

Subject: Computer Networks	
Name of the Student:	
Class:	Roll no:
PRN:	
Date of Performance:	Date of Submission:
Examined by:	

EXPERIMENT NO.B6

TITLE: Executing Telnet, DHCP Server using simulator.

OBJECTIVE: To study configuration of Telnet and DHCP server

AIM: Installation and configuration of Telnet server for Telnet communication. Installation and configuration of DHCP server for Telnet communication using Cisco packet tracer.

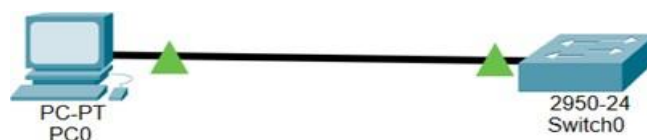
SOFTWARE USED: Cisco packet Tracer 6.2

THEORY:

Part 1: Telnet

Telnet is an **application layer protocol** that allows a network administrator to access and manage **remote** devices . A user on a client machine can use a software (also known as a **Telnet client**) to access a command-line interface of another, remote machine that is running a **Telnet server** program.

A network administrator can access the device by telnetting to the IP address or hostname of a remote device. The network administrator will then be presented with a virtual terminal that can interact with the remote host. Telnet configuration on a switch



Configuring telnet for the above network topology

Explanation of commands used:

Switch>en

Switch#conf t

1. **En** means to enable and is used to enter into privileged mode and you will see after typing `en` the symbol `>` will become to `#`. The symbol `>` indicates you are in user mode and `#` means you are in privileged mode. In privileged mode, you get more powers which you don't get in user mode. Like in this `#` mode you can see more detailed information about configuration, copy that configuration, etc. However, the limitation is that you cannot make any change to global parameters. So, in order to do that type `conf t`.
2. **conf t** is for configuring terminal and after typing it you enter into global configuration mode where you have the powers to change global parameters which you don't have in privileged mode.
3. **int vlan 1**: Here `int` means interface. `int vlan` means interface VLAN which gives your switch a routable interface. This then allows you to assign IP address to the interface so the switch can be managed over the network.
4. **no shut** or no shutdown is just to enable an interface or say to turn it up. It is a very simple command to turn on the interface.
5. **ip add 10.0.0.10 255.0.0.0** command is for giving IP address to VLAN interface, think it as the switch has now an IP 10.0.0.10 whose subnet mask is 255.0.0.0.
6. **line vty 0 4** means you are assigning 5 virtual terminal connections to the virtual port. These virtual connections, in this case, are for telnet and 0–4 is the range. If we write `line vty 0 15` then it will mean 16 virtual connections are allowed. This command is basically used to get telnet access to the device.
7. **password cisco** command means that we are setting the password as cisco. You can keep the password as anything. Writing cisco here is just an example. If you think `line vty` as a door to enter switch here then the password is the key to that door. Unless you don't write the correct password you will have no right to access the switch.
8. **login** command is just to ensure that when you try to remotely access the switch using telnet

protocol then it must ask for a password. It is just ensuring that your door i.e. line vty is locked and anyone trying to open that door needs a key i.e. password to open it.

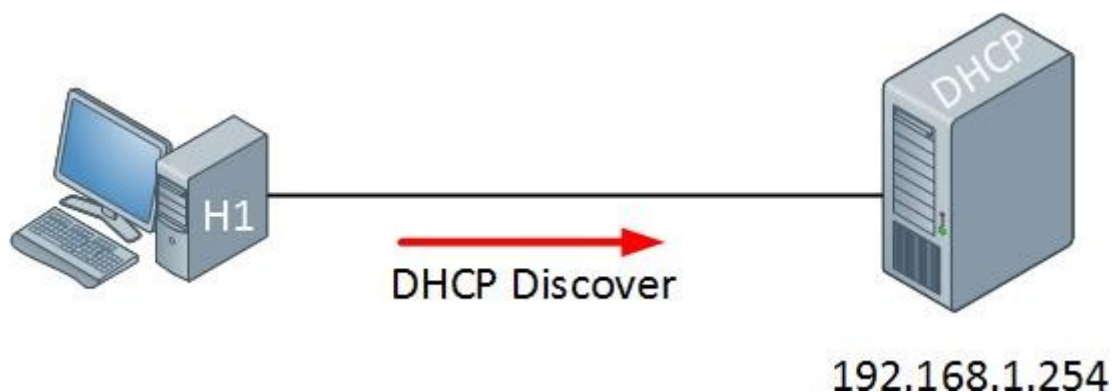
9. **enable secret cisco12** command is you need to access the privileged mode. Earlier by simply writing **en**, you were able to enter privileged mode. But now after writing this command you need to enter password first to enter the privileged mode. Here the password set is **cisco12**. You can write anything in place of cisco12. Also, **secret** means that your password will be stored in encrypted form and hence is more secure.

