CprE 530

Lecture 3

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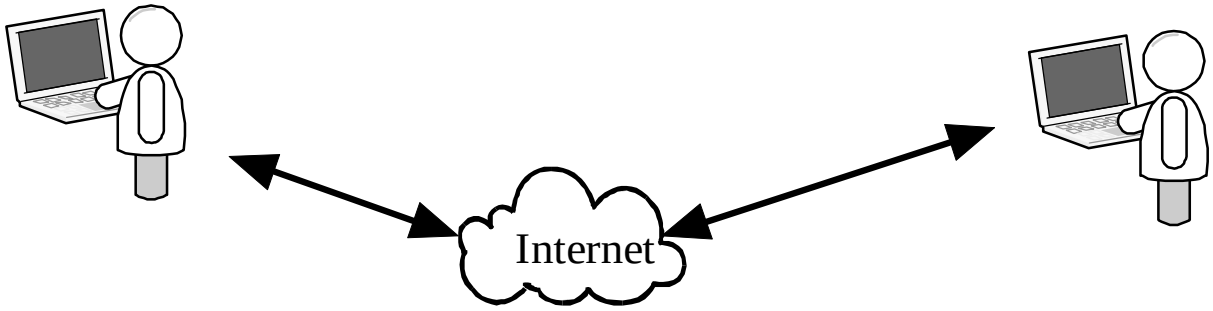
Topics

