How to interface NetSim interfacing with LabVIEW?

Applicable Versions	**NetSim Standard**	**NetSim Pro**

Applicable Releases	**v12.2**

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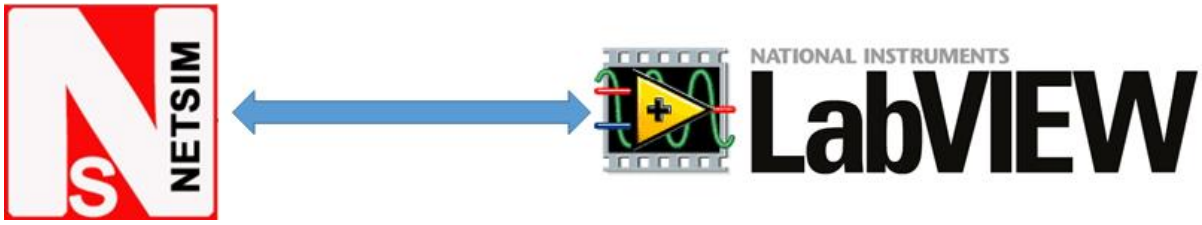
Introduction

NetSim can be interfaced with LabVIEW, which allows users to interact with LabVIEW during run-time. LabVIEW can interact and control the behavior of its Models.

LabVIEW is a system engineering software for applications that require test, measurement, and control with rapid access to hardware and data insights. NetSim now has a method of Interfacing with LabVIEW in a fashion similar to that of MATLAB interfacing. NetSim can initialize a LabVIEW Virtual Instrument (.vi) file during runtime, pass inputs to components of the file, execute the vi, read the computed parameters from its components, and terminate the vi instance at the simulation end.

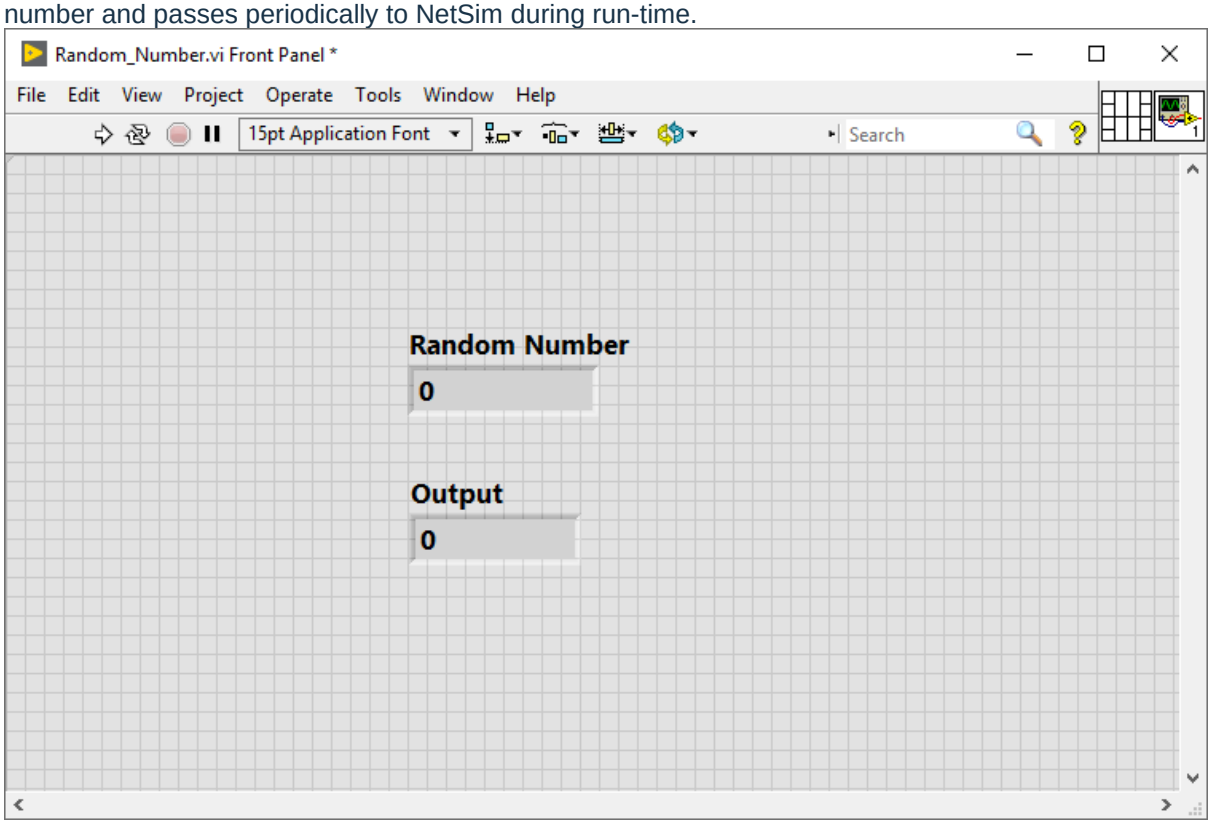


Softwares used

- NetSim Standard v12.2 or higher
- LabVIEW 2020
- Visual Studio Community Edition 2019 or higher

LabVIEW Example

In this article, we have considered a simple LabVIEW Example which keeps generating a random number and passes periodically to NetSim during run-time.



NetSim-LabVIEW interfacing

Upon interfacing NetSim with LabVIEW the following tasks are performed during simulation start:

- LabVIEW Engine process is initialized
- LabVIEW GUI window is loaded
- LabVIEW - Random Number generator Example is loaded

Upon simulating a network created in NetSim the following tasks are performed periodically:

- The random number starts generating in LabVIEW
- NetSim reads the data generated by LabVIEW
- Prints the random number to NetSim Simulation window

Output/Metrics specific to this example

- NetSim Event Trace - LabVIEW event is registered to periodically interact with LabVIEW
- NetSim Run-time simulation

Modifications done to NetSim Source codes

Projects: Zigbee

Files:

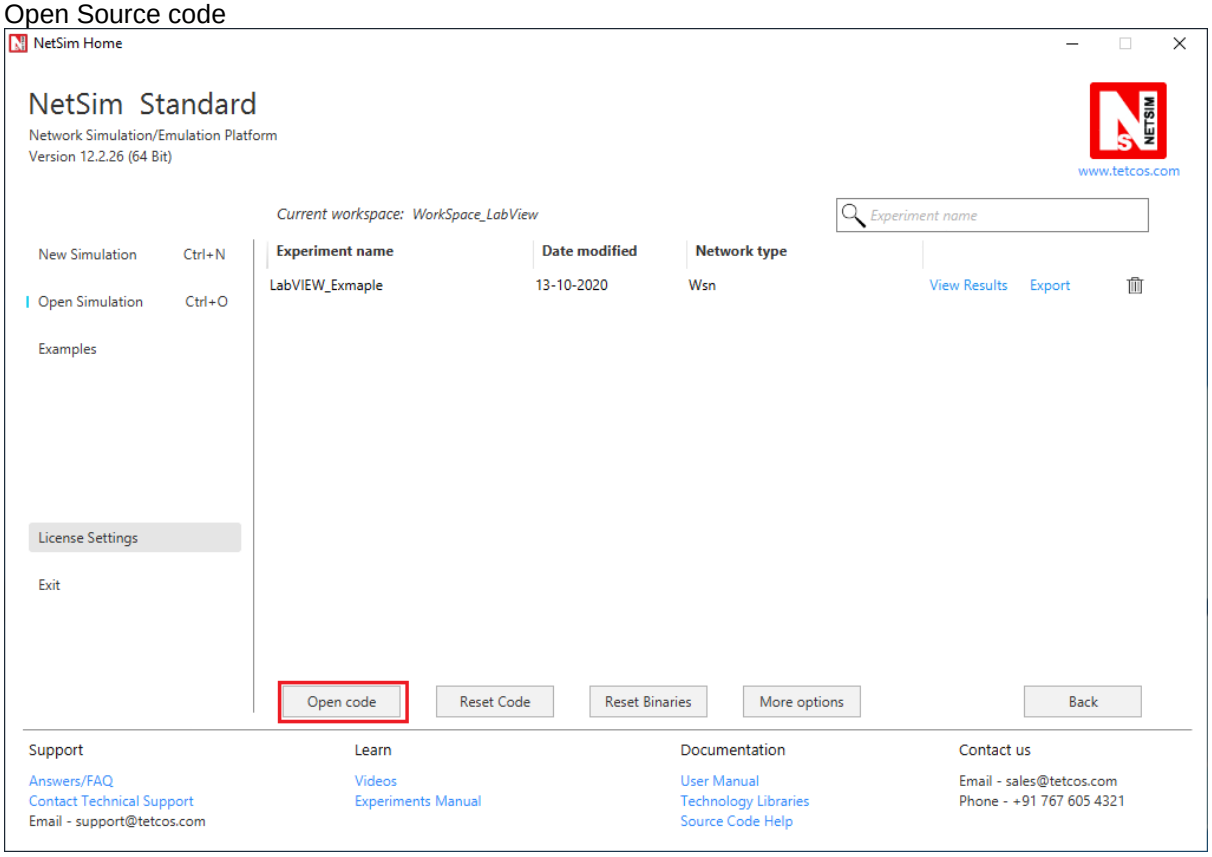
- 802.15.4.c,
- 802.15.4.h,
- Zigbee.vcxproj (Project file)

Files added:

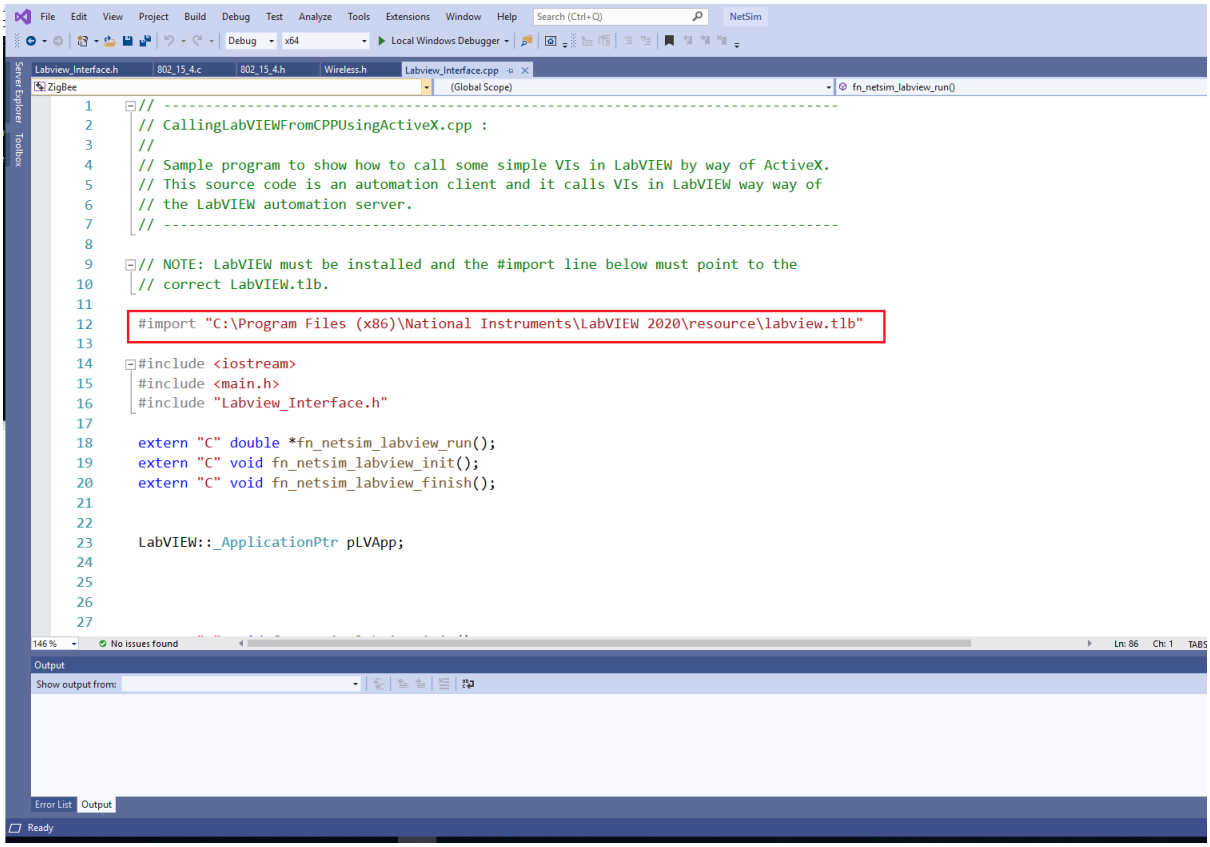
- Labview_Interface.cpp
- Labview_Interface.h

Procedure to setup NetSim for this example

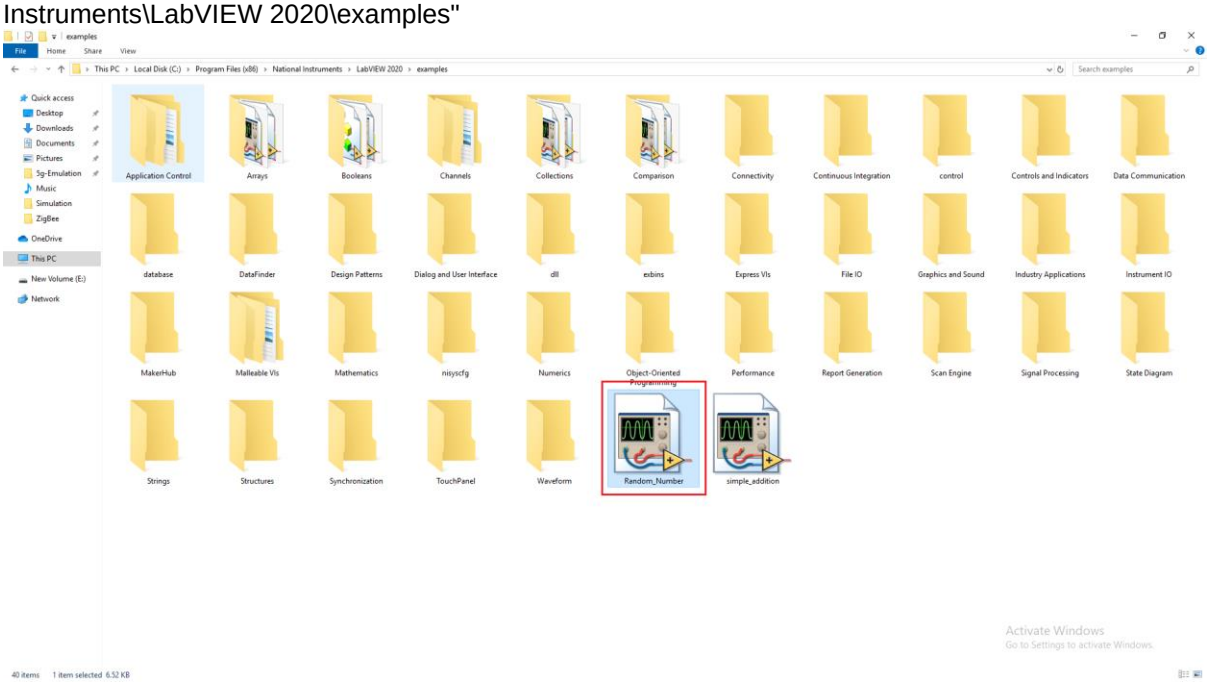
- Import the Workspace provided in the repository for interfacing with LabVIEW in NetSim
- Open Source code



