# College Network System

by

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# CHAPTER 1

# INTRODUCTION TO THE PROJECT

## 1.1 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). CNS come up with a network with good performance.

## 1.2 OBJECTIVES:

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.

# CHAPTER 2

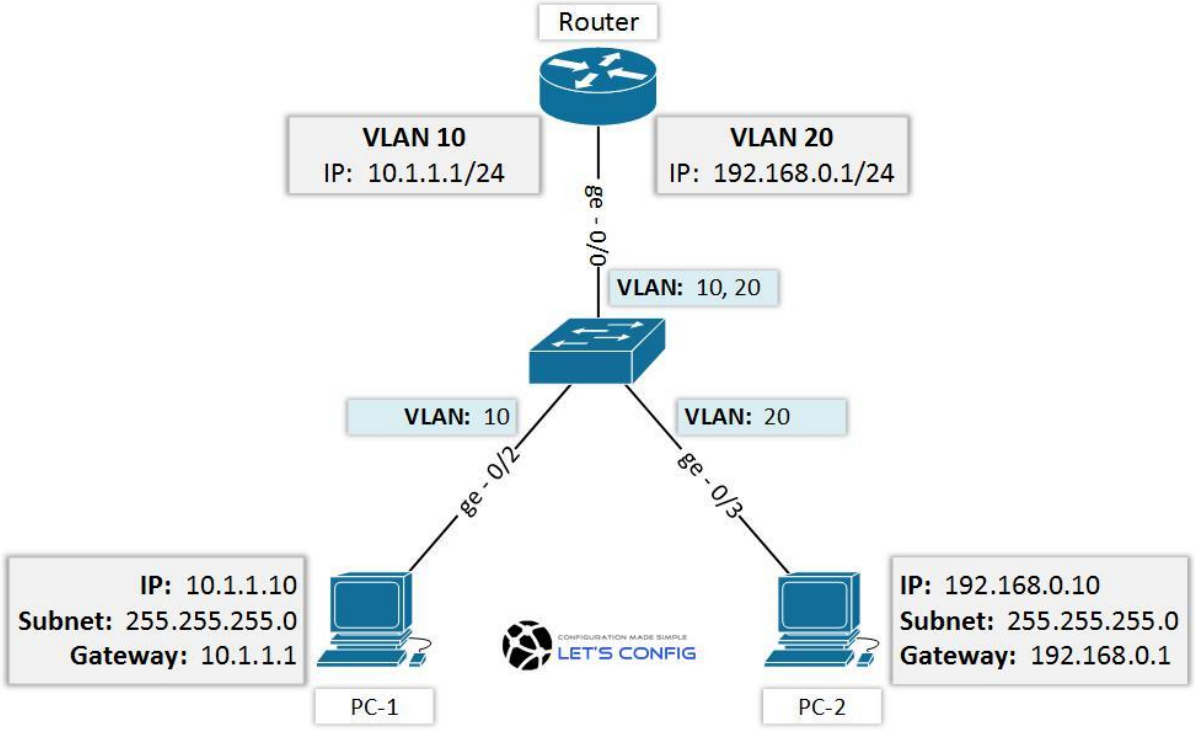
# DESIGN & DEVELOPMENT

## 2.1 MAJOR DESIGN AREAS AND FUNCTIONAL 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. Ip based switches are used mainly because:

- The inter VLAN routing feature is supported on both IP base or SMI and IP services or EMI image Layer 3 switches. For Layer 2-only switches, you require a Layer 3 routing device with any of the previous images.




- The IP Base feature set includes advanced quality of service (QoS), rate limiting, access control lists (ACLs), and basic static and Routing Information Protocol (RIP) functions. Dynamic IP routing protocols (Open Shortest Path First (OSPF), BGPv4, Enhanced Interior Gateway Routing Protocol (EIGRP)) are available only on the IP services image.

- The IP Services image provides a richer set of enterprise-class features, which includes advanced hardware-based IP unicast and IP Multicast routing. Support for IPv6 Layer 3 switching in hardware is also available with the addition of the Advanced IP Services license to either the IP Base or the IP Services images. Both the IP base Image and the IP services image allow for Layer 3 and Layer 4 lookups for QoS and security.

