#===================================

# 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) 59 ;# number of nodes

set val(rp) AODV ;# routing protocol

set val(x) 1269 ;# X dimension of topography

set val(y) 874 ;# Y dimension of topography

set val(stop) 4.7 ;# time of simulation end

#===================================

# Initialization

#===================================

#Create a ns simulator

set ns [new Simulator]

$ns color 1 Blue

$ns color 2 Red

$ns color 3 Pink

#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 WBPOH.tr w]

$ns trace-all $tracefile

#Open the NAM trace file

set namfile [open WBPOH.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 \

-macTrace ON \

-movementTrace ON

#===================================

# Nodes Definition

#===================================

#Create nodes

set n0 [$ns node]

$n0 set X\_ 132

$n0 set Y\_ 675

$n0 set Z\_ 0.0

$ns initial\_node\_pos $n0 20

set n1 [$ns node]

$n1 set X\_ 121

$n1 set Y\_ 446

$n1 set Z\_ 0.0

$ns initial\_node\_pos $n1 20

set n2 [$ns node]

$n2 set X\_ 444

$n2 set Y\_ 453

$n2 set Z\_ 0.0

$ns initial\_node\_pos $n2 20

set n3 [$ns node]

$n3 set X\_ 530

$n3 set Y\_ 466

$n3 set Z\_ 0.0

$ns initial\_node\_pos $n3 20

set n4 [$ns node]

$n4 set X\_ 491

$n4 set Y\_ 552

$n4 set Z\_ 0.0

$ns initial\_node\_pos $n4 20

set n5 [$ns node]

$n5 set X\_ 727

$n5 set Y\_ 730

$n5 set Z\_ 0.0

$ns initial\_node\_pos $n5 20

set n6 [$ns node]

$n6 set X\_ 492

$n6 set Y\_ 410

$n6 set Z\_ 0.0

$ns initial\_node\_pos $n6 20

set n7 [$ns node]

$n7 set X\_ 188

$n7 set Y\_ 427

$n7 set Z\_ 0.0

$ns initial\_node\_pos $n7 20

set n8 [$ns node]

$n8 set X\_ 355

$n8 set Y\_ 773

$n8 set Z\_ 0.0

$ns initial\_node\_pos $n8 20

set n9 [$ns node]

$n9 set X\_ 304

$n9 set Y\_ 597

$n9 set Z\_ 0.0

$ns initial\_node\_pos $n9 20

set n10 [$ns node]

$n10 set X\_ 510

$n10 set Y\_ 640

$n10 set Z\_ 0.0

$ns initial\_node\_pos $n10 20

set n11 [$ns node]

$n11 set X\_ 405

$n11 set Y\_ 509

$n11 set Z\_ 0.0

$ns initial\_node\_pos $n11 20

set n12 [$ns node]

$n12 set X\_ 276

$n12 set Y\_ 457

$n12 set Z\_ 0.0

$ns initial\_node\_pos $n12 20

set n13 [$ns node]

$n13 set X\_ 327

$n13 set Y\_ 523

$n13 set Z\_ 0.0

$ns initial\_node\_pos $n13 20

set n14 [$ns node]

$n14 set X\_ 364

$n14 set Y\_ 587

$n14 set Z\_ 0.0

$ns initial\_node\_pos $n14 20

set n15 [$ns node]

$n15 set X\_ 768

$n15 set Y\_ 546

$n15 set Z\_ 0.0

$ns initial\_node\_pos $n15 20

set n16 [$ns node]

$n16 set X\_ 576

$n16 set Y\_ 330

$n16 set Z\_ 0.0

$ns initial\_node\_pos $n16 20

set n17 [$ns node]

$n17 set X\_ 626

$n17 set Y\_ 355

$n17 set Z\_ 0.0

$ns initial\_node\_pos $n17 20

set n18 [$ns node]

$n18 set X\_ 422

$n18 set Y\_ 305

$n18 set Z\_ 0.0

$ns initial\_node\_pos $n18 20

set n19 [$ns node]

$n19 set X\_ 375

$n19 set Y\_ 373

$n19 set Z\_ 0.0

$ns initial\_node\_pos $n19 20

set n20 [$ns node]

