



# GraphWorX64

## Using Complex OPC UA Objects



### APPLICATION NOTE

September 2013

**Description:** Guide to use OPC UA objects as smart symbols in GraphWorX64

**OS Requirement:** Vista x64/ Windows 7 x64/ Windows 8 x64/ Windows Server 2008 x64/ Windows Server 2008 R2 x64/ Windows Server 2012

**General Requirement:** GENESIS64 installed on your machine; basic knowledge of GraphWorX64 and smart symbols; installed OPC-UA Demo Server from Unified Automation.

## Introduction

GraphWorX64 is one of GENESIS64 OPC-UA to the core components. Put in simpler words, GraphWorX64 is a native OPC-UA client. As such you can create smart symbols that represent an object inside an OPC-UA server.

**NOTE:** For more information on Smart Symbols, please refer to application note *GraphWorX64 - Smart Symbols*.

For our example, we use the UA demo server from the OPC foundation. It can be downloaded from Unified Automation Web Sites: <http://www.unified-automation.com/opc-ua-servers/>. This server contains two objects, each representing a boiler. In order to download the demo server from the link, you need to register as a user. Once downloaded, extract the .zip file and run uademoserver-win32-v1.3.1 to install the demo. Once installed, run the application.

## Open the Display

You can find a display called “OPCUA Boiler - Smart Symbol.gdxf” in the GenDemo directory in \Program Files\ICONICS\GENESIS64\GenDemo\Examples\OilPlatform\OPC UA Smart Objects.

1. Start **GraphWorX64**, either as standalone or through Workbench. Once loaded select **File** → **Open** to open an existing display.
2. In the file browser go to the GenDemo path as stated above and select the display “**OPCUA Boiler - Smart Symbols.gdxf**”

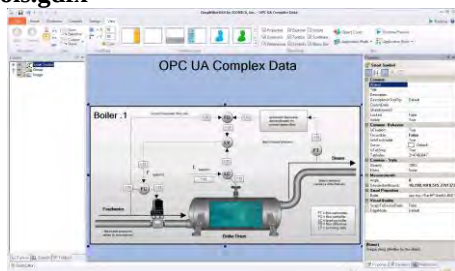


Figure 1 - OPC UA Boiler Display

## Connect to the OPC UA Object

1. Select the boiler object named Smart Symbol in GraphWorX64.
2. Make sure that you have the smart symbol selected by checking it in Navigation Explorer.

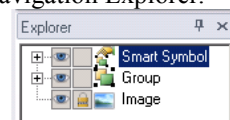


Figure 2 - Select the Smart Symbol

3. In **Properties** tab look for “**Smart Properties**” section

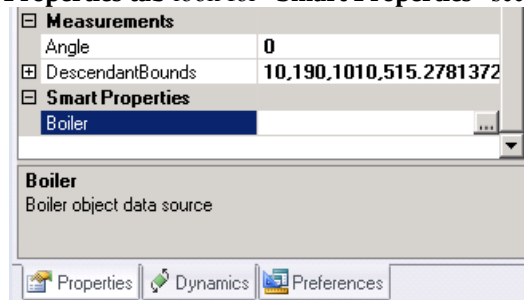


Figure 2 - Smart Properties

4. Clicking on the ellipse (browse) button will bring up the **Data Browser**.

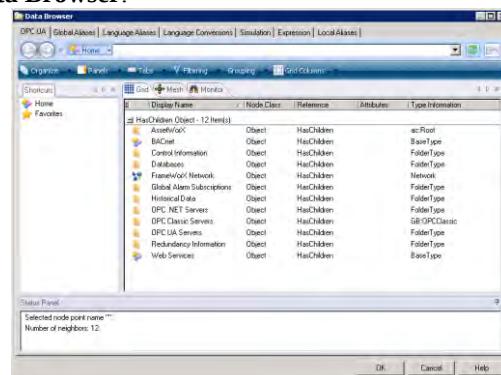


Figure 3 - Data Browser

5. Make sure the Demo OPC-UA Server is running.

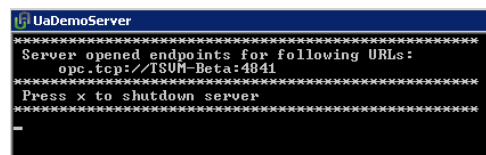


Figure 4 - OPC-UA Server running



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6. In the data browser type in your node name and port number as shown in the command prompt above. TSVM-Beta is the node name in the above example; please replace it with your node name.