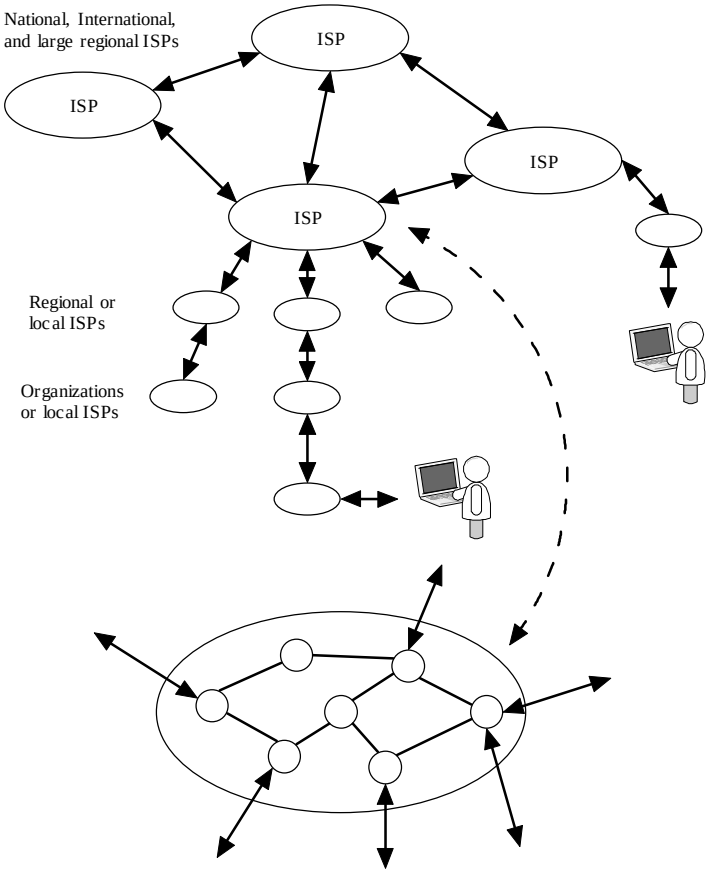
- The Internet
- Addressing

The Internet

- User's View



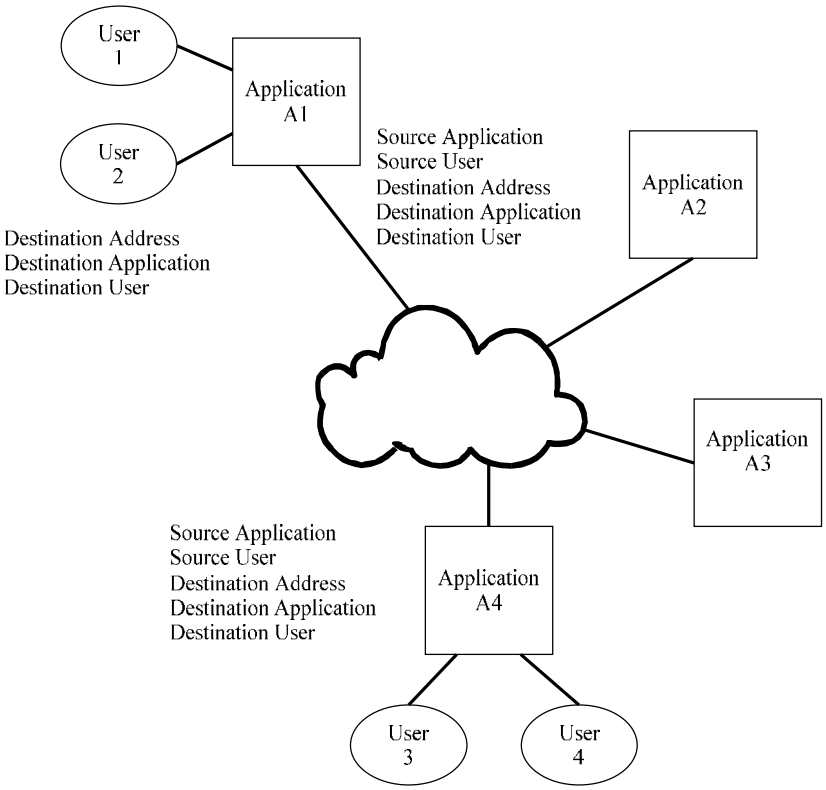
The Internet Hierarchy



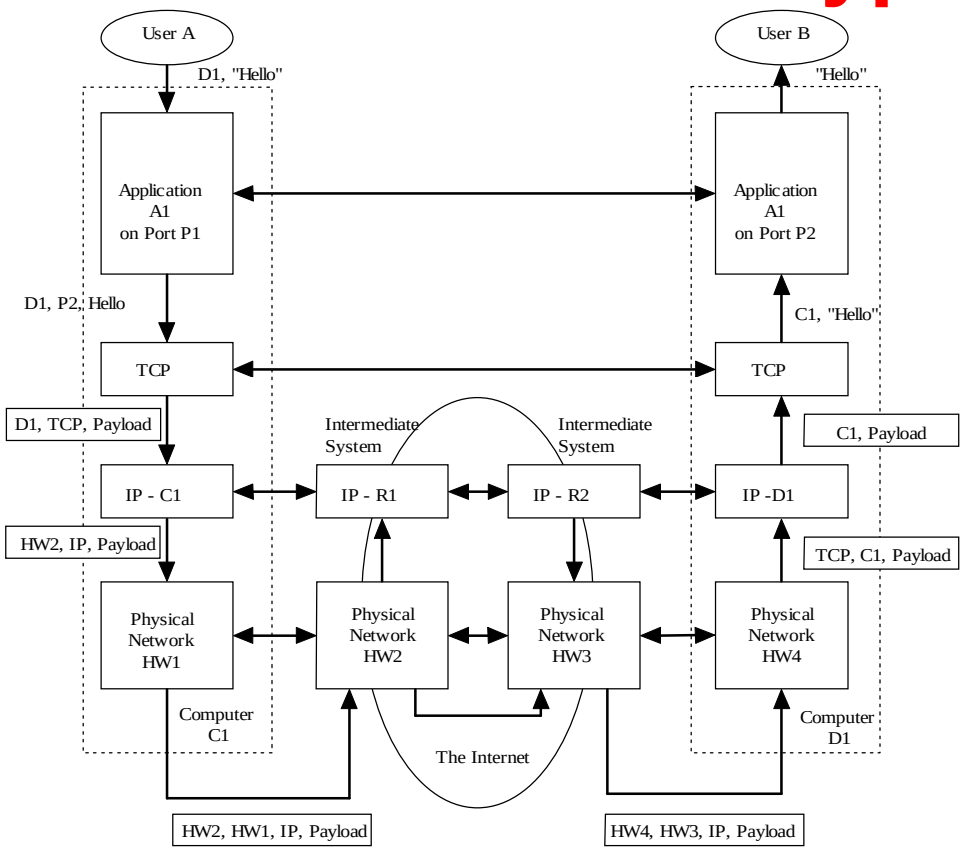
Internet Addressing

- Different address types
- Hardware address spoofing
- IP address Spoofing
- IP address Space

