

**Description:** This applications note is intended to give users a quick start on configuring and running transactions using BridgeWorX.

**OS Requirement:** Win XP/Server 2003/ Server 2008/Vista/Windows 7

**General Requirement:** BridgeWorX V9.x and the Unified Web Interface must be installed.

## Goal

In this Quick Start you will learn some of the basics of BridgeWorX by walking through the configuration of a simple transaction. The example will retrieve product information out of the Northwind database and move this to OPC tags. After 10 seconds all of the OPC tags will be set to '0' again.

**NOTE:** For more in-depth documentation and a complete list of available features, please refer to the BridgeWorX documentation on the BizViz CD.

## Client Management

One of the most important things to establish from the beginning in BridgeWorX is which users should have permission to execute and manage your transactions. To modify users and permissions, follow these steps:

1. Open the BridgeWorX Configurator.
2. Select User Management → User Accounts in the tree.
3. Click on the User Accounts Registration button to open the “Windows / Domain Accounts Import” dialog.
4. Select any users or groups that you would like to eventually be able to execute transactions and click Add to Selected Accounts list to add them. To add users or groups from a domain, rather than the local machine, click the Add Domain Groups button. Hit OK when you have picked all of your users and groups.
5. You should now have a list of your users and groups under the User Accounts tree. We will later pick users from this list for our specific folder permissions. You may come back here at any time to add additional users.

## Creating a Transaction

1. If you do not already have a configuration, right-click on the Configurations tree and select New → Transaction Configuration. Give it a name and click the **Set As Active Configuration** button.
2. If you do not already have a transaction folder, right-click on your configuration and select New → Transaction Folder.
  - a. Once you’ve created the folder, click the Permissions button.

- b. Click the Add button to select users or groups you would like to give permissions to for this folder. If you do not see your users in this list, see the Client Management section above.
  - c. When you have picked your list of users, click OK.
  - d. Select each user and check the appropriate boxes to give them View, Manage, and Execute permissions (as necessary for the application). When you are done, click OK.
3. Right-click on your transaction folder and select New → Transaction.
4. Name your transaction “BridgeWorX Quick Start”.
5. After naming your transaction, create a new template object by clicking the Create New Diagram icon next to the Transaction Diagram field, as shown in Figure 1.

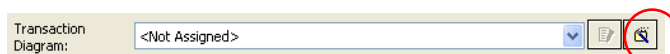


**Figure 1: New Transaction Template**

6. The Transaction Template Wizard will appear. Name the diagram “BridgeWorX Quick Start” and click OK.
7. Click on the  icon to go to the Transaction diagram, or agree to be taken there automatically.
8. At this point you could click the “Run Diagram Designer” button to open the Transaction Diagram Designer, but before you do this it is best to configure the necessary Data Connectors.

## Configuring the Data Connectors

For this example, we will use the Microsoft Access Northwind database.

1. Expand the Data Connectors node in the tree.
2. Right-click on Database Connectors and select New Data Connector.
3. Name the Data Connector “ReadProductID” and select Read Only as the data direction.
4. Select the Database Connection tab and click on the Database Login button.
5. The Database Connections browser will open; right-click on the MS Access Connections and select Insert New Connection.
6. Browse for the Northwind database on your hard disk (located by default in C:\Program Files\ICONICS\BizViz\BridgeWorX\Sample Database Files) and select OK.
7. The Northwind connection will appear in the MS Access Connections list; double-click on it and you’ll be back in the BridgeWorX Configurator.
8. Select the Reading from Database tab and click on the Edit Command button and select Simple SQL Query Wizard from the list.

9. In the SQL Command Designer, click on the  button beside Table Name and pick the Products table.
10. In the Columns Selection pick ProductName, UnitPrice and UnitsInStock.
11. In the Records Filtering tab we are going to build a filter. This filter will determine which data will be returned by the SQL query. Click on the  button to add a filter.
12. A new popup will appear. Select Products.ProductID from the Column Name to Filter On. Then select "[Parameter]" from the "Relates To" list.
13. Click on this button:  and name the Parameter "@ProductID".
14. Click OK twice to get back to the BridgeWorX Configurator.
15. Click on the "SQL" button to test the query. Fill in a product ID number (e.g. 4) and this will return data from the database. Click Apply to save your database connector.

In the next step we'll configure the OPC tags:

1. Go to the tree control on the left and open the Data Connectors and right-click on OPC Connectors and select New → Data Connector.
2. Name the connector "NorthwindOPCTags" and select Read/Write as Data Direction.
3. We are going to configure the Read tag now, click on the "Tag Menu..." button and the Unified Data Browser will open.
4. Select the OPC DA tab and browse to: My Computer → ICONICS.Simulator.1 → SimulatePLC → OUTPUTS.
5. Select the FLOAT tag and click OK.
6. In the next step we are going to configure the OPC write tags. Select the Write to OPC tab and click on Add. The Unified Data Browser will appear. Select the OPC DA tab and browse to: My Computer → ICONICS.Simulator.1 → SimulatePLC → OUTPUTS.
7. Select the following OPC tags by keeping the CTRL button pressed: FLOAT1, FLOAT2, and STRING, and then click OK.
8. You will see the OPC tags appear in the window. Click Apply to save your OPC connector.

## Designing a Transaction

In the next step we will design the Transaction Diagram so the information from the database will be moved to the OPC tags.

1. Go back to your transaction configuration and select the "BridgeWorX Quick Start" transaction, which you configured in step 4 of Creating a Transaction.
2. Click on the  icon to go to the Transaction Diagram.
3. Click the "Run Diagram Designer..." button to open the Transaction Diagram Designer.
4. The Transaction Diagram Designer will appear.
5. Drag and drop the Database to OPC block to the designer area.
6. A block with "Transaction Start" will appear on the screen; double-click on it.
7. Name the block "Move Product to OPC" in the Task Name input field.
8. Select the Database to OPC Data Mapping tab. Click on the  button to the right of the text "Database Connector to read data from". Select "ReadProductID" from the list, then click on Select button to confirm your choice.
9. In the next step the parameter binding will be set. Click on the  in the parameter mapping field.

| Parameter Mapping |                |              |                                                                                                 |
|-------------------|----------------|--------------|-------------------------------------------------------------------------------------------------|
| Parameter Name    | Type           | Formula      | Bind To                                                                                         |
| @ProductID        | INPUT, Integer | x={{Source}} | <Not Set>  |

Figure 2: Parameter Mapping

10. The data source browser will appear, from the OPC Elements tab, open NorthwindOPCTags and select the FLOAT tag. Click on the Add button and click on Bind Current Selection.
11. In the next step the Data Columns to OPC tags will be configured. Click on  in the Data Records Mapping field.

| Data Records Mapping  |           |              |                                                                                                 |
|-----------------------|-----------|--------------|-------------------------------------------------------------------------------------------------|
| Column                | Row Index | Formula      | Bind To                                                                                         |
| Products.ProductN     | N/A       | x={{Source}} | <Not Set>  |
| Products.UnitPrice    | N/A       | x={{Source}} | <Not Set>                                                                                       |
| Products.UnitsInStock | N/A       | x={{Source}} | <Not Set>                                                                                       |

Figure 3: Data Records Mapping

12. Browse for the NorthwindOPCTags, and select the FLOAT1, FLOAT2, and STRING tags and click on the Add button and then on the Bind Current Selection.
13. The tags will be listed in the Data Records Mapping pane. Map the UnitPrice field to FLOAT1, the UnitsInStock field to FLOAT2, and the ProductName field to STRING as shown in Figure 4 below, then click OK.

| Data Records Mapping  |           |              |                   |
|-----------------------|-----------|--------------|-------------------|
| Column                | Row Index | Formula      | Bind To           |
| Products.ProductN     | Row[0]    | x={{Source}} | ...UTPUTS.STRING  |
| Products.UnitPrice    | Row[0]    | x={{Source}} | ...OUTPUTS.FLOAT1 |
| Products.UnitsInStock | Row[0]    | x={{Source}} | ...OUTPUTS.FLOAT2 |

Figure 4: Data Records Mapping

In the next step the Execution Delay block is added. This will ensure that there is a delay of 10 seconds before processing the next block.

1. Drag and drop the Execution Delay block to the transaction design area. Now drag the cursor from the green arrow in the middle of the first block (the cursor will change into a pointing finger) to the new execution delay block. A popup screen will appear, to which you should select “On Complete”.
2. Double click on the Execution Delay block and change the Time Interval to 10000 ms. Click OK.