$n20 set X\_ 514

$n20 set Y\_ 337

$n20 set Z\_ 0.0

$ns initial\_node\_pos $n20 20

set n21 [$ns node]

$n21 set X\_ 596

$n21 set Y\_ 585

$n21 set Z\_ 0.0

$ns initial\_node\_pos $n21 20

set n22 [$ns node]

$n22 set X\_ 671

$n22 set Y\_ 602

$n22 set Z\_ 0.0

$ns initial\_node\_pos $n22 20

set n23 [$ns node]

$n23 set X\_ 680

$n23 set Y\_ 492

$n23 set Z\_ 0.0

$ns initial\_node\_pos $n23 20

set n24 [$ns node]

$n24 set X\_ 563

$n24 set Y\_ 704

$n24 set Z\_ 0.0

$ns initial\_node\_pos $n24 20

set n25 [$ns node]

$n25 set X\_ 357

$n25 set Y\_ 675

$n25 set Z\_ 0.0

$ns initial\_node\_pos $n25 20

set n26 [$ns node]

$n26 set X\_ 197

$n26 set Y\_ 672

$n26 set Z\_ 0.0

$ns initial\_node\_pos $n26 20

set n27 [$ns node]

$n27 set X\_ 160

$n27 set Y\_ 585

$n27 set Z\_ 0.0

$ns initial\_node\_pos $n27 20

set n28 [$ns node]

$n28 set X\_ 879

$n28 set Y\_ 300

$n28 set Z\_ 0.0

$ns initial\_node\_pos $n28 20

set n29 [$ns node]

$n29 set X\_ 609

$n29 set Y\_ 186

$n29 set Z\_ 0.0

$ns initial\_node\_pos $n29 20

set n30 [$ns node]

$n30 set X\_ 528

$n30 set Y\_ 177

$n30 set Z\_ 0.0

$ns initial\_node\_pos $n30 20

set n31 [$ns node]

$n31 set X\_ 369

$n31 set Y\_ 183

$n31 set Z\_ 0.0

$ns initial\_node\_pos $n31 20

set n32 [$ns node]

$n32 set X\_ 297

$n32 set Y\_ 209

$n32 set Z\_ 0.0

$ns initial\_node\_pos $n32 20

set n33 [$ns node]

$n33 set X\_ 292

$n33 set Y\_ 290

$n33 set Z\_ 0.0

$ns initial\_node\_pos $n33 20

set n34 [$ns node]

$n34 set X\_ 162

$n34 set Y\_ 303

$n34 set Z\_ 0.0

$ns initial\_node\_pos $n34 20

set n35 [$ns node]

$n35 set X\_ 747

$n35 set Y\_ 274

$n35 set Z\_ 0.0

$ns initial\_node\_pos $n35 20

set n36 [$ns node]

$n36 set X\_ 861

$n36 set Y\_ 501

$n36 set Z\_ 0.0

$ns initial\_node\_pos $n36 20

set n37 [$ns node]

$n37 set X\_ 847

$n37 set Y\_ 379

$n37 set Z\_ 0.0

$ns initial\_node\_pos $n37 20

set n38 [$ns node]

$n38 set X\_ 960

$n38 set Y\_ 638

$n38 set Z\_ 0.0

$ns initial\_node\_pos $n38 20

set n39 [$ns node]

$n39 set X\_ 909

$n39 set Y\_ 644

$n39 set Z\_ 0.0

$ns initial\_node\_pos $n39 20

set n40 [$ns node]

$n40 set X\_ 801

$n40 set Y\_ 662

$n40 set Z\_ 0.0

$ns initial\_node\_pos $n40 20

set n41 [$ns node]

$n41 set X\_ 961

$n41 set Y\_ 491

$n41 set Z\_ 0.0

$ns initial\_node\_pos $n41 20

set n42 [$ns node]

$n42 set X\_ 637

$n42 set Y\_ 301

$n42 set Z\_ 0.0

$ns initial\_node\_pos $n42 20

set n43 [$ns node]

$n43 set X\_ 781

$n43 set Y\_ 123

$n43 set Z\_ 0.0

$ns initial\_node\_pos $n43 20

set n44 [$ns node]

