CSE 434

Architectural Issues

What is meant by an Architecture & why is it important?

- putting layers in design of the assembly of component for some purpose

Switching Pkt or Ckt layered design/assembly of components for resilience for purpose.
Replication for at least "hot" sites

**DNS Architecture**

13 Root Servers

- Root DNS Servers (full replication)
  - com DNS Servers
  - edu DNS Server
  - asu.edu DNS Server

Each of the root servers itself is implemented in a distributed manner.

- www.asu.edu
- hotmail.com

Yahoo.com DNS Server

Local DNS

authoritative authoritative

dns.asu.edu
DNS

hostnames $\rightarrow$ IP addresses.
32 bit
dot notation
e.g. $169.245.13.5$
bytes.
0-255

Directory maintains these mappings:

```
query (hostname) $\rightarrow$ DNS $\rightarrow$ 400 million entries
\rightarrow$ host 400 million
```
Centralized DNS is a bad idea.
- Poor scalability

Distributed system which is scalable to millions of hosts.

```
hash(name) -> server id.
split DNS database and assign it to various nodes.
```
Example: cc.poly.edu

To speed up future processing, the intermediate DNS servers cache the mappings.
DNS is distributed, hierarchical, replicated, and caching-enabled. It helps in distributing workload and improving scalability with no single point of failure. DNS is useful in file sharing, peer-to-peer, and FTP, SMTP, HTTP. Cookie and socket are concepts related to HTTP.
push  
SMTP = 
versus

pull 
HTTP

out of band & inband signalling.

Next class Ch. 3.