

Computer Communication Networks
BS(CE)-2k20
Semester Project Report
College Network with DNS, FTP and Web Servers



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College Network with DNS, FTP and Web Servers

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The existing network of the college is slow and outdated.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.

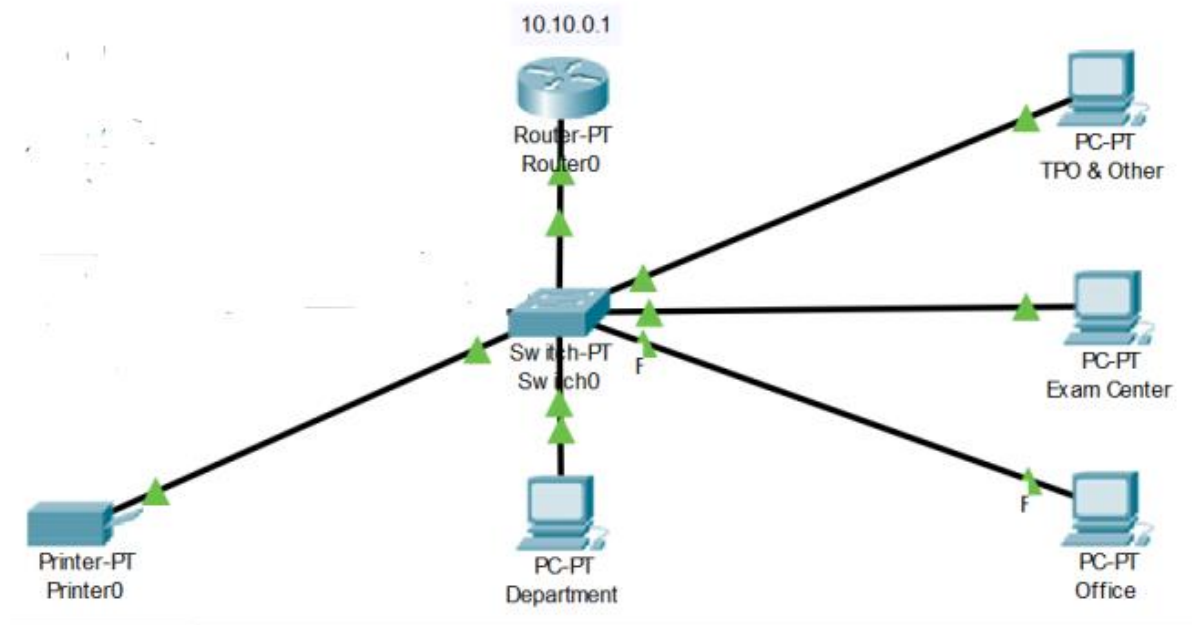


Figure 1 Existing Network

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.

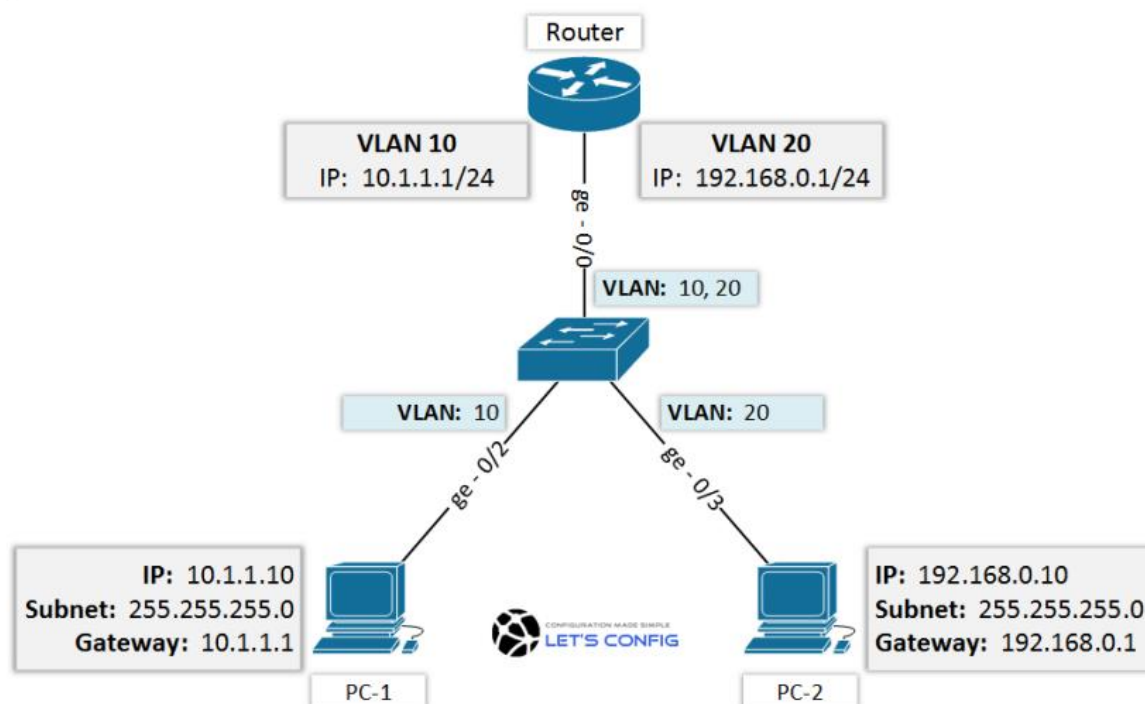


Figure 2 VLAN Config

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:

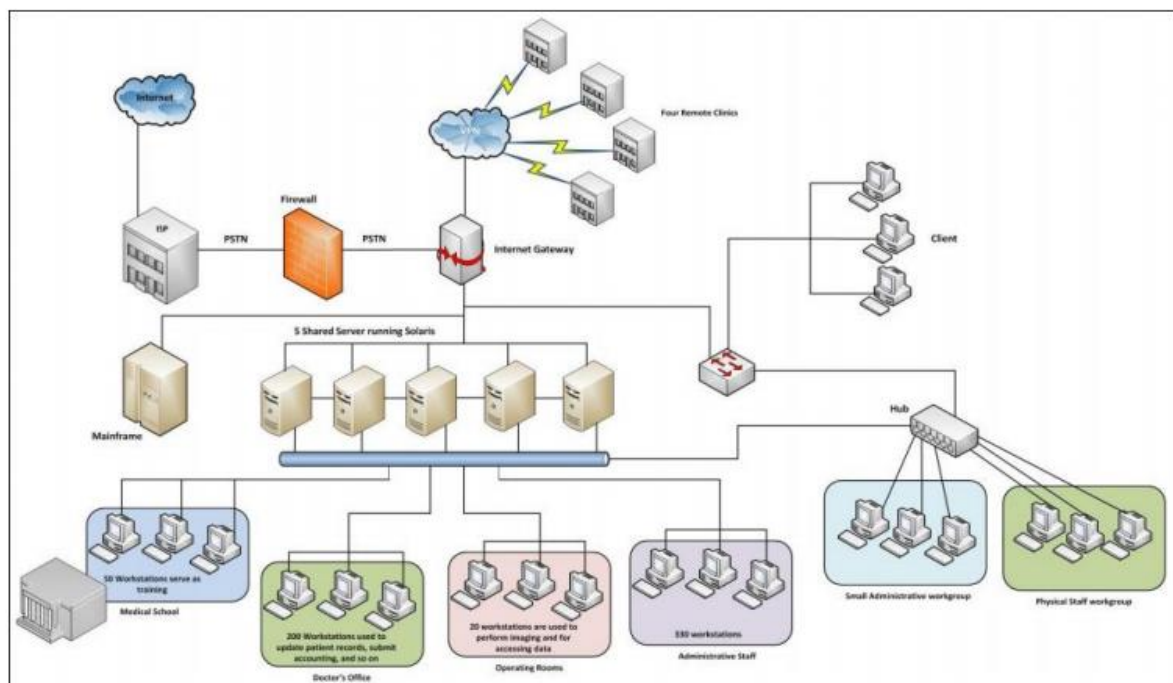


Figure 3Proposed Network

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.

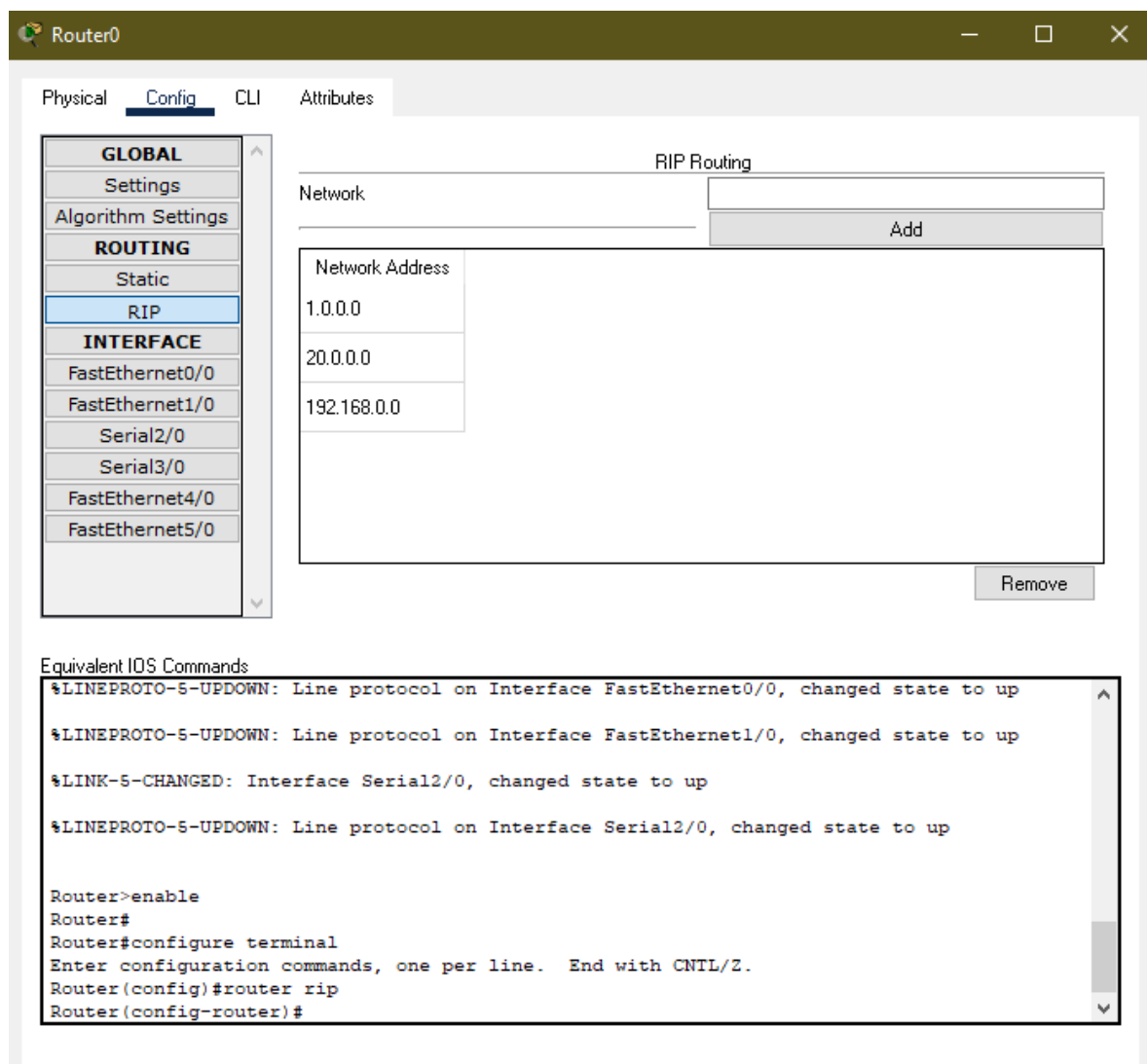


Figure 4 Routing Protocol for Router 0

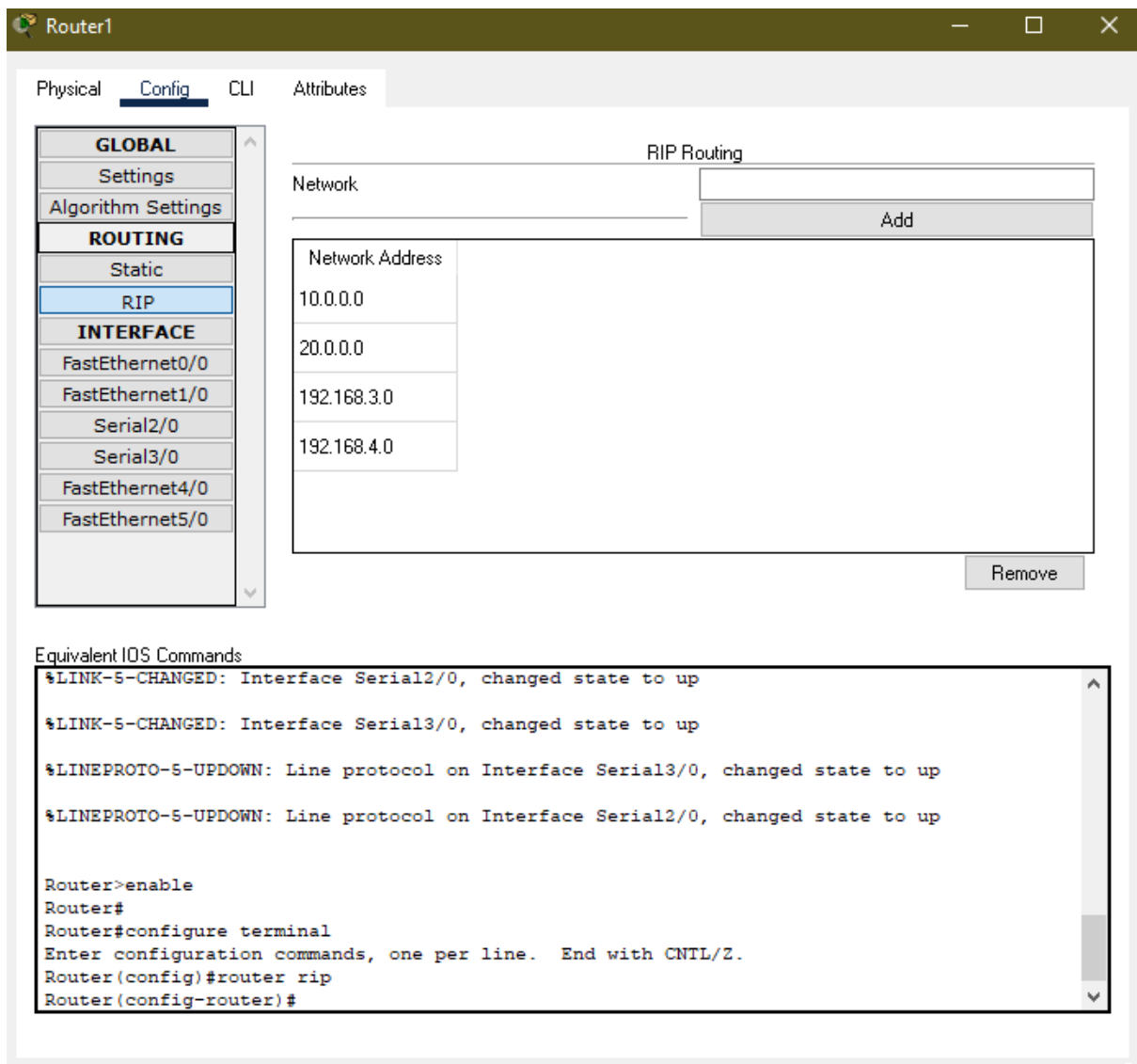


Figure 5 Routing Protocol for Router 1

Router2

Physical
Config
CLI
Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0

RIP Routing
Network
Add

Network Address
10.0.0.0
192.168.1.0
192.168.2.0

Remove

Equivalent IOS Commands

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#

```

Figure 6 Routing Protocol for Router 2

Network Design:

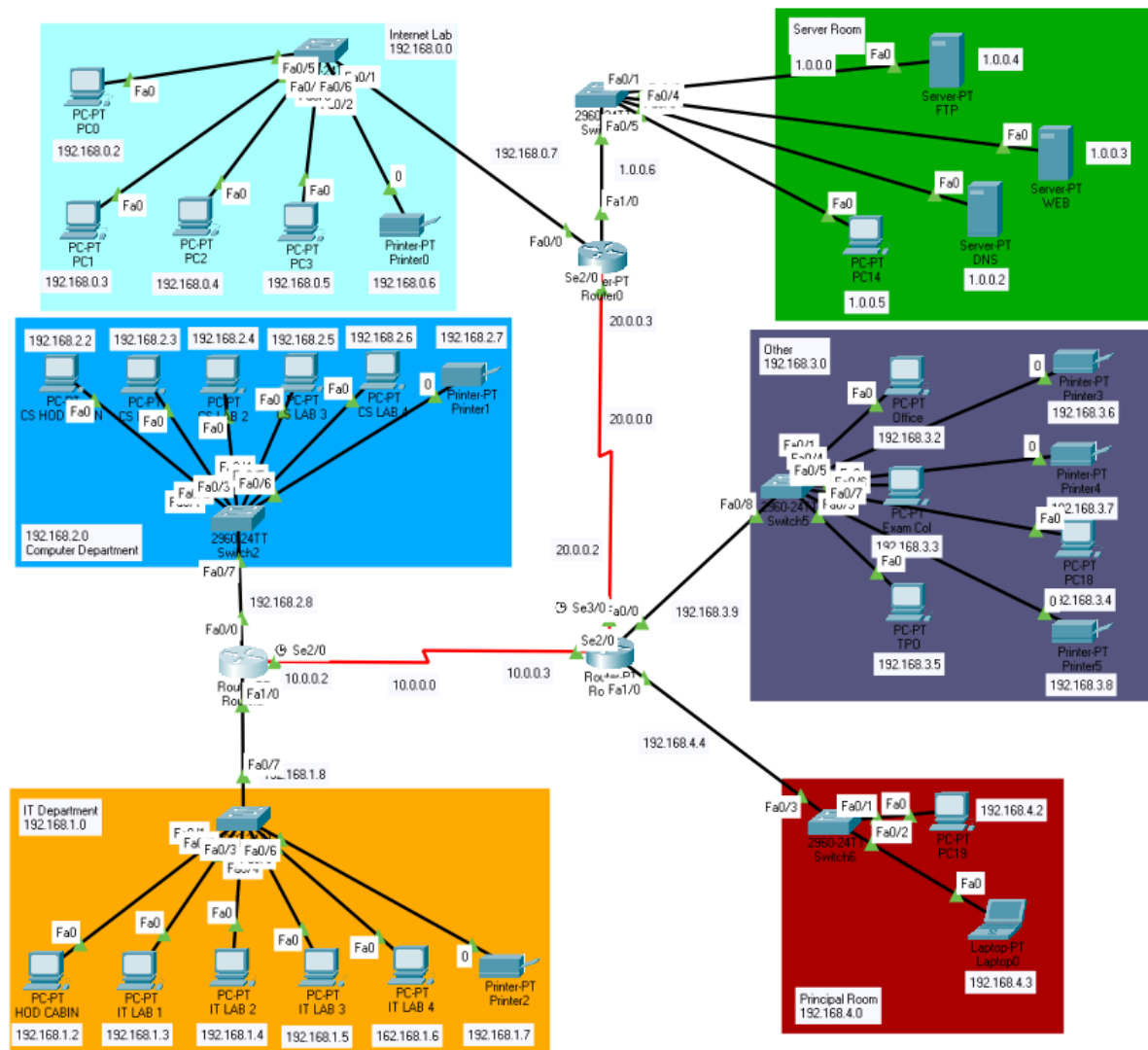


Figure 7 Network Design on Cisco

Network Testing:

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

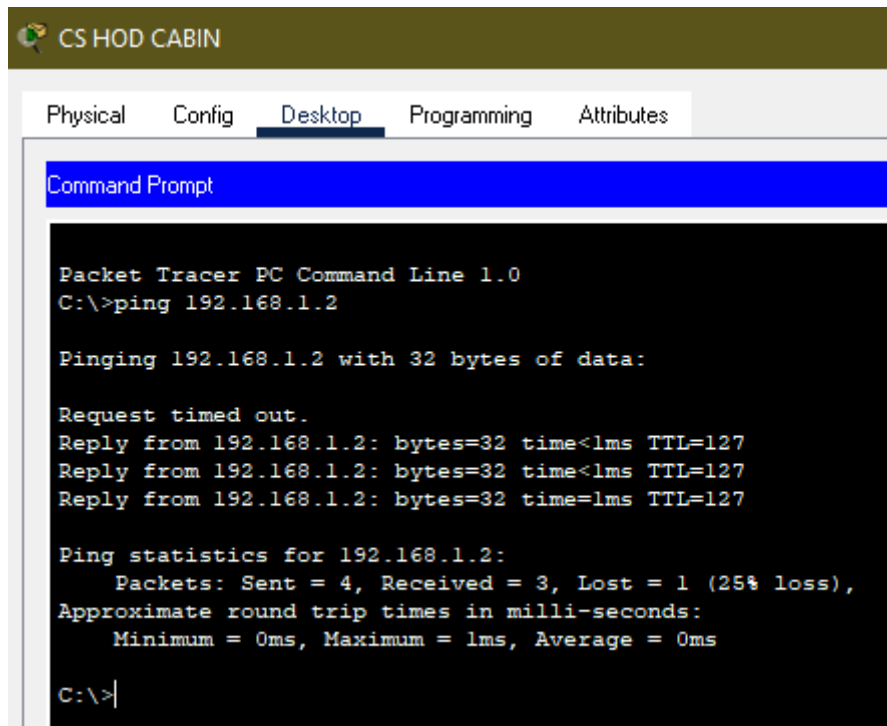


Figure 8 Network Test

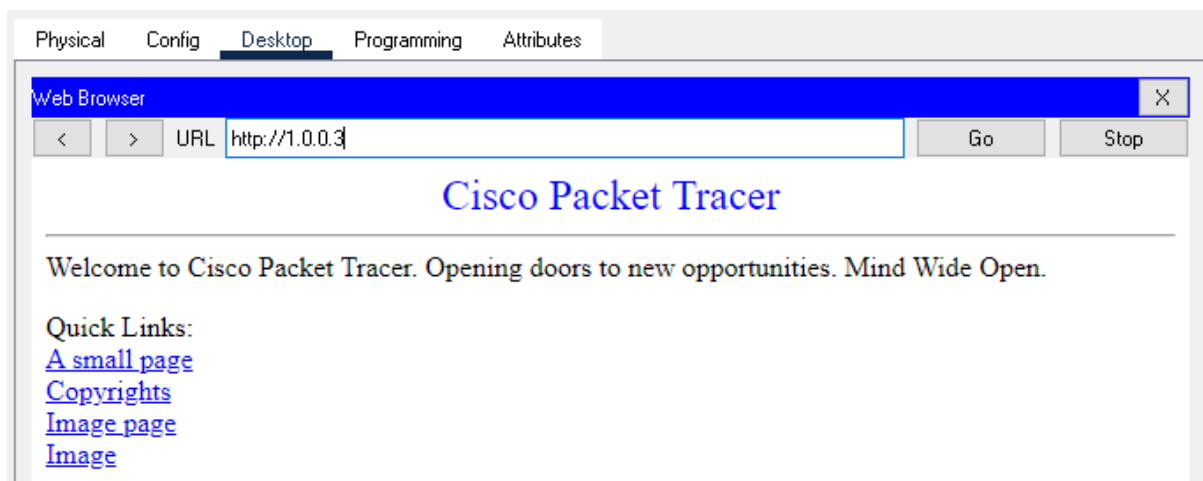
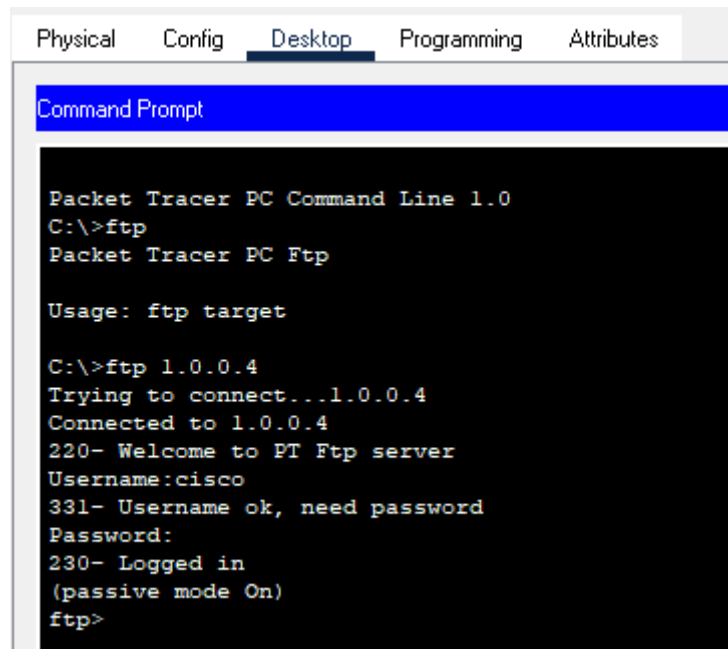


Figure 9 Web Hosting Test



The screenshot shows the Packet Tracer Desktop tab with a Command Prompt window open. The window title is 'Command Prompt'. The text inside the window is as follows:

```
Packet Tracer PC Command Line 1.0
C:\>ftp
Packet Tracer PC Ftp

Usage: ftp target

C:\>ftp 1.0.0.4
Trying to connect...1.0.0.4
Connected to 1.0.0.4
220- Welcome to PT Ftp server
Username:cisco
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>
```

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.