Ex 10
PAGE - 2009/2024 CLASSFULL & CLASSLESS ROUTING

AIM:

Implementation of subnetting in CISCO Packet Tracer simulator

Classless IP subnetting is a technique that allows for more efficient use of IP address by allowing for subnet masks that are just default Mask for each IP class. This means that we can divide our IP address space into smaller subnet which can be useful when we have a limited number of IP address but need to create multiple network

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 "Network" and "generic" This will create a blank network topology that we can use to add devices.

ADDING THE DEVICE

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 i select the device from the bottom left corner and drag

SUBNETTING

To subnet the network address of 192.168.1.0/24 to provide enough space for 5 addresses for each device the switch the router we can use a 127 subnet mask This will give us 8 subnets and 30 host addresses each

shown

* 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 : 192.168.1.13

PC4 : 192.168.1.14

PC5 : 192.168.1.15

Fast ethernet 0/1 : 192.168.2.0/27

PC1 : 192.168.2.11

PC2 : 192.168.2.12

PC3 : 192.168.2.13

PC4 : 192.168.2.14

PC5 : 192.168.2.15

configuring the Device

Now that we have added our device and connected them we can start configuring them we will start by configuring the router right click on the router and select CLI #enable

# configure terminal

# ip address (ip address & subnet mask)

# no shutdown

# exit

interface fastEthernet 0/1

ip address <ip address> <subnet mask>

no shutdown

exit

To configure the gigabit Ethernet interface on the router you can follow steps

1) Right click on the router and select CLI

2) Enter the following commands

(i) enable

(ii) configuring terminal

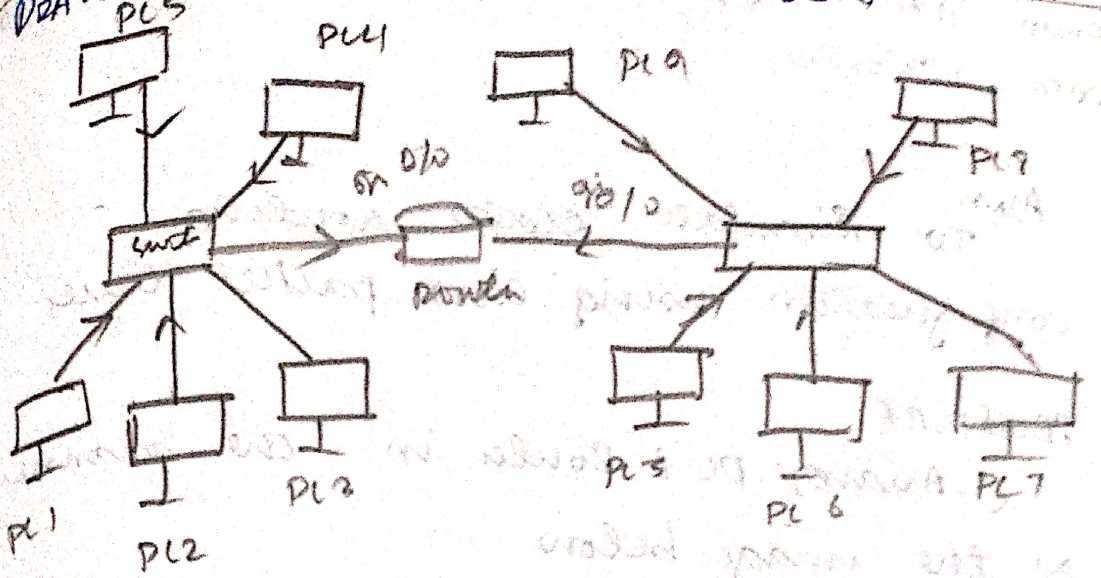
(iii) interface

ip address <ip address> <subnet mask>

Testing the network

TESTING THE NETWORK

Now that our network topology is configured we can test it by opening cmd on each pc and try to ping other pc if successful then network functioning properly else not we can make use of "ping" command.




OUTPUT

| Fire | Last status | source | Destination | Type | Time | periodic | Num |
|---|---|---|---|---|---|---|---|
| ● | successful | PC0 | PC7 | ICMP | 0.000 | N | 0 |

STUDENT OBSERVATION

a) understanding subnetting in my way subnetting divide a large network into smaller manageble subnetworks (subnets) improving organization and security by segmenting IP addres spaces

b) Advantages of subnetting - subnetting enhance network performance by reducing traffic, improves security through network segmentation and help in efficient IP address management

RESULT

Thus the output is verified and executed successfully.