

# COMPUTER NETWORK'S ASSIGNMENT- 5



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## Aim -

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

## Theory -

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

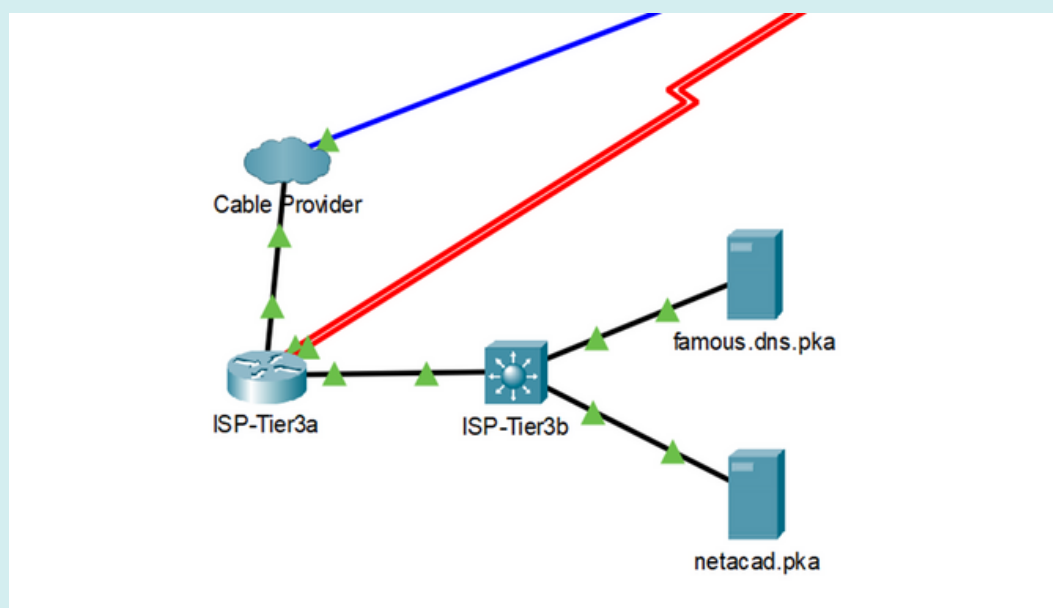
### **The Internet:**

- The internet is a worldwide collection of interconnected LANs and WANs.
- LANs are connected to each other using WANs.
- WANs may use copper wires, fiber optic cables, and wireless transmissions.
- The internet is not owned by any individual or group. The following groups were developed to help maintain structure on the internet:  
IETF  
ICANN  
IAB

### **Intranet and Extranet:**

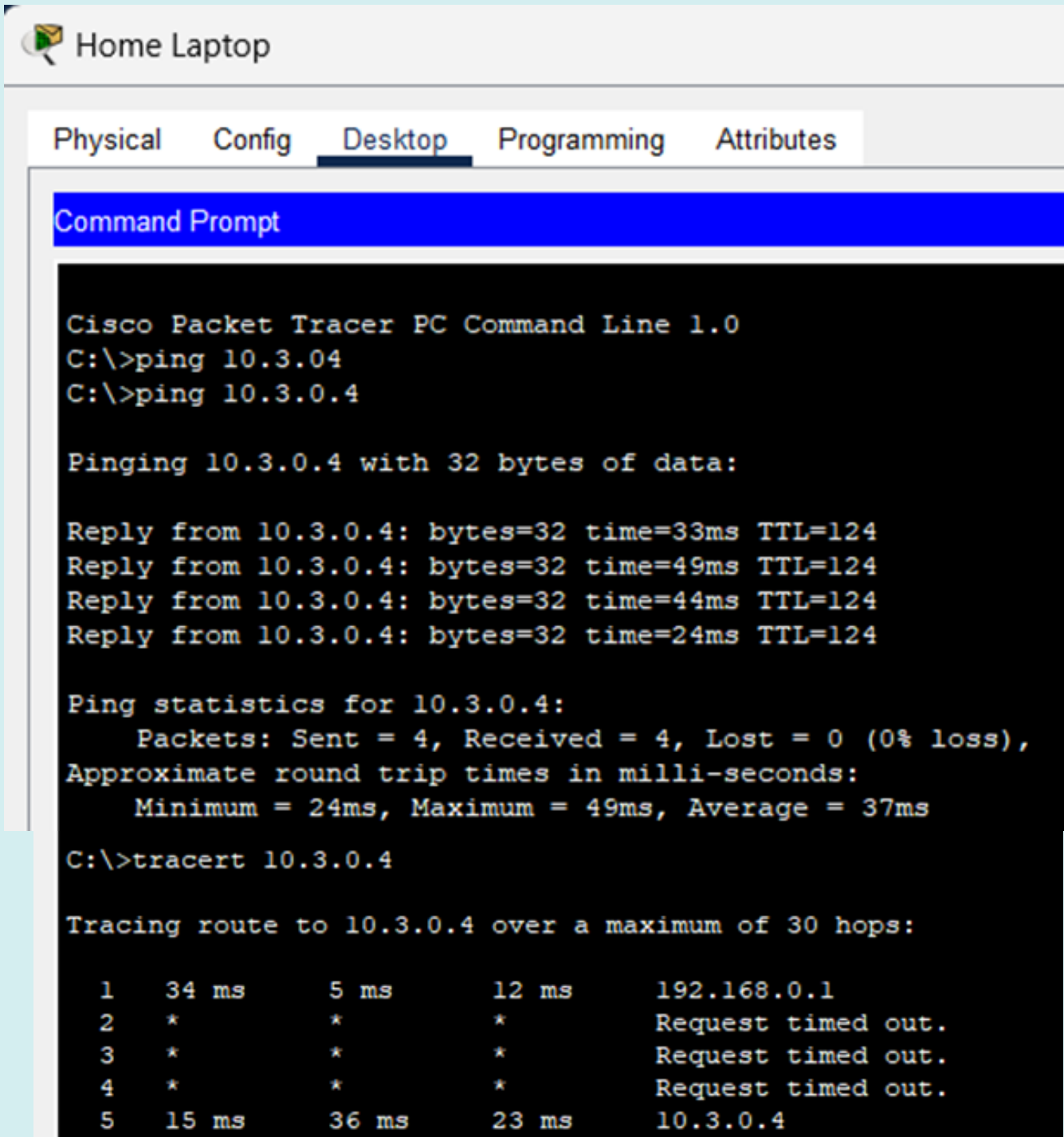
- An intranet is a private collection of LANs and WANs internal to an organization that is meant to be accessible only to the organizations members or others with authorization.
- An organization might use an extranet to provide secure access to their network for individuals who work for a different organization that need access to their data on their network.

