# Software Defined Wireless Networking and Network-Function Virtualization (NFV) (SDWN & NFV)

**Omnet version** 🡪 6.0.3

**Intel version** 🡪3.8.5(هتلاقيها جوا omnet)

A screen shot of a computer

AI-generated content may be incorrect.

# **Links :**

<https://github.com/inet-framework/inet/releases>

<https://github.com/CoRE-RG/OpenFlow>

<https://omnetpp.org/download/>

<https://www.youtube.com/watch?v=d6Mdmv_M8uY&ab_channel=Omnet%2B%2BManual>

<https://youtu.be/iyZ9RuOyIfM?si=iWaFSGDq74R6ZFB9>

<https://youtu.be/ujQ_jaItx_Y?si=aOkMDFvGRobN_HNw>

# **codes:**

# .ini

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| **[General]**  **network** = sdwn\_final.simulations.Network1  **sim-time-limit** = 2s  *# ============= Wireless & Radio Medium Settings =============*  \*.radioMedium.**typename** = "Ieee80211RadioMedium"  \*.radioMedium.backgroundNoise.power = -110dBm  \*.radioMedium.analogModelType = "ScalarAnalogModel" *# Added for better signal modeling*  *# ============= Radio Settings =============*  \*\*.radio.transmitter.power = 2000mW  \*\*.radio.receiver.sensitivity = -85dBm  \*\*.radio.receiver.snirThreshold = 4dB  *# ============= Host Settings =============*  \*.host\*.wlan[0].ssid = "SDWN-Net" *# Applies to all hosts*  \*.host\*.wlan[0].bitrate = 54Mbps  \*.host\*.wlan[0].radio.transmitter.power = 20mW  \*.host\*.wlan[0].radio.transmitter.communicationRange = 100m  \*.host\*.wlan[0].mac.useAck = true *# Enable ACKs for reliability*  *# ============= Access Point Settings =============*  \*.accessPoint.wlan[0].ssid = "SDWN-Net"  \*.accessPoint.wlan[0].channelNumber = 1  \*.accessPoint.wlan[0].bitrate = 54Mbps  \*.accessPoint.wlan[0].radio.transmitter.power = 100mW  \*.accessPoint.wlan[0].mac.useAck = true  \*.accessPoint.wlan[0].radio.transmitter.communicationRange = 200m  *# ============= OpenFlow/SDN Configuration =============*  \*.controller.flowTableConfig = xmldoc("flows.xml") *# Changed to match your NED file*  \*.switch.controllerAddress = "10.0.0.100" *# Matches controller's IP*  \*.switch.flowTableSize = 1000 *# Added for better switch performance*  .controller.tcpApp[].localPort = 6633 *# Controller listening port*  *# ============= Updated TCP Configuration =============*  .switch.tcpApp[\*].connectAddress = "10.0.0.100" *# Controller IP*  .switch.tcpApp[\*].connectPort = 6633 *# OpenFlow port*  .switch.tcpApp[\*].localPort = -1 *# Ephemeral port*  .switch.tcpApp[\*].startTime = 0.1s *# Connection delay*  .switch.tcp.mss = 1460 *# Maximum Segment Size (no units)*  .switch.tcp.sendQueue = "inet::tcp::TcpSendQueue" *# Updated class name*  .switch.tcp.receiveQueue = "inet::tcp::TcpReceiveQueue" *# Updated class name*  *# ============= IP Address Configuration =============*  \*.host1.ipv4.address = "10.0.0.1"  \*.host1.ipv4.netmask = "255.255.255.0"  \*.host2.ipv4.address = "10.0.0.2"  \*.host2.ipv4.netmask = "255.255.255.0"  \*.host3.ipv4.address = "10.0.0.3"  \*.host3.ipv4.netmask = "255.255.255.0"  \*.accessPoint1.ipv4.address = "10.0.0.10"  \*.accessPoint1.ipv4.netmask = "255.255.255.0"  \*.accessPoint2.ipv4.address = "10.0.0.20"  \*.accessPoint2.ipv4.netmask = "255.255.255.0"  \*.switch.ipv4.address = "10.0.0.30" *# Changed to match NED file*  \*.switch.ipv4.netmask = "255.255.255.0"  \*.controller.ipv4.address = "10.0.0.100" *# Changed to match NED file*  \*.controller.ipv4.netmask = "255.255.255.0"  *# ============= Visualization =============*  .visualizer..displayLinks = true  .visualizer..physicalLinkVisualizer.displayLinks = true  .visualizer..dataLinkVisualizer.displayLinks = true  **allow-object-stealing-on-deletion** = true  *# ============= Ethernet Connections =============*  \*.switch1.ethg[0].datarate = 100Mbps  \*.switch2.ethg[0].datarate = 100Mbps  \*.controller.ethg[0].datarate = 100Mbps  *# VFN enable*  .switch.vfn.enabled = true  \*.controller.vfn.enabled = true |

# .ned

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| **package** sdwn\_final.simulations;  **import** inet.networklayer.configurator.ipv4.IPv4NetworkConfigurator;  **import** inet.node.ethernet.Eth100M;  **import** inet.node.inet.WirelessHost;  **import** inet.node.wireless.AccessPoint;  **import** inet.physicallayer.ieee80211.packetlevel.Ieee80211RadioMedium;  **import** openflow.openflow.controller.Open\_Flow\_Controller;  **import** openflow.openflow.switch.Open\_Flow\_Switch;  **import** inet.node.inet.AdhocHost;  **@license**(LGPL);  **network** Network1  {  **parameters**:  **int** numCli = **default**(2);  **@display**("b=600,400;i=block/network2,grey,30;bgb=727,399,,,0");  **submodules**:  radioMedium: Ieee80211RadioMedium {  **parameters**:  analogModel.**typename** = "ScalarAnalogModel";  pathLoss.**typename** = "FreeSpacePathLoss";  obstacleLoss.**typename** = "DielectricObstacleLoss";  **@display**("p=634,104");  }  AccessPoint1: AccessPoint {  **parameters**:  wlan[0].mgmt.**typename** = "HostapMgmt";  wlan[0].agent.**typename** = "MgmtFrameForwarder";  wlan[0].radio.**typename** = "Ieee80211Radio";  ethg[0].**typename** = "EthernetInterface";  **@display**("p=312,142");  }  AccessPoint2: AccessPoint {  **parameters**:  wlan[0].mgmt.**typename** = "HostapMgmt";  wlan[0].agent.**typename** = "MgmtFrameForwarder";  wlan[0].radio.**typename** = "Ieee80211Radio";  ethg[0].**typename** = "EthernetInterface";  **@display**("p=312,287");  }  host1: WirelessHost {  **parameters**:  wlan[0].radio.**typename** = "Ieee80211Radio";  mobility.**typename** = "StationaryMobility";  **@display**("p=88,70");  }  host2: WirelessHost {  **parameters**:  wlan[0].radio.**typename** = "Ieee80211Radio";  mobility.**typename** = "StationaryMobility";  **@display**("p=88,188");  }  host3: AdhocHost {  **@display**("p=87,322");  }  controller: Open\_Flow\_Controller {  **@display**("p=645,223;i2=-");  }  switch: Open\_Flow\_Switch {  **@display**("p=516,222;i2=-");  }  configurator: IPv4NetworkConfigurator {  **@display**("p=635,36");  }  **connections**:  } |

# **Network :**

A screenshot of a computer

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