expiries.

5.7 Dynamic Host Configuration Protocol

When a mobile node visits a foreign network then it gets a new IP address known as care-of address (COA) by agent discovery process and advertisement of the COAs by the foreign agent (Section 5.3.1). Also, a co-located COA is obtained by the dynamic host configuration protocol (DHCP). Let us assume that a mobile computer (laptop or other) visits another network (which has a separate domain name server identity on the network and functions as a subnet on the Internet). The computer gets a new IP address in this case too. The server provides a dynamic IP address, subnet mask, and ARP and RARP caches to enable the computer to transmit and receive the IP packets at the new IP address from the Internet via the subnet. The server (subnet) has its own IP address to provide connectivity to the Internet. Dynamic host configuration protocol (DHCP) is a protocol to dynamically provide new IP addresses and set subnet masks for the visiting computer so that it can use the server and subnet router at the place being visited.

Any software in an agent (e.g., a foreign agent visiting a mobile node) or device software for connecting to the network can have a software component called the

DHCP client. The DHCP client protocol communicates with a server. The steps in the DHCP protocol for dynamically configuring the IP address and other networks are as follows:

1. The DHCP client in an agent, device, or computer broadcasts a discover request known as DHCPDISCOVER directly or through a DHCP relay agent to the servers. A subnet may have a number of DHCP servers. For this reason, the request is broadcasted to several servers. (A DHCP server may be part of the operating system of the computer seeking connection to the network. The server has software for allocation of network addresses to the computer.)
2. Each server listening to the discover request finds the configuration, which can be offered to the client. Server(s) send(s) the configuration parameters, including an IP address not presently in use, at the subnet. The configuration parameters are in the DHCPOFFER for the offered configuration.
3. The DHCP client can reject the offer from a server or servers. When DHCP offers from all the servers are rejected, the client repeats the steps from step 1, else it proceeds to step 4.
4. The client replies to the servers through a DHCPREQUEST to each server. The option 'reject' is set in each reply to those DHCP servers to which the client reply is 'reject'. The option 'select' is set for those servers to which the client reply is 'select'.
5. The selected DHCP server creates and manages bindings. (A binding is a collection of configuration parameters, including at least one IP address, which is associated with and binds to the DHCP client.) DHCP server also sets a time interval during which the offered IP address will be valid for the DHCP client computer. The required interval can vary depending upon the likely Internet connection interval at a particular Internet-serving network. The binding may periodically provide new IP addresses.
6. The DHCP server confirms the binding through a message. It sends DHCPACK after creating the binding.
7. When the DHCP client computer leaves the subnet, it sends DHCPRELEASE message. In case the client does not send DHCPRELEASE within a specified time interval, the server frees the created binding.
8. The server and client also use the authentication protocols before considering the DHCPDISCOVER from a client and before accepting a DHCPOFFER, respectively.

The DHCP protocol guarantees that any assigned network address, at a given instant, is in use by either one DHCP client or none.