

NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCE

Computer Networks Lab (CL307)

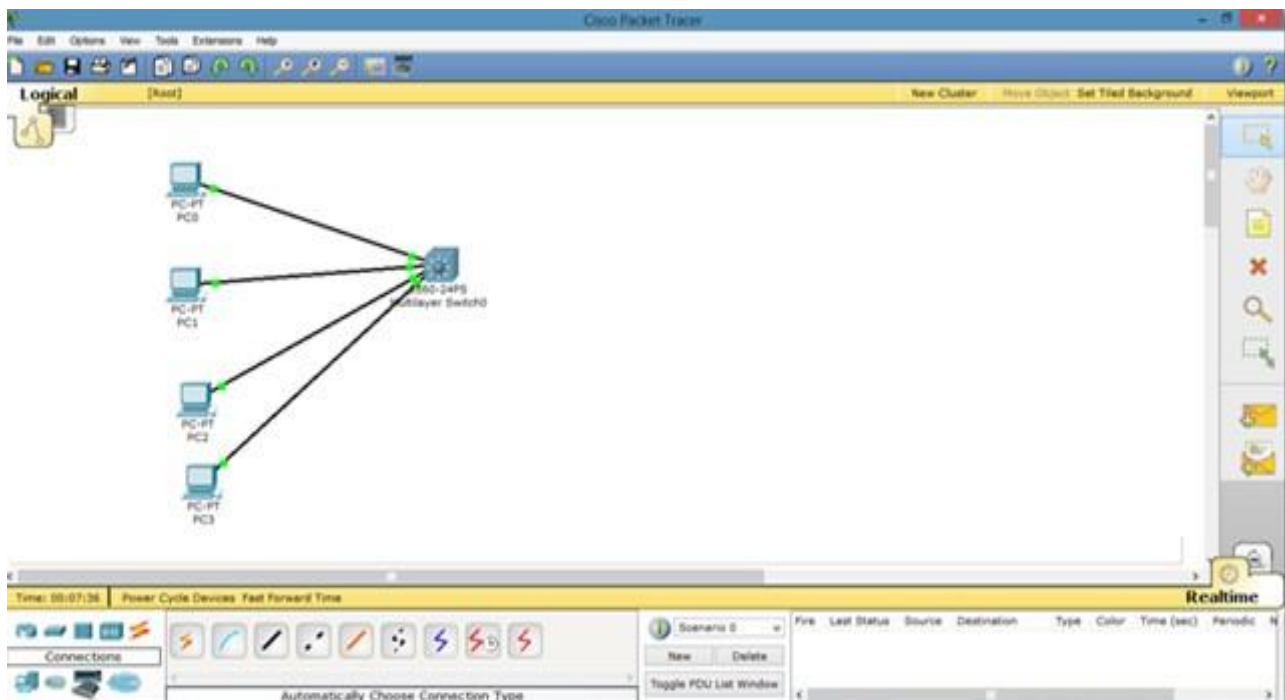
Lab Session 3.1

Application Layer Protocol

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.

Let us apply Telnet on packet tracer.



Take the topology as in the above diagram. Set IPs on the PCs. As, by default, all PCs are in vlan 1. We will create a virtual interface on switch with vlan 1 as follows.

