Configuring the OpenEnterprise™ PI Interface Reference Guide (V3x)
Revision Tracking Sheet

May 2016

This manual may be revised periodically to incorporate new or updated information. The revision date of each page appears at the bottom of the page opposite the page number. A change in revision date to any page also changes the date of the manual that appears on the front cover. Listed below is the revision date of each page (if applicable):

<table>
<thead>
<tr>
<th>Page</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial issue</td>
<td>May 2016</td>
</tr>
</tbody>
</table>
Contents

Configuring a New PI Interface ......................................................... 1

1.1 Before You Begin ........................................................................ 1
1.2 Getting Started .......................................................................... 2
1.3 Creating a new PI Interface ....................................................... 2
1.4 Configuring the new PI interface ................................................. 4
  1.4.1 Selecting the OPC Server (OPCInt node) ............................. 4
  1.4.2 Setting Collection Frequency (General node) ....................... 5
  1.4.3 Configuring Interface Settings (Unilnt node) ....................... 6
  1.4.4 Defining Monitoring (Health Points node) ......................... 7
  1.4.5 Setting Advanced Options (OPCInt node) ......................... 8
  1.4.6 Setting Advanced Options (Service node) ......................... 9
  1.4.7 Adding Start Up and Shut Down Commands ..................... 10
  1.4.8 Starting the Interface Service .......................................... 12
1.5 Running the OPC Server Interactively ...................................... 13
  1.5.1 Run dcomcnfg .................................................................. 13
  1.5.2 Setting the OPC Server as Interactive ............................... 14
1.6 Verifying the OPC Server ......................................................... 15
  1.6.1 Query and Transaction Diagnostics .................................. 16
1.7 PI Server .................................................................................... 16
  1.7.1 Start Updating Values ..................................................... 16
  1.7.2 Check that the PI Server Reflects Database Updates .......... 17
1.8 Troubleshooting ....................................................................... 19
  1.8.1 Manually Registering the OPC Server ............................. 19
Configuring OE PI Interface
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Configuring a New PI Interface

Use the PI Interface Configuration Utility ("PI ICU") to manage the PI system. The utility streamlines the setup and configuration options required for new and existing PI interfaces, and enables you to configure and maintain both new and existing PI interfaces.

1.1 Before You Begin

The PI system can draw data – such as current values – from OE using the OEOPCDA Server (or "OPC Server"). To permit this, either:

1. Use SQL Client to grant appropriate table privileges to the PUBLIC user (so the OPC Server does not need to log on) or
2. Configure the OPC Server to log on using Server Security.

By default, the OPC Server connects as "Public." This is the default limited-privileges OE user ID that the OPC Server uses to connect to OE. You may need to grant additional table privileges for the PUBLIC user.

Alternately, as a Windows Administrator, you can use the Settings Editor (click Start and enter Settings Editor in the Search Programs and Files field), select OEOPCDA Server and UseServerSecurity and set the value to 1.

Figure 1: Settings Editor – Modify value dialog
This causes the OPC Server to log in as the System user.

## 1.2 Getting Started

Use the PI ICU’s dialog to set parameters and manage PI interface services. To access the PI ICU, select **PI Interface Configuration Utility** from the PI System menu. The PI Interface Configuration Utility screen displays.

![Figure 2: PI Interface Configuration Utility (new)](image)

- **A** Interface selection controls
- **B** The tree (use it to access groups of settings)
- **C** Control settings (depending on the selection)
- **D** Status bar (indicates the configuration status)

## 1.3 Creating a new PI Interface

This section describes the process of setting up a new PI interface to communicate using OPC. PI interfaces gather data from a data source, convert the data to a PI readable format, and send it to the PI server for storage.

From the PI Interface Configuration Utility screen:

1. Select **Interface > New Windows Interface Instance from EXE**. The system opens the **Configure a New Interface** wizard.
2. Click **Browse** and select the OPC interface executable (**OPCInt.exe**) file for the new interface. (The default location is **C:\Program Files (x86)\PIPC\Interfaces\OPCInt.exe**.)

3. Click ▼ in the Host PI Server/Collective field (2) to display all defined PI servers. Select a server; the wizard completes the Path field.

