

1. .tcl

```
1. # Letter S is capital
2. set ns [new Simulator]

3. # open a nam trace file in write mode
4. # nf nam filename
5. # tf trace filename
6. set nf [open /home/mca/sandhya/1.nam w]

7. # clears trace file contents

8. $ns namtrace-all $nf
9. set tf [open /home/mca/sandhya/1.tr w]
10. $ns trace-all $tf

11. proc finish { } {
12. global ns nf tf
13. $ns flush-trace
14. close $nf
15. close $tf
16. exec nam 1.nam &
17. exit 0
18. }

19. # # creates 3 nodes

20. set n0 [$ns node]
21. set n1 [$ns node]
22. set n2 [$ns node]

23. # establishing links
24. # you need to modify the bandwidth to observe the variation in packet.

25. $ns duplex-link $n0 $n1 200Mb 10ms DropTail
26. $ns duplex-link $n1 $n2 100Kb 1000ms DropTail

27. #set queue size

28. $ns queue-limit $n0 $n1 10
29. $ns queue-limit $n1 $n2 10

30. set udp [new Agent/UDP]
31. $ns attach-agent $n0 $udp
32. set cbr [new Application/Traffic/CBR]
33. $cbr attach-agent $udp
34. $cbr set packet_size_ 500
35. # attaching transport layer protocols
36. set null [new Agent/Null]
37. $ns attach-agent $n2 $null
38. $ns connect $udp $null
39. # creating sink(destination) node
40. # attaching application layer protocols
41. $ns at 0.1 "$cbr start"
42. $ns at 1.0 "finish"
43. $ns run
44.
```

46. *Output :*

47. ns 1.tcl

48. *1.awk*

```
1. #awk file run in newterminal
2. BEGIN{
3. c=0;

4. }

5. {

6. if($1=="d")

7. {
8. c++;
9. printf("%s\t%s\n",$5,$11);
10. }
11. } END{
12. printf("The number of packets dropped =%d\n",c);

13. }
14.
```

15. *output:-open new terminal*

16. awk -f 1.awk 1.tr

17. The number of packets dropped =28

8.tcl

```
1. set ns [new Simulator]
2. set nf [open 8b.nam w]
3. $ns namtrace-all $nf
4. set tf [open 8b.tr w]
5. $ns trace-all $tf

6. set n0 [$ns node]
7. $n0 color "red"
8. $n0 label "src1"

9. set n1 [$ns node]
10. set n2 [$ns node]
11. $n2 color "red"
12. $n2 label "src2"

13. set n3 [$ns node]
14. $n3 color "blue"
15. $n3 label "dest2"

16. set n4 [$ns node]
17. set n5 [$ns node]
18. $n5 color "blue"
19. $n5 label "dest1"
20. $ns make-lan "$n0 $n1 $n2 $n3 $n4" 1Mb 100ms LL Queue/DropTail Mac/802_3

21. $ns duplex-link $n4 $n5 1Kb 1ms DropTail
22. $ns queue-limit $n4 $n5 1

23. set tcp0 [new Agent/TCP]
24. $ns attach-agent $n0 $tcp0

25. set ftp0 [new Application/FTP]
26. $ftp0 attach-agent $tcp0
27. $ftp0 set packetSize_ 500
28. $ftp0 set interval_ 0.0001

29. set sink5 [new Agent/TCPSink]
30. $ns attach-agent $n5 $sink5
31. $ns connect $tcp0 $sink5

32. set tcp2 [new Agent/TCP]
33. $ns attach-agent $n2 $tcp2

34. set ftp2 [new Application/FTP]
35. $ftp2 attach-agent $tcp2
36. $ftp2 set packetSize_ 600
37. $ftp2 set interval_ 0.001
38. set sink3 [new Agent/TCPSink]
39. $ns attach-agent $n3 $sink3 $ns connect $tcp2 $sink3

40. proc finish { } {
41. global ns nf tf
42. $ns flush-trace
43. close $tf
44. close $nf
45. exec nam 8b.nam &
46. exit 0
47. }

48. $ns at 0.1 "$ftp0 start"
49. $ns at 5 "$ftp0 stop"
50. $ns at 7 "$ftp0 start"
51. $ns at 0.2 "$ftp2 start"
52. $ns at 8 "$ftp2 stop"
53. $ns at 14 "$ftp0 stop"
54. $ns at 10 "$ftp2 start"
55. $ns at 15 "$ftp2 stop"
56. $ns at 16 "finish"
57. $ns run
```

8b. awk

```
1. #awk file run in new terminal
2. BEGIN{
3. c=0;
4. }
5. {
6. if($1=="d")
7. {
8. c++;
9. }
10. }
11. END{
12. printf("The number of %s packets dropped =%d\n", $5, c); }
```

2. output:-

```
13. the number of ack packets dropped=3
```

```

1. #Create a simulator object
2. set ns [new Simulator]

3. #Define different colors for data flows (for NAM)
4. $ns color 1 Blue
5. $ns color 2 Red

6. #Open the NAM trace file
7. set nf [open 7.nam w]
8. $ns namtrace-all $nf
9. set tf [open 7.tr w]
10. $ns trace-all $tf

11. #Create five nodes
12. set n0 [$ns node]
13. set n1 [$ns node]
14. set n2 [$ns node]
15. set n3 [$ns node]
16. set n4 [$ns node]

17. #Create links between the nodes
18. $ns duplex-link $n0 $n4 1Mb 10ms DropTail
19. $ns duplex-link $n1 $n4 1Mb 10ms DropTail
20. $ns duplex-link $n4 $n3 1Mb 10ms DropTail
21. $ns duplex-link $n4 $n2 1Mb 10ms DropTail

22. #Setup a TCP connection
23. set tcp [new Agent/TCP]
24. $ns attach-agent $n0 $tcp
25. set sink [new Agent/TCPSink]
26. $ns attach-agent $n3 $sink
27. $ns connect $tcp $sink
28. set ftp [new Application/FTP]
29. $ftp attach-agent $tcp

30. #Setup a UDP connection
31. set udp [new Agent/UDP]
32. $ns attach-agent $n1 $udp
33. set null [new Agent/Null]
34. $ns attach-agent $n2 $null
35. $ns connect $udp $null

36. #Setup a CBR over UDP
37. set cbr [new Application/Traffic/CBR]
38. $cbr attach-agent $udp
39. $cbr set packet_size_ 500

40. #Schedule events for the CBR and FTP agents $ns at 0.0 "$cbr start"
41. $ns at 0.0 "$ftp start"
42. $ns at 20.0 "$ftp stop"
43. $ns at 20.0 "$cbr stop"

44. #Define a 'finish' procedure
45. proc finish {} {
46. global ns nf tf
47. $ns flush-trace
48. close $nf
49. close $tf
50. exec nam 7.nam &
51. exit 0
52. }
53. $ns at 10.0 "finish"

54. #Run the simulation
55. $ns run

```

3. 7.awk:-

```
1. BEGIN{
2.  udp=0;
3.  tcp=0;
4. }
5. {
6.  if($1 == "r" && $5 == "cbr")
7.  {
8.    udp++;
9.  }
10. else if($1 == "r" && $5 == "tcp")
11. {
12.  tcp++;
13. }
14. }
15. END{
16. printf("Number of packets sent by TCP = %d\n", tcp);
17. printf("Number of packets sent by UDP=%d\n",udp);
```