## 2.2 IP ADDRESSING PLAN

| **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 0 | 192.168.1.7 |

| **COMPUTER DEPARTMENT (192.168.2.0)** | |
|---|---|
| CS 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 7 | 192.168.2.7 |

| **OTHERS (192.168.3.0)** | |
|---|---|
| Office | 192.168.3.2 |
| Printer 2 | 192.168.3.3 |
| Exam Hall | 192.168.3.4 |
| Printer 3 | 192.168.3.5 |
| Enquiry | 192.168.3.6 |
| TPO | 192.168.3.7 |
| Printer 4 | 192.168.3.8 |

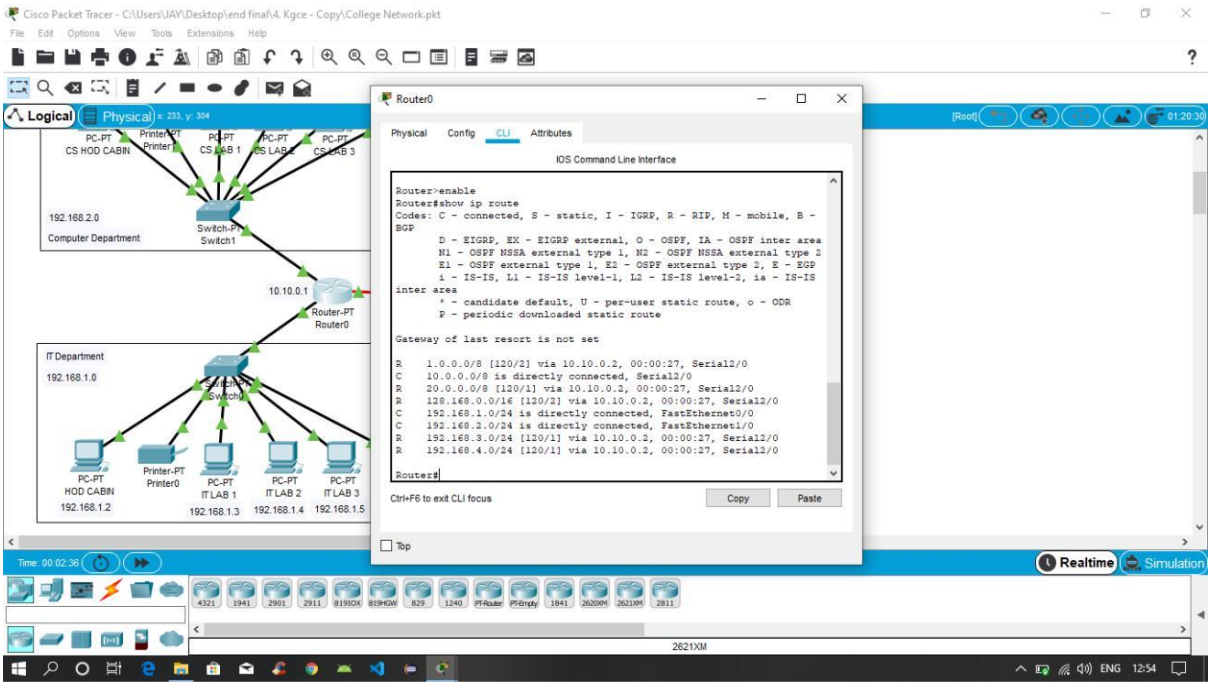
| SERVER ROOM (1.0.0.0) | |
|---|---|
| FTP Server | 1.0.0.4 |
| PC 1 | 1.0.0.5 |
| DNS Server | 1.0.0.2 |
| WEB Server | 1.0.0.3 |

| INTERNET LAB (128.168.0.0) | |
|---|---|
| PC2 | 128.168.0.2 |
| PC3 | 128.168.0.3 |
| PC4 | 128.168.0.4 |
| PC5 | 128.168.0.5 |
| Printer 5 | 128.168.0.6 |

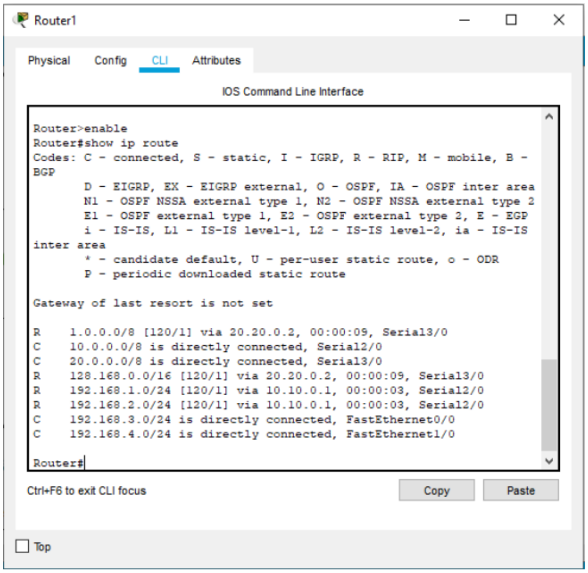
| PRINCIPLE ROOM (192.168.4.0) | |
|---|---|
| PC 0 | 192.168.4.2 |
| LAPTOP 0 | 192.168.4.3 |