Application Addressing



Different Address types



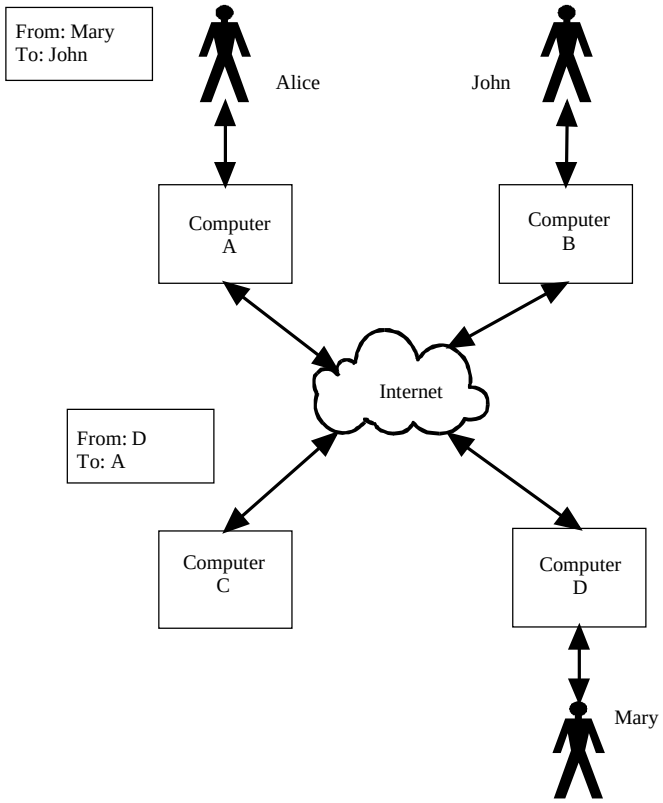
Address spoofing

- Who can generate the address?
- Spoofing is the ability to change the address
- Who can “see” (sniff) the traffic?

IP address Spoofing and Sniffing

Message will get to John

Return message will go back to Alice



IP Address Space

- In Version 4 the IP address is 32 Bits
- Total IP address space is 4,294,967,296

IP addresses

- The IP address is written as a four-tuple where each tuple is in decimal and are separated by a "." (called a dot). When talking about an address you pronounce the word dot. So 129.186.5.102 is pronounced 129 dot 186 dot 5 dot 102

