

[01/20/2024]

FLoRa creating the simulation environment

Attending

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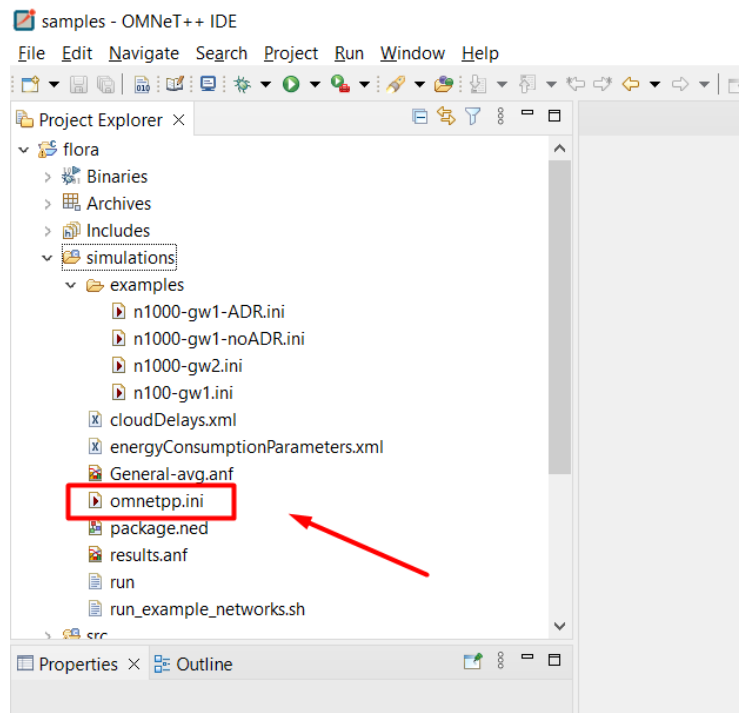
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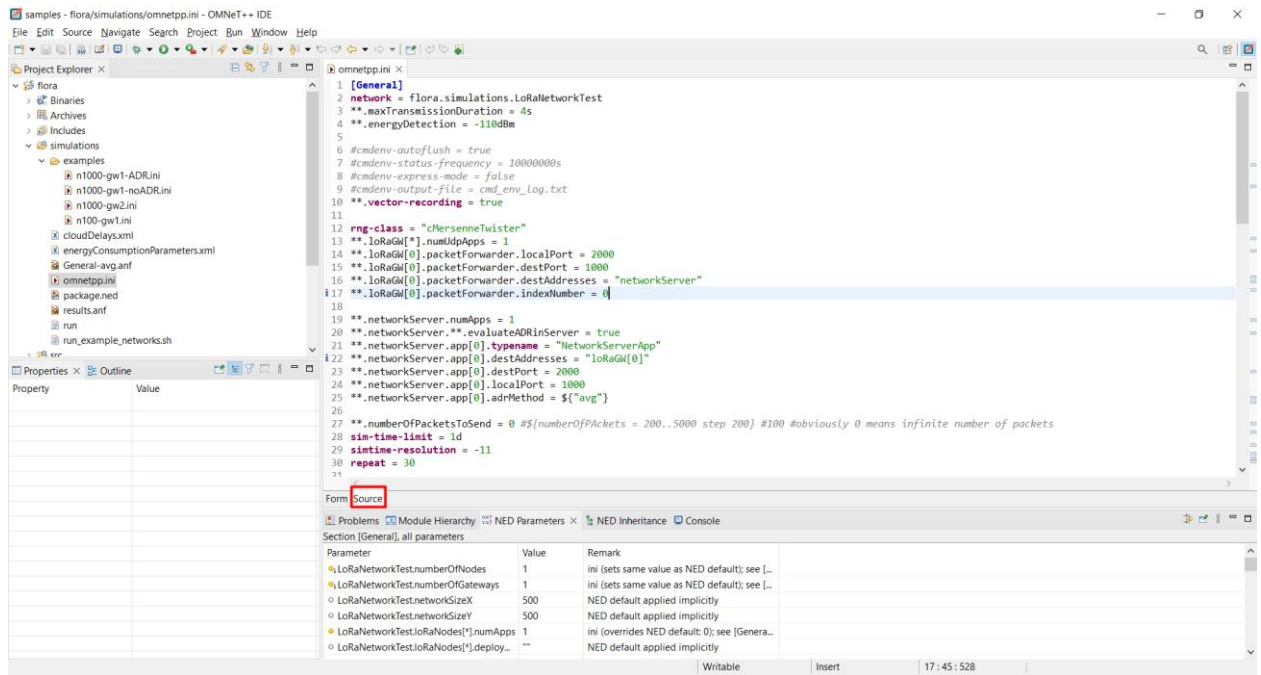
Announcements

This document is crafted to assist telecommunications and related academic professionals in seamlessly installing, configuring, and extracting results from the Flora simulation environment using the Omnet++ tool. Its purpose is to streamline the process, making it more accessible and efficient for users engaged in telecommunications studies and research.