## 2.3 ROUTING PROTOCOL PLAN

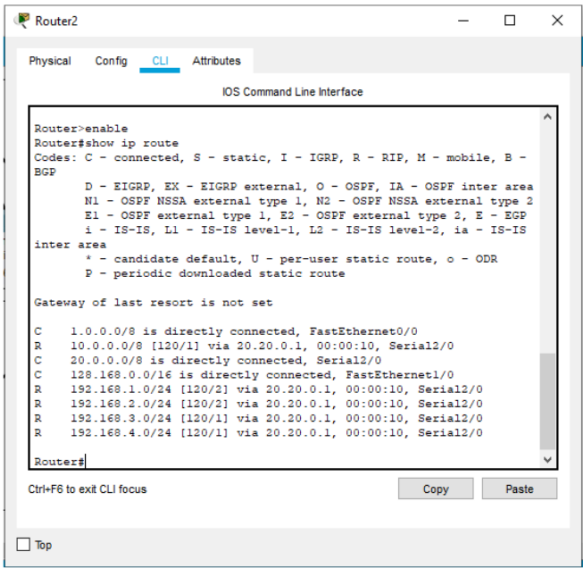
Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as a routing metric to find the best path between the source and the destination network. It is a distance vector routing protocol which has AD value 120 and works on the application layer of OSI model.




(Routing Protocol for Router 0)

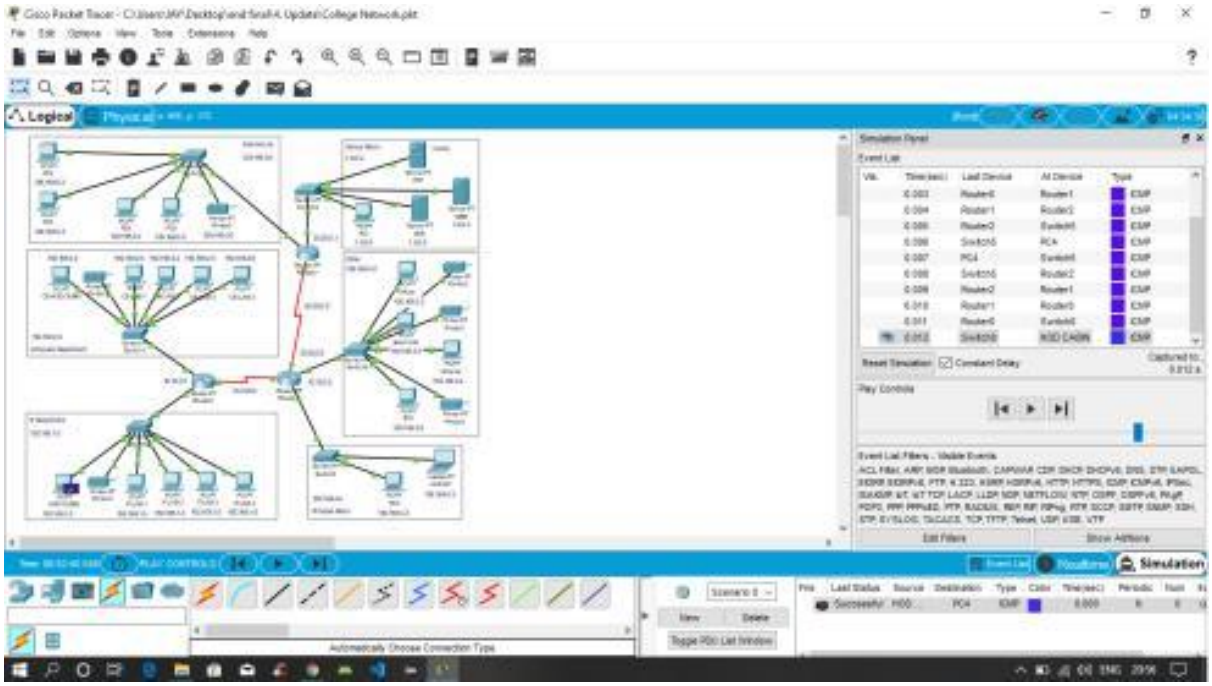



(Routing Protocol plan for router 1)

