

LBSC 690: Week 2
FTP, "Hello World!" HTML



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Goals

- By the end of this class, you will...
 - Have a better understanding of networking
 - Have your very own website

Review Questions

- What is the processor (CPU)? Memory? Bus?
- What does caching do?
- What does "packet routing" mean?

In the Beginning...

- What happens when you boot up a computer?
- What's BIOS?
- What's firmware?
- What's an operating system?

Paths

- How do you specify the location of files on your hard drive?
- The folder metaphor
 - Hierarchically nested directories
 - Absolute vs. relative paths

/afs/wam.umd.edu/home/wam/jl/jimmylin/home
C:\Documents and Settings\Jimmy Lin\My Documents

../pub
../Desktop

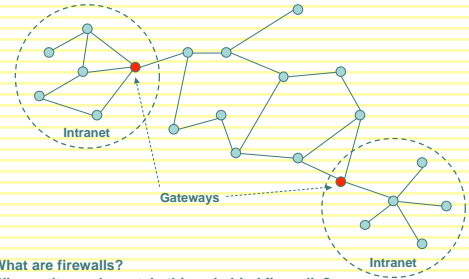
Internet ≠ Web

- Internet = collection of global networks
- Web = particular way of viewing information on the Internet
 - Uses the HTTP protocol
- Other ways of using the Internet
 - Usenet
 - FTP
 - email (SMTP, POP, IMAP, etc.)
 - Internet Relay Chat

Client/Server Concepts

- What is a client? Server?
- What are file servers? What are Web servers?
- Are servers public or private?
- What are ports and protocols?
- What is FTP? FTP server?
- Where does a file go when you FTP it?
- What is P2P?

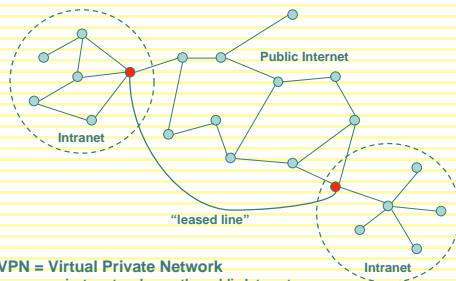
Intranets



What are firewalls?
Why can't you do certain things behind firewalls?

VPNs

Problem: how do you securely connect separate networks?



VPN = Virtual Private Network
a secure private network over the public Internet

Foundations of the Web

- TCP/IP
- DNS
- HTTP

IP Address

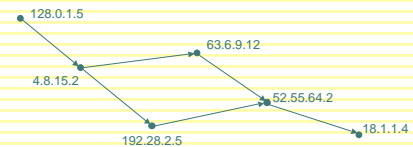
- Every computer on the Internet is identified by a address
- 32 bit number, divided into four "octets"

128.8.11.33
216.239.39.99
199.181.132.250

Example: go in your browser and type "http://66.249.93.99/"

Are there enough IP addresses to go around?
What is the difference between static and dynamic IP?

Packet Routing (TCP/IP)



(Much simplified) Routing table for 4.8.15.2

Destination	Next Hop
52.55.*.*	63.6.9.12
18.1.*.*	192.28.2.5/63.6.9.12
4.*.*.*	225.2.55.1
...	

Domain Name Service (DNS)

- "Domain names" improve usability
 - Easier to remember than numeric IP addresses
 - DNS coverts between names and numbers
 - Written like a postal address: specific-to-general
- Each name server knows one level of names
 - "Top level" name server knows .edu, .com, .mil, ...
 - .edu name server knows umd, umbc, stanford, ...
 - .umd.edu name server knows wam, glue, tclass, ...
 - .wam.umd.edu name server knows rac1, rac2, ...

What are country domains? Why don't sites in the US need one?

Demo

- Play with various utilities at <http://www.dnsstuff.com/>

HyperText Transfer Protocol

○ Send request

```
GET /path/file.html HTTP/1.0
From: someuser@jmarshall.com
User-Agent: HTTPTool/1.0
```

○ Server response

```
HTTP/1.0 200 OK
Date: Fri, 31 Dec 1999 23:59:59 GMT
Content-Type: text/html
Content-Length: 1354
<html><body><h1>Happy New Millennium!</h1> ...
</body> </html>
```

Behind the scenes...

○ Tell me what happens:

- From the moment you click on "check messages" to the moment you start reading your email
- From the moment you click "send" to the moment the other party receives the email
- From the moment you type a URL and hit "enter" to the moment you see the Web page

Why Code HTML by Hand?

- The only way to learn is by doing
- WYSIWYG editors...
 - Often generate unreadable code
 - Ties you down to that particular editor
 - Cannot help you connect to backend databases
- Hand coding HTML allows you to have finer-grained control
- HTML is merely demonstrative of other important concepts:
 - Structured documents
 - Metadata

Today's Tutorial

- Your first HTML page
- Uploading your page to the Web server via FTP

"Hello World" HTML

```
<html>
<head>
<title>Hello World!</title>
</head>
<body>
<p>Hello world! This is my first webpage!</p>
</body>
</html>
```

This is the header

This is the actual content of the HTML document

Uploading Your Page

- o Connect to "wam.umd.edu"
- o Change directory to "/pub/USERID"
- o Upload files

Tips

- o Edit files on your own machine, upload when you're happy
- o Save early, save often, just save!
- o Reload browser