IP Addressing

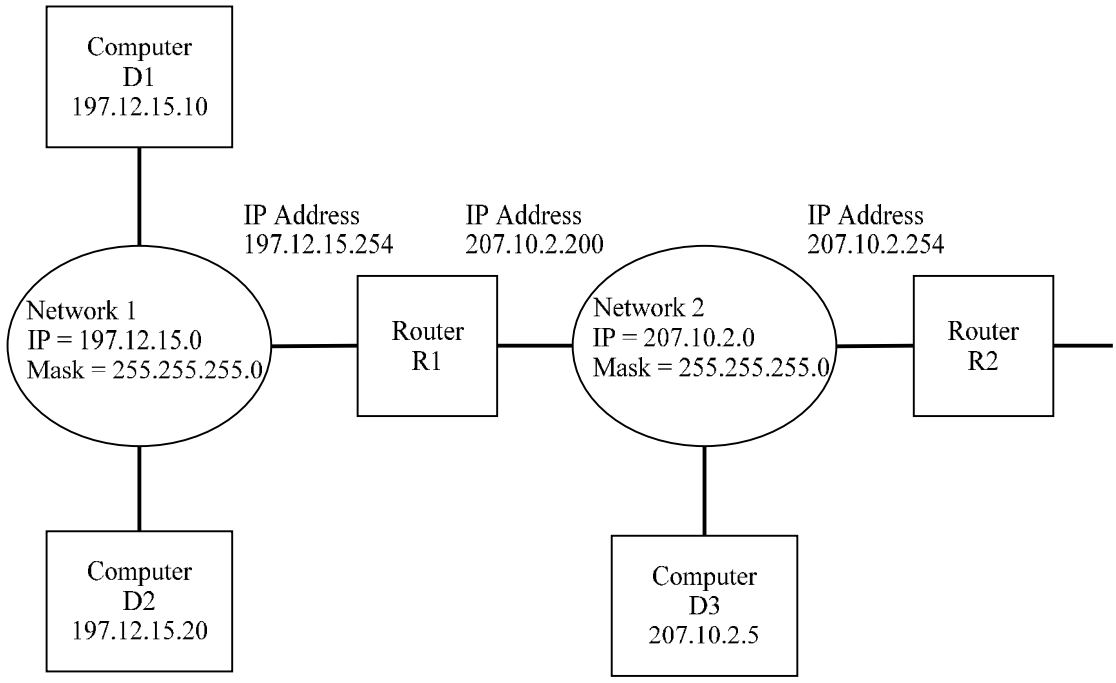


Figure 3.5 Networks in the Internet

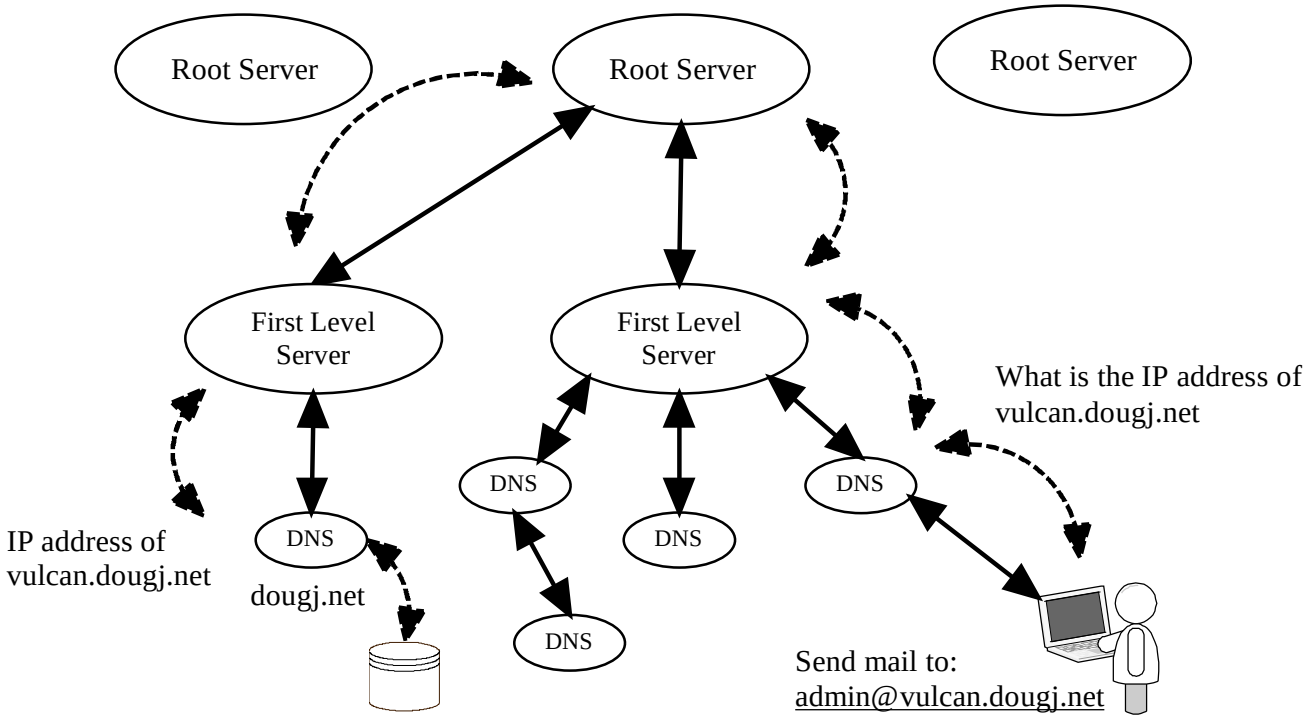
Machine names

- The format for the machine name is:
  - machine.domain Where:
    - machine is unique to the domain or subdomain.
    - and domain is a single domain or a series of subdomains.

Domain Name Conversion

- Now lets look at how we can convert a machine name into an IP address.
- There are two ways that this conversion can take place.
  - The first is to use a table on each host which maintains the mapping between names and IP addresses. This method required very large tables and made it hard to update.
  - The second, and preferred, method is to use a nameserver. The nameserver is actually a set of nameservers each having authority over different domains and subdomains.

DNS Model


Root Server
Root Server
Root Server
First Level Server
First Level Server
What is the IP address of vulcan.dougj.net
DNS
DNS
DNS
DNS
DNS
DNS
IP address of vulcan.dougj.net
dougj.net
Send mail to: admin@vulcan.dougj.net