Cheatography

Computer Network Cheat Sheet

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Introduction

Internet: interconnection of networks - Interrconnected ISPs

Communication links:fiber,copper,radio...

Trans rate R=bandwidth[bits/s]-=capacity

Hosts=end systems: break app data into packets of length L bits, transmit packet into access network at transmission rate R

Packet trans delay = time to transmit L-bit packet into link = **L**(bits)/**R**(bits/s)

Protocols: Rules for data communication includes Syntax, Semantics(meaning of each section of bits), Timing

Internet standards define protocols: developed by IETF(Internet Engineering Task Force), IETF standards documents are called: RFCs(Request for comments);

Circuit Switching: dedicated circuit for every connection. FDM vs TDM(Freq/time Division Multiplexing)

Packet Switching: break msgs to smaller chunks/packets. Store--and-forward:entire packet must arrive at router before sending. **+** It allows more users,good for bursty data,resource sharing, no call setup, but excessive congestion possible: packet delay&loss

Delay, Loss and Throughput

Delay when arrival rate > output link capacity; **Loss** when no free buffers

d(nodal)=d(proc)+d(queue)+d(trans)+d(prop)

d(proc)=nodal processing:check bit errors&determine output link, typically < msec

d(queue):time waiting to be transmitted . a:average packet arrival rate. Queuing delay larger when traffic intensity La/R goes to 1

d(trans) = L/R; d(propagation) = length of physical link/prop speed(2 x 10^8)

End-to-End Delay (PSw) = Time to deliver all for hop + 1 packet for each hop...

End-to-End Delay (CSw) = Call setup time + Trans time + Prop time

Throughput: rate at which bits transferred btw sender and receiver (bottleneck)

Internet protocol stack

application	no of bytes	FTP,SMTP,HTTP
transport	identify apps	TCP, UDP
network	identify end host	IP, Routing
data link	identify next hop router	Ethernet, 802.11
physical	identify group of bits	Wire