A
Project Report On

Telnet & SSH Simulation using PacketTracer

Data Communications & Networking (2171008)

BACHELOR OF ENGINEERING
in
ELECTRONICS AND COMMUNICATION ENGINEERING

By

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Academic Year- 2017-18

CERTIFICATE

This is to certify that the project report entitled ***"Telnet & SSH Simulation using PacketTracer",*** submitted by ***Anup Tiwari (140080111007)***, ***Chaitanya Tejaswi (140080111013)***, *and* ***Nishant Kumar (140080111032))*** in the subject of the ***Data Communications & Networking (2171008)*** for the *Bachelor of Engineering in Electronics and Communication* of *BVM Engineering College, Vallabh Vidyanagar (Gujarat Technological University)*, is the record of work carried out by them under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination.

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OPEN-ENDED PROBLEM

AIM: To study & simulate Telnet/SSH Protocols using CISCO PacketTracer.

SOFTWARE: CISCO PacketTracer 7.0

THEORY:

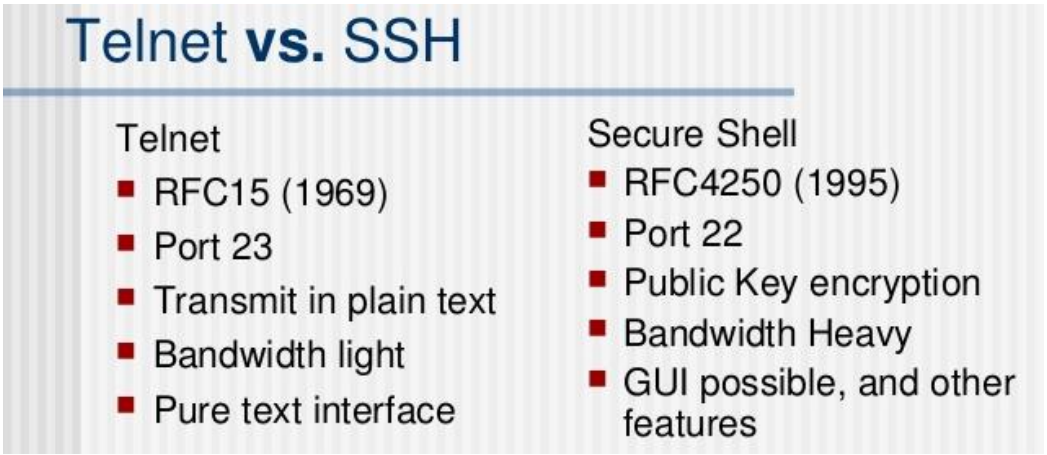
TelNet

1. *Teletype Network (TelNet)* is a communications protocol used on the Internet (or LANs) to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection. User data is interspersed in-band with Telnet control information in an 8-bit byte oriented data connection over the Transmission Control Protocol (TCP).

2. Historically, Telnet provided access to a command-line interface (usually, of an OS) on a remote host, including most network equipment and operating systems with a configuration utility.
   However, because of serious security concerns when using Telnet over an open network such as the Internet, its use for this purpose has waned significantly in favor of SSH.

SSH

1. *Secure Shell (SSH)* is a cryptographic network protocol for operating network services securely over an unsecured network. The best known example application is for remote login to computer systems by users.
2. The protocol specification has two major versions, *SSH-1* and *SSH-2*.



