

COMP 2406 Notes

Slides 2

Client Server

- This is where multiple servers will share a database, the client successive request is not necessary handled by the same server, this would mean when the computer / tablet is requesting the information, we are getting this from multiple servers but sharing the same database, ie more than one server 1 database. This same example can be done in the same case if we only have 1 server the process is the same

Request-Respond Model

- This is when the client makes a request and the server makes provides the responses as noted HTTP based on stateless provolone the server does not remember the client, nor what they wanted in the past, all the information is required to service the request when it is send in. Meaning the computer connects to the internet and then the server and not the database,

True Asynchronous Server

- This is when the server provides the data that is not a response to the request, this is typical done with websockets. Kinda irrelevant; Websockets is a computer communications protocol providing full-duplex communication channels over a tingle TCP connection. Basically, this is when the computer will go through different channels like the serve and the database to get the necessary information.

Polling based Asynchronous page updates

- This is when the client periodically request an update this can be based on time or mouse event but the user is not direct aware of the request. A great example of this is when you do google maps from the web pages. The page appears but you did not request it the information was pushed.

Client to client interaction

- This is when the client appears to be in direct communication for example a char service but can be done though a co-ordiating server or a client as server code. So something similar to Facebook chat and such. Live communication between two different sources

Internet Concepts and Components

What is the internet?

- This is a world wide network of dissimilar computers and computer networks
- This is at the lowest level since 1982 and all connections where using TCP/IP
- TCP/IP hides the differences about devices that are connected to the internet.

Network Layers

- Application Layer -> HTTP, FTP, Telnet
- Transport Layer -> TCP, UDP
- Internetwork Layer -> IP
- Network Interface Layer -> Ethernet, PPP
- Physical Layer -> Bits and Bytes

Router To Router Communication

- The magic of router to router communication is that they have Internet network layer, this means that the IP provides routing services on top of most network level protocols
- This also works that inter Network routing base on IP dresses similar networks is unreliable and delivery is intermediate order

IP Adresses

- Inter-networking protocol (IP) dominates internetwork layers
- Every packet has to and from dress
- IP addresses are 4 byte numbers - based on current IPv4 standards (1984)
- Assigned by IANA (Internet Assigned Numbers Authority)
- Usually separated by decimals for example, 134.117.29.41
 - We are vastly running out of IP Adresses
 - Newer IPv6 standard promises much bigger address space

Application to Application

- This has an application layer and a transport layer
- Application Layer: web browsers and web serves use HTTP to communicate, these applications request TCP sockets to ensure reliable communication
- Transport Layer: TCP proves reliable transport of application data over the internet UDP provides a more streamlined, but unreliable transport service

A brief intro to the internet (Continued)

- Domain Names: This is your website name
- Last Domain: This is where you have .com, .ca, .xyz this is the idea
- DNS servers - these will convert fully qualified domain names to IP addresses, this is similar to what a phonebook or maps people to do phone numbers, examples of this can include what we do in revers lookup
- Example of DNS translation is <http://people.scs.carleton.ca/~ldnel/2405winter2011> could also be converted to <http://134.117.29.41/~ldnel/2405winter2011>

Web Servers

- Browser-server connection is now maintained through more than one request-response cycle
- All communications between browsers
 - Servers use Hypertext transfer protocol (HTTP)
- Web servers monitor a communications port on the host
 - Accepting HTTP messages when they appear
- Browser and Server can now establish a "data pipe" and transfer data asynchronously.
- Provide responses to browser requests, either to deliver existing documents or dynamically build documents or data

URL

- Uniform Resource Locator
- User Request Intel
- Traditionally URL's use a located a source on a serve path however this is no longer true
 - What is a resource?
 - These are anything that is accessible via the web
 - Static resources don't change from request to request (These include HTML documents or images)
 - Dynamic resources may change based on the changing data source, input, time of day or be constructed at time or request\

Ports

- Every device has ports
- Certain ports (0-1024) are reserved for standard services
 - 20: File transfer protocol (FTP)
 - 22: Secure Shell (SSH)
 - 23: Telnet
 - 25: Simple mail transfer protocol (SMTP)
 - 80: Hypertext transfer protocol (HTTP)

URL and Ports

- A service must be contacted on its ports
- Even when standard services can be removed
 - HTTP on 8080 instead of 80

Multipurpose Internet Mail

- This was originally developed for email
- However it was used to specify the browser the form of the contents in a file returned by the user this would mean how its attached by the server to the beginning of the document
- There are some specifications
 - Form: type/subtype
 - Example: text/plain, text/html, image/gif, image/jpeg
- Server infers type from the request file names, this can be cured a suffix .html, implies text/html and protocol
- This means that the browser gets the type explicitly from the server's response message