$n44 set X\_ 609

$n44 set Y\_ 483

$n44 set Z\_ 0.0

$ns initial\_node\_pos $n44 20

set n45 [$ns node]

$n45 set X\_ 742

$n45 set Y\_ 455

$n45 set Z\_ 0.0

$ns initial\_node\_pos $n45 20

set n46 [$ns node]

$n46 set X\_ 930

$n46 set Y\_ 412

$n46 set Z\_ 0.0

$ns initial\_node\_pos $n46 20

set n47 [$ns node]

$n47 set X\_ 778

$n47 set Y\_ 352

$n47 set Z\_ 0.0

$ns initial\_node\_pos $n47 20

set n48 [$ns node]

$n48 set X\_ 431

$n48 set Y\_ 381

$n48 set Z\_ 0.0

$ns initial\_node\_pos $n48 20

set n49 [$ns node]

$n49 set X\_ 318

$n49 set Y\_ 381

$n49 set Z\_ 0.0

$ns initial\_node\_pos $n49 20

set n50 [$ns node]

$n50 set X\_ 236

$n50 set Y\_ 514

$n50 set Z\_ 0.0

$ns initial\_node\_pos $n50 20

set n51 [$ns node]

$n51 set X\_ 361

$n51 set Y\_ 455

$n51 set Z\_ 0.0

$ns initial\_node\_pos $n51 20

set n52 [$ns node]

$n52 set X\_ 714

$n52 set Y\_ 654

$n52 set Z\_ 0.0

$ns initial\_node\_pos $n52 20

set n53 [$ns node]

$n53 set X\_ 828

$n53 set Y\_ 209

$n53 set Z\_ 0.0

$ns initial\_node\_pos $n53 20

set n54 [$ns node]

$n54 set X\_ 590

$n54 set Y\_ 256

$n54 set Z\_ 0.0

$ns initial\_node\_pos $n54 20

set n55 [$ns node]

$n55 set X\_ 487

$n55 set Y\_ 260

$n55 set Z\_ 0.0

$ns initial\_node\_pos $n55 20

set n56 [$ns node]

$n56 set X\_ 687

$n56 set Y\_ 560

$n56 set Z\_ 0.0

$ns initial\_node\_pos $n56 20

set n57 [$ns node]

$n57 set X\_ 212

$n57 set Y\_ 347

$n57 set Z\_ 0.0

$ns initial\_node\_pos $n57 20

set n58 [$ns node]

$n58 set X\_ 81

$n58 set Y\_ 383

$n58 set Z\_ 0.0

$ns initial\_node\_pos $n58 20

$ns at 0.0 "$n57 color #4287f5"

$n57 color "#4287f5"

$ns at 0.0 "$n58 color #4287f5"

$n58 color "#4287f5"

$ns at 0.0 "$n57 label macrocell"

$ns at 0.0 "$n58 label macrocell"

$ns at 0.0 "$n56 color #f7072f"

$n56 color "#f7072f"

$ns at 0.0 "$n56 label WBPOH"

$ns at 0.1 "$n56 label PTT-28.3ms"

$ns at 0.2 "$n56 label CD-36560bits"

$ns at 0.3 "$n56 label PS-1350bits"

$ns at 0.4 "$n56 label Power-0.2mw"

$ns at 0.5 "$n56 label max-time-3ms"

$ns at 0.6 "$n56 label WBPOH"

$ns at 0.7 "$n56 label PTT-28.3ms"

$ns at 0.8 "$n56 label CD-36560bits"

$ns at 0.9 "$n56 label PS-1350bits"

$ns at 1.0 "$n56 label Power-0.2mw"

$ns at 1.1 "$n56 label max-time-3ms"

$ns at 1.2 "$n56 label WBPOH"

$ns at 1.3 "$n56 label PTT-28.3ms"

$ns at 1.4 "$n56 label CD-36560bits"

$ns at 1.5 "$n56 label PS-1350bits"

$ns at 1.6 "$n56 label Power-0.2mw"

$ns at 1.7 "$n56 label max-time-3ms"

$ns at 1.8 "$n56 label WBPOH"