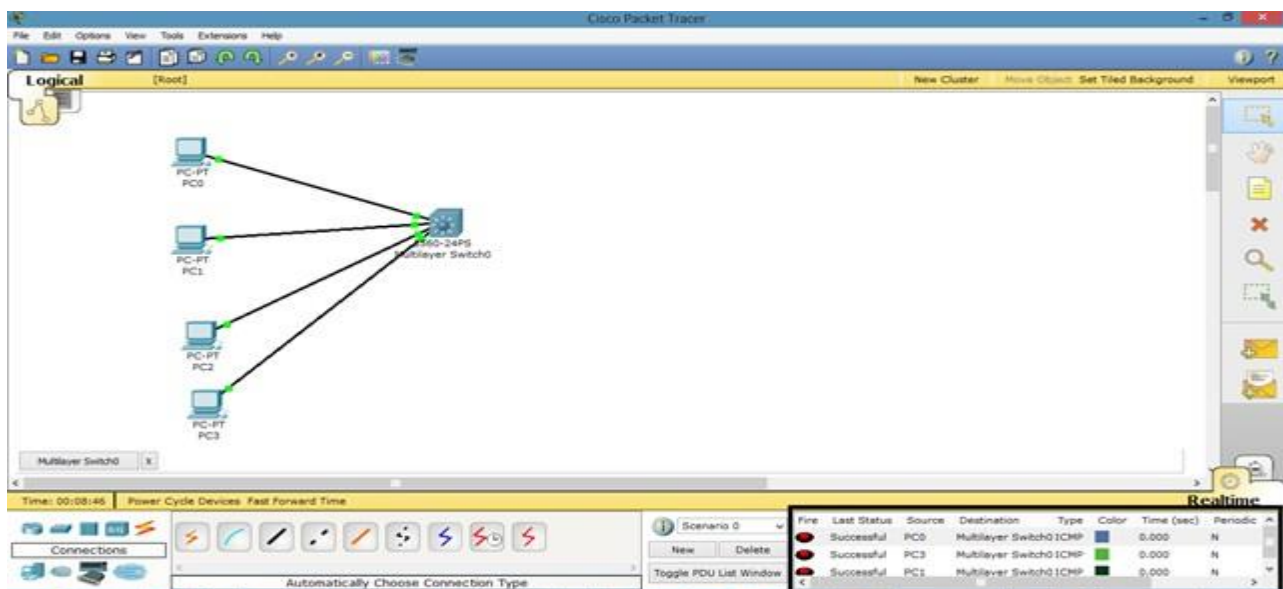
```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int
Switch(config)#interface vi
Switch(config)#interface vl
Switch(config)#interface vlan 1 ?
<cr>
Switch(config)#interface vlan 1
Switch(config-if)#ip ad
Switch(config-if)#ip address 192.168.1.1 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#no shutdown

%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Switch(config-if)#
```

Now, we can ping to switch by our hosts because hosts are in vlan 1 and switch also has a vlan 1 interface.

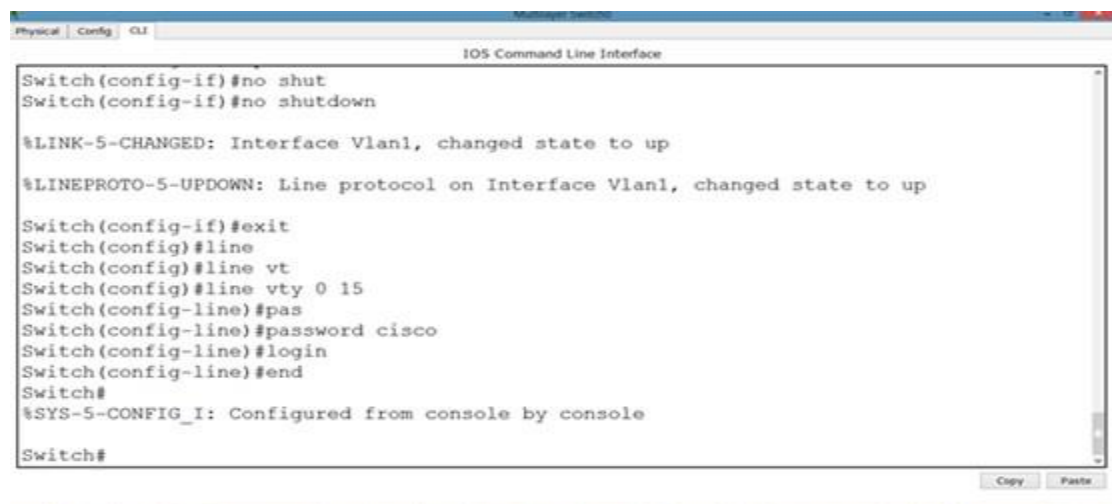


Now, try to telnet the switch from our PC, it refuses because we have not applied authentication on the switch yet.

```
Packet Tracer PC Command Line 1.0
PC>telnet 192.168.1.1
Trying 192.168.1.1 ...Open

[Connection to 192.168.1.1 closed by foreign host]
PC>
```

So, let's apply line authentication on the switch. The system supports 20 virtual tty (vty) lines for Telnet, 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)#no shut
Switch(config-if)#no shutdown

