



# LabVIEW OPC with NI OPC Servers

Hans-Petter Halvorsen, M.Sc.

# Software

You need the following Software:

- **LabVIEW** (LabVIEW Professional Development System 32-Bit: English)
- **NI OPC Servers**

You may use them in “Evaluation Mode” if you don't have a valid License key

All LabVIEW Software can be downloaded from: [www.ni.com/download](http://www.ni.com/download)

# NI OPC Servers

Write Data to OPC Server

Read Data from OPC Server



LabVIEW Application #1

In this Example LabVIEW Application #1 and LabVIEW Application #2 are on the same computer. Normally they are located on 2 different computers in a Network.



LabVIEW Application #2



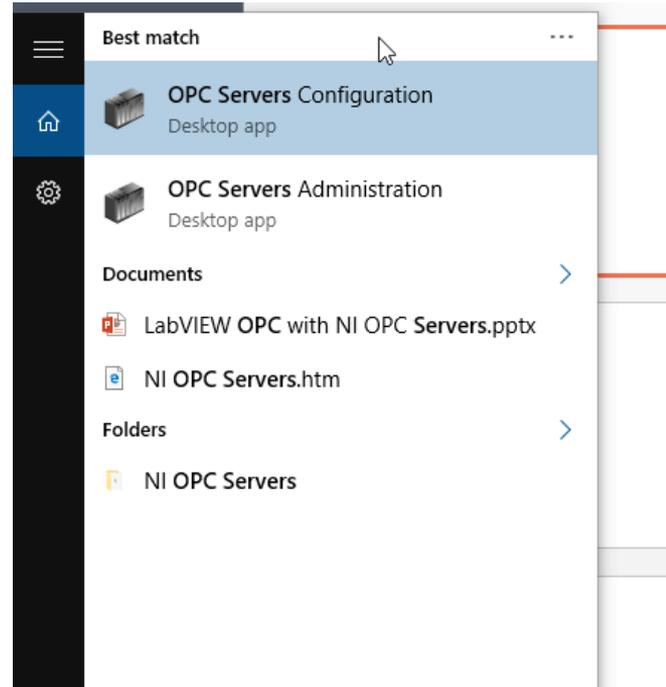
# NI OPC Servers

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# NI OPC Servers

A Demo version should be included with LabVIEW DSC Module or LabVIEW Real-Time Module

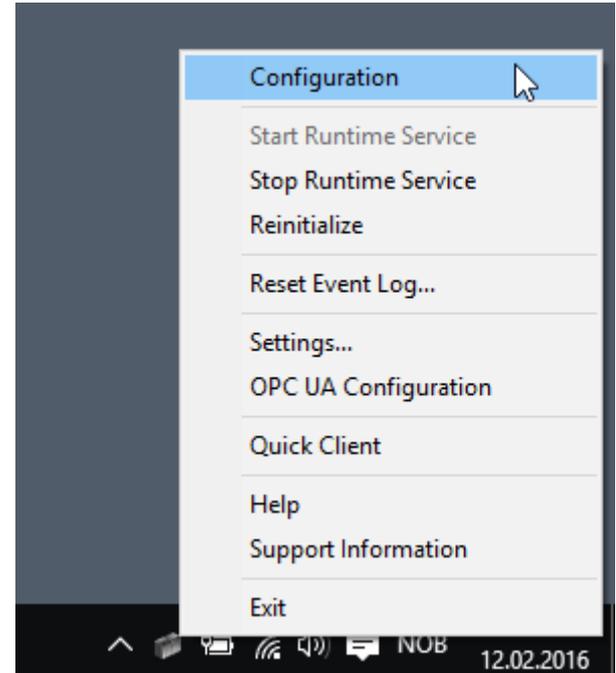
Use Search in Windows. Search for «OPC Servers»  
And select «OPC Servers Configuration»



# NI OPC Servers

NI OPC Servers will then start and you get access from the Taskbar in Windows.