Part 2: DHCP server

IP addresses can be configured **statically** or **dynamically**. Normally we configure static IP addresses on network devices like routers, switches, firewalls and servers while we dynamically assign IP addresses to computers, laptops, tablets, smartphones etc.

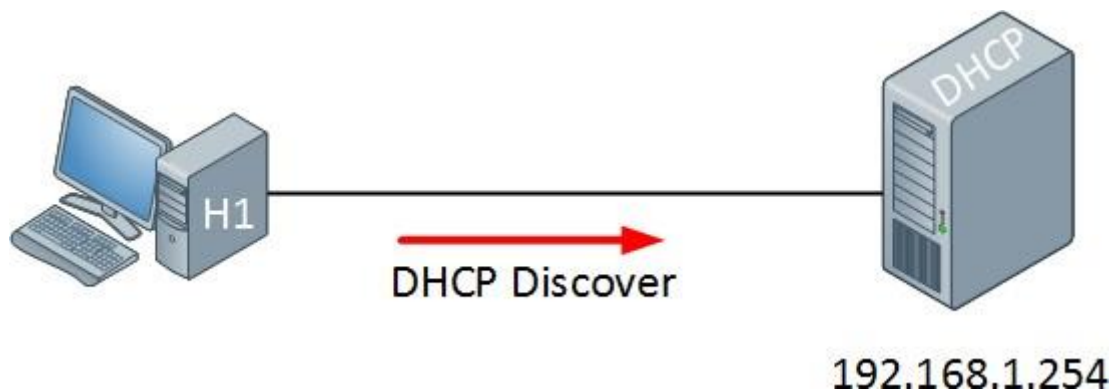


On the left side we have a computer without IP address. On the right side there's a DHCP server configured with static IP address 192.168.1.254. This DHCP server will supply an IP address to our computer, this is how it works:

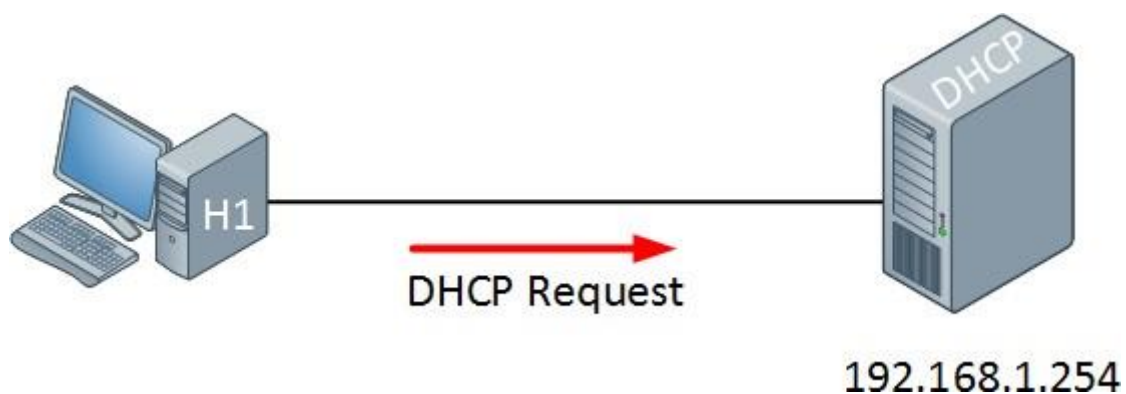


The computer will send a DHCP discover message. This is a broadcast because it doesn't have an IP address and it doesn't know if there is a DHCP server on the network. In above scenario

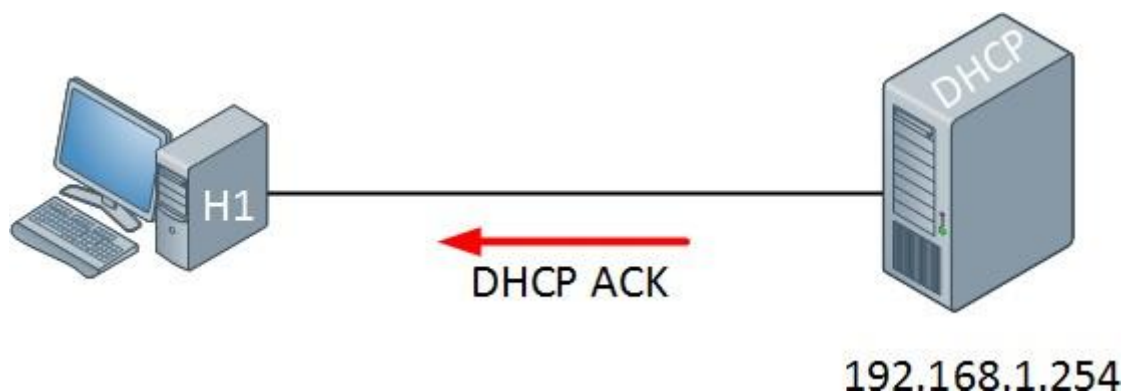
we do have a DHCP server so it will respond to this broadcast as following:



