ClearControls®

OPC Gateway
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**Overview**

ReLab Software’s OPC Gateway provides an OPC tunneling between multiple computer systems on the Local Area Networks (LAN) or Wide Area Networks (WAN). The Gateway eliminates dependency on Microsoft DCOM technology, and provides higher performance and deterministic failure modes. OPC gateway provides users with a solution for remote connectivity to OPC applications.
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Operating System and Hardware Requirements

Operating System (OS)

✓ Windows 7
✓ Windows 8.1
✓ Windows® Server 2008, 2008 R2

Hardware

✓ CPU – 1GHz
✓ Memory – 100MB
✓ Hard Drive – 200MB
OPC Gateway Architecture

ReLab OPC Gateway includes the following components:

OPC Gateway Producer – Windows process that can be also configured to run as a service.

Gateway Configuration Application – Windows GUI Application used to manage Producer configuration.

OPC Gateway Consumer – ReLab’s standard OPC Server.

Note: ReLab’s OPC Server must be registered in Enterprise mode, see Registering OPC Gateway Consumer below.
Registering OPC Gateway Producer

OPC Gateway components are provided as part of ReLab OPC Product Suite Installation Package. After you buy a license you will need to register separately the Gateway Producer and the Gateway Consumer. To register the OPC Gateway Producer run the Gateway Configuration application and navigate to Tools | Register OPC Gateway.

![Gateway Configuration Interface](image)

Figure 1
1. Copy **Customer ID** and provide it to ReLab Software.
2. Enter key code (license code received from ReLab Software) into **Key Code** entry box and click **Register**.
Staring OPC Gateway as Windows Service

In order to use OPC Gateway Producer it needs to be registered as Windows Service. To register it as a service navigate to Tools | Gateway NT Service

![Gateway Configuration](image)

Figure 3
Figure 4

1. Click **Register** to register OPC gateway as Windows Service
2. Click **Start Service** to start OPC Gateway Service
Configuring OPC Gateway Producer

1. Specify **Producer Name** (Optional)
2. Specify **OPC Update Group Intervals**
3. Specify **Consumer Primary IP Address** (required)
4. Check **Has Redundant Consumer** if required
   - Specify **Backup IP address** if **Has Redundant Consumer** is checked
5. Check **Has Redundant Producer** if required
   - Specify **Default Mode of Operation** if **Has Redundant Producer** is checked
   - Specify **Redundant Producer Host IP** or computer name if **Has Redundant Producer** is checked
Configuring OPC Items

The items you configure here will be tunneled between OPC Producer and OPC Consumer.

- Click on Add... button

Figure 6

- From OPC browser select required OPC Server and Items and click Add to Configuration. The items will appear on the main form list view.

To edit a specific OPC Item click Edit...

Note: You can select and edit multiple items at once.
Figure 7

- On Edit Item… interface you can modify item Alias Name and select one of three OPC Groups.

**OPC Gateway Advanced Settings**

Navigate to Tools | Advanced Settings…

Figure 8

Log Files Tab

1. Specify if logging is enabled [Enable Logging]
2. Specify the path where the log files will be stored [Path to log file(s)]
3. Specify the size of the log file in bytes [When file size exceeds]
4. Specify if the logging is based on schedule [Scheduled]
5. Specify how many log files should be created [Maximum number of log files]
6. Specify the detail of the log file [Verbosity]

![Advanced Settings]

Figure 9

**Producer Redundancy Options Tab**

1. Specify primary Consumer port [Primary Gateway Listening Port]
2. Specify backup Consumer port [Backup Gateway Listening Port]

   Note: by default the OPC Gateway consumer communicates on the TCP/IP Port 5150. You need to specify the same port for OPC Gateway Producers. You can change the OPC Gateway's Consumer Listening port, see Configuring OPC Gateway Consumer below.

3. Specify heartbeat interval [Redundancy Heartbeat Interval]
4. Specify heartbeat timeout [Redundancy Heartbeat Timeout]
### Consumer Connections Tab

1. Specify producer reconnect timeout [Reconnect Timeout]

![Advanced Settings]