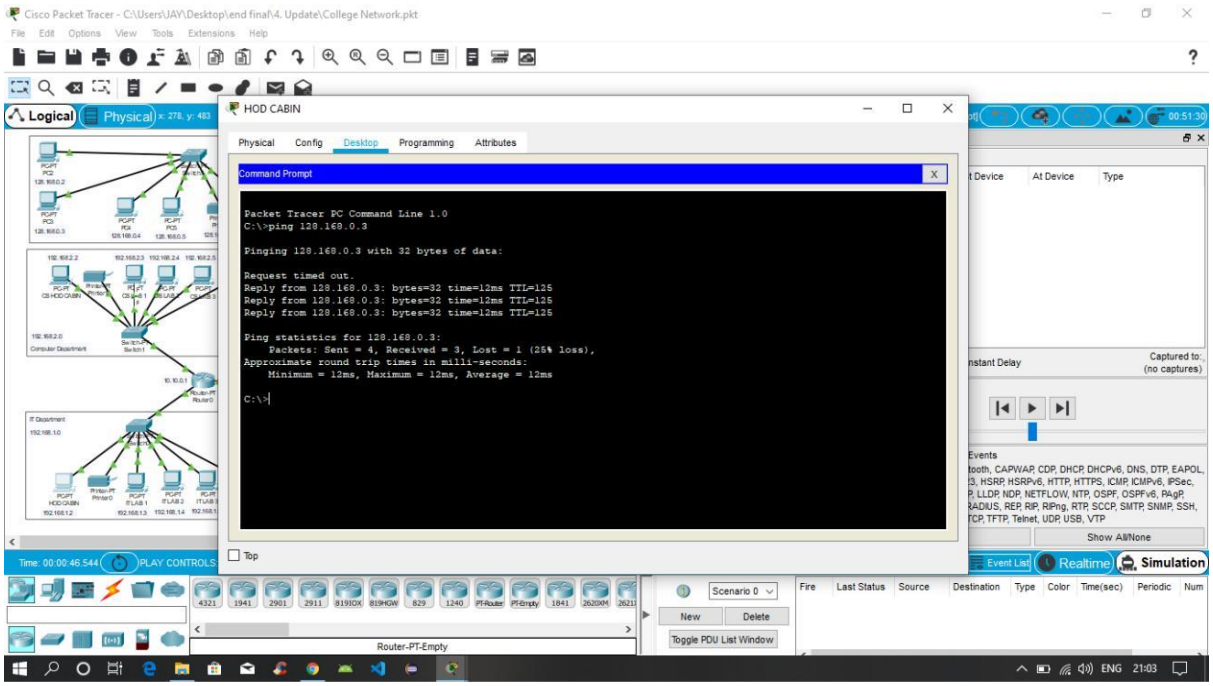



(Routing Protocol for router 2)

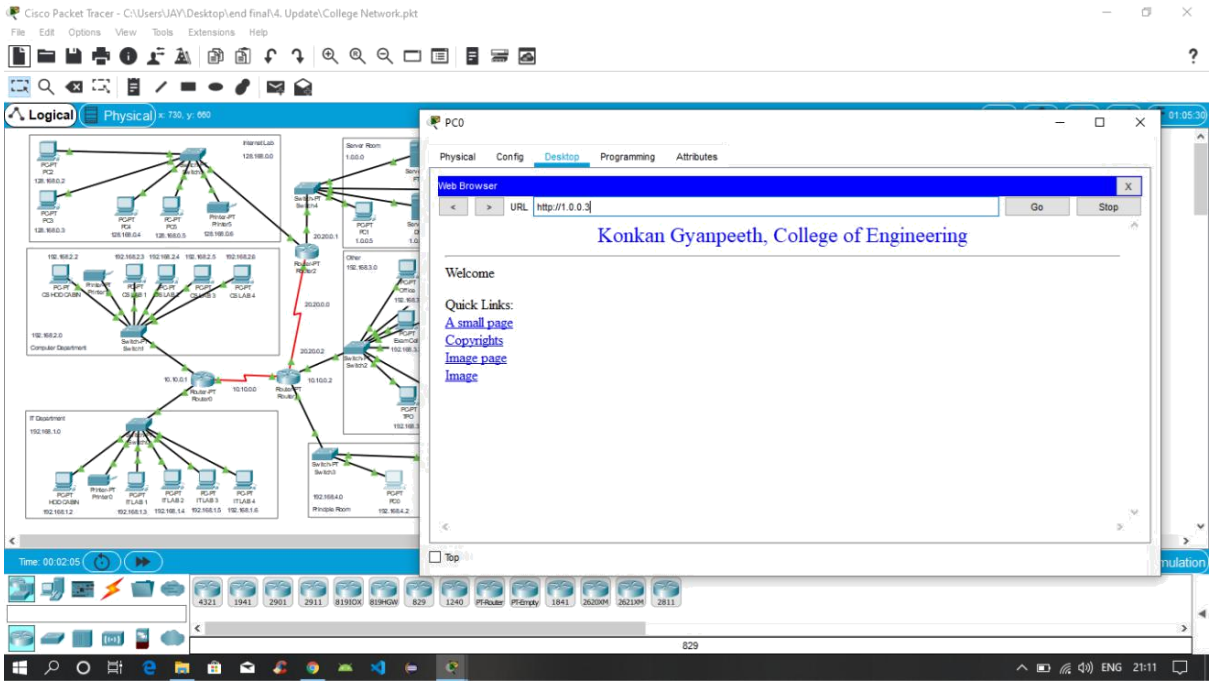
## 2.4 NETWORK DESIGN:



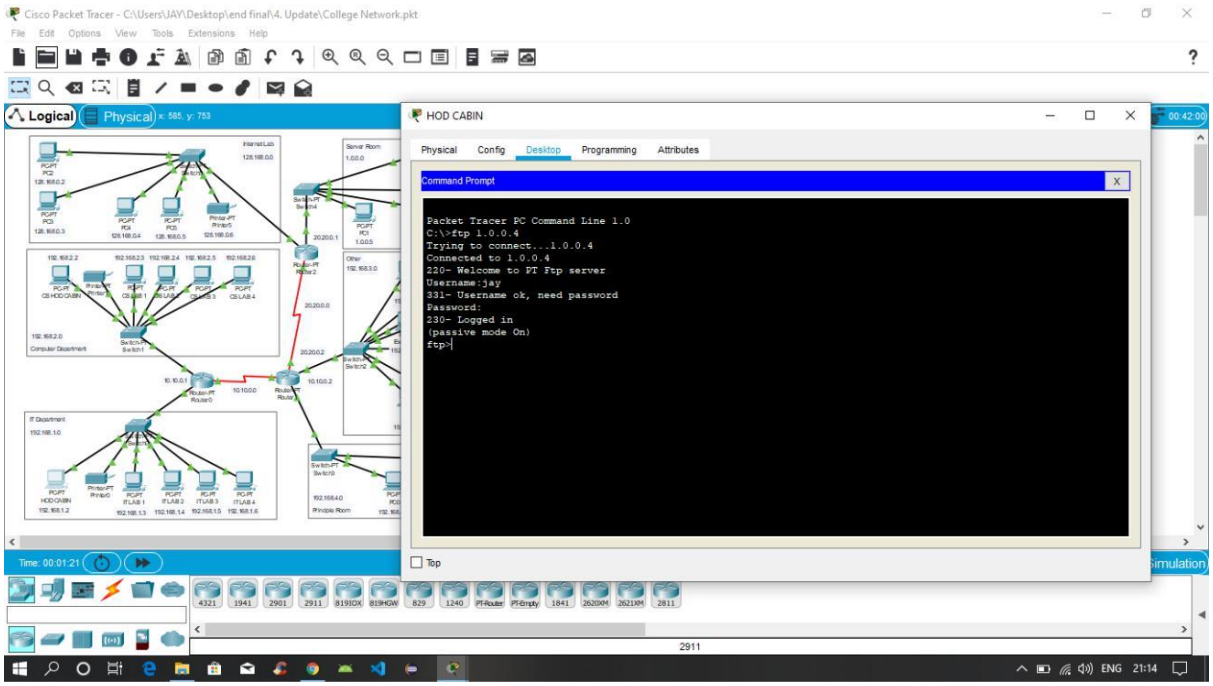
(The prototype of the proposed network is implemented on cisco packet tracer)




(Testing VLAN communications from HOD Cabin to Internet Lab)




(Testing Web Hosting)




(Testing FTP Server)

# CHAPTER 3

# CONCLUSION

## 3.1 SUMMARY:

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.

## 3.2 REFERENCES: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