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| CODE |

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\*File : p4.tcl

\*Description : Simulate an Ethernet LAN using n nodes (6-10), change error rate and data rate and compare throughput.

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\*Tools : NS2, nam, XGraph, awk

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#Create a new Simulation Instance

set ns [new Simulator]

#Turn on the Trace and the animation files

set f [open out.tr w]

set nf [open out.nam w]

$ns trace-all $f

$ns namtrace-all $nf

#Define the finish procedure to perform at the end of the simulation

proc finish {} {

global f nf ns

$ns flush-trace

close $f

close $nf

exec nam out.nam &

exec awk -f 4.awk out.tr &

exit 0

}

#Create the nodes

set n0 [$ns node]

set n1 [$ns node]

set n2 [$ns node]

set n3 [$ns node]

set n4 [$ns node]

set n5 [$ns node]

set n6 [$ns node]

set n7 [$ns node]

set n8 [$ns node]

set n9 [$ns node]

#create the lan topology

$ns make-lan "$n0 $n1 $n2 $n3 $n4" 1Mb 10ms LL Queue/DropTail Mac/802\_3

$ns make-lan "$n5 $n6 $n7 $n8 $n9" 1Mb 10ms LL Queue/DropTail Mac/802\_3

$ns duplex-link $n2 $n6 1Mb 30ms DropTail

Mac/802\_3 set datarate\_ 10Mb

#Create a UDP Agent and attach to the node n1

set udp0 [new Agent/UDP]

$ns attach-agent $n0 $udp0

#Create a CBR Traffic source and attach to the UDP Agent

set cbr0 [new Application/Traffic/CBR]

$cbr0 attach-agent $udp0

$cbr0 set packetSize\_ 500

$cbr0 set Interval\_ 0.05

#Create a TCP agent and attach to the node n0

set tcp0 [new Agent/TCP]

$ns attach-agent $n3 $tcp0

#Create a FTP source and attach to the TCP agent

set ftp0 [new Application/FTP]

#Attach the FTP source to the TCP Agent

$ftp0 attach-agent $tcp0

$ftp0 set packetSize\_ 500

#Create a Null Agent and attach to the node n2

set null0 [new Agent/Null]

$ns attach-agent $n7 $null0

#Create a TCPSink agent and attach to the node n2

set sink0 [new Agent/TCPSink]

$ns attach-agent $n8 $sink0

#Connect

$ns connect $udp0 $null0

$ns connect $tcp0 $sink0

set err [new ErrorModel]

$ns lossmodel $err $n2 $n6

$err set rate\_ 0.1

$ns at 1.0 "$cbr0 start"

$ns at 1.0 "$ftp0 start"

$ns at 9.0 "$cbr0 stop"

$ns at 9.0 "$ftp0 stop"

$ns at 10.0 "finish"

$ns run

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\*File : p4.awk

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#!/usr/bin/awk -f

BEGIN {

cbrPktReceived=0;

totalPktReceived=0;

ftpPktReceived=0;

throughput=0.0;

}

{

src=$3;

des=$4;

type=$5;

event=$1;

if((event=="+") && (src=="2") && (des=="6") && (type=="cbr"))

cbrPktReceived++;

if(($1=="+") && ($3=="2") && ($4=="6") && (type=="tcp"))

ftpPktReceived++;

totalPktReceived=cbrPktReceived+ftpPktReceived;

}

END {

throughput=((totalPktReceived\*500\*8)/(8\*1000000));

printf "the throughput is:%f\n",throughput;

printf "the throughput is:%d\n",cbrPktReceived;

printf "the throughput is:%d\n",ftpPktReceived;

}

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| **OUTPUT** |



