**How I learnt about DHCP**

Problem: At work when I tried connecting to the internet I was able to connect to the outside web, sites like Google etc. but unable to connect to the internal office network.

My colleagues, Jared and Travis helped solve the issue and in the process taught me a bit about DHCP and DNS servers.

To find out why I couldn't connect to the internal network we first ran the *ipconfig /all*command on Windows command prompt. This showed the ip address and all other network related information for my personal computer.

To resolve this we first tried *ipconfig /flushdns* since we assumed the DNS servers had some bad data. But this didn't work.

We then saw that the DHCP service was connecting to Google's DNS server and some other DNS server. And since both these DNS servers couldn't resolve to the ip addresses of our internal office network resources, I was cut off from the office network.

So, we then fixed this problem by setting the DNS servers manually for the DHCP service for the network which our office uses.

On windows this is done through:

Control panel--> Network center-->Change Adapter settings-->Right click on the network you want to connect to--> Select Ip v4--> Select properties-->Enter the DNS servers manually.

The addresses of the correct DNS servers we obtained from another office computer.

So if you face this problem that is you can connect to websites but can't connect to your internal office network then your DNS servers are not set right. You'd then have to ask around to find the addresses of the correct DNS servers and then manually set the DNS servers.

Now, you usually don't have to bother about setting up DNS servers for your system because this is done by a service called [DHCP](http://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol) (Dynamic Host Configuration Protocol). This is a service which runs on some server and your computer always tries to find if there is a listening DHCP service from which it can acquire an ip address, an internet connection and addresses to DNS servers.

So your computer has a default port on which it keeps broadcasting for a listening DHCP service. At businesses or offices DHCP services are run on internal servers, at home DHCP services would be run your internet router/modem.

Once, your computer establishes a connection with a DHCP service, the DHCP service then passes the DNS server addresses and a dynamic ip to your computer.

On wireless routers, there's a NAT card which turns public ips to private ips. So, home or company networks take one or two public ips or ip addresses and the wireless cards convert the public ips into the appropriate private ips to connect to the correct computers or other networked device on a private network.

Private ip addresses usually start with 192.

I faced the same problem when I tried connecting using my Linux system. It was then that we figured out that the problem was due to the wired connection that I had started using. The wired socket was connecting to a different subnet and returning a different DHCP service which was passing different DNS server addresses.

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