Date, 1st September, 2017
A01630510
Victor Manuel García Rosales
TC2007 Métodos Cuantitativos y Simulación

Automate the execution of ns2 in Linux Shell or Python

TCL code + Linux shell or Python

TCL code

```
#TCL code
if { $argc < 1 } {
     puts stderr " Need packet size parameter "
     exit 0
}

set packet_size [lindex $argv 1]
puts $packet_size

#Create a new 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 out6.nam w]
$ns trace-all $nf

#Enabling tracing of all events of the simulation
set f [open out6.all w]
$ns trace-all $f

#Define a 'finish' procedure
proc finish {} {
     global ns nf f
     $ns flush-trace
     #Close the NAM trace file
     close $nf
     close $f
     #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)
$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_ $packet_size
$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"

#Detach tcp and sink agents (not really necessary)
$ns at 4.5 "$ns detach-agent $n0 $tcp ; $ns detach-agent $n3
$sink"

#Call the finish procedure after 5 seconds of simulation time
$ns at 5.0 "finish"

#Print CBR packet size and interval
puts "CBR packet size = [$cbr set packet_size_]"
puts "CBR interval = [$cbr set interval_]"

#Run the simulation
$ns run
```

Shell script

Store the following in a file called script.sh

```
#!/bin/bash
# This script helps to run ns2 multiple times
num_times=7
packet_size = 64
for((i=1; i<=$num_times; i++))
do
     echo "Running $i of $num_times"
     echo "------------------------"
     #Run simulator
     ns TCL_parameters.tcl $packet_size * $i
done
```

Instructions to run

First assure you have permissions in your file by typing

```
ls –al script.sh
```

Then if you don`t have all the permission to access a third file, type the following command

```
chmod +x script.sh
```

After that, just execute ./script.sh

The results will appear on the screen (7 times exactly)