Nov 25 2008

Review for Test 2

- MAC
  - what does MAC = ideal
  - why
  - scaling properties
    - distance
    - rate
  - # users

- Deterministic
  - why called OMU
  - P0 P1 P2...
- Token ring "Token in notes"
- Token bus
- FDDI
- Max Token holding time

+ Random Access
  + Collisions
  + Back off
  - Pure ALOHA
    \[ S_{\text{max}} = 1.6 \]
  - Slotted ALOHA
    \[ S_{\text{max}} = 3.6/2 \]
  - CSMA
    \[ A = \frac{1}{1 + C} \]

\[ C = 10 \text{ms} \]
\[ \text{in } < 180 \text{ms} \]
A \uparrow \text{ Source }~

* C0
* p - persistent
* l - persistent
* non - persistent

- Collision Free
- Request / Grant MAC process
- IEEE 802.11
- Time structure
- Some of min.
  - map packet
  - Size in Instut

- Trade - off Random waiting & Retransmission protocols
- DSL
- Power line

- Cable modem
  - headend
  - CMTS
  - UP & DOWN Stream
  - Rode Randon Access
  - BOC OSI

- Ethernet
  - Hub (bridge)
  - Switch
  - Raster
  - Layer X switching

- Network elements
  - Repeteur

- DSL
- 802.16
- 802.11 (packed Radio)

- Issues with wireless
  - Interference
  - Noise

- Hidden Terminal Problem
  - RTS/CTS

- Adaptive modulation
  - Coding

- Sat comms
  - LEO
  - GEO
  - MEO
DLC

+ Function (build frame structure)
+ Fragment
+ Flag 0111110
+ Bit stuffing

+ Stop & Wait
+ Sliding Window \rightarrow Send N packets & wait for Ack

- Go - Back - N
- Selective Repeat

- Operations
  - n 1.5 bytes \( N = 2^n - 1 \)
  - timeout
What to Retx

- piggyback ack
- Ack timer
- NAK
- Re-ark

-formula

\[ R_{eff} = \frac{\# \text{bit}}{\text{in T sec}} \]

\[ J = \frac{R_{cost}}{R} \]

- stop & wait
  \[ J = 1 + \frac{2R}{np} \]

- sliding window
$2^n - 1 \geq \frac{25R}{nf}$

If large window:

$n > \frac{25R}{nf}$

If small window:

$n < \frac{25R}{nf}$

Add:

$N = \frac{1}{L} \times \frac{25R}{nf}$

(Change N control Reff)
+ MDLC

+ CBB

+ Open loop control

Drop priority

\(D = 1\) Open

Drop if congestion

* Tolerates
  * Controls above rate
  * Controls more burst size

* Frame Delay
  * CIR
  * \(D \geq 6\) bit
  * Bc
  * Bc
Net & Transport

- IP
  - connectionless
  - IP address: 82565
    - x.x.x.x
  - Subnetting
  - Classful address
  - CIDR
    - /X
    - 127.36.5.170/25
- DNS
- ARP
- ICMP
- Tunneling
- IP forwarding
- IB routing ("short" path)
  - "Direct"
  - "Learn topology"
* Shared path Alg

- AS
  - IGP
    - RIS
    - OSPF
  - EGP
  - BGP

\[ \text{Control} \rightarrow \text{control} \]

- MPLS \rightarrow \text{UC “like”}

- Attributes: IPv6 \rightarrow 128 bit address

- LSR, LDP, FEC
multistandard Cable Switching

129. 236. 5. 2 / 24 (class C)

110 AND 211

TCP [end-to-end]
- connection-oriented
- port / socket
- well known ports
- W in bytes
- Flow control
- Adaptive congestion control
  First data transfer
  Slow start
  Congestion avoidance
  Time out
8. F 150 L MN 100 dwt./net

a) 150 x 100 = 15,000

Sub net

Class B - 16 hojet

\[
\begin{array}{c}
0.8 \\
9 \\
7
\end{array}
\]

b) CIOA /17

17 + 15 = 32

Net = 8

204 = 7