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SUBJECT: NETWORKING

BS IT: THIRD SEMESTER

CODE: CC_214

SUBMITTED TO : MISS SAHRISH KHAN

INTRODUCTION OF MAN NETWORK

MAN (Metropolitan Area Network) refers to a network that spans a larger geographical area than a Local Area Network (LAN) but is smaller than a Wide Area Network (WAN). Typically, a MAN covers a city or a large campus, connecting multiple LANs within a metropolitan area. It is widely used by organizations and governments to interconnect offices or buildings across a city, enabling high-speed data transmission and efficient sharing of resources.

Key Features of a MAN:

1. Geographical Coverage: Covers areas from several kilometers to a few hundred kilometers, such as a city or large campus.

2. Connectivity: Connects multiple LANs, providing seamless data transfer across connected locations.

3. Bandwidth and Speed: Offers high-speed connections (up to 100 Gbps) to support demanding applications, such as streaming, VoIP, and large-scale data transfers.

Examples of MAN Usage:

University Campuses: To connect buildings, departments, and research facilities.

City Government Networks: Used by municipalities to connect administrative buildings, police departments, libraries, and schools.

Advantages of a MAN:

1: High Speed and Reliability: Provides faster speeds than a WAN with good reliability and minimal latency.

2: Cost-Effective: Reduces data transfer costs within a city by eliminating the need for WAN connections between LANs.

3: Scalability: Easily scalable to accommodate the growing network needs of metropolitan areas.

Disadvantages of a MAN:

-Complex Infrastructure: Requires skilled management and substantial infrastructure investment.

-Limited Coverage: Restricted to metropolitan areas, so it is not suitable for long-distance connectivity.

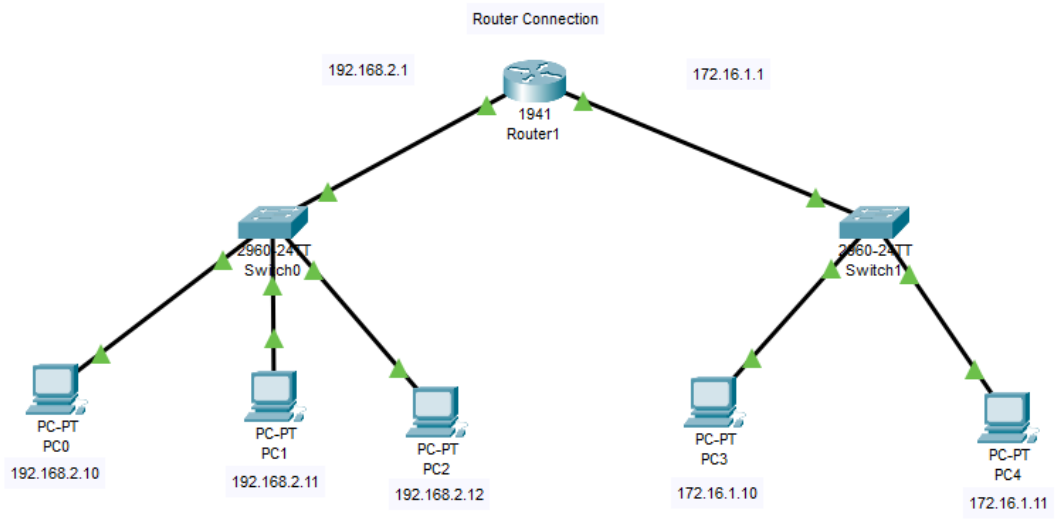
MAN Technologies

Several network technologies support MAN configurations:

Fiber Optic Cables: Often used for high-speed backbone connections.

Metro Ethernet: Extends Ethernet technology for city-wide data transport.

NETWORK STUCTURE



PROCESS:

1: first we take one switch and three pc and connected them through straight copper wire and connected them.

2:on the other hand we will also take tow pc and one switch and connected them through copper straight wire.

3: Then we take a router name 1941 and connected them with switches with copper straight wire.

4: The connection will show red which means message cannot send then wo click on pc one and configure them with cli and give them through with IP address .