The DHCP server will respond with a **DHCP offer** message which contains an IP address for the computer (we have to configure the DHCP server to define which IP addresses we want to give). If we want we can also assign a default gateway and DNS server(s) to the computer. The computer will respond to this information:



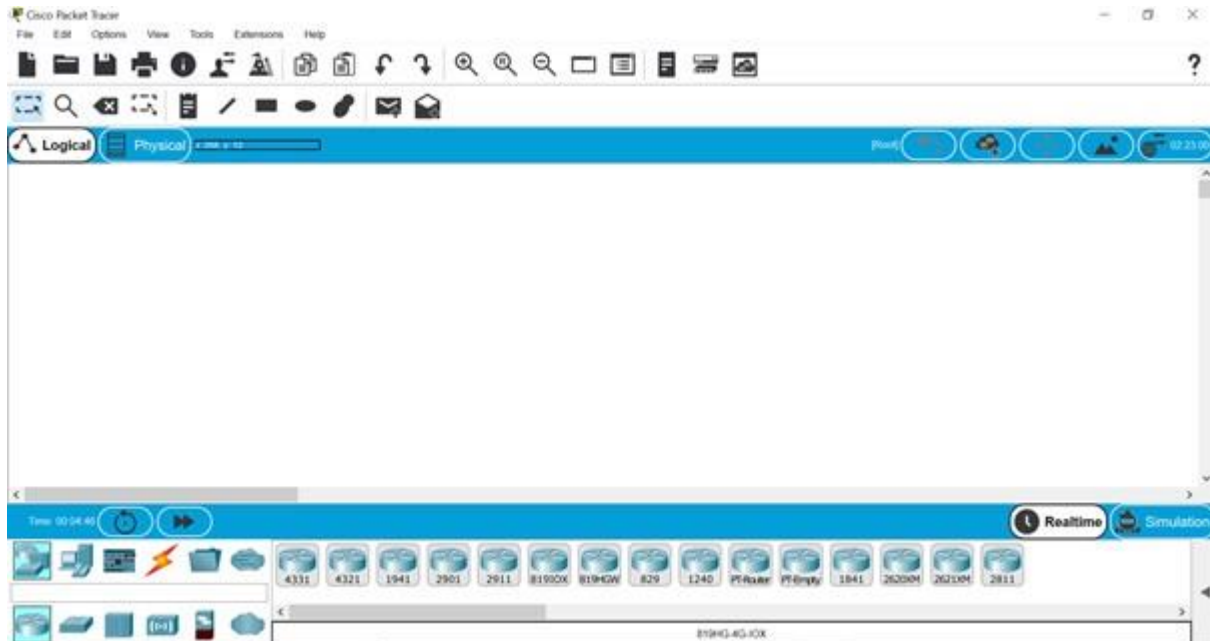
The computer will send a **DHCP Request** in response to the DHCP offer message, asking nicely if it's OK to use the information that it has received. Our DHCP server will respond to this as following:



PROCEDURE:

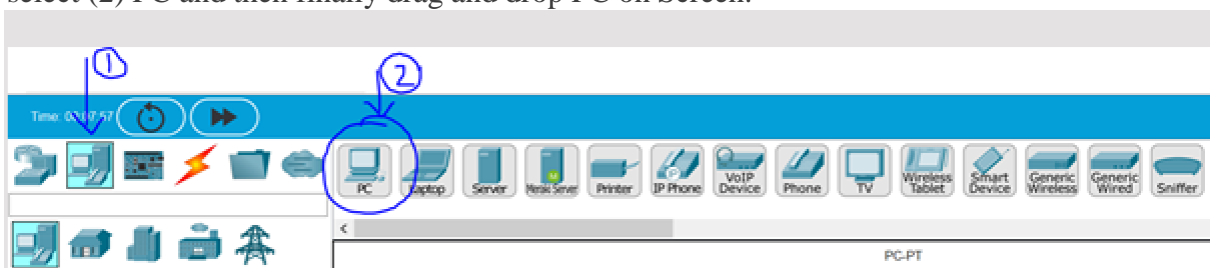
Part 1 : Telnet

STEP 1: OPEN CISCO PACKET TRACER

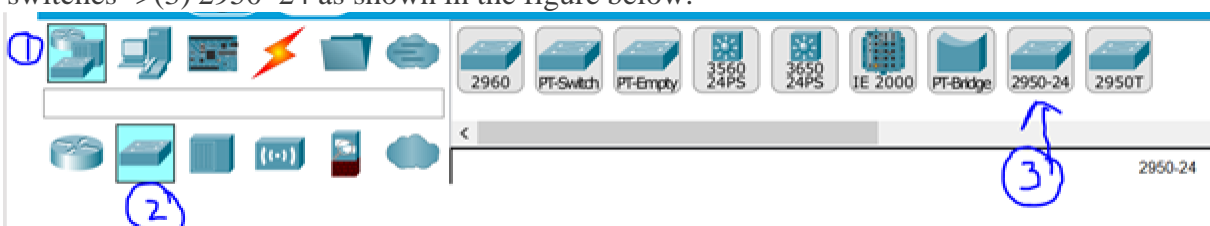


Blank Cisco Packet Tracer

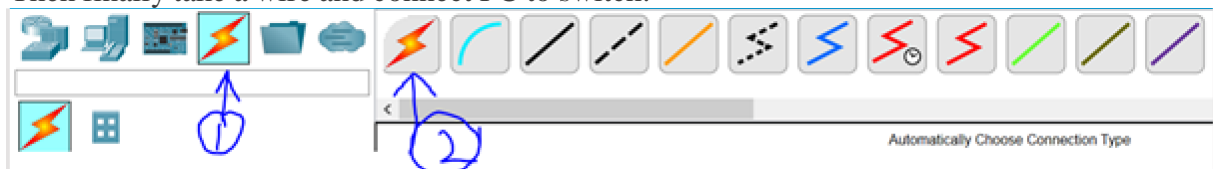
STEP 2: MAKE CONNECTIONS: As shown in the figure below, go to (1) End Devices and select (2) PC and then finally drag and drop PC on Screen.



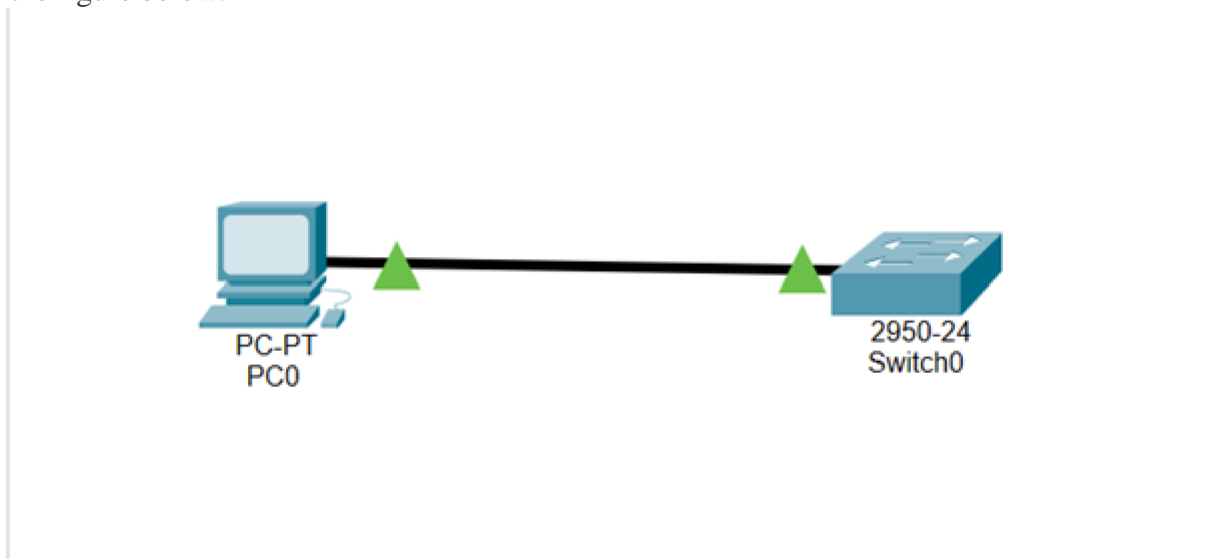
Then select a switch [I have taken Switch named as 2950-24]. Go to (1)Network device ->(2) switches ->(3) 2950-24 as shown in the figure below.



Then finally take a wire and connect PC to switch.



Now when you have taken the PC, wire, switch then start making the connection as shown in the figure below.



