

Program 4:- Implement simple ESS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to the transmission of packets.

```
#Create a ns simulator
set ns [new Simulator]

#Setup topography object
set topo [new Topography]
$topo load_flatgrid 1500 1500

#Open the NS trace file
set tracefile [open p4.tr w]
$ns trace-all $tracefile

#Open the NAM trace file
set namfile [open p4.nam w]
$ns namtrace-all $namfile
$ns namtrace-all-wireless $namfile 1500 1500

#=====
#Mobile node parameter setup
#=====
$ns node-config -adhocRouting DSDV \
  -llType LL \
  -macType Mac/802_11 \
  -ifqType Queue/DropTail \
  -ifqLen 20 \
  -phyType Phy/WirelessPhy \
  -channelType Channel/WirelessChannel \
  -propType Propagation/TwoRayGround \
  -antType Antenna/OmniAntenna \
  -topoInstance $topo \
  -agentTrace ON \
  -routerTrace ON

#=====
#Nodes Definition
#=====
create-god 6
#Create 6 nodes
set n0 [$ns node]
$n0 set X_ 630
$n0 set Y_ 501
$n0 set Z_ 0.0
$ns initial_node_pos $n0 20
set n1 [$ns node]
$n1 set X_ 454
$n1 set Y_ 340
$n1 set Z_ 0.0
```

```
$ns initial_node_pos $n1 20
set n2 [$ns node]
$n2 set X_ 785
$n2 set Y_ 326
$n2 set Z_ 0.0
$ns initial_node_pos $n2 20
set n3 [$ns node]
$n3 set X_ 270
$n3 set Y_ 190
$n3 set Z_ 0.0
$ns initial_node_pos $n3 20
set n4 [$ns node]
$n4 set X_ 539
$n4 set Y_ 131
$n4 set Z_ 0.0
$ns initial_node_pos $n4 20
set n5 [$ns node]
$n5 set X_ 964
$n5 set Y_ 177
$n5 set Z_ 0.0
$ns initial_node_pos $n5 20
```

```
#=====
```

```
#Agents Definition
```

```
#=====
```

```
#Setup a UDP connection
set udp0 [new Agent/UDP]
$ns attach-agent $n0 $udp0
set null1 [new Agent/Null]
$ns attach-agent $n4 $null1
$ns connect $udp0 $null1
$udp0 set packetSize_ 1500
```

```
#Setup a TCP connection
set tcp0 [new Agent/TCP]
$ns attach-agent $n3 $tcp0
set sink1 [new Agent/TCPSink]
$ns attach-agent $n5 $sink1
$ns connect $tcp0 $sink1
```

```
#=====
```

```
#Applications Definition
```

```
#=====
```

```
#Setup a CBR Application over UDP connection
set cbr0 [new Application/Traffic/CBR]
$cbr0 attach-agent $udp0
$cbr0 set packetSize_ 1000
$cbr0 set rate_ 1.0Mb
$cbr0 set random_ null
```

```
#Setup a FTP Application over TCP connection
set ftp0 [new Application/FTP]
$ftp0 attach-agent $tcp0
```

```
#=====
#Termination
#=====
#Define a 'finish' procedure
proc finish {} {
    global ns tracefile namfile
    $ns flush-trace
    close $tracefile
    close $namfile

    exec nam p4.nam &
    exec echo "Number of packets dropped is:" &
    exec grep -c "^D" p4.tr &
    exit 0
}
```

```
$ns at 1.0 "$cbr0 start"
$ns at 2.0 "$ftp0 start"
$ns at 180.0 "$ftp0 stop"
$ns at 200.0 "$cbr0 stop"
$ns at 200.0 "finish"
$ns at 70 "$n4 set dest 100 60 20"
$ns at 100 "$n4 set dest 700 300 20"
$ns at 150 "$n4 set dest 900 200 20"
$ns run
```

```
#=====
```

Save the below code file name with .awk extension

```
#CODE TO BE SAVED AS .awk FILE
#=====
BEGIN{
    count1=0
    count2=0
    pack1=0
    pack2=0
    time1=0
    time2=0
}
{
    if($1=="r"&&$3=="_1_"&&$4=="RTR")
    {
```

```
count1++
pack1=pack1+$8
time1=$2
}
if($1=="r"&&$3=="_2_"&&$4=="RTR")
{
count2++
pack2=pack2+$8
time2=$2
}
}
END{
printf("The Throughput from n0 to n1:
%fMbps\n",((count1*pack1*8)/(time1*1000000)));
printf("The Throughput from n1 to n2:
%fMbps\n",((count2*pack2*8)/(time2*1000000)));
}
```