

Aim: Create simple Adhoc network.

Description:

- Simulator used : Omnet++
- Simulator can be downloaded from below link:

<https://omnetpp.org/omnetpp> (recommended version is omnet++ 4.2.2).

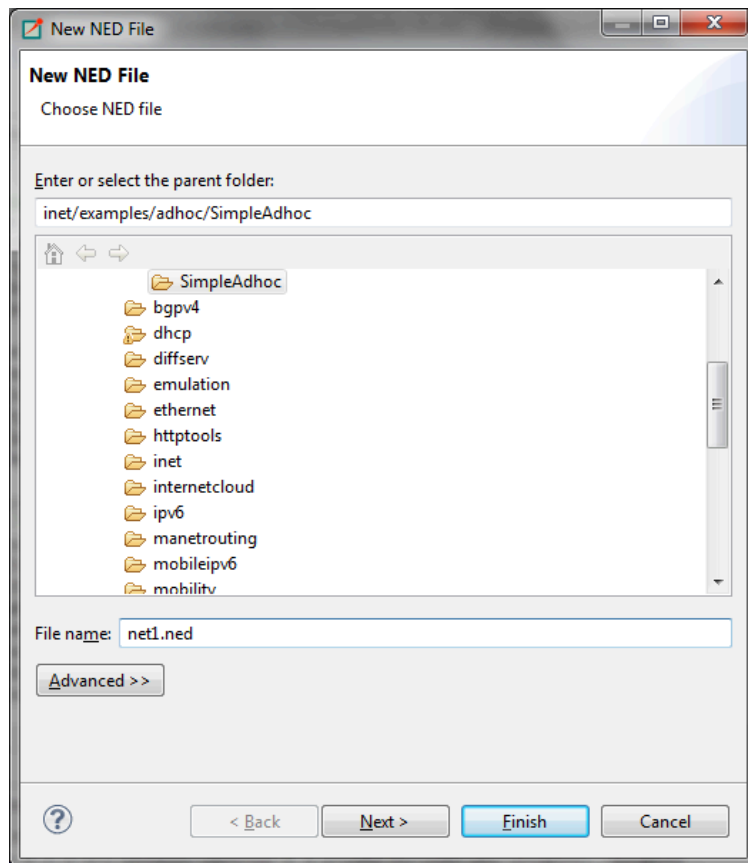
- After installing Omnet++, we need to install inet framework which is specially designed for wireless simulation. You can download inet framework from below link.