Select “Configuration”



# NI OPC Servers Configuration

Here you may create New OPC Tags.  
Just Right-click and select «New Tag»

Tag Name	Address	Data Type	S...	Scaling	Description
Tag1	R0001	Word	100	None	Ramping Read/Write tag used to verify client connection
Tag2	K0001	Word	100	None	Constant Read/Write tag used to verify client connection
Temperature	K0000	Float	100	None	

Date	Time	Source	Event
10.02.2016	15.45.43	NI OPC Servers...	Runtime performing exit processing.
10.02.2016	15.45.43	NI OPC Servers...	Stopping Simulator device driver.
11.02.2016	12.24.02	NI OPC Servers...	NI OPC Servers 2013
11.02.2016	12.24.10	NI OPC Servers...	Simulator device driver loaded successfully.
11.02.2016	12.24.12	NI OPC Servers...	Runtime service started.
11.02.2016	12.24.12	NI OPC Servers...	Starting Simulator device driver.
11.02.2016	12.24.12	Simulator	Simulator Device Driver V5.11.262.0
11.02.2016	12.24.12	NI OPC Servers...	Starting Simulator device driver.
11.02.2016	12.24.12	NI OPC Servers...	Starting Simulator device driver.
11.02.2016	12.24.12	NI OPC Servers...	Starting Simulator device driver.
12.02.2016	08.33.15	NI OPC Servers...	NI OPC Servers 2013
12.02.2016	08.33.20	NI OPC Servers...	Simulator device driver loaded successfully.
12.02.2016	08.33.21	NI OPC Servers...	Runtime service started.
12.02.2016	08.33.21	NI OPC Servers...	Starting Simulator device driver.
12.02.2016	08.33.21	Simulator	Simulator Device Driver V5.11.262.0
12.02.2016	08.33.21	NI OPC Servers...	Starting Simulator device driver.
12.02.2016	08.33.21	NI OPC Servers...	Starting Simulator device driver.
12.02.2016	08.33.21	NI OPC Servers...	Starting Simulator device driver.

Ready Default User Clients: 0 Active tags: 0 of 0

# NI OPC Servers – Create New Tag

The screenshot shows the NI OPC Servers - Runtime application window. On the left, a tree view displays the project structure under 'Channel1', including 'Device1', 'Data Type Examples', and 'Simulation Examples'. The main area shows a table of existing tags:

Tag Name	Address	Data Type	S...	Scaling	Description
Tag1	R0001	Word	100	None	Ramping Read/Write tag used to verify client connection
Tag2	K0001	Word	100	None	Constant Read/Write tag used to verify client connection
Temperature	K0000	Float	100	None	

The 'Tag Properties' dialog box is open, showing the 'General' tab. The 'Identification' section contains the following fields:

- Name: Temperature
- Address: K0000
- Description: (empty)

The 'Data properties' section contains the following fields:

- Data type: Float
- Client access: Read/Write
- Scan rate: 100 milliseconds

A note at the bottom of the dialog states: "Note: The scan rate is only used for client applications that do not specify a rate when referencing this tag (e.g., non-OPC clients)".

At the bottom of the dialog are buttons for 'OK', 'Cancel', 'Apply', and 'Help'. The background application window shows a status bar with 'Default User', 'Clients: 0', and 'Active tags: 0 of 0'.

Here I have create a New OPC Tag called «Temperature»



# OPC in LabVIEW

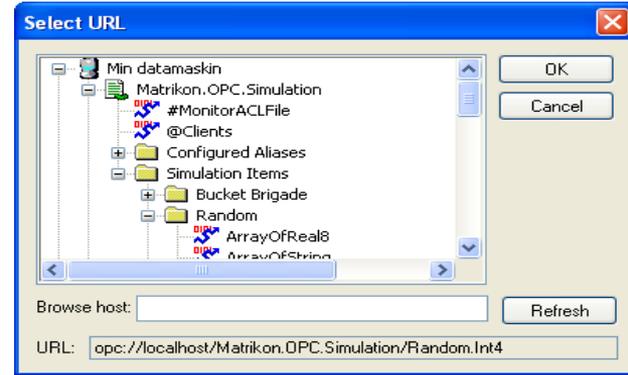
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# The OPC Functions in LabVIEW

You can use LabVIEW as an OPC client by connecting to an OPC server through a **DataSocket** connection.