$ns at 1.9 "$n56 label PTT-28.3ms"

$ns at 2.0 "$n56 label CD-36560bits"

$ns at 2.1 "$n56 label PS-1350bits"

$ns at 2.2 "$n56 label Power-0.2mw"

$ns at 2.3 "$n56 label max-time-3ms"

$ns at 2.4 "$n56 label WBPOH"

$ns at 2.5 "$n56 label PTT-28.3ms"

$ns at 2.6 "$n56 label CD-36560bits"

$ns at 2.7 "$n56 label PS-1350bits"

$ns at 2.8 "$n56 label Power-0.2mw"

$ns at 2.9 "$n56 label max-time-3ms"

$ns at 3.0 "$n56 label WBPOH"

$ns at 3.1 "$n56 label PTT-28.3ms"

$ns at 3.2 "$n56 label CD-36560bits"

$ns at 3.3 "$n56 label PS-1350bits"

$ns at 3.4 "$n56 label Power-0.2mw"

$ns at 3.5 "$n56 label max-time-3ms"

$ns at 3.6 "$n56 label WBPOH"

$ns at 3.7 "$n56 label PTT-28.3ms"

$ns at 3.8 "$n56 label CD-36560bits"

$ns at 3.9 "$n56 label PS-1350bits"

$ns at 4.0 "$n56 label Power-0.2mw"

$ns at 4.1 "$n56 label max-time-3ms"

$ns at 4.2 "$n56 label WBPOH"

$ns at 4.3 "$n56 label PTT-28.3ms"

$ns at 4.4 "$n56 label CD-36560bits"

$ns at 4.5 "$n56 label PS-1350bits"

$ns at 4.6 "$n56 label Power-0.2mw"

$ns at 4.7 "$n56 label max-time-3ms"

$ns at 0.0 "$n1 color #9003fc"

$n1 color "#9003fc"

$ns at 0.0 "$n1 label bS1"

$ns at 0.0 "$n14 color #9003fc"

$n14 color "#9003fc"

$ns at 0.0 "$n14 label bS2"

$ns at 0.0 "$n18 color #9003fc"

$n18 color "#9003fc"

$ns at 0.0 "$n18 label bS3"

$ns at 0.0 "$n44 color #9003fc"

$n44 color "#9003fc"

$ns at 0.0 "$n44 label bS4"

$ns at 0.0 "$n39 color #9003fc"

$n39 color "#9003fc"

$ns at 0.0 "$n39 label bS5"

$ns at 0.0 "$n2 color #eb34df"

$n2 color "#eb34df"

$ns at 0.0 "$n2 label W1"

$ns at 0.0 "$n16 color #eb34df"

$n16 color "#eb34df"

$ns at 0.0 "$n16 label W2"

$ns at 0.0 "$n4 color #873e36"

$n4 color "#873e36"

$ns at 0.0 "$n4 label W1"

$ns at 0.0 "$n11 color #873e36"

$n11 color "#873e36"

$ns at 0.0 "$n11 label W1"

$ns at 0.0 "$n51 color #873e36"

$n51 color "#873e36"

$ns at 0.0 "$n51 label W1"

$ns at 0.0 "$n49 color #873e36"

$n49 color "#873e36"

$ns at 0.0 "$n49 label W1"

$ns at 0.0 "$n19 color #873e36"

$n19 color "#873e36"

$ns at 0.0 "$n19 label W1"

$ns at 0.0 "$n48 color #873e36"

$n48 color "#873e36"

$ns at 0.0 "$n48 label W1"

$ns at 0.0 "$n6 color #873e36"

$n6 color "#873e36"

$ns at 0.0 "$n6 label W1"

$ns at 0.0 "$n3 color #873e36"

$n3 color "#873e36"

$ns at 0.0 "$n3 label W1"

$ns at 0.0 "$n17 color #873e36"

$n17 color "#873e36"

$ns at 0.0 "$n17 label W2"

$ns at 0.0 "$n20 color #873e36"

$n20 color "#873e36"

$ns at 0.0 "$n20 label W2"

$ns at 0.0 "$n54 color #873e36"

$n54 color "#873e36"

$ns at 0.0 "$n54 label W2"

