Symbiosis University of Applied Sciences, Indore

India's First Skill University

SKILL JOURNAL

Enrollment Number – 2019BTCS088 Year of Enrollment – 2019-2023

Name of the Student – YASH GUPTA

School of COMPUTER SCIENCE & INFORMATION TECHNOLOGY

Program – B. TECH

Specialization/ Branch – CS&IT

Semester – 4TH Section – B2 Branch – CS&IT

Paper Code – BTCS03CCB5 Name of Paper – Computer Networks

Faculty-In-Charge – DR. NEHA GUPTA MAM

CERTIFICATE

THE SKILL EXPERIMENTS

ENTERED IN THIS JOURNAL HAVE BEEN SATISFACTORY PERFORMED BY

ENROLLMENT NO - 2019BTCS088 MR/MS YASH GUPTA

STUDYING IN PROGRAM B. TECH BRANCH CS&IT IN

SCHOOL OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DURING SEMESTER 4^{TH} OF ACADEMIC YEAR 2020-2021

_____

( )

Date: _____

INDEX

S.NO	Title of Skill Activity	Date of Allocation	Date of Submission	Sign of Faculty
1.	TCP/UDP Configuration	23/06/2021	30/06/2021	
2.	LAN Segmentation	24/06/2021	30/06/2021	
3.	Implementation of CDP (Cisco Discovery Protocol)	25/06/2021	30/06/2021	

SKILL ACTIVITIY NO: 01

(TCP/UDP Configuration)

Date: June 23rd, 2021

SKILL ACTIVITY NO: 1

Date:

Title: TCP/UDP Configuration

1. What is the Purpose of this activity? (Explain in 3-4 lines)

Purpose of this activity is to find out :-

ⓐ what are TCP/UDP protocols?
ⓑ Why we Need TCP/UDP protocol?
ⓒ What's the technical level difference between two?
ⓓ Real world use case of both the protocols.
ⓔ How to configure them in Cisco Packet Tracer?

2. Steps performed in this Activity? (Explain in 5-6 lines)

For configuring TCP/UDP services we have to follow below steps:-

Step ①: TCP/UDP Services page enables TCP or UDP based services on the device usually for security reasons.

→ Log in to the Cisco Packet Tracer. then log in to the web-based utility of your switch then we will choose Security > TCP/UDP devices

Step ②: Check the ENABLE HTTPS to enable the HTTP service on our switch. By default, Cisco switches can be configured through the web-based utility.

Step ③: Then click on apply to save the settings.

Step ④: Click SAVE to save settings to the startup configuration file. After that we should now have configured the TCP/UDP services on our switch.

Step ⑤: TCP service table displays the Next Information:-

TCP Service Table

Service Name	Type	Local IP	Local Port	Remote IP	State

Step ⑥: For viewing UDP Service Table, it displays the info!-

UDP Service Table

Service	Type	Local IP	Local Port	Application Instance

3. What Resources/ Materials/Equipments/Tools did you use for this activity?

a. This lab is based on Cisco Packet Tracer 8.0
b. 1- Webserver, 4 client Nodes ; 4 Copper straight-Through cables ; 1Switch
c. Ubuntu 20.04 LTS {OS} where cisco packet Tracer is Installed.

4. What skills did you acquire?

a. Configureing TCP/UDP Suite in Webserver
b. Different between both (TCP vs UDP)
c. Real world use case of TCP & UDP such as in Apache httpd web Server & nginx(Haproxy) etc.
d. How to configure TCP & UDP services on our Cisco Business 250 or 350 series switch.

5. Time Taken to complete This Activity? 02:00 (HOURS)

Yaqub A

Signature of Student

(To be filled by Faculty)

Sr. No.	Skill /Competencies	(Achieved / Not Achieved) (Yes / No)

Remarks :

Total mark _____out of 10.

