CN LAB

Experiment – 5

CREATE A SIMPLE NETWORK USING PACKET TRACER (INTRANET, INTERNET, AND LAPTOP/PC/MOBILE DEVICES

Submitted To

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AIM

To help understand different network types (internet, intranet, and extranet) and practice simulating them using Packet Tracer.

THEORY

Intranet: **Intranet** is a private network that is accessible only by members of a single organization. It uses the same protocols and hardware as the internet but is isolated from it. Intranets are used for internal communication, collaboration and information sharing within an organization.

Extranet: **Extranet** is an extension of an intranet that allows selected external parties, such as customers, vendors, or partners, to access some or all the intranet content. Extranets are used for cross-enterprise communication, collaboration, and information sharing.

Internet: **Internet** is a global network of interconnected computers and servers that allows people to communicate and access information across the world. It uses the World Wide Web as the main platform for accessing and sharing information.

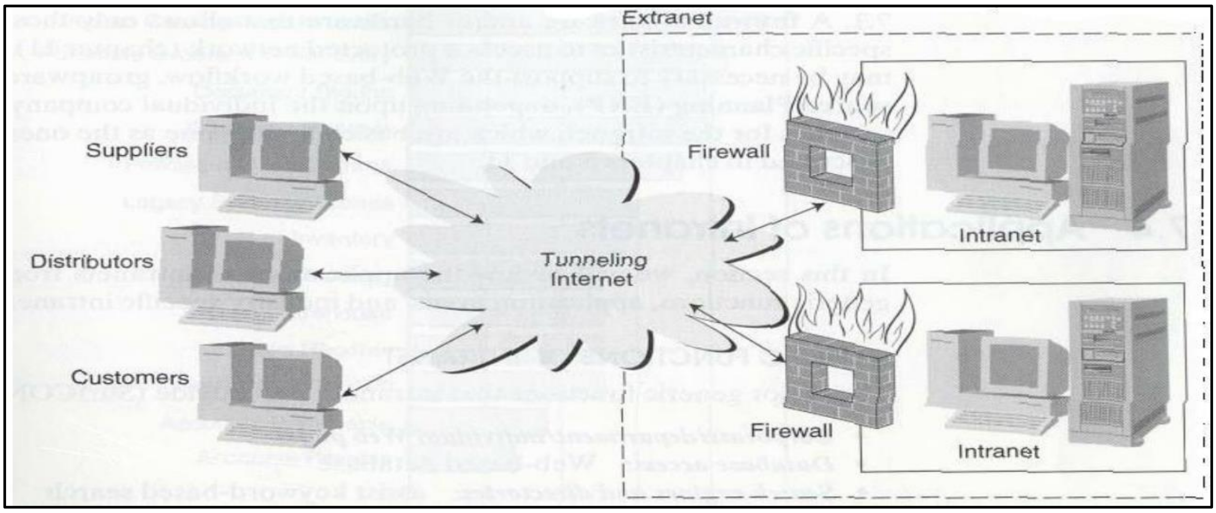


Figure 1 Diagrammatic Contrast of the Internet, Intranet, and Extranet

An Example of Internet and Intranet Connections from CISCO course.