$ns at 0.0 "$n55 color #873e36"

$n55 color "#873e36"

$ns at 0.0 "$n55 label W2"

$ns at 0.0 "$n42 color #873e36"

$n42 color "#873e36"

$ns at 0.0 "$n42 label W2"

#===================================

# Node Movement

#===================================

$ns at 0.0 " $n34 setdest 609 186 50 "

$ns at 0.0 " $n7 setdest 510 640 50 "

$ns at 0.0 " $n0 setdest 530 466 50 "

$ns at 0.0 " $n27 setdest 491 552 50 "

$ns at 0.0 " $n9 setdest 375 373 50 "

$ns at 0.0 " $n21 setdest 960 638 50 "

$ns at 0.0 " $n26 setdest 514 337 50 "

$ns at 0.0 " $n50 setdest 861 501 50 "

$ns at 0.0 " $n12 setdest 563 704 50 "

$ns at 0.0 " $n13 setdest 747 274 50 "

$ns at 0.0 " $n33 setdest 132 675 50 "

$ns at 0.0 " $n5 setdest 369 183 50 "

$ns at 0.0 " $n8 setdest 960 638 50 "

$ns at 0.0 " $n9 setdest 369 183 50 "

$ns at 0.0 " $n10 setdest 961 491 50 "

$ns at 0.0 " $n15 setdest 162 303 50 "

$ns at 0.0 " $n21 setdest 160 585 50 "

$ns at 0.0 " $n22 setdest 292 290 50 "

$ns at 0.0 " $n23 setdest 930 412 50 "

$ns at 0.0 " $n24 setdest 369 183 50 "

$ns at 0.0 " $n25 setdest 879 300 50 "

$ns at 0.0 " $n28 setdest 236 514 50 "

$ns at 0.0 " $n29 setdest 357 675 50 "

$ns at 0.0 " $n30 setdest 355 773 50 "

$ns at 0.0 " $n31 setdest 727 730 50 "

$ns at 0.0 " $n32 setdest 304 597 50 "

$ns at 0.0 " $n35 setdest 960 638 50 "

$ns at 0.0 " $n36 setdest 236 514 50 "

$ns at 0.0 " $n37 setdest 188 427 50 "

$ns at 0.0 " $n38 setdest 369 183 50 "

$ns at 0.0 " $n40 setdest 292 290 50 "

$ns at 0.0 " $n41 setdest 327 523 50 "

$ns at 0.0 " $n43 setdest 162 303 50 "

$ns at 0.0 " $n45 setdest 960 638 50 "

$ns at 0.0 " $n46 setdest 236 514 50 "

$ns at 0.0 " $n47 setdest 355 773 50 "

$ns at 0.0 " $n50 setdest 861 501 50 "

$ns at 0.0 " $n52 setdest 514 337 50 "

$ns at 0.0 " $n53 setdest 355 773 50 "

$ns at 0.0 " $n3 setdest 747 274 50 "

$ns at 0.0 " $n4 setdest 528 177 50 "

$ns at 0.0 " $n6 setdest 528 177 50 "

$ns at 0.0 " $n11 setdest 680 492 50 "

$ns at 0.0 " $n17 setdest 276 457 50 "

$ns at 0.0 " $n19 setdest 778 352 50 "

$ns at 0.0 " $n20 setdest 304 597 50 "

$ns at 0.0 " $n42 setdest 327 523 50 "

$ns at 0.0 " $n48 setdest 781 123 50 "

$ns at 0.0 " $n49 setdest 680 492 50 "

$ns at 0.0 " $n51 setdest 778 352 50 "

$ns at 0.0 " $n54 setdest 357 675 50 "

$ns at 0.0 " $n55 setdest 510 640 50 "

$ns at 0.0 "$n0 label BS1"

$ns at 0.0 "$n5 label BS5"

$ns at 0.0 "$n7 label BS1"

$ns at 0.0 "$n8 label BS2"

$ns at 0.0 "$n9 label BS2"

$ns at 0.0 "$n10 label BS2"

$ns at 0.0 "$n12 label BS1"

$ns at 0.0 "$n13 label BS2"

