

Connectivity Guide KEPServerEX[®] for National Instruments' LabVIEW

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1. Overview and Requirements

This guide intends to demonstrate how to establish a connection between the KEPServerEX OPC server and a LabVIEW project. Users must complete the following before continuing with this tutorial:

- Configure a server project. Users may either select the appropriate driver and settings or run the **Simulation Driver Demo** that is included with KEPServerEX. The Simulation Driver Demo project is used for all examples in this tutorial.
- Start KEPServerEX and load the Simulation Driver demo project. Once the server project has been loaded, open the Runtime menu on the main menu bar and verify that the server project is connected.
- Note: LabVIEW version 8.6.1 is used in this tutorial. Its installation must include the Datalogging and Supervisory Control (DSC) module to connect with an OPC server.

2. Setting KEPServerEX to Interactive Mode

Before the LabVIEW project is created, the OPC server Runtime must be started. National Instruments also recommends that the OPC server be placed in Interactive Mode. For more information, refer to the instructions below.

- 1. Right-click on the Administrative icon located in the System Tray.
- 2. Select Settings.

Configuration	
Start Runtime Process Stop Runtime Process Reinitialize	
Reset Event Log	
User Manager	_
Settings	
OPC UA Configuration	
Ouick Client	
Licence Utility	
Help	
Support Information	
Exit	
	- 2:18 PM

- 3. Open the **Runtime Process** tab.
- 4. Beneath **Process Mode**, change the **Selected Mode** to **Interactive**.

🛍 KEPServerEX Settings		×					
Runtime Options Administration	Event Log Configuration	Host Resolution Runtime Process					
Process Mode The server runtime can operate as a system service or run interactively in a specific user session. Changing this setting will cause the server to restart. Selected mode: Interactive							
Selected mode: Interactive Process Priority Check the following box to run the server process with the high priority classification. If this PC has more than one CPU you may limit execution to one or more specific CPUs from the list below. Image: High priority Single CPU							
	OK Cancel	Apply Help					

- 5. Click **OK** to apply the changes.
 - Note: KEPServerEX's Runtime must be running during the configuration of the LabVIEW project. Users should also ensure that the Simulation Driver Demo project has been loaded into KEPServerEX.

3. Creating a LabVIEW Project

1. To start, open LabVIEW by clicking **Start | Programs | National Instruments LabVIEW8.6**. Then, click **Launch LabVIEW**.



2. In Getting Started, select Empty Project.



3. In the **Project Explorer**, right-click on **My Computer** and select **New** | **I/O Server**.

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- 4. In Create New I/O Server, select OPC Client.
- 5. Click **Continue**.

🔀 Create New I/O Server	×
I/O Server Type	
Alarm Printer Custom VI - On Input Change Custom VI - Periodic Data Set Marking EPICS Client Modbus Modbus Slave OPC Client	4
, Description	
Communicate with OPC (OLE for Process Control) Servers.	
Continue Cancel Hel	p

- 6. In **Configure OPC Client I/O Server**, open the **Settings** tab. For the "localhost," select **Kepware.KEPServerEX.V5** from beneath **Registered OPC Servers**.
- 7. In **Update Rate**, set the value to 250 ms.

🔁 Configure OPC Client I/O Server	×
Settings Advanced Diagnostics	
Browse Machine	Update rate (ms)
Machine	Deadband (%)
localhost Browse	0
Registered OPC servers	Reconnect poll rate (s)
National Instruments.NIOPCServers National Instruments.Variable Engine.1 Kepware.KEPServerEX.V5	120
Prog ID	
Kepware.KEPServerEX.V5	
ОК	Cancel Help

- 8. Upon completion, click **OK.**
- 9. In the Project Explorer, click **File** | **Save All**.

