

```

# Define options
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) 24 ;# number of mobilenodes
set val(rp) AODV ;# routing protocol
set val(x) 1000 ;# X dimension of topography
set val(y) 1000 ;# Y dimension of topography
set val(stop) 160 ;# time of simulation end

set ns [new Simulator]

set tracefd [open arif_nur_listanto_manet_UTS.tr w]
set namtrace [open arif_nur_listanto_manet_UTS.nam w]

$ns trace-all $tracefd
$ns namtrace-all-wireless $namtrace $val(x) $val(y)

# set up topography object
set topo [new Topography]
$topo load_flatgrid $val(x) $val(y)

create-god $val(nn)

#configure the nodes
set chan1 [new $val(chan)]
$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 $chan1 \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON \
-macTrace OFF \
-movementTrace ON

for {set i 0} {$i < $val(nn)} {incr i} {
set n($i) [$ns node]
#$ns at 0.1 "$n($i) color blue"
}

```

```
#defining heads
$ns at 0.0 "$n(1) label Source"
$ns at 0.0 "$n(15) label Destination"
$ns at 0.0 "$n(14) label Source"
$ns at 0.0 "$n(9) label Destination"

# Provide initial location of mobilenodes

$n(0) set X_ 105.0
$n(0) set Y_ 206.0
$n(0) set Z_ 0.0

$n(1) set X_ 805.0
$n(1) set Y_ 742.0
$n(1) set Z_ 0.0

$n(2) set X_ 515.0
$n(2) set Y_ 606.0
$n(2) set Z_ 0.0

$n(3) set X_ 405.0
$n(3) set Y_ 342.0
$n(3) set Z_ 0.0

$n(4) set X_ 675.0
$n(4) set Y_ 156.0
$n(4) set Z_ 0.0

$n(5) set X_ 905.0
$n(5) set Y_ 549.0
$n(5) set Z_ 0.0

$n(6) set X_ 675.0
$n(6) set Y_ 336.0
$n(6) set Z_ 0.0

$n(7) set X_ 555.0
$n(7) set Y_ 762.0
$n(7) set Z_ 0.0

$n(8) set X_ 258.0
$n(8) set Y_ 646.0
$n(8) set Z_ 0.0

$n(9) set X_ 645.0
$n(9) set Y_ 522.0
$n(9) set Z_ 0.0

$n(10) set X_ 265.0
$n(10) set Y_ 376.0
$n(10) set Z_ 0.0
```

\$n(11) set X\_ 495.0  
\$n(11) set Y\_ 502.0  
\$n(11) set Z\_ 0.0

\$n(12) set X\_ 75.0  
\$n(12) set Y\_ 426.0  
\$n(12) set Z\_ 0.0

\$n(13) set X\_ 145.0  
\$n(13) set Y\_ 119.0  
\$n(13) set Z\_ 0.0

\$n(14) set X\_ 85.0  
\$n(14) set Y\_ 702.0  
\$n(14) set Z\_ 0.0

\$n(15) set X\_ 340.0  
\$n(15) set Y\_ 36.0  
\$n(15) set Z\_ 0.0

\$n(16) set X\_ 758.0  
\$n(16) set Y\_ 602.0  
\$n(16) set Z\_ 0.0

\$n(17) set X\_ 435.0  
\$n(17) set Y\_ 186.0  
\$n(17) set Z\_ 0.0

\$n(18) set X\_ 5.0  
\$n(18) set Y\_ 2.0  
\$n(18) set Z\_ 0.0

\$n(19) set X\_ 515.0  
\$n(19) set Y\_ 366.0  
\$n(19) set Z\_ 0.0

\$n(20) set X\_ 33.0  
\$n(20) set Y\_ 111.0  
\$n(20) set Z\_ 0.0

\$n(21) set X\_ 805.0  
\$n(21) set Y\_ 100.0  
\$n(21) set Z\_ 0.0

\$n(22) set X\_ 125.0  
\$n(22) set Y\_ 10.0  
\$n(22) set Z\_ 0.0

\$n(23) set X\_ 505.0  
\$n(23) set Y\_ 90.0  
\$n(23) set Z\_ 0.0

#new location after move

```
$ns at 0.0 "$n(0) setdest 130.0 208.0 5.0"
$ns at 0.0 "$n(1) setdest 485.0 128.0 5.0"
$ns at 1.0 "$n(2) setdest 615.0 340.0 5.0"
$ns at 1.0 "$n(3) setdest 680.0 458.0 5.0"
$ns at 3.0 "$n(4) setdest 580.0 368.0 5.0"
$ns at 3.0 "$n(5) setdest 785.0 228.0 5.0"
$ns at 2.0 "$n(6) setdest 750.0 638.0 5.0"
$ns at 1.0 "$n(7) setdest 185.0 120.0 5.0"
$ns at 0.0 "$n(8) setdest 335.0 700.0 5.0"
$ns at 2.0 "$n(9) setdest 425.0 590.0 5.0"
$ns at 2.0 "$n(10) setdest 105.0 620.0 5.0"
$ns at 0.0 "$n(11) setdest 565.0 420.0 5.0"
$ns at 1.0 "$n(12) setdest 700.0 20.0 5.0"
$ns at 1.0 "$n(13) setdest 115.0 85.0 5.0"
$ns at 1.0 "$n(14) setdest 195.0 185.0 5.0"
$ns at 1.0 "$n(15) setdest 387.0 590.0 5.0"
$ns at 2.0 "$n(16) setdest 165.0 620.0 5.0"
$ns at 0.0 "$n(17) setdest 765.0 320.0 5.0"
$ns at 1.0 "$n(18) setdest 109.0 20.0 5.0"
$ns at 1.0 "$n(19) setdest 175.0 185.0 5.0"
$ns at 2.0 "$n(20) setdest 200.0 225.0 5.0"
$ns at 1.0 "$n(21) setdest 765.0 100.0 5.0"
$ns at 1.0 "$n(22) setdest 109.0 100.0 5.0"
$ns at 0.0 "$n(23) setdest 800.0 800.0 5.0"
```

# Set a TCP connection between n(1) and n(15)

```
set udp [new Agent/UDP] ;#use UDP to connect to sender node1
#$tcp set class_ 2
set null [new Agent/Null] ;#use NULL to attach to reciever node2
$ns attach-agent $n(1) $udp
$ns attach-agent $n(15) $null
$ns connect $udp $null ;#connect UDP AND NULL
```

# Set a TCP connection between n(14) and n(9)

```
set udp_1 [new Agent/UDP] ;#use UDP to connect to sender node1
#$tcp set class_ 2
set null_1 [new Agent/Null] ;#use NULL to attach to reciever node2
$ns attach-agent $n(14) $udp_1
$ns attach-agent $n(9) $null_1
$ns connect $udp_1 $null_1 ;#connect UDP AND NULL
```

set cbr1 [new Application/Traffic/CBR]

```
$cbr1 set packetSize_ 1000
$cbr1 set rate_ 200kb
$cbr1 set interval_ 0.02
$cbr1 attach-agent $udp ;#cbr object attached to udp
```

\$ns at 5.0 "\$cbr1 start"

```

# ending nam and the simulation
$ns at 80 "$cbr1 stop"
#$ns at $val(stop) "$ns nam-end-wireless $val(stop)"
$ns at $val(stop) "stop"
$ns at 50.01 "puts \"end simulation\" ; #$ns halt"

set cbr1 [new Application/Traffic/CBR]
$cbr1 set packetSize_ 1000
$cbr1 set rate_ 200kb
$cbr1 set interval_ 0.02
$cbr1 attach-agent $udp_1 ;#cbr object attached to udp

$ns at 81.0 "$cbr1 start"

# ending nam and the simulation
$ns at 160 "$cbr1 stop"
#$ns at $val(stop) "$ns nam-end-wireless $val(stop)"
$ns at $val(stop) "stop"
$ns at 50.01 "puts \"end simulation\" ; #$ns halt"

# Define node initial position in nam
for {set i 0} {$i < $val(nn)} { incr i } {
#80 defines the node size for nam
$ns initial_node_pos $n($i) 80
}

proc stop {} {
global ns tracefd namtrace
$ns flush-trace
close $tracefd
close $namtrace

exec nam arif_nur_listanto_manet_UTS.nam &
puts "nam"

#exec Xgraph thesis4.tr &
exit 0
}

$ns run

```