

CSI 470 - Computer Networks - Exam III Review sheet

318: Terms: Routing, Forwarding, Forwarding Table, Interface

321: Service Models,

- delivery guarantee
- delivery guarantee w/ bounded delay
- in-order packet delivery
- guaranteed minimal bandwidth
- guaranteed maximum jitter
- security services
- "best-effort" service

322: ATM network architecture (CBR and ABR)

323: Virtual-Circuit Networks vs Datagram Networks

323: Parallels of network connection service

- and transport-layer connection-oriented services

324: Virtual Circuits

- each connection establishes a defined path through routers
- set-up and teardown affects all forwarding tables from route

328: Datagram network

- prefix matching
- longest prefix matching rule

330: Routers

- input port, switch fabric, routing processor, output port
- terms: line speed, queueing, line termination, interface
- lookups: trees, CAMs, caches
- switching: memory, bus, interconnection network (crossbar)
- queueing, packet loss, switching fabric speed, packet scheduler, AQM, RED, drop-tail
- 341 - HOL blocking

343: The Internet Protocol (IP)

- header information, version, header length, service type, datagram length in bytes (16 bits), 16 bit ID, flags, 13 bit fragmentation offset, TTL, Upper-layer protocol, checksum, 32 bit source IP, 32 bit dest IP, options, data
- fragmentation (347), MTU, ID, offset, Flag = 1 for first frags, 0 for last frag
  
- 348 - IPv4 Addressing - dotted-decimal notation
- subnet, subnet mask, subnet mask notation (/# notation)
- CIDR, blocks of addresses, subnet math
  
- static vs dynamic IP addressing
- 357 - DHCP, server discovery, offer message, request, ACK
  
- 359 - Network Address Translation (NAT) - private addresses
  - NAT translation table - port #s and IP addresses
  - purists argue against port #s to identify hosts
  - purists argue against routers processing past layer 3
  - purists argue that NAT violates end-to-end argument
  - generally, NAT interrupts "servers"

374: Routing Algorithms

- terms: default router, first-hop router, neighbor, path, least-cost path
- global routing algorithm (LS algorithm)
- decentralized routing algorithm (DV algorithm)
- static vs dynamic routing algorithms
- load-sensitive vs. load-insensitive algorithms
- 377 - LS algorithm
- 381 - DV algorithm, Bellman-Ford equation, poisoned reverse

390: Autonomous Systems, gateway routers, AS routing protocols

- 394 - RIP - hops - DV
- 398 - OSPF - LS - security, multiple same-cost paths, single AS hierarchy support

