

Expt: 9

Date: 18.9.25

AIM: Implementation of SUBNETTING in
CISCO PACKET TRACER SIMULATOR

Classless IP subnetting is a technique that allows for more efficient use of IP addresses by allowing for subnet masks that are not just the default masks for each IP class.

CREATING A NETWORK TOPOLOGY

Created a network topology in Cisco Packet Tracer

ADDING THE DEVICES:

Added devices like PCs, Switches, Routers.
Connected the devices by dragging a cable from one's port to another device's port

SUBNETTING:

To subnet the network address of
192.168.1.0/24 - use a /27 subnet mask

This will give us 8 subnets with

30 hosts address each

IP addressing

Router 1

Gigabit Ethernet 0/0 : 192.168.1.1

Gigabit Ethernet 0/1 : 192.168.2.1

Router 2

Gigabit Ethernet 0/0 : 192.168.3.1

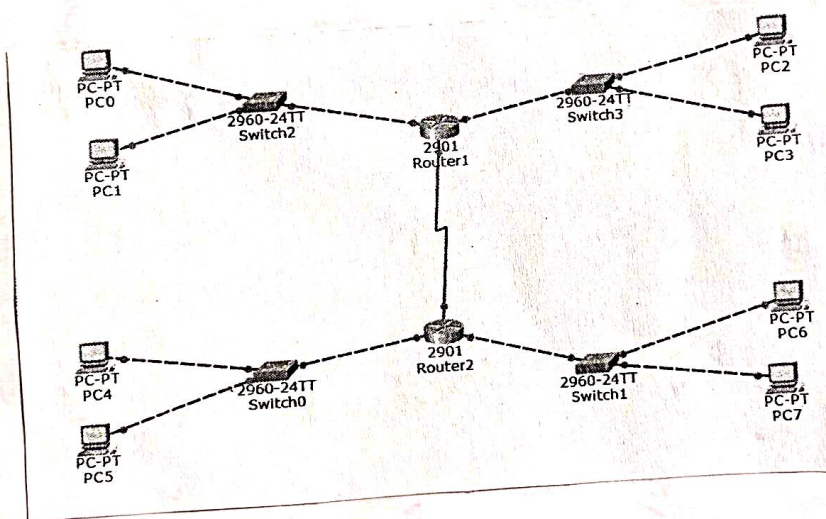
Gigabit Ethernet 0/1 : 192.168.4.1

Switch S3

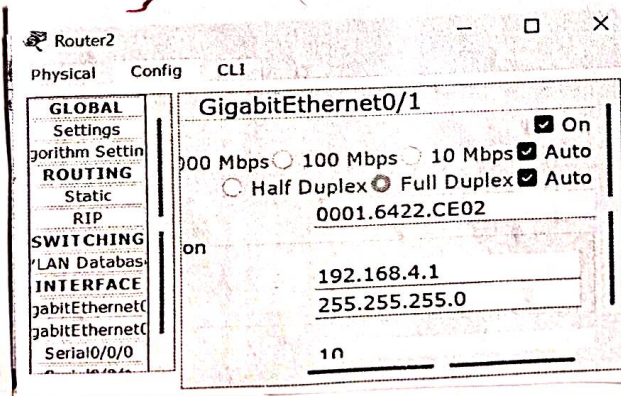
PC P2: 192.168.2.11

PC P3: 192.168.2.12

Output of address allocation :-



Network topology



Router 2

address allocation

Router 1:

Router1

Physical Config CLI

GLOBAL Settings

ROUTING

Static

RIP

SWITCHING

LAN Databases

INTERFACE

GigabitEthernet0/1

Port Status

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps

Duplex ☐ Half Duplex ☒ Full

MAC Address 000C.8589.E001

IP Configuration

IP Address 192.168.2.1

Subnet Mask 255.255.255.0

Trunk Limit 10

Router1

Physical Config CLI

GLOBAL Settings

ROUTING

Static

RIP

SWITCHING

LAN Databases

INTERFACE

GigabitEthernet0/0

Port Status

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps

Duplex ☐ Half Duplex ☒ Full

MAC Address 000C.8589.E001

IP Configuration

IP Address 192.168.1.1

Subnet Mask 255.255.255.0

Trunk Limit 10

PC3 and PC2:

PC3

Physical Config Desktop Custom Interface

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.2.12

Subnet Mask 255.255.255.192

Default Gateway 192.168.2.1

DNS Server

PC2

Physical Config Desktop Custom Interface

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.2.11

Subnet Mask 255.255.255.192

Default Gateway 192.168.2.1

DNS Server 0.0.0.0

IPv6 Configuration

RIP routing of Router1 and Router2

Router1

Physical Config CLI

GLOBAL Settings

ROUTING

Static

RIP

SWITCHING

LAN Databases

INTERFACE

GigabitEthernet0/1

RIP Routing

Network

Work Addr

192.168.1.0

192.168.2.0

192.168.5.0

Remove

Router2

Physical Config CLI

GLOBAL Settings

ROUTING

Static

RIP

SWITCHING

LAN Databases

INTERFACE

GigabitEthernet0/0

RIP Routing

Network

Work Addr

192.168.3.0

192.168.4.0

192.168.5.0

Remove

Equivalent IOS Commands

Testing the network :-

PC0

Physical Config Desktop Custom Interface

Command Prompt

Packet Tracer PC Command Line 1.0

PC>PING 192.168.2.11

Pinging 192.168.2.11 with 32 bytes of data:

Request timed out.

Reply from 192.168.2.11: bytes=32 time=0ms TTL=127

Reply from 192.168.2.11: bytes=32 time=1ms TTL=127

Reply from 192.168.2.11: bytes=32 time=0ms TTL=127

Ping statistics for 192.168.2.11:

Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>


```
PC>ping 192.168.3.11
```

```
Pinging 192.168.3.11 with 32 bytes of data:
```

```
Request timed out.
```

```
Reply from 192.168.3.11: bytes=32 time=1ms TTL=126
```

```
Reply from 192.168.3.11: bytes=32 time=2ms TTL=126
```

```
Reply from 192.168.3.11: bytes=32 time=9ms TTL=126
```

```
Ping statistics for 192.168.3.11:
```

```
Packets: Sent = 4, Received = 3, Lost = 1 (25%
```

```
loss),
```

```
Approximate round trip times in milli-seconds:
```

```
Minimum = 1ms, Maximum = 9ms, Average = 4ms
```

Student Observation

a) Write down your understanding of subnetting

- Subnetting is the process of dividing a larger network into smaller, manageable sub networks to improve efficiency.

b) What is the advantage of implementing subnetting over a network?

1. Reduces network congestion
2. Enhancing security
3. simplifies management and troubleshooting

RESULT:

The implementation of subnetting on Cisco Packet Tracer is successfully completed.

allot