The **DataSocket** palette in LabVIEW:

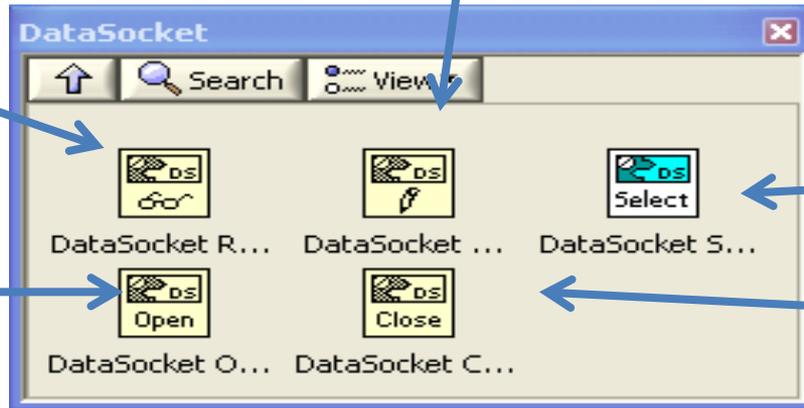
Write Data to OPC



Browse OPC Servers and OPC Items

Close Connection to OPC Server

Read Data from OPC



Open Connection to OPC Server



# OPC Write in LabVIEW

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# NI OPC Servers

Write Data to OPC Server

Read Data from OPC Server



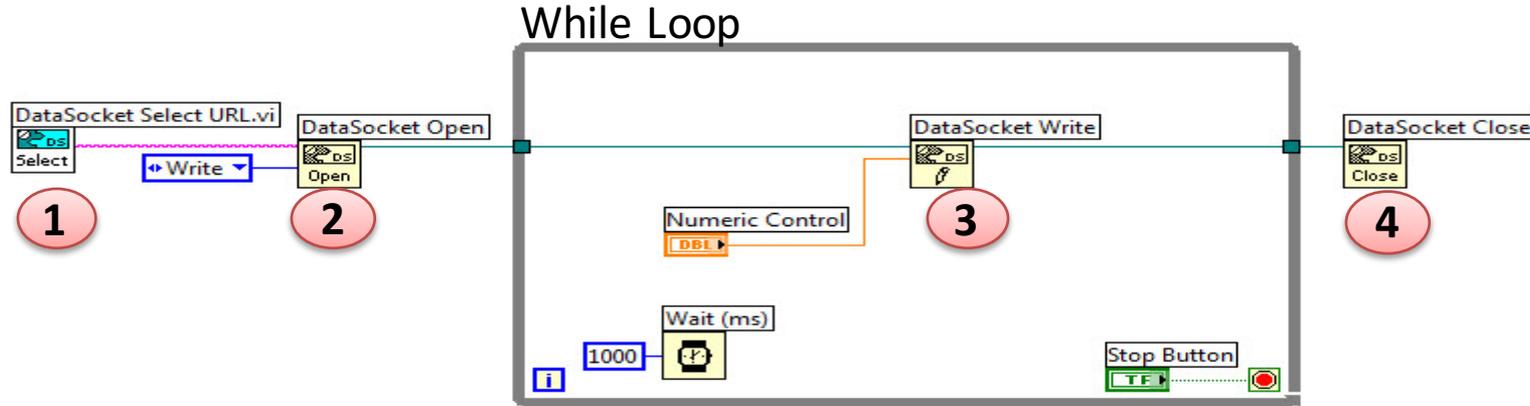
LabVIEW Application #1

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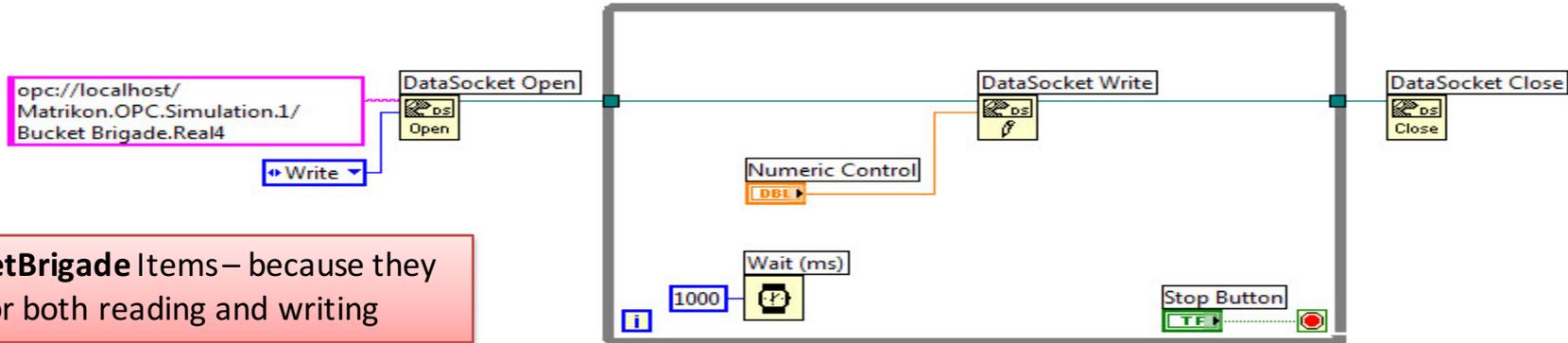


