Lecture 9: reliable transmission over unreliable networks

reading 3.4 - reliable transmission concepts

Reliable transport over a reliable network

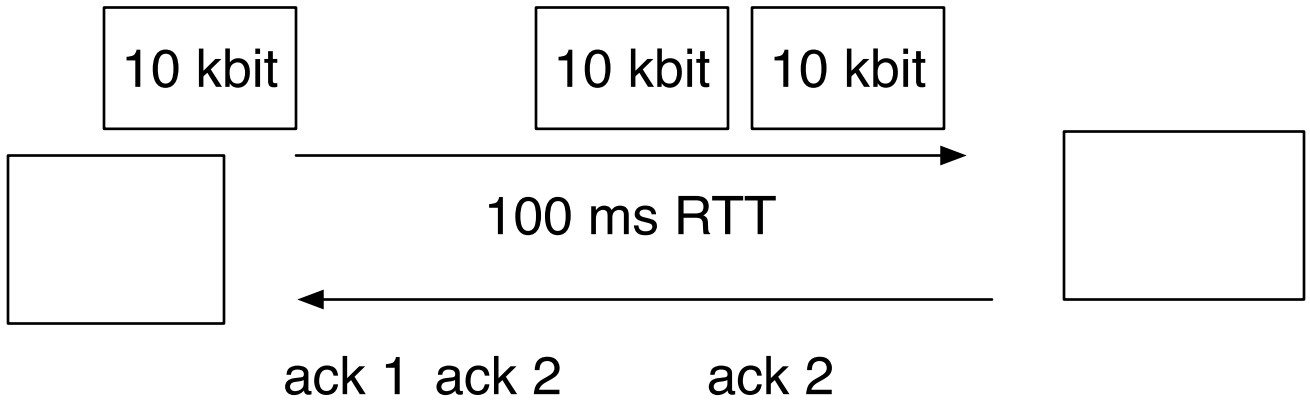
```
tr_send(msg):
  nl_send(msg)

msg* tr_recv:
 return nl_recv()
```

```
tr_send(msg):
  while(true) {
   nl_send(msg)
   if(got_ack(timeout)) return
  }

msg* tr_recv:
  send_ack()
 return nl_recv()
```

```
tr_send(msg):
  while(true) {
   nl_send([seqno,msg])
   if(got_ack(seqno,timeout)) return
  }

msg* tr_recv:
start:
  [seqno,msg]=nl_recv()
  if(seqno==next_expected_seqno)
   send_ack(seqno+1)
  else send_ack(next_expected_seqno)
  if(seqno==next_expected_seqno)
   return msg
  goto start
```

100 kbit/s throughput

1 Mbps link



cumulative acknowledgments

selective acknowledgment (TCP option)