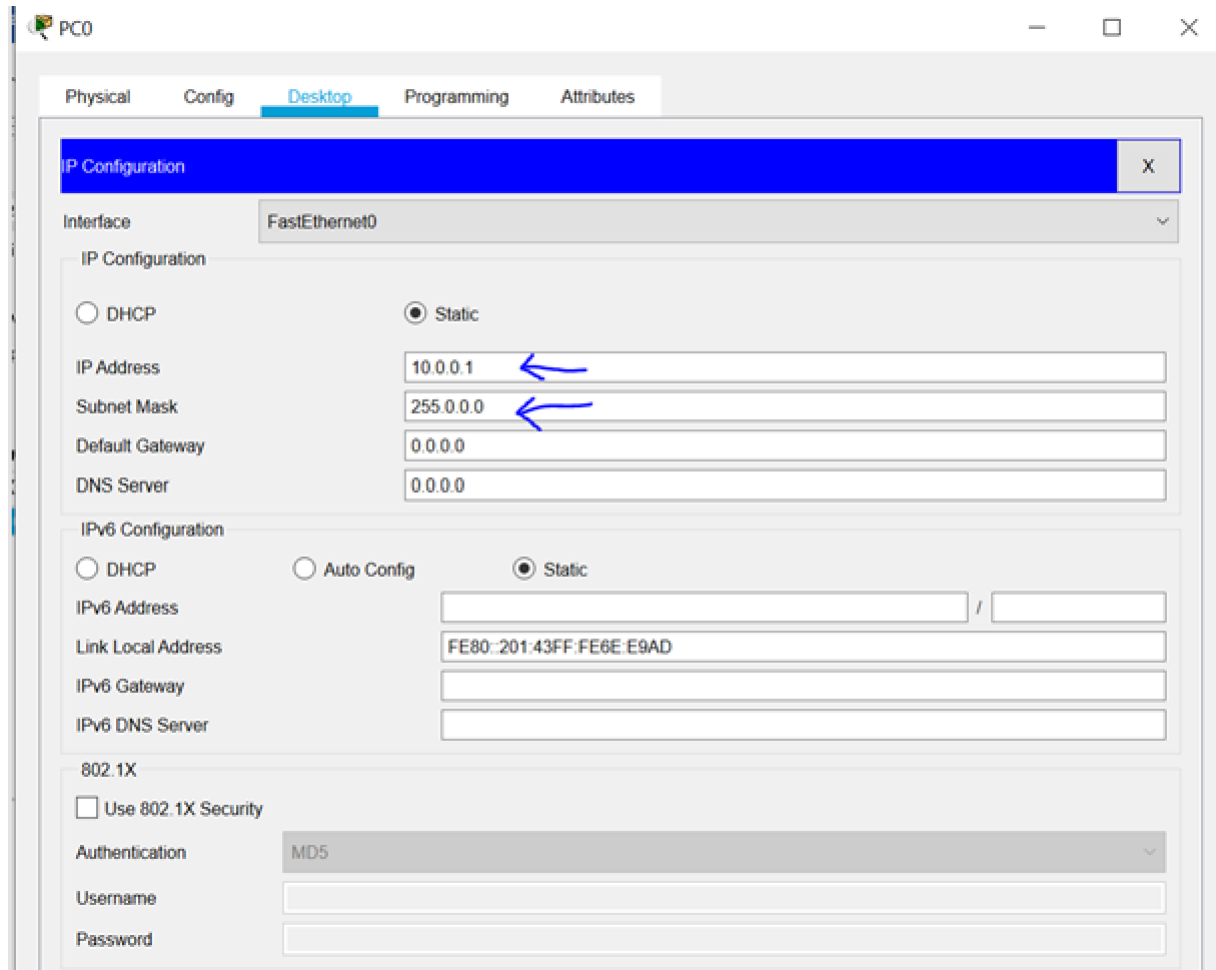
Note: The green triangle might be appearing as an orange circle when you have just made the connections, but don't worry after some time they will become green.

STEP 3: ADD IP ADDRESS TO PC

Click on the PC and then a dialogue box will appear. Go to Desktop then click IP Configuration button.