LabVIEW Application #2

# Write to OPC Server using LabVIEW

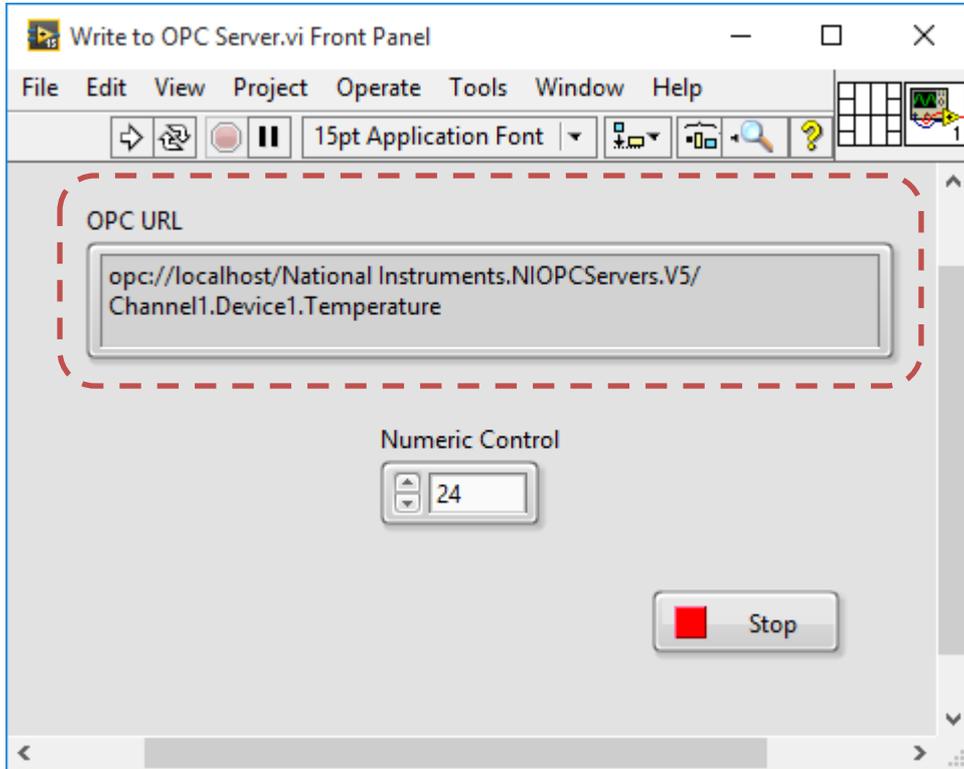


Or specify URL directly: While Loop

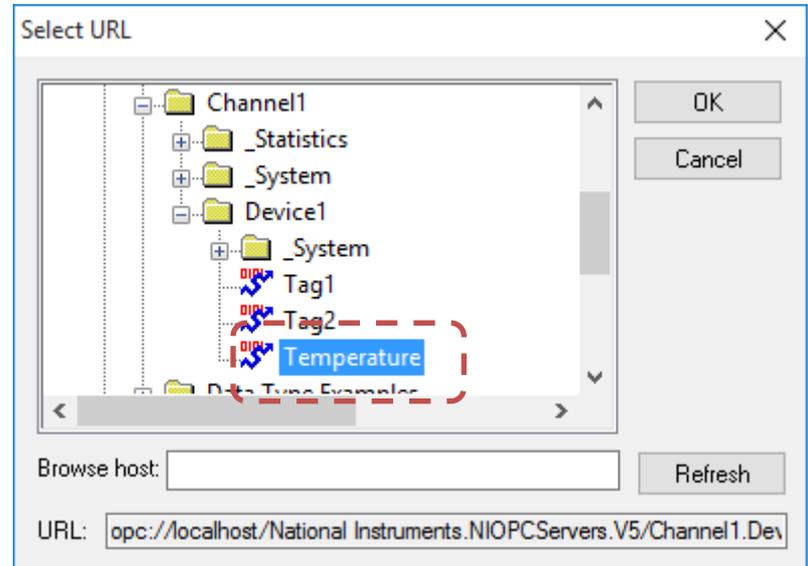


Use the **BucketBrigade** Items – because they can be used for both reading and writing

