

Computer Networks Lab 08

Course: Computer Networks (CL3001)
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Semester: Spring 2024
T.A: N/A

Note:

- Maintain discipline during the lab.
 - Listen and follow the instructions as they are given.
 - Just raise hand if you have any problem.
 - Completing all tasks of each lab is compulsory.
 - Get your lab checked at the end of the session.
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Lab Objective

- Introduction to Telnet & configuration of Telnet in Cisco Packet Tracer.
- Introduction to SSH & configuration of SSH in Cisco Packet Tracer.

SSH & Telnet

1. Introduction to Telnet

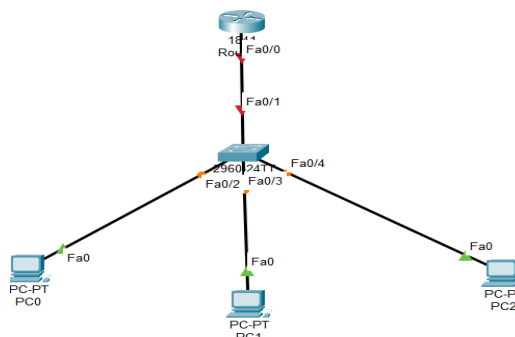
A terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network. You can then enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console. This enables you to control the server and communicate with other servers on the network. To start a Telnet session, you must log in to a server by entering a valid username and password. Telnet is a common way to remotely control Web servers.

To telnet means to establish a connection with the Telnet protocol, either with command line client or with a programmatic interface.

2. Configuration of Telnet

Below are the steps for Telnet Protocol. Follow the procedure for the configuration of Telnet Protocol.

Step 1: Build the following topology.



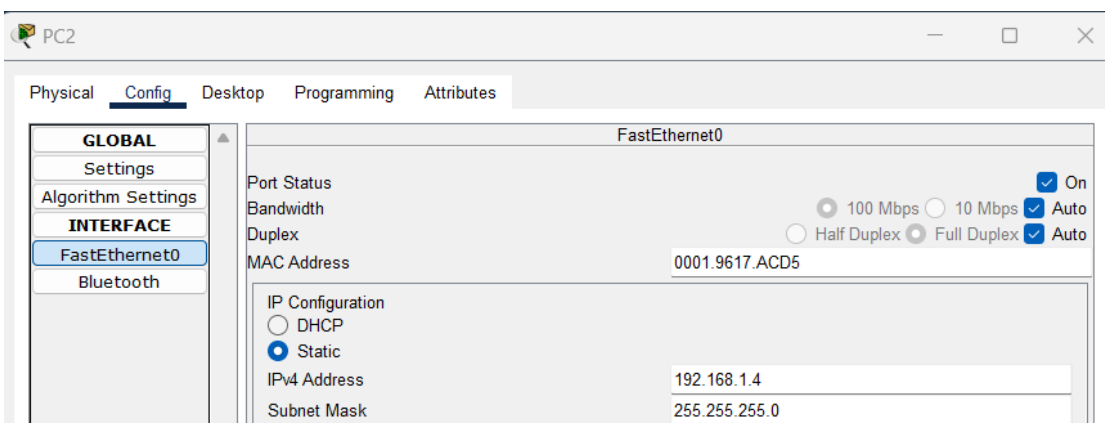
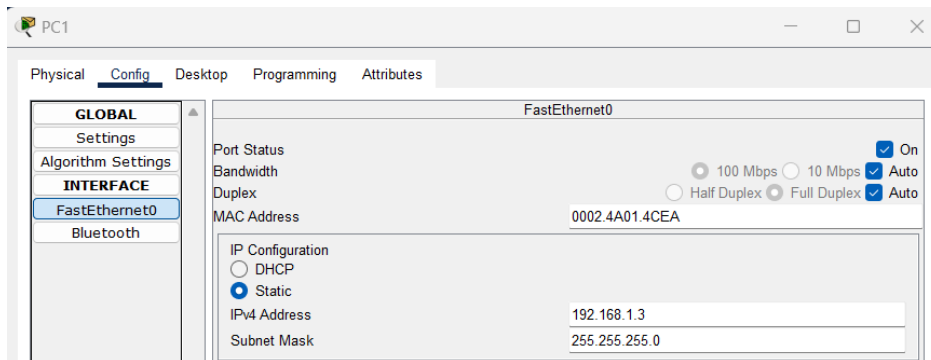
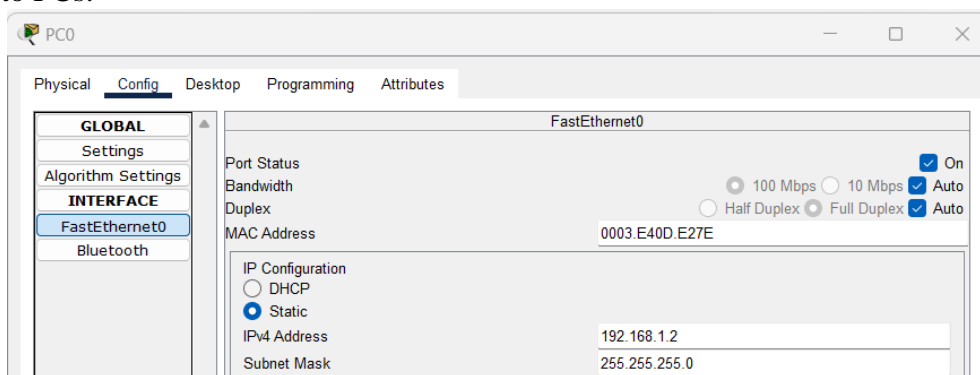
Step 2: Set IPs on the PCs. As, by default, all PCs are in vlan. We will create a virtual interface on switch with vlan 1 as follows:

```
Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.168.1.1 255.255.255.0
Switch(config-if)#no shutdown

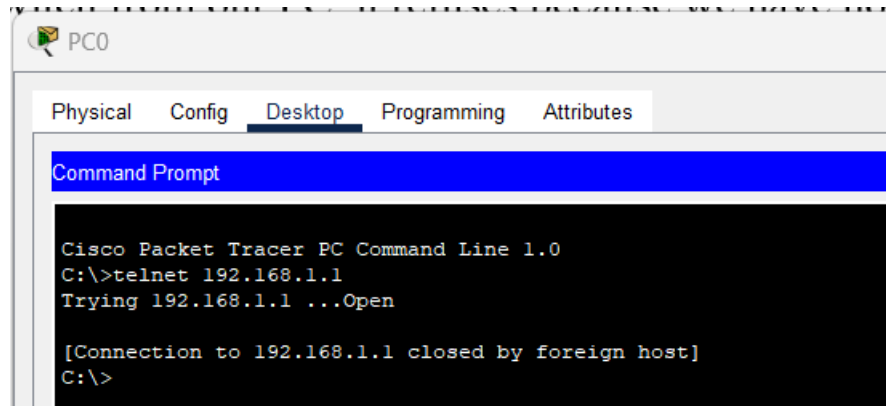
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
|
```

