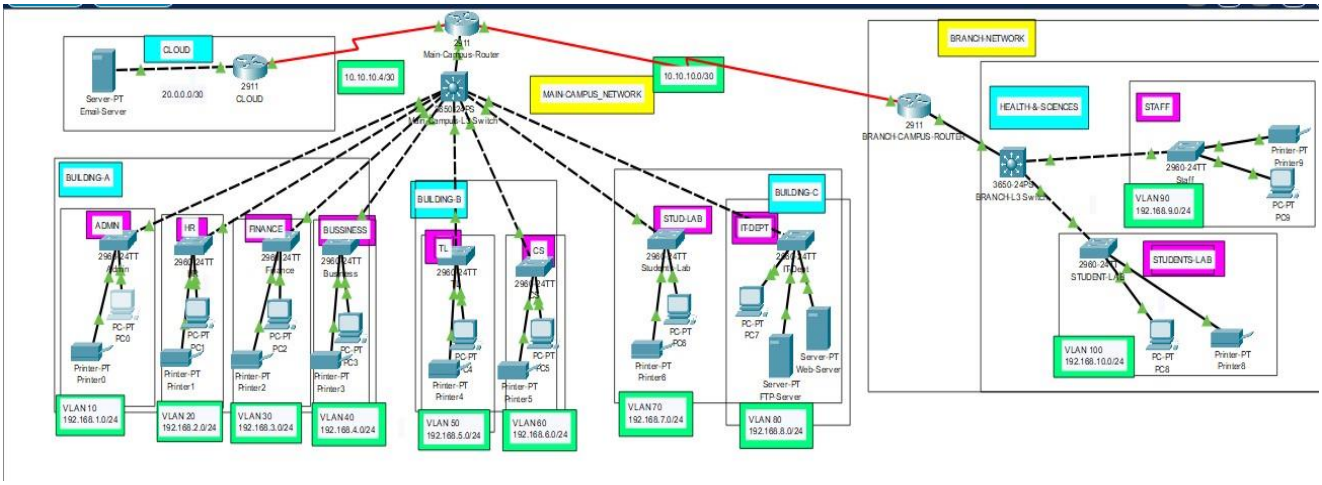
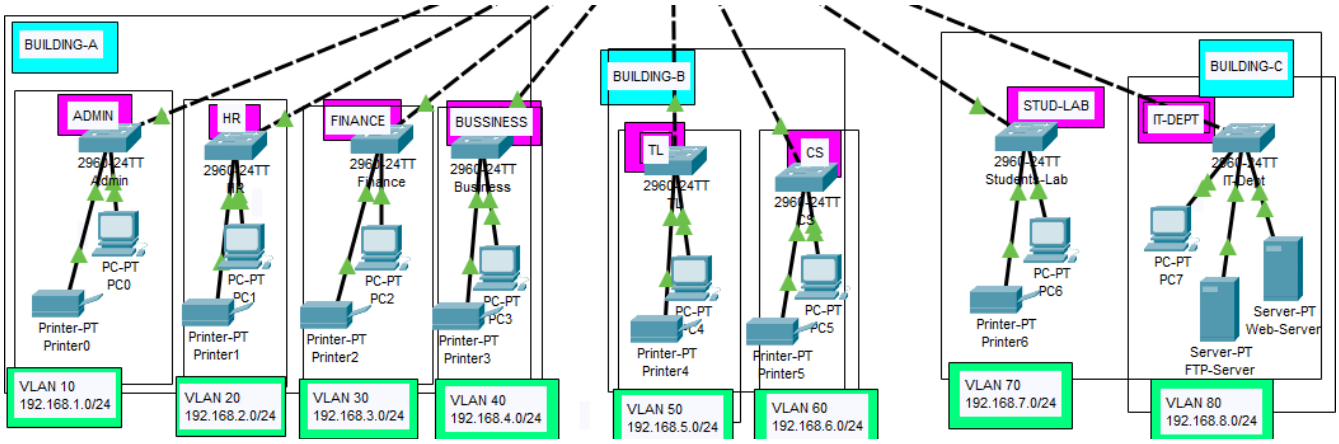
LAB EXPERIMENT # 16/3