<https://inet.omnetpp.org/Download.html>

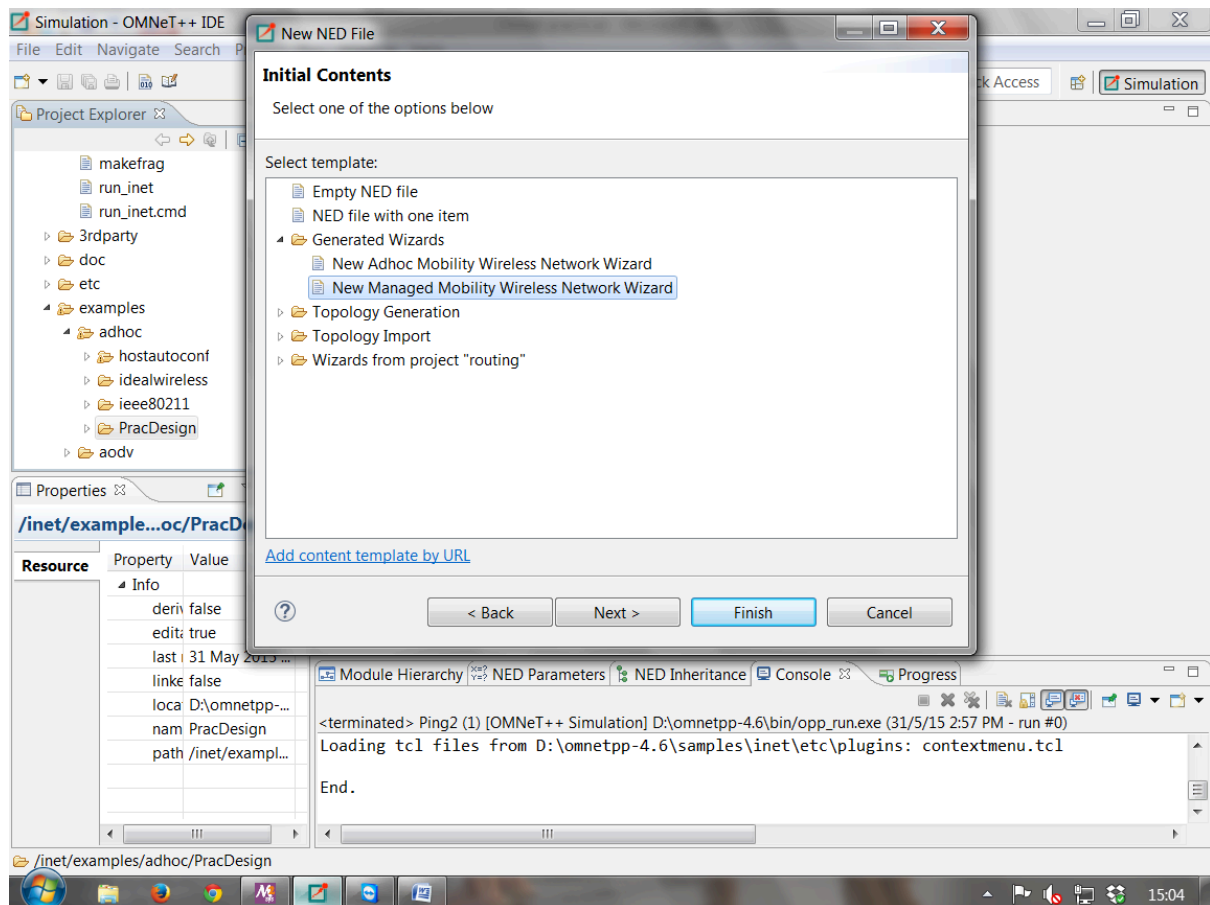
- After downloading there are certain steps to be followed to include this framework in omnet++ as follows:
- **Download the INET sources.**
- **Unpack it into the directory of your choice: (tar xvfz inet-<version>.tgz)(recommended is tar or .tgz)**
- **Recommended version is inet 2.1**
- **Start the Omnet++ IDE, and import the project via *File -> Import -> Existing Projects to the Workspace*. A project named inet should appear.**
- **Build with *Project -> Build*, or hit ctrl+b**
- **Now you should be able to launch example simulations.**

Steps for practical:

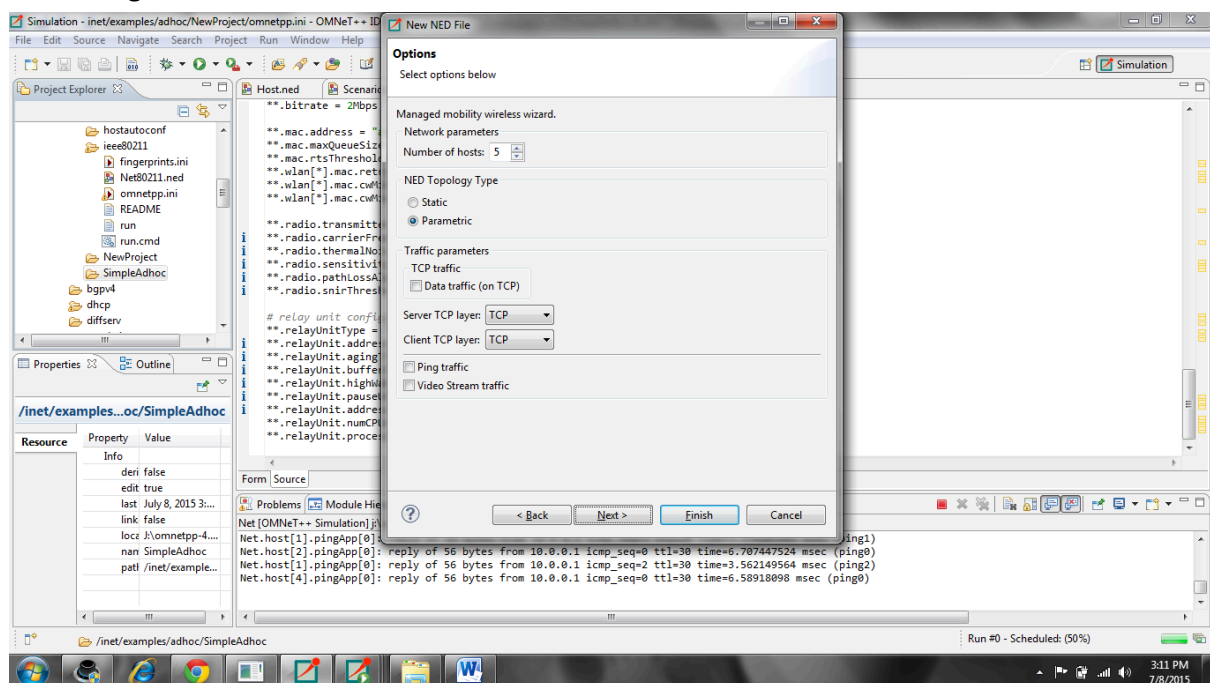
- **Then open inet/examples/**
- **Right click on adhoc -create new folder as SimpleAdhoc.**
- **Right click on your newly created folder and select NED file. Give name as Net1.**