4. Define a **Point Source** and an **Interface ID #**.
   - **Point Source** (3) provides the name you assign a group of tags in the PI database. You can group tags in the database by location, by communication channel, or by or some other theme. You must assign each group of tags a different point source name.
   - **Interface ID #** (4) is the number you use to identify this instance of the interface. It usually relates to the point source name, as seen below.

5. Click **Add**. The wizard displays the PI ICU Register Interface dialog.

6. Click **OK**. (The wizard displays the OPCint8 screen.)
1.4 Configuring the new PI interface

Configuring a new PI interface requires the following tasks:

- Selecting the OPC server
- Setting the collection frequency
- Configuring universal interface settings
- Defining system monitoring
- Defining any advanced options
- Adding commands to the startup and shutdown files
- Starting the interface service

The following sections discuss each of these tasks.

1.4.1 Selecting the OPC Server (OPCInt node)

Figure 4: PI Interface Configuration Utility (OPCInt node)

1. Select the **OPCInt** node in the left-most pane of the PI Interface Configuration Utility screen.
2. Click **List Available Servers**.
3. Click ▼ to display the available OPC data acquisition servers. Select **Emerson OEOPCDAServer**.
4. Click **Apply**.
### NOTICE

After you click **Apply**, the status bar at the bottom on the page should display **Service Uninstalled** and **OPCInt8 – Not Installed**.

---

#### 1.4.2 Setting Collection Frequency (General node)

*Figure 5: PI Interface Configuration Utility (General node)*

1. Select the **General** node (1) in the left-most pane of the PI Interface Configuration Utility screen.
2. Click the **Add a scan class** icon (2).
3. Enter a scan “class” (for example, enter **00:00:10** to define 10-second intervals).

The scan class defines the frequency at which the interface checks the OPC server for updates in the server’s value for this tag. For instance, with a 10-second scan class, the OPC interface looks to the OPC Server for an update in its value once every 10 seconds and sends a new snapshot to the PI tag **only** if the value in the OPC Server is different from the value the OPC Server had the last time the interface performed a scan.

4. Click **Apply**.
1.4.3 Configuring Interface Settings (Unilnt node)

Use this screen to define general settings for the interface.

**Figure 6: PI Interface Configuration Utility (Unilnt node)**

1. Select the **Unilnt** node in the left-most pane of the PI Interface Configuration Utility screen.
2. Select **Startup delay**, enter **10** (to specify a startup delay of 10 seconds), and click **Reset** to register the value.
3. Select the **Disable Unilnt performance counters** and **Include Point Source in the header of log messages** options.
4. Select **Write status to tags on shutdown**, click ▼ to display all defined values, and ensure that you select the default value (**Intl Shut**) .
5. Click **Apply**.
1.4.4 Defining Monitoring (Health Points node)

Use the Health Points node to define monitoring characteristics for the interface.

Figure 7: PI Interface Configuration Utility (Health Points node)

1. Select the **Health Points** node in the left-most pane of the PI Interface Configuration Utility screen.
2. Right-click on any of the listed tags in the **Unlint Interface Health Monitoring Points** pane.
3. Select **Create All** from the context menu. This creates tags in the PI server.
1.4.5 Setting Advanced Options (OPCInt node)

Use the OPCInt node to define advanced options for the interface.

Figure 8: PI Interface Configuration Utility (OPCInt node)

1. Select the **OPCInt** node in the left-most pane of the PI Interface Configuration Utility screen.
2. Select **OPC Server > Advanced Options** in the OPC Interface Specific Parameters pane.
3. Select the **Advise Groups on Creation** and **the Enable Mass Tag Adding** options.
4. Select the **Reconnect To Server Delay** option and enter **30** to specify a 30-second delay when interface reconnects to the server.
5. Click **Apply**.
1.4.6 Setting Advanced Options (Service node)

Use the Service node to define advanced option for the interface.

