

UNIVERSITY NETWORKING DESIGN

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ABSTRACT

A Campus network is an important part of campus life and network security is essential for a campus. A college network has a number of uses, such as teaching, learning, research, management, e-library, result publishing and connection with the external users.

In this project, a tested and secure network design is proposed based on the practical requirements and this proposed network infrastructure is realizable with adaptable infrastructure.

INTRODUCTION

This College Network Architecture 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

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 by interchanging data.

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.

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.

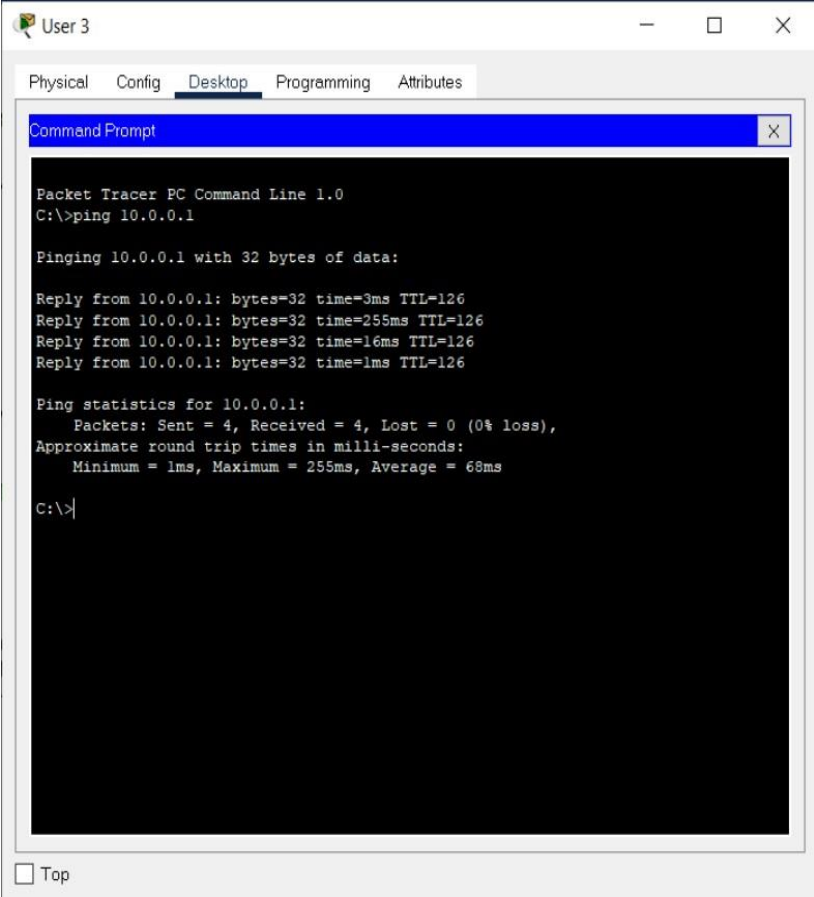
- The IP Services image provides a richer set of enterprise-class features, which includes advanced hardware-based IP unicast and IP Multicast routing.

NETWORK DEVICES

NO	DEVICE	FUNCTION
1	Cisco 2911 router	Core connection
2	Cisco 2811 router	Outdoor & ISP
3	Cisco 2960 switch	Department connection
4	DHCP server	DHCP Access
5	DNS server	College website access
6	Cisco Access Point	Wi-Fi Access
7	Computers	User Access
8	Laptops	User Access
9	Wireless Printers	User Access
10	CAT5 SERIAL,CROSS, STRIGHT CABLE	LAN Connectivity

RESULTS AND DECLARATION

A public PC ping the server via public IP



The screenshot shows a Packet Tracer PC configuration window for 'User 3'. The 'Desktop' tab is active, displaying a 'Command Prompt' window. The command prompt shows the execution of the 'ping 10.0.0.1' command, resulting in four successful replies with varying round-trip times (3ms, 255ms, 16ms, and 1ms) and a TTL of 126. The ping statistics indicate that all four packets were sent and received with 0% loss, and the average round-trip time is 68ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:

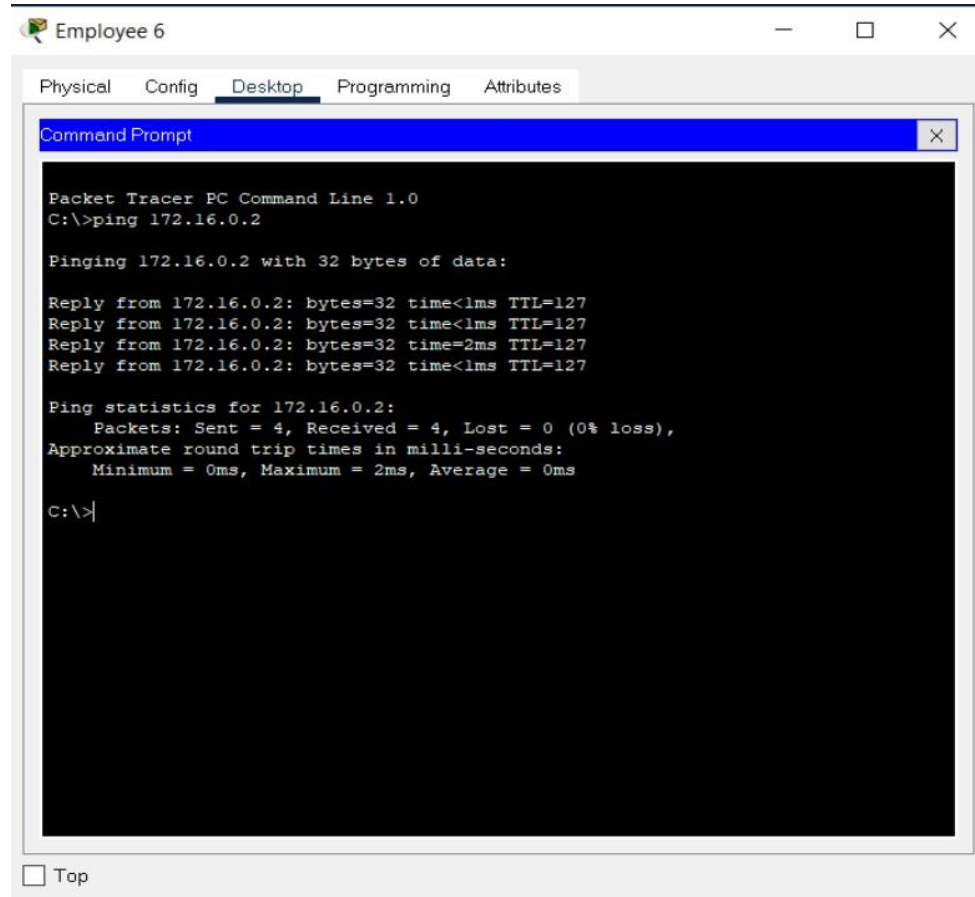
Reply from 10.0.0.1: bytes=32 time=3ms TTL=126
Reply from 10.0.0.1: bytes=32 time=255ms TTL=126
Reply from 10.0.0.1: bytes=32 time=16ms TTL=126
Reply from 10.0.0.1: bytes=32 time=1ms TTL=126

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 255ms, Average = 68ms

C:\>
```

RESULTS AND DECLARATION

An employee PC ping the server via private IP



The screenshot shows a Packet Tracer PC Command Line window for 'Employee 6'. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with 'Desktop' selected. Inside the window is a 'Command Prompt' window with a black background and white text. The text shows the execution of a ping command to 172.16.0.2, resulting in four successful replies with 0% loss. The window also includes a 'Top' button at the bottom left.

```
Packet Tracer PC Command Line 1.0
C:\>ping 172.16.0.2

Pinging 172.16.0.2 with 32 bytes of data:

Reply from 172.16.0.2: bytes=32 time<1ms TTL=127
Reply from 172.16.0.2: bytes=32 time<1ms TTL=127
Reply from 172.16.0.2: bytes=32 time=2ms TTL=127
Reply from 172.16.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 172.16.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>
```


CONCLUSION AND FUTURE ENHANCEMENT

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.

THANK YOU

