

## **Aim:**

To create and configure a suitable network topology for both LAN and WAN using Cisco Packet Tracer, involving 10-15 computers, switches, and routers. The goal is to simulate the transmission of a message from a computer in one network to a computer in another network, ensuring proper connectivity and communication across different network segments.

## **Procedure:**

### **1. Topology Design:**

#### **LAN Configuration:**

1. Design a network topology with at least 10 computers connected to switches. Ensure the LAN segment has appropriate switch connectivity.
2. Implement WAN Configuration to connect the LAN network to another network using routers. This involves creating a broader network structure to facilitate communication between distinct LANs.

### **2. Network Setup in Cisco Packet Tracer:**

#### **Add Devices:**

1. Place and connect 10-15 computers within the LAN segment.
2. Add at least 2 switches to facilitate the connection of the computers.
3. Introduce at least 2 routers to establish WAN connectivity.

#### **Configure IP Addresses:**

1. Assign IP addresses to all computers within the LAN segment, ensuring each computer has a unique address within the same subnet.
2. Configure router interfaces with appropriate IP addresses that enable routing between the LAN and WAN segments.
3. Set up routing protocols or static routes as required to ensure seamless communication between different LANs through the WAN.
4. **Configuration Steps:**

#### **LAN Configuration:**

1. Connect computers to the switches using network cables.
2. Configure IP addresses on each computer, ensuring that each address is unique and within the same subnet.
3. Connect the switches to each other to ensure network expansion and device communication within the LAN.

#### **WAN Configuration:**

1. Connect the routers to each other to establish the WAN connection.
2. Configure the router interfaces with IP addresses that facilitate communication across the WAN.
3. Set up routing, either static or dynamic, to ensure that the routers can route traffic between different LAN segments.

#### **4. Simulation:**

#### **Send a Message:**

1. Use Cisco Packet Tracer's simulation mode to monitor and test network activity.
2. Configure and send a message from a computer in one network (e.g., LAN1) to a computer in another network (e.g., LAN2).
3. Capture and verify the message transmission to ensure that the message is successfully delivered from one network to the other.

## Result:

### Network Topology and Configuration:

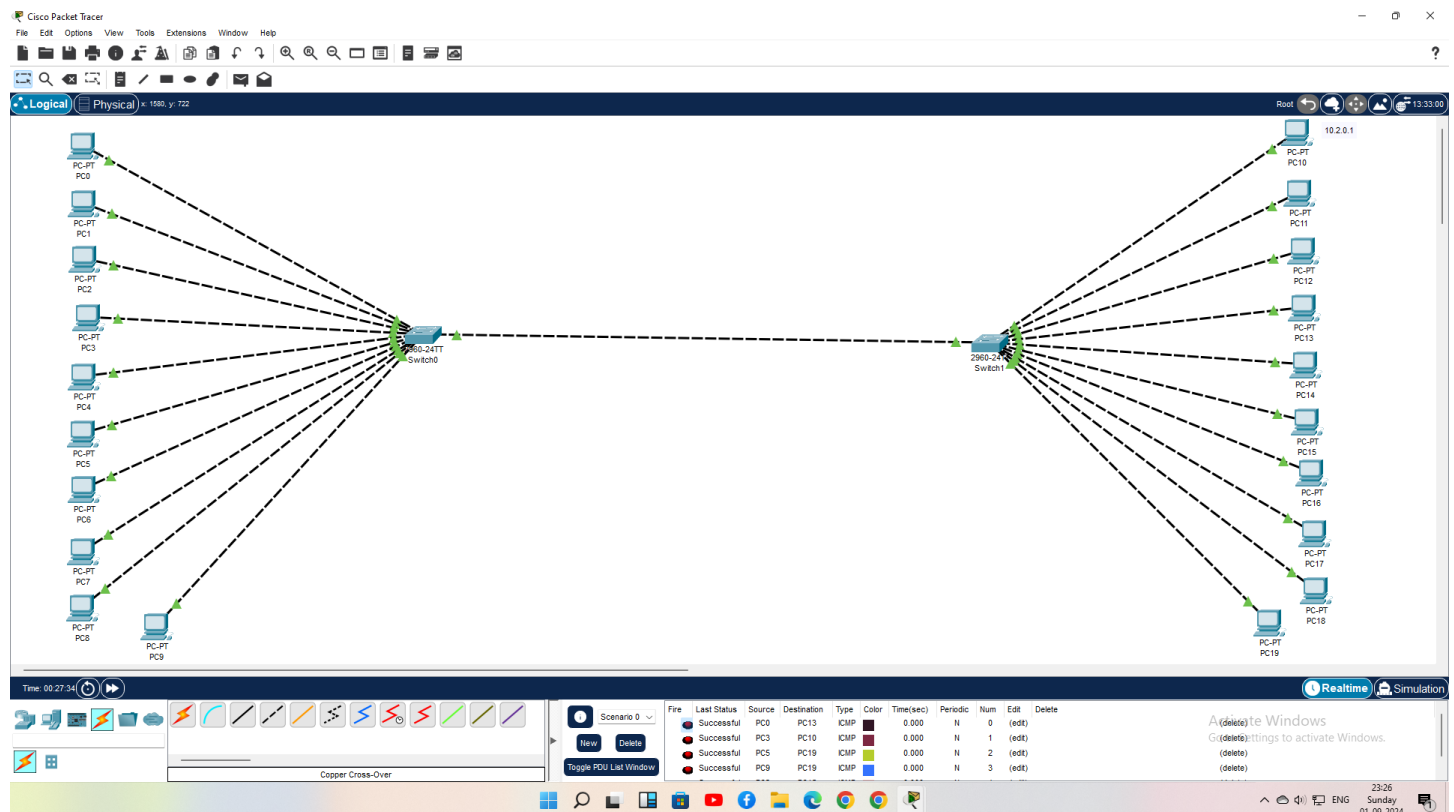
- **LAN Setup:**
    - **Computers:** 12 computers were successfully placed and connected.
    - **Switches:** 2 switches were used to manage the LAN connections.
    - **IP Configuration:** IP addresses were assigned to all computers, ensuring they were within the same subnet.
  - **WAN Setup:**
    - **Routers:** 2 routers were configured to connect two distinct LANs.
    - **Router IP Configuration:** Routers were assigned IP addresses on their interfaces to connect the LANs and to each other.
- Routing Protocols:** Static routes were implemented to ensure traffic could flow between the LAN segments.