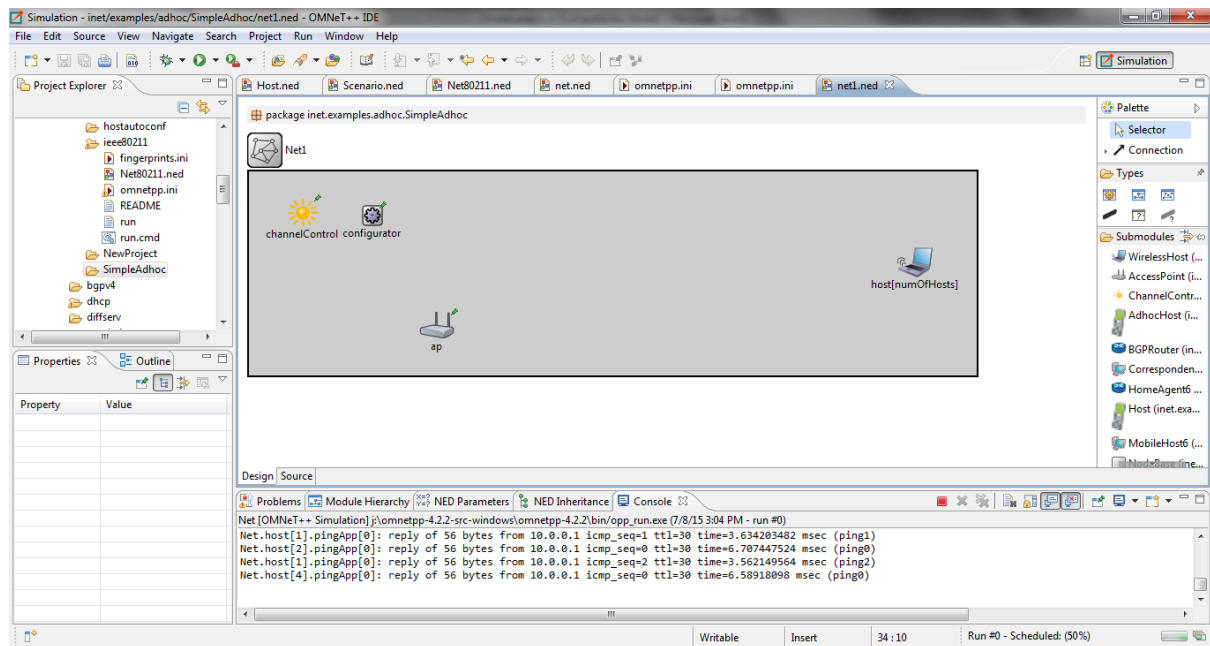
click on new manages mobility wireless network wizard.



then configure as follows



then click on finish.



below is the code that will be available in source part of net1.ned once configured.

```
package inet.examples.adhoc.SimpleAdhoc;

// numOfHosts: 5

import inet.networklayer.autorouting.ipv4.Ipv4NetworkConfigurator;
import inet.nodes.inet.WirelessHost;
import inet.nodes.wireless.AccessPoint;
import inet.world.radio.ChannelControl;

network Net1
{
    parameters:
        int numOfHosts;

    submodules:
        host[numOfHosts]: WirelessHost
        {
            @display("r=, ,#707070");
        }

        ap: AccessPoint
        {
            @display("p=213,174;r=, ,#707070");
        }

        channelControl: ChannelControl
}
```

```

    {
        numChannels = 2;
        @display("p=61,46");
    }

    configurator: IPv4NetworkConfigurator
    {
        @display("p=140,50");
    }
}

```

On design part you will find components appearing according to the code as the above snapshot.

