



Figure 3.15 ♦ rdt3.0 sender

We have now assembled the key elements of a data transfer protocol. Checksums, sequence numbers, timers, and positive and negative acknowledgment packets each play a crucial and necessary role in the operation of the protocol. We now have a working reliable data transfer protocol!



VideoNote
Developing a protocol
and FSM representation
for a simple application-
layer protocol

3.4.2 Pipelined Reliable Data Transfer Protocols

Protocol `rdt3.0` is a functionally correct protocol, but it is unlikely that anyone would be happy with its performance, particularly in today’s high-speed networks. At the heart of `rdt3.0`’s performance problem is the fact that it is a stop-and-wait protocol.

To appreciate the performance impact of this stop-and-wait behavior, consider an idealized case of two hosts, one located on the West Coast of the United States and the other located on the East Coast, as shown in Figure 3.17. The speed-of-light round-trip propagation delay between these two end systems, RTT , is approximately 30 milliseconds. Suppose that they are connected by a channel with a transmission rate, R , of 1 Gbps (10^9 bits per second). With a packet size, L , of 1,000 bytes