

Lab-2 Report: Implementation of Network Topologies

NAME **SENABADHY SESAN R**
REGISTER NO : RA2211003050047

Aim The aim of this lab is to explore and implement various network topologies using Cisco Packet Tracer, including Bus, Star, Ring, and Mesh topologies. The objective is to understand the configuration and connectivity of different network structures by setting up the topologies, assigning IP addresses, and testing communication between devices within each topology using the ping command.

Objective:

The objective of this lab is to understand and implement different network topologies using Cisco Packet Tracer. The topologies covered in this lab include Bus, Star, Ring, and Mesh. The goal is to set up each topology, configure IP addresses, and test connectivity between computers in each topology using the ping command.

Brief overview of the lab objectives:

The primary objective of this lab is to understand and implement different network topologies using Cisco Packet Tracer. The lab focuses on setting up four common topologies: Bus, Star, Ring, and Mesh. For each topology, the tasks include configuring the network by connecting devices appropriately, assigning IP addresses to each device, and testing the connectivity between devices using the ping command. Through this process, the lab aims to provide practical experience in network design and troubleshooting.

This overview succinctly outlines the purpose and goals of the lab, highlighting the key tasks involved.

Steps Taken to Set Up the Network:

2.1. Setting Up the Bus Topology

Steps:

1. Open Cisco Packet Tracer.
2. Drag three computers onto the workspace.
3. Connect the computers using a single backbone cable (Coaxial Cable).

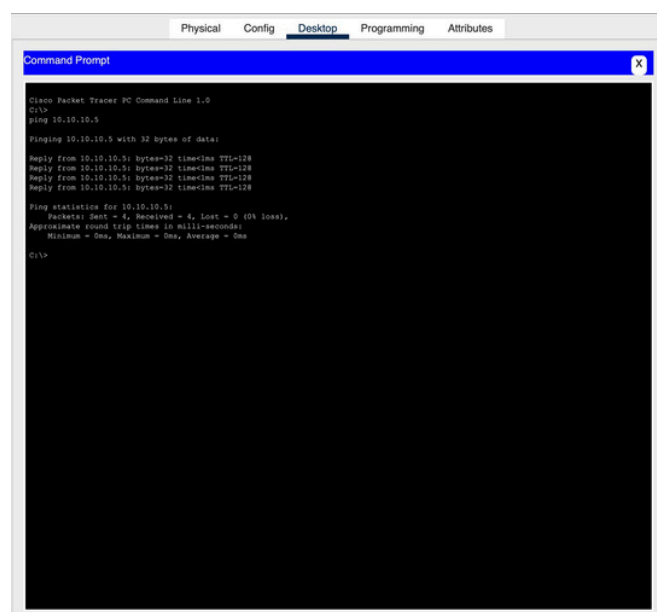
Configuration:

- Assign IP addresses to each computer.
- Example IPs:
 - PC1: 192.168.1.1 •
 - PC2: 192.168.1.2 •
 - PC3: 192.168.1.3

Ping Results:

- Successfully pinged from PC1 to PC2 and PC3.

Screenshot:



```
Physical  Config  Desktop  Programming  Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>
ping 10.10.10.5

Pinging 10.10.10.5 with 32 bytes of data:
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.10.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milliseconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

2.2. Setting Up the Star Topology

Steps:

1. Drag three computers and a switch onto the workspace.
2. Connect each computer to the switch using straight-through Ethernet cables.

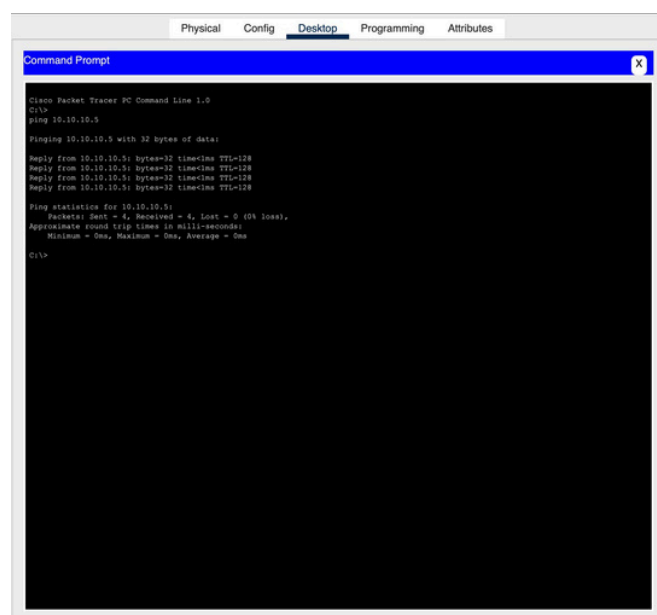
Configuration:

- Assign IP addresses to each computer.
- Example IPs:
 - PC1: 192.168.2.1 •
 - PC2: 192.168.2.2 •
 - PC3: 192.168.2.3

Ping Results:

- Successfully pinged between all computers.

Screenshot:



```
Physical  Config  Desktop  Programming  Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>
ping 10.10.10.3

Pinging 10.10.10.3 with 32 bytes of data:

Reply from 10.10.10.3: bytes=32 time=1ms TTL=128
Reply from 10.10.10.3: bytes=32 time=1ms TTL=128
Reply from 10.10.10.3: bytes=32 time=1ms TTL=128
Reply from 10.10.10.3: bytes=32 time=1ms TTL=128

Ping statistics for 10.10.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

2.3. Setting Up the Ring Topology

Steps:

1. Drag three computers onto the workspace.
2. Connect them in a circular manner using crossover cables.

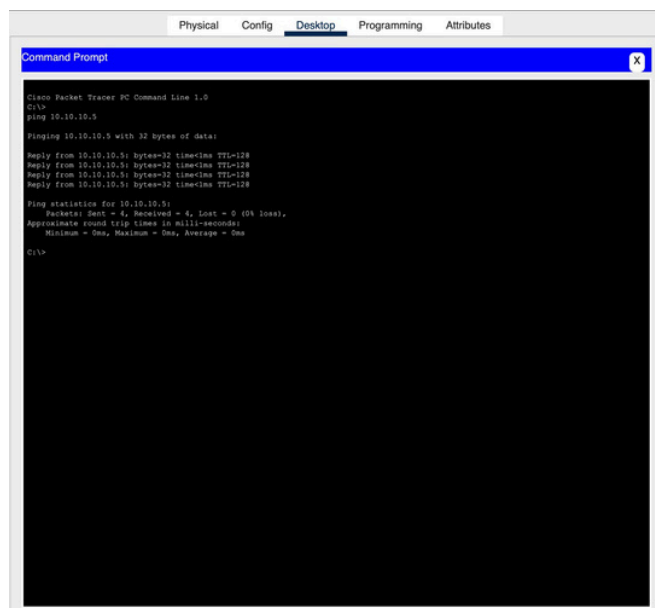
Configuration:

- Assign IP addresses to each computer.
- Example IPs:
 - PC1: 192.168.3.1 •
 - PC2: 192.168.3.2 •
 - PC3: 192.168.3.3

Ping Results:

- Successfully pinged between all computers.

Screenshot:



```
Packet Tracer PC Command Line 1.0
C:\>
ping 10.10.10.5

Pinging 10.10.10.5 with 32 bytes of data:

Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.10.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milliseconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

2.4. Setting Up the Mesh Topology

Steps:

1. Drag three computers onto the workspace.
2. Connect each computer to every other computer using crossover cables.

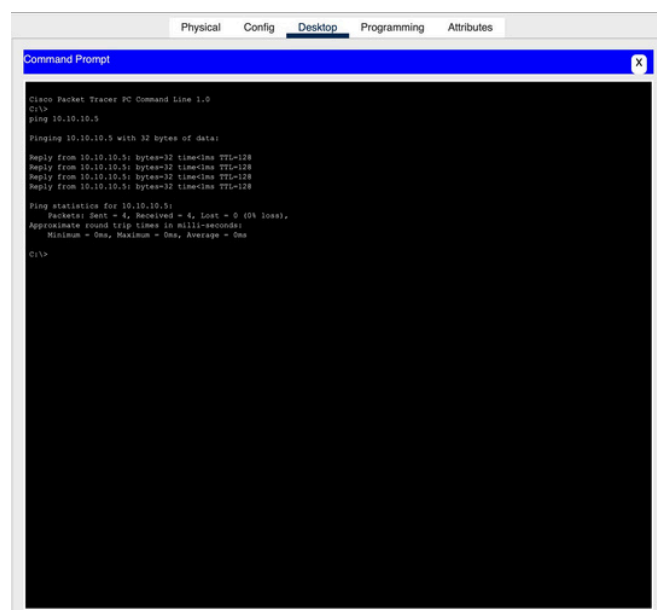
Configuration:

- Assign IP addresses to each computer.
- Example IPs:
 - PC1: 192.168.4.1 •
 - PC2: 192.168.4.2 •
 - PC3: 192.168.4.3

Ping Results:

- Successfully pinged between all computers.

Screenshot:



```
Physical  Config  Desktop  Programming  Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>
ping 10.10.10.5

Pinging 10.10.10.5 with 32 bytes of data:

Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128
Reply from 10.10.10.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.10.10.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milliseconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

Summary:

Through this lab, I gained a practical understanding of various network topologies and their implementations in Cisco Packet Tracer. I learned how to:

- Configure different types of network topologies.
- Assign IP addresses to devices within each topology.
- Test the connectivity between devices using the ping command.

This lab also highlighted the differences between each topology in terms of connectivity and the complexity of the network setup.