- Change Labview.tlb path as per your installation in Labview_interface.cpp file

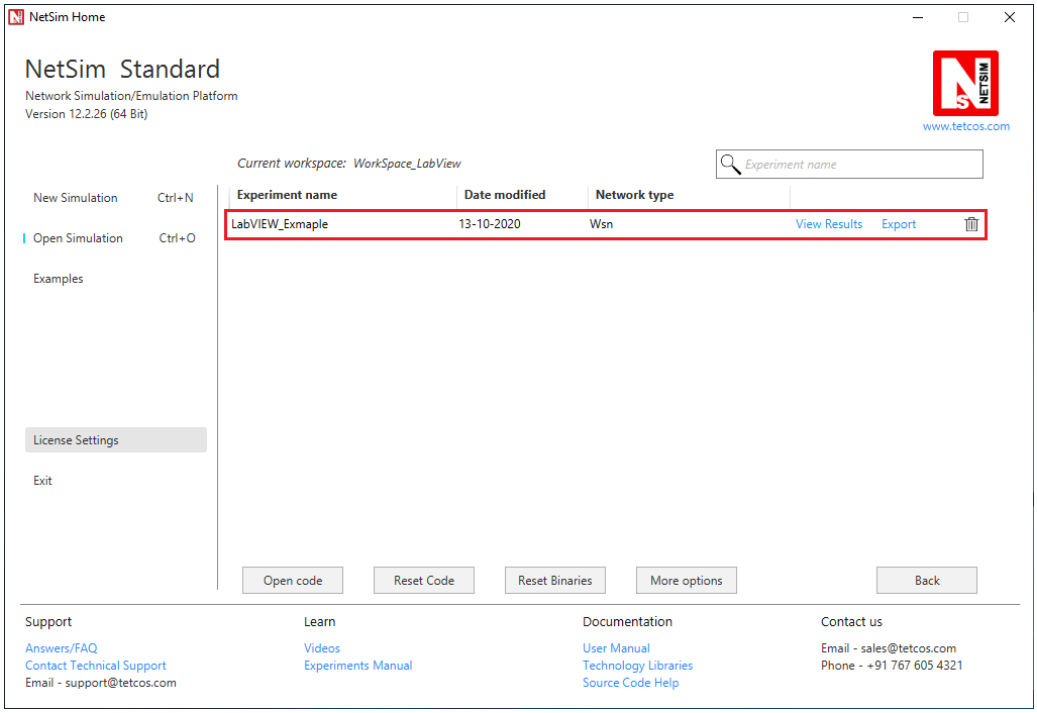


- Rebuild Zigbee project
- Copy Random_Number.vi LabVIEW file to "C:\Program Files (x86)\National Instruments\LabVIEW 2020\examples"



