**TCP-UDP Script for a WIRED network**

set ns [new Simulator]

set n0 [$ns node]

set n1 [$ns node]

set n2 [$ns node]

set n3 [$ns node]

set f [open udp\_tcp.tr w]

$ns trace-all $f

$ns duplex-link $n0 $n2 5Mb 2ms DropTail

$ns duplex-link $n1 $n2 5Mb 2ms DropTail

$ns duplex-link $n2 $n3 10Mb 2ms DropTail

set tcp0 [new Agent/TCP]

$ns attach-agent $n0 $tcp0

set sink0 [new Agent/TCPSink]

$ns attach-agent $n3 $sink0

$ns connect $tcp0 $sink0

set ftp0 [new Application/FTP]

$ftp0 attach-agent $tcp0

$ftp0 set fid\_ 1

set udp1 [new Agent/UDP]

$ns attach-agent $n1 $udp1

set null1 [new Agent/Null]

$ns attach-agent $n3 $null1

$ns connect $udp1 $null1

set cbr1 [new Application/Traffic/CBR]

$cbr1 attach-agent $udp1

$cbr1 set fid\_ 0

$ns at 1.0 "$cbr1 start"

$ns at 1.2 "$ftp0 start"

$ns at 3.2 "$ftp0 stop"

$ns at 4.2 "$cbr1 stop"

$ns at 10.0 "finish"

proc finish {} {

global ns f

$ns flush-trace

close $f

exit 0

}

$ns run

**AWK Script**

**Wired Trace File Format \_ NEW**

**Find out THROUGHPUT of an End to End wired network**

BEGIN {

fromNode=2; toNode=3;

src0 = 0.0; dst0 = 3.0;

src1 = 1.0; dst1 = 3.1;

lineCount0 = 0;totalBits0 = 0;

lineCount1 = 0;totalBits1 = 0;

}

/^r/&&$3==fromNode&&$4==toNode&&$9==src0&&$10==dst0 {

totalBits0 += 8\*$6;

if ( lineCount0==0 ) {

timeBegin0 = $2; lineCount0++;

} else {

timeEnd0 = $2;

};

};

/^r/&&$3==fromNode&&$4==toNode&&$9==src1&&$10==dst1 {

totalBits1 += 8\*$6;

if ( lineCount1==0 ) {

timeBegin1 = $2; lineCount1++;

} else {

timeEnd1 = $2;

};

};

END{

duration0 = timeEnd0-timeBegin0;

print "\nTransmission for TCP 0: source" src0".0" " -> Destination" dst0".0";

print " - Total transmitted bits =" totalBits0 " bits";

print " - Duration = " duration0 " s";

print " - Thoughput = " totalBits0/duration0/1e3 " kbps";

print " " ;

duration1 = timeEnd1-timeBegin1;

print "\nTransmission for UDP 1: source" src1".0" " -> Destination" dst1;

print " - Total transmitted bits =" totalBits1 " bits";

print " - Duration = " duration1 " s";

print " - Thoughput = " totalBits1/duration1/1e3 " kbps";

print " " ;

};

**Find out THROUGHPUT of a particular link for WIRED network.**

BEGIN {

fromNode=1;

toNode=2;

lineCount = 0;

totalBits = 0;

}

/^r/&& $3==fromNode &&$4==toNode {

totalBits = totalBits + 8\*$6;

if ( lineCount==0 ) {

timeBegin = $2;

lineCount = lineCount+1;

}

else {

timeEnd = $2;

}

}

END{

duration = timeEnd-timeBegin;

print "Number of records is\t" NR;

print "Number of records is\t" NF;

print "Output:\n";

print "Transmission:N" fromNode "->N" toNode;

print "Total transmitted bits = "totalBits" bits";

print "Duration = "duration" s";

print "Thoughput = "totalBits/duration/1e3" kbps";

**Find out DELAY of End to End WIRED network**

BEGIN {

src="0.0";

dst="3.0";

num\_samples = 0;

total\_delay = 0;

}

/^\+/ &&$9==src &&$10==dst { # Enque Packet

t\_arr[$12] = $2;

}

/^r/ &&$9==src &&$10==dst{

if (t\_arr[$12] > 0) {

num\_samples++;

delay = $2 - t\_arr[$12];

total\_delay += delay;

}

}

END{

avg\_delay = total\_delay/num\_samples;

print "Average end-to-end transmission delay is " avg\_delay " seconds";

print "Measurement details:";

print " - Since packets are created from the address " src;

print " - Until the packets are destroyed at the address " dst;

};

**Find out DELAY of a particular link of a WIRED network.**

BEGIN {

fromNode=1;

toNode=2;

num\_samples = 0;

total\_delay = 0;

}

/^\+/ &&$3==fromNode &&$4==toNode { # Enque packet

t\_arr[$12] = $2;

}

/^r/ &&$3==fromNode &&$4==toNode {

if (t\_arr[$12] > 0) {

num\_samples++;

delay = $2 - t\_arr[$12];

total\_delay += delay;

}

}

END{

avg\_delay = total\_delay/num\_samples;

print "Average queuing transmission delay is " avg\_delay " seconds";

print "Measurement details:";

print " - Start when packets enter the node " fromNode;

print " - Until the packets arrive the node " toNode;

}