Power Xpert Insight™
Admin Guide
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About this Guide

The Admin Guide was written for an audience of IT professionals and system administrators. It contains detailed information about how to install Power Xpert Insight software. It discusses supported hardware, operating systems, versions of Microsoft SQL Server, and browsers. In addition, this guide provides information on server configuration, firewall ports that must be opened, setting up Power Xpert Insight user accounts, and accessing a running version of Power Xpert Insight. It also covers adding devices to the Power Xpert bridge, a data acquisition engine that can access a large set of Modbus and INCOM devices.

Installation Workflow

Installing Power Xpert Insight is straightforward; however, like any client/server system you must deal with network security, user authentication, and database deployment and maintenance. The Before You Begin part covers hardware and software prerequisites for the Power Xpert Insight server as well as firewall ports that must be opened. The Microsoft SQL Server Considerations chapter briefly describes using either SQL Server Express, which the installer will install for you, or SQL Server Standard or Enterprise edition. Because it’s difficult to change instances of SQL Server after you’ve deployed Power Xpert Insight, you should take the time to read this chapter and consider which approach to take.

Installation is covered in the Installation, Deployment, and Connecting part. The workflow is:

1. Install Power Xpert Insight software from the distribution DVD.
2. Run the Deployment Validation Utility. The utility handles the required configurations for your server and sets up SQL Server for Power Xpert Insight. Through this utility, you’ll:
   ◦ Create the required Windows user groups for Power Xpert Insight users.
   ◦ Check, and if necessary, change your IIS configuration.
   ◦ Check, and if necessary, open firewall ports. The utility can only open ports on the Microsoft firewall. If you have a third party firewall, you’ll need to open them manually as outlined in the Firewall Ports chapter.
   ◦ Connect to the instance of SQL Server that Power Xpert Insight will use and create the required databases.
   ◦ When everything is properly configured, start the two Power Xpert Insight services.
3. Assign all Windows user accounts that will access Power Xpert Insight to one of the two user groups created by the Deployment Validation Utility. One group allows access without being able to acknowledge alarms or modify anything while the other provides the ability to acknowledge alarms and completely configure the system.
4. Connect to Power Xpert Insight. Should you require SSL connections, that’s covered in Using SSL with Power Xpert Insight. Configuring Power Xpert Insight to use an SSL certificate requires modifying some configuration files, and those modifications are covered as well.

Configuration

Once installation is complete, you can add publishers and devices to Power Xpert Insight. Publishers are data acquisition engines to which Power Xpert Insight can connect. These can be actual devices, such as the Power Xpert Gateway or Power Xpert Meter, or can be the Power Xpert bridge software. Doing this interactively is covered in the Power Xpert Insight Essentials guide. Other setup tasks you’ll find in that guide include:

- Creating one-lines. These are containers for grouping related electrical devices. Each one-line can have a graphical representation of how these devices are connected.
- Creating State Change rules. Device symbols on one-lines can change colors or symbol shapes based on rules that look at data from specified channels.
- Specifying devices as mains, which includes them on Favorites for all users.
- Setting up the list of devices for the Energy tab. This set of devices is shared by all Power Xpert Insight users.
- Modifying system settings.

Offline Configuration

Sometimes, it’s more convenient to configure a Power Xpert Insight system offline by specifying all of the publishers and devices through a spreadsheet. Also, it may be easier to construct the graphical layouts for one-lines on a development instance of Power Xpert Insight and then install these onsite in a production instance. These topics are covered in the Offline Configuration chapter within the Advanced Configuration part.

Adding Devices to the Power Xpert bridge

The Power Xpert bridge is a software data acquisition engine built on Eaton Foreseer technology. Through the bridge, Power Xpert Insight can connect to a wide variety of ModBus and INCOM devices. You can add devices to the bridge through the DeviceConfig utility, and this is covered in the Power Xpert bridge chapter.
Adding Unsupported Devices

The *Hardware Compatibility List*, found in the Power Xpert Insight section at [http://www.eaton.com/pxi](http://www.eaton.com/pxi), lists all of the devices supported by Power Xpert Insight. Also, you can check there for updates to the set of supported devices and download the update file. The update file is an executable, just place it on the server machine and run it.