PROCEDURE:

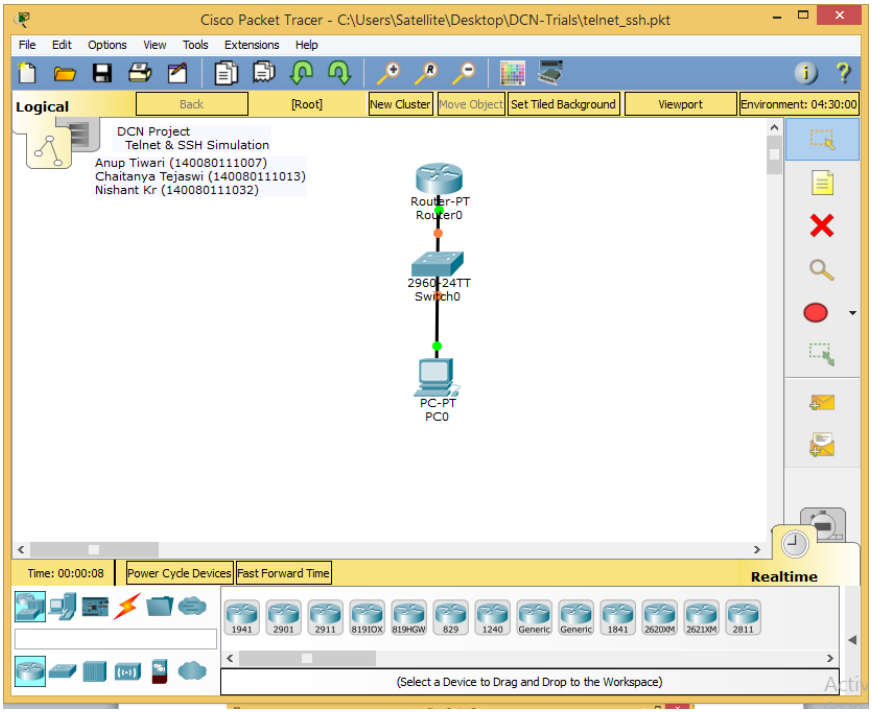
[1] Place the various physical blocks (router, switch & PC) using the Logical View of PT.
[2] Make necessary connections using Copper Straight-Through wires.
[3] Configure CLI options of the router.
[4] Configure IPv4 Addressing scheme for the two PC.
[5] Program the Router (R0) to permit access to use:

TelNet protocol `telnet`
SSH protocol `ssh`

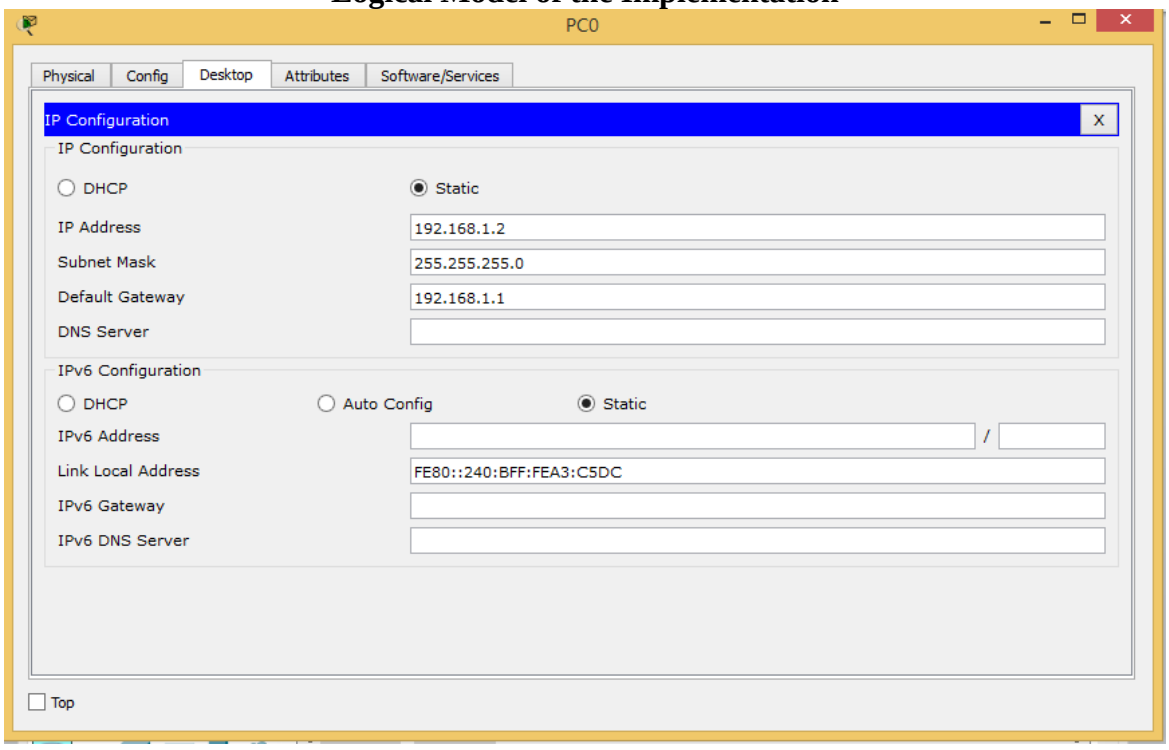
[6] Gain access to the router using above two protocols in the PC's shell (command-line).

IMPLEMENTATION:

(In the corresponding order as listed in '**PROCEDURE**')

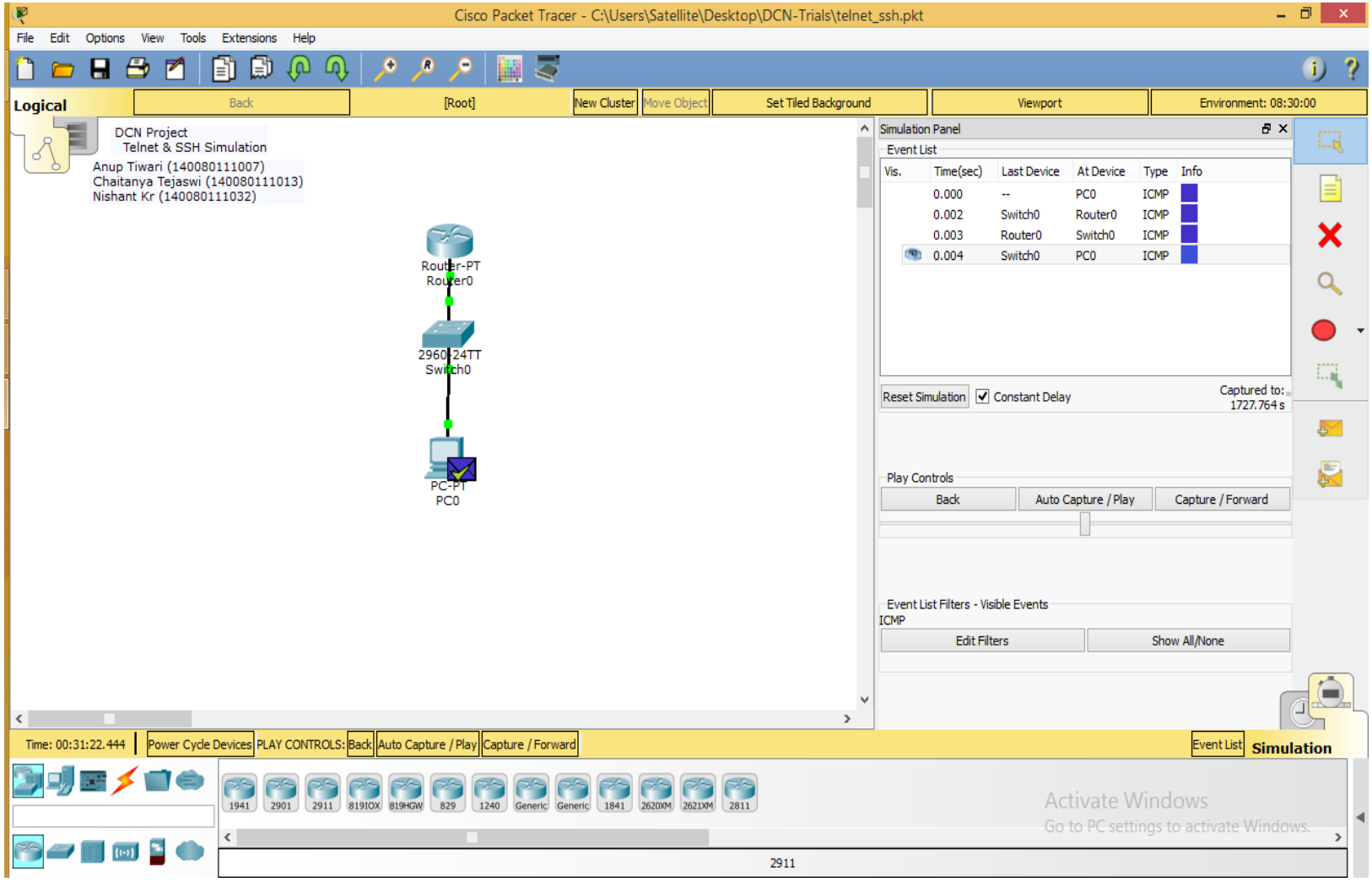


Logical Model of the Implementation



Configuring the PC's IPv4 Addressing

Visualizing the Ping



CLI-INPUT:
(Entered for configuring Telnet & SSH)

Router – R0: Configure TelNet

```
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R0
R0(config)#enable secret dcn_123
R0(config)#line con 0
R0(config-line)#password dcn_123
R0(config-line)#login
R0(config-line)#exit
R0(config)#line vty 4
R0(config-line)#password dc_123
R0(config-line)#login
R0(config-line)#exit
R0(config)#interface FastEthernet 0/0
R0(config-if)#ip address 192.168.1.1 255.255.255.0
R0(config-if)#description R0 FastEthernet0/0
R0(config-if)#no shutdown

R0(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up

R0(config-if)#exit
R0(config)#exit
R0#
%SYS-5-CONFIG_I: Configured from console by console
```

 # Save configuration to NVRAM

```
R0#copy running-config startup-config
```

 # View Interface Brief

```
R0#show ip interface brief
Interface        IP-Address      OK?  Method  Status Protocol
FastEthernet0/0 192.168.1.1      YES manual   up       up
FastEthernet1/0 unassigned       YES unset administratively down down
Serial2/0       unassigned       YES unset administratively down down
Serial3/0       unassigned       YES unset administratively down down
FastEthernet4/0 unassigned       YES unset administratively down down
FastEthernet5/0 unassigned       YES unset administratively down down
```

PC – PC0

 # Trying to log into TelNet

```
C:\>telnet 192.168.1.1
Trying 192.168.1.1 ...Open


