Name: _____

This week's readings

[1] Brian E. Carpenter, editor. Architectural principles of the Internet. Internet Engineering Task Force Request for Comments RFC-1958, June 1996. URL http://www.ietf.org/rfc/rfc1958.txt.

[2] Jerome H. Saltzer, David P. Reed, and David D. Clark. End-to-end arguments in system design. *ACM Transactions on Computer Systems*, 2(4):277–288, November 1984. URL http://web.mit.edu/Saltzer/www/publications/endtoend/endtoend.pdf.

[3] David D. Clark. The design philosophy of the DARPA internet protocols. In *Proceedings of the ACM SIGCOMM Symposium on Communications Architectures and Protocols*, pages 106–104. Stanford, CA, August 1988. URL http://nms.lcs.mit.edu/6829-papers/darpa-internet.pdf.

[4] Scott Bradner. Key words for use in RFCs to indicate requirement levels. Internet Engineering Task Force Request for Comments RFC-2119, March 1997. URL http://www.ietf.org/rfc/rfc2119.txt.

[5] Scott Bradner. The Internet standards process – revision 3. Internet Engineering Task Force Request for Comments RFC-2026, October 1996. URL http://www.ietf.org/rfc/rfc2026.txt.

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1. State the "End-to-end argument."

2. List and justify three design goals of the Internet, preferably the most important goals.

3. What does "best-effort" mean?
4. What does "fate-sharing" mean?
5. What's wrong with including patented technology in standards? Is it ever okay?
6. Relate the circuit switching vs. packet switching debate to "end to end." (This style of question—relate x to end-to-end—is common, and will be repeated for other things we study. State which is "more compatible" with the end to end arguments, argue why, acknowledge the exception built into the end to end argument, and conclude.)

Vocabulary (some of this may be covered in class)

- application layer
- ARP (expand and define)
- best-effort delivery
- broadcast address
- Classless Inter-domain Routing (CIDR)
- data-link layer
- dotted quad
- Draft Standard
- encapsulation
- End-to-end argument
- Experimental RFC
- exponential backoff
- fate sharing
- forwarding (different from routing)
- frame (different from segment, packet)
- framing
- Full Standard
- hierarchical addressing
- IETF (expand, define role)
- Informational RFC
- interface
- Internet-draft (and expiration)
- IP address prefix
- IP fragmentation
- IP service model (four bad things)
- MAC address
- MAY (in an RFC)
- MSS (expand and define)
- MTU (expand and define)
- MUST (in an RFC)
- network byte order
- network effect
- network layer

- packet (different from segment, frame)
- physical layer
- presentation layer (unimportant)
- Proposed Standard
- proxy ARP
- robustness principle
- routing (different from forwarding)
- segment (different from packet, frame)
- session layer (unimportant)
- SHOULD (in an RFC)
- soft state
- store-and-forward
- transport layer