If you need to add a device that’s not on the list, you can create a device profile file to define the device’s configuration parameters to Power Xpert Insight. Creating a custom device profile is covered under *Device Profiles*. 
Before You Begin
Software Requirements

Microsoft Windows Server Operating Systems

- Windows Server 2008 R2, SP1 Standard and Enterprise.
- Windows Server 2012 Standard and Datacenter.

Microsoft SQL Server

Power Xpert Insight installs Microsoft SQL Server 2012 Express with Advanced Services if you have no installed version of SQL Server. It can used with the following versions of SQL Server:

- SQL Server 2008 R2 Standard and Enterprise, SP2
- SQL Server 2008 R2 Standard for Small Business, SP2
- SQL Server 2012 Express with Advanced Services
- SQL Server 2012 Standard
- SQL Server 2012 Enterprise
- SQL Server 2012 Enterprise Core
- SQL Server 2012 Business Intelligence

See Microsoft SQL Server Configurations for more.

IIS

7.5 or higher.

.NET Framework 3.5 SP1

Note: If you’re installing Power Xpert Insight onto Windows Server 2012 and you wish to use Microsoft SQL Server 2012 Express with Advanced Services, the Power Xpert Insight installer cannot install the .NET Framework 3.5 SP1 for you. You must instead enable the .NET 3.5 feature manually through the Server Manager before starting the process of installing Power Xpert Insight.

For more information, see http://msdn.microsoft.com/library/windows/hardware/hh975396. If the server is not connected to the Internet, you will be able to specify a path to the Power Xpert Insight installation DVD.

Hardware Requirements

Power Xpert Insight Server

Power Xpert Insight requires a workstation or server machine with the following minimum hardware specifications:

- Quad-core processor.
- 16 GB of memory.
- 100 GB of disk space. The software itself is 190 MB, the rest is for the database.

Client Video

- Monitor displaying 1440 x 900 or larger (1920 x 1080 is recommended).

Client Operating System

- Windows 7 Professional, 64 bit, SP1
- Windows 7 Ultimate/Enterprise 64 bit, SP1
- Windows 8 professional/Enterprise X86 and X64.

Other operating systems (such as Windows XP and Apple OS X) which support Silverlight may also work, but are not officially supported by Eaton.

Supported Browsers

- Microsoft Internet Explorer 8, 9, or 10 (desktop version)
- Google Chrome (latest).
- Mozilla Firefox (latest)

Other browsers (such as Opera and Safari) which support Silverlight may also work, but are not officially supported by Eaton.
The following lists the ports that are used by Power Xpert Insight and must be opened on the server. During the deployment process, the deployment utility will open the first three ports. If you have a third-party firewall, you’ll need to open these yourself.

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>HTTP</td>
<td>Required by Power Xpert Insight</td>
</tr>
<tr>
<td>443</td>
<td>HTTPS</td>
<td>Required by Power Xpert Insight</td>
</tr>
<tr>
<td>8081</td>
<td>HTTP</td>
<td>Required by Power Xpert Insight</td>
</tr>
<tr>
<td>1433</td>
<td>TCP</td>
<td>Only required if using a remote database. This is the default port for SQL Server, but it is configurable. This port must be open on both the Power Xpert Insight server and the remote database server.</td>
</tr>
</tbody>
</table>

The following ports must be opened on client machines. Typically, these are already opened and shouldn’t require any action.

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
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</thead>
<tbody>
<tr>
<td>80</td>
<td>TCP</td>
</tr>
<tr>
<td>443</td>
<td>TCP</td>
</tr>
</tbody>
</table>

Communications between the Power Xpert bridge and Power Xpert Insight occur on localhost, so this should work without configuring the firewall. However, if you have a third-party firewall that has rules to restrict local communications, you’ll need to make sure these ports are opened for the bridge.

