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Tutorial - 7

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Questions

- Q1.) What is the use of ARP? Explain ARP operation and packet format. (3.5)
- Q2.) Differentiate between BOOTP & DHCP. (3.5)
- Q3.) Draw and explain Datagram format for IPv6. (3)

Answers

A1.) ARP

- ~ ARP stands for address resolution protocol.
- ~ It is a communication protocol used for discovering the link layer address, such as a MAC address, associated with a given internet layer address.
- ~ Before any device sends data to another target device, it must determine the MAC address of that target given its IP address.
- ~ These IP-to-MAC address mappings are derived from an ARP cache maintained on each device.

- ~ To obtain this an ARP query packet is sent, broadcasted over the network.
- ~ The intended receiver, recognizes the target IP address and receives it - rest of the broadcast is discarded.
- ~ The received ^{packet} ~~target~~ - will have the following frame format:

Hardware Type		Protocol Type
Hardware Length	Protocol Length	Operation Request(1) Reply(2)
Sender's Hardware Address		
Sender's Network (IP) Address		
Target's Hardware Address		
Target's Protocol Address		

- ~ When this packet is being received the Operation = 1 & "Target's Hardware Address" field will be empty.
- ~ When the target sends back this packet the Operation = 2 and "Target's Hardware Address" field will be filled with the physical address of the target.

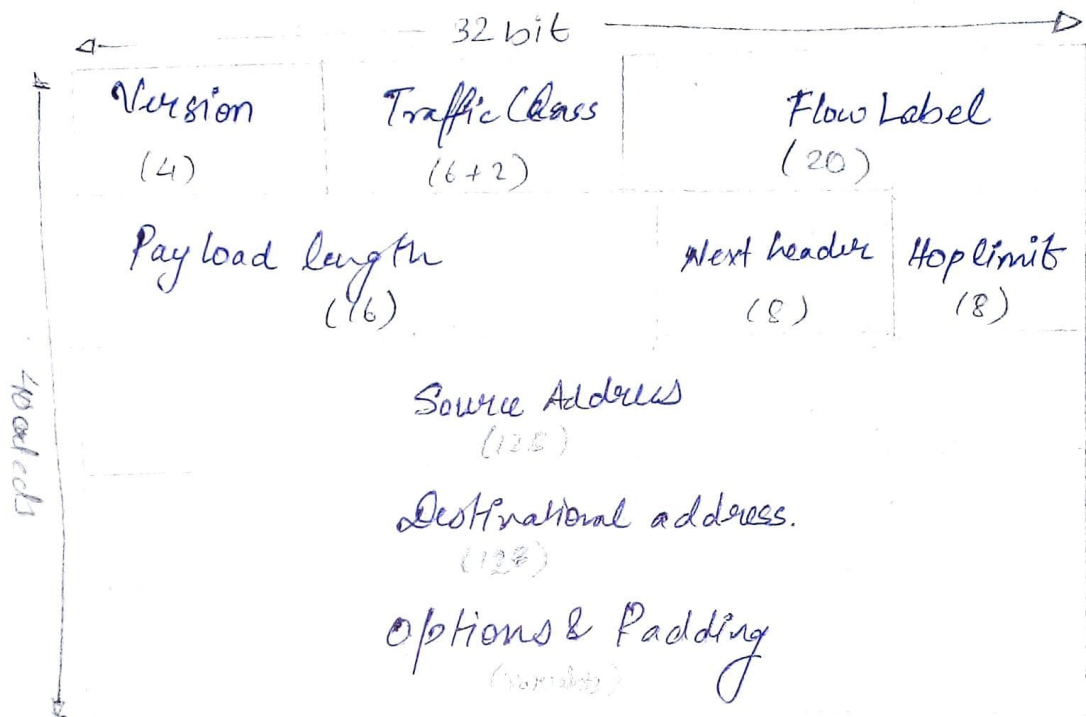
A2) Difference between BootP & DHCP.

<u>Basis</u>	<u>BootP</u>	<u>DHCP</u>
Definition	Bootstrap Protocol (BootP) is a client-server protocol designed to obtain the information such as IP-address, subnet-mask, router address from a diskless computer or a computer booted for the first time.	Dynamic Host Configuration Protocol is a network management protocol used on internet protocol networks where by DHCP server dynamically assigns an IP address and other network configuration parameters.
Configuration	Only supports manual configuration	Automatically obtains IP address.
Temporary IP addressing	Not provided	Provided for a limited amount of time.
Mobility	IP configuration & information access are not allowed.	Supports even mobile machines.
Error Occurrence	Manual configuration is prone to errors	Auto configuration is immune to errors.
Usage	Provides information to the diskless computer or workstation	It requires disk to store and forward the information.
Compatibility	Not compatible with DHCP	Interoperable with BootP clients.

A3.) Datagram format for IPv6

An IPv6 packet is the smallest message entity exchanged via the Internet Protocol across the IPv6 network.

The IPv6's fixed header has a packet size of 40 octets.



Version: The constant 6 (0110)

Traffic Class:

The 6 MSB bits hold differential services field used to classify packets.

The 2 LSB bits are used as priority values.

Source & Destination Address - of the packet.

Options - Additional space for error correction detection etc.