

**Expt. No. 07**

**Date:**

## **Packet Tracer: Pinging in a Network**

**Aim:** To configure a Network Topology using Packet Tracer Software and ping from any one machine to another machine in the network. **(Hub, Switch and Router)**

**Theory:**

### **Packet Tracer**

Cisco Packet Tracer is Cisco's simulation software. It can be used to create complicated network topologies, as well as to test and simulate abstract networking concepts. It acts as a playground for you to explore networking and the experience is very close to what you see in computer networks.

Packet Tracer enables students to create complicated and huge networks, which is frequently impossible with physical hardware due to cost considerations. Packet Tracer is available for Linux, Windows, MacOS, Android, and iOS.

Packet Tracer allows users to drag and drop routers, switches, and other network devices to create simulated network topologies. If you have a Netacad account, you can download it for free.

Before implementing any protocol, engineers like to test it on Cisco Packet Tracer. In addition, engineers who want to deploy any modification in the production network prefer to utilise Cisco Packet Tracer to test the changes first and then deploy if everything works as planned.

### **Features of Cisco Packet Tracer**

**Packet Tracer Workspaces:** Cisco Packet Tracer has two workspaces—logical and physical. The logical workspace allows users to build logical network topologies by placing, connecting, and clustering virtual network devices. The physical workspace provides a graphical physical dimension of the logical network, giving a sense of scale and placement in how network devices such as routers, switches, and hosts would look in a real environment. The physical view also provides geographic representations of networks, including multiple cities, buildings, and wiring closets.

**Packet Tracer Modes:** Cisco Packet Tracer provides two operating modes to visualize the behaviour of a network—real-time mode and simulation mode. In real-time mode the network behaves as real devices do, with immediate real-time response for all network activities. The real-time mode gives students a viable alternative to real equipment and allows them to gain configuration practice before working with real equipment. In simulation mode the user can see and control time intervals, the inner workings of data transfer, and the propagation of data across a network. This helps students understand the fundamental concepts behind network operations. A solid understanding of network fundamentals can help accelerate learning about related concepts.

**Protocols:** Cisco Packet Tracer supports the following protocols:

Layer	Cisco Packet Tracer Supported Protocols
Application	▪ FTP , SMTP, POP3, HTTP, TFTP, Telnet, SSH, DNS, DHCP, NTP, SNMP, AAA, ISR VOIP, SCCP config and calls ISR command support, Call Manager Express
Transport	▪ TCP and UDP, TCP Nagle Algorithm & IP Fragmentation, RTP
Network	▪ BGP, IPv4, ICMP, ARP, IPv6, ICMPv6, IPsec, RIPv1/ v2/ng, Multi-Area OSPF, EIGRP, Static Routing, Route Redistribution, Multilayer Switching, L3 QoS, NAT, CBAL , Zone-based policy firewall and Intrusion Protection System on the ISR, GRE VPN, IPsec VPN
Network Access/ Interface	▪ Ethernet (802.3), 802.11, HDLC, Frame Relay, PPP, PPPoE, STP, RSTP, VTP, DTP, CDP, 802.1q, PAgP, L2 QoS, SLARP, Simple WEP, WPA, EAP

**Multiusers Functionality:** Cisco Packet Tracer is a network-capable application, with a multiuser peer-to-peer mode that allows collaborative construction of virtual networks over a real network. The multiuser feature enables exciting collaborative and competitive interactions, providing the option to progress from individual to social learning and features opportunities for collaboration, competition, remote instructor student interactions, social networking, and gaming.

**Help:** A help feature is available to familiarize users with the Cisco Packet Tracer interface, functions, and features. The help area includes important notes and tips and provides annotated screenshots to aid understanding.

## Output:

1. Form a single network using a Hub. Ping any 2 machines. Simulate using packet flow.
2. Form a single network using a switch. Ping any 2 machines. Simulate using packet flow.
3. Connect 2 networks by making use of a router. Ping any 2 machines across the networks. Simulate using packet flow.

For each of the above questions, put the following screenshots.

- i. Network topology
- ii. Output of PING command
- iii. Packet flow (simulation)
- iv.

**Conclusion:** A network topology was configured, and machines were pinged successfully using Packet tracer.