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# Implementation of subnetting in Cisco Packet Tracer.

## Aim:

To implement classless IP subnetting in cisco Packet Tracer and configure routers, switches and PCs for proper communication.

## Procedure:

1) Create Topology

* Open packet Tracer → New project.
* Add routers, switches and PCs from the device list.
* Connect devices using appropriate cables.

2) Subnetting the network

* Given network: 192.168.1.0/24
* Requirement: Atleast 5 usable IPs per subnet
* Apply 127 subnet mask → Creates 8 subnets, each with 30 usable hosts.
* Example subnets:
  * 192.168.1.0/27 → Hosts: 192.168.1.1 - 192.168.1.30
  * 192.168.1.32/27 → Hosts: 192.168.1.33 - 192.168.1.62
  * 192.168.1.64/27 → Hosts: 192.168.1.65 - 192.168.1.94 & so

3) IP Addressing Example

* Router R1:
  - Gi0/0 → 192.168.1.1/27
  - Gi0/1 → 192.168.2.1/27
* Router R2:
  - Fa0/0 → 192.168.3.1/27
  - Fa0/1 → 192.168.4.1/27

PCs: Assigned sequential IPs like 192.168.1.11 - 192.168.1.15, 192.168.2.11-192.168.2.15

4) Device Configuration

Routers (CLI):

Enable

Configure terminal

Interface g0/0

IP address <IP> <subnet Mask>

no shutdown

exit.

Switches: Set ports to access mode (switchport mode access)

PCs: Configure IP, subnet mask & default gateway from respective subnet.

5) Testing

Use the ping command from one PC to another

If ping replies are received, the subnetting and routing are working correctly.

Student observations:

a) Understanding of subnetting:

Subnetting is the process of dividing a larger IP network into smaller logical networks. This allows better utilization of IP addresses, reduce wastage and helps organize networks based on departments or functions.

b) Advantages of subnetting:

* Efficient use of IP addresses.
* Reduce network congestion & improves performance.
* Enhances security by isolating departments.
* Simplifies troubleshooting & management.

c) Subnetting in college:

Yes, subnetting is generally implementation in colleges.

For example:

Administration Dept: 10.1.1.0124

Computer labs: 10.1.2.0124

Library Network: 10.1.3.0124

Wifi Access: 10.1.4.0124

this ensures smooth communication, controlled access & efficient IP management access the campus.

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Result:

Therefore subnetting is implemented in cisco packet tracer.