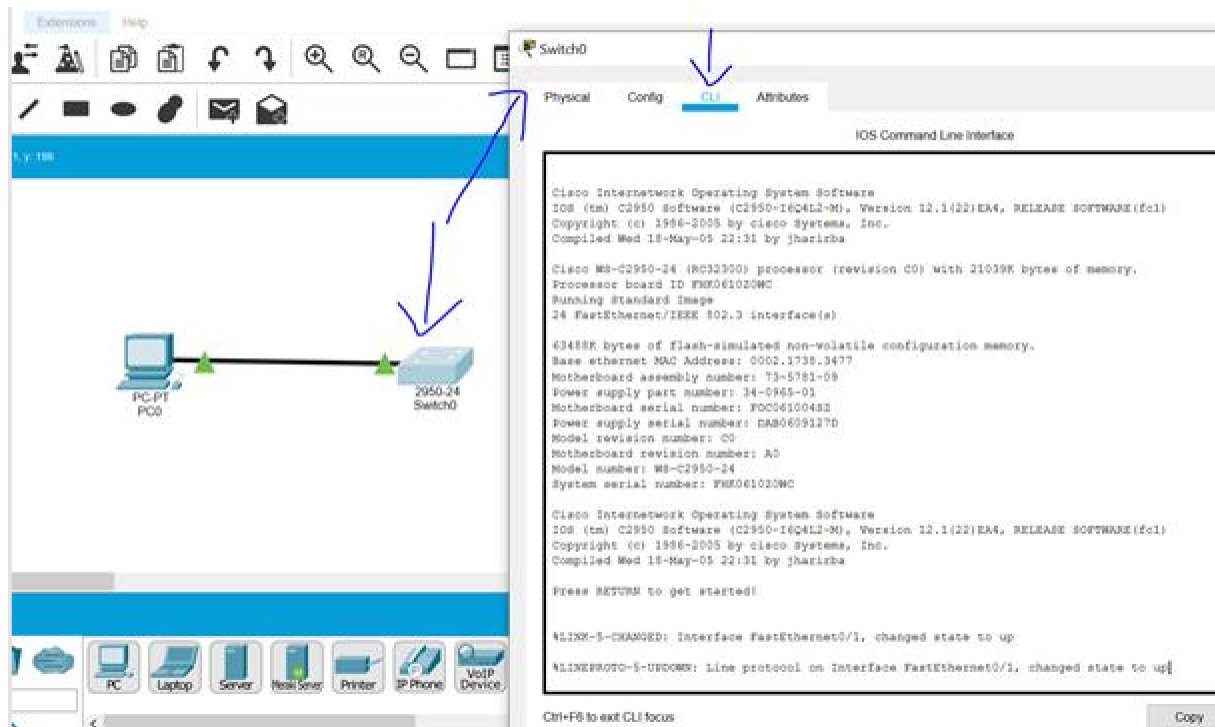


A dialogue box will open up and then fill the IP address of PC whatever you want to, For e.g. write 10.0.0.1 in IP address field and then automatically subnet mask will be filled as 255.0.0.0.



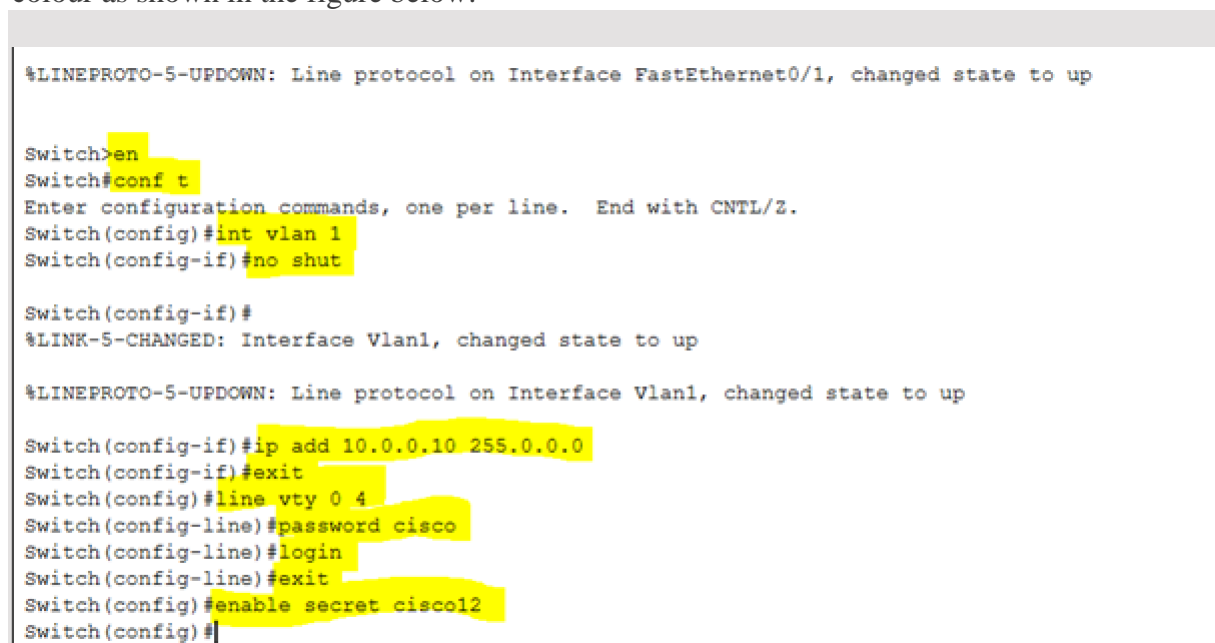
STEP 4: ENABLE TELNET ON SWITCH

Now close the dialogue box and select switch now and then a dialogue box will be opened for the switch and then select CLI where we will have to write the main commands to do telnet configuration on the switch.



The dialogue box that will get opened after clicking the switch

Now hit enter and start writing commands on CLI. Write the commands highlighted in yellow colour as shown in the figure below.



In case the image is not visible, the commands that you have to write are:

en

conf t

int vlan 1

no shut

ip add 10.0.0.10 255.0.0.0

exit

line vty 0 4

password cisco

login

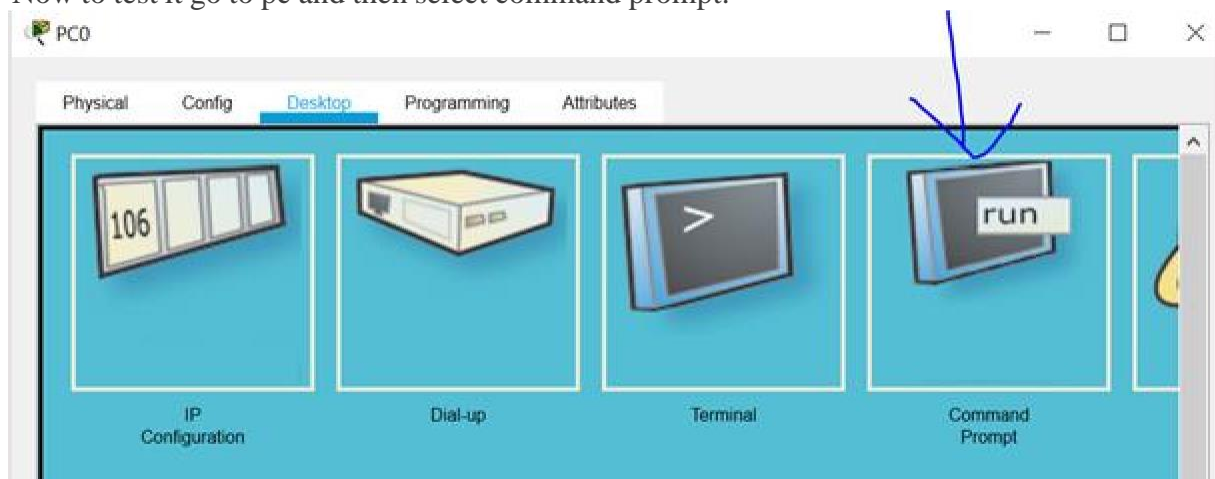
exit

enable secret cisco12

After you are done writing all the commands then it means you have successfully enabled telnet on the switch.

STEP 5: CHECK IF TELNET IS ENABLED OR NOT?

Now to test it go to pc and then select command prompt.



The dialogue box which will appear after clicking on PC

After opening the command prompt, write *telnet 10.0.0.10*

It will ask you for a password and then you need to write

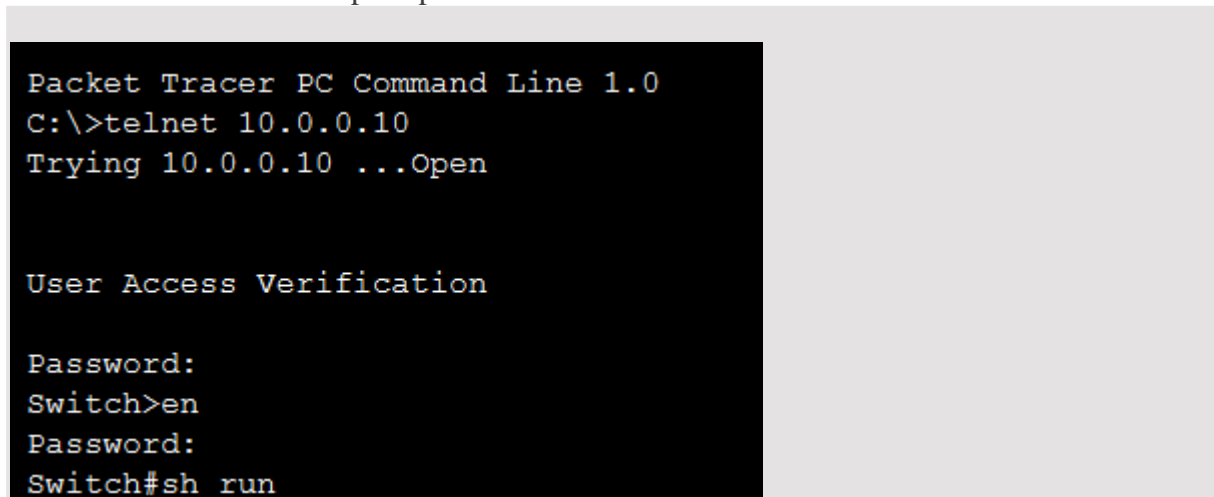
Cisco

We are writing cisco as it is the password we have given, this is just an example, how the command prompt works when the user is typing a password. So, after you are done typing password and though nothing seems to be written just press enter. Only if you have filled

correct password, it will work. After successfully entering the password, now you are able to remotely login into the switch using telnet. Due to which you will see the following coming on command prompt.

switch>

Then type *en* which means enable and enter the password as *cisco12*. Now you are done and experiment has been completed. The following image of PC dialogue box shows what you have to write in command prompt.