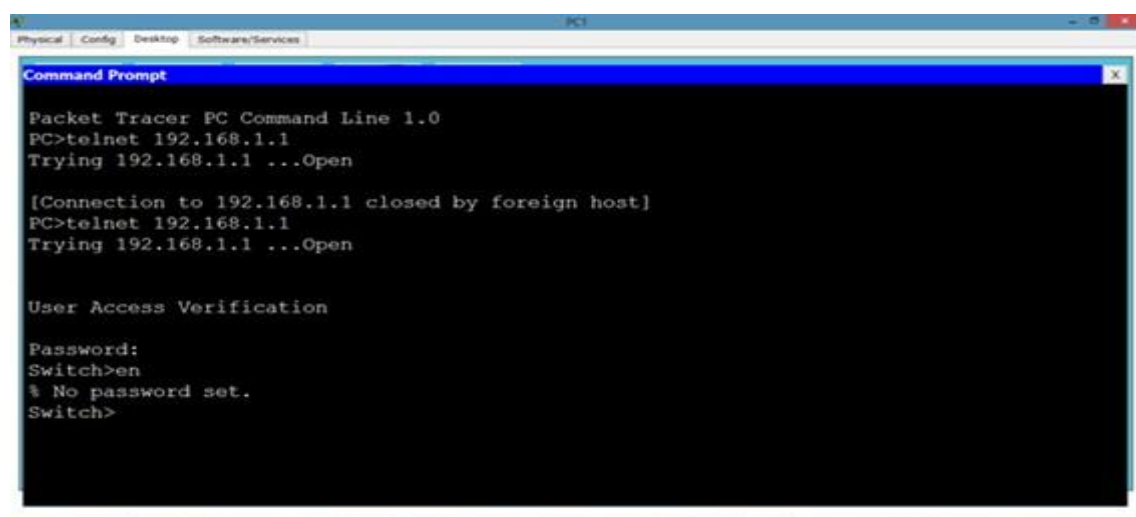
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Switch(config-if)#exit
Switch(config)#line
Switch(config)#line vt
Switch(config)#line vty 0 15
Switch(config-line)#pas
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.



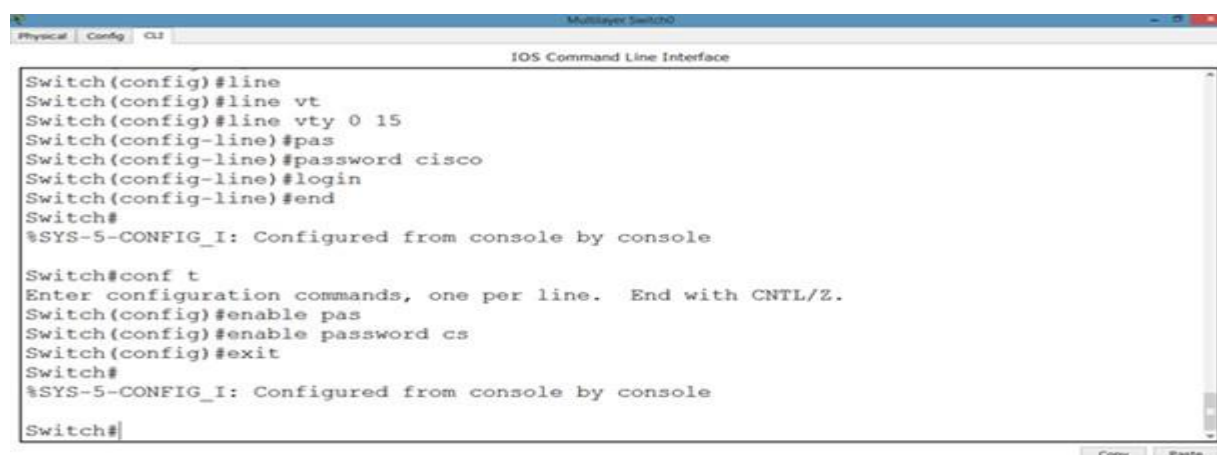
```
Packet Tracer PC Command Line 1.0
PC>telnet 192.168.1.1
Trying 192.168.1.1 ...Open

[Connection to 192.168.1.1 closed by foreign host]
PC>telnet 192.168.1.1
Trying 192.168.1.1 ...Open

User Access Verification

Password:
Switch>en
% No password set.
Switch>
```

Let's apply password on the switch enabled mode.

