Transport Level Protocols

in the internet: TCP and UDP

Transport Protocol Mechanisms

❚ Connection oriented - TCP

❚ Datagram Based - UDP

❚ Connection oriented: elements

   ❚ Logical connection…then

   ❚ Establishment…then

   ❚ Maintenance termination

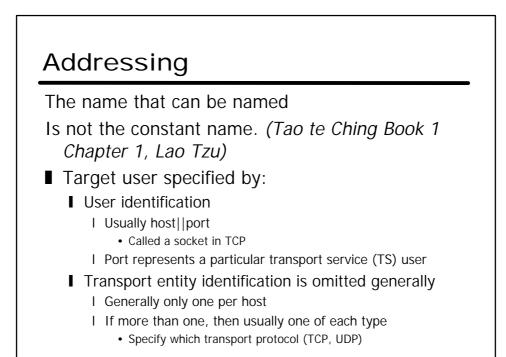❚ Transport connections are expected to be reliable and robust

Reliable Sequencing Network Service

❚ Assume arbitrary length message
❚ Assume virtually 100% reliable delivery by network service
   ❚ e.g. reliable packet switched network using X.25
   ❚ e.g. frame relay using LAPF control protocol
   ❚ e.g. IEEE 802.3 using connection oriented LLC service
❚ Transport service is end to end protocol between two systems on same network
   ❚ note that this is a simplification of the reality of internetworking

Issues in a Simple Transport Protocol

❚ Addressing
❚ Multiplexing
❚ Flow Control
❚ Connection establishment and termination

Addressing

The name that can be named

Is not the constant name. *(Tao te Ching Book 1 Chapter 1, Lao Tzu)*

❚ Target user specified by:
  ❚ User identification
    l Usually host||port
      • Called a socket in TCP
    l Port represents a particular transport service (TS) user
  ❚ Transport entity identification is omitted generally
    l Generally only one per host
    l If more than one, then usually one of each type
      • Specify which transport protocol (TCP, UDP)

Host address

❚ Host is
  l An attached network device
  l In an internet, it has a global internet address
❚ Network number

Finding Addresses

❚ Four methods
  ❚ Know address ahead of time
    ❙ e.g. collecting network device statistics
  ❚ Well known addresses (fixed in advance)
  ❚ Name server
    ❙ using the Domain Naming System
    ❙ communicated with using UDP to find IP address from internet name
    ❙ name server address is fixed in advance!
  ❚ Sending process request to a newly created process
    ❙ for use in multi-process application on the network