$ns at 0.0 "$n15 label BS5"

$ns at 0.0 "$n21 label BS4"

$ns at 0.0 "$n22 label BS4"

$ns at 0.0 "$n23 label BS4"

$ns at 0.0 "$n24 label BS4"

$ns at 0.0 "$n25 label BS2"

$ns at 0.0 "$n26 label BS2"

$ns at 0.0 "$n27 label BS1"

$ns at 0.0 "$n28 label BS4"

$ns at 0.0 "$n29 label BS3"

$ns at 0.0 "$n30 label BS3"

$ns at 0.0 "$n31 label BS3"

$ns at 0.0 "$n32 label BS3"

$ns at 0.0 "$n33 label BS3"

$ns at 0.0 "$n34 label BS1"

$ns at 0.0 "$n35 label BS4"

$ns at 0.0 "$n36 label BS5"

$ns at 0.0 "$n37 label BS4"

$ns at 0.0 "$n38 label BS5"

$ns at 0.0 "$n40 label BS5"

$ns at 0.0 "$n41 label BS5"

$ns at 0.0 "$n43 label BS3"

$ns at 0.0 "$n45 label BS4"

$ns at 0.0 "$n46 label BS5"

$ns at 0.0 "$n47 label BS4"

$ns at 0.0 "$n50 label BS1"

$ns at 0.0 "$n52 label BS5"

$ns at 0.0 "$n53 label BS4"

$ns at 0.0 "$n3 label W1"

$ns at 0.0 "$n4 label W1"

$ns at 0.0 "$n6 label W1"

$ns at 0.0 "$n11 label W1"

$ns at 0.0 "$n17 label W2"

$ns at 0.0 "$n19 label W1"

$ns at 0.0 "$n20 label W2"

$ns at 0.0 "$n42 label W2"

$ns at 0.0 "$n48 label W1"

$ns at 0.0 "$n49 label W1"

$ns at 0.0 "$n51 label W1"

$ns at 0.0 "$n54 label W2"

$ns at 0.0 "$n55 label W2"

#===================================

# HANDOFF

#===================================

$ns at 1.25 "$n0 label BS2"

$ns at 1.16 "$n3 label W2"

$ns at 3.49 "$n4 label W2"

$ns at 2.20 "$n5 label BS4"

$ns at 0.89 "$n6 label W2"

$ns at 2.55 "$n7 label BS2"

$ns at 3.60 "$n9 label 35767-BS3"

$ns at 1.01 "$n10 label BS4"

$ns at 4.17 "$n11 label 32897-W2"

$ns at 0.64 "$n12 label BS2"

$ns at 3.06 "$n13 label BS3"

$ns at 0.15 "$n15 label BS4"

$ns at 2.69 "$n17 label W1"

$ns at 2.03 "$n19 label W2"

$ns at 1.18 "$n20 label W1"

$ns at 2.13 "$n21 label BS2"

$ns at 3.76 "$n23 label 29812-BS5"

$ns at 4.00 "$n25 label 31256-BS4"

$ns at 1.04 "$n27 label BS2"

$ns at 1.92 "$n33 label BS1"

$ns at 1.51 "$n34 label BS3"

$ns at 3.98 "$n35 label 36471-BS5"

$ns at 1.71 "$n36 label BS4"

$ns at 4.40 "$n38 label 34123-BS4"

$ns at 2.34 "$n40 label BS4"

$ns at 3.37 "$n41 label BS4"

$ns at 3.43 "$n42 label W1"

$ns at 1.87 "$n45 label BS5"

$ns at 1.87 "$n46 label BS4"

$ns at 1.13 "$n48 label W2"

$ns at 0.57 "$n50 label BS2"

$ns at 3.79 "$n51 label 36541-W2"

$ns at 0.77 "$n52 label BS4"

$ns at 3.31 "$n54 label W1"

$ns at 2.94 "$n55 label W1"

#================================

# COMMUNICATION DATA

#================================

$ns at 3.49 "$n0 label 36551-BS2"

$ns at 3.49 "$n3 label 0-W2"

$ns at 3.49 "$n4 label 36432-W2"

$ns at 3.49 "$n5 label 29182-BS4"