In the next step another block will be added that will set all the OPC tags to ‘0’.

1. Drag and drop the OPC to OPC block into the design area and drag an arrow from the Delay block to the OPC to OPC block. Double click the OPC to OPC block. Name it SetToZero in the general tab. Click on the OPC to OPC mapping tab
2. Click on  below the destination element, select FLOAT1, FLOAT2 and STRING. Click on **ADD** and then click on **Bind Current Selection**.
3. Click on  below the source element, select the Constant tab and enter a ‘0’ in the Enter Constant Value input field. Now click on **ADD 3 times** and then click on **Bind Current Selection**. The data mapping will look like this:

| Source Element | Formula | Destination Element           |
|----------------|---------|-------------------------------|
| <Constant>     | x=0     | ...ulatePLC.OUTPUTS.FLOAT1... |
| <Constant>     | x=0     | ...imulatePLC.OUTPUTS.FLOAT2  |
| <Constant>     | x=0     | ...imulatePLC.OUTPUTS.STRING  |

**Figure 5: Writing Constant Values**

4. Click OK, then drag the arrow from the Delay block to this new block and also make sure the SetToZero block has an arrow to the “Finish: Success” block.
5. Go to the Tools Menu in the left upper corner and select Tracing. Click on **Select All** and then on **Task and each Data Mapping Step** and then on OK.
6. Save the diagram from the File menu, then close the window by selecting Exit. You might get warnings but as long as there are no errors the transaction is all set.
7. The BridgeWorX Configurator will appear again. Make sure the BridgeWorX quick start transaction is enabled and click on the traffic light so it will become green. This means the BridgeWorX engine is running

## Testing the Transaction

In this part the transaction will be tested, this will be done with an OPC client.

1. Open the OPC DataSpy by going to Start → All Programs → ICONICS Tools → OPC DataSpy
2. Browse for the tags that are being used in the BridgeWorX diagram: OPC Items → My Computer → OPC Data Access → ICONICS Simulator 1 → SimulatePLC → Outputs. Multi select FLOAT, FLOAT1, FLOAT2 and STRING and right mouse click on them and select monitor.
3. Go to the left tree control and click on the **Data Monitor** item.
4. The 4 tags will appear in the right window. Right click on the FLOAT and select **SYNC write**, enter a 4 and click on **OK**.
5. Go back to the BridgeWorX Configurator and go to the BridgeWorX quick start transaction. Click on Execute now. Go back to the OPC data spy and the values of the OPC tags will be changed. This will be there for 10 seconds then the values will be ‘0’ again.

| Name                                           | Source | Value             |
|------------------------------------------------|--------|-------------------|
| ICONICS.Simulator.1\SimulatePLC.OUTPUTS.FLOAT  | OPC    | 4 (VT_R8)         |
| ICONICS.Simulator.1\SimulatePLC.OUTPUTS.FLOAT1 | OPC    | 22 (VT_R8)        |
| ICONICS.Simulator.1\SimulatePLC.OUTPUTS.FLOAT2 | OPC    | 53 (VT_R8)        |
| ICONICS.Simulator.1\SimulatePLC.OUTPUTS.STRING | OPC    | "Chef Anton's ... |

**Figure 6: Testing the Transaction**

## Basic Troubleshooting

The troubleshooting of a transaction can be done with the Unified Web Interface.

1. Start the Unified Web Interface by clicking on the  button in the BridgeWorX Configurator.
2. Open the BridgeWorX folder on the left side and click on the folder where you created the BridgeWorX Quick Start transaction.
3. By clicking on the folder you'll see the transaction history. Click on the green checkmark or the red 'X' icon (depending on whether the transaction succeeded or failed) to open the execution log for the transaction.
4. A new Internet Explorer window will appear. Click on each block in the list to get more information about the transaction.

**NOTE:** In order to see tracing information about your transaction, you must first enable tracing at the transaction level. To do so, go into the BridgeWorX Configurator and navigate to your “BridgeWorX Quick Start” transaction. Click on the “Advanced Mode” button to show additional tabbed dialogs in the lower half of the configuration screen if they aren't already showing. Click on the “Options” tab, and then select the checkbox that says “Enable transaction tracing”. You may also want to enable tracing at the Data Connector level. For more information, please consult the *BridgeWorX - Debugging Your Transactions Application Note*.