User Access Verification

Username: tejaswi

Password:
R0>enable
Password:
R0#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

C 192.168.1.0/24 is directly connected, FastEthernet0/0
```

 # Trying to log into SSH

```
C:\>ssh -l tejaswi 192.168.1.1
Open

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

Router – R0: Configure SSH, Disable TelNet

```
Router>enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
R0(config)#ip domain-name www.google.co.in
R0(config)#crypto key generate rsa
The name for the keys will be: R0.www.google.co.in
Choose the size of the key modulus in the range of 360 to 2048 for
your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 512
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]
R0(config)#ip ssh authentication-retries 5
R0(config)#ip ssh time-out 60
*Mar 1 0:22:35.583: RSA key size needs to be at least 768 bits for ssh
version 2
*Mar 1 0:22:35.583: %SSH-5-ENABLED: SSH 1.5 has been enabled
R0(config)#aaa new-model
R0(config)#line vty 0 4
R0(config-line)#no login local
R0(config-line)#trasnport input ssh
R0(config-line)#exit
R0(config)#exit
R0#
%SYS-5-CONFIG_I: Configured from console by console
```

PC – PC0

 # Trying to log into TelNet

```
C:\>telnet 192.168.1.1
Trying 192.168.1.1 ...Open

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

 # Trying to log into SSH

```
C:\>ssh -l tejaswi 192.168.1.1
Open
Password:

R0>enable
Password:
R0#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
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Gateway of last resort is not set

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