Forest H

Week 2 report

Nodejs

Template strings contained in ECMAScript can be used in nodejs, ${} adds placeholder for an arg, because the code is executed outside a browser you can find system information, work with files, work with network, and build a web server. Need to require the fs module, use a synch or asynch method contained in the module, using asynchronous methods is preferred. Events are raised when something interacts with the code, ex a port being used. Events involve listening, raising the event, and perhaps some response, or used as a call to access information. Got localhost and port listening working.

Udacity

Some problems with modern internet, running out of addresses, only have 2^32 addresses. Ow dynamic ranges have led to some bad congestion control. BGP routing has lack of security thus routing isn’t well configured/developed. Security is a concern and denial of service attacks are hard to block as data is very easy to send even to those not wanting to receive it. Packet switching contains information for forwarding traffic in the destination address of the packet, best effort service also used. Statistical multiplexing allows never getting a “busy” signal unlike phones, data shared. IP used as narrow waist interconnection, expands on knowledge from last time concerning layers of internet, app layer, transport layer, etc. from last time. Fate sharing is a means of withstanding complex failure by preventing some data loss in the event of a physical failure, like a router failing. End to end principle states for two communicating processes reliability obtained from that cant be expected to perfectly align with the reliability requirements of the processes communicating, it can be violated, NAT, VPN, and TCP splitting all violate it. NAT, home given 1 ip address, but devices on home network are on a private IP, public internet only sees the 1 public address, NAT translates the 1 IP address data flow out and in to work for each device and communicated with the public internet. This is done with ports and destination addresses. The 1 IP is also called the gateway address. LAN/Mac address is the physical address of a device, when two hosts connect one often has the IP or DNS but needs to learn the mac address to send a datagram, ARP (address resolution protocol) allows this. It builds an ARP table so that repeated queries aren’t needed, a host can simply reference its table(the connection between two hosts is defined by an ethernet connection in the lecture).

Switches vs routers

Auto configuring not restricted to a spanning tree

Forwarding is fast

High network load via broadcast

Buffer sizing often viewed as 2T\*C T as in time and C as in capacity of bottleneck, represents the outstanding data that could be on the path between source and destination as any time. This is often used but can build queuing delay and take a lot of ram, commonly used but not a hard rule as it works better for single flow. If flows are desynced much less buffering is needed.

No works assigned just some reading and a quiz

### **[The Design Philosophy of the DARPA Internet Protocols](http://ccr.sigcomm.org/archive/1995/jan95/ccr-9501-clark.pdf)**

**End-to-end arguments in system design**

as assigned reading