

Assignment 7

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Objective :

To implement a reliable transmission protocol (RelTP) using datagram socket. We need to implement a variant of Go-Back-N ARQ mechanism with timeout for the implementation of reliability and flow control.

Details about the RelTP:

In RelTP, the sender maintains a sequence number field in the packet header, and acknowledgement (ACK) packets are used by the receiver to acknowledge the receipt of a particular packet. If a sender transmits a packet, and then does not receive an ACK within a timeout value then it assumes the packet to be lost in the network, and retransmits the packet.

In this protocol both the sender and the receiver also maintain a window whose size indicates the number of packets the sender can transmit without waiting for an acknowledgement.. Once the sender receives the acknowledgement, it slides the window accordingly. The acknowledgement (ACK) is cumulative acknowledgement.

Steps:

1. We define the packet header structure as follows:

- A 16 bit sequence number
- A 16 bit acknowledgement number
- 1 bit control field
- 1 bit terminal field indicating last packet

2. The 2 C files client.c and server.c contain the codes for the client and server for the server respectively

3. In mininet we created a single hop network with 2 host connected by a single link and transfer a 100 mb file from h2 to h1 setting delay ,bandwidth as specified and varying loss.

4. We do steps 2 and 3 for the standard UDP protocol also.

5. We plot graphs comparing the performance of RelTP and UDP with respect to average throughput and average packet loss rate.

Design parameters:

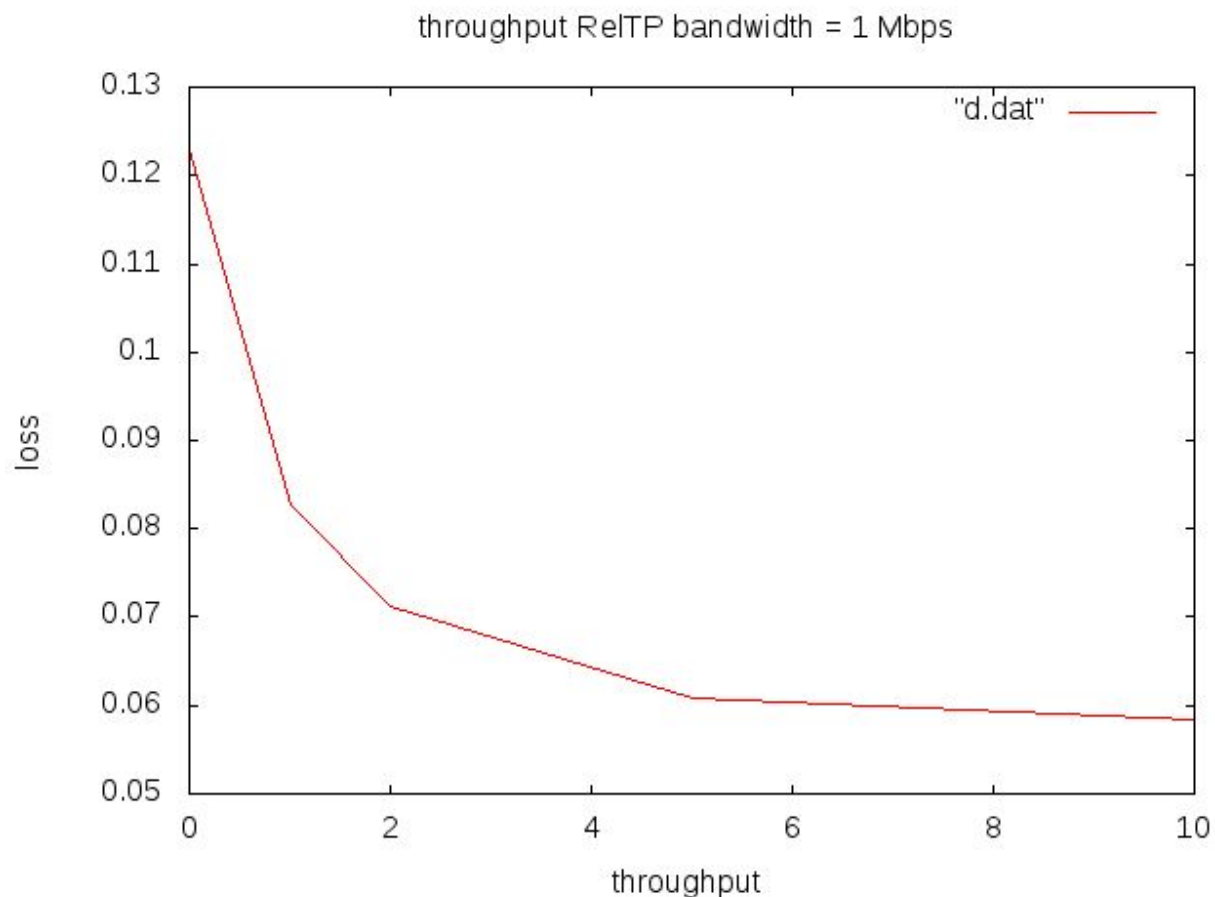
Timeout value:3 secs.We chose this value as values lesser than this caused too many resends and values greater wasted too much time in case of timeout

Window Size: 10. Values smaller than this donot take advantage of go backn and are slow, Values greater than this cause too many resends.

Packet size:2048 in case of 100 mb transfer as we needed to fit sequence numbers in 16 bits

Comparision of RelTP and UDP:

RelTP is very reliable and due to go back N mechanism there are pratically zero packets lossed UDP drops many packets but is faster than RelTP which has to resend many times.



throughput ReITP bandwidth = 10 Mbps

