**DNS**

* Name resolution
  + In the early of TCP/OP, users had to remember the IP address of every computer on the network
    - Obviously this system could not be sustained.
* Host Name System
  + Simple name resolution technique developed in the history of TCP/IP
  + Each computer is assigned an alphanumeric name called a hostname.
  + This system worked well (still does) on small local networks
  + It becomes inefficient on larger networks
  + The host-to-address associations have to reside in a single file, and the search efficiency of that file diminishes as the files expands
  + In the ARPAnet days, a single master file called hosts.txt maintained a list of name-to-address associations, and local administrators had to continually update hosts.txt to stay current.
* DNS
  + Name resolution method used on the Internet and is the source of common Internet names.
  + DNS divides the namespace into hierarchical entities called domains
  + The domain name can be included with the hostname in what is called fully qualified domain name
  + Instead of host files kept on individual computers, DNS places name resolution data on one or more server
  + The DNS server provide name resolution services for the network
  + If the computer on the network encounters a hostname where it is looking for an IP address, it asks the server for the IP address associated with the host name.
  + If the DNS server has the address, it sends back that address.
  + The computer then invisibly substitutes the IP.
* DNS namespace
  + Multi-tiered arrangement of domains
  + At the top of the DNS tree is a single node known as the root.
  + Beneath the root is a group of domains known as top level domains (TLD)
* Restrictions on Hostnames
  + Hierarchy goes right to left with a maximum of 127 levels
  + Each level can have up to 63 characters
  + Total name including delimiting dotes cannot exceed 255 characters
* Authoritative name server is the one sending an authoritative response
  + It provides original and definitive answers to DNS queries
* Recursive Domain Name Server
  + When your browser sends out a DNS query – assuming the browser doesn’t already have the mapping stores in its cache = it is sent to a recursive DNS server
  + Recursive servers are part of the DNS that provides the required information to web clients