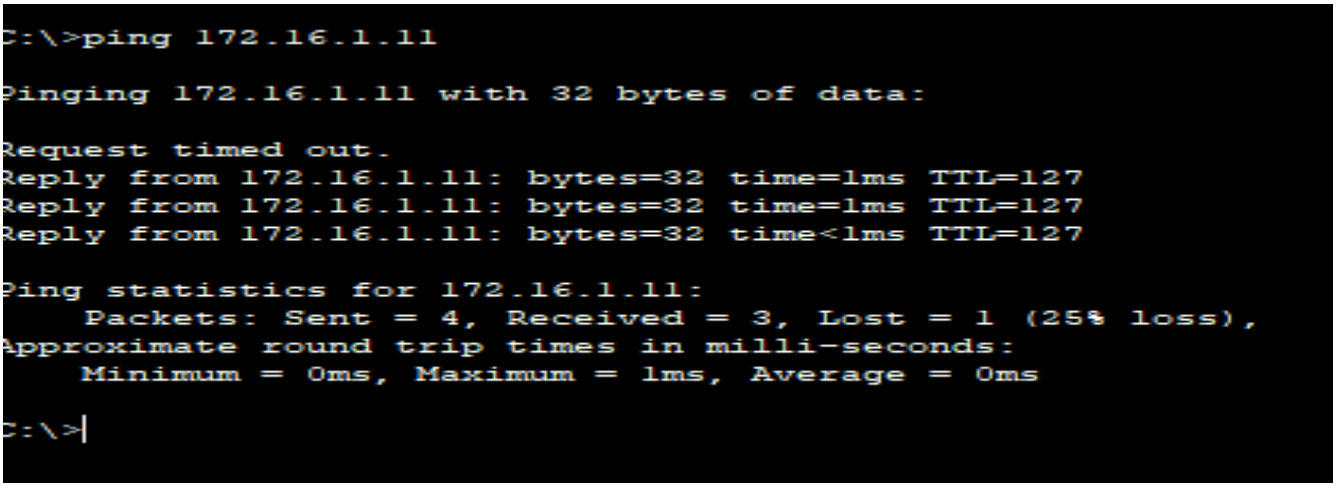
5: The same process with we will do with every computer.

6: then we click on router on cli to set the address after this the connection will show green which means the connection will become correct.

7: Then we ping on pc and give his IP address to other side of computer.

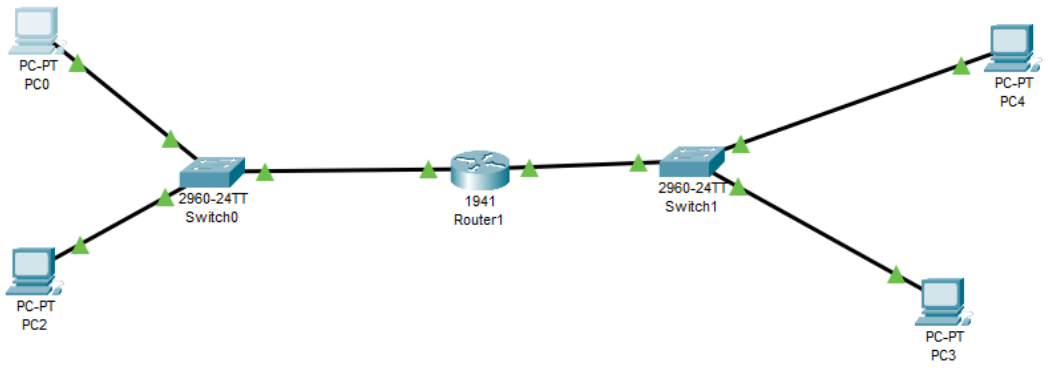
8: The message will send sent successful.

RESULT



This will show that the message will send and loss is 25 % and message will receive to his destination.

second structure



PROCESS:

1: first we take one switch and three pc and connected them through straight copper wire and connected them.

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7: Then we ping on pc and give his IP address to other side of computer.

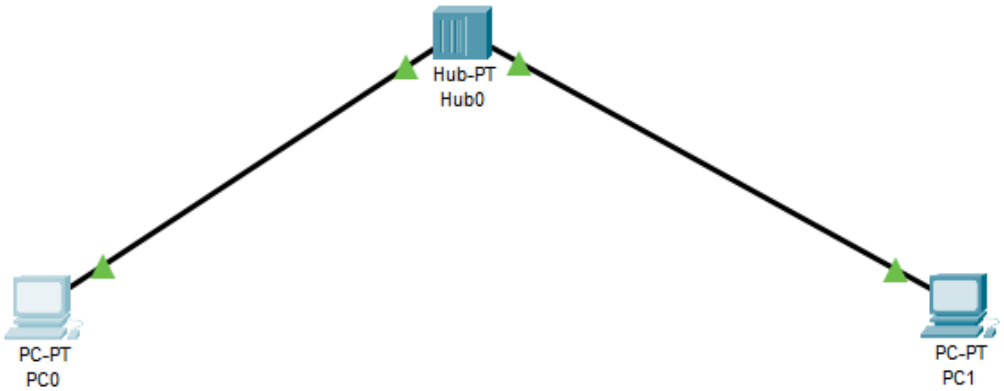
8: The message will send sent successful.

