The Internet

Issues to be Addressed

Internetworking

- TCP/IP is the de-facto internet standard.
- Major issues to be addressed in Internetworking are…
  - Service type.
  - Addressing
  - Routing
  - QOS
  - Max. packet size
  - Flow & congestion control
  - Error reporting

Service Type

- Connection oriented TCP
  - Provides reliable error free transport.
  - Utilises sliding window protocol.
- Connectionless UDP
  - Provides best effort datagram delivery.
  - Unreliable, packets may be discarded, not acknowledged.

Addressing

- How do we address processes running on hosts ?
- How do we ensure unique addresses ?
- How do we map LAN addresses to TCP/IP addresses ?
- How do we interpret addresses ?
- How do we know where to send packets, i.e. route packets ?

Routing

- Issues include …
  - How does host determine address of router attached to its network.
  - How does router determine the NPA addresses of hosts attached to its network.
  - How does host select a particular router when sending a packet.
  - How does router determine addresses of other routers attached to the same network
  - How does router select another router to which to send packets given destination host address.

Quality of Service

- Issues include…
  - Transit delay expected when delivering packets to destination.
  - Security and privacy required.
  - Cost of delivery.
  - Probability of error.
  - Priority of transfer.

Maximum Packet Size

- Prevailing conditions may determine size.
  - High bit error-rates: smaller packets better.
  - Large transit delay: large queuing delays at each intermediate router, reduces efficiency.
  - Buffer requirements at routers may dictate that it is easier to store smaller than larger packets..
  - Processing overheads used in processing large numbers of small packets are larger than processing smaller numbers of larger packets.