Notations:

Ack field value: y dupackcount: used to keep track of the number of duplicate acks

data received from application above

create TCP segment with sequence number NextSeqNum;

if (timer currently not running)

start timer;

pass segment to IP;

NextSeqNum=NextSeqNum+length(data);

break;

data received from application above

create TCP segment with sequence number NextSeqNum;

if (timer currently not running)

start timer;

pass segment to IP;

NextSeqNum=NextSeqNum+length(data);

break;

new ACK&&not corrupted

cwnd = cwnd+MSS.(MSS/cwnd);

dupACKcount = 0;

Rate= min(cwnd,rwnd)/RTT;

Sendbase = y;

dupackcount = 0;

if (there are currently any not yet acknowledged segment)

start timer;

new ACK&&not corrupted

cwnd = cwnd+MSS

dupACKcount = 0

Rate= min(cwnd,rwnd)/RTT

Sendbase = y

dupackcount = 0

if (there are currently any not yet acknowledged segment)

start timer;

cwnd ≥ ssthresh

  Λ

 Λ

NextSeqNum=

InitialSeqNumber;

SendBase=

InitialSeqNumber;

CWND=1MSS;

Sstresh=64Kb;

Rate= min(cwnd,rwnd)/RTT;

dupAcknum=0;

Congestion

Avoidance

timeout

ssthresh=cwnd/2

cwnd=1 MSS;

dupACKcount=0;

Rate= min(cwnd,rwnd)/RTT

retransmit not-yet-acknowledged segment with smallest sequence number

start timer

Duplicate Ack

Dupackcount++

dupACKcount==3

ssthresh=cwnd/2;

cwnd=ssthresh+3•MSS;

Rate= min(cwnd,rwnd)/RTT;

retransmit not-yet-acknowledged segment with smallest sequence number(y);

timeout

ssthresh=cwnd/2;

cwnd=1 MSS;

dupACKcount=0;

Rate= min(cwnd,rwnd)/RTT;

retransmit not-yet-acknowledged segment with smallest sequence number;

start timer;

duplicate ACK

cwnd=cwnd+MSS;

Rate= min(cwnd,rwnd)/RTT

retransmit not-yet-acknowledged segment with smallest sequence number;

Duplicate Ack

Dupackcount++

new ACK

cwnd=ssthresh;

dupACKcount=0;

Rate= min(cwnd,rwnd)/RTT