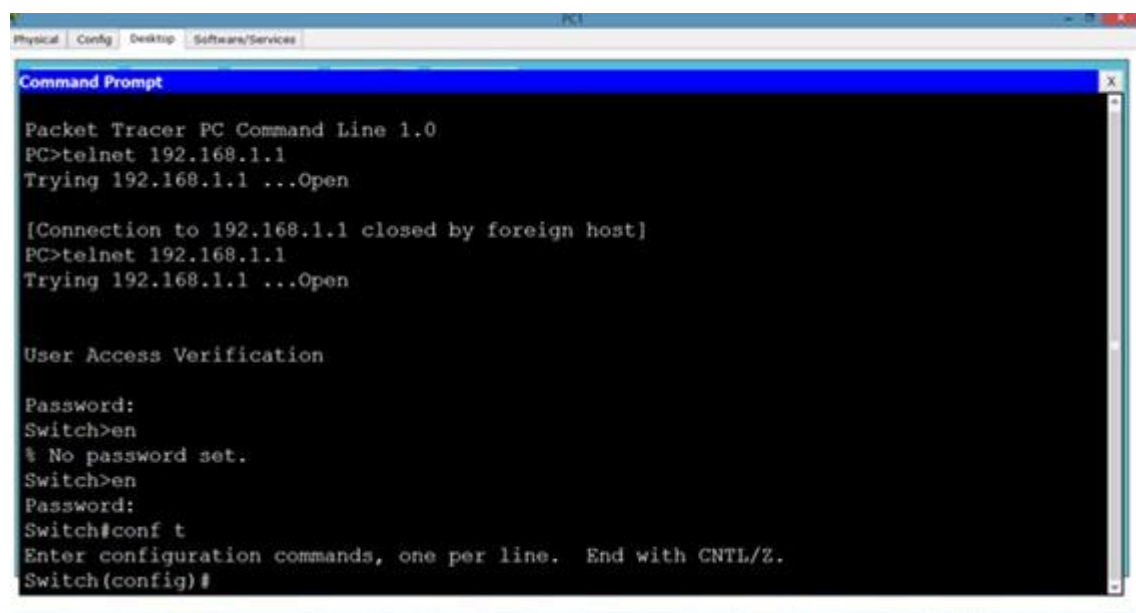


```
Switch(config)#line
Switch(config)#line vt
Switch(config)#line vty 0 15
Switch(config-line)#pas
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config-line)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

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

Switch#
```

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



```
Packet Tracer PC Command Line 1.0
PC>telnet 192.168.1.1
Trying 192.168.1.1 ...Open

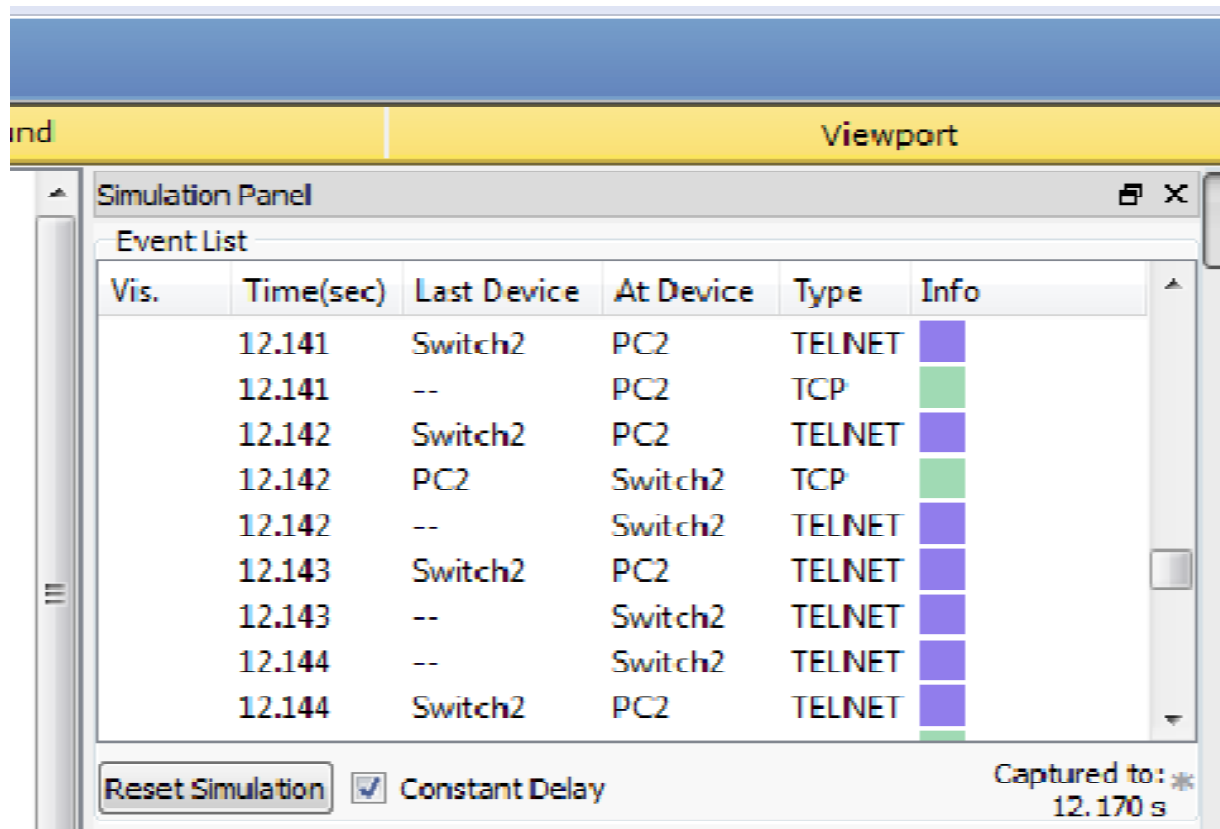
[Connection to 192.168.1.1 closed by foreign host]
PC>telnet 192.168.1.1
Trying 192.168.1.1 ...Open

User Access Verification

Password:
Switch>en
% No password set.
Switch>en
Password:
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
```

