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

3	set ns [new Simulator]	<pre>puts "node [\$node_ id] received ping answer from \$from with round trip time \$rtt</pre>	\$ns at 0.4 "\$cbr0 start"
	\$ns color 1 Blue		\$ns at 0.8 "\$p0 send"
	\$ns color 2 Red		\$ns at 1.0 "\$p1 send"
	set ntrace [open prog3.tr w]	ms"	\$ns at 1.2 "\$cbr0 stop"
	\$ns trace-all \$ntrace	}	\$ns at 1.4 "\$p0 send"
	set namfile [open prog3.nam w]	set p0 [new Agent/Ping]	\$ns at 1.6 "\$p1 send"
		\$p0 set class_1	\$ns at 1.8 "Finish"
	\$ns namtrace-all \$namfile	\$ns attach-agent \$n(0) \$p0	\$ns run
	proc Finish {} {	set p1 [new Agent/Ping]	
	global ns ntrace namfile	\$p1 set class_1	
	\$ns flush-trace	\$ns attach-agent \$n(5) \$p1	
	close \$ntrace	\$ns connect \$p0 \$p1	
	close \$namfile	\$ns queue-limit \$n(2) \$n(3) 2	
	exec nam prog3.nam &	\$ns duplex-link-op \$n(2)	
	puts "The number of ping packets dropped are "	\$n(3) queuePos 0.5	
		set tcp0 [new Agent/TCP]	
	exec grep "^d" prog3.tr cut -d " " -f 5 grep -c "ping" & exit 0	\$tcp0 set class_ 2	
		\$ns attach-agent \$n(2) \$tcp0	
	}	set sink0 [new	
	for {set i 0} {\$i < 6} {incr i} {	Agent/TCPSink] \$ns attach-agent \$n(4) \$sink0	
	set n(\$i) [\$ns node]		
	}	\$ns connect \$tcp0 \$sink0	
	for {set j 0} {\$j < 5} {incr j} {	set cbr0 [new	
	\$ns duplex-link \$n(\$j) \$n([expr (\$j+1)]) 0.1Mb 10ms DropTail	Application/Traffic/CBR]	
		\$cbr0 set packetSize_ 500	
	}	\$cbr0 set rate_ 1Mb	
	Agent/Ping instproc recv {from rtt} {	\$cbr0 attach-agent \$tcp0	
		\$ns at 0.2 "\$p0 send"	

\$ns at 0.4 "\$p1 send"

\$self instvar node_

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