

IGMP is a network-layer protocol that is used to manage multicast group memberships. When a device wants to receive multicast traffic, it sends an IGMP join message to its local router, which in turn sends an IGMP query to the multicast group. Devices that are members of the multicast group respond to the query, allowing the router to determine which devices are interested in receiving the multicast traffic. IGMP is used to optimize the distribution of multicast traffic and prevent unnecessary traffic on the network.

33) Explain the position of IP and other network layer protocols in TCP/IP protocol suite.

The TCP/IP protocol suite is a set of communication protocols that enable computers to communicate with each other over a network. It is a four-layered protocol, which includes the following layers:

**Network Layer:** This layer is responsible for managing communication between networks, and it includes protocols like IP, ICMP, and ARP.

In this protocol suite, the IP protocol (Internet Protocol) is a network layer protocol, responsible for providing an addressing system and routing mechanism that allows packets to be sent across different networks. IP is also responsible for fragmenting and reassembling packets if they are too large to be transmitted across the network.

Other network layer protocols like ICMP (Internet Control Message Protocol) are used for sending error messages and controlling the flow of packets in the network. ARP (Address Resolution Protocol) is responsible for mapping IP addresses to MAC addresses for communication over a local network.

In summary, the IP and other network layer protocols are a critical part of the TCP/IP protocol suite, responsible for managing communication between different networks and providing addressing, routing, and error handling mechanisms that enable the Internet to function effectively.

35) Explain Distance vector routing protocol with example.

Distance vector routing protocol is a type of routing protocol used in computer networks to dynamically determine the best path for data to travel between devices. It is also known as a Bellman-Ford algorithm. In this protocol, each router maintains a table that contains information about the network topology and the best path to each destination network. The table is periodically updated with information from neighboring routers.

Each router maintains a routing table that lists the distance to each destination network and the next hop router to reach that network. Initially, each router only knows about its directly connected networks and sets the distance to those networks as 0.

Each router broadcasts its routing table to its neighboring routers. The neighboring routers then update their own routing tables based on the received information. The distance to a destination network is calculated as the sum of the distance to the next hop router and the distance from that router to the destination network.