TCP Error control and Congestion Control

By

Dr M. Senthilkumar

Assistant Professor

Department of Computer Science

Government Arts and Science College, Avinashi - 641654

TCP – Error Control

TCP must detect and handle

- Corrupted segments
- Lost segments
- Out-of-order segments
- Duplicated segments

TCP – Error Control

TCP uses

- Checksum Computation
- ACK
- Time-out

TCP – Error Control

- Lost segment or corrupted segment
  - Retransmission after Time-out
  - No NACK in TCP
- Duplicate segment
  - Discard
- Out-of-order segment
  - Destination does not acknowledge, until it receives all segments that precede it

TCP – Error Control

- Lost ACK
  - This is irrelevant, since ACK mechanism is cumulative

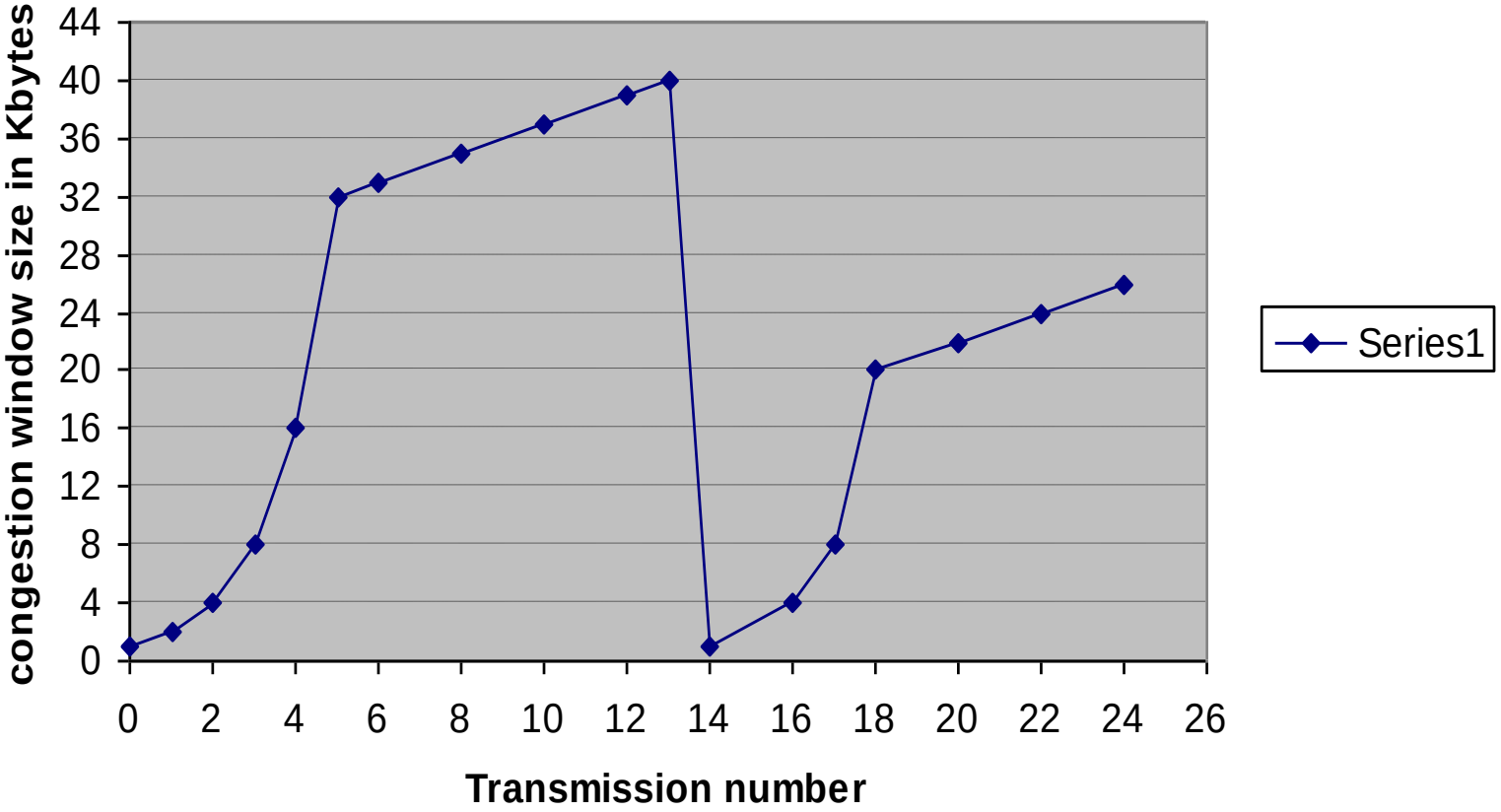
TCP – Congestion Control

- ✓ TCP assumes the cause of a lost segment is due to congestion in the network
- ✓ Retransmission aggravates congestion
- ✓ Sender must be told to slow down (affects the sender window size in TCP)
- ✓ Actual window size = Min (Receiver Window Size, Congestion Window Size)

TCP – Congestion Control

- ✓ The congestion window is flow control imposed by the sender
- ✓ The advertised window is flow control imposed by the receiver

TCP – Congestion Control



References

- ✓ Books: Data communication and Networking, Behrouz A Forouzan, Fourth edition
- ✓ Computer Networks, Andrew S. Tanenbaum, 4th edition, PHI
- ✓ Data Communication and Networks, Achyut Godbole, 2007, TMH.
- ✓ Computer Networks: Protocols, Standards, and Interfaces, Uyless Black, 2nd ed, PHI
- ✓ Various relevant websites

Thank You