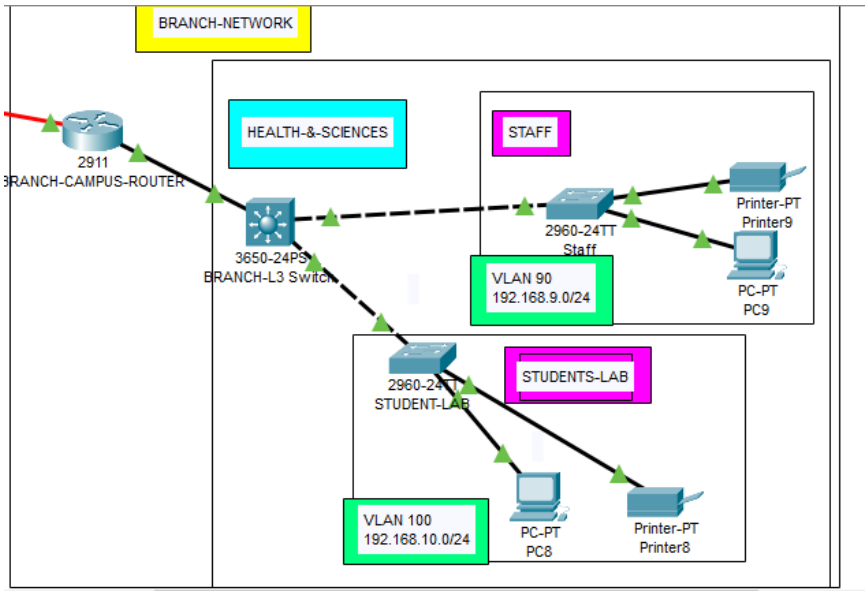
TOPOLOGY:



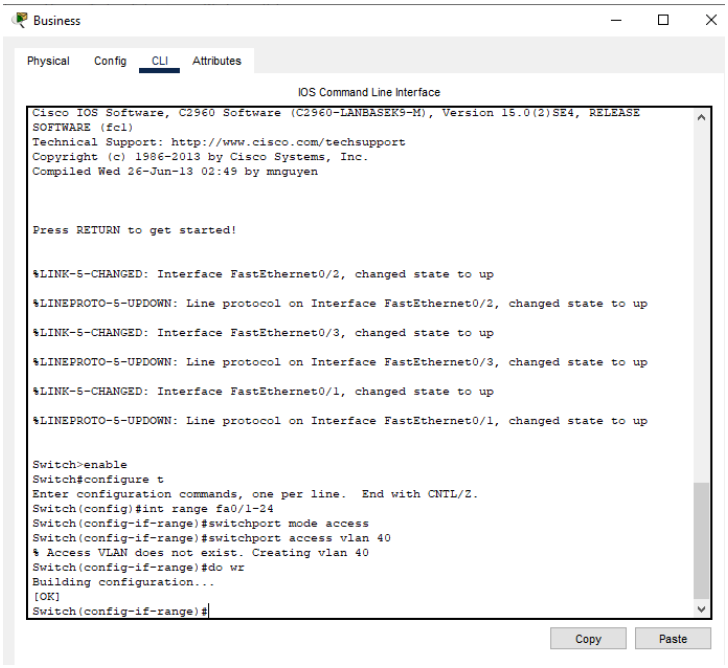
MAIN-CAMPUS:



SMALLER-CAMPUS:



ACCESSING-VLAN's:



DHCP-CONF:

```
Router(config)#ip dhcp pool Studlb-pool
Router(dhcp-config)#network 192.168.10.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#dns-server 192.168.10.1
Router(dhcp-config)#exit
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
```

