



Academic Year: 2023-24

Semester: V

Class / Branch: TE – CSE(DS)

Subject: WCN Lab

Name of Student:

Student ID:

Roll No:

Date of Submission:

Experiment No. 06

1. **Aim:** Study and use network simulator CISCO Packet Tracer for network setup.

2. **Software used:** CISCO Packet Tracer

3. **Theory:** -

Cisco Packet Tracer as the name suggests, is a tool built by Cisco. This tool provides a network simulation to practice simple and complex networks.

The main purpose of Cisco Packet Tracer is to help students learn the principles of networking with hands-on experience as well as develop Cisco technology specific skills. Since the protocols are implemented in software only method, this tool cannot replace the hardware Routers or Switches. Interestingly, this tool does not only include Cisco products but also many more networking devices.

How to download Cisco Packet Tracer?

WINDOWS:

- Visit the Cisco Networking Academy website at netacad.com.
- Once open, log in (if you already have an account) or create an account if you are a new user.
- Once you log in, click on the “Resources” tab at the top of the page.
- Click on “Packet Tracer” in the drop-down menu.
- Click on “Download Packet Tracer”.
- Select the Packet Tracer version you need and click “Download”.

UBUNTU:

- Visit the Cisco Networking Academy website at netacad.com.
- Once open, log in (if you already have an account) or create an account if you are a new user.
- Once you log in, click on the “Resources” tab at the top of the page.
- Click on “Packet Tracer” in the drop-down menu.
- After scrolling down the webpage, a little bit, click on the 64-Bit Download link under the Ubuntu Desktop Version 8.2.0 English title and save the [CiscoPacketTracer_821_Ubuntu_64bit.deb](#) file to your computer.
- Open the terminal by pressing the CTRL + Alt + T keys and execute the command “[sudo dpkg -i CiscoPacketTracer_821_Ubuntu_64bit.deb](#)” in the terminal to start the installation and continue by typing your root password.



```
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: $ ls
Desktop  Downloads  Pictures  Public  Templates
Documents  Music  PT  snap  Videos
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT$ sudo dpkg -i CiscoPacketTracer_B21_Ubuntu_64bit.deb
```

- After confirming the software license agreement, press Enter on the Yes option to accept the EULA terms.

```
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT

NOT AGREE TO ALL OF THE TERMS OF THE EULA AND SEULA, THEN CISCO SYSTEMS, INC. ("CISCO") IS UNWILLING TO LICENSE
THE SOFTWARE TO YOU AND YOU ARE NOT AUTHORIZED TO DOWNLOAD, INSTALL OR USE THE SOFTWARE.

[More]

Do you accept the terms of this EULA? [yes/no] y

Unpacking packettracer (8.2.1) ...
```

- Deb extension in Linux systems are extracted from the archive and installed with the dpkg command. However, when trying to install Packet Tracer or any other program, you may find that dependent packages need to be installed.

```
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT

Unpacking packettracer (8.2.1) ...
dpkg: dependency problems prevent configuration of packettracer:
 packettracer depends on dialog; however:
  Package dialog is not installed.
 packettracer depends on libgl1-mesa-glx; however:
  Package libgl1-mesa-glx is not installed.
 packettracer depends on libxcb-xinerama0-dev; however:
  Package libxcb-xinerama0-dev is not installed.

dpkg: error processing package packettracer (--install):
 dependency problems - leaving unconfigured
Processing triggers for shared-mime-info (2.1-2) ...
Errors were encountered while processing:
 packettracer
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT$
```

- Dependants are downloaded by

```
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT

packettracer
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT$ sudo apt install -f
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Correcting dependencies... Done
The following additional packages will be installed:
 dialog libgl1-mesa-glx libpthread-stubs0-dev libxau-dev libxcb-xinerama0 libxcb-xinerama0-dev libxcb1-dev
 libxdmcp-dev x11proto-dev xorg-sgml-doctools
Suggested packages:
 libxcb-doc
The following NEW packages will be installed:
 dialog libgl1-mesa-glx libpthread-stubs0-dev libxau-dev libxcb-xinerama0 libxcb-xinerama0-dev libxcb1-dev
 libxdmcp-dev x11proto-dev xorg-sgml-doctools
0 upgraded, 10 newly installed, 0 to remove and 2 not upgraded.
1 not fully installed or removed.
Need to get 1,064 kB of archives.
After this operation, 4,061 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

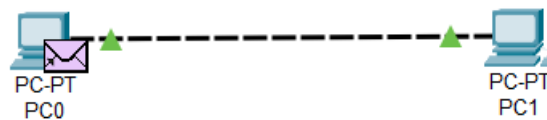


