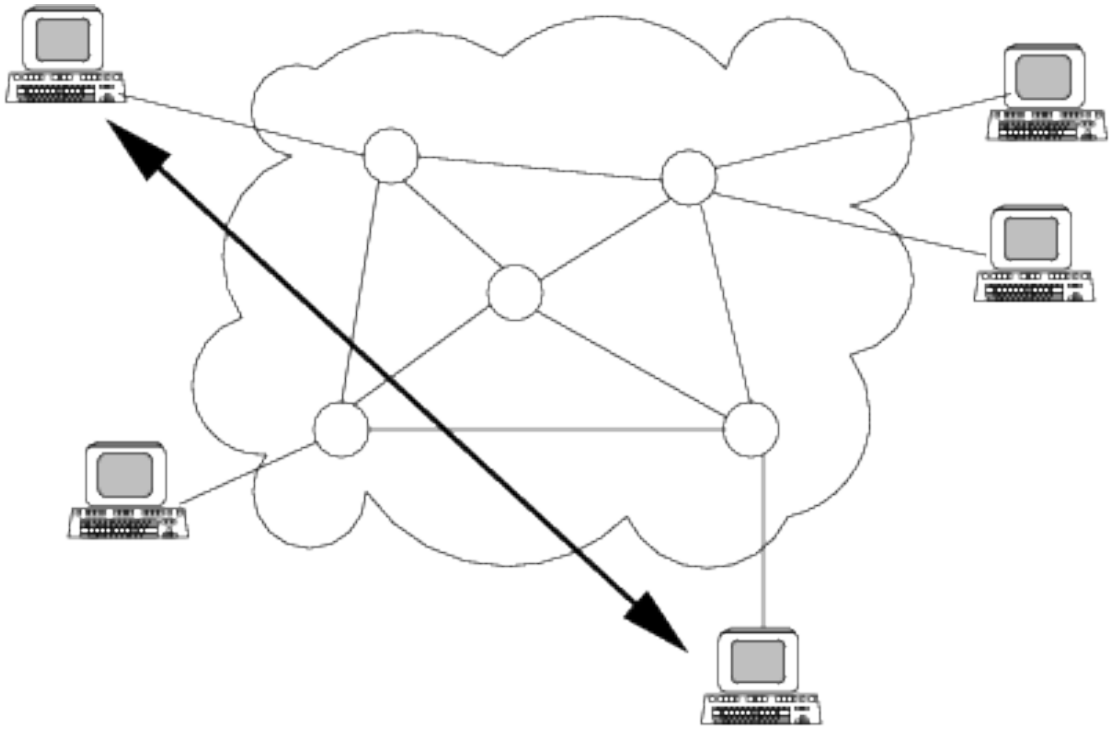
Final Exam

- 3 hours
- No examination aids
- Entire course

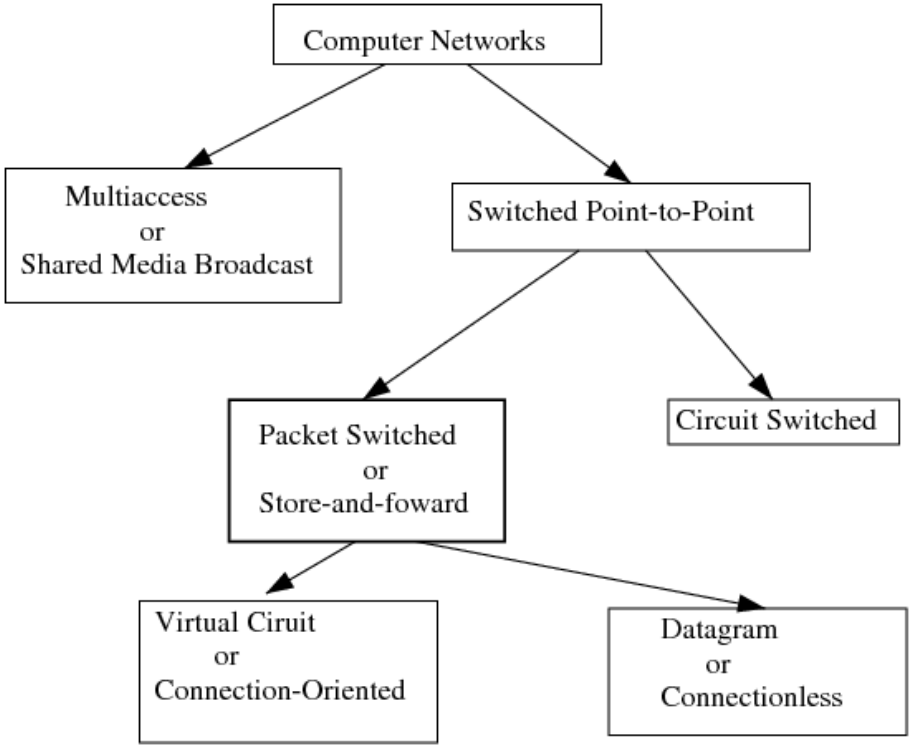
Computer Networks



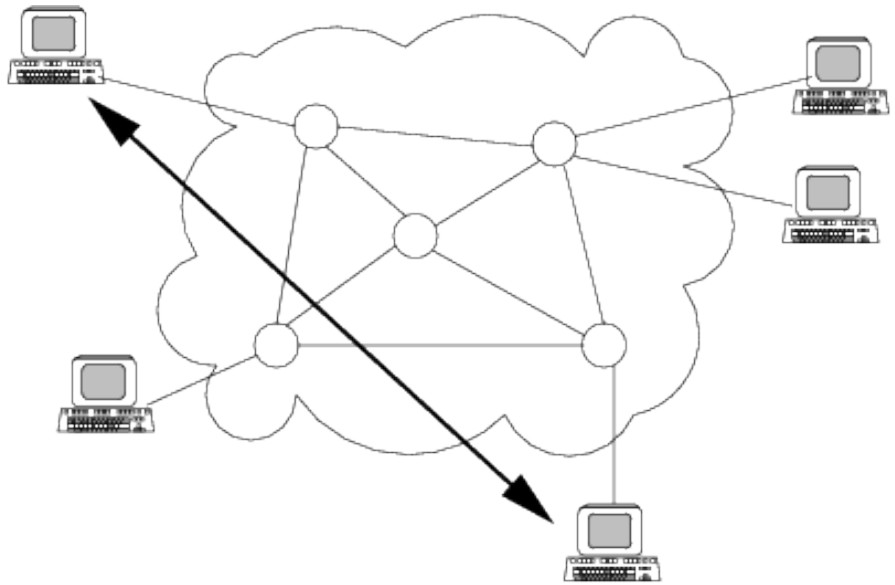
Sessions

- **Interactive**: Short messages, small delay, high reliability
- **File transfer**: Long messages, moderate delay, high reliability
- **Digitized Voice**: Short messages, fixed small delay, moderate reliability
- **Web Traffic:** Long messages, small delay, high reliability
- **Video:** Long messages, fixed small delay. Requires broadcast and multicast capabilities.

Network Types

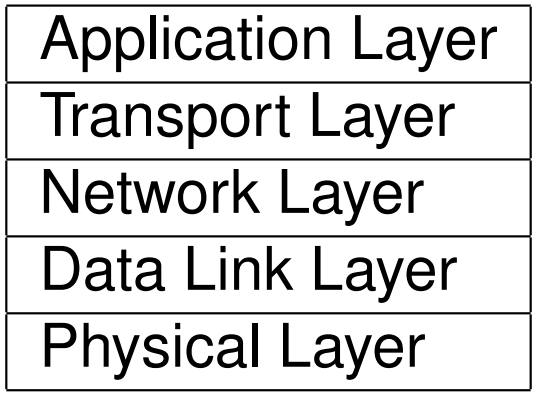


How to Send a Message over a Network?