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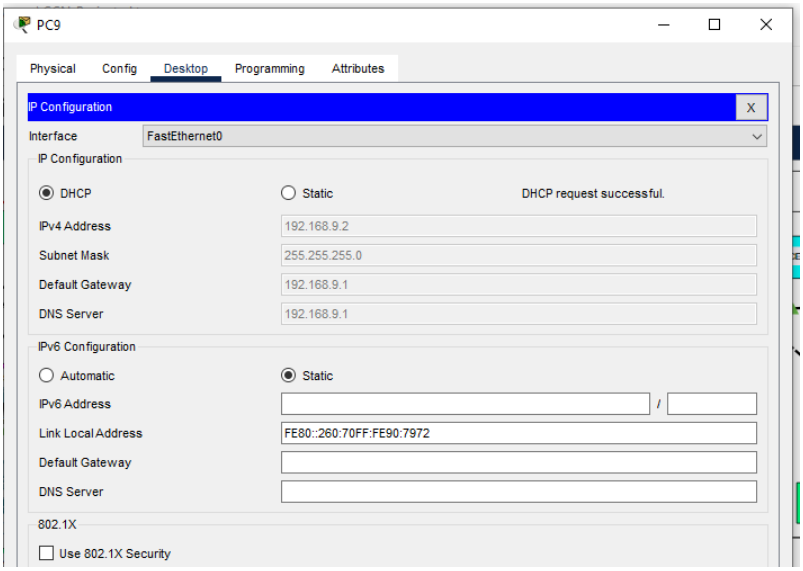
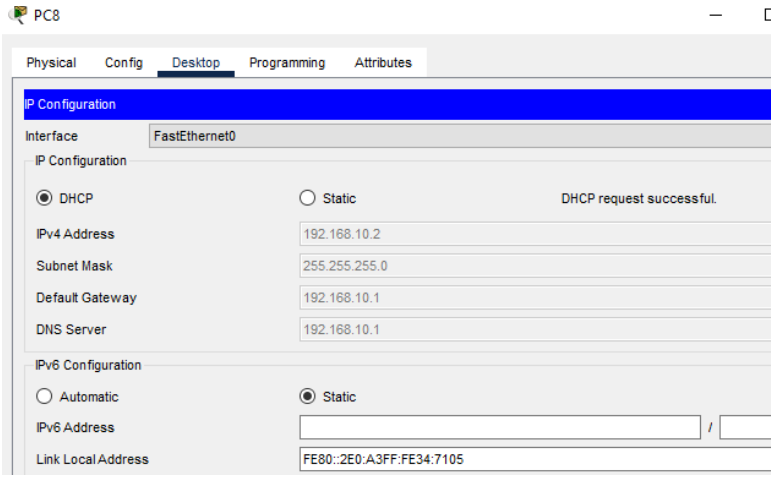