#### Figure 10

#### Figure 11
Menu and Toolbar

Main menu

<table>
<thead>
<tr>
<th>File</th>
<th>Creates new OPC Gateway configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Config</td>
<td>Opens existing OPC Gateway configuration</td>
</tr>
<tr>
<td>Open Config</td>
<td>Saves OPC Gateway current configuration</td>
</tr>
<tr>
<td>Save</td>
<td>Saves OPC Gateway configuration to specified directory</td>
</tr>
<tr>
<td>Save As...</td>
<td>Exits OPC Gateway application</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools</th>
<th>Configures OPC Gateway NT Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway NT Service</td>
<td>Deploys OPC Gateway Configuration</td>
</tr>
<tr>
<td>Deploy Config</td>
<td>Configures OPC Gateway Advanced Settings</td>
</tr>
<tr>
<td>Advanced Settings...</td>
<td>Registers (license) OPC Gateway</td>
</tr>
<tr>
<td>Register OPC Gateway</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Help</th>
<th>Displays OPC Gateway Help Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>About</td>
<td>Displays OPC Gateway About screen</td>
</tr>
</tbody>
</table>

Figure 12

Toolbar

<table>
<thead>
<tr>
<th>New</th>
<th>Creates new OPC Gateway configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open...</td>
<td>Opens existing OPC Gateway configuration</td>
</tr>
<tr>
<td>Save</td>
<td>Saves OPC Gateway current configuration</td>
</tr>
<tr>
<td>Save As...</td>
<td>Saves OPC Gateway configuration to specified directory</td>
</tr>
<tr>
<td>Deploy</td>
<td>Deploys OPC Gateway configuration</td>
</tr>
<tr>
<td>Service</td>
<td>Configures OPC Gateway NT Service</td>
</tr>
</tbody>
</table>
Exit

Exits OPC Gateway Configuration Console

Figure 13

**Context Menu**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add...</td>
<td>Adds OPC Item</td>
</tr>
<tr>
<td>Remove</td>
<td>Removes OPC Item</td>
</tr>
<tr>
<td>Edit</td>
<td>Edits OPC Item</td>
</tr>
</tbody>
</table>

Figure 14
OPC Gateway Redundancy

Two OPC Gateways can work in redundant mode on different computers: one in Primary mode and another – in backup mode. One OPC Gateway can also work with two Consumers. The most complete redundant configuration is presented below. Depending on the redundancy needs only one Producer or only one Consumer can be used.

Figure 15
In a redundant configuration both Producers receive data from OPC Servers and both Producers are connected to the Consumer(s). Backup producer will not send data to the Consumer(s) and will ignore requests from the Consumer(s). If a primary Producer becomes unavailable the backup Producer takes a primary role.

**Configuring OPC Gateway Redundancy**

![OPC Gateway Configuration](image)

**Figure 16**

Redundancy settings:

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has Redundant Consumer</td>
<td>If checked, Producer will connect to both primary and redundant Consumers</td>
<td>Checked, Unchecked</td>
</tr>
<tr>
<td>Primary IP Address</td>
<td>IP address of Primary Consumer</td>
<td>Valid IP Address</td>
</tr>
<tr>
<td>Backup IP Address</td>
<td>IP address of Backup Consumer</td>
<td>Valid IP Address</td>
</tr>
<tr>
<td>Has Redundant Producer</td>
<td>If checked, the Producer will be aware of another, redundant producer</td>
<td>Checked, Unchecked</td>
</tr>
</tbody>
</table>
Default Mode of Operation | Specifies the mode of operation for the Producer | Primary, Backup  
---|---|---  
Redundant Producer Host | Host name or IP address of the redundant Producer | Valid host name or IP Address

Primary and Backup Consumer ports, heartbeat interval and timeout can be specified on **Producer Redundancy Options Tab**, see **OPC Gateway Advanced Settings** above.
Registering OPC Gateway Consumer

OPC Gateway components are provided as part of ReLab OPC Product Suite Installation Package. After you buy a license you will need to register separately the Gateway Producer and the Gateway Consumer. To register the OPC Gateway Consumer run ReLab OPC Console, Navigate to Tools | Register Enterprise.

1. Copy the code and provide it to ReLab Software.
2. Enter license code you received from ReLab Software and click Register.
3. Restart OPC Server
Configuring OPC Gateway Consumer

Run ReLab OPC Console on the “Consumer” computer.

If your producers are already configured you should be able to see them in the “Loaded Device Drivers” panel on the left side.

You should be able to browse producers and their configured OPC items by consequently clicking on “Producers”, your Producers’ names, etc.

You can then map the OPC items to the OPC Groups in the same way as you do it for other ReLab OPC Drivers.
Note: by default the OPC Gateway consumer communicates on the TCP/IP Port 5150. You need to specify the same port for OPC Gateway Producers.

You can change the OPC Consumer’s Listening port by right-clicking on Producers, choosing Properties and changing the Listening Port in the Properties Window as it is shown below. The settings will take effect after OPC Server restart.

![Producers Properties Window](image)

(Complete instructions and figure showing the properties window with settings)