RESULT

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Request timed out.
Reply from 172.16.1.10: bytes=32 time=11ms TTL=127
Reply from 172.16.1.10: bytes=32 time=1ms TTL=127
Reply from 172.16.1.10: bytes=32 time<1ms TTL=127

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 11ms, Average = 4ms
```

This will show that the total loss is 25% which is acceptable and the message will send to his destination correctly.

STRUCTURE NUMBER THREE



PROCESS:

1: first we take a PT hub and two pcs.

2: Then the pcs will connected with the hub through Wire .

3: Then we will give IP address and gate way to the Pcs.

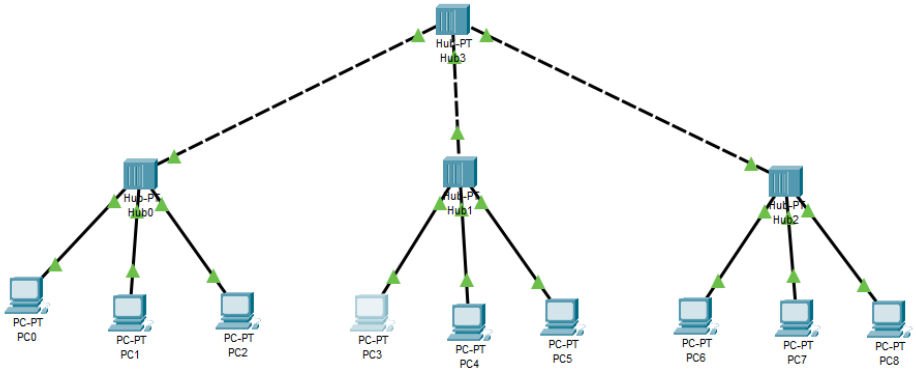
4: The message will send successfully.

RESULT

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time<1ms TTL=128
Reply from 192.168.0.2: bytes=32 time<1ms TTL=128
Reply from 192.168.0.2: bytes=32 time<1ms TTL=128
Reply from 192.168.0.2: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

This will show that the message will sent to his destination with zero percent loss .

FOURTH STRUCTURE



Process:

1: first I will take three three pcs and connected them With hub with each pair of three pcs.

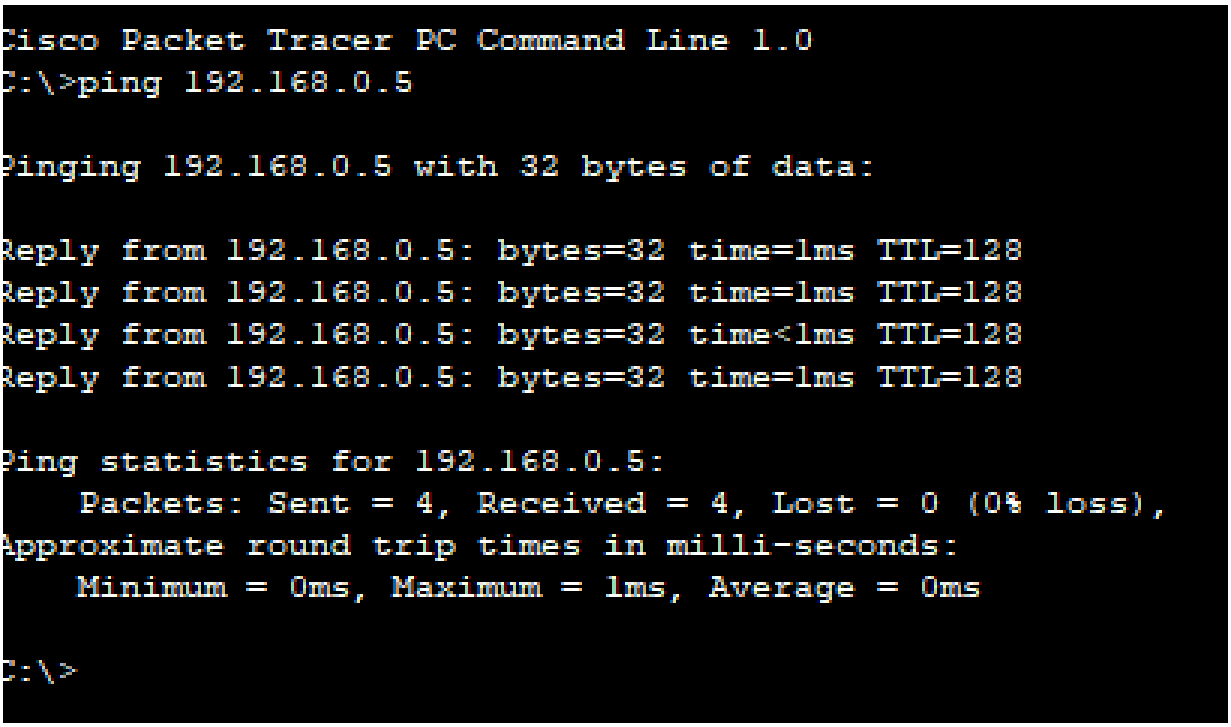
2: The three hubs will connected with central hub through Wire.

3: Then we connected them with same wire.

4: After that we will assign a IP addresses to each Computer with same gate way.

5: The message will send to his destination successfully.

RESULT



This will show that in the network the loss is zero percent and and the message will send to his destination successfully .