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Aim: To implement cisco packet tracer (CPT) explanation and usage

Required tools: Cisco packet Tracer Software

Theory:-

Network -

'A system of computers, terminals and databases connected by communication lines'

'A computer network is defined as the interconnection of 2 or more independent computers.'

Data communication Network:-

The word 'Data' refers to information presented in whatever form is agreed upon by the parties creating and using the Data. Data communication is the exchange of Data between two devices via some form of transmission medium such as a wire cable.

Cisco Packet Tracer:-

It is an innovative and powerful Networking simulation tool used for practice, discovery and Troubleshooting. It helps to understand Network Practically.

We use two cables (straight over cable, cross over cable)

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Objective :

- ① Install, and setup CPT software
- ② Familiarize with the various components and functions of CPT.
- ③ Navigate and utilize the main user interface to stimulate and configure network scenarios.

Procedure :

1. Connect the End Devices as shown in Diagrams or networks.
2. Set up or Give an IP Address to each Device
3. Now, send the message from one device to other Device
4. Can view this in Simulation mode

Conclusion: Packet Tracer is a very useful Interface that enables the user to implement various basic topologies of communication entities.

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Aim : Familiarize with Networking components and Devices.

Software used: CPT

Theory:

Router: A Router is a networking Device that forwards Data packets between computer Networks. Router performs the traffic Directing functions on the internet. Data sent through the Internet, such as a webpage or Email, is in the form of Data Packets. A packet is typically forwarded from one Router to another Router through the Network that constitute an internetwork until it reaches its Destination node.

Switch: Switches are used to connect multiple Devices on the same network within a building or campus. For example, a switch can connect your computers, Printers and Services. Creating a Network of Shared Resources. The switch would serve as a controller, allowing the various devices to share information and talk to each other.

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Procedure:

- ① In Cisco packet tracer, select Router under Network Devices from the Device - Type selection Box and drag 2901 Router from Device-Specific Selection Box onto the workspace.
- ② Select switches under Network Devices from the Device type selection Box and drag 2960-24TT Switch onto the workspace.
- ③ Select End Devices from the Device - Type selection box and Then drag PC-PT (say PC) from Device Specific Selection Box and Drag 2960-24TT onto The workspace
- ④ Select connections from a device - type selection box and then copper straight through cable from Device-Specific Selection Box. Click on the switch and then on PC, connect them via Fast ethernet ports.
- ⑤ Click on the PC, go to the Desktop Tab and in in the dialog Box and then click on IP configuration enter IP Address 10.11.12.1 and default gateway 10.11.12.5
- ⑥ Repeat steps 3 to 5 For other PC with IP Address

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192.168.10.1 to build LAN1,
Build Another LAN (say LAN2) by following
Steps 2 through 7 with addressing as
TP Address : 192.168.10.1

Default Address : 192.168.10.4

Now connect the switch with The Router
Using straight through cable via Fast
Ethernet Poets in The Router and Gigabit
Ethernet ports in the switches.

Click on the Router, go to config each tab
and under the Interface menu select Fast
Ethernet 0/0 and Enter the Address of the
Default Gateway of the LAN It is configured
to as the TP Address and turn on the Router
status. Repeat for Fast Ethernet 0/1

Click on one of The PC, go to Desktop Tab
and Then open command Prompt and Ping all
Other PC's to check if network is working.

CONCLUSION:

We have Familiarized ourselves with key Networking
components and Devices including LAN Adapters,
Switches and Routers. We learned about their
functions and observed their physical characteristics.

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Aim: Study basic Network commands and CISCO IOS Show Commands.

Objective:

1. Implementation of Network Commands
 - Executes Ping commands using Cisco packet Tracer
 - Utilize nslookup and netstat commands in Cmd. exe to analyze Network connectivity
2. Utilization of show commands for network analysis

Software used: Cisco packet tracer software

Theory:

The following are some network commands:

PING: ping sends an ICMP ECHO REQUEST packet to the specified Host. If the host responds, you get an ICMP packet back. The ping command verifies IP-level connectivity to another TCP/IP computer by sending Internet Control Message Protocol echo Request messages. The receipt of corresponding Echo reply messages are displayed, along with round-trip times. It is the primary TCP/IP command used to

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troubleshoot connectivity, reachability and name resolution.

nslookup: It is a UNIX shell command to query Internet domain name servers. It stands for Name server lookup.

Netstat: It shows the established Network TCP/IP connections of the LOCAL computers with remote hosts, open ports on the machine, the process ID (PID) of each connection etc. It stands for Network statistics.

Showarp: Displays the ARP table of the Router address to the MAC Address mapping.

ShowFlash: displays information about Flash memory

Show ip route: displays IPv4 routing table of the Router

Show user: displays all users connected to the Router

Show Protocols: Displays status of configured Layer 3 protocols; both parameters are optional

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Show version : displays information about Loaded CISCO IOS Software.

Show Interfaces : Displays information of all Interfaces in the chassis or one Specific Interface.

Procedure:

- To implement Ping commands in cisco packet Tracer -
 1. In CPT, build a basic network using routers, switches and PC.
 2. Open Command Prompt on one of the PC's in the Network
 3. To ping other PC, type ping IP Address and press Enter
- To implement nslookup and netstat Commands in command prompt -
 1. Press Window Key + R, type cmd.exe and hit enter.
 2. Type nslookup in command prompt and press enter. Type The Address of the website and get its IP Address. About the command after the result is displayed.
 3. Type Netstat and then press Enter

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—For the show command

1. First, create the topology by connecting with specified cables and give the IP address to all the devices.
2. Then click on router, CLI windows, and First create the hostname.
3. Write Show commands and Press Enter key.

CONCLUSION: In the last of the practical file we can know about what are the ios commands and how it is used and their functionality.

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EXPERIMENT 4

AIM : TO CONFIGURE CISCO Router & switch as Telnet and DHCP server using IOS commands

Objectives :

- To configure Telnet on Switch using IOS commands.
- To configure Telnet on Router using IOS commands.
- To configure DHCP on Router using IOS commands.
- To setup DHCP server

Theory :

Telnet is a protocol that provides a Command Line Interface (CLI) for communication with a Remote device or server, sometimes employed for remote device or server sometimes employed for remote

Telnet stands for TeleType Network

It is a simple text based protocol that is used to access remote computers over TCP/IP n/w like Internet.

DHCP Server

Dynamic Host Configuration Protocol (DHCP) is a client/server protocol designed to provide the four pieces of information for a diskless computer or a computer that is booted for the first time.

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when using the Internets set of Protocols (TCP/IP) in order to for a computer system to communicate to another computer system it needs a unique IP Address.

The purpose of DHCP is to provide the Automatic (Dynamic) Allocation of IP Client configuration for a specific Time period.

DHCP has major advantages over normal configuration

CLI Commands

① configuring Switch or TELNET Server

en

conf t

hostname sw

enable secret has1

interface vlan 1

ip add 192.168.1.1 255.255.255.0

no shutdown

exit

line vty 04

password pass2

login

exit.

command Prompt of PC

create IP Address 192.168.1.2

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Telnet 192.168.1.1

Password Pass2

SW > enable

SW # password pass1

② Configuring Telnet on Router

CLI

No

enable

config t

hostname rtr1

enable secret pass1

int g 0/0

ip add 192.168.1.1 255.255.255.0

no shutdown

line vty 0 5

login

Password Pass2

exit

wr

Command Prompt PC

192.168.1.2

Ping 192.168.1.1

Telnet 192.168.1.1

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③ configuring DHCP on Router
no

enable

conf t

int Fa 0/0

ip add 192.168.1.1 255.255.255.0

no shutdown

exit.

④ configuring DHCP Server

no

enable

conf t

int Fa 0/0

ip add 192.168.1.1 255.255.255.0

no shutdown

exit

ip dhcp excluded-address

192.168.1.3 - 192.168.1.10

ip dhcp pool nthpool

network 192.168.1.0 255.255.255.0

default router 192.168.1.10

CONCLUSION:

We successfully setup from CLI using IOS commands:

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① Switch as Telnet Server

② Switch as DHCP Server

③ Router as DHCP Server

④ DHCP Server

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EXPERIMENT 5

AIM: Hands on practice for preparing straight and crossover cables.

OBJECTIVES:

- Cable Identification and study.
- Practical Implementation of straight & crossover cables
- Testing and Troubleshooting

EQUIPMENT/COMPONENT required:

LAN cable, RJ45 connector, Crimping Tool, LAN cable tester, Cable wire stripper, LAN Cable cutter.

Theory:-

① Crimping Tool

Device to join two pieces of metal by developing one or both of them to hold each other.

② Network cables

Used to establish wired connections b/w Networking Devices such as comp, switch, Router etc.

③ Twisted Pair Cable

consists of insulated copper wires pair twisted together to reduce Interference from external sources and cross talk b/w wires.

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(4) RJ 45 Connector :-

Registered Jack 45 has 8 pins that aligns with 8 wires inside cable. Connector is crimped onto cable to establish secure connection.

(5) Straight Through cable

uses same wiring order on both ends & used to connect different types of devices such as comp to switch or router to Modem

(6) Cross-wired cable :-

wiring order of wires is altered one end T568A Standard other end T568B Standard

Procedure :-

Creating straight Through cable
Familiarize the different components of a nw cable:

copper wire, insulation, jacket, RJ45 connector.

- Take a LAN cable of suitable length and use the cable cutter to cut it to the desired length.
- Use cable stripper to remove approx 1 inch of jacket from both cable ends.

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• Wire order:

orange/white : orange : green/white :
blue : blue/white : green brown/
white : brown.

Trim the wires to ensure that they are all same length, leaving about 0.5 inches exposed

Insert the arranged wires into RJ45 connector, ensuring they go all the way to the end of the connector in correct order.

Use the crimping tool to crimp the connectors onto the cable applying firm pressure to ensure a secure connection.

Repeat above steps for other end & use a LAN tester to verify the connections

Creating crosswired cable

- (1) Take a LAN cable of suitable length
- (2) Repeat the above steps of straight wire
- (3) connect the twisted pairs and rearrange one end on T568B standard order
- (4) Repeat the steps and Test the continuity of the crossover cable using LAN cable tester.

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Observations :-

Straight through cable : All pins corresponding glow to each other.

Crosswired cable : Pins from start and alternate from end glow.

Conclusion :-

We have successfully demonstrated creation of straight through and crosswired cable.

Precautions :-

- ① Cut the Network cable to the desired length.
- ② Verify the order of straightened wires before insertion into RJ45 connector.

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