

10/10/25

Implementation of SUBNETTING CISCO PACKET TRACER Simulator

AIM: Implementation of SUBNETTING in CISCO PACKET TRACER Simulator.

Classless IP subnetting is a technique that allows for allowing for subnet masks that are not just the default mask for each IP class. This means that we can divide our IP address space into smaller subnets, which can be useful when we have a limited number of IP addresses.

Creating a network topology:-

The first step in implementing Classless IP subnetting is to create a network topology in packet tracer. To create a network topology in packet tracer, select the "new" button in the top left corner, then select "networks" as "Generic".

Adding the devices:

Once we have created our network topology, we can add devices to it. Here, we will be adding routers, switches and PCs. To add a device select the device from the bottom left corner and drag it onto the network topology.

Subnetting:-
To subnet the network address of
192.168.1.0/24 to provide enough space
for at least 5 address for end devices the
Switch and the Router we can use a
24/8 Subnet mask.

The IP addressing for the network
shown in the topology can be as follows.

Router R1:

Gigabit Ethernet 0/0: 192.168.1.1

Gigabit Ethernet 0/1: 192.168.2.1

Switch S1:

Fast Ethernet 0/1: 192.168.1.0/27

PC1: 192.168.1.11

PC2: 192.168.1.12

PC3: 192.168.2.12

PC4: 192.168.1.14

PC5: 192.168.1.15

Fast Ethernet 0/0: 192.168.3.1

Switch S2:

Fast Ethernet 0/1: 192.168.3.0/27

Configuring the devices:-

Now that we have added out
devices and connected them, we can start
configuring them.

We will start by configuring the router.
Right click on the router and select "C", this
will open the Command-line interface
(CLI) for the router.

- # enable
- # configure terminal
- # interface FastEthernet 0/0
- # ip address 192.168.1.1
- # no shutdown
- # exit

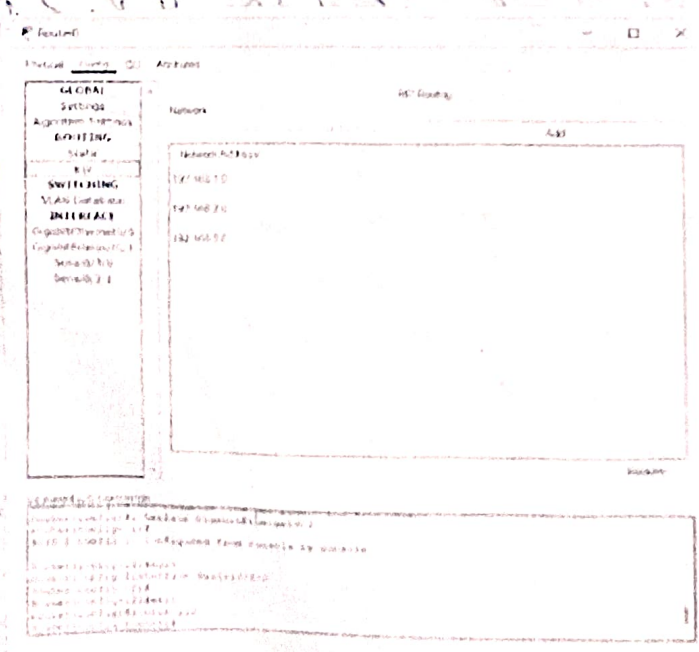
To configure two Gigabit Ethernet interfaces on the router, you can follow the steps:

1. Right-click on the router and select CLI

2. Enter the following commands -

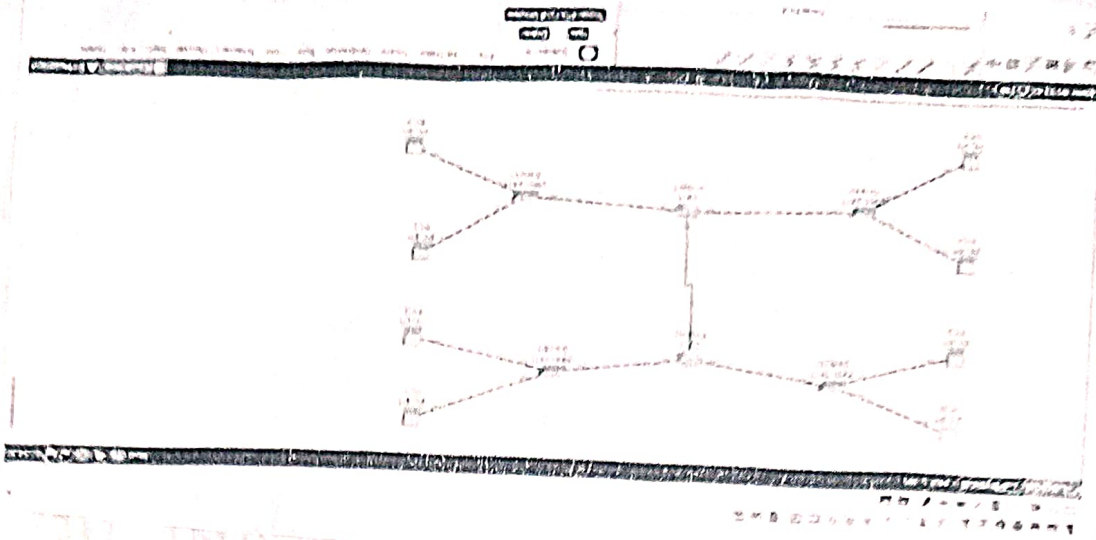
Testing the network:

Now that our network topology is configured, we can test the network by opening a command prompt on each PC and try to ping the other PC. If the ping is successful then the network is functioning properly.



Two PC's
connected to the router

configured
network
successfully



PC0

Physical Config Desktop Programming Attributes

Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.11

Subnet Mask: 255.255.255.192

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: FE80:2D0:D3FF:FE69:1271

Link Local Address: _____

Default Gateway: _____

DNS Server: _____

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PC0>
PC0#show ip interface fastEthernet 0/24
FastEthernet0/24 is up, line protocol is up
Internet address is 192.168.1.11/24
MTU 1500 bytes, BW 1000000 Kbit/sec, DLE 1, Encapsulation HDLC, L2 LACP
Hardware: FastEthernet-10/100/1000, Address 9846.1111.1111, MAC 9846.1111.1111
VLAN 1
IP address 192.168.1.11/24
Subnet mask 255.255.255.192
Default gateway 192.168.1.1
DNS server 0.0.0.0
IPv6 address FE80:2D0:D3FF:FE69:1271
Link-local address FE80::2D0:D3FF:FE69:1271

```

Result:

Thus the above experiment successfully completed and executed.