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Open	Ctrl+O	
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New Project		
Open Proj <u>e</u> ct		
Save Project		
Close Project		
Page Setup		
Page Setup Print		
Page Setup Print Print Window	Ctrl+P	
Page Setup Print Print Window VI Properties	Ctrl+P Ctrl+I	
Page Setup Print Print Window VI Properties Recent Projects	Ctrl+P Ctrl+I	
Page Setup Print Print Window VI Properties Recent Projects Recent Files	Ctrl+P Ctrl+I	

10. In File Name, enter "Demo OPC Server" and click OK.

Name the Proje	ct (Untitled Projec	t 1)				? ×
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- Note: The Name the Library (Untitled Library 1) dialog is invoked.
- 11. In **File Name**, enter "Simulator Driver."
- 12. Click **OK**.

Name the Library	/ (Untitled Library	(1)	<u>?</u> ×
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My Recent Documents Desktop My Documents My Computer	Cabvieware LabVIEW Data My Music My Pictures		
My Network Places	File <u>n</u> ame: Save as tupe:	Simulator Driver OK UV Libraries (* With)	
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- 3.1 Creating Bound Variables
 - 1. In the Project Explorer, right-click on **Simulator Driver.lvlib** and select **Create Bound Variables**.

Project Explorer - Demo OPC Server.ly	vproj 💷 🗙			
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1105				
Project: Demo OPC Server.lvproj				
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Save	•			
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Show Error Win	dow			
Deploy				
Deploy All				
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✓ Autodeploy Var	iables			
Multiple Variable	e Editor			
Create Variable	5			
Create Bound V	ariables			
Export Variable	5			
Import variable	»			
Remove from P	roject			
Rename	F2			
Properties				

- 2. In **Create Bound Variables**, expand the project tree beneath **Project Items** until all the folders beneath **OPC1** are visible.
- 3. Open Simulation Examples and Functions.
- 4. Select the tag "Ramp3" and click **Add>>**.
- 5. Select the tag "Ramp4" and click **Add>>**.
 - **Note:** Both "Ramp3" and "Ramp4" should be visible beneath **Added Variables**.

🖻 🤔 OPC1		
AdvancedTags Alarms&Events JataLogger OracleConnector System Channel1 Data Type Examples Simulation Examples System System System AdvancedTags System System Ramp1 Ramp2 Ramp4 Pandom1	Add >> Add range >> Custom-base name Variable Copy properties from Browse	Ramp3 Ramp4

- 6. Upon completion, click **OK**.
 - Note: The Multiple Variable Editor dialog is invoked. This dialog is used to configure tag-related options.
- 7. Leave the options at the default settings and click **Done**.

See Multiple Variable Editor							
50	× 🗅 🗯 🛱						
	Path	Name	Var Type	Data Type	Network: Buffering	Net: Buffe	
Ramp3	oj/My Computer/Simulator Driver.lvlib/	Ramp3	Network-Published	Int32	on	50	
Ramp4	oj/My Computer/Simulator Driver.lvlib/	Ramp4	Network-Published	Int32	on	50	
 				Done	Help		

Note: In the Project Explorer, the two variables "Ramp3" and "Ramp4" should be visible beneath the Simulator Driver.lvlib library.



- 8. Click File | New VI.
 - Note: Two new windows will be invoked. One is an untitled Front Panel. The other is the corresponding Block Diagram window. Together, these two windows comprise a Virtual Instrument (VI).

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1 1	Untitled 1 Front Panel on Demo OPC Server.lvproj/My Computer													
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3.2 Adding an I/O Control to the VI

- 1. From the Project Explorer, drag "Ramp3" to the **Untitled 1 Front Panel**. Place an I/O control for "Ramp4" on the front panel in the same fashion.
- 2. In the front panel's main menu, click **Run Continuously**. Changing data should be visible in both I/O controls.

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3. Click Abort Execution to stop the VI.



4. In the Project Explorer, click **File** | **Save All**. Name the VI "Simulator Tags." The new VI is visible in the project tree.

4. Using Kepware's OPC Quick Client

Kepware provides an OPC client application for testing purposes with each installation of KEPServerEX.

For more information, refer to the OPC Quick Client help documentation.