$ns at 3.49 "$n6 label 36541-W2"

$ns at 3.49 "$n7 label 29876-BS2"

$ns at 3.49 "$n8 label 36276-BS2"

$ns at 3.49 "$n9 label 35767-BS2"

$ns at 3.49 "$n10 label 34987-BS4"

$ns at 3.49 "$n11 label 32897-W1"

$ns at 3.49 "$n12 label 0-BS2"

$ns at 3.49 "$n13 label 0-BS3"

$ns at 3.49 "$n15 label 36498-BS4"

$ns at 3.49 "$n17 label 32761-W1"

$ns at 3.49 "$n19 label 0-W2"

$ns at 3.49 "$n20 label 29992-W1"

$ns at 3.49 "$n21 label 0-BS2"

$ns at 3.49 "$n22 label 36555-BS4"

$ns at 3.49 "$n23 label 29812-BS4"

$ns at 3.49 "$n24 label 28543-BS4"

$ns at 3.49 "$n25 label 31256-BS2"

$ns at 3.49 "$n26 label 35256-BS2"

$ns at 3.49 "$n27 label 0-BS2"

$ns at 3.49 "$n28 label 34831-BS4"

$ns at 3.49 "$n29 label 35794-BS3"

$ns at 3.49 "$n30 label 36121-BS3"

$ns at 3.49 "$n31 label 0-BS3"

$ns at 3.49 "$n32 label 29814-BS3"

$ns at 3.49 "$n33 label 34918-BS1"

$ns at 3.49 "$n34 label 35555-BS3"

$ns at 3.49 "$n35 label 36471-BS4"

$ns at 3.49 "$n36 label 32147-BS4"

$ns at 3.49 "$n37 label 29514-BS4"

$ns at 3.49 "$n38 label 34123-BS5"

$ns at 3.49 "$n40 label 0-BS4"

$ns at 3.49 "$n41 label 27988-BS4"

$ns at 3.49 "$n42 label 29889-W1"

$ns at 3.49 "$n43 label 0-BS3"

$ns at 3.49 "$n45 label 35982-BS5"

$ns at 3.49 "$n46 label 27615-BS4"

$ns at 3.49 "$n47 label 29872-BS4"

$ns at 3.49 "$n48 label 36291-W2"

$ns at 3.49 "$n49 label 35982-W1"

$ns at 3.49 "$n50 label 29569-BS2"

$ns at 3.49 "$n51 label 36541-W1"

$ns at 3.49 "$n52 label 36512-BS4"

$ns at 3.49 "$n53 label 35984-BS4"

$ns at 3.49 "$n54 label 0-W1"

$ns at 3.49 "$n55 label 36210-W1"

$ns at 3.7 "$n3 label sleep-state"

$ns at 3.7 "$n19 label sleep-state"

$ns at 3.7 "$n54 label sleep-state"

$ns at 3.7 "$n27 label sleep-state"

$ns at 3.7 "$n31 label sleep-state"

$ns at 3.7 "$n40 label sleep-state"

$ns at 3.7 "$n43 label sleep-state"

$ns at 3.7 "$n21 label sleep-state"

$ns at 3.7 "$n12 label sleep-state"

$ns at 3.7 "$n13 label sleep-state"

#Setup a TCP connection

set tcp0 [new Agent/TCP]

set sink0 [new Agent/TCPSink]

set ftp0 [new Application/FTP]

$ns attach-agent $n0 $tcp0

$ns attach-agent $n8 $sink0

$ftp0 attach-agent $tcp0

$ns connect $tcp0 $sink0

$ns at 0.2 "$ftp0 start"

$ns at 0.4 "$ftp0 stop"

set tcp1 [new Agent/TCP]

set sink1 [new Agent/TCPSink]

set ftp1 [new Application/FTP]

$ns attach-agent $n32 $tcp1

$ns attach-agent $n51 $sink1

$ftp1 attach-agent $tcp1

$ns connect $tcp1 $sink1

$ns at 0.4 "$ftp1 start"

$ns at 0.7 "$ftp1 stop"

set tcp2 [new Agent/TCP]

set sink2 [new Agent/TCPSink]

set ftp2 [new Application/FTP]