Signature of Faculty

Date: _____

Details of the Activity

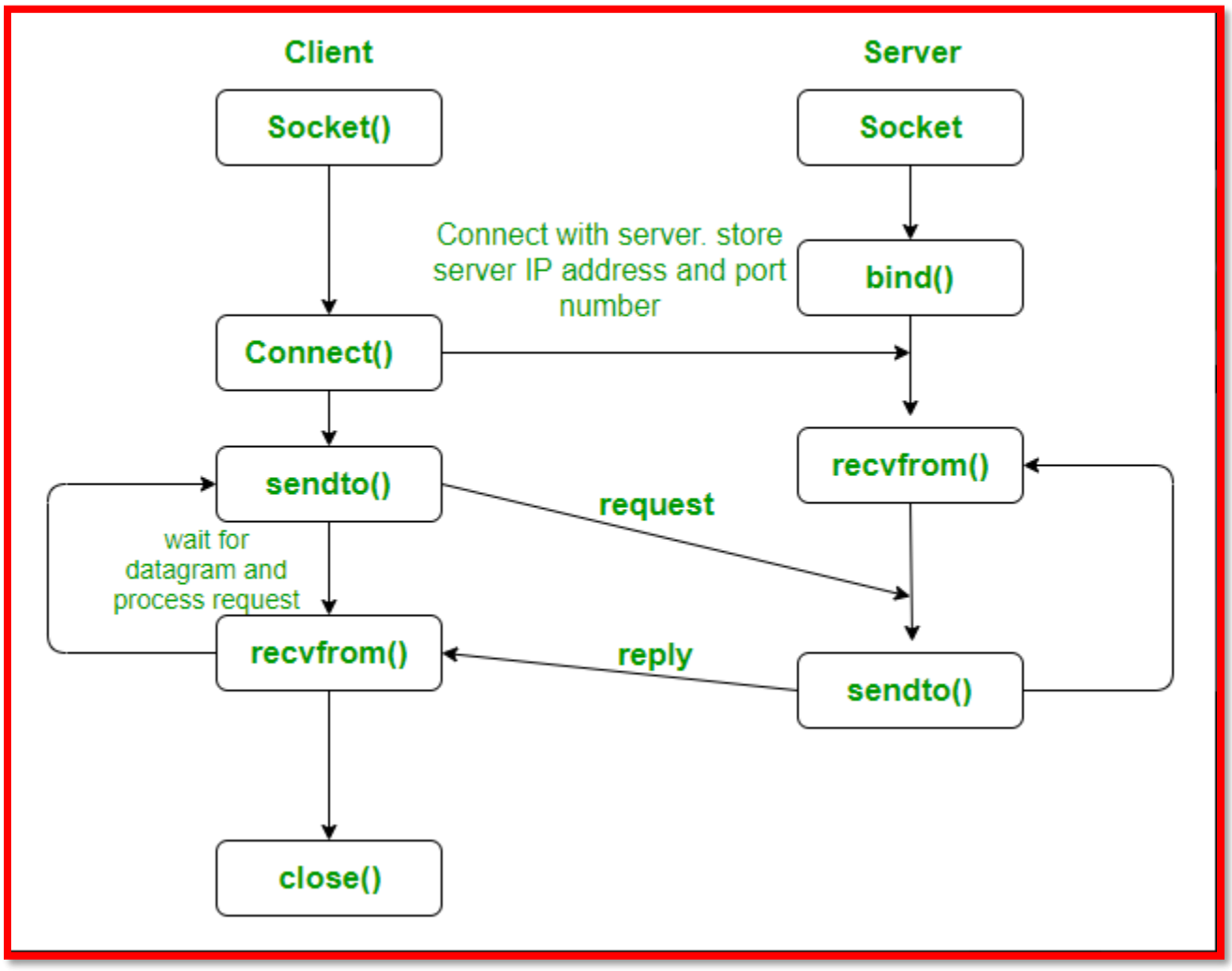
Details of the Activity:

TCP → Transmission Control Protocol & UDP → User Datagram Protocol are transportation protocols which are some of the core protocols of the Internet Protocol Suite. Both TCP and UDP work at the transport layer of the TCP/IP model. TCP uses a 3-way handshake to establish the reliable connection, whereas UDP is unreliable but faster when compared to TCP. The network device offers some of the services which use either TCP or UDP for easy management of the device. The services can be enabled or disabled based on the requirement.

Applicable Devices / Software Version {w.r.t Cisco Packet Tracer v8.0} → These are typical Cisco business suites

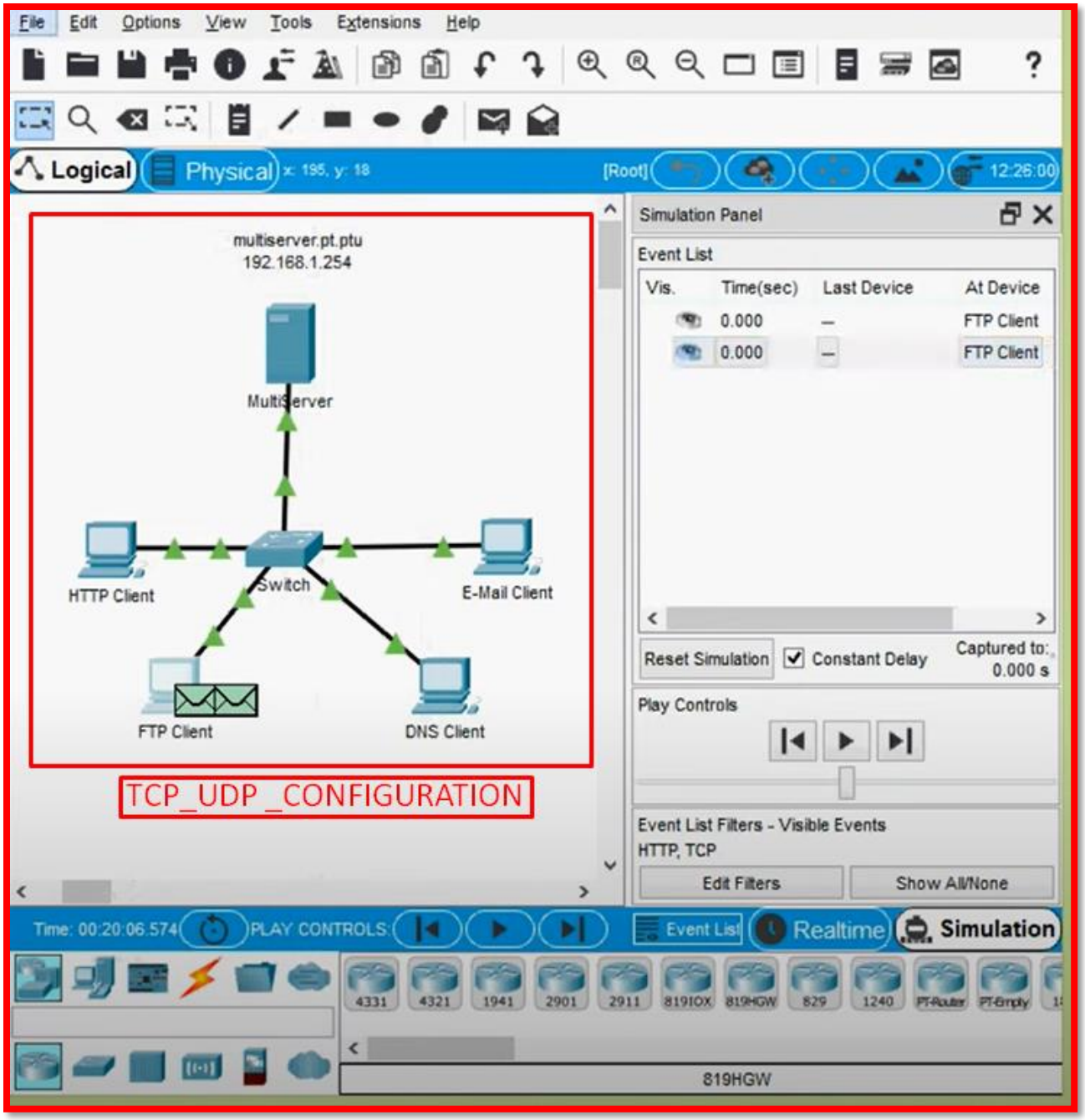
- CBS 250
- CBS 350
- CBS 350-2X
- CBS 350-4X

Flowchart behind the working of UDP Connection



Algorithm of UDP Connection

```
1 int connect(int sockfd, const struct sockaddr *servaddr,
2               socklen_t addrlen);
3 returns : 0 if OK -1 on error
4 arguments :
5 sockfd : File descriptor of socket to be connected.
6 struct sockaddr *servaddr : server address structure.
7 addrlen : length of server address structure.
```


File Edit Options View Tools Extensions Help
Logical
Physical
[Root]
12:26:00
multiserver.pt.ptu
192.168.1.254
MultiServer
HTTP Client
Switch
E-Mail Client
FTP Client
DNS Client
TCP_UDP _CONFIGURATION
Simulation Panel
Event List
Vis.
Time(sec)
Last Device
At Device
0.000
FTP Client
Reset Simulation
Constant Delay
Captured to:
0.000 s
Play Controls
Event List Filters - Visible Events
HTTP, TCP
Edit Filters
Show All/None
Time: 00:20:06.574
PLAY CONTROLS:
Event List
Realtime
Simulation
4331
4321
1941
2901
2911
819IOX
819HGW
829
1240
819HGW

SKILL ACTIVITIY NO: 02

(LAN Segmentation)

Date: June 24th, 2021

SKILL ACTIVITY-02

Date:

Title: LAN Segmentation

1. What is the purpose of this activity? (Explain in 3-4 lines)

Purpose of this activity is to find out:-

- (a) What do we mean by segmentation?
- (b) How segmentation works?
- (c) What are different types of segmentation?
- (d) Why we need segmentation?
- (e) Benefits of segmentation in Org. Network Topologies

2. Steps performed in this Activity. (Explain in 5-6 lines)

Suppose we want to implement segmentation inside a small cap company. Then to implement in best possible manner would be:-

Step ①: Take Open Cisco Packet Tracer V8.0

Step ②: Go to Network Devices: Under Network devices select WAN Emulation or Val → Ctrl + Alt + N. Then under it, select Cloud-PT.

Step ③: Use cloud-PT as ISP & Internet service provider of company. From where all the company employee's acess Internet.

Step ④: After that take Router 1841, connect it with cloud PT & named as ISP& via copper-straight-through wire

Step ⑤: Take one 'Switch-PT' name it as 'Aggregation Switch' Because it aggregrates the other 3 Fiber switches. Connect this switch to 1841 Router via Copper straight through.

Step ⑥: Then take 3 Fiber switches connected with different employees of the company via copper straight Through. & All these switches are also connected to one single aggregrated switch i.e. 'Aggregation Switch' via 'Copper Cross-Over'

Step ⑦: Finally, the whole VLAN segmentation is configured.

3. What resources/equipments/materials/tools did you use for this Activity?

a. 1→ CloudPT; 1-Router 1841; 4-Switches-PT; 4-PCs; 4-Laptops

b. This lab is based on cisco packet Tracer V8.0

c. Under connections; → 10- Copper straight-through wires & 3 - copper cross over wires

d. Ubuntu 20.04 {OS} where CiscoPacket Tracer is installed.

4. What skills did you acquire?

a. What is Network Segmentation? Where we Need it?
b. How to perform VLAN/Lan segmentation?
c. Best Network Segmentation Design
d. Real world use case of VLAN segmentation.
e. VLAN → Implementation, Maintenance, Monitoring } → How to setup these requirements?

5. Time taken to complete this Activity? 02:00 (HOURS)

Yogesh

Signature of student

(To be filled by Faculty)

Sr. No.	Skill /Competencies	(Achieved / Not Achieved) (Yes / No)

Remarks :

Total mark _____out of 10.

Signature of Faculty

Date: _____

Details of the Activity

Details of Activity:

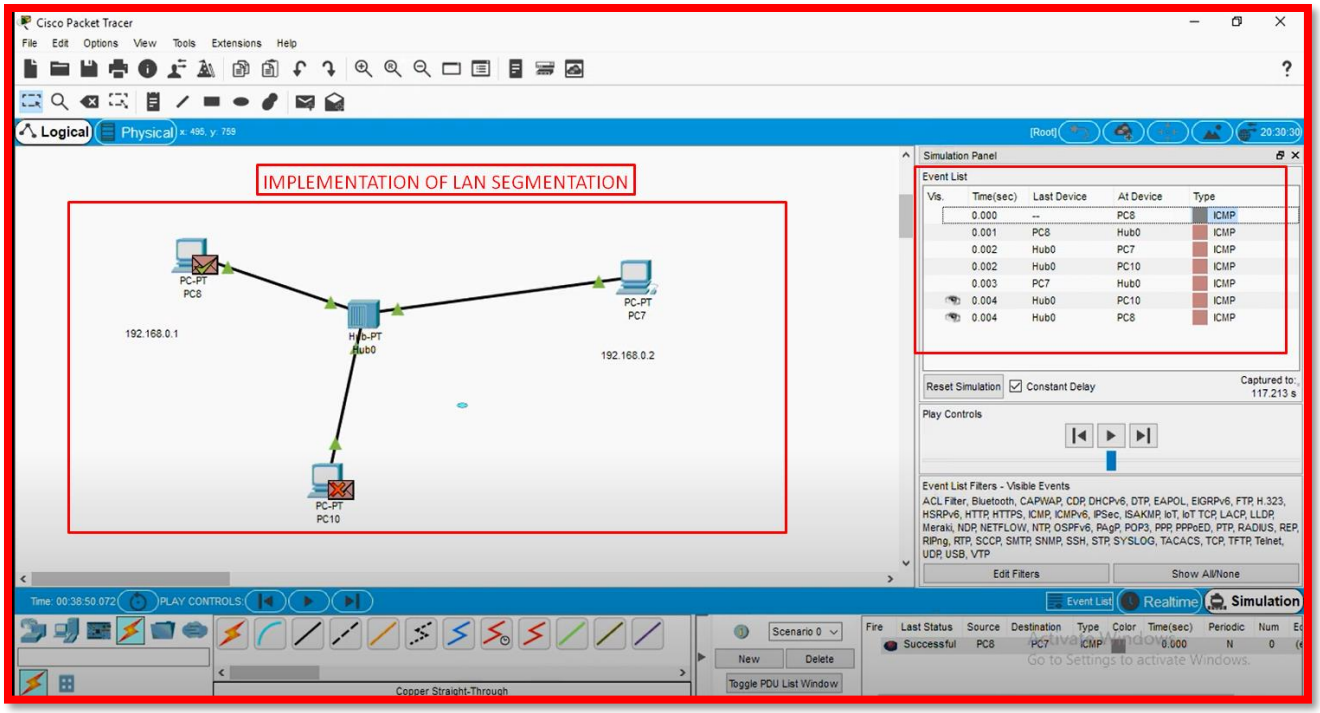
→ Network segmentation divides a computer Network into smaller parts. The purpose is to improve Network performance & security.

→ It works by controlling how traffic flows among the parts. We could choose to stop all traffic in one part from reaching another Or we can limit the flow of traffic type, source, destination & many other options.