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>HTTP</td>
</tr>
<tr>
<td>444</td>
<td>HTTPS</td>
</tr>
</tbody>
</table>
Microsoft SQL Server Configurations

IMPORTANT: Before installing Power Xpert Insight, you should decide which version of Microsoft SQL Server you will use. Consider this carefully, as changing SQL Server instances requires migrating databases as well as repointing Power Xpert Insight to the new instance.

Power Xpert Insight automatically installs a copy of Microsoft SQL Server 2012 Express w/Advanced Services if no other instance of SQL Server is present on the machine. If you will be installing another copy of SQL Server on the Power Xpert Insight machine, install that before installing Power Xpert Insight. Installing another copy of SQL Server after the Power Xpert Insight installation “masks” the Express instance, and unless you reconfigure Express you won’t see the Power Xpert Insight databases. Also, it is difficult to change the SQL Server instance Power Xpert Insight uses after it has been initially set (you must migrate the databases to do this).

If you will be deploying the Power Xpert Insight databases to a remote SQL Server instance, then you must open port 1433 (TCP) on both the SQL Server and Power Xpert Insight servers. This is the default port and can be changed. Also, ensure that SQL Browser is running and that the SQL Server is set to allow remote connections.

Using SQL Server Express

This is the easiest way to install and configure Power Xpert Insight because SQL Server Express is installed for you. While SQL Server Express 2012 is limited to a database size of 10 GB and can only access the lesser of one socket or 4 cores, in Eaton’s experience that provides enough performance to handle all but the largest Power Xpert Insight configurations. This is, in part, due to the fact that Power Xpert Insight uses separate monthly databases, each of which can grow to 10 GB of data using SQL Server Express. The SQL Server Express installation scenario is simpler to configure because it requires only one machine. To complete this installation scenario, you must have administrative privileges for the server machine.

Note: Power Xpert Insight will not install SQL Server Express if any other instance of SQL Server is resident on that computer. However, if you wish to install it manually you can find the installation files in the \PXInsight\SqlExpress2012 folder on the Power Xpert Insight distribution DVD.

Installing with SQL Server Standard or Enterprise Edition

If you already have an existing SQL Server installation, you can exploit that to host the Power Xpert Insight databases. The advantage of this scenario is that SQL Server Standard or Enterprise editions do not have the 10 GB limitation for database size imposed on the SQL Server Express edition. Also, the Standard edition can use up to the lesser of 4 sockets or 16 cores and the Enterprise edition can have unlimited scaling and partitioning, providing much higher performance than the Express edition. You must have administrative privileges for SQL Server as well as administrative privileges for the server machine itself.

SQL Server Accounts

- If you are using a local instance of SQL server, use a local account with system administrator privilege.
- If you are using a remote instance of SQL server, use a domain account with the SQL Server sysadmin role assigned.
Installation, Deployment, and Connecting
Installation

For the most part, you’ll just follow the instructions and prompts listed in the installation dialog boxes. What follows here are reminders of what to do at each step, just in case you get “stuck.”

IMPORTANT: If you’re installing under Windows Server 2012, and you intend to use the default instance of SQL Server Express 2012 installed by Power Xpert Insight, make sure that you’ve first activated the .NET Framework 3.5 SP1 feature on the server. This must be done before attempting to install Power Xpert Insight. For more, see the Requirements chapter.

Installation and deployment consists of:

1. Loading required Microsoft components.
2. Installing Power Xpert Insight.
3. Running the Deployment Validation Utility.

Installing Required Microsoft Components

Power Xpert Insight requires a number of Microsoft technologies, some of which may already be on your server. This process starts when the installation for Power Xpert Insight begins.

1. Load the Power Xpert Insight DVD. If the Power Xpert Insight installer doesn’t automatically launch, double-click setup.exe in the root folder on the DVD. *Don’t use the MSI file