

Name: \_\_\_\_\_

## This week's readings

- [1] Butler W. Lampson. Hints for computer system design. *ACM Operating Systems Review*, 15(5):33–48, October 1983. URL <http://research.microsoft.com/~lampson/33-hints/Acrobat.pdf>.
  - [2] Christopher A. Kent and Jeffrey C. Mogul. Fragmentation considered harmful. In *Proceedings of the ACM SIGCOMM Conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*, pages 390–401. Stowe, VT, August 1987. URL <http://ftp.digital.com/pub/Digital/WRL/research-reports/WRL-TR-87.3.pdf>.
  - [3] David R. Boggs, Jeffrey C. Mogul, and Christopher A. Kent. Measured capacity of an ethernet: myths and reality. In *Proceedings of the ACM SIGCOMM Symposium on Communications Architectures and Protocols*, pages 222–234. Stanford, CA, August 1988. URL <http://www.hpl.hp.com/techreports/Compaq-DEC/WRL-88-4.pdf>.
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1. Summarize the Tenex password hack.

2. Many protocol implementations have a “fast path,” used most of the time, and a “slow path” that handles exceptional packets. Which of Lampson’s rules prescribes this implementation approach?

3. Why have a network with a small limit to the size of packets?
  
4. Why have a network with a large limit on the size of packets?
  
5. Is fragmentation on a local subnet okay? (That is, sending an NFS block as an IP packet of size 8K on an ethernet with MTU of 1500 bytes.) Why or why not?
  
6. Run the command `arp -a` on any unix machine (the junkfood cluster works, others should too). This shows the *ARP table*, which is a table mapping IP addresses to ethernet MAC addresses. When is this table used? When is this table updated?

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Vocabulary (some of this may be covered in class)

- advertised window
- ARP table
- bridge
- closed window
- demultiplexing
- Ethernet
- flow control
- forwarding database (in a switch/bridge)
- fragmentation
- initial sequence number (ISN)
- multiplexing
- Nagle's algorithm
- optimize the common case
- protocol state machine
- reassembly
- switched ethernet
- SYN cookies
- TCP (expand and define)
- TCP three-way handshake
- window probes