SIMULATION

- Now click on simulation icon in the right bottom of packet Tracer.
- Now click on auto capture /play icon for packet capturing.
- Click on the PC and go to Desktop →Command Prompt then Telnet 192.168.1.1



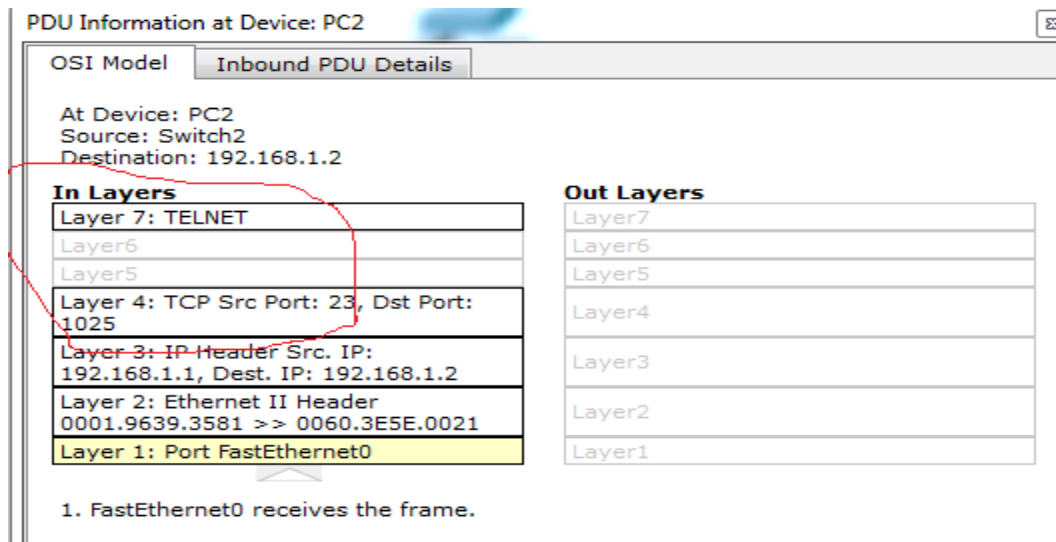
Vis.	Time(sec)	Last Device	At Device	Type	Info
	12.141	Switch2	PC2	TELNET	
	12.141	--	PC2	TCP	
	12.142	Switch2	PC2	TELNET	
	12.142	PC2	Switch2	TCP	
	12.142	--	Switch2	TELNET	
	12.143	Switch2	PC2	TELNET	
	12.143	--	Switch2	TELNET	
	12.144	--	Switch2	TELNET	
	12.144	Switch2	PC2	TELNET	

Reset Simulation ☒ Constant Delay Captured to: 12.170 s

Now click on the TELNET packet show its header.

a) **Shows OSI layers involved in transmission.**

The popped up window (below) will enable you to trace the content of the message through the OSI layer and what changes will occur at each layer (use next and previous buttons to trace each layer content).



b) **Show Inbound PDU Details.**

The inbound tab shows the content of the message (header format) during the receiving process.