```
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT
Unpacking libxcb-xinerama0-dev:amd64 (1.14-3ubuntu3) ...
Setting up libpthread-stubs0-dev:amd64 (0.4-1build2) ...
Setting up libxcb-xinerama0:amd64 (1.14-3ubuntu3) ...
Setting up dialog (1.3-20211214-1) ...
Setting up libgl1-mesa-glx:amd64 (23.0.4-0ubuntu1~22.04.1) ...
Setting up xorg-sgml-doctools (1:1.11-1.1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for sgml-base (1.30) ...
Setting up x11proto-dev (2021.5-1) ...
Setting up libxau-dev:amd64 (1:1.0.9-1build5) ...
Setting up libxdmcp-dev:amd64 (1:1.1.3-0ubuntu5) ...
Setting up libxcb1-dev:amd64 (1.14-3ubuntu3) ...
Setting up libxcb-xinerama0-dev:amd64 (1.14-3ubuntu3) ...
Setting up packettracer (8.2.1) ...
gtk-update-icon-cache: No theme index file.
viresh@viresh-ASUS-EXPERTBOOK-B1502CBA-B1502CBA: ~/PT$ packettracer
Starting Packet Tracer 8.2.1
```



Sample Exercises:

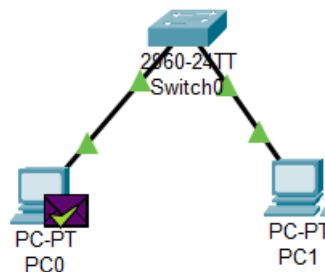
1. Connect two End devices (Peer to Peer type)



By the using the above set-up,

- Configured IP address to PC0 & PC1 as 192.168.10.2 & 192.168.10.3 (Class C)
- Ping 192.168.10.3 from PC0 is done.
- Ping 192.168.10.2 from PC1 is done.

2. Connect End Devices and Switch

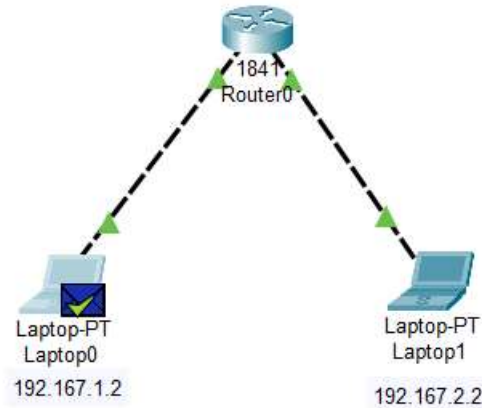


By the using the above set-up,

- Configured IP address to PC0 & PC1 as 192.168.10.2 & 192.168.10.3 (Class C)
- Ping 192.168.10.3 from PC0 is done.
- Ping 192.168.10.2 from PC1 is done.



3. Connect End Devices and Router



By the using the above set-up,

- Configured IP address to Laptop0 & Laptop1 as 192.167.1.2 & 192.167.2.2 (Class C)
- Router configured the Laptop0 with default gateway 192.167.1.1.
- Router configured with Laptop1 with default gateway 192.167.2.1.
- Ping 192.167.2.2 from Laptop0 is done.
- Ping 192.167.1.2 from Laptop1 is done.

Lab Exercise:

- Design a topology using 4 PC and a Switch with following IP address:

Host	IP Address	Subnet Mask
PC0	192.68.1.10	255.255.255.0
PC1	192.68.1.11	255.255.255.0
PC2	192.68.1.12	255.255.255.0
PC3	192.68.1.13	255.255.255.0

- Observe the flow of data from host to host by creating network traffic.
- Configure PC0 and PC1 with following IP address and Subnet Mask

Host	IP Address	Subnet Mask
PC0	192.168.1.10	255.255.255.0
PC1	192.168.1.11	255.255.255.0

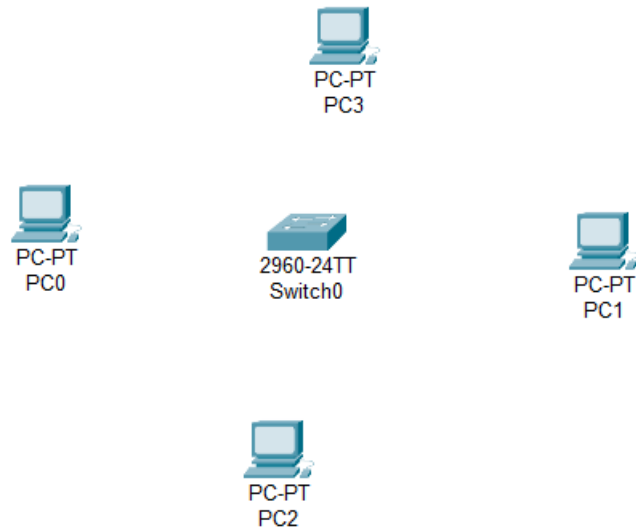
- Use ping command to verify the connection from PC0 to PC1.
