1

```
set ns [new Simulator]
set ntrace [open prog1.tr w]
$ns trace-all $ntrace
set namfile [open prog1.nam w]
$ns namtrace-all $namfile
proc Finish {} {
global ns ntrace namfile
$ns flush-trace
close $ntrace
close $namfile
exec nam prog1.nam &
exec echo "The number of packet drops is " &
exec grep -c "^d" prog1.tr &
exit 0
}
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
$n0 label "TCP Source"
$n2 label "Sink"
$ns color 1 blue
$ns duplex-link $n0 $n1 1Mb 10ms DropTail
$ns duplex-link $n1 $n2 1Mb 10ms DropTail
$ns duplex-link-op $n0 $n1 orient right
$ns duplex-link-op $n1 $n2 orient right
$ns queue-limit $n0 $n1 10
$ns queue-limit $n1 $n2 10
set tcp0 [new Agent/TCP]
$ns attach-agent $n0 $tcp0
set sink0 [new Agent/TCPSink]
$ns attach-agent $n2 $sink0
$ns connect $tcp0 $sink0
set cbr0 [new Application/Traffic/CBR]
$cbr0 set type_ CBR
$cbr0 set packetSize_ 100
$cbr0 set rate_ 1Mb
$cbr0 set random_ false
$cbr0 attach-agent $tcp0
$tcp0 set class_ 1
$ns at 0.0 "$cbr0 start"
$ns at 5.0 "Finish"
$ns run
```

2

```
set ns [new Simulator]
$ns color 1 Blue
$ns color 2 Red
set ntrace [open prog3.tr w]
$ns trace-all $ntrace
set namfile [open prog3.nam w]
$ns namtrace-all $namfile
proc Finish {} {
global ns ntrace namfile
$ns flush-trace
close $ntrace
close $namfile
exec nam prog3.nam &
puts "The number of ping packets dropped are "
exec grep "^d" prog3.tr | cut -d " " -f 5 | grep -c "ping" & exit 0
}
for {set i 0} {$i < 6} {incr i} {
set n($i) [$ns node]
}
for {set j 0} {$j < 5} {incr j} {
$ns duplex-link $n($j) $n([expr ($j+1)]) 0.1Mb 10ms DropTail
}
Agent/Ping instproc recv {from rtt} {
$self instvar node_
puts "node [$node_ id] received ping answer from $from with round trip time $rtt
ms"
}
set p0 [new Agent/Ping]
$p0 set class_ 1
$ns attach-agent $n(0) $p0
set p1 [new Agent/Ping]
$p1 set class_ 1
$ns attach-agent $n(5) $p1
$ns connect $p0 $p1
$ns queue-limit $n(2) $n(3) 2
$ns duplex-link-op $n(2) $n(3) queuePos 0.5
set tcp0 [new Agent/TCP]
$tcp0 set class_ 2
$ns attach-agent $n(2) $tcp0
set sink0 [new Agent/TCPSink]
$ns attach-agent $n(4) $sink0
$ns connect $tcp0 $sink0
set cbr0 [new Application/Traffic/CBR]
$cbr0 set packetSize_ 500
$cbr0 set rate_ 1Mb
$cbr0 attach-agent $tcp0
$ns at 0.2 "$p0 send"
$ns at 0.4 "$p1 send"
$ns at 0.4 "$cbr0 start"
$ns at 0.8 "$p0 send"
$ns at 1.0 "$p1 send"
$ns at 1.2 "$cbr0 stop"
$ns at 1.4 "$p0 send"
$ns at 1.6 "$p1 send"
$ns at 1.8 "Finish"
$ns run
```

3

```
set ns [new Simulator]
$ns color 1 Blue
$ns color 2 Red
set ntrace [open prog3.tr w]
$ns trace-all $ntrace
set namfile [open prog3.nam w]
$ns namtrace-all $namfile
proc Finish {} {
global ns ntrace namfile
$ns flush-trace
close $ntrace
close $namfile
exec nam prog3.nam &
puts "The number of ping packets dropped are "
exec grep "^d" prog3.tr | cut -d " " -f 5 | grep -c "ping" &
exit 0
}
for {set i 0} {$i < 6} {incr i} {
set n($i) [$ns node]
}
for {set j 0} {$j < 5} {incr j} {
$ns duplex-link $n($j) $n([expr ($j+1)]) 0.1Mb 10ms DropTail
}
Agent/Ping instproc recv {from rtt} {
$self instvar node_
puts "node [$node_ id] received ping answer from $from with round trip time $rtt
ms"
}
set p0 [new Agent/Ping]
$p0 set class_ 1
$ns attach-agent $n(0) $p0
set p1 [new Agent/Ping]
$p1 set class_ 1
$ns attach-agent $n(5) $p1
$ns connect $p0 $p1
$ns queue-limit $n(2) $n(3) 2
$ns duplex-link-op $n(2) $n(3) queuePos 0.5
set tcp0 [new Agent/TCP]
$tcp0 set class_ 2
$ns attach-agent $n(2) $tcp0
set sink0 [new Agent/TCPSink]
$ns attach-agent $n(4) $sink0
$ns connect $tcp0 $sink0
set cbr0 [new Application/Traffic/CBR]
$cbr0 set packetSize_ 500
$cbr0 set rate_ 1Mb
$cbr0 attach-agent $tcp0
$ns at 0.2 "$p0 send"
$ns at 0.4 "$p1 send"
$ns at 0.4 "$cbr0 start"
$ns at 0.8 "$p0 send"
$ns at 1.0 "$p1 send"
$ns at 1.2 "$cbr0 stop"
$ns at 1.4 "$p0 send"
$ns at 1.6 "$p1 send"
$ns at 1.8 "Finish"
$ns run
```

4

```
set ns [new Simulator]
set topo [new Topography]
$topo load_flatgrid 1500 1500
set tracefile [open p4.tr w]
$ns trace-all $tracefile
set namfile [open p4.nam w]
$ns namtrace-all $namfile
$ns namtrace-all-wireless $namfile 1500 1500
$ns node-config -adhocRouting DSDV \
-llType LL \
-macType Mac/802_11 \
-ifqType Queue/DropTail \
-ifqLen 20 \
-phyType Phy/WirelessPhy \
-channelType Channel/WirelessChannel \
-propType Propagation/TwoRayGround \
-antType Antenna/OmniAntenna \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON
create-god 6
#Create 6 nodes
set n0 [$ns node]
$n0 set X_ 630
$n0 set Y_ 501
$n0 set Z_ 0.0
$ns initial_node_pos $n0 20
set n1 [$ns node]
$n1 set X_ 454
set tcp0 [new Agent/TCP]
$n1 set Y_ 340
$n1 set Z_ 0.0
$ns initial_node_pos $n1 20
set n2 [$ns node]
$n2 set X_ 785
$n2 set Y_ 326
$n2 set Z_ 0.0
$ns initial_node_pos $n2 20
set n3 [$ns node]
$n3 set X_ 270
$n3 set Y_ 190
$n3 set Z_ 0.0
$ns initial_node_pos $n3 20
set n4 [$ns node]
$n4 set X_ 539
$n4 set Y_ 131
$n4 set Z_ 0.0
$ns initial_node_pos $n4 20
set n5 [$ns node]
$n5 set X_ 964
$n5 set Y_ 177
$n5 set Z_ 0.0
$ns initial_node_pos $n5 20
set udp0 [new Agent/UDP]
$ns attach-agent $n0 $udp0
set null1 [new Agent/Null]
$ns attach-agent $n4 $null1
$ns connect $udp0 $null1
$udp0 set packetSize_ 1500
$ns attach-agent $n3 $tcp0
```

```
set sink1 [new Agent/TCPSink]
$ns attach-agent $n5 $sink1
$ns connect $tcp0 $sink1
set cbr0 [new Application/Traffic/CBR]
$cbr0 attach-agent $udp0
$cbr0 set packetSize_ 1000
$cbr0 set rate_ 1.0Mb
$cbr0 set random_ null
set ftp0 [new Application/FTP]
$ftp0 attach-agent $tcp0
proc finish {} {
global ns tracefile namfile
$ns flush-trace
close $tracefile
close $namfile
exec nam p4.nam &
exec echo "Number of packets dropped is:" &
exec grep -c "^D" p4.tr &
exit 0
}
$ns at 1.0 "$cbr0 start"
$ns at 2.0 "$ftp0 start"
$ns at 180.0 "$ftp0 stop"
$ns at 200.0 "$cbr0 stop"
$ns at 200.0 "finish"
$ns at 70 "$n4 set dest 100 60 20"
$ns at 100 "$n4 set dest 700 300 20"
$ns at 150 "$n4 set dest 900 200 20"
$ns run
```