**[2CEIT503: COMPUTER NETWORK]**

Practical: 8



**AIM: Define a topology with four nodes in which one node act**

**that forwards the data that two nodes are sending to the fourth node.**

**Also find a way to distinguish the data flows from the two nodes other,**

**and learn how a queue can be monitored to see how full it is and**

**how many packets are being discarded**

**Department of Computer**

**Engineering/Information Technology**

# Create a simulator object

set ns [new Simulator]

# Define different colors

# for data flows (for NAM)

$ns color 1 Blue

$ns color 2 Red

# Open the NAM trace file

set nf [open out.nam w]

$ns namtrace-all $nf

# Define a 'finish' procedure

proc finish {} {

global ns nf

$ns flush-trace

# Close the NAM trace file

close $nf

# Execute NAM on the trace file

exec nam out.nam &

exit 0

}

# Create four nodes

set n0 [$ns node]

set n1 [$ns node]

set n2 [$ns node]

set n3 [$ns node]

# Create links between the nodes

$ns duplex-link $n0 $n2 2Mb 10ms DropTail

$ns duplex-link $n1 $n2 2Mb 10ms DropTail

$ns duplex-link $n2 $n3 1.7Mb 20ms DropTail

# Set Queue Size of link (n2-n3) to 10

$ns queue-limit $n2 $n3 10

# Give node position (for NAM)

$ns duplex-link-op $n0 $n2 orient right-down

$ns duplex-link-op $n1 $n2 orient right-up

$ns duplex-link-op $n2 $n3 orient right

# Monitor the queue for link (n2-n3). (for NAM)

$ns duplex-link-op $n2 $n3 queuePos 0.5

# Setup a TCP connection

set tcp [new Agent/TCP]

$tcp set class\_ 2

$ns attach-agent $n0 $tcp

set sink [new Agent/TCPSink]

$ns attach-agent $n3 $sink

$ns connect $tcp $sink

$tcp set fid\_ 1

# Setup a FTP over TCP connection

set ftp [new Application/FTP]

$ftp attach-agent $tcp

$ftp set type\_ FTP

# Setup a UDP connection

set udp [new Agent/UDP]

$ns attach-agent $n1 $udp

set null [new Agent/Null]

$ns attach-agent $n3 $null

$ns connect $udp $null

$udp set fid\_ 2

# Setup a CBR over UDP connection

set cbr [new Application/Traffic/CBR]

$cbr attach-agent $udp

$cbr set type\_ CBR

$cbr set packet\_size\_ 1000

$cbr set rate\_ 1mb

$cbr set random\_ false

# Schedule events for the CBR and FTP agents

$ns at 0.1 "$cbr start"

$ns at 1.0 "$ftp start"

$ns at 4.0 "$ftp stop"

$ns at 4.5 "$cbr stop"

# Call the finish procedure after

# 5 seconds of simulation time

$ns at 5.0 "finish"

# Run the simulation

$ns run

**Output:**