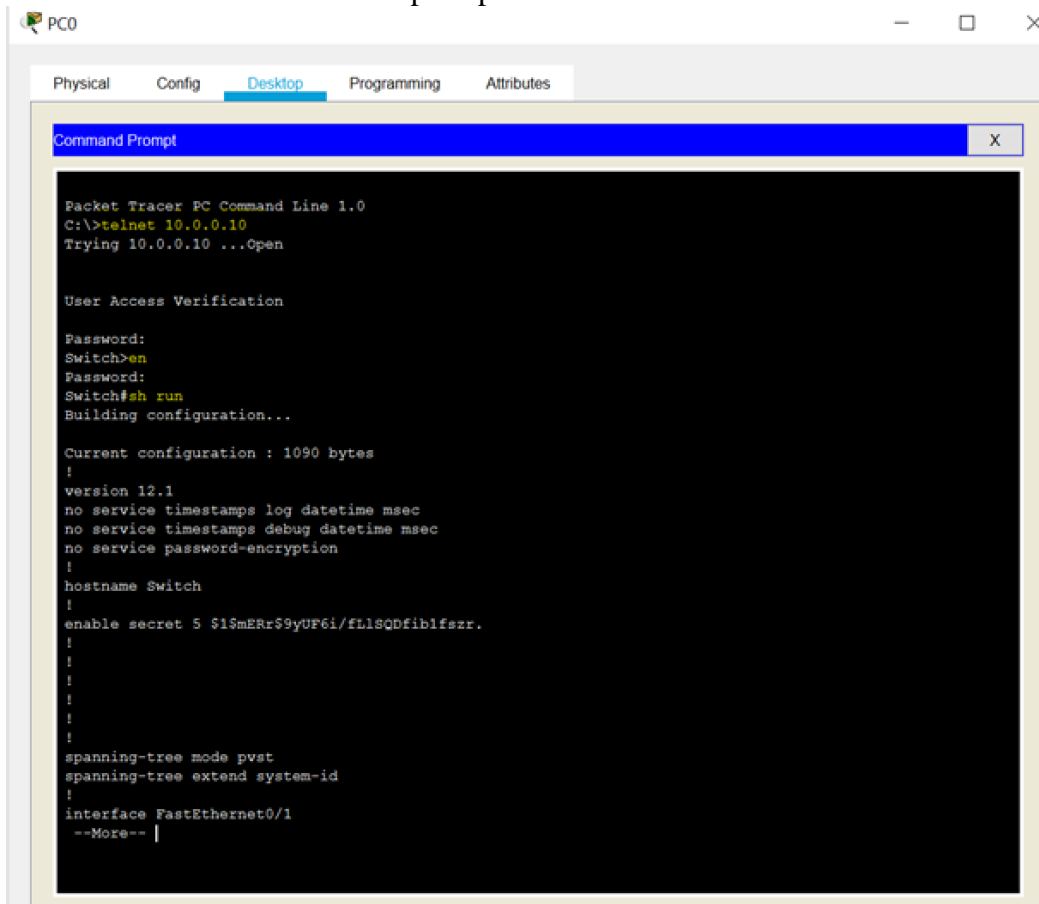


```
Packet Tracer PC Command Line 1.0
C:\>telnet 10.0.0.10
Trying 10.0.0.10 ...Open

User Access Verification

Password:
Switch>en
Password:
Switch#sh run
```

Zoomed view of the command prompt



```
Packet Tracer PC Command Line 1.0
C:\>telnet 10.0.0.10
Trying 10.0.0.10 ...Open

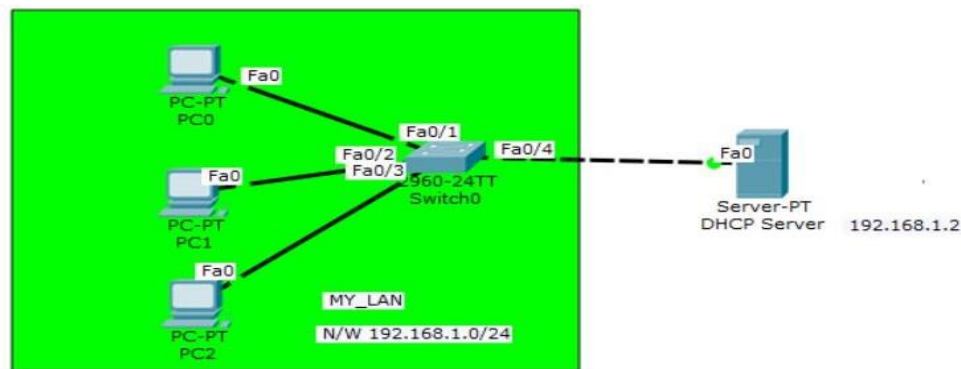
User Access Verification

Password:
Switch>en
Password:
Switch#sh run
Building configuration...

Current configuration : 1090 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
enable secret 5 $1$mERr$9yUF6i/fLLSQDfib1fszr.
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
--More-- |
```

Part 2: DHCP

1. Build the network topology in packet tracer.



2. Configure static IP address on the server (192.168. 1.2/24).
3. Now configure DHCP service on the generic server.

To do this, click on the server, then click on Services tab. You will pick DHCP on the menu. Then proceed to define the DHCP network parameters as follows:

Pool name: MY_LAN

Default Gateway: 192.168.1.1

DNS Server: 192.168.1.2 (optional)

Start IP Address: 192.168.1.0

Subnet Mask: 255.255.255.0

Maximum Number of users: 256

Click on **add** then **Save**. The DHCP entry is included in the list.

Here are the configurations on the server:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
MY_LAN	192.168.1.1	192.168.1.2	192.168.1.0	255.255.255.0	256	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	512	0.0.0.0	0.0.0.0

Once you've configured everything, turn **ON** the DHCP service.

4. Finally, enable DHCP configuration on each PC. The three PCs should get automatically configured.

As an example, here is the DHCP configuration on PC1:

IP Configuration

☒ DHCP ☐ Static

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 192.168.1.2

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::202:16FF:FE0C:5580

IPv6 Gateway:

IPv6 DNS Server:

OUTPUT:

CONCLUSION: