NetSim®

Accelerate Network R & D

Legacy Networks

A Network Simulation & Emulation Software

By

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1 Introduction

A legacy network is an old network which is rarely used today and not part of the TCP/IP protocol suite. With the advent of TCP/IP as a common networking platform in the mid-1970s, most legacy networks are no longer used.

With NetSim, you can simulate and analyze Pure ALOHA (the original version) and Slotted ALOHA (improvised version of pure ALOHA designed to reduce the chances of collisions when sending data between the sender and the receiver).

2 Simulation GUI

In the Main menu select →**New Simulation** → **Legacy Network** →**Pure Aloha/ Slotted Aloha** as shown **Figure 2-1.**

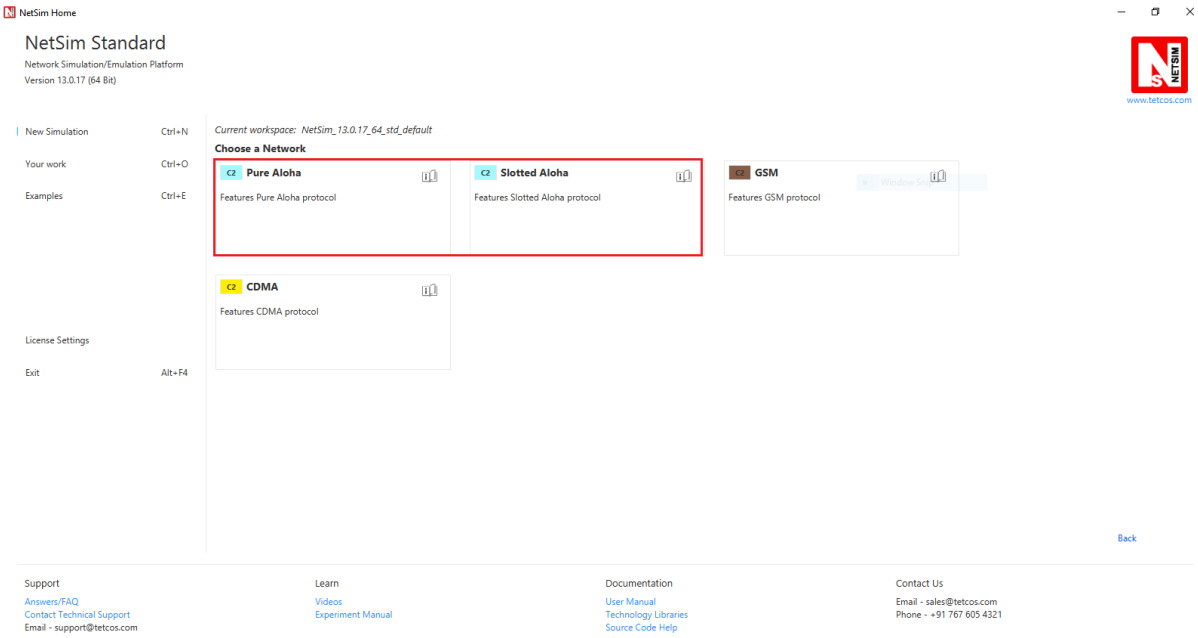

Figure 2-1: NetSim Home Screen

2.1 Create Scenario

Legacy networks come with a palette of various devices like wireless node,

2.1.1 Click and drop into environment

- **Click** on the **Node** icon in the tool bar and click and drop inside the grid. (*Note*: This is applicable for Pure Aloha and Slotted Aloha)
- Similarly drop **Adhoc link** and connect **Wireless Nodes** to **Adhoc links** using **Adhoc links**. (Note: A Node cannot be placed on another Node. A Node cannot float outside of the grid.

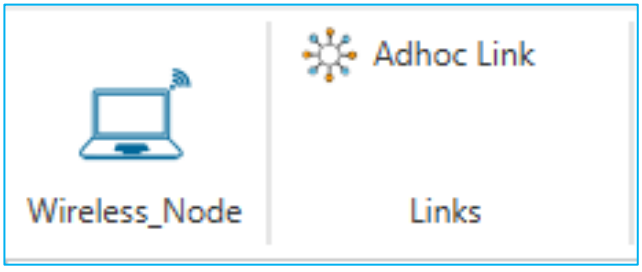

Figure 2-2: Pure and Slotted Aloha Device Palette in GUI

2.2 Set Node, Link and Application Properties

Set Node Properties: Right Click on the appropriate node and select Properties.

Set the Properties for the devices and links: Right click over the devices and then select Properties to set the properties of the links and the devices.

Configure an application as follows:

- Click the application icon on the top ribbon/toolbar.
- Specify the source and destination devices.
- Specify other application parameters per your model.

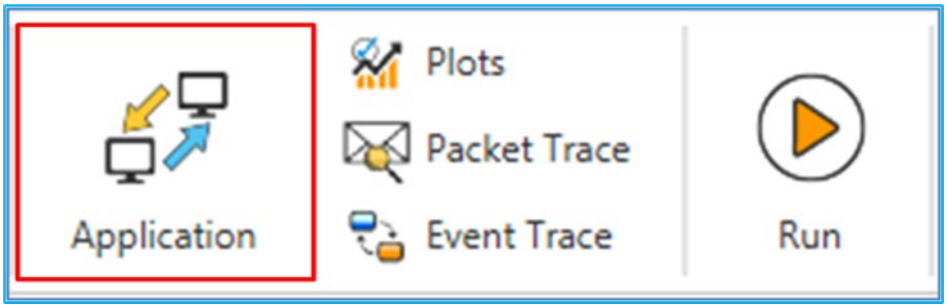

Figure 2-3: Application icon on the top tool bar

2.3 Enable Packet Trace (Optional)

Click Packet Trace / Event Trace icon in the tool bar and click OK. To get detailed help, *Refer section 8.4 and 8.5 in User Manual*. Select Plots icon for enabling Plots and click on OK.

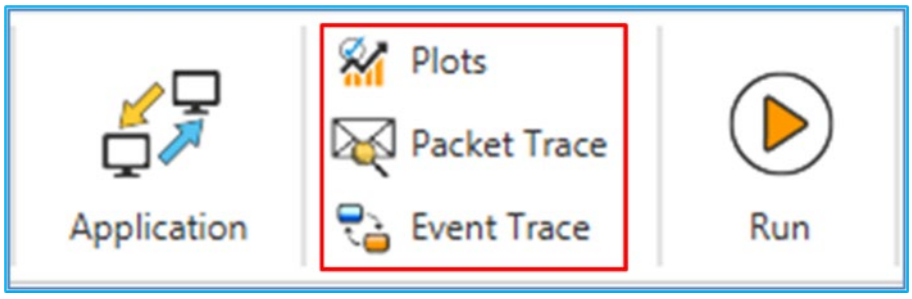

Figure 2-4: Enable Packet Trace / Event Trace icon on the top tool bar

2.4 Run Simulation

Click on **Run Simulation** icon on the top toolbar.

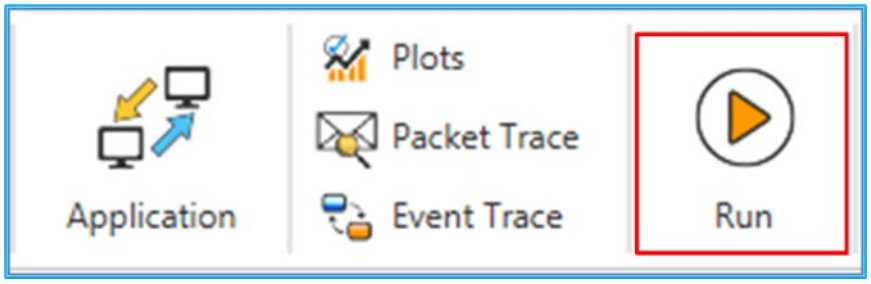

Figure 2-5: Run Simulation icon on the top toolbar

Set the Simulation Time and click on OK

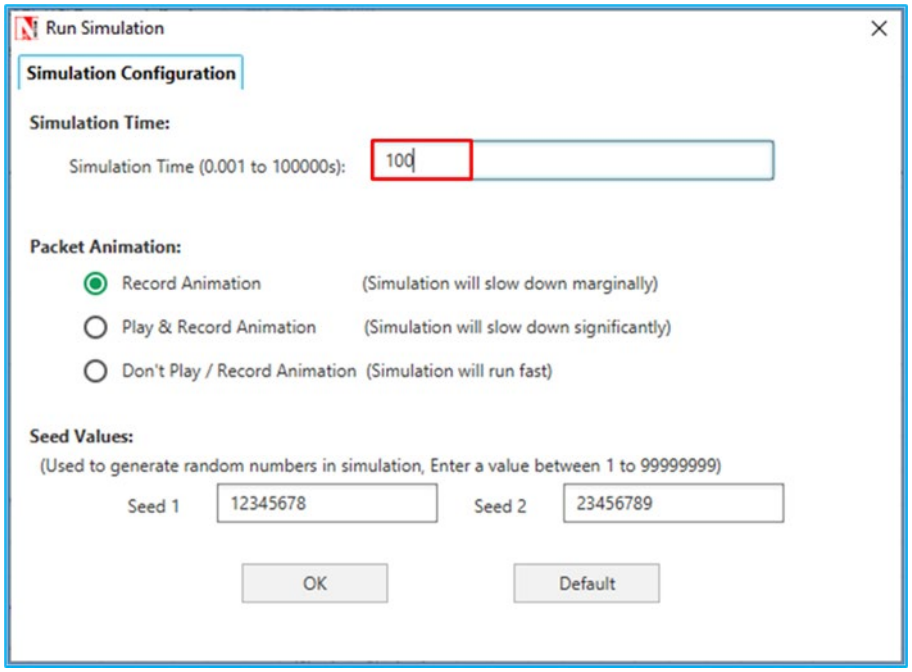

Figure 2-6: Run Simulation window

3 Featured Examples

Sample configuration files for all networks are available in Examples Menu in NetSim Home Screen. These files provide examples on how NetSim can be used – the parameters that can be changed and the typical effect it has on performance.

3.1 Pure Aloha

Open NetSim, **Select Examples->Lagacy Networks->Pure-Aloha** as shown

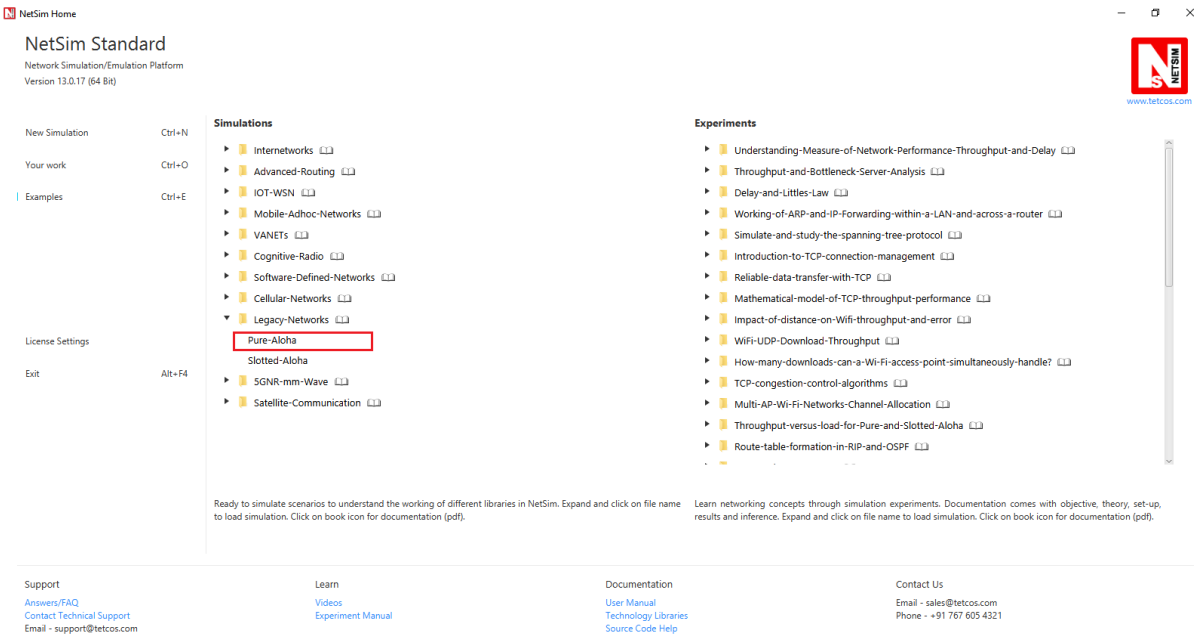

Figure 3-1: Featured Examples list

The following network diagram illustrates, what the NetSim UI displays when you open the example configuration file.