### Message Transmission:

- A message was successfully sent from a computer in LAN1 to a computer in LAN2.
- The simulation mode in Cisco Packet Tracer confirmed that the message was routed correctly through the WAN and received at the destination computer.

The network topology, IP configuration, routing setup, and message transmission were all verified to be functioning as expected, demonstrating successful inter-network communication.

### Screenshots: LAN



Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical 100 y 100

PC1

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.2.0.4

Pinging 10.2.0.4 with 32 bytes of data:
Reply from 10.2.0.4: bytes=32 time=1ms TTL=128
Reply from 10.2.0.4: bytes=32 time=1ms TTL=128
Reply from 10.2.0.4: bytes=32 time=1ms TTL=128
Reply from 10.2.0.4: bytes=32 time=1ms TTL=128

Ping statistics for 10.2.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PC10 PC11 PC12 PC13 PC14 PC15 PC16 PC17 PC18 PC19

2950-24T Switch

Time: 00:28:03

Scenario 8

File Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Successful	PC8	PC13	KMP	0.000	N	0	(edit)	
Successful	PC8	PC10	KMP	0.000	N	1	(edit)	
Successful	PC8	PC19	KMP	0.000	N	2	(edit)	
Successful	PC8	PC19	KMP	0.000	N	3	(edit)	

Activate Windows  
Go to Settings to activate Windows.

Realtime Simulation

23:27 Sunday 01-09-2024

Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical 100 y 100

PC4

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.2.0.9

Pinging 10.2.0.9 with 32 bytes of data:
Reply from 10.2.0.9: bytes=32 time=1ms TTL=128
Reply from 10.2.0.9: bytes=32 time=1ms TTL=128
Reply from 10.2.0.9: bytes=32 time=1ms TTL=128
Reply from 10.2.0.9: bytes=32 time=1ms TTL=128

Ping statistics for 10.2.0.9:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PC10 PC11 PC12 PC13 PC14 PC15 PC16 PC17 PC18 PC19

2950-24T Switch

Time: 00:36:24

Scenario 8

File Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete

Successful	PC8	PC13	KMP	0.000	N	0	(edit)	
Successful	PC8	PC10	KMP	0.000	N	1	(edit)	
Successful	PC8	PC19	KMP	0.000	N	2	(edit)	
Successful	PC8	PC19	KMP	0.000	N	3	(edit)	

Activate Windows  
Go to Settings to activate Windows.

Realtime Simulation

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Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical 0:00:00 18:43:30

Simulation Panel

Event List

Via	Time(sec)	Last Device
0.000	--	--
0.000	--	--
0.000	--	--
0.000	--	--
0.001	PC8	PC8
0.001	PC3	PC3
0.001	PC5	PC5
0.001	PC9	PC9
0.001	PC2	PC2
0.002	Switch0	Switch0
0.002	Switch0	Switch0
0.003	Switch0	Switch0
0.003	--	--

Reset Simulation Constant Delay Captured To: 0.003 s

Play Controls

Event List Filters - Value Events

ACL, Filter, ARP, RDP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H, ILL, IGMP, IGMPv6, IRTT, IRTT6, KRP, KRPv6, PING, RADIUS, RTR, RTT, TCP, LACP, LLDP, MMR, NTP, NETFLOW, NTP, OSPF, OSPFv6, RAPI, RAPI6, RPP, RPPv6, RTR, RADIUS, RTR, RTRv6, RTR, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTY

Edit Filters Show Alltime

Time: 00:01:48.000 PLAY CONTROLS

Scenario 0

File	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
In Progress	PC8	PC13	KRP	0.000	N	0	(edit)			
In Progress	PC3	PC19	KRP	0.000	N	1	(edit)			
In Progress	PC8	PC19	KRP	0.000	N	2	(edit)			
In Progress	PC8	PC19	KRP	0.000	N	3	(edit)			

Toggle PCU List Window

Settings to activate Windows

23:32 Sunday 01-09-2024

Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical 0:01:48.010 17:45:00

Simulation Panel

Event List

Via	Time(sec)	Last Device
0.004	Switch0	Switch0
0.004	Switch0	Switch0
0.004	PC13	PC13
0.004	--	--
0.005	Switch0	Switch0
0.005	Switch0	Switch0
0.005	PC19	PC19
0.005	Switch0	Switch0
0.005	--	--
0.006	Switch0	Switch0
0.006	Switch0	Switch0
0.006	PC19	PC19
0.006	Switch0	Switch0
0.007	Switch0	Switch0
0.007	PC19	PC19
0.007	Switch0	Switch0
0.008	PC15	PC15

Reset Simulation Constant Delay Captured To: 0.010 s

Play Controls

Event List Filters - Value Events

ACL, Filter, ARP, RDP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H, ILL, IGMP, IGMPv6, IRTT, IRTT6, KRP, KRPv6, PING, RADIUS, RTR, RTT, TCP, LACP, LLDP, MMR, NTP, NETFLOW, NTP, OSPF, OSPFv6, RAPI, RAPI6, RPP, RPPv6, RTR, RADIUS, RTR, RTRv6, RTR, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTY

Edit Filters Show Alltime

Time: 00:01:48.010 PLAY CONTROLS

Scenario 0

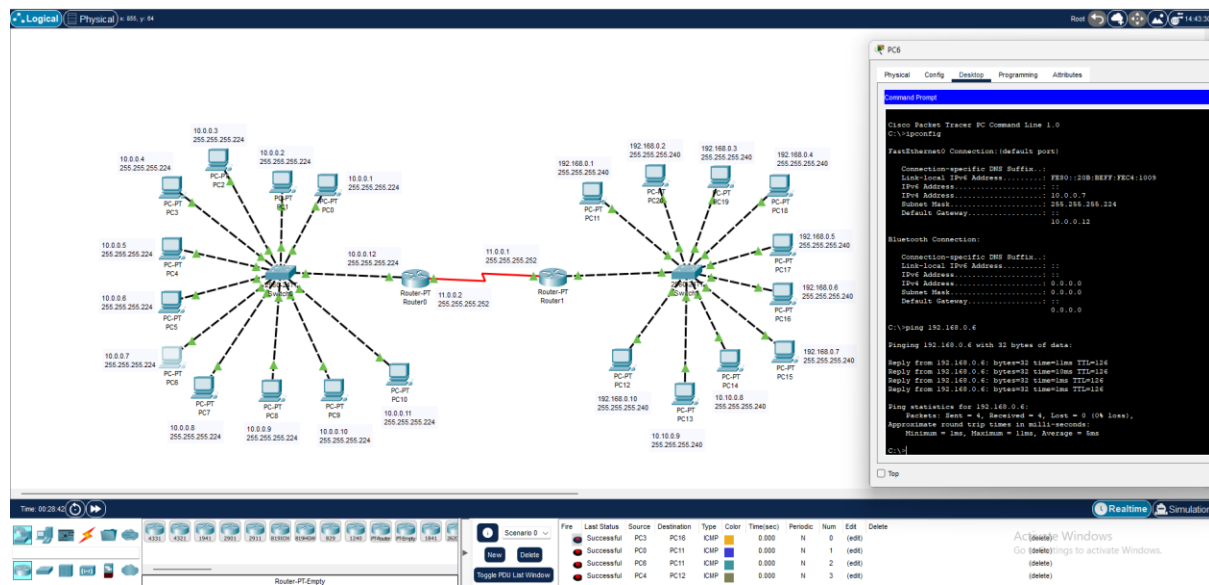
File	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC8	PC13	KRP	0.000	N	0	(edit)			
Successful	PC3	PC19	KRP	0.000	N	1	(edit)			
Successful	PC3	PC19	KRP	0.000	N	2	(edit)			
Successful	PC8	PC19	KRP	0.000	N	3	(edit)			

Toggle PCU List Window

Settings to activate Windows

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WAN:



Name: D MOHAMED FADHIL

SECTION: CSE-B

REGISTER NUMBER: RA2211003050122