Running NetSim Simulation scenario

- Open Example from NetSim i.e Home Screen ->Open Simulation -> LabVIEW_Example


NetSim Home
NetSim Standard
Network Simulation/Emulation Platform
Version 12.2.26 (64 Bit)
www.tetcos.com
Current workspace: WorkSpace_LabView
Experiment name
New Simulation Ctrl+N
Open Simulation Ctrl+O
Examples
License Settings
Exit
Experiment name
Date modified
Network type
LabVIEW_Exmaple
13-10-2020
Wsn
View Results
Export
Open code
Reset Code
Reset Binaries
More options
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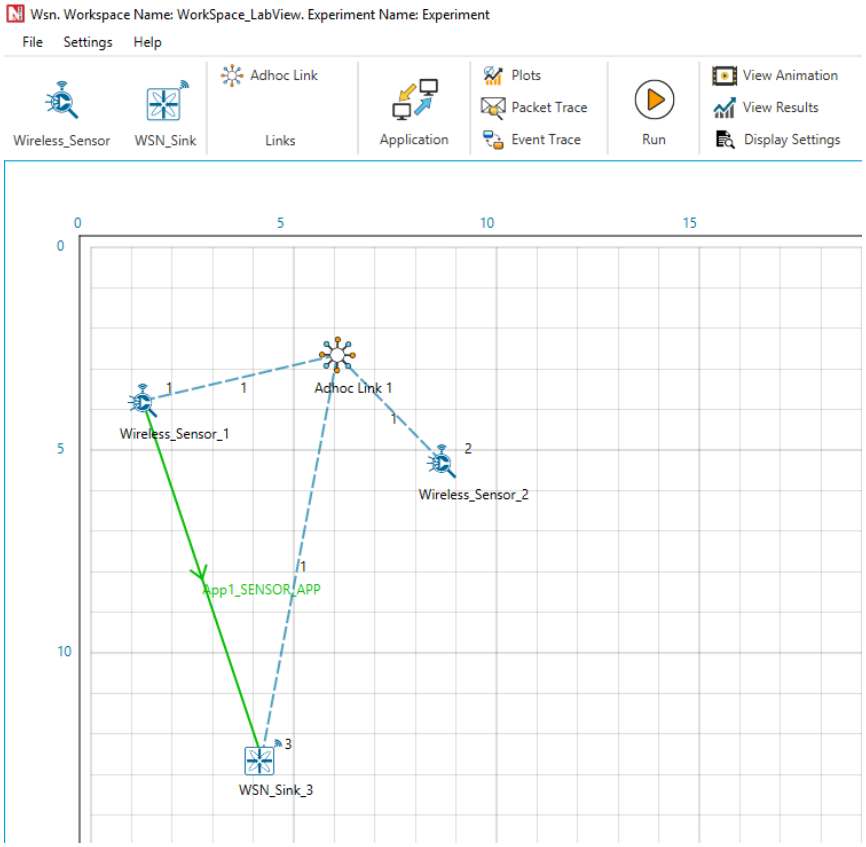
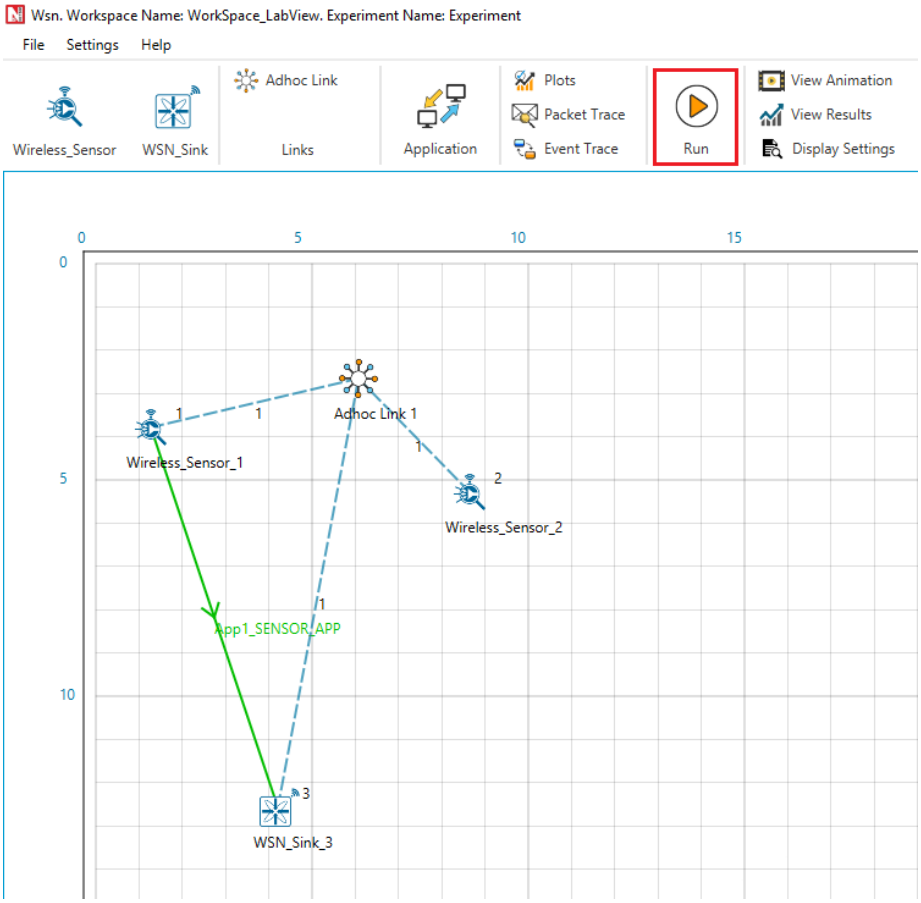
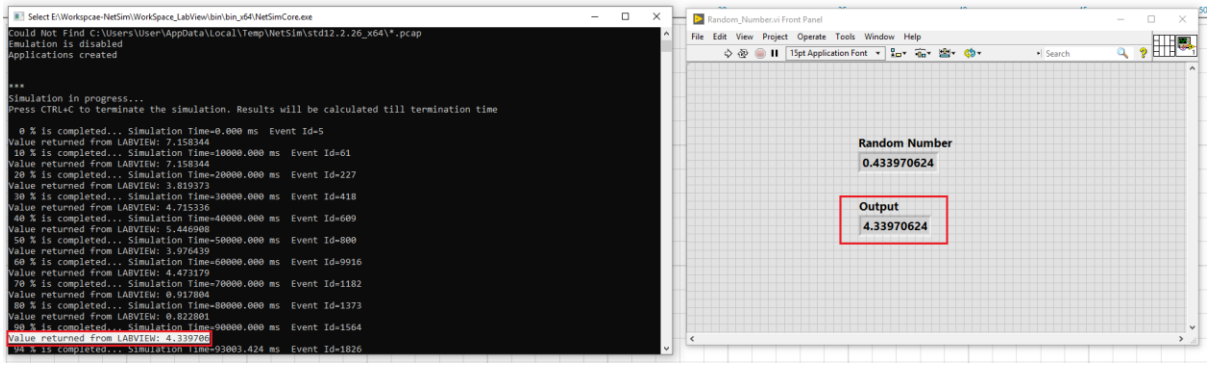
- NetSim Scenario



- Run-Simulation



Results



NetSim Run-time Simulation interacting with LabVIEW