Computer Communication Networks

BS(CE)-2k20

Semester Project Report

College Network with DNS, FTP and Web Servers

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Introduction:

This College Network Scenario is about designing a topology of a network that is a LAN (Local Area Network) for a College in which various computers of different departments are set up so that they can interact and communicate with each other by interchanging data. To design a networking scenario for a college which connect various departments to each other's, it puts forward communication among different departments. CNS is used to design a systematic and well-planned topology, satisfying all the necessities of the college (i.e. client).

Problem Statement:

The existing network of the college is slow and outdated. It does not provide connectivity throughout the campus and it does not provide all the modern day-required services like FTP, DNS and Web.
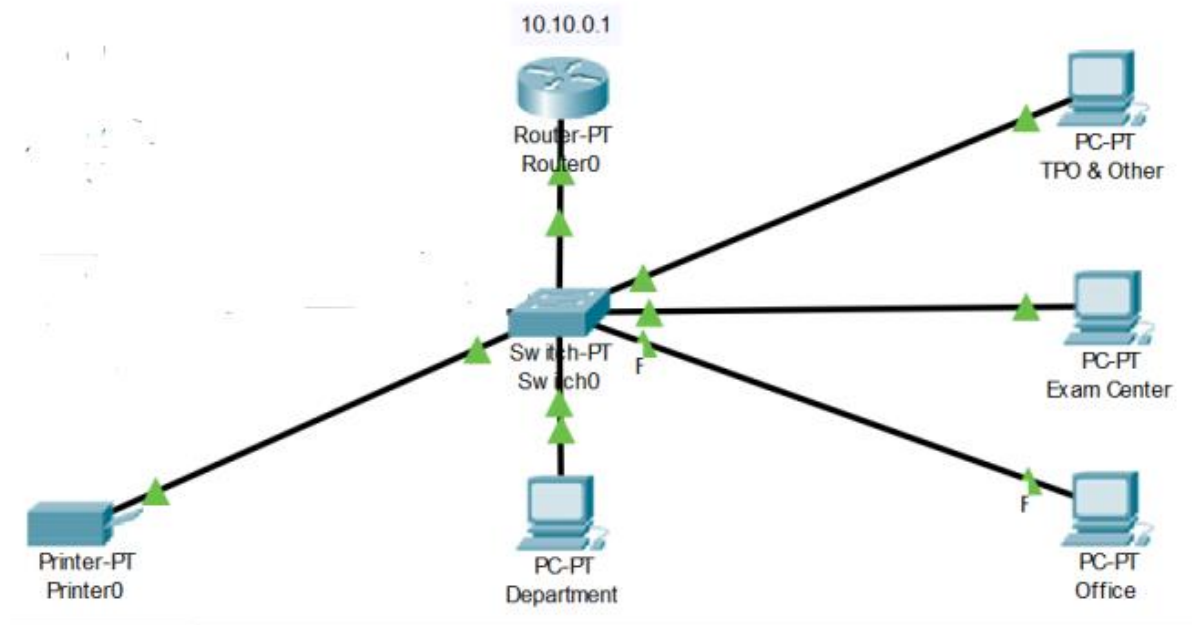

Figure 1 Existing Network

Objective:

The main objective of the proposed network is to update the existing network and also enhance its capabilities and increase the flexibility of the network which will eventually provide good security.

Requirements:

1: The new system should be able to reduce internet downtime. Download and upload links should be maintained above 5 Mbps speed requirement.

2: Network will be scalable.

3: The system should support remote access.

4: Should comprise of data centers with necessary security features and support.

Major Design & Function Areas:

- The new system planned comprises of IP based switches that remain as the access point to LAN-based (ethernet) as well as Wi-Fi-based connectivity.
- These switches provide SNMP support as well so that traffic monitoring becomes easy.
- Different areas like Principal's Office, Departments, Labs etc. will be connected with each other.
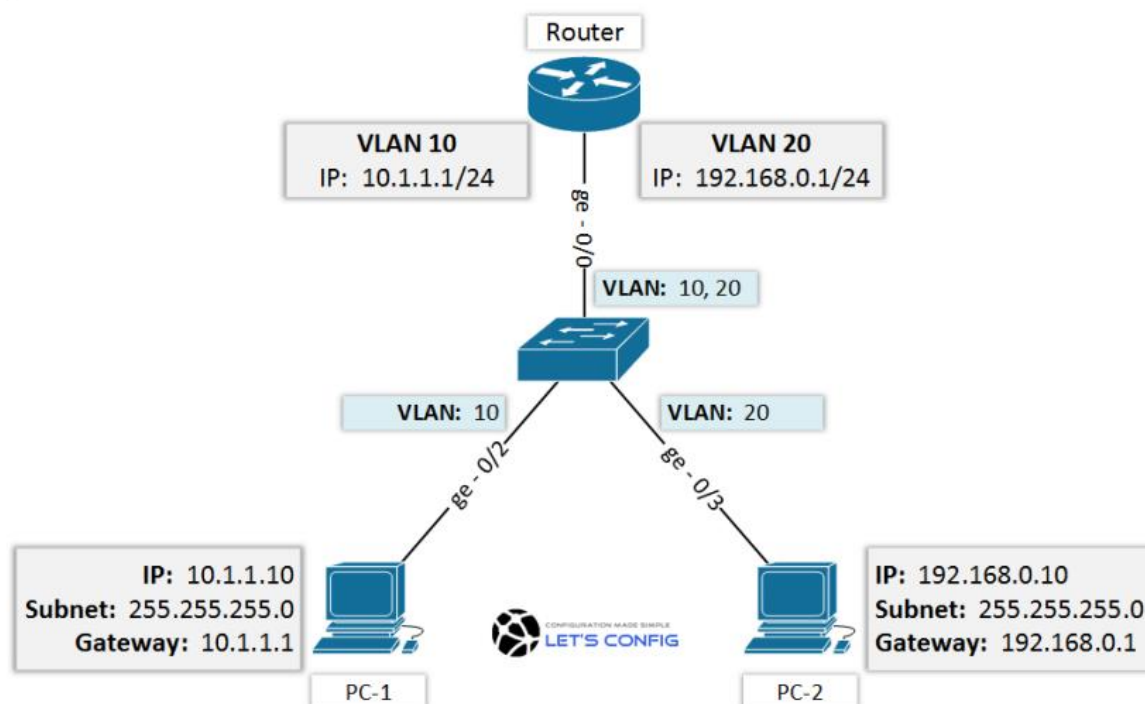- There will be servers which will provide services like File-Transferring, Web-Browsing and DNS.

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Figure 2 VLAN Config

Network Devices:

Following are the major **Network Devices** used in the proposed network:

- Router-PT
- 2960 Switches
- Web Server
- DNS Server
- FTP Server

Proposed Network:

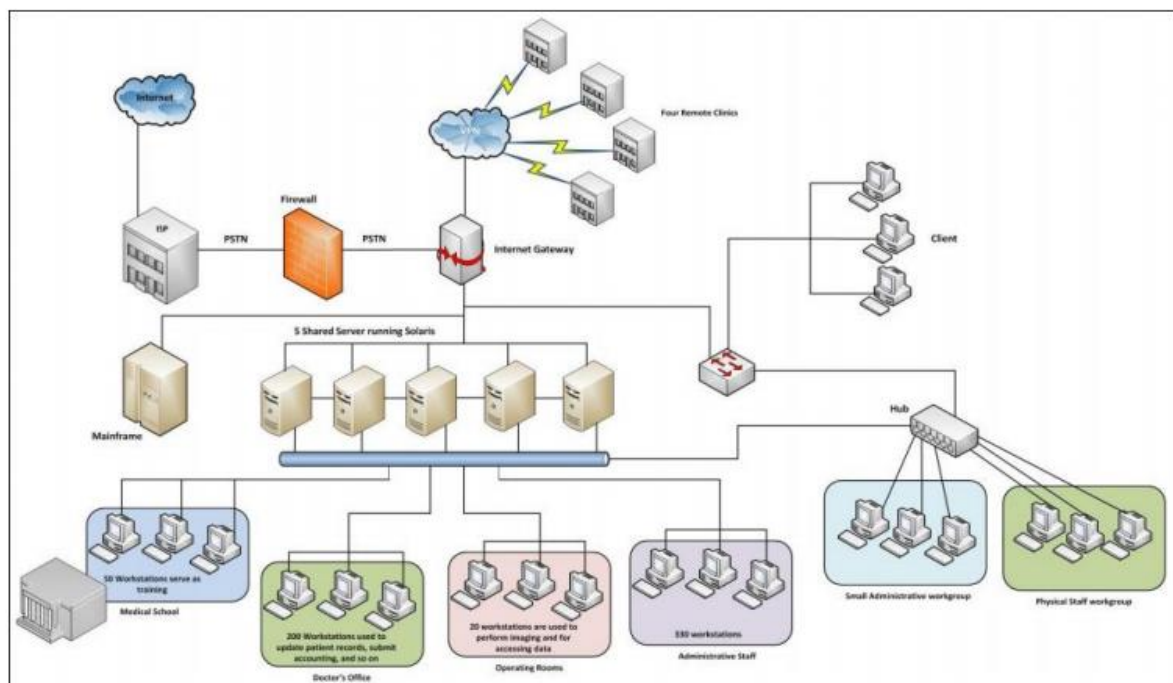A pictorial representation of the proposed network is displayed below:

Figure 3Proposed Network

IP Addressing Plan:

Principal's Office (192.168.4.0)	
PC-19	192.168.4.2
Laptop-0	192.168.4.3

IT Department (192.168.1.0)	
HOD CABIN	192.168.1.2
IT LAB 1	192.168.1.3
IT LAB 2	192.168.1.4
IT LAB 3	192.168.1.5
IT LAB 4	192.168.1.6
PRINTER 2	192.168.1.7

Computer Department (192.168.2.0)	
HOD CABIN	192.168.2.2
CS LAB 1	192.168.2.3
CS LAB 2	192.168.2.4
CS LAB 3	192.168.2.5
CS LAB 4	192.168.2.6
PRINTER 1	192.168.2.7

Internet Lab (192.168.0.0)	
PC 0	192.168.0.2
PC 1	192.168.0.3
PC 2	192.168.0.4
PC 3	192.168.0.5
PRINTER 0	192.168.0.6

Server Room (1.0.0.0)	
SERVER-PT DNS	1.0.0.2
SERVER-PT WEB	1.0.0.3
SERVER-PT FTP	1.0.0.4
PC 14	1.0.0.5

Others (192.168.3.0)	

Office	**192.168.3.2**
Exam Col	**192.168.3.3**
PC 18	**192.168.3.4**
TPO	**192.168.3.5**
PRINTER 3	**192.168.3.6**
PRINTER 4	**192.168.3.7**
PRINTER 5	**192.168.3.8**

Routing Protocol Plan:

Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as

a routing metric to find the best path between the source and the destination network. It is a distance vector routing protocol which has AD value 120 and works on the application layer of OSI model.
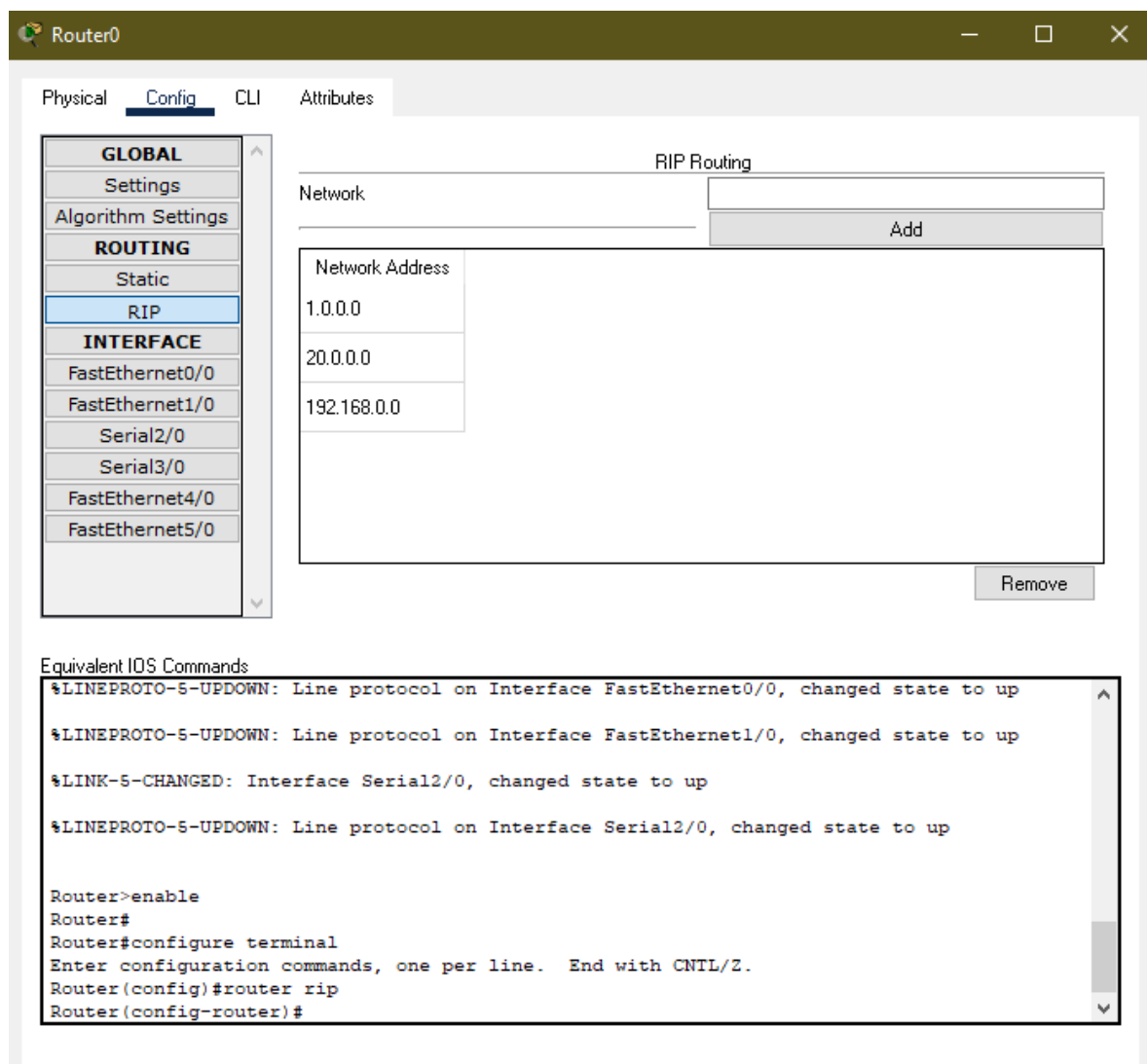
Figure 4 Routing Protocol for Router 0
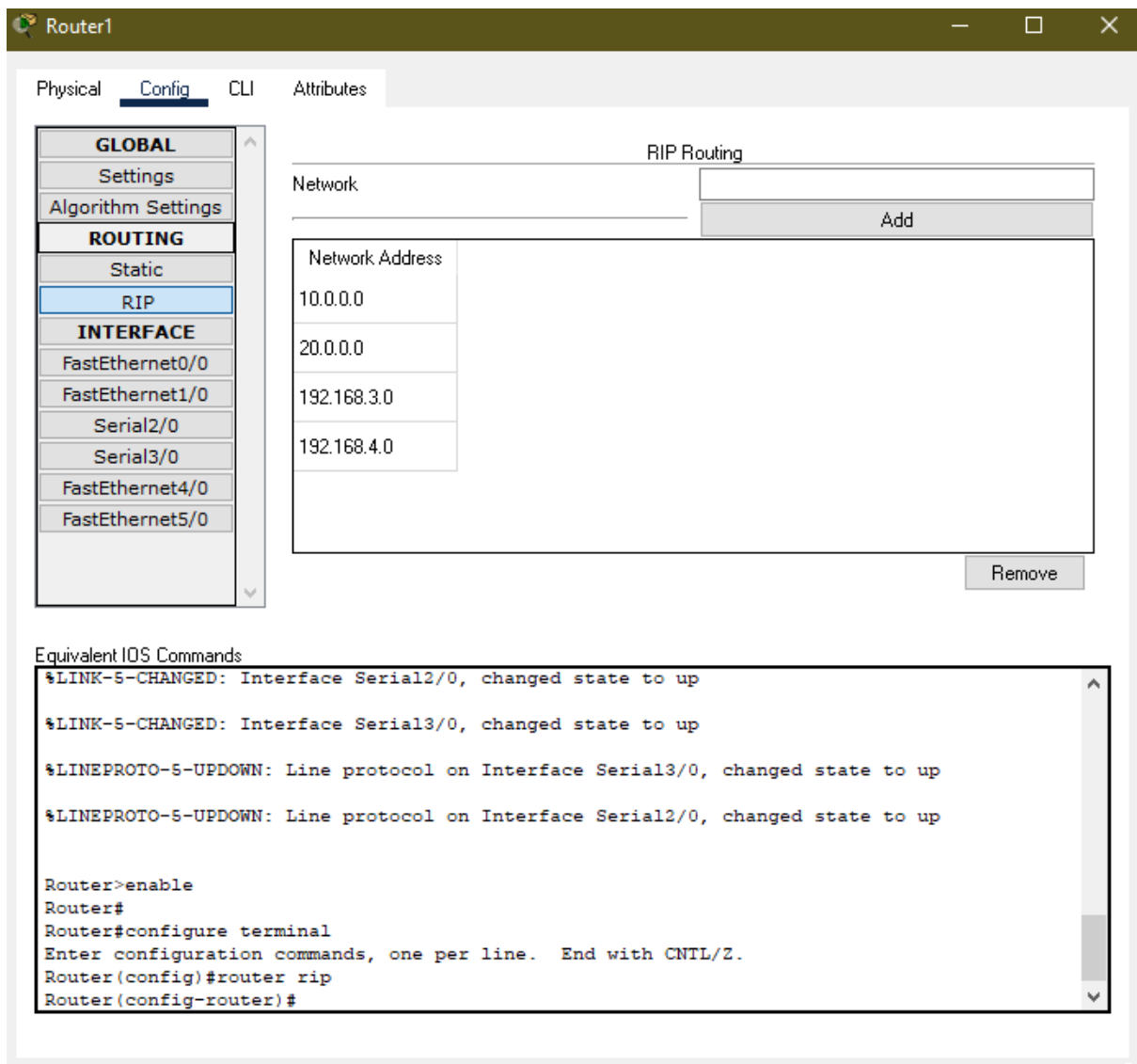
Figure 5 Routing Protocol for Router 1