Figure 9: PI Interface Configuration Utility (Service node)

1. Select the **Service** node in the left-most pane of the PI Interface Configuration Utility screen.
2. Scroll through the **Installed services** pane to locate and select the **pinetmgr** option.
3. Click **Edit** to add **pinetmgr** to the Service Configuration pane.
4. Click **Create** to create the interface service. The wizard displays a validation dialog:
5. Click Yes in the PI Interface Configuration Utility dialog. The wizard opens the PIsrvsitestop.bat and PIsrvsitestart.bat files in Windows Notepad.

1.4.7 Adding Start Up and Shut Down Commands

In this step, you add the commands for the new service to the PISrvSiteStart.bat and PISrvSiteStop.bat files located in the \PI\adm\ folder. The wizard opens these files in Notepad; save them once you complete editing them.

1. Open the PIsrvsitestop.bat file and add NET STOP OPCINT8 immediately below the NET STOP OPCINT7 line:

   ```
   REM Non-Interactive Site Specific shutdown file. This file
   REM should be modified to stop site specific services
   REM related to PI. This file will not be overwritten
   REM on upgrade. Instead new versions will be written
   REM as pIsrvsitestop.bat.new for review and integration
   REM by the PI Administrator.
   REM $Workfile: pIsrvsitestop.bat $ $Revision: 11 $

   echo Stopping Site Specific PI System Services...
   net stop mp_sk
   net stop random
   NET STOP OPCINT1
   NET STOP OPCINT2
   NET STOP OPCINT3
   NET STOP OPCINT4
   NET STOP OPCINT5
   NET STOP OPCINT6
   NET STOP OPCINT7
   NET STOP OPCINT8
   NET STOP OPCINT9
   REM
   ```

   2. Save the file.

   3. Open the PIsrvsitestart.bat file and add NET START OPCINT8 immediately below the NET START OPCINT7 line.
4. Save the file.
1.4.8 Starting the Interface Service

Use the Service node to define advanced options for the interface.

Figure 10: PI Interface Configuration Utility (Service node)

1. Click the green arrow (†) to start the interface service.
2. The Service status bar at the bottom of the screen should then display *Running* and *OPCInt8 - Installed*.
1.5 Running the OPC Server Interactively

WARNING

This option is only for debugging purposes. For normal production use, always reset the OPC Server back to The launching user option (see the Emerson OpenEnterprise OPC DA Server Properties dialog). Once you associate the “interactive” view with a user ID, the “interactive” view is available only for that specific user ID, which then always starts in the interactive view.

Normally, the PI Server runs the OPC Server as a non-interactive service (that is, the OEOPCDAServer.exe runs invisibly). If you want the OPC Server to run interactively, refer to Section 1.7.1, Manually Registering the OPC Server.

NOTICE

To ensure the availability of OE or PI functionality, ensure that the person installing or configuring the OPC or PI software has administrator privileges (that is, is a “Windows Administrator”) or equivalent system security credentials.

1.5.1 Run dcomcnfg

To make the OPC Server dialog visible:

1. From the Windows Start menu select the Run command. The Run dialog displays.
2. Enter dcomcnfg in the Open field and click OK.

3. Click Yes if you receive either of the following warning dialogs.
1.5.2 Setting the OPC Server as Interactive

1. From Component Services, open DCOM Config.
2. Right-click the Emerson OpenEnterprise OPC DA Server label; the Properties dialog displays.
3. Select the Identity tab and select The interactive user.
4. Click Apply.

**NOTICE**

If you don’t see Emerson OpenEnterprise OPC DA Server in the tree you must add it manually. See Section 1.8 Troubleshooting.
1.6 Verifying the OPC Server

Use this section to confirm that the OPC Server is working properly. Normally, the PI interface automatically starts the OPC Server.

The OPC Server pulls data from the OE Server. Launch it from the following location:

Launching the OEOPCDAServer.exe file creates an icon ( ) in the System Tray. (This is necessary only if PI hasn’t already started the OPC Server.)

1. Double-click this icon to launch the OPC Server.

   The OPC Data Access Server dialog displays, showing the number of tags the system is acquiring from the database. This shows that it is functioning as expected.

2. Click the label for the connected database, which highlights the database connection in blue and activates the Diagnostics button.