$ns attach-agent $n7 $tcp2

$ns attach-agent $n33 $sink2

$ftp2 attach-agent $tcp2

$ns connect $tcp2 $sink2

$ns at 0.5 "$ftp2 start"

$ns at 0.9 "$ftp2 stop"

set tcp3 [new Agent/TCP]

set sink3 [new Agent/TCPSink]

set ftp3 [new Application/FTP]

$ns attach-agent $n4 $tcp3

$ns attach-agent $n17 $sink3

$ftp3 attach-agent $tcp3

$ns connect $tcp3 $sink3

$ns at 1.4 "$ftp3 start"

$ns at 1.7 "$ftp3 stop"

set tcp4 [new Agent/TCP]

set sink4 [new Agent/TCPSink]

set ftp4 [new Application/FTP]

$ns attach-agent $n5 $tcp4

$ns attach-agent $n36 $sink4

$ftp4 attach-agent $tcp4

$ns connect $tcp4 $sink4

$ns at 2.0 "$ftp4 start"

$ns at 3.1 "$ftp4 stop"

set tcp5 [new Agent/TCP]

set sink5 [new Agent/TCPSink]

set ftp5 [new Application/FTP]

$ns attach-agent $n6 $tcp5

$ns attach-agent $n30 $sink5

$ftp5 attach-agent $tcp5

$ns connect $tcp5 $sink5

$ns at 0.8 "$ftp5 start"

$ns at 1.9 "$ftp5 stop"

set tcp6 [new Agent/TCP]

set sink6 [new Agent/TCPSink]

set ftp6 [new Application/FTP]

$ns attach-agent $n9 $tcp6

$ns attach-agent $n50 $sink6

$ftp6 attach-agent $tcp6

$ns connect $tcp6 $sink6

$ns at 2.9 "$ftp6 start"

$ns at 3.3 "$ftp6 stop"

set tcp7 [new Agent/TCP]

set sink7 [new Agent/TCPSink]

set ftp7 [new Application/FTP]

$ns attach-agent $n11 $tcp7

$ns attach-agent $n10 $sink7

$ftp7 attach-agent $tcp7

$ns connect $tcp7 $sink7

$ns at 2.4 "$ftp7 start"

$ns at 2.6 "$ftp7 stop"

$ns at 0.0 " $n56 setdest 375 373 1000 "

$ns at 0.3 " $n56 setdest 590 256 1000 "

$ns at 0.46 " $n56 setdest 513 583 1000 "

$ns at 0.6 " $n56 setdest 369 183 1000 "

$ns at 0.9 " $n56 setdest 801 662 1000 "

$ns at 1.1 " $n56 setdest 781 123 1000 "

$ns at 1.3 " $n56 setdest 909 773 1000 "

$ns at 1.5 " $n56 setdest 823 573 1000 "

$ns at 1.7 " $n56 setdest 189 752 1000 "

$ns at 1.9 " $n56 setdest 672 563 1000 "

$ns at 1.95 " $n56 setdest 132 675 1000 "

$ns at 2.4 " $n56 setdest 279 175 1000 "

$ns at 2.6 " $n56 setdest 452 349 1000 "

$ns at 2.8 " $n56 setdest 592 431 1000 "

$ns at 3.0 " $n56 setdest 640 341 1000 "

$ns at 3.07 " $n56 setdest 355 773 1000 "

$ns at 3.2 " $n56 setdest 350 580 1000 "

$ns at 3.4 " $n56 setdest 395 764 1000 "

$ns at 3.5 " $n56 setdest 503 412 1000 "

$ns at 3.7 " $n56 setdest 132 675 1000 "

$ns at 3.9 " $n56 setdest 458 794 1000 "

$ns at 4.0 " $n56 setdest 742 455 1000 "

$ns at 4.3 " $n56 setdest 132 675 1000 "

$ns at 4.5 " $n56 setdest 199 538 1000 "

$ns at 4.7 " $n56 setdest 556 433 1000 "

#Define a 'finish' procedure

proc finish {} {

global ns tracefile namfile

$ns flush-trace

close $tracefile

close $namfile

exec nam WBPOH &

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