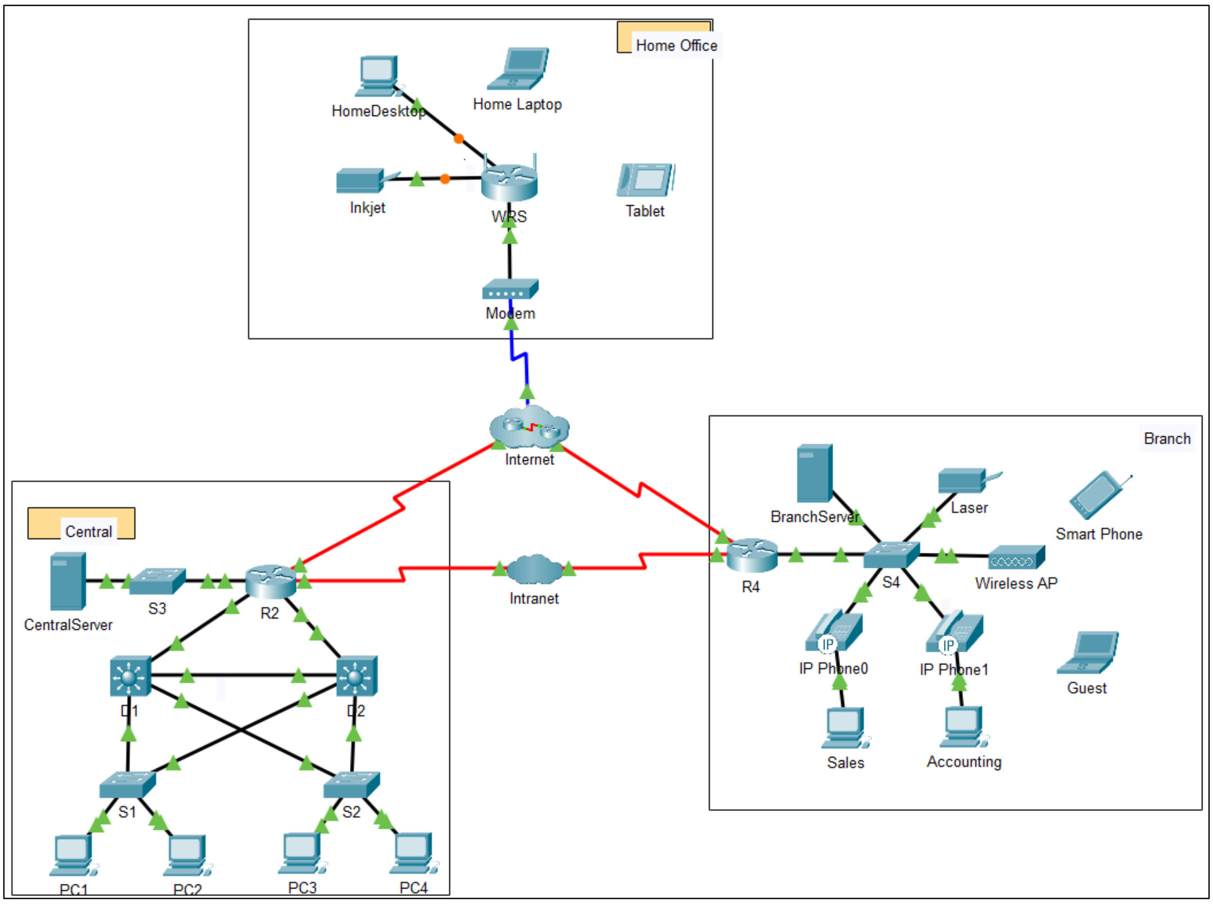


Figure 2

Cluster in CISCO PT

A cluster in Cisco PT refers to a group of devices that are interconnected and can communicate with each other as if they were part of a real network.

First, the connections and configurations need to be completed and tested. To create a cluster, one needs to select the devices one wants to include. These devices could be routers, switches, PCs, servers, or any other networking components available in Cisco PT. Then in the top right corner of the window of CISCO PT, there is an option with an icon which needs to be clicked to create the final cluster. After creating cluster, we can test the connections inside and outside the cluster in the network.

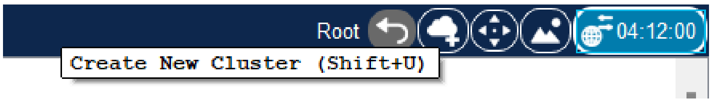


Figure 3 *Creating Cluster*

OSERVATION

In the given network as shown in the figure 2, connections were tested using ping commands. After pinging systems from each sub-networks, following result was found.

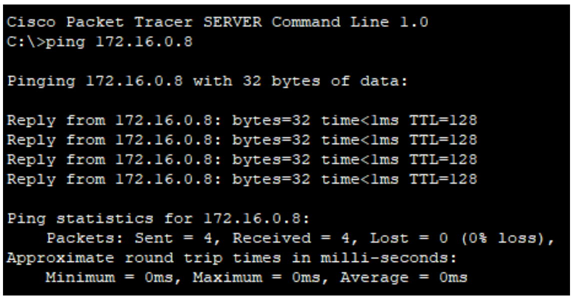
We were able to ping every system of **Central** and **Branch** but not from **Home Office**. But we could only ping **Central** from **Branch**. From **Central** we were not able to ping any sub-networks.

Default Gateway

Home Office	192.168.0.1
Branch Office	172.16.0.1
Central Office	10.10.10.1

Here are the screenshots.