Assigning IP to PCs:



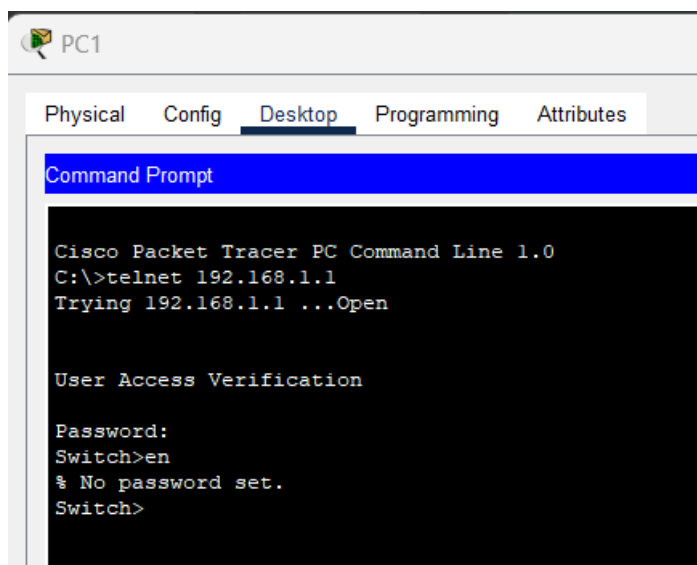
Step 3: Now, try to telnet the switch from our PC, it refuses because we have not applied authentication on the switch yet.



Secure Shell Server (SSH) and FTP services. Each Telnet, SSH, or FTP session requires one vty-line. You can add security to your system by configuring the software to validate login requests:

```
Switch(config-if)#exit
Switch(config)#line vty 0 15
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config-line)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#
```

