



Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute of Information Technology

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Subject Name & Code: Fundamentals of computer network (22203)

Title of Assignment: Wired LAN setup by using Cisco Packet Tracer.

Date of Performance: 20/01/23

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Theory/ Writeup:

FCN Assignment no 02

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Aim: Setup a wired LAN using Layer 2s switch and then IP switch of minimum four computer. It includes preparation of cable, testing of cable using line tester, configuration machine using IP addresses, testing using PING utility and demonstrate the PING Packet captured traces using Cisco Packet Tracer tool.

Component: RJ-45 connector, crimping tool, Twisted Pair cables (Cat6), line tester, HTTP server (Apache) with website page of your Institute, four client nodes with wifi-support, Wireshark Protocol Analyzer tool on all nodes, Layer-II switch, Layer-III IP switches, Wifi Access Point.

Prerequisite:

1. Networking component: switch, Router etc.
2. Linux command: Ping
3. Wireshark Tool
4. IP Addressing.

Theory:

LAN: Local area Network is a computer network that spans a relatively small area. Most often, a LAN is confined to a single room, building or group of buildings, however, one LAN can be connected to other LAN over any distances via telephone line and radio. Most LAN connect workstation and personal computer.

Layer 2 switch:

Layer 2 switch use the media access control address (MAC address) from the host network interface card (NIC) to decide where to forward frames. Layer 2 switch is hardware based, which means switch use application-specific integrated circuit (ASIC) to build and maintain filter table (also known as MAC address table or CAM tables). One way to think of a layer 2 switch is as multipoint bridge.

Layer 2 switching provide the following:

1. Hardware - base bridging (MAC)
2. Wire speed / non-blocking forwarding
3. Low latency.

IP switching:

Internet protocol switching, far more commonly referred to as IP switching, is a routing technique which route data packet faster than traditional routing by using layer 3 switches.

IP switching is performed by implementing layer 3 switches which employ Application specific Integrated circuit (ASIC) hardware & transferring via Asynchronous Transfer modes (ATM) switches. This speed up whole routing process. IP switching established a virtual circuit in ATM switches whenever it need to route packet that are high priority or packet that are destined for an external network.

Ping

Ping is a computer network administration software utility used to test the reachability of a host on an Internet Protocol (IP) network. It measure the round trip time for message sent from the originating host to a destination computer that are echoed back to the source.

The name comes from active sonar terminology that send as pulse of sound and listen for the echo to detect the object under water although it is sometimes interpreted as a backronym to Packet internet groper.

* Step of a wired LAN (simulation)

1. Spool out your length of cable.
2. Strip off the outer Jacket.
3. Separate your wire pair.
4. Arrange wire according to its colour which are light orange, white orange, green, green white, white blue, blue, white brown.
5. Cut the wires.
6. Insert wire into connector.
7. Crimp the connector.
8. Test your cable.

* Conclusion: Thus, we have setup a wired LAN using layer 2 switch and then IP switch of minimum four computer. It includes preparation of cable, testing using PING utility and demonstrate the PING Packet.

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25/11/23

Snapshot of implementation:





