**CS 456/656 - Computer Networks** **Fall 2018**

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## 11.1 Transport Layer Services

- Transport Layer typically only offers support for UDP and TCP
- The Transport layers responsibility is to transfer a packet from an application to an application on the end system
- Transport layer takes the application layer message and encapsulates it within a Transport Layer Segment
- Most segments will contain
  - Source port number
  - Destination port number
  - Source IP address
  - Destination IP address
  - Checksum
- Integrity and Packet-loss are the primary concerns of the transport layer

### 11.1.1 RDT (Reliable Data Transport Protocol)

- RDT is a base upon which lessons for TCP were learned
- To check for corruption, a checksum will be appended to the segment
- RDT also introduces ACK, NAK, and Sequence Number into the segment
- RDT requires each packet to be confirmed by the server before it sends another packet. This stop-and-wait approach causes RDT to have poor performance.

### 11.1.2 Go-Back-N

- Go-Back-N improves upon RDT by introducing Pipe-lining. This allows for $N$ packets to be sent out in parallel.
- Go-Back-N keeps track of sent packets in a window of Size $N$. Packets are still sent in order as the window can not move till the next sequence number goes beyond the window.
- If the timer fires, all packets that have been sent but not acknowledged are resent
- On the server, a counter is maintained to keep track of the expected packet. If the packet sequence number mismatches the expected packet, the server responds with the last received packet.