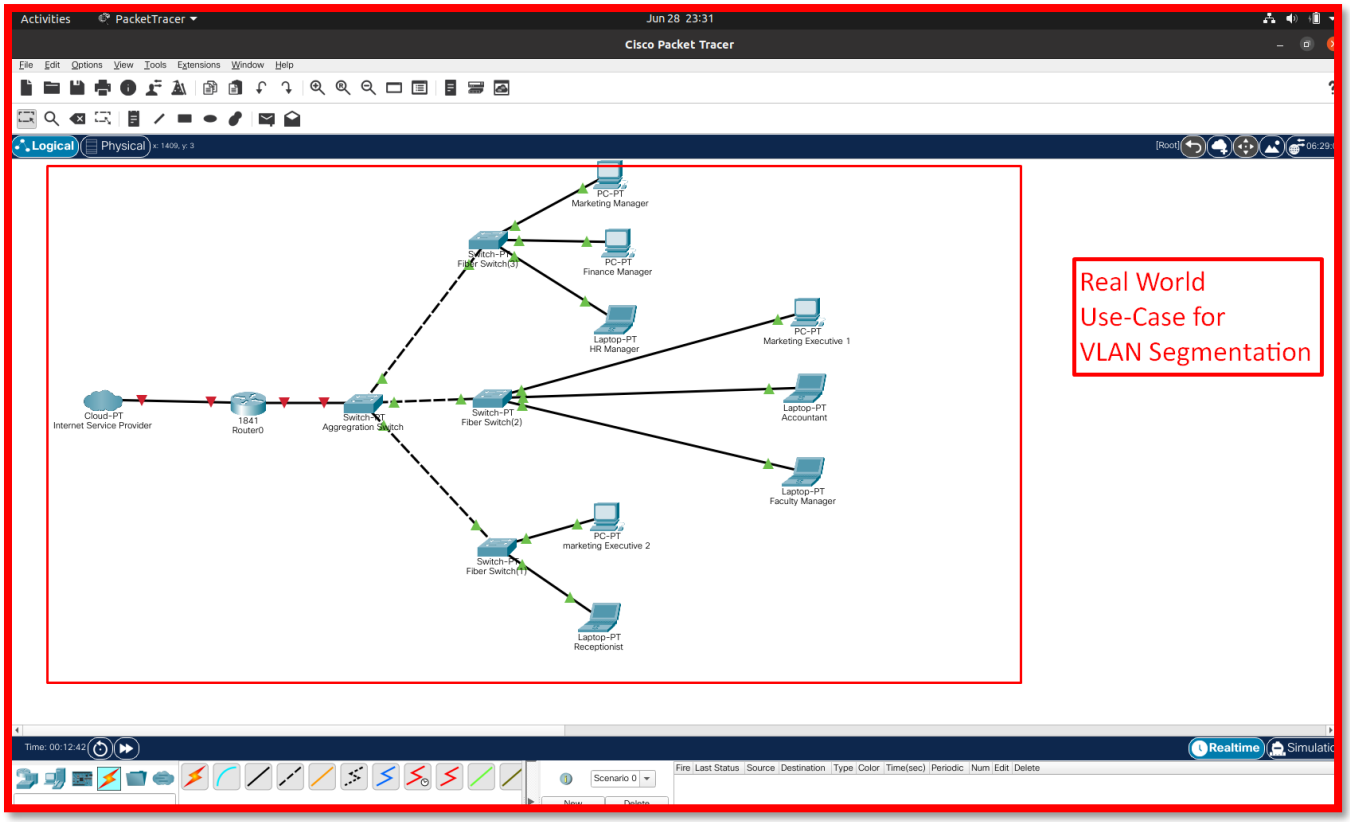
Ex:→ Imagine a large bank with several branch offices. The bank's security policy restricts branch employees from accessing its financial reporting system. It can enforce the security policy by preventing all branch traffic from reaching the financial system.

Benefits of Segmentation:

- Reduce the scope of compliance
  - It reduces the cost associated with regulatory compliance by limiting the no. of in scope systems.
- Protect Vulnerable Devices
  - It can stop harmful traffic from reaching devices that are unable to protect themselves from attack.
- limit cyberattack Damage
  - It improves cybersecurity by limiting how far an attack can spread.
- Improve operational performance
  - It reduces Network congestion.



Real World Use Case Scenario



SKILL ACTIVITIY NO: 03

(Implementation of CDP Protocol)

Date: June 25th, 2021

SKILL_ACTIVITY_03

Title: Implementation of CDP {Cisco Discovery Protocol} Date:

1. What is the purpose of this Activity? (Explain in 3-4 lines)

Purpose of this activity is to :-

(a) find what is CDP? Why we need it? where to use it?
(b) How to Implement CDP in CiscoPacket Tracer?
(c) Minimum Requirement we need for CDP Implementation?
(d) Real world use cases for CDP.

2. Steps performed in this Activity? (Explain in 5-6 lines)

To enable CDP globally we use "cdp run" on the router configuration mode.

Step① → type 'cdp run'

// For Enabling cdp
Step② → To enable CDP on a specific interface, use "cdp enable" command on the interface configuration mode.
By default, CDP is enabled.

// For Disabling CDP
Step③ → For disabling the cdp → we use "no cdp enable" command.

// For HoldTime & HelloTime
Step④ → To configure CDP Hello Time & Hold Time we use
cdp timer 50
cdp holdtime 100

// For clearing CDP Table
Step⑤ → To clear the CDP Table, we use
clear cdp table

// Verifying whether CDP enabled or disabled
Step⑥ → To verify the CDP, we use
show cdp
show cdp interface
show " neighbours
show " entry
show " traffic

3. What equipments / tools / materials did you use for this activity?

a. 2 - 1841 Routers ; 2 - (2950-24) Switches ; 2- copper straight Through Wire
1 - Serial DTE
b. This lab is based on Cisco Packet Tracer v8.0
c. Ubuntu 20.04 LTS {OS}.

4. What skills did you acquire?

a. How to configure CDP on Cisco Packet Tracer 8.0

b. What is CDP? Where we need CDP? Why we need CDP?

c. How we can use CDP in Real world use cases like

↳ VLan Trunking Protocol

↳ To find Type, Length Value Fields

↳ ~~Integrating~~ Integrating CDP with SNMP

5. Time taken to complete this activity? 02:00 (HOURS)

Yogesh A

Signature of Student

(To be filled by Faculty)

Sr. No.	Skill /Competencies	(Achieved / Not Achieved) (Yes / No)

Remarks :

Total mark _____out of 10.

Signature of Faculty

Date: _____

Details of the Activity

Details Of Activity

→ Cisco Discovery Protocol (also k/w as CDP) is a Layer2, media- Independent and Network-Independent protocol that runs on Cisco devices and enables Networking applications to learn about directly connected devices Nearby.

→ This protocol facilitates the management of Cisco Devices by discovering these devices, determining how they are configured, & allowing systems using different Network layer protocols.

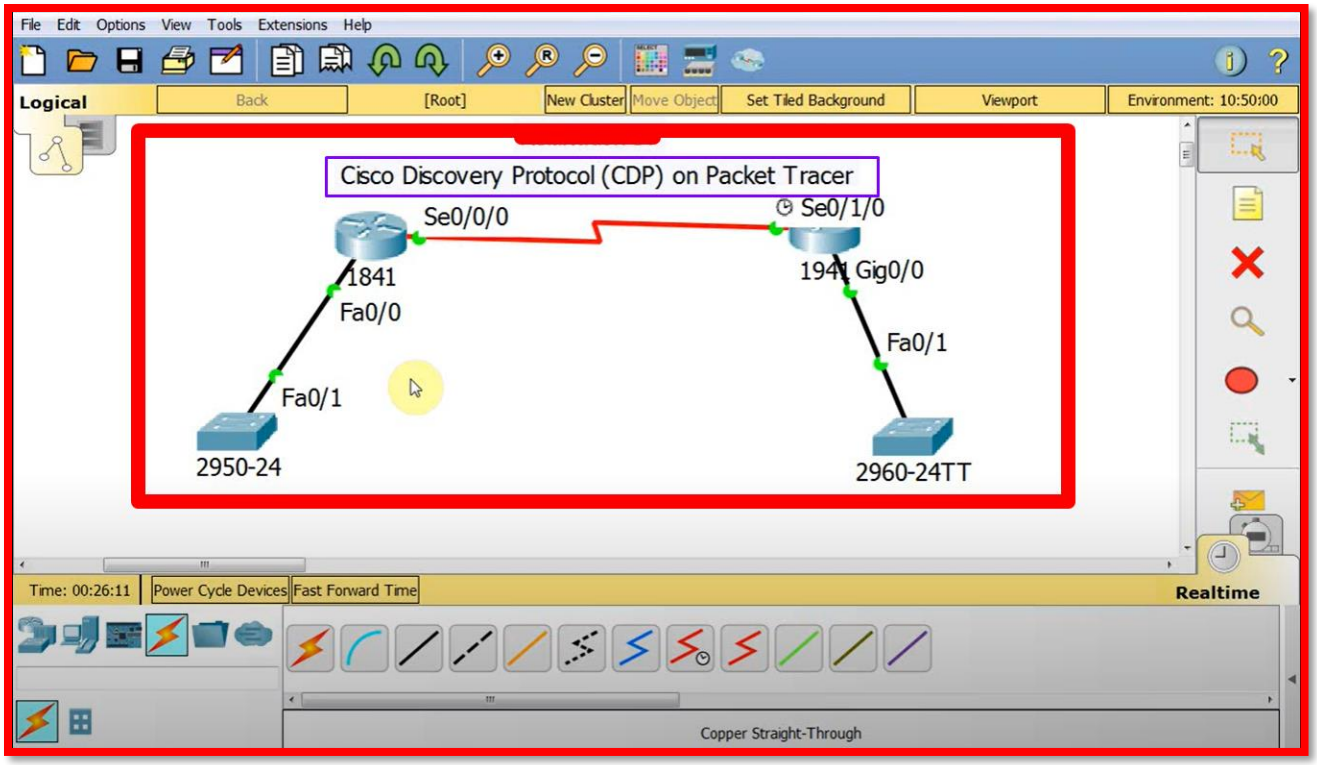
→ The Information contained in CDP varies based on the type of device and the installed version of the operating system.

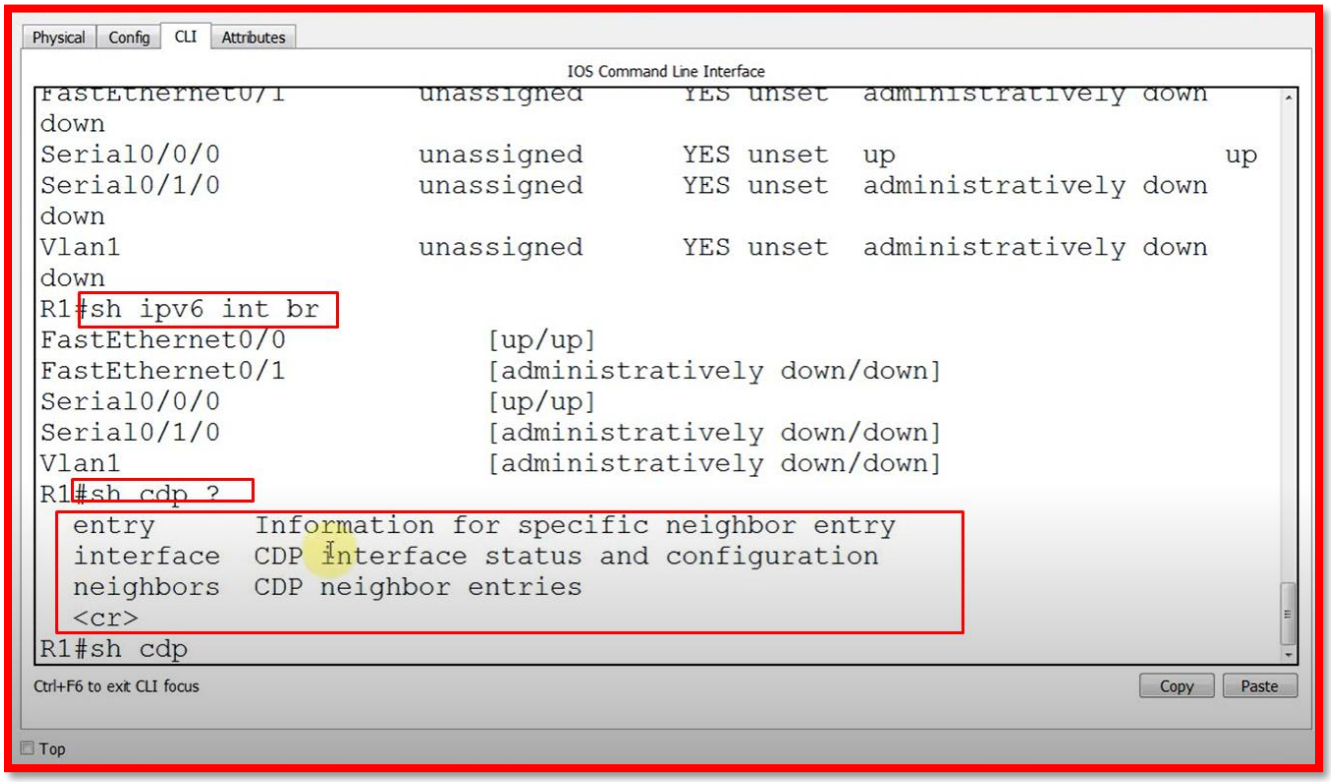
Some of the info that CDP can learn includes —

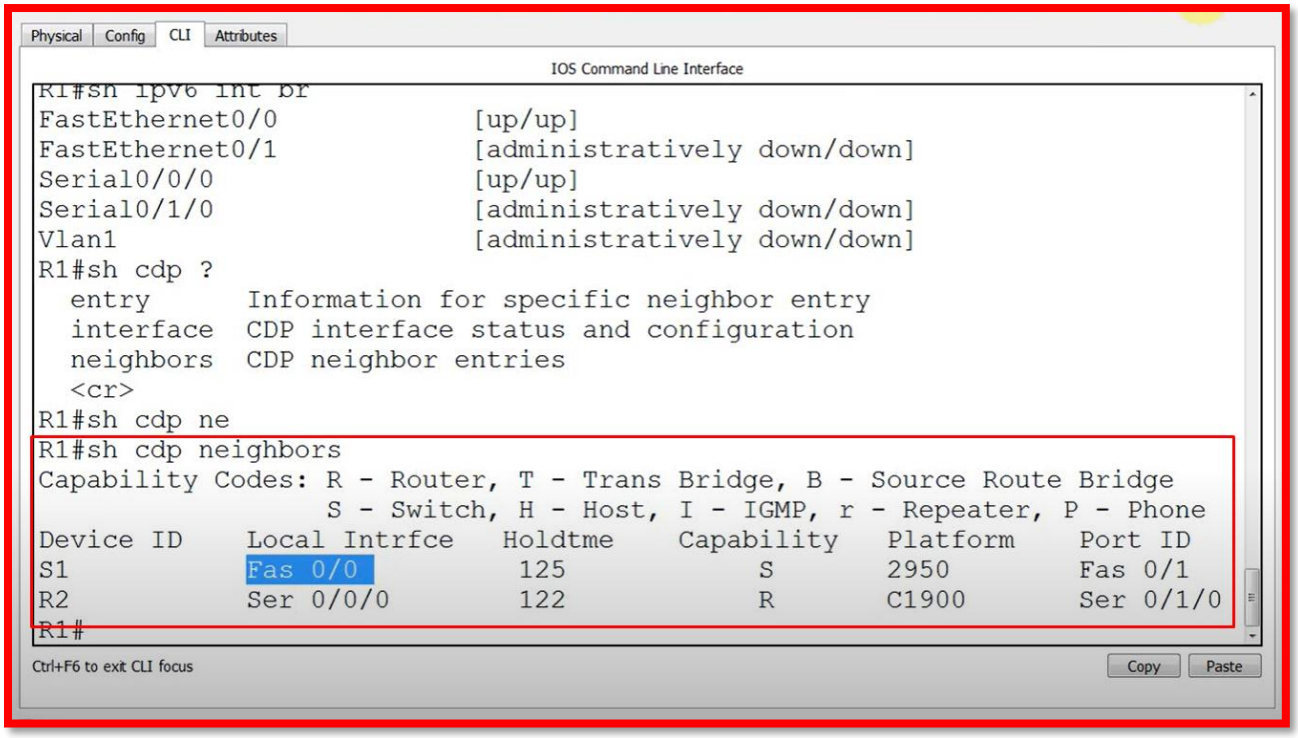
- Cisco IOS Version running on Cisco Devices
- Hardware platform of devices
- IP address of interfaces on devices
- Locally connected devices on Network
- Hostname
- Duplex setting
- VLAN Trunking Protocol
- Native VLAN

→ Benefits of using CDP are as follows

- Allows systems using different Network layer protocols to learn about one another.
- Facilitates management of Cisco devices by discovering them & discovering how they are configured
- Assists with troubleshooting TLV fields
- Works with SNMP by learning SNMP agent addresses & sending SNMP queries.


File Edit Options View Tools Extensions Help
Logical
Back
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Environment: 10:50:00
Cisco Discovery Protocol (CDP) on Packet Tracer
Se0/0/0
Se0/1/0
1841
1941
Gig0/0
Fa0/0
Fa0/1
Fa0/1
2950-24
2960-24TT
Time: 00:26:11
Power Cycle Devices
Fast Forward Time
Realtime
Copper Straight-Through


Physical
Config
CLI
Attributes
IOS Command Line Interface
FastEthernet0/1 unassigned YES unset administratively down
down
Serial0/0/0 unassigned YES unset up up
Serial0/1/0 unassigned YES unset administratively down
down
Vlan1 unassigned YES unset administratively down
down
R1#sh ipv6 int br
FastEthernet0/0 [up/up]
FastEthernet0/1 [administratively down/down]
Serial0/0/0 [up/up]
Serial0/1/0 [administratively down/down]
Vlan1 [administratively down/down]
R1#sh cdp ?
entry Information for specific neighbor entry
interface CDP interface status and configuration
neighbors CDP neighbor entries
<cr>
R1#sh cdp
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Physical
Config
CLI
Attributes
IOS Command Line Interface
R1#sh ipv6 int br
FastEthernet0/0 [up/up]
FastEthernet0/1 [administratively down/down]
Serial0/0/0 [up/up]
Serial0/1/0 [administratively down/down]
Vlan1 [administratively down/down]
R1#sh cdp ?
entry Information for specific neighbor entry
interface CDP interface status and configuration
neighbors CDP neighbor entries
<cr>
R1#sh cdp ne
R1#sh cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID Local Intrfce Holdtme Capability Platform Port ID
S1 Fas 0/0 125 S 2950 Fas 0/1
R2 Ser 0/0/0 122 R C1900 Ser 0/1/0
R1#
Ctrl+F6 to exit CLI focus
Copy
Paste
