Experiment No. 11

Aim: Create a scenario with and without subnetting where the IP address of the original network is 171.14.0.0.

Steps: 1)Launch Cisco Packet Tracer and open a new workspace.

2)Drag and drop devices:1 Router, 3 Switches,12 PCs

3)Connect the devices: Connect 4 PCs to each switch using Copper Straight-through cables.

4)Assign IP addresses to PCs: Click on each PC → Desktop tab → IP Configuration

Without Subnetting

- Group 1 (Connected to Switch 1): 171.14.2.1 to 171.14.2.4
- Group 2 (Connected to Switch 2): 171.14.7.1 to 171.14.7.4
- Group 3 (Connected to Switch 3): 171.14.14.1 to 171.14.14.4

With Subnetting

- Group 1: IP range 171.14.2.1 to 171.14.2.4, Subnet: 171.14.2.0/24, Gateway: 171.14.2.254
- Group 2: IP range 171.14.7.1 to 171.14.7.4, Subnet: 171.14.7.0/24, Gateway: 171.14.7.254
- Group 3: IP range 171.14.14.1 to 171.14.14.4, Subnet: 171.14.14.0/24, Gateway: 171.14.14.254

5)Configure router interfaces via GUI: Click on the router → Go to Config tab

In without Subnetting set all GigabitEthernet cables to → IP: 171.14.0.1

In with subnetting Click on the router → Config tab → Interfaces:

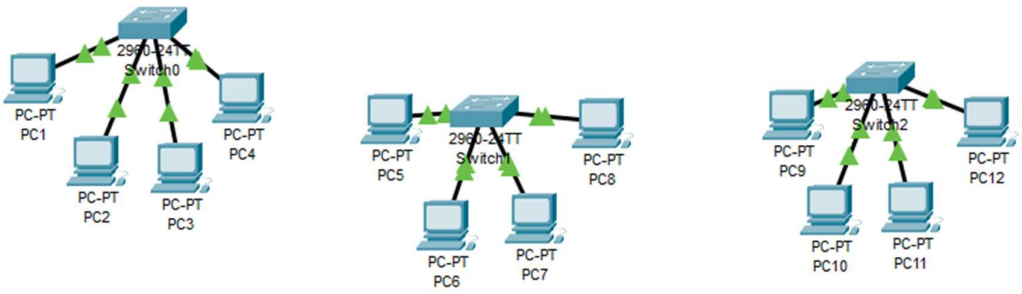
- GigabitEthernet0/0/0 → IP: 171.14.2.254, Mask: 255.255.255.0, switch On
- GigabitEthernet0/0/1 → IP: 171.14.7.254, Mask: 255.255.255.0, switch On
- GigabitEthernet0/0/2 → IP: 171.14.14.254, Mask: 255.255.255.0, switch On

6)Test connectivity:

- Click on any PC → Desktop → Command Prompt → ping another PC's IP
- All devices should be reachable.

Output

Without Subnetting



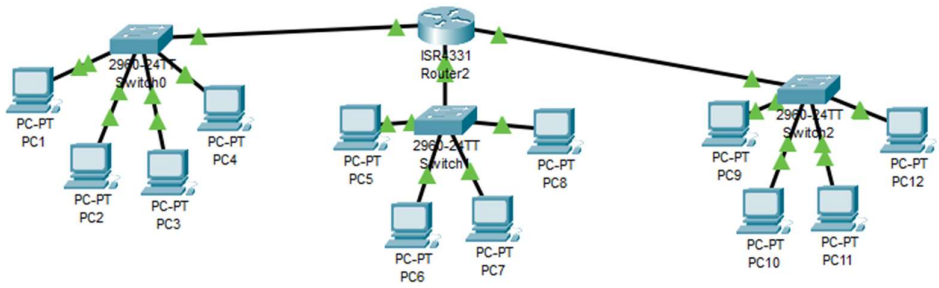
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 171.14.2.2

Pinging 171.14.2.2 with 32 bytes of data:

Reply from 171.14.2.2: bytes=32 time=2ms TTL=128
Reply from 171.14.2.2: bytes=32 time<1ms TTL=128
Reply from 171.14.2.2: bytes=32 time<1ms TTL=128
Reply from 171.14.2.2: bytes=32 time<1ms TTL=128

Ping statistics for 171.14.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

With Subnetting




```
Pinging 171.14.14.1 with 32 bytes of data:

Reply from 171.14.14.1: bytes=32 time<1ms TTL=128
Reply from 171.14.14.1: bytes=32 time<1ms TTL=128
Reply from 171.14.14.1: bytes=32 time<1ms TTL=128
Reply from 171.14.14.1: bytes=32 time<1ms TTL=128

Ping statistics for 171.14.14.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```