Same as do this in omnetpp.ini file :

Source code for omnetpp.ini:

```

[General]
network = Net1

*.numOfHosts = 5

#debug-on-errors = true
tkenv-plugin-path = ../../../../etc/plugins

**.constraintAreaMinX = 0m
**.constraintAreaMinY = 0m
**.constraintAreaMinZ = 0m
**.constraintAreaMaxX = 600m
**.constraintAreaMaxY = 400m
**.constraintAreaMaxZ = 0m
**.debug = true
**.coreDebug = false
**.host*.**.channelNumber = 0

# channel physical parameters
*.channelControl.carrierFrequency = 2.4GHz
*.channelControl.pMax = 2.0mW
*.channelControl.sat = -110dBm
*.channelControl.alpha = 2

# mobility
**.host*.mobilityType = "MassMobility"
**.host*.mobility.initFromDisplayString = false
**.host*.mobility.changeInterval = truncnormal(2s, 0.5s)
**.host*.mobility.changeAngleBy = normal(0deg, 30deg)
**.host*.mobility.speed = truncnormal(20mps, 8mps)
**.host*.mobility.updateInterval = 100ms

# ping app (host[0] pinged by others)
*.host[0].numPingApps = 0
*.host[*].numPingApps = 2
*.host[*].pingApp[*].destAddr = "host[0]"

```

```

**.pingApp[0].startTime = uniform(1s,5s)
**.pingApp[1].startTime = 5s+uniform(1s,5s)
**.pingApp[*].printPing = true

# nic settings
**.wlan[*].bitrate = 2Mbps

**.wlan[*].mgmt.frameCapacity = 10

**.wlan[*].mac.address = "auto"
**.wlan[*].mac.maxQueueSize = 14
**.wlan[*].mac.rtsThresholdBytes = 3000B
**.wlan[*].mac.retryLimit = 7
**.wlan[*].mac.cwMinData = 7

**.wlan[*].radio.transmitterPower = 2mW
**.wlan[*].radio.thermalNoise = -110dBm
**.wlan[*].radio.sensitivity = -85dBm
**.wlan[*].radio.pathLossAlpha = 2
**.wlan[*].radio.snrThreshold = 4dB

[Config Ping1]
description = "host1 pinging host0"

[Config Ping2] # __interactive__
description = "n hosts"
# Leave numHosts undefined here

**.mobility.constraintAreaMinZ = 0m
**.mobility.constraintAreaMaxZ = 0m
**.mobility.constraintAreaMinX = 0m
**.mobility.constraintAreaMinY = 0m
**.mobility.constraintAreaMaxX = 600m
**.mobility.constraintAreaMaxY = 400m
**.debug = false
**.coreDebug = false

**.channelNumber = 0

# channel physical parameters
*.channelControl.carrierFrequency = 2.4GHz
*.channelControl.pMax = 20.0mW
*.channelControl.sat = -110dBm
*.channelControl.alpha = 2

# mobility

**.host[*].mobilityType = "MassMobility"
**.host[*].mobility.changeInterval = truncnormal(2s, 0.5s)
**.host[*].mobility.changeAngleBy = normal(0deg, 30deg)
**.host[*].mobility.speed = truncnormal(20mps, 8mps)
**.host[*].mobility.updateInterval = 100ms

# nic settings
**.bitrate = 2Mbps

**.mac.address = "auto"

```

```

**.mac.maxQueueSize = 14
**.mac.rtsThresholdBytes = 3000B
**.wlan[*].mac.retryLimit = 7
**.wlan[*].mac.cwMinData = 7
**.wlan[*].mac.cwMinMulticast = 31

**.radio.transmitterPower = 20.0mW
**.radio.carrierFrequency = 2.4GHz
**.radio.thermalNoise = -110dBm
**.radio.sensitivity = -85dBm
**.radio.pathLossAlpha = 2
**.radio.snirThreshold = 4dB

# relay unit configuration
**.relayUnitType = "MACRelayUnitNP"
**.relayUnit.addressTableSize = 100
**.relayUnit.agingTime = 120s
**.relayUnit.bufferSize = 1MiB
**.relayUnit.highWatermark = 512KiB
**.relayUnit.pauseUnits = 300 # pause for 300*512 bit (19200 byte) time
**.relayUnit.addressTableFile = ""
**.relayUnit.numCPUs = 2
**.relayUnit.processingTime = 2us

```

EXECUTION:

Now try to execute by right click on ned file Run as-1-Omnet++ simulation.

OUTPUT:

