Ques1) Provide a simple overview of IPv6 and compare it with IPv4?

Answer1) Internet Protocol Version 6 (IPv6) is the latest revision of Internet Protocol (IP) and the first version of protocol to be widely used.

IPv6 is a network layer protocol that allows the communication do take place over the network. IPv6 was designed by Internet Engineering task force.

Types of IPv6 addresses

→ Unicast address → It identifies unique node on a network and usually refers to single sender or single receiver

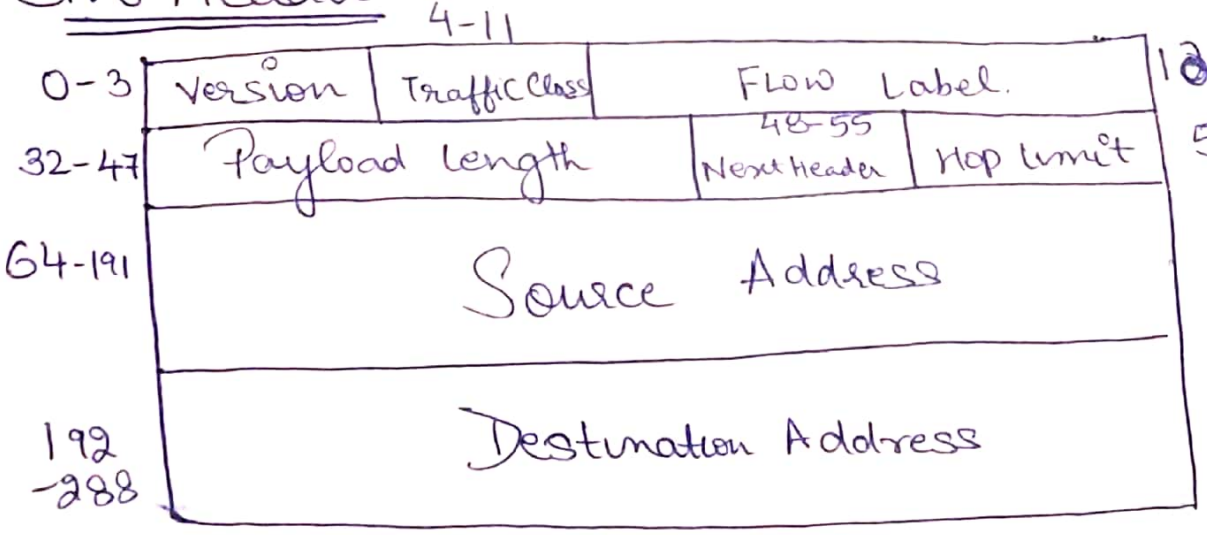
→ Multicast address → It represents group of IP devices and can only be used as destination of datagram.

→ Anycast address → It is assigned to set of interfaces that typically belong to different nodes

advantages:-

+ Reliability, Faster Speeds, Routing Efficiency.

IPV6 Header



IPv6	IPv4
→ The Space is 128 bits	→ The address space is 32 bits.
→ The length of header is 40 bytes	→ The length of header is 20 bytes
→ The number of header field is 8	→ The number of header field is 12.
→ Checksum field eliminated from header as error in IP header are not very crucial	→ Checksum field used to measure error in the header required
→ Internet Protocol Security with respect to network Security is mandatary	→ Internet Protocol Security with respect to network security is optional
→ Clients donot have to approach any such server as they are given permanent address.	→ Clients have approach Dynamic host Configuration Server whenever they connect to network.

Ques2) Discuss three points of Simple key management for internet protocols in details?

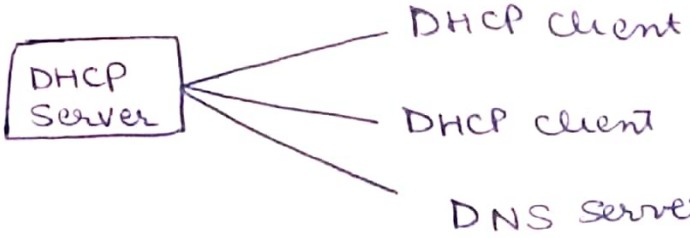
Answer2): Simple Key-Management for Internet Protocol or SKIP was a protocol developed in 1995.

- Skip (SKIP) is hybrid key distribution protocol
- It uses the knowledge of its own secret key and destination public component to calculate a unique key to be used only between them

- SKIP sits between the Network layer and data link layer. SKIP is transparent to all the users and all layers above it. The NETWORK layer where IP header is appended to data packet
- IP packet with SKIP message (MAC HEADER | IP Header | SKIP Message)
- In SKIP, the master key is not used directly, but it is hashed together with some other data to produce key.
- SKIP uses long term Diffie Hellman public keys

Ques 3) (a) What is DHCP?

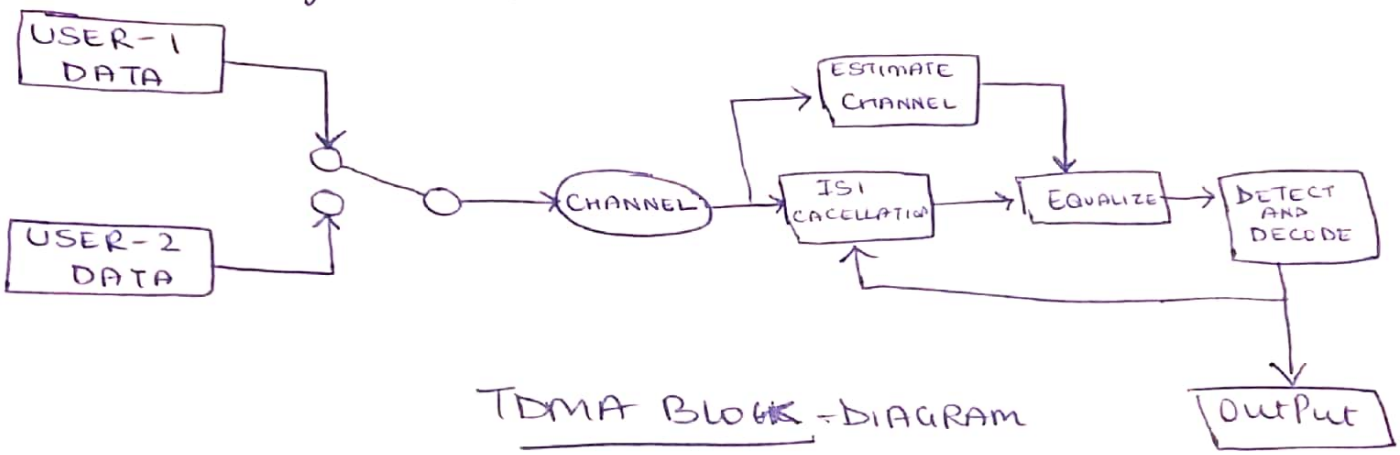
(DHCP) Dynamic Host Configuration protocol is a network management protocol used to automate process of configuring devices on IP networks thus allowing them to use network services such as DNS, & NTP and any communication based on UDP or TCP



(b) What is TDMA?

→ Time Division Multiple Access (TDMA) is a channel access method for shared medium network. It allows several users to share same frequency channel by dividing signal into different time slots.

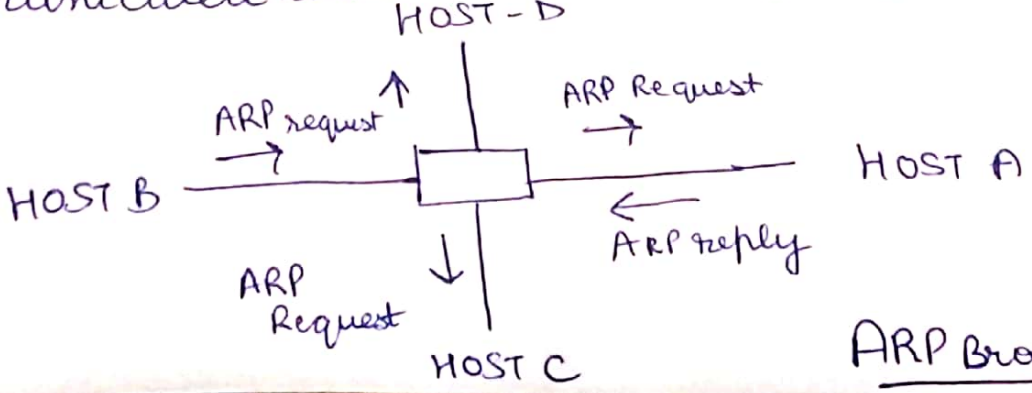
- It shares single carrier frequency with multiple users
- Slots can be assigned on demand in dynamic
- TDMA is used in digital 2G cellular System such as Global System for Mobile Communication (GSM)



TDMA BLOCK-DIAGRAM

(c) What is ARP?

→ Address Resolution Protocol (ARP) is a communication protocol used for discovering link layer address such as MAC address associated with given Internet layer address typically IPv4. The Address resolution protocol is request response protocol whose messages are encapsulated by link layer protocol. It is communicated within boundaries of single network.



ARP Broadcast