Computer Networks - Exp 9
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Aim

Creation of Stop and Wait using ns2.

Theory

Stop-and-wait ARQ, also referred to as alternating bit protocol, is a method in telecommunications to send information between two connected devices. It ensures that information is not lost due to dropped packets and that packets are received in the correct order.

NS2 stands for Network Simulator Version 2. It is an open-source event-driven simulator designed specifically for research in computer communication networks.

Commands

stop and wait protocol in normal situation

features : labeling, annotation, nam-graph, and window size monitoring set ns [new

Simulator]

set n0 [$ns node]

set n1 [$ns node]

```
$ns at 0.0 "$n0 label Sender"

$ns at 0.0 "$n1 label Receiver"

set nf [open A1-stop-n-wait.nam w]

$ns namtrace-all $nf

set f [open A1-stop-n-wait.tr w]

$ns trace-all $f

$ns duplex-link $n0 $n1 0.2Mb 200ms DropTail

$ns duplex-link-op $n0 $n1 orient right

$ns queue-limit $n0 $n1 10

Agent/TCP set nam_tracevar_ true set tcp [new Agent/TCP]

$tcp set window_ 1

$tcp set maxcwnd_ 1

$ns attach-agent $n0 $tcp

set sink [new Agent/TCPSink]

$ns attach-agent $n1 $sink

$ns connect $tcp $sink

set ftp [new Application/FTP]

$ftp attach-agent $tcp

$ns add-agent-trace $tcp tcp

$ns monitor-agent-trace $tcp

$tcp tracevar cwnd_
```

```
$ns at 0.1 "$ftp start"

$ns at 3.0 "$ns detach-agent $n0 $tcp ; $ns detach-agent $n1 $sink"

$ns at 3.5 "finish"

$ns at 0.0 "$ns trace-annotate \"Stop and Wait with normal operation\""

$ns at 0.05 "$ns trace-annotate \"FTP starts at 0.1\""

$ns at 0.11 "$ns trace-annotate \"Send Packet_0\""

$ns at 0.35 "$ns trace-annotate \"Receive Ack_0\""

$ns at 0.56 "$ns trace-annotate \"Send Packet_1\""

$ns at 0.79 "$ns trace-annotate \"Receive Ack_1\""

$ns at 0.99 "$ns trace-annotate \"Send Packet_2\""

$ns at 1.23 "$ns trace-annotate \"Receive Ack_2 \""

$ns at 1.43 "$ns trace-annotate \"Send Packet_3\""

$ns at 1.67 "$ns trace-annotate \"Receive Ack_3\""

$ns at 1.88 "$ns trace-annotate \"Send Packet_4\""

$ns at 2.11 "$ns trace-annotate \"Receive Ack_4\""

$ns at 2.32 "$ns trace-annotate \"Send Packet_5\""

$ns at 2.55 "$ns trace-annotate \"Receive Ack_5 \""

$ns at 2.75 "$ns trace-annotate \"Send Packet_6\""

$ns at 2.99 "$ns trace-annotate \"Receive Ack_6\""

$ns at 3.1 "$ns trace-annotate \"FTP stops\"" proc finish {} {

global ns nf
```

```
$ns flush-trace close $nf

puts "filtering..."

exec tclsh ../ns-allinone-2.1b5/nam-1.0a7/bin/namfilter.tcl A1-stop-n-wait.nam puts

"running nam..."

exec nam A1-stop-n-wait.nam & exit 0

}

$ns run
```
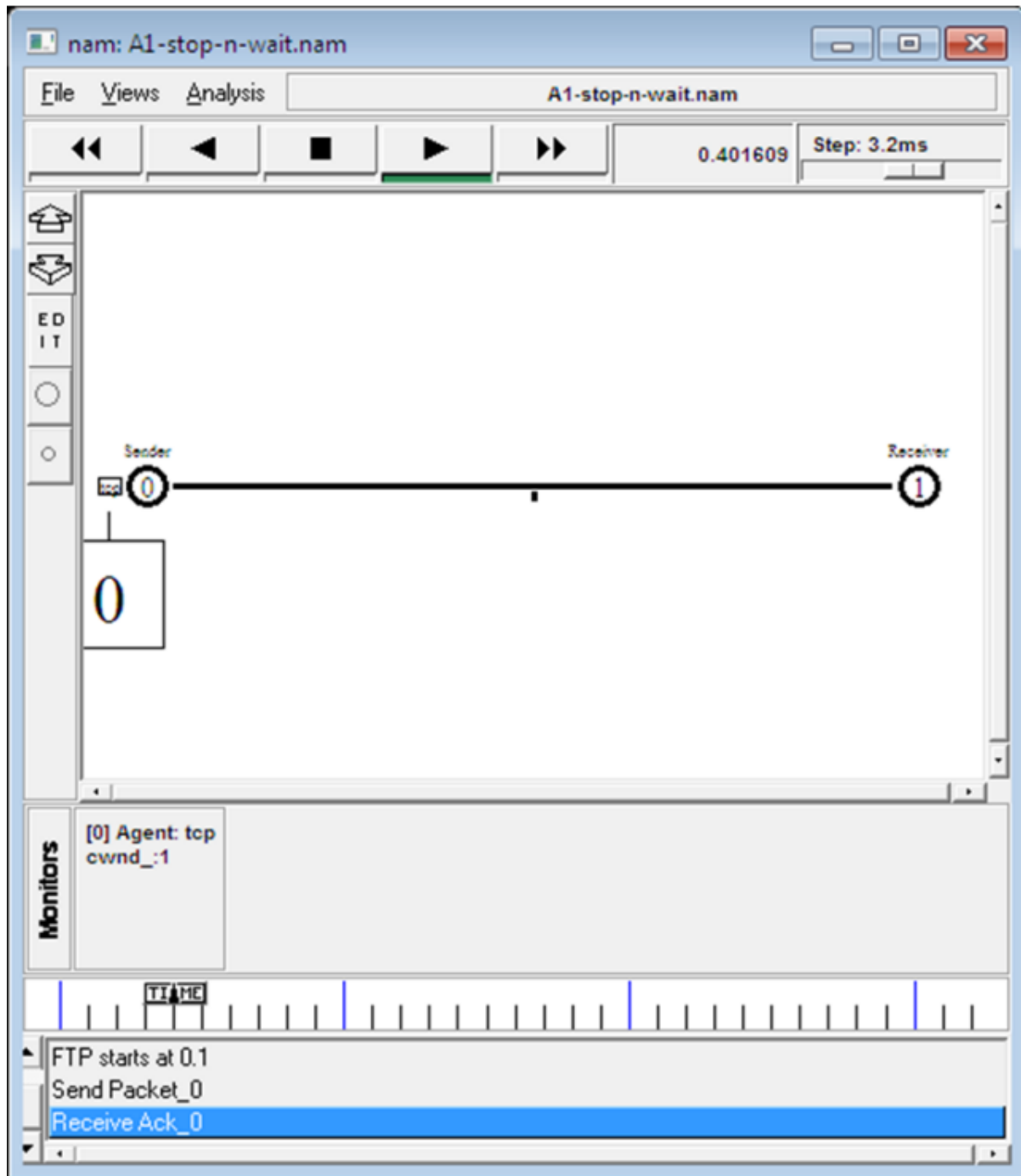
Conclusion

Thus, we studied stop and wait protocols in NS2.