Figure 6 Routing Protocol for Router 2
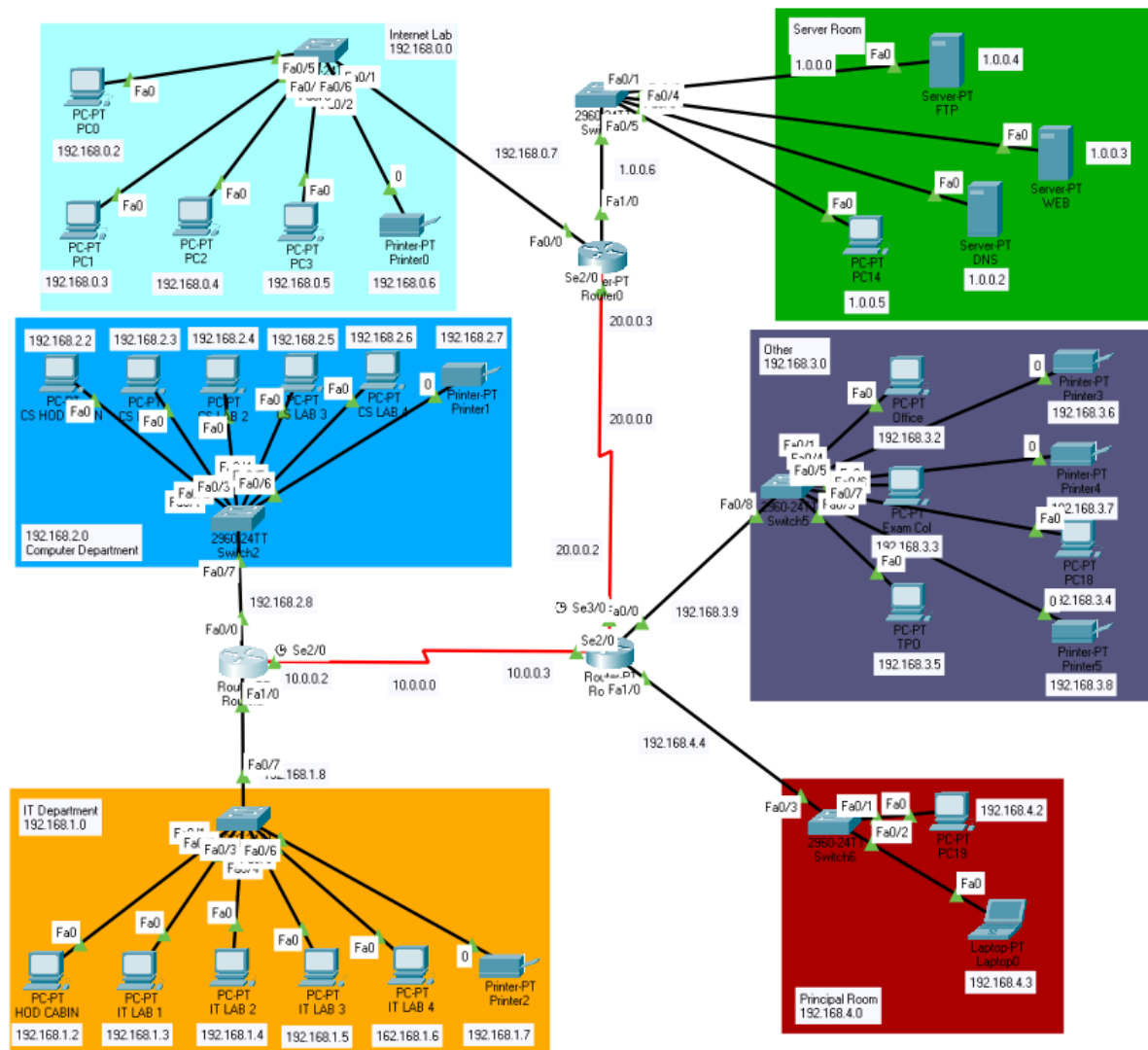
Network Design:

Figure 7 Network Design on Cisco

Network Testing:

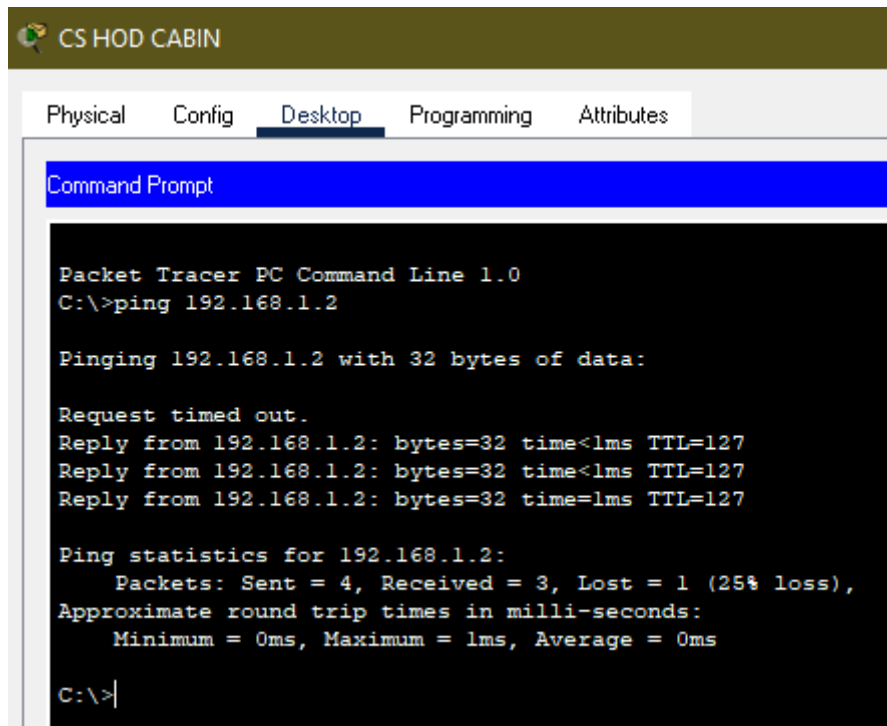A screenshot of ping from CS HOD to IT HOD is displayed below:
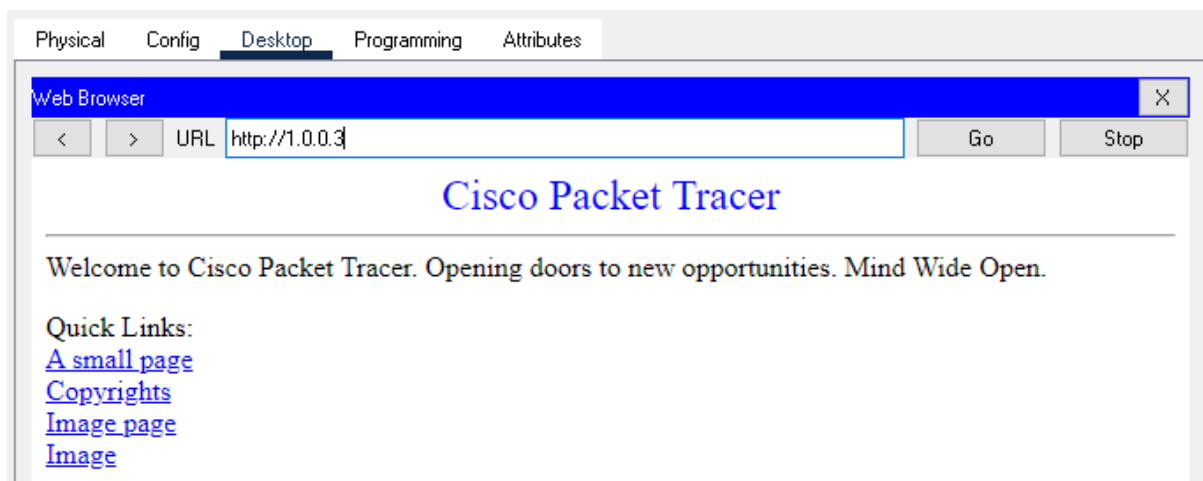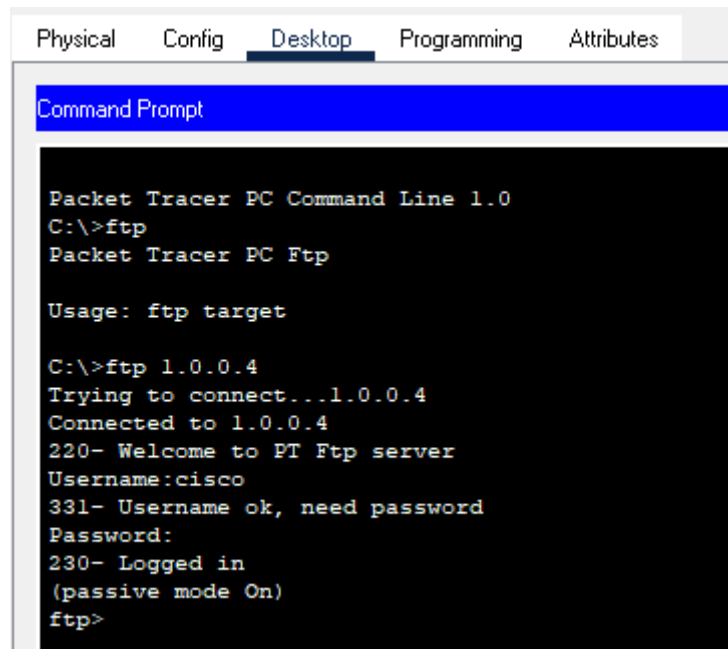

Figure 8 Network Test

Figure 9 Web Hosting Test

Figure 10 FTP Server Test

Conclusion:

The outcome of the proposed system will be a fail-safe backbone network infrastructure which meets the requirements for readily available access to information and security of the private network, and also ensures optimized productivity when telecommunication services are accessed. The installed equipment allowed to organize high-speed wired and wireless Internet access throughout the whole complex of hospital buildings as well as providing transfer of all types of data throughout the single optimized network.