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#Aim :- To simulate and write a network using nsg2/ns2 with tcp-ftp and udp-cbr with
AODV protocol
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# This script is created by NSG2 beta1
# <http://wushoupong.googlepages.com/nsg>

#===================================
#     Simulation parameters setup
#===================================
set val(chan)   Channel/WirelessChannel    ;# channel type
set val(prop)   Propagation/TwoRayGround   ;# radio-propagation model
set val(netif)  Phy/WirelessPhy            ;# network interface type
set val(mac)    Mac/802_11                 ;# MAC type
set val(ifq)    Queue/DropTail/PriQueue    ;# interface queue type
set val(ll)     LL                         ;# link layer type
set val(ant)    Antenna/OmniAntenna        ;# antenna model
set val(ifqlen) 50                         ;# max packet in ifq
set val(nn)     4                          ;# number of mobilenodes
set val(rp)     DSDV                       ;# routing protocol
set val(x)      757                       ;# X dimension of topography
set val(y)      1069                       ;# Y dimension of topography
set val(stop)   10.0                          ;# time of simulation end

#===================================
#        Initialization
#===================================
#Create a ns simulator
set ns [new Simulator]

#Setup topography object
set topo       [new Topography]
$topo load_flatgrid $val(x) $val(y)
create-god $val(nn)

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

#Open the NAM trace file
set namfile [open out.nam w]
$ns namtrace-all $namfile
$ns namtrace-all-wireless $namfile $val(x) $val(y)
set chan [new $val(chan)];#Create wireless channel

#===================================
#     Mobile node parameter setup
#===================================
$ns node-config -adhocRouting  $val(rp) \
                -llType        $val(ll) \
                -macType       $val(mac) \
                -ifqType       $val(ifq) \
                -ifqLen        $val(ifqlen) \
                -antType       $val(ant) \
                -propType      $val(prop) \
                -phyType       $val(netif) \
                -channel       $chan \
                -topoInstance  $topo \
                -agentTrace    ON \
                -routerTrace   ON \
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                -macTrace      ON \
                -movementTrace ON

#=================================
#        Nodes Definition
#=================================
#Create 4 nodes
set n0 [$ns node]
$n0 set X_ 327
$n0 set Y_ 337
$n0 set Z_ 0.0
$ns initial_node_pos $n0 20
set n1 [$ns node]
$n1 set X_ 333
$n1 set Y_ 67
$n1 set Z_ 0.0
$ns initial_node_pos $n1 20
set n2 [$ns node]
$n2 set X_ 501
$n2 set Y_ 225
$n2 set Z_ 0.0
$ns initial_node_pos $n2 20
set n3 [$ns node]
$n3 set X_ 703
$n3 set Y_ 230
$n3 set Z_ 0.0
$ns initial_node_pos $n3 20

#=================================
#        Generate movement
#=================================
$ns at 0.5 " $n0 setdest 200 200 25 "
$ns at 0.5 " $n1 setdest 250 250 25 "
$ns at 0.5 " $n2 setdest 650 600 25 "
$ns at 0.5 " $n3 setdest 350 350 25 "

#=================================
#        Agents Definition
#=================================
#Setup a TCP connection
set tcp0 [new Agent/TCP]
$ns attach-agent $n0 $tcp0
set sink1 [new Agent/TCPSink]
$ns attach-agent $n2 $sink1
$ns connect $tcp0 $sink1
$tcp0 set packetSize_ 1500

#Setup a UDP connection
set udp2 [new Agent/UDP]
$ns attach-agent $n1 $udp2
set null3 [new Agent/Null]
$ns attach-agent $n2 $null3
$ns connect $udp2 $null3
$udp2 set packetSize_ 1500

#Setup a TCP connection
set tcp4 [new Agent/TCP]
$ns attach-agent $n2 $tcp4
set sink5 [new Agent/TCPSink]
$ns attach-agent $n3 $sink5
$ns connect $tcp4 $sink5
$tcp4 set packetSize_ 1500
```

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#===================================
#        Applications Definition
#===================================
#Setup a FTP Application over TCP connection
set ftp0 [new Application/FTP]
$ftp0 attach-agent $tcp0
$ns at 1.0 "$ftp0 start"
$ns at 2.0 "$ftp0 stop"

#Setup a CBR Application over UDP connection
set cbr1 [new Application/Traffic/CBR]
$cbr1 attach-agent $udp2
$cbr1 set packetSize_ 1000
$cbr1 set rate_ 1.0Mb
$cbr1 set random_ null
$ns at 1.0 "$cbr1 start"
$ns at 2.0 "$cbr1 stop"

#Setup a FTP Application over TCP connection
set ftp2 [new Application/FTP]
$ftp2 attach-agent $tcp4
$ns at 1.0 "$ftp2 start"
$ns at 2.0 "$ftp2 stop"


#===================================
#        Termination
#===================================
#Define a 'finish' procedure
proc finish {} {
    global ns tracefile namfile
    $ns flush-trace
    close $tracefile
    close $namfile
    exec nam out.nam &
    exit 0
}
for {set i 0} {$i < $val(nn) } { incr i } {
    $ns at $val(stop) "\$n$i reset"
}
$ns at $val(stop) "$ns nam-end-wireless $val(stop)"
$ns at $val(stop) "finish"
$ns at $val(stop) "puts \"done\" ; $ns halt"
$ns run
```