Example: *opc.tcp://TSVM-Beta:4841*

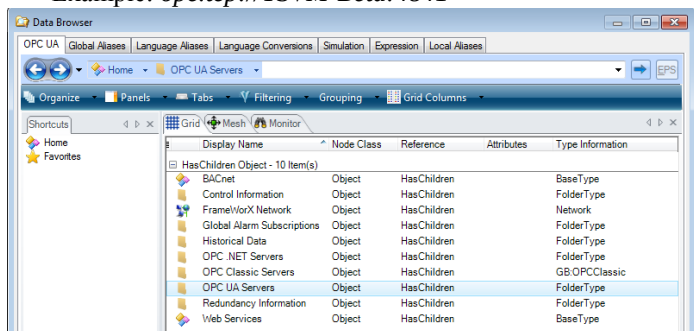


Figure 5 - Browse for OPC-UA Servers

**NOTE:** You can either type in the node name or the IP Address. The port 4841 is the port where the OPC-UA Server form Unified Automation has its entry point. You can see the whole address in OPC UA server.

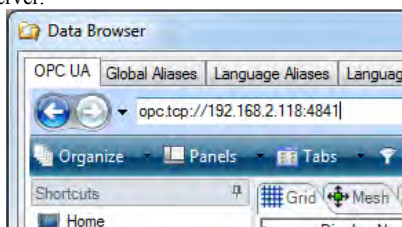


Figure 6 - Addressing an OPC-UA Server

**NOTE:** If you don't see the server address space it might be due to server security restrictions. You may disable security of the server in its XML configuration file "ServerConfig.xml". Open the file with your xml editor and comment out the lines similar to those shown in the Figure 7.

```
<SecuritySetting>
  <SecurityPolicy>http://opcfoundation.org/UA/SecurityPolicy#None</SecurityPolicy>
  <MessageSecurityMode>None</MessageSecurityMode>
</SecuritySetting>
<!--
<SecuritySetting>
  <SecurityPolicy>http://opcfoundation.org/UA/SecurityPolicy#Basic128Sha15</SecurityPolicy>
  <MessageSecurityMode>SignAndEncrypt</MessageSecurityMode>
</SecuritySetting>
-->
```

Figure 7 - Disabling Security in OPC UA Server Configuration File

7. Browse down to: **PLC1 → Programs → Main**

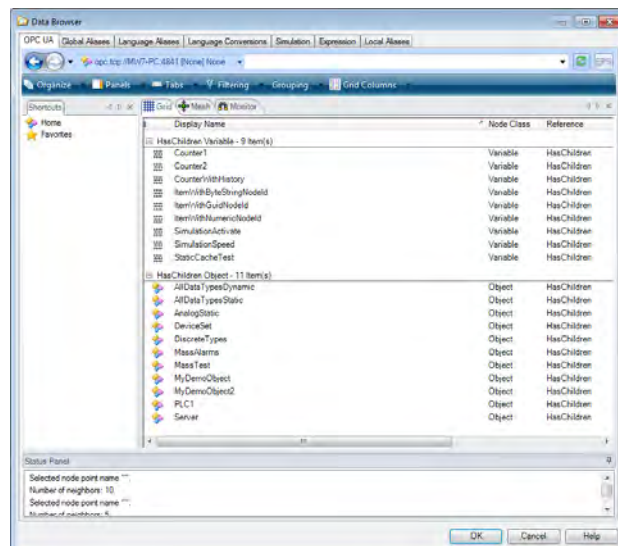


Figure 8 - Items on the Root of the OPC-UA Server

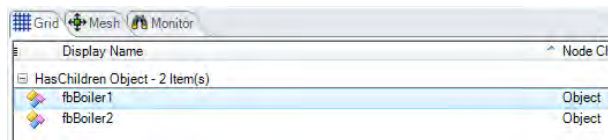


Figure 9 - fbBoiler1 object

8. Select the "fbBoiler1" object, and then click OK.
9. Enter GraphWorX64 runtime and see how all other data gets updated.

## Conclusion

OPC-UA gives us the power of creating objects in the OPC-Server and as such you can create the counterpart in GraphWorX64. Connecting the OPC-UA object with you symbol will save you engineering time. Duplicate the object in GraphWorX and connect the second one to fbBoiler2 to see the benefits.