
DHCP - You use it everyday when you surf the web - but what is it?

DHCP (Dynamic Host Configuration Protocol) is an extension of BOOTP, the first standard for automatic booting in a TCP/IP environment. BOOTP was originally designed for diskless workstations, so it could actually start a system based on nothing more than some basic IP code in read-only memory. Basically what happens is:

- The client sends a request for information
- The server returns the client's IP address along with an optional location of a file to be downloaded
- The client downloads the software into memory and executes the software.

The software that the client downloads comes from a BOOTP server where an administrator has assigned IP addresses to system by manually creating a table that mapped client hardware types and hardware address combinations to IP addresses. This was a time consuming process that, because it *was* manual, also created an opportunity for human error and inefficiencies when changes to networks were required.

DHCP changed all of that. With DHCP, administrators merely identify a block of IP addresses that the DHCP server can allocate to LAN clients. On your home broadband router, you've probably already used the embedded DHCP server to assign IP addresses to the systems on your network as well as printers and other network-enabled devices. And, using DHCP, if you've unplugged a computer and moved it, or changed wireless card or even added a new system, you already know how DHCP's automation capabilities changed/added the system(s) and their subnet mask, router and Domain Name Systems (if needed).

DHCP supports three types of address allocation:

- Manual - a "permanent" address manually assigned to a client
- Automatic - an address is selected from an available pool and permanently assigned to the client
- Dynamic (most often used in dial environments) - IP address is assigned to a client for a limited amount of time - or until given up by the client.

Dynamic address allocation uses the concept of a "lease", where the server provides the address for a specific period of time. The client may renew the lease or let it expire - and expired addresses are reused - often by other clients.

DHCP is the method by which your system acquires the IP address it uses to communicate with your broadband router - and the Internet. Take some time over the next few days and check out how DHCP has been configured on your home router and see how this standard has made setting up your home network simple - and automatic!