- Do the same procedure for Router1, PC2 and PC3 with following IP. Check the connection from PC2 to PC3 using ping command.

Host	IP Address	Subnet Mask
Router1	192.168.2.1	255.255.255.0
PC2	192.168.2.10	255.255.255.0
PC3	192.168.2.11	255.255.255.0



Output:

1)



PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.10

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:70FF:FE29:822D

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top



PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP

☒ Static

IPv4 Address

192.168.1.11

Subnet Mask

255.255.255.0

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

 /

Link Local Address

FE80::201:64FF:FE29:D5DC

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

☐ Top



PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP

☒ Static

IPv4 Address

192.168.1.12

Subnet Mask

255.255.255.0

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

Link Local Address

FE80::250:FFF:FE3A:3593

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

☐ Top



PC3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.13

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::201:42FF:FE80:4B40

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

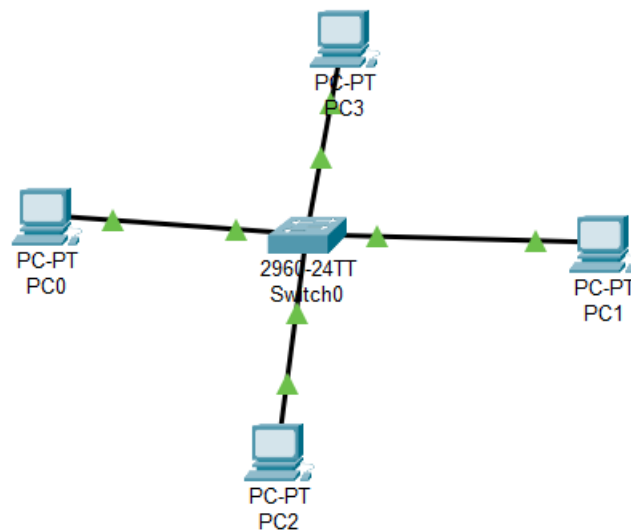
Authentication MD5

Username

Password

☐ Top

2)





3)

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>
```

4)

Router1

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

INTERFACE

- FastEthernet0/0
- FastEthernet1/0
- Serial2/0
- Serial3/0
- FastEthernet4/0
- FastEthernet5/0

FastEthernet0/0

Port Status: ☒ On

Bandwidth: ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex: ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address: 0001 96A9 DB38

IP Configuration

IPv4 Address: 192.168.2.1

Subnet Mask: 255.255.255.0

Tx Ring Limit: 10

Equivalent IOS Commands

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

☐ Top



PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.2.10

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::201:C9FF:FE02:677B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.2.11

Subnet Mask 255.255.255.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::204:9AFF:FE0A:455E

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Conclusion:

Thus, we have studied use network simulator CISCO Packet Tracer for network setup.