

CS100: CPADS

Wired Network Configuration

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Network Terms / Configuration

- **MAC (Media Access Control) Address**

- Unique value that identifies a specific piece of network hardware
 - Some hardware will have multiple MAC addresses . . e.g. your laptop computers
- Represented by 6 hexadecimal pairs **8A:77:FF:4D:89:CB**
- Can be used for network access administration
 - YCP port registration
- Find yours with this command in Windows: **ipconfig /all**

Network Terms / Configuration (Cont.)

- **IP Address (IPv4)**

- Common address format used for computers on networks
- Typically represented by four decimal values between 0-255 each
. ### . ### . ### ==> 192.168.1.15
- Certain groups of IP address are designated for use on LANs ONLY (i.e. they cannot go out to the Internet)
 - e.g. 192.168.x.x (provides a total of 65,536 private addresses)

Network Terms / Configuration (Cont.)

- **DHCP (Dynamic Host Configuration Protocol) Servers**

- Used to dynamically assign IP addresses to machines on a LAN
 - No need for a user to manually assign an address to computer, the network will do it automatically
- Particularly useful for wireless networks where clients are always changing

Network Terms / Configuration (Cont.)

- **DNS (Domain Name System) Server**

- Converts server name/locations to an IP address
 - Would really be a pain in the neck if we had to remember the IP address of EVERY website that we visit
- Addresses can be associated with a domain name for use on the Internet
 - `www.ycp.edu ==> 166.78.40.19`

Network Terms / Configuration (Cont.)

- **Subnet mask (netmask)**

- Determines which machines can be seen on the LAN
- Utilizes a 'mask' to separate machines into different **subnets**

- 0 means anything matches

- 255 means only an identical value matches

- Example:

- Machines IP Address = 192.168.1.100

- Machines Netmask = 255.255.255.0

The machine will be able to communicate with any machines with IP address 192.168.1.*** where *** can be a value between 0-255

Useful Tools

- The **ping** command can see if a machine exists and/or is available at a specific address
 - Try the following from a Windows command prompt
 - `ping 166.78.40.19` or
`ping www.ycp.edu`
- The **nslookup** command can get the IP address of a machine from the domain name
 - Try the following from a Windows command prompt
 - `nslookup www.ycp.edu`