   ![Figure 12: OPC Data Access Server dialog](image)

3. Click Diagnostics, which opens the Query and Transaction Diagnostics dialog.
1.6.1 Query and Transaction Diagnostics

The Query and Transaction Diagnostics dialog shows all current active queries. Typically, it shows fewer queries than the total number of tags. The OPC Server groups tags by object and issues a single query for each object. For example a query with an attribute count of 10 is actually requesting 10 values, as shown below.

![Figure 13. Query and Transaction Diagnostics dialog](image)

**NOTICE**

The Status column (in the center of the dialog) may display -9 with the Status text Failed to start query for incorrectly configured tags or for a user ID with insufficient privileges to view the database table.

1.7 PI Server

Use this information to determine whether the PI Interface is working correctly.

1.7.1 Start Updating Values

Use this task to verify that the PI Interface is collecting tags and depositing them correctly into the PI Server.

1. Open the PI System Management Tool.
2. The PI Server \((\text{GBWOR-00ED2} \text{ in the example})\) is in upper left pane. Ensure that you select the Server option.

3. Select **Current Values** in lower left pane. This opens the list of tags contained in the PI archive. The PI archive obtains this list from the OE database through the action of the OPC Server/PI interface.

4. Notice the start (►) and stop symbols (■) in the tool bar at the top of the screen. Click ► to start updating values. If values are altered in OE database the changes are reflected in this list.

### 1.7.2 Check that the PI Server Reflects Database Updates

After you alter a value in the OE database, use this process to verify that the PI Server correctly reflects the change.

The following example is part of a single record in the PI process book, a Microsoft® Excel® spreadsheet containing the list of tags the PI Server archives (you create the spreadsheet using a PI add-in program for Excel).

The tag’s format in the OE database appears in the **instrumenttag** column; the tag name provides the name the PI Server uses for the same tag.

<table>
<thead>
<tr>
<th>Tag</th>
<th>instrumenttag</th>
</tr>
</thead>
<tbody>
<tr>
<td>A_KUR_2_M1_VOL_TOT_ACCUM</td>
<td>“10.69.141.187:rtrdb1,gbwor- oed8:rtrdb1”.abstractmeter”.name:varchar:AK urliko_2_M1”.volume_total_accum:float”</td>
</tr>
</tbody>
</table>

To search for the tag which contains the value you are about to change in the OE database, select **Tools** on the menu bar and then select **Tag Search**.
The system displays the Tag Search screen.

Figure 15: Tag Search dialog

1. Enter a valid PI tag name in the Tag Mask field (as shown above).
2. Click **Search**.
3. The system displays the search result in the lower pane.
4. Update the database using the SQL Client (that is, `update abstractmeter set Volume_Total_Accum = 1356;commit;`)

**NOTICE**

The SQL Client (or SQLC) is a Polyhedra client that provides a command-line SQL session with the OE server, enabling you to access the database. Refer to the SQL Client online help topic for further information.
5. The PI Server then reflects the updated value as shown in Figure 14.

![Figure 16: Current Values – PI System Management Tools screen](image)

**NOTICE**

The system may take several minutes to display the result, based on the scan class of the point and/or the frequency of the screen updates.

1.8 Troubleshooting

Use these procedures to resolve issues with the PI Interface.

1.8.1 Manually Registering the OPC Server

If you don’t see the Emerson OpenEnterprise OPC DA Server in the tree view you must **manually** add it to the Registry using Windows’ RegEdit utility.

**WARNING**

Exercise **extreme** caution when using RegEdit to change the Windows registry file.
1. As a user with administrative privileges (a Windows Administrator), open RegEdit (Click Start and enter RegEdit in the Search Programs and Files field).

2. Navigate to the following node:
   HKEY_CLASSES_ROOT\AppID\{7087D7E2-72FE-11D1-9921-0020AF87D5A6}
   (If this key is not already present, you need to manually create it.)

3. Right-click on the \{7087D7E2-72FE-11D1-9921-0020AF87D5A6} node and select New > Key.

4. Double-click (Default) in the right-hand pane and, using the Edit String dialog, set the value in the Data column to Emerson OpenEnterprise OPC DA Server.

5. Save the file and close RegEdit.
Configuring OE PI Interface
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