21BDS0340

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Information Security and Audit Lab

Task – III

Question 1

Aim: To create 2 LAN's with a dynamic routing connection

Tools and Concepts Required:

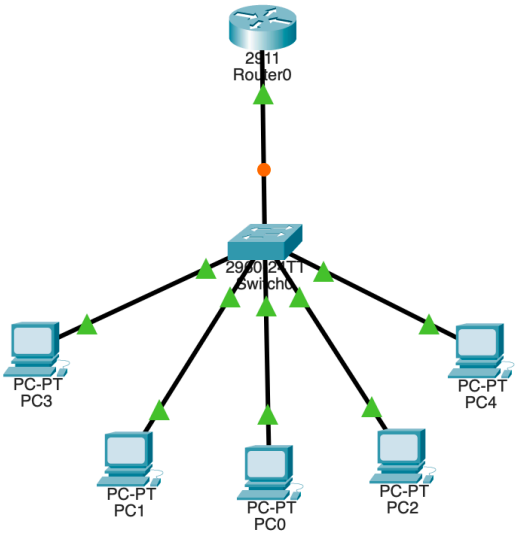
- Cisco Packet Tracer
- Switch
- Hub
- Router
- Personal Computers
- Wiring

Procedure:

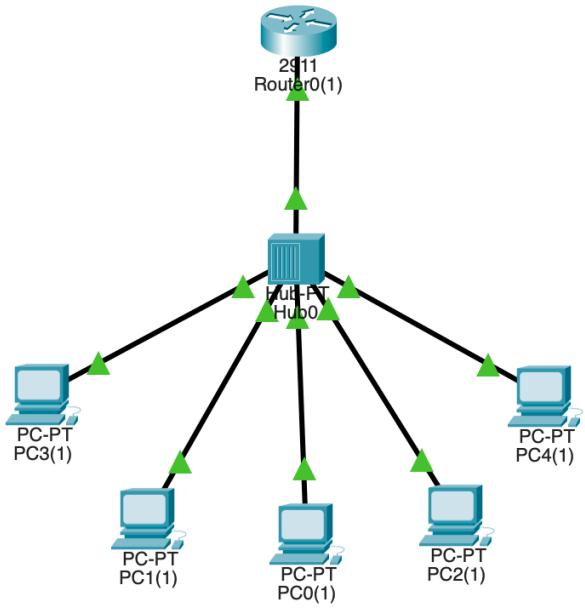
- Create LAN1 using switch with 5 PC
- Create LAN2 using hub with 5 PC
- Interconnect the routers and configure the routing table for dynamic routing
- Understand the packet transmission across the LAN

Output:

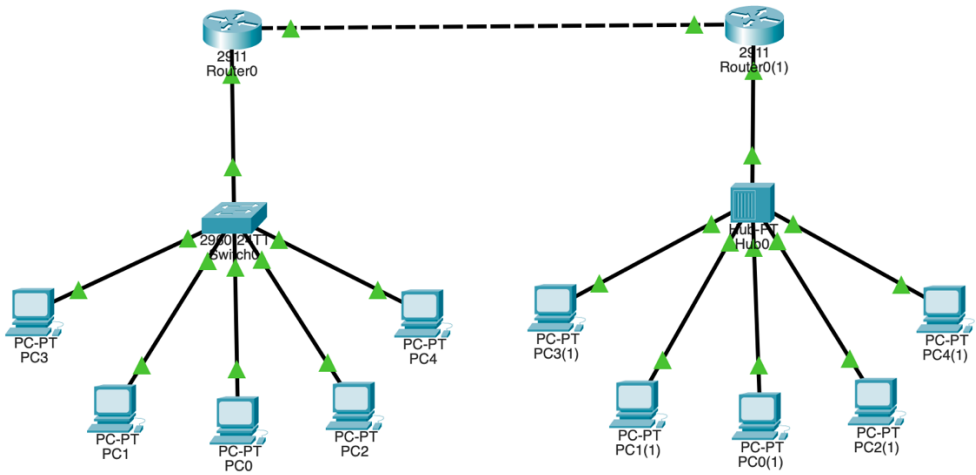
Create LAN1 using switch with 5 PC:

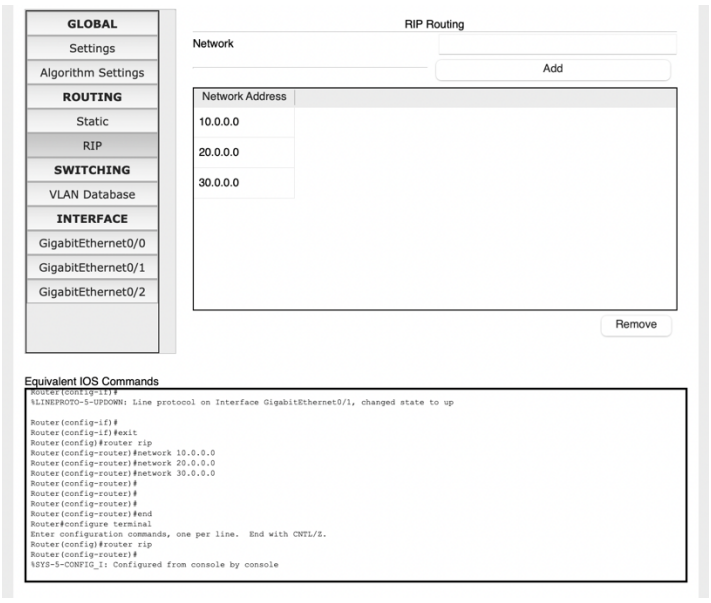


Create LAN2 using hub with 5 PC:



Interconnect the routers and configure the routing table for dynamic routing:





Understand the packet transmission across the LAN:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 20.0.0.6

Pinging 20.0.0.6 with 32 bytes of data:

Reply from 20.0.0.6: bytes=32 time<1ms TTL=126
Reply from 20.0.0.6: bytes=32 time<1ms TTL=126
Reply from 20.0.0.6: bytes=32 time<1ms TTL=126
Reply from 20.0.0.6: bytes=32 time<1ms TTL=126

Ping statistics for 20.0.0.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Security Analysis:

Vulnerabilities	Threats	Attack
Outdated software	Physical access with insider access	Malware infection to hardware by insider access
Weak passwords	Unauthorised access by gaining a password	Denial of service by blocking hub access
Lack of encryption	Data theft by insider attacks	Phishing by insider attack
Direct offline hub and switch access		

Prevention:

- Keeping the nodes and hub in a sperate room for nobody to access directly.
- Encrypt and mandate strong password usage

Result:

This network is extremely secure, but all the nodes can only connect to each other and none of them to the internet. This type of connection is very good for local file storages and broadcasting. This also enables different LANs to connect with each other through the usage of a router.

Question 2

Aim: Create 2 servers with one accessible through CLI only and one from browser only

Tools and Concepts Required:

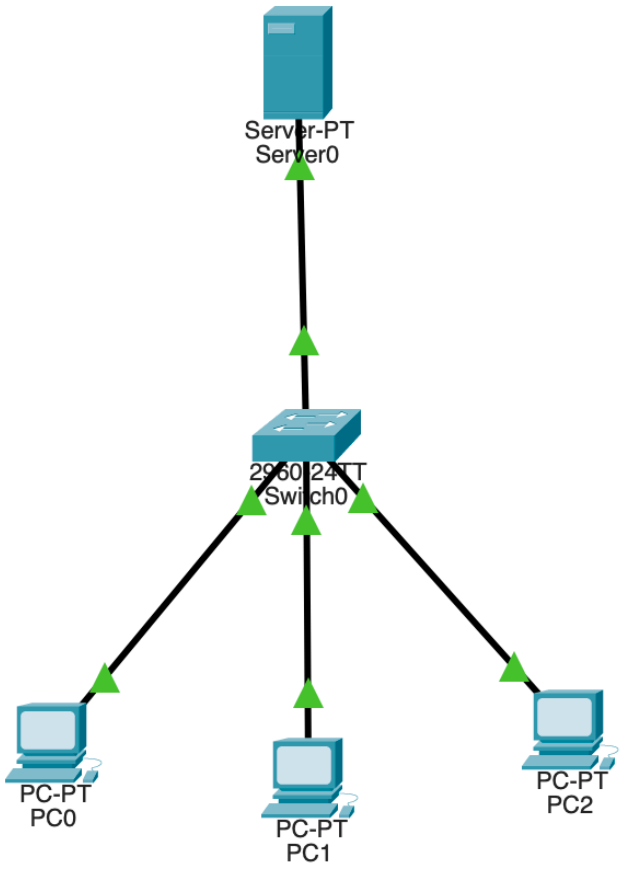
- Cisco Packet Tracer
- Switch
- Router
- Personal Computers
- Server
- Wiring

Procedure:

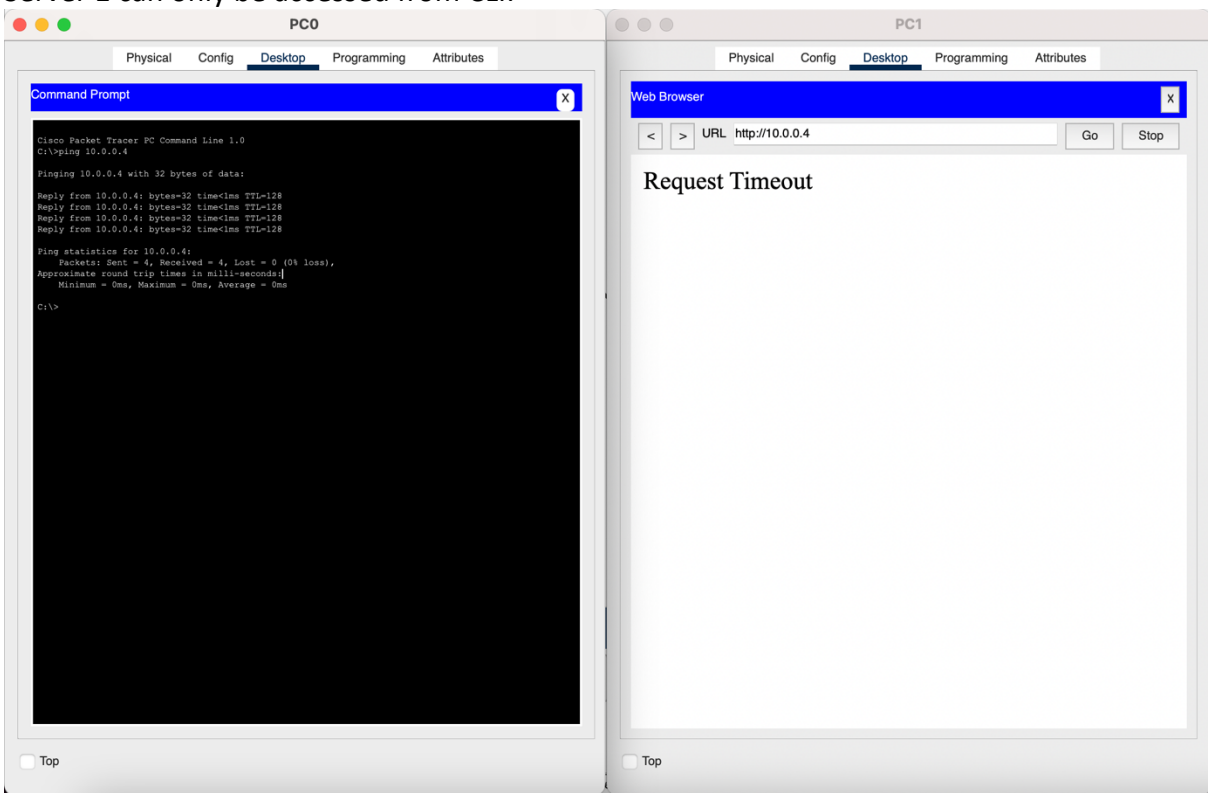
- Create server 1 with a switch and 3 PC
- Server 1 can only be accessed from CLI
- Create server 2 with a switch and 2 PC
- Server 2 can only be accessed from browser

Output:

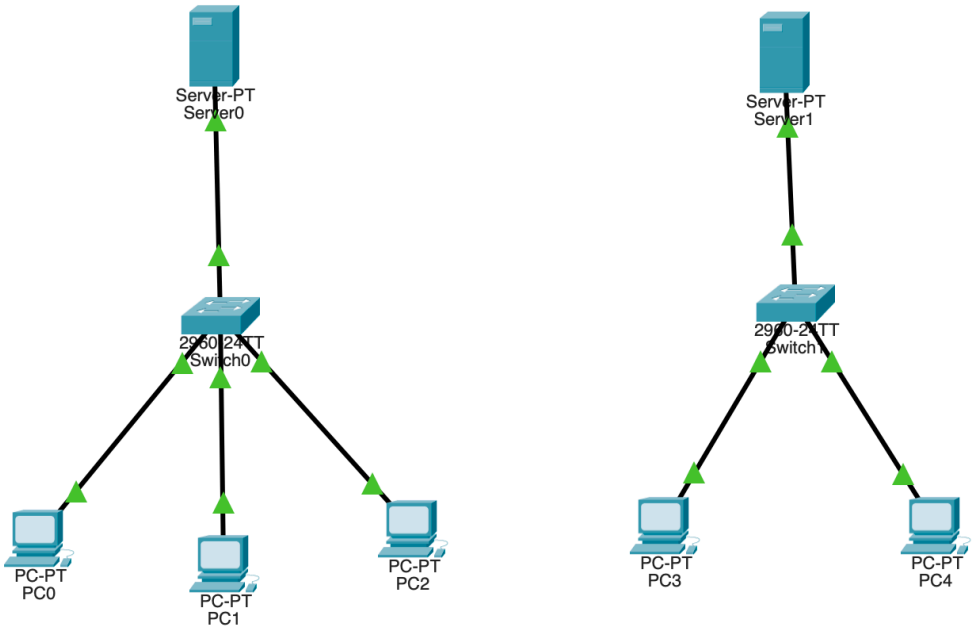
Create server 1 with a switch and 3 PC:



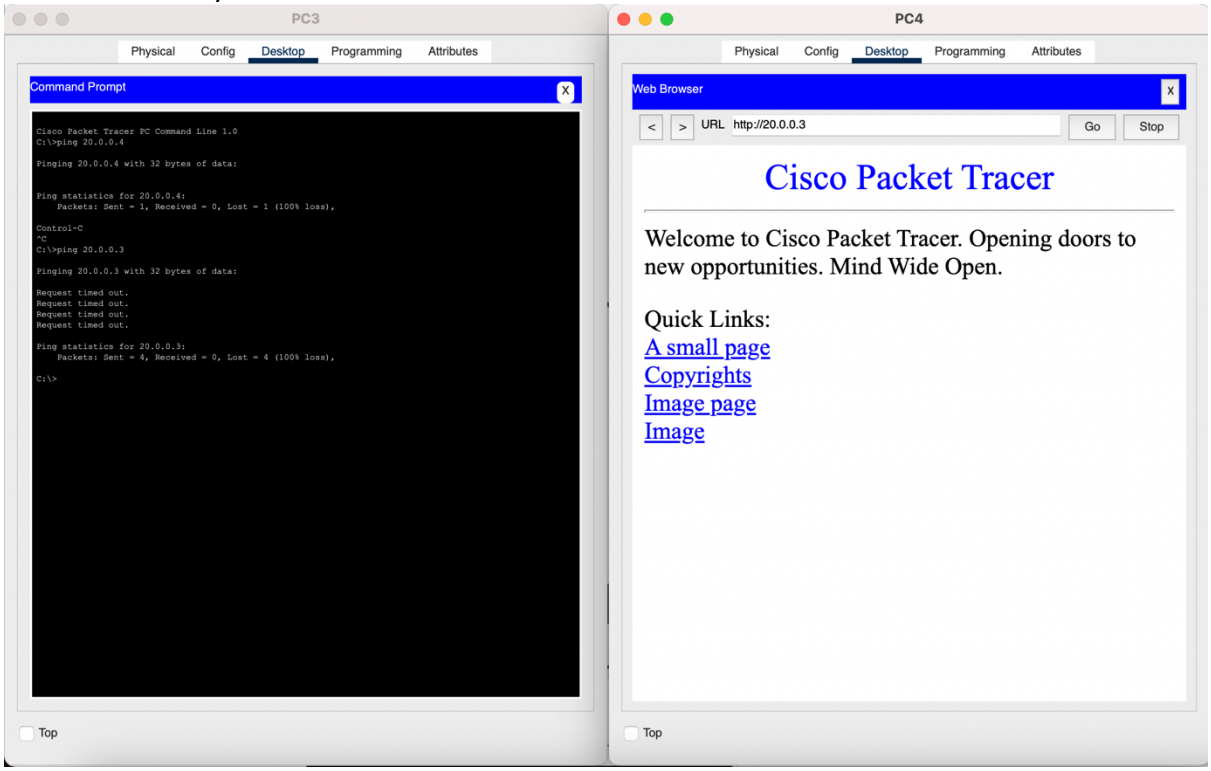
Server 1 can only be accessed from CLI:



Create server 2 with a switch and 2 PC:



Server 2 can only be accessed from browser:



Security Analysis:

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Outdated software	Physical access with insider access	Malware infection to hardware by insider access
Weak passwords	Unauthorised access by gaining a password	Denial of service by blocking hub access
Lack of encryption	Data theft by insider attacks	Phishing by insider attack
Direct offline switch access		

Prevention:

- Keeping the nodes and hub in a sperate room for nobody to access directly.
- Encrypt and mandate strong password usage
- The usage of the firewall prevents users from the second server to access the CLI, which can prevent unwanted installation and access

Result:

This network is secure, but all the nodes can only access to the server they are assigned to and not to the rest of the internet. The implementation of the firewall on both servers allows for added security and allows more repudiation on servers.