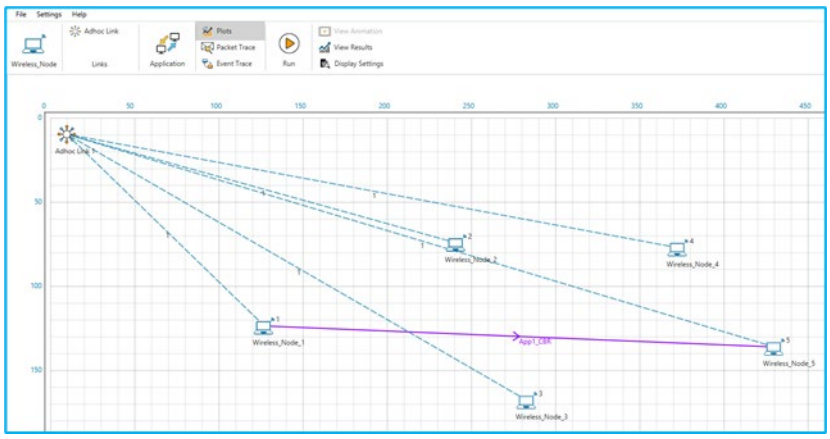

Figure 3-2: Network Topology in this experiment

Network Settings

1. Environment Grid length: 500m x 500m
2. Drop 5 Wireless nodes and connect with adhoc link.

Device Co-ordinates		
Device Name	**X – Axis (m)**	**X – Axis (m)**
Wireless_Node_1	125.52	122.15
Wireless_Node_2	238.33	73.33
Wireless_Node_3	279.86	165.92
Wireless_Node_4	368.53	76.14
Wireless_Node_5	425.22	134.51

Table 3-1: Device Positions

3. Channel Characteristics: Pathloss and Fading and Shadowing, Path Loss Model: Friis Free Space
4. Click on application Icon present in the top ribbon/toolbar.
   - Application Type – CBR.
   - Source ID – 1 and Destination ID – 5.
   - Transport Protocol - UDP
   - Packet Size Value (Bytes) – 1460
   - Inter Arrival Time Value (μs) – 20000.
5. In NetSim GUI Plots are Enabled. Run simulation for 100s.

Results:

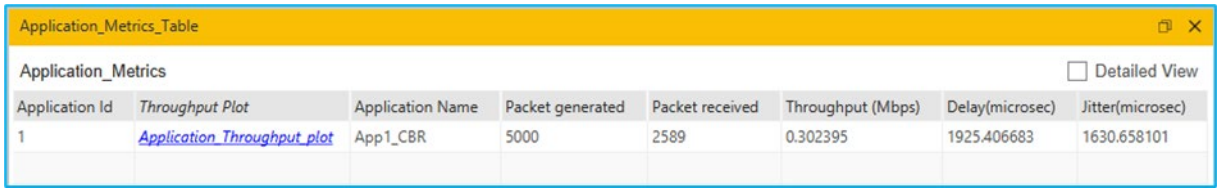

Figure 3-3: Application Metrics window in Result Dashboard

3.2 Slotted Aloha

Open NetSim, **Select Examples->Lagacy Networks->Slotted-Aloha** as shown

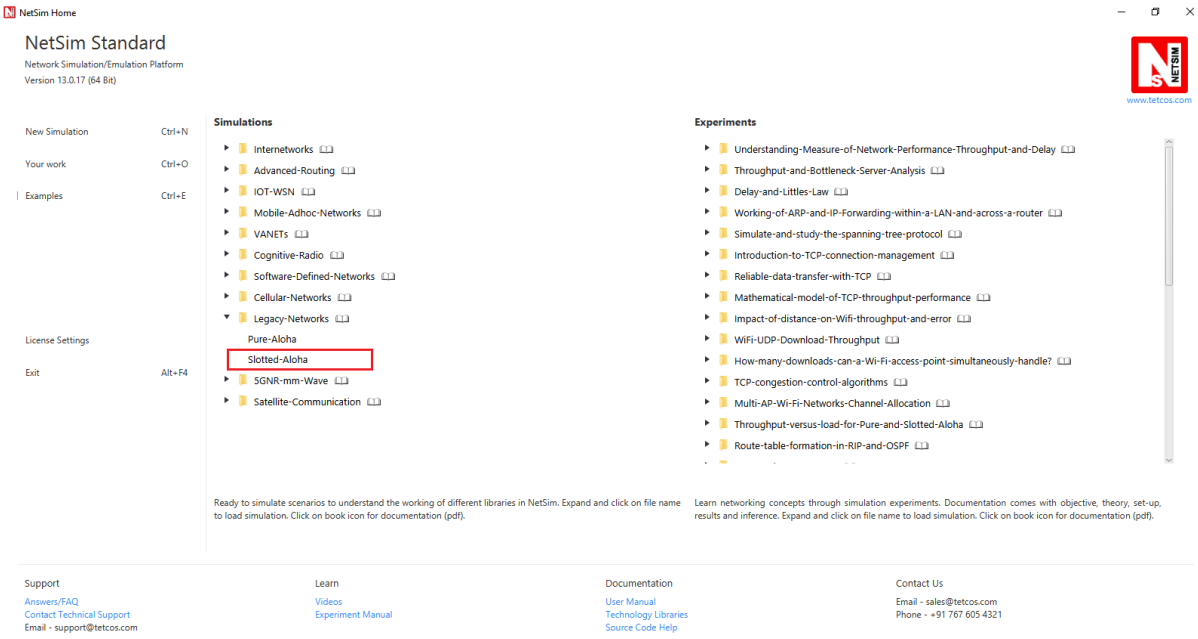

Figure 3-4: Featured Examples list

The following network diagram illustrates, what the NetSim UI displays when you open the example configuration file.

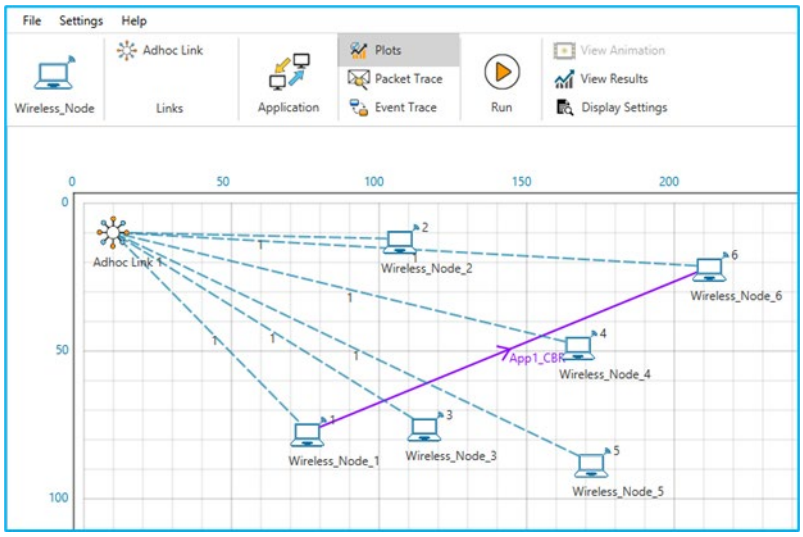

Figure 3-5: Network Topologyin for Slotted aloha

Network Settings

1. Environment Grid length: 500m x 500m
2. Drop 6 Wireless nodes and connect with adhoc link.

Device Co-ordinates		
Device Name	**X – Axis (m)**	**X – Axis (m)**
Wireless_Node_1	75.31	76.42

Wireless_Node_2	106.33	11.91
Wireless_Node_3	114.52	74.65
Wireless_Node_4	165.99	47.44
Wireless_Node_5	170.48	86.75
Wireless_Node_6	210.05	21.18

Table 3-2: Device Positions

3. Channel Characteristics: Pathloss and Fading and Shadowing, Path Loss Model: Friis Free Space
4. Click on application Icon present in the top ribbon/toolbar.
   - Application Type – CBR.
   - Source ID – 1 and Destination ID – 6.
   - Transport Protocol - UDP
   - Packet Size Value (Bytes) – 1460
   - Inter Arrival Time Value (μs) – 20000.
5. In NetSim GUI Plots are Enabled. Run simulation for 100s.

Results:

Application_Metrics_Table

Application_Metrics — Detailed View

Application Id	Throughput Plot	Application Name	Packet generated	Packet received	Throughput (Mbps)	Delay(microsec)	Jitter(microsec)
1	Application_Throughput_plot	App1_CBR	5000	4927	0.575474	1783.360668	1504.263110

Table 3-3: Application Metrics window in Result Dashboard

4 Note: Release on Unsupported Basis

- No further development activity such as building of new features is expected for the legacy protocol libraries.
- Source codes are provided on an unsupported basis.
- Legacy Networks is non-IP based protocols and runs stand alone. This means that legacy networks cannot be connected to Internetworks.

5 Latest FAQs

https://support.tetcos.com/support/solutions/folders/14000116739