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~~AIML~~ Computer Networks
Assignment 7

Ans 1: Address Resolution Protocol:-

Address Resolution Protocol is a communication protocol used for discovering physical address associated with the network address.

Typically, ARP is a network layer to data link layer mapping process, which is used to discover MAC address for given Internet Protocol address.

In order to send the data to destination, having IP address is necessary but not sufficient, we also need physical address of destination machine. ARP is used ~~to~~ to get the physical address of ~~the~~ destination machine.

Before sending the IP packet, the MAC address of destination must be known. If not so, then ~~server~~ sender broadcasts the ARP-discovery ~~packets~~ requesting the MAC address of the ~~inte~~ intended destination.

Reverse Address Resolution Protocol:-

Reverse ARP is a networking protocol used by a client machine in a local area network to request its Internet address (IPv4) from the gateway-router's ARP table.
The network administrator creates a table in gateway router which is used to map the MAC address to corresponding IP address.

When a new machine is setup or any machine which don't have memory to store IP address, needs an IP address for its own use. So the machine sends RARP broadcast packet which contains its own MAC address in both sender and receiver hardware address field.

A special host configured inside the local area network, called the RARP-server is responsible to reply for these kind of broadcast packets.

Now, the RARP server attempt to find out entry in IP to MAC address mapping table.

Ans 2: Dynamic Host Configuration Protocol (DHCP) is an application layer protocol which is used to provide:-

1. Subnet Mask
2. Router Address
3. DNS Address
4. Vendor Class Identifier

DHCP is based on client server model and based on discovery, offer, request and ACK.

The advantages of using DHCP include:-

- Centralised management of IP addresses.
- Ease of adding new clients to network.
- Reuse of IP address reducing the total number of IP addresses that are required.
- Simple configuration of the IP address space on the DHCP server without needing to reconfigure each client.

The DHCP protocol gives the network administrator a method to configure the network from a centralised area.
With the help of DHCP, easy handling of new users and reuse of IP address can be achieved.

Ans 3. Since IP does not have an inbuilt mechanism for sending error and control messages. It depends on Internet Control Message Protocol (ICMP) to provide error control.

It is used for reporting errors and management queries. It is a supporting protocol and used by network devices like routers for sending the error messages and operations information.

Control Signals:-

- Source Quench Message
- Parameter Problem
- Time exceeded message
- Destination unreachable
- Redirection message

Ans 4. IGRP stands for Interior Gateway Routing Protocol.
It works on Bellman Ford Algorithm.
It is basically used for larger size organisation.
It is distance vector type.
It is internet protocol gateway.

It is intelligent routing protocol.
Its administrative distance is 100.
In IGRP, Internet Protocol is used.