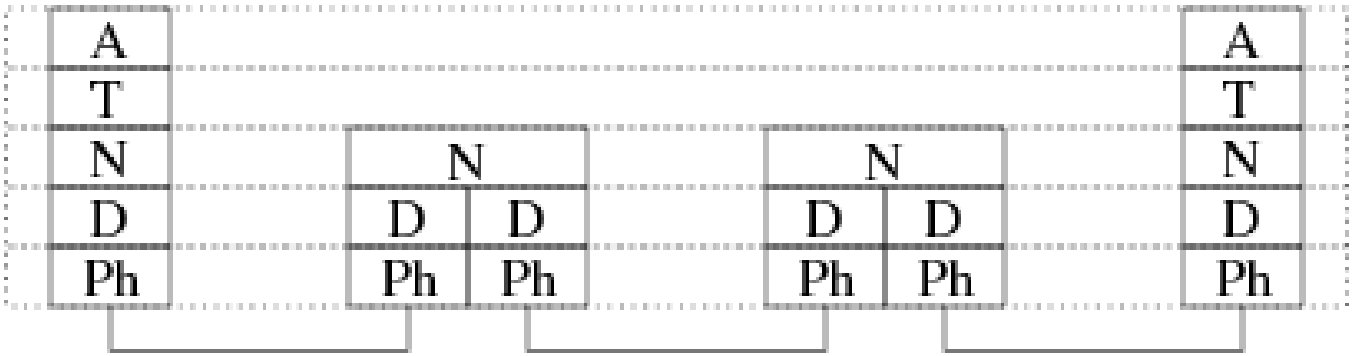


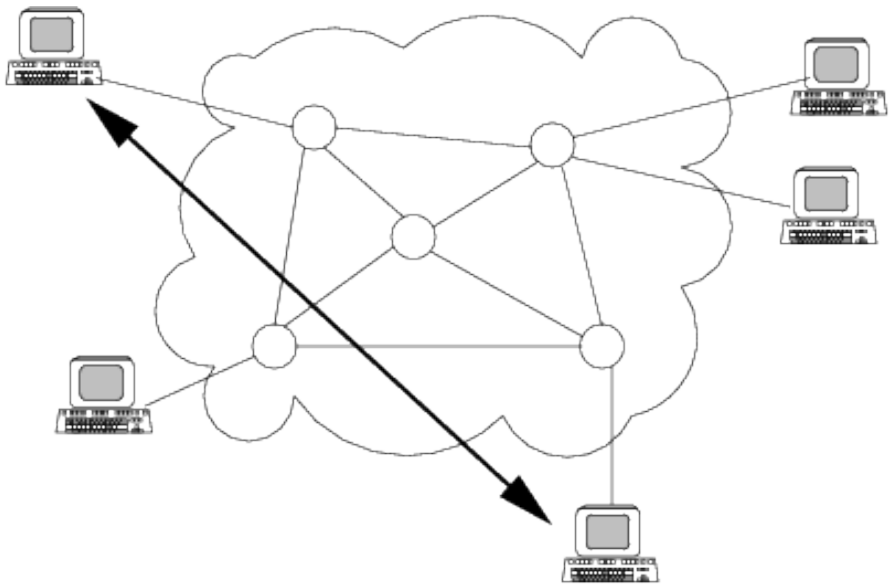
- Routing
- Addressing
- Reliable Data Transfer
- Congestion Control

Layered Network Architecture



“The Roller-Coaster Ride of a Message”





Review

- Each layer could provide to generic type of services - what are those two service types?
- How can a higher layer map a unreliable (connectionless) service of a lower layer into a reliable service?
- What is the advantage of a connectionless service? When would one might choose a connectionless service?
- Does TCP provide a connectionless or a connection-oriented service?
- What is the quality-of-service that TCP/IP provides?
- When using TCP, would one might also want to use ARQ in the data link layer?
- What is the advantage of using TCP/IP?
- What is the disadvantage of using TCP/IP?

Review

- What is the advantage of a virtual circuit service over a datagram service? What is the disadvantage?
- For what type of applications would you rather use UPD than TCP?
- Is it possible for an application to enjoy reliable data transfer even when it runs over UDP? If so, how?
- Which layer is the most complex layer. Why?
- The transport and network layer provide a logical communication between “what”?
- What is the advantage of using a shared media broadcast network?
- What makes the design of a computer network more challenging than the design of a telephone network?
- What is the advantage of using a circuit switched architecture for the telephone network?
- What is the disadvantage of using a circuit switched architecture for computer networks?

- There are still many problems to be solved!
- Mathematical models are useful!
- There are typically several choices/solutions!