# Connect to NI OPC Servers



Write Tag URL manually or select Tag using the «DataSocket Selct URL»



**DEMO**



# OPC Read in LabVIEW

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# NI OPC Servers

Write Data to OPC Server

Read Data from OPC Server



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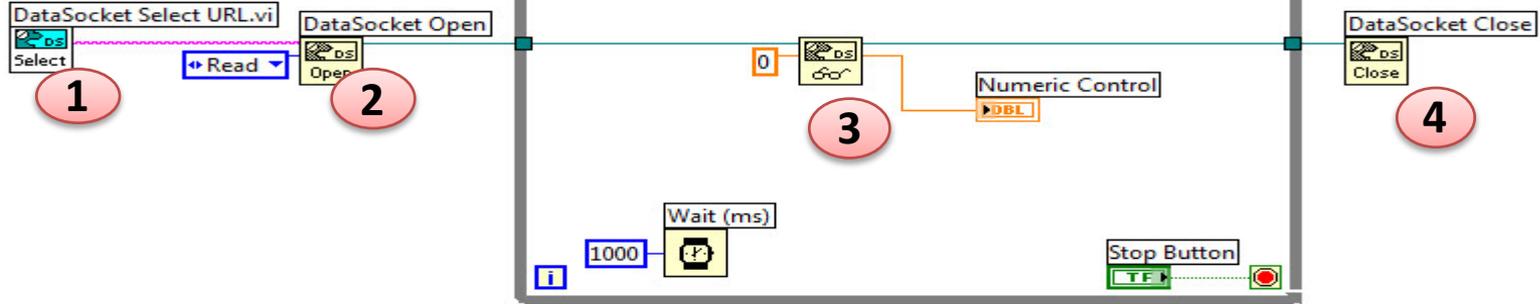


LabVIEW Application #2

# Read from OPC Server using LabVIEW

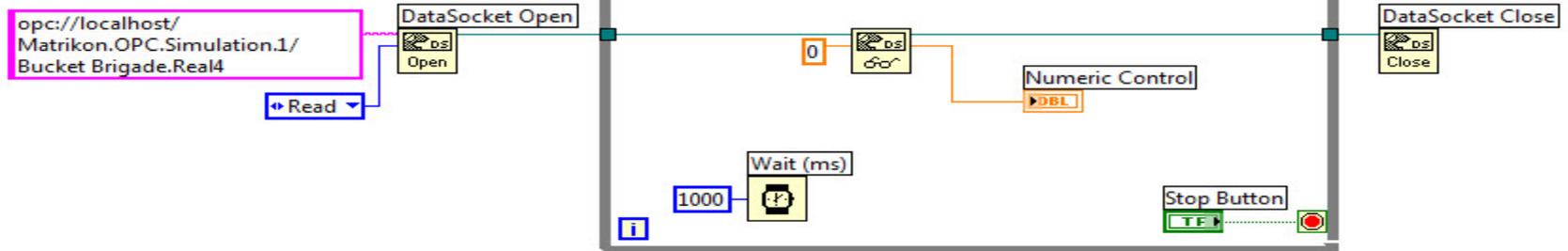


While Loop



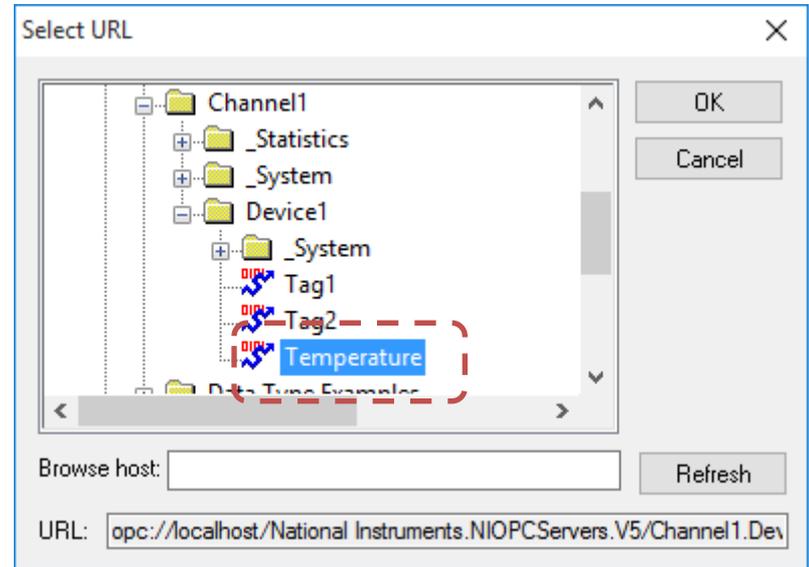
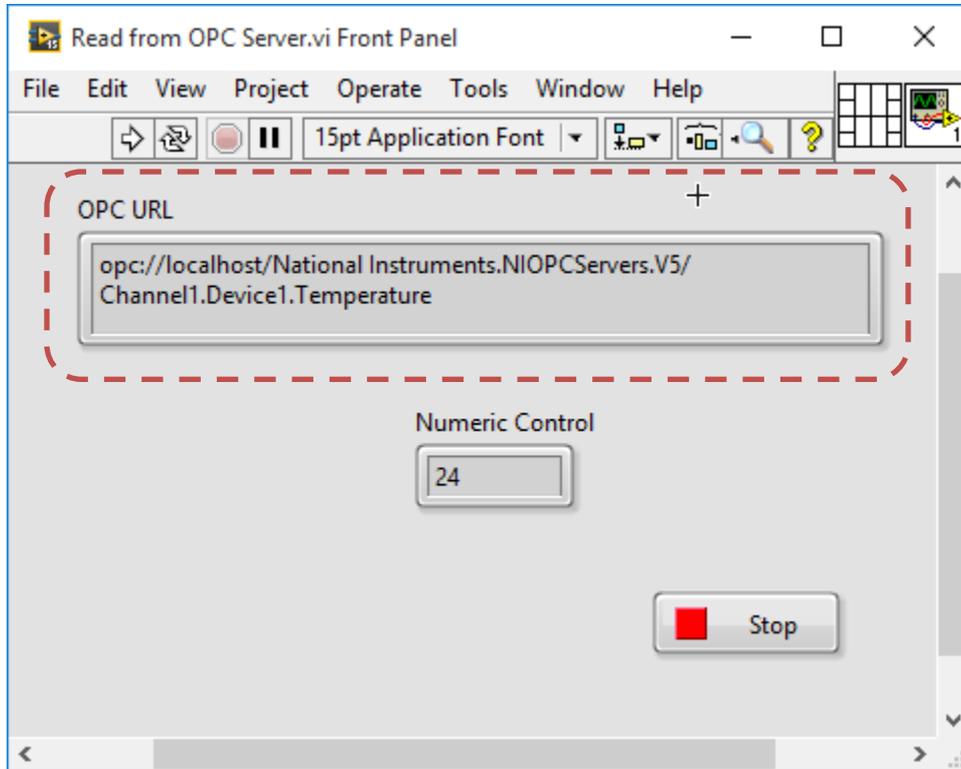
Or specify URL directly:

While Loop



# Connect to NI OPC Servers

Write Tag URL manually or  
select Tag using the  
«DataSocket Selct URL»



**DEMO**



# Final Solution

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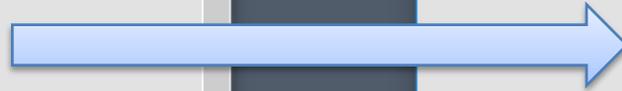
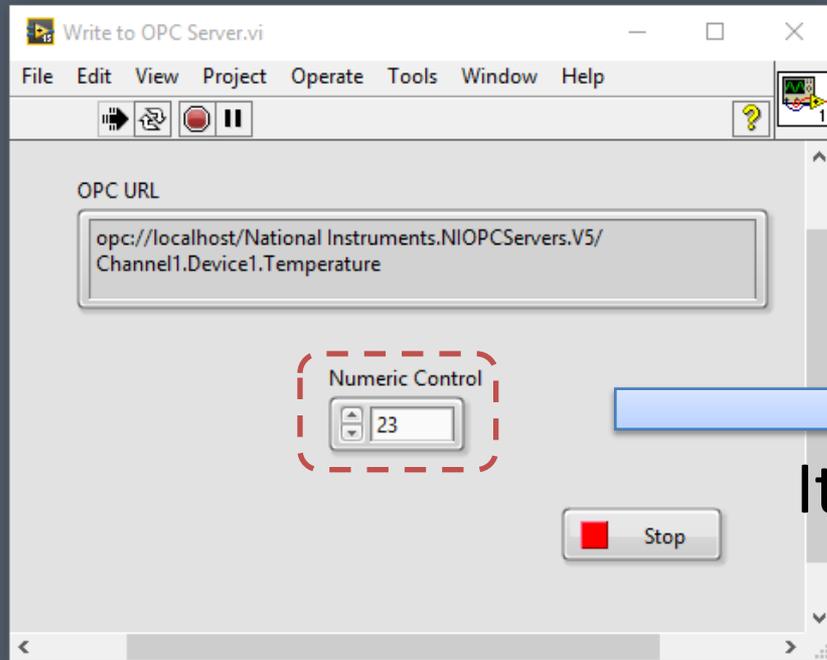
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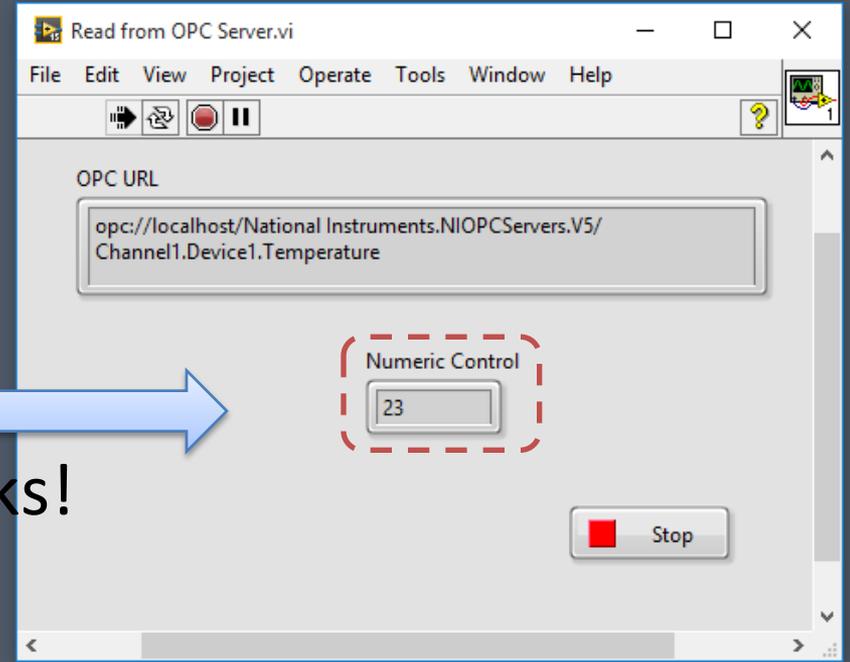


LabVIEW Application #2

# Running Write Client and Read Client simultaneously



It Works!



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