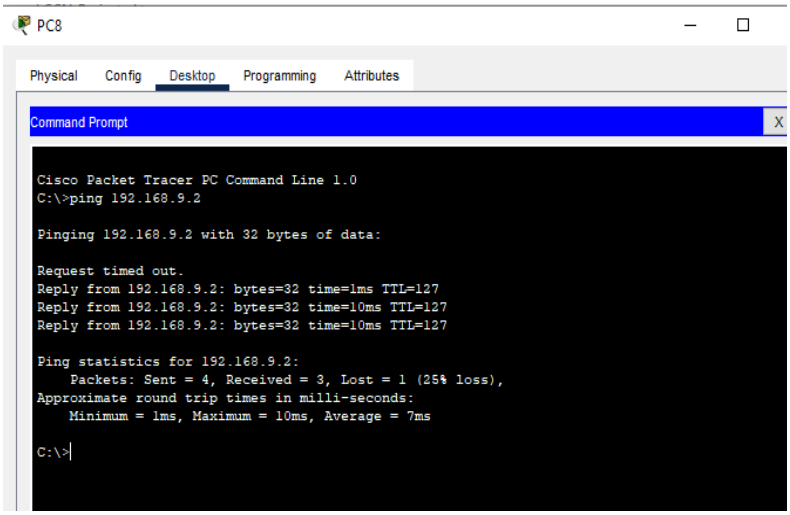
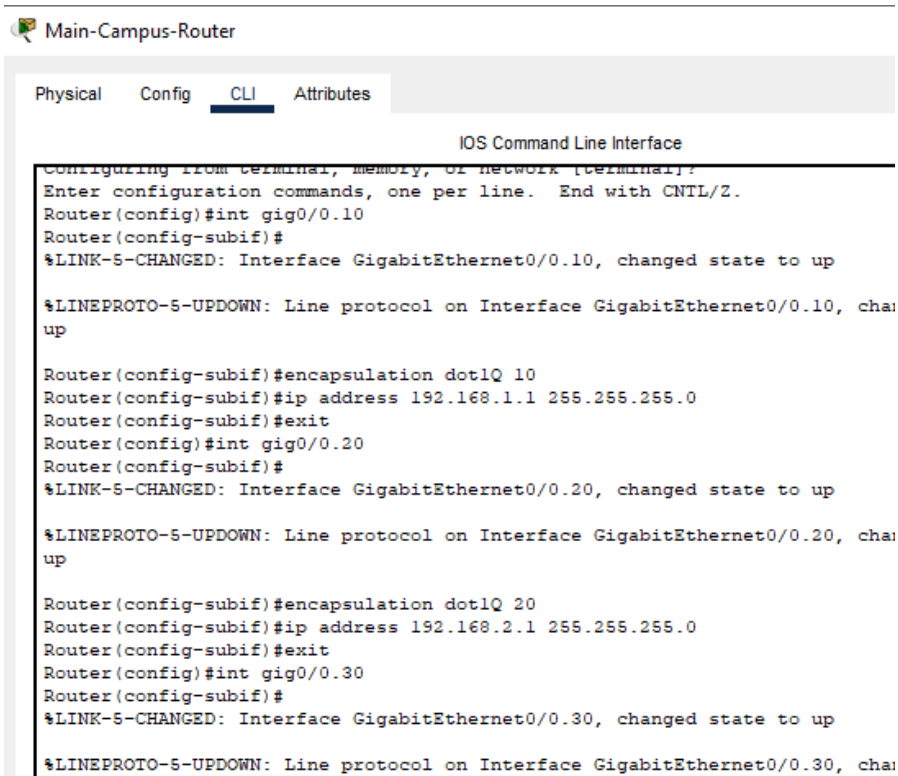
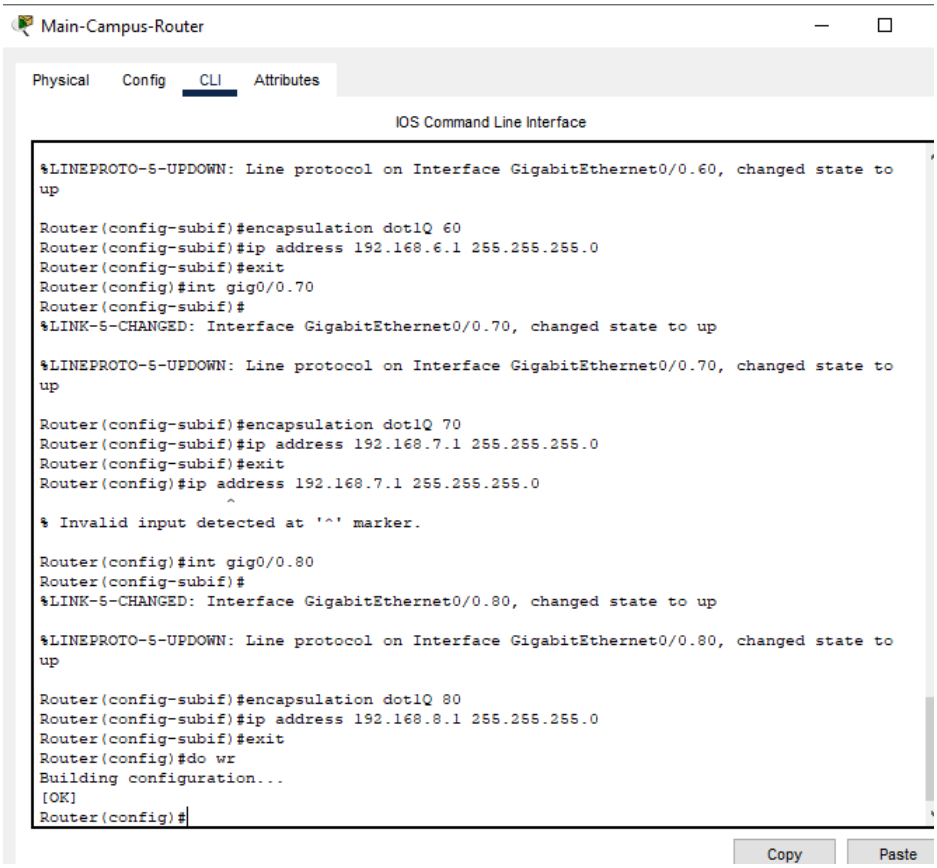
LAB EXPERIMENT # 16/5

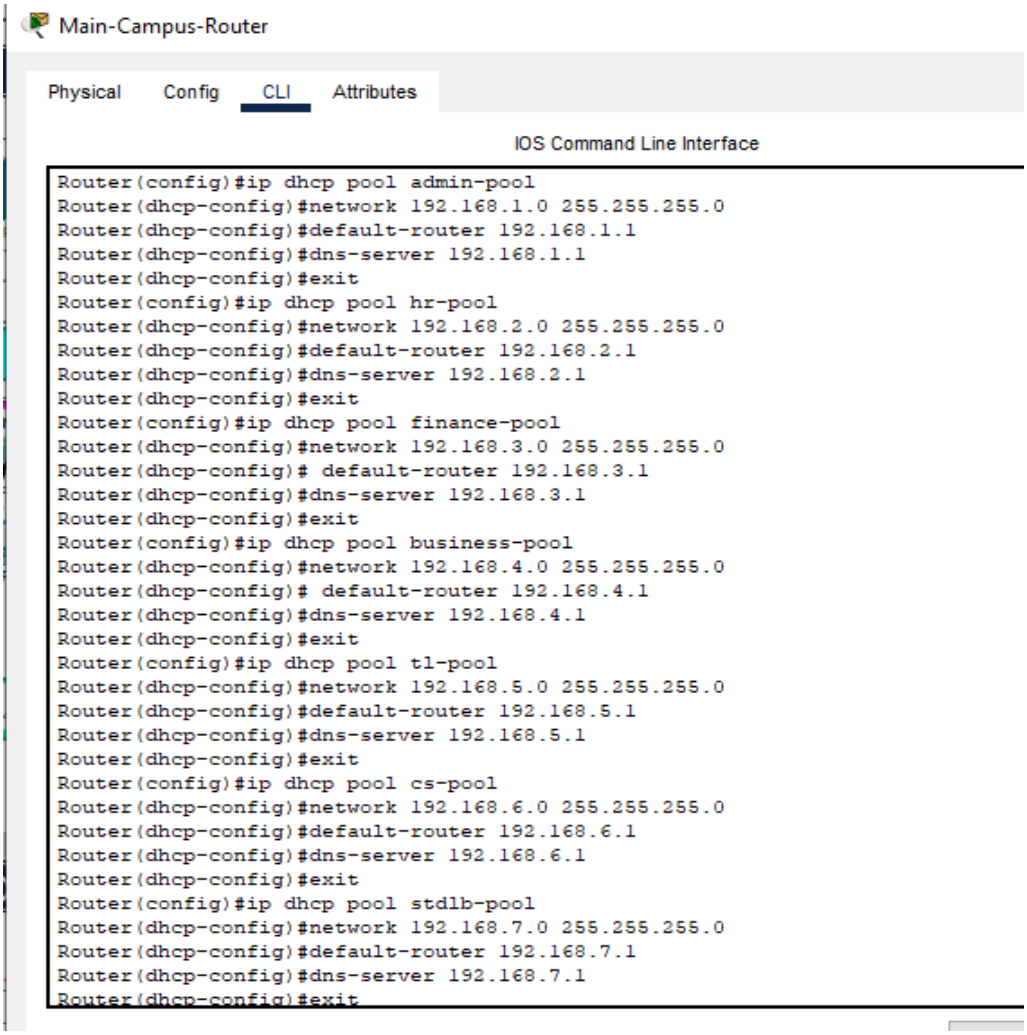




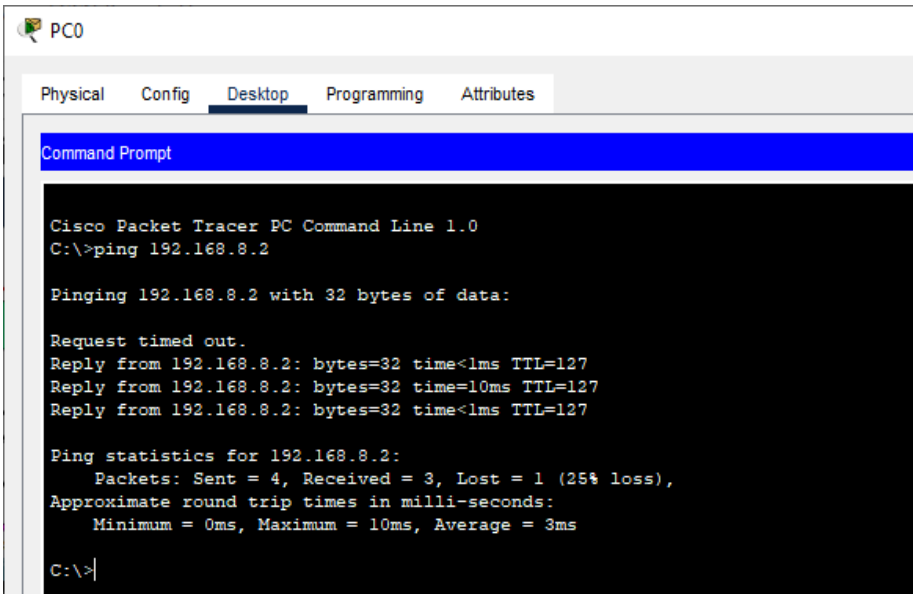



Main-Campus-Router
Physical
Config
CLI
Attributes
IOS Command Line Interface
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int gig0/0.10
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, cha
up
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 192.168.1.1 255.255.255.0
Router(config-subif)#exit
Router(config)#int gig0/0.20
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, cha
up
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 192.168.2.1 255.255.255.0
Router(config-subif)#exit
Router(config)#int gig0/0.30
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, cha


Main-Campus-Router
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.60, changed state to up
Router(config-subif)#encapsulation dot1Q 60
Router(config-subif)#ip address 192.168.6.1 255.255.255.0
Router(config-subif)#exit
Router(config)#int gig0/0.70
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.70, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.70, changed state to up
Router(config-subif)#encapsulation dot1Q 70
Router(config-subif)#ip address 192.168.7.1 255.255.255.0
Router(config-subif)#exit
Router(config)#ip address 192.168.7.1 255.255.255.0
% Invalid input detected at '^' marker.
Router(config)#int gig0/0.80
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.80, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.80, changed state to up
Router(config-subif)#encapsulation dot1Q 80
Router(config-subif)#ip address 192.168.8.1 255.255.255.0
Router(config-subif)#exit
Router(config)#do wr
Building configuration...
[OK]
Router(config)#
Copy
Paste



Now PC0 that is in Main-campus can communicate with PC8 which is in different campus.


PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.8.2
Pinging 192.168.8.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.8.2: bytes=32 time<1ms TTL=127
Reply from 192.168.8.2: bytes=32 time=10ms TTL=127
Reply from 192.168.8.2: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.8.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 10ms, Average = 3ms
C:\>