Pinging Screenshots from Branch to Branch and Central

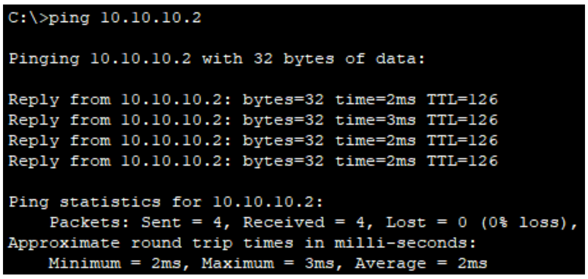


```
Cisco Packet Tracer SERVER Command Line 1.0
C:\>ping 172.16.0.8

Pinging 172.16.0.8 with 32 bytes of data:

Reply from 172.16.0.8: bytes=32 time<1ms TTL=128
Reply from 172.16.0.8: bytes=32 time<1ms TTL=128
Reply from 172.16.0.8: bytes=32 time<1ms TTL=128
Reply from 172.16.0.8: bytes=32 time<1ms TTL=128

Ping statistics for 172.16.0.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```



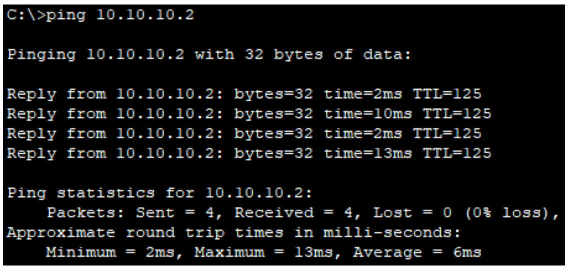
```
C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2: bytes=32 time=2ms TTL=126
Reply from 10.10.10.2: bytes=32 time=3ms TTL=126
Reply from 10.10.10.2: bytes=32 time=2ms TTL=126
Reply from 10.10.10.2: bytes=32 time=2ms TTL=126

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

Pinging screenshots from Home to Central



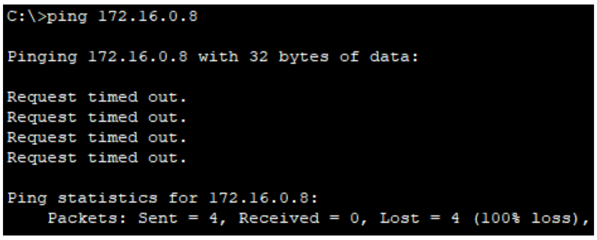
```
C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:

Reply from 10.10.10.2: bytes=32 time=2ms TTL=125
Reply from 10.10.10.2: bytes=32 time=10ms TTL=125
Reply from 10.10.10.2: bytes=32 time=2ms TTL=125
Reply from 10.10.10.2: bytes=32 time=13ms TTL=125

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 13ms, Average = 6ms
```

Failed ping from Home to Branch



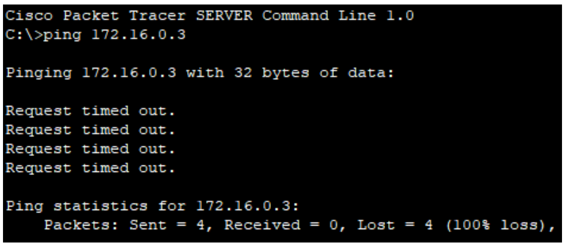
```
C:\>ping 172.16.0.8

Pinging 172.16.0.8 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.16.0.8:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Failed ping from Central to Branch and Home

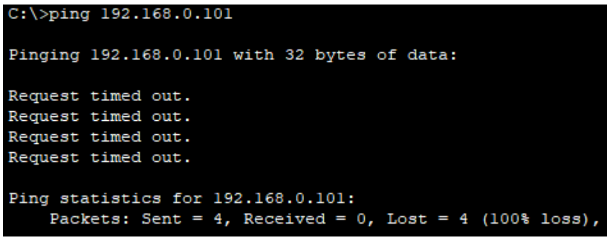


```
Cisco Packet Tracer SERVER Command Line 1.0
C:\>ping 172.16.0.3

Pinging 172.16.0.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.16.0.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```



```
C:\>ping 192.168.0.101

Pinging 192.168.0.101 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.0.101:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

SELF-ASSESSMENT

1. What are some challenges associated with managing and securing a WAN compared to a LAN?

   Some challenges associated with managing and securing a WAN compared to a LAN are:

   a) WANs cover and connect larger areas than LANs, which increases the risk of data loss, theft, or interception.

   b) WANs are more expensive and complex to set up and maintain than LANs.

   c) WANs may rely on public or shared networks, which can expose them to more threats and vulnerabilities than LANs.

   d) WANs have lower transfer rates and higher latency issues than LANs, which can affect the performance and reliability of applications.

2. List the limitations or constraints that you faced of simulating WAN networks in Packet Tracer?

   Some limitations or constraints that you faced of simulating WAN networks in Packet Tracer are:

   a) Packet Tracer does not support some features and commands that are available in real devices, such as IPv6, L2 protocols, and packet duplication.

   b) Packet Tracer may not accurately reflect the latency, jitter, and packet loss that are associated with the WAN.

   c) Packet Tracer may not provide sufficient visibility and security for the WAN traffic.