## Overall Network



## Observations :-

### Finding routes from Home computer to PC3



The screenshot shows a 'Home Laptop' window in Cisco Packet Tracer. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of ping and traceroute commands to the IP address 10.3.0.4.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.3.04
C:\>ping 10.3.0.4

Pinging 10.3.0.4 with 32 bytes of data:

Reply from 10.3.0.4: bytes=32 time=33ms TTL=124
Reply from 10.3.0.4: bytes=32 time=49ms TTL=124
Reply from 10.3.0.4: bytes=32 time=44ms TTL=124
Reply from 10.3.0.4: bytes=32 time=24ms TTL=124

Ping statistics for 10.3.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 24ms, Maximum = 49ms, Average = 37ms

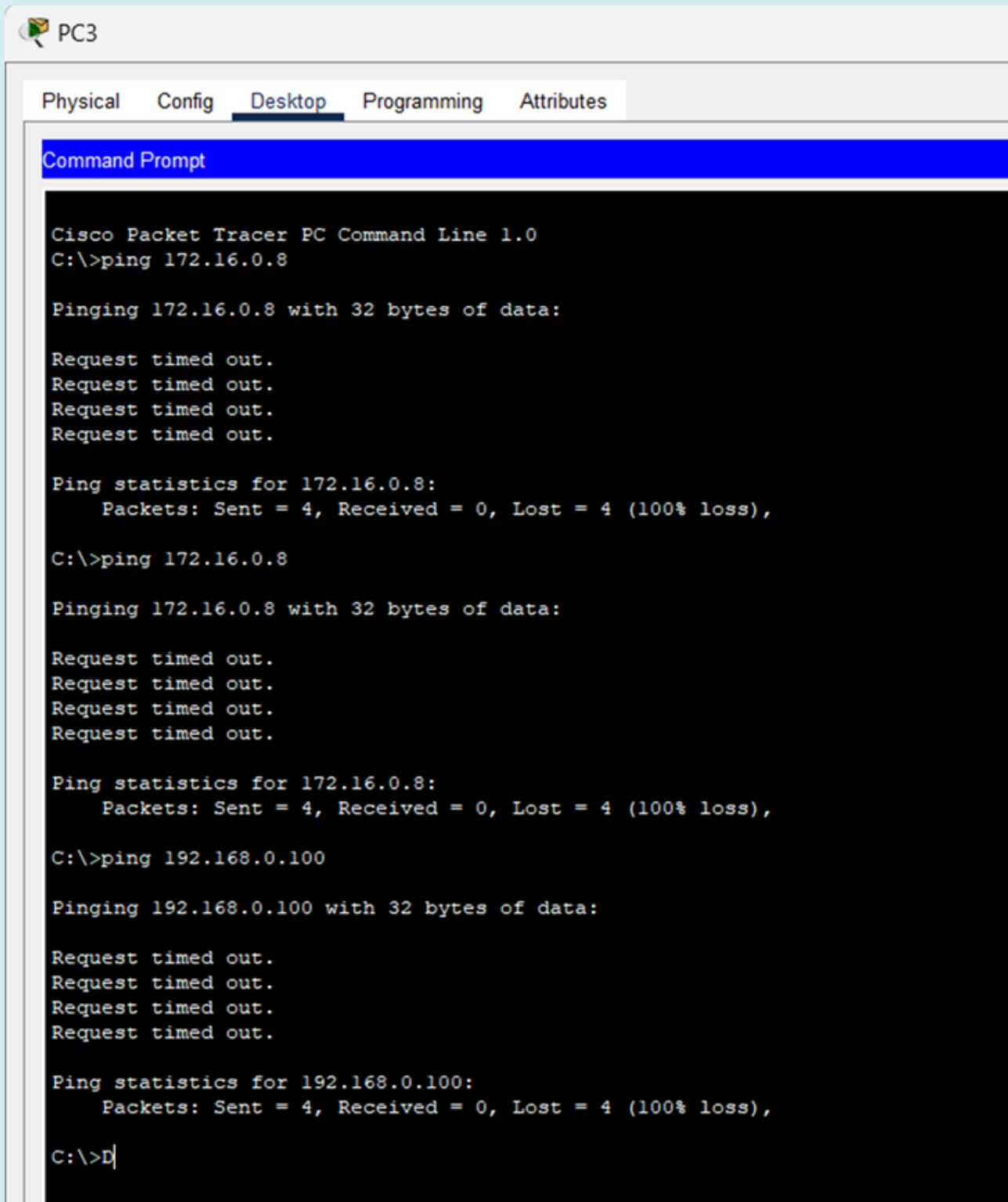
C:\>tracert 10.3.0.4

Tracing route to 10.3.0.4 over a maximum of 30 hops:

  1    34 ms     5 ms     12 ms     192.168.0.1
  2    *         *         *         Request timed out.
  3    *         *         *         Request timed out.
  4    *         *         *         Request timed out.
  5    15 ms     36 ms     23 ms     10.3.0.4
```

## Observations :-

### Finding routes from PC3 to Accounting and PC3 to Home Laptop



The screenshot shows the PC3 interface in Cisco Packet Tracer. The 'Desktop' tab is selected, and the 'Command Prompt' window is open. The command prompt displays the results of three ping commands: two to 172.16.0.8 and one to 192.168.0.100. All three pings resulted in 100% packet loss.

```
PC3
Physical  Config  Desktop  Programming  Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
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),

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),

C:\>ping 192.168.0.100

Pinging 192.168.0.100 with 32 bytes of data:

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

Ping statistics for 192.168.0.100:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>D|
```

## **Self Assessment:-**

### **What are some challenges associated with managing and securing a WAN compared to a LAN?**

Managing and securing a WAN presents distinct challenges compared to a LAN due to its broader scope and diverse connections:

- **Scale and Complexity:** WANs span large geographic areas, making their management and monitoring more complex than the confined nature of LANs.
- **Diverse Infrastructure:** WANs encompass various technologies like leased lines, satellites, and public internet, demanding expertise in multiple systems.
- **Higher Latency and Reliability:** WANs' extended distances often result in higher latency and potential reliability issues, necessitating optimized routing and redundancy.
- **Security Concerns:** WANs involve data transmission across public networks, exposing information to more security threats, necessitating advanced encryption and authentication measures.
- **Resource Allocation:** Managing bandwidth across distributed locations is challenging, requiring efficient allocation to ensure consistent performance.

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

Simulating WAN networks in Packet Tracer has the following limitations:

- **Scale:** Packet Tracer is designed for smaller-scale simulations, making it less suitable for accurately replicating the complexity of large WAN environments.
- **Realism:** It may not fully capture real-world WAN behaviors, such as varying latency and congestion, which are crucial for accurate testing.
- **Limited Protocol Support:** Some advanced WAN protocols and features might not be supported or accurately represented in Packet Tracer.
- **Hardware Emulation:** Emulating WAN hardware may not fully replicate the performance and intricacies of actual networking equipment found in WAN setups.

## **Conclusion:-**

**the internet functions as a global network of interconnected LANs and WANs, enabled by technologies like fiber optics and wireless transmissions. Its decentralized nature is supported by essential organizations such as IETF, ICANN, and IAB. Intranets provide exclusive networks for internal communication within organizations, while extranets extend controlled access to external collaborators. This intricate landscape showcases the evolution of secure and efficient data sharing on a worldwide scale.**

**End of Report**