1. To start a test environment, we will use the model we have in Flora itself, follow the image below and find the file, then double click to start



2. To manipulate the code, make sure the page looks like the image



3. To manipulate the code

[General]

```
network = flora.simulations.LoRaNetworkTest
**.maxTransmissionDuration = 4s
**.energyDetection = -110dBm
```

```
#cmdenv-autoflush = true
#cmdenv-status-frequency = 1000000s
#cmdenv-express-mode = false
#cmdenv-output-file = cmd_env_log.txt
**.vector-recording = true
```

```
rng-class = "cMersenneTwister"
**.loRaGw[*].numUdpApps = 1
**.loRaGw[0].packetForwarder.localPort = 2000
**.loRaGw[0].packetForwarder.destPort = 1000
**.loRaGw[0].packetForwarder.destAddresses = "networkServer"
**.loRaGw[0].packetForwarder.indexNumber = 0
```

```
**.networkServer.numApps = 1
**.networkServer.**, evaluateADRIInServer = true
```

```

**.networkServer.app[0].typename = "NetworkServerApp"
**.networkServer.app[0].destAddresses = "loRaGW[0]"
**.networkServer.app[0].destPort = 2000
**.networkServer.app[0].localPort = 1000
**.networkServer.app[0].adrMethod = ${"avg"}

**.numberOfPacketsToSend = 0 #${numberOfPackets = 200..5000 step 200} #100 #obviously
0 means infinite number of packets
sim-time-limit = 1d
simtime-resolution = -11
repeat = 30

**.timeToFirstPacket = exponential(1000s)
**.timeToNextPacket = exponential(1000s)
**.alohaChannelModel = false

#nodes features
**.numberOfNodes = 1
**.constraintAreaMaxX = 1000m
**.constraintAreaMaxY = 1000m

**.loRaNodes[0]**.initialX = 300m
**.loRaNodes[0]**.initialY = 350m
**.loRaNodes[0]**.initialLoRaSF = 12
**.loRaNodes[0]**.initialLoRaTP = 14dBm
**.loRaNodes[0]**.initialLoRaBW = 125 kHz
**.loRaNodes[0]**.initialLoRaCR = 4
**.loRaNodes[0]**.initFromDisplayString = false
**.loRaNodes[0]**.evaluateADRinNode = true
**.loRaNodes[*].numApps = 1
**.loRaNodes[*].app[0].typename = "SimpleLoRaApp"

#gateway features
**.numberOfGateways = 1
**.loRaGW[0]**.initialX = 200.00m
**.loRaGW[0]**.initialY = 200.00m
**.LoRaGWNic.radio.iAmGateway = true
**.loRaGW[*]**.initFromDisplayString = false

#power consumption features
**.loRaNodes[*].LoRaNic.radio.energyConsumer.typename = "LoRaEnergyConsumer"
**.loRaNodes[*]**.energySourceModule = "^IdealEpEnergyStorage"
**.loRaNodes[*].LoRaNic.radio.energyConsumer.configFile =
xmldoc("energyConsumptionParameters.xml")

#general features
**.sigma = 3.57
**.constraintAreaMinX = 0m
**.constraintAreaMinY = 0m
**.constraintAreaMinZ = 0m
**.constraintAreaMaxZ = 0m

LoRaNetworkTest**.radio.separateTransmissionParts = false
LoRaNetworkTest**.radio.separateReceptionParts = false

```

```

**.ipv4Delayer.config = xmldoc("cloudDelays.xml")
**.radio.radioMediumModule = "LoRaMedium"
**.LoRaMedium.pathLossType = "LoRaLogNormalShadowing"
**.minInterferenceTime = 0s
**.displayAddresses = false

# cache features
**.LoRaMedium.mediumLimitCacheType = "LoRaMediumCache"
**.LoRaMedium.rangeFilter = "communicationRange"
**.LoRaMedium.neighborCacheType = "LoRaNeighborCache"
**.LoRaMedium.neighborCache.range = 546m
**.LoRaMedium.neighborCache.refillPeriod = 3000s

```

4. When manipulating the code, there is important information that you must pay attention to so that your simulation is as real as possible.

for example

```

#nodes features
#gateway features
#general features

```