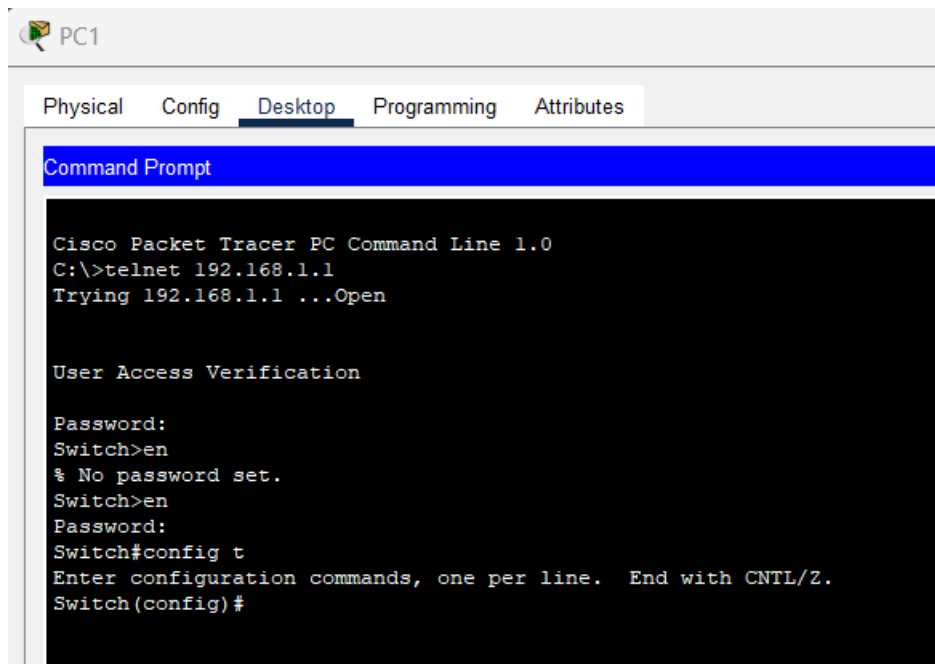
Now, we can easily telnet. But it does not let us go in the switch enabled mode because we have not set the password on the switch yet.



Let's apply password on the switch enabled mode.

```
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#enable password cs
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

Now, we can go inside Switch configuration mode from our pc.



3. Introduction to SSH

Secure Shell or Secure Socket Shell is a network protocol. It is an application layer protocol that is in the 7th layer of the Open Systems Interconnection (OSI) network model. It also refers to the suite of utilities that implements the SSH protocol.

Secure Shell also supports both password and key-based authentication. Password-based authentication let users provide username and password to authenticate to the remote server.

A key-based authentication allows users to authenticate through a key-pair. The key pairs are two cryptographically secure keys for authenticating a client to a Secure Shell server.

Furthermore, the Secure Shell protocol also encrypts data communication between two computers. It is extensively used to communicate with a remote computer over the Internet.

4. Configuration of SSH

Taking the same topology as mentioned in telnet.

Below are the steps for SSH Protocol. Follow the following procedure for the configuration of SSH Protocol.

```
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname sameer
sameer(config)#ip domain name ai-study
sameer(config)#crypto key generate rsa
The name for the keys will be: sameer.ai-study
Choose the size of the key modulus in the range of 360 to 4096 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

sameer(config)#

sameer(config)#ip s
*Mar 1 0:29:49.71: %SSH-5-ENABLED: SSH 1.99 has been enabled
% Ambiguous command: "ip s"
sameer(config)#ip ssh version 2
sameer(config)#line vty 0 15
sameer(config-line)#transport input ssh
sameer(config-line)#
```

Protocol working on it. By default, username is admin. We can apply any sort of configuration on our switch from our PC.

```
C:\>ssh -l admin 192.168.1.1

Password:
Password:

sameer>en
Password:
sameer#config t
Enter configuration commands, one per line. End with CNTL/Z.
sameer(config)#interface fa0/2
sameer(config-if)#no shutdown
sameer(config-if)#exit
sameer(config)#exit
sameer#
```

Now, if we want to change the username from admin to something else, we will do it as follows:

```
sameer(config)#username ds-study secret abc
sameer(config)#line vty 0 15
sameer(config-line)#login local
sameer(config-line)#
```

Now we will do the following on our PCs:

```
C:\>ssh -l ds-study 192.168.1.1

Password:
% Login invalid

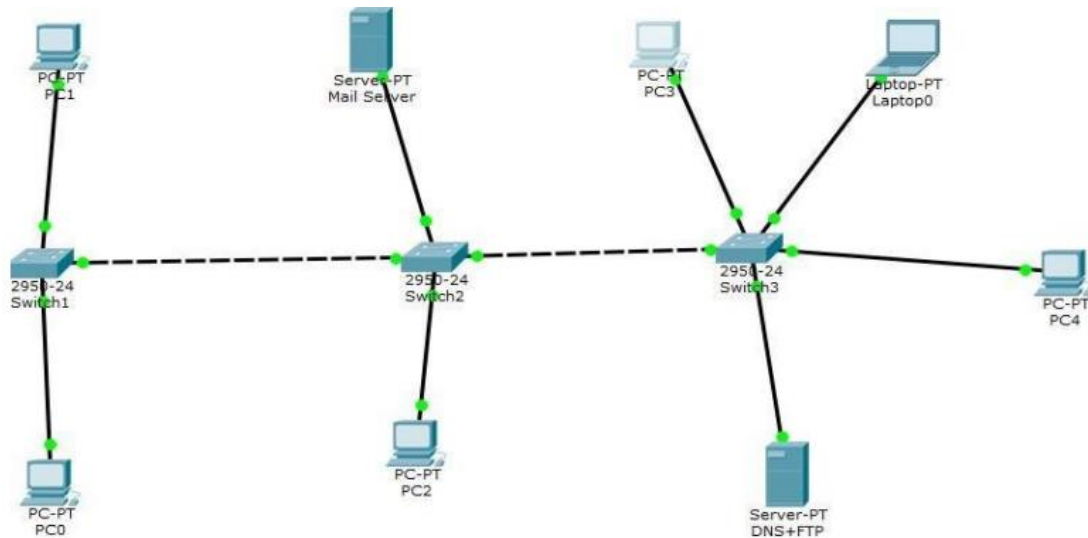
Password:
% Login invalid

Password:

sameer>
```

Lab Exercise – I

Implement the topology given below on cisco packet tracer:

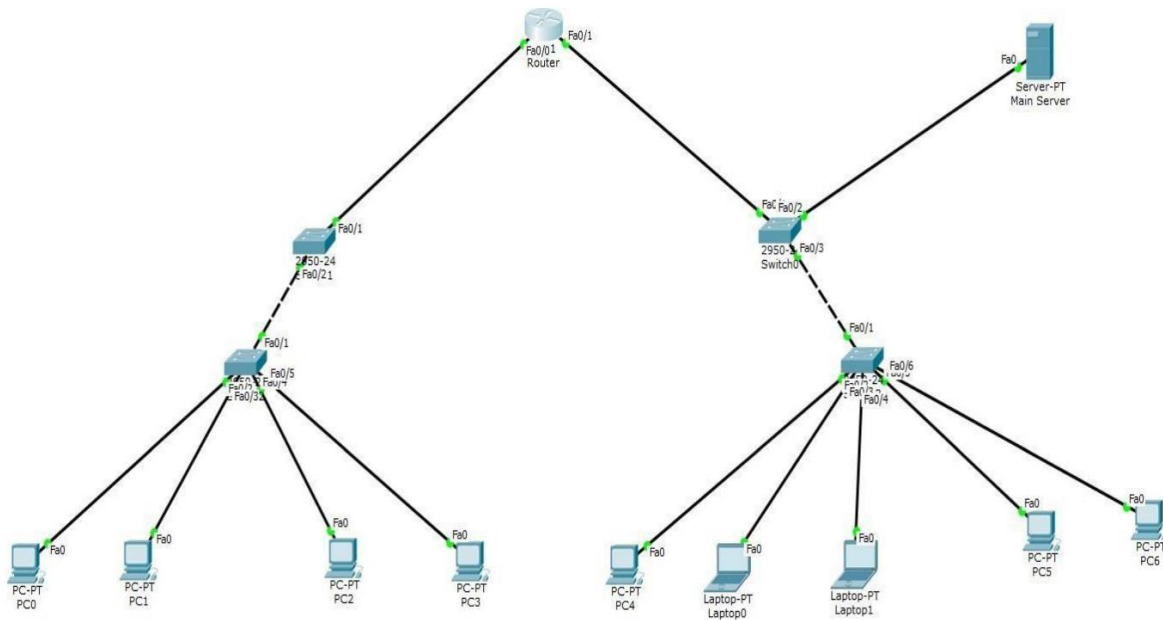


Do the following:

- Assign IP to the computers. The Network should like this XX.XX.0.0. i.e. your roll number like 3879(38.79.0.0).
- Ping the server from any computer.
- Verify the telnet connection from all switches nearest to the computer.
- Do change the IP of Switch2 from PC2 using its command prompt.

Lab Exercise – II

Implement the topology given below on cisco packet tracer:



Do the following:

- The IPs should be assigned to the computer using static method and to the router using CLI. The Network on one side of FastEthernet should be like XX.XX.0.0 i.e. your roll number like 3879(38.79.0.0) and on another side it should be 3880(38.80.0.0).
- Run command of show run on Switch0 and Switch1 and take screenshot of it.
- Verify SSH and do assign IP to another interface of Router. It should be done through laptop0. Take screenshot of it.