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# ping-wireless.tcl
# A simple example for wireless simulation
#===================================================================
# Define options
#===================================================================
set val(chan)           Channel/WirelessChannel          ;# channel type
set val(prop)           Propagation/TwoRayGround         ;# radio-propagation model
#set val(prop)          Propagation/RFMGroundProp        ;# radio-propagation model
#set val(prop)          Propagation/SimpleProp           ;# radio-propagation model
set val(netif)          Phy/WirelessPhy                  ;# network interface type
set val(mac)            Mac/802_11                       ;# MAC type
#set val(mac)           Mac/Tdma                         ;# 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)             3                                ;# number of mobilenodes
set val(rp)             DSDV                             ;# routing protocol
set val(batterymodel)   Battery/Simple                   ;# battery model
set val(batterymonitor) "on"
set val(initialenergy)  36                               ;# Initial battery capacity
set val(radiomodel)     Radio/Simple                     ;# generic radio hardware
set val(receivepower)   .5                               ;# Receiving Power
set val(transmitpower)  .5                               ;# Transmitting Power
set val(idlepower)      .05                              ;# Idle Power

#===================================================================
# Other Settings
#===================================================================

LL set mindelay_              50us
LL set delay_                 25us
LL set bandwidth_             0       ;# not used

Queue/DropTail/PriQueue set Prefer_Routing_Protocols    1

# unity gain, omni-directional antennas
# set up the antennas to be centered in the node and 1.5 meters above it
Antenna/OmniAntenna set X_ 0
Antenna/OmniAntenna set Y_ 0
Antenna/OmniAntenna set Z_ 1.5
Antenna/OmniAntenna set Gt_ 1.0
Antenna/OmniAntenna set Gr_ 1.0
```

```
# Initialize the SharedMedia for a transmission range of 20 m for TwoRay Ground model
Phy/WirelessPhy set CPThresh_ 10.0
Phy/WirelessPhy set CSThresh_ 1.559e-11
Phy/WirelessPhy set RXThresh_ 4.80696e-07
Phy/WirelessPhy set Rb_ 2*1e6
Phy/WirelessPhy set Pt_ 0.2818
Phy/WirelessPhy set freq_ 914e+6
Phy/WirelessPhy set L_ 1.0


#===================================================================
# Main Program
#===================================================================

#
# Initialize Global Variables
#
#remove-all-packet-headers
#add-packet-header DSDV Agent/Ping Mac/802_11 Mac/Tdma

set ns_                 [new Simulator]
set tracefd     [open simple.tr w]
$ns_ trace-all $tracefd

# set up topography object
set topo       [new Topography]

$topo load_flatgrid 100 100

#
# Create God
#
create-god $val(nn)

#
#  Create channel
set chan_1_ [new $val(chan)]

#
#  Create the specified number of mobilenodes [$val(nn)] and "attach" them
#  to the channel.
```

```
# configure node

        $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_1_ \
                         -topoInstance $topo \
                         -agentTrace ON \
                         -routerTrace ON \
                         -macTrace OFF \
                         -movementTrace OFF       \
                -energyModel "EnergyModel" \
                -initialEnergy $val(initialenergy) \
                -rxPower $val(receivepower) \
                -txPower $val(transmitpower) \
                -idlePower $val(idlepower)



# Generating nodes
for {set i 0} {$i < $val(nn) } {incr i} {
 set node_($i) [$ns_ node]
 }

# Provide initial (X,Y, for now Z=0) co-ordinates for mobilenodes
$node_(0) set X_  94.85
$node_(0) set Y_  12.75
$node_(0) set Z_   0.0
$node_(1) set X_  60.79
$node_(1) set Y_  92.33
$node_(1) set Z_   0.0
$node_(2) set X_  41.86
$node_(2) set Y_  10.13
$node_(2) set Z_   0.0

#Create two ping agents and attach them to the nodes n0 and n2
set p0 [new Agent/Ping]
$ns attach-agent $n0 $p0

set p1 [new Agent/Ping]
$ns attach-agent $n2 $p1
```

```
#Connect the two agents
$ns connect $p0 $p1


#Define a 'recv' function for the class 'Agent/Ping'
Agent/Ping instproc recv {from rtt} {
        $self instvar node_
        puts "node [$node_ id] received ping answer from \
              $from with round-trip-time $rtt ms."
}


#Schedule events
$ns_ at 100.0 "puts \"hell-O\" "
$ns_ at 10.2 "$p0 send"
$ns_ at 10.4 "$p1 send"
$ns_ at 20.6 "$p0 send"
$ns_ at 120.4 "$p0 send"
$ns_ at 200.4 "$p1 send"
$ns_ at 10000.0 "$ns_ halt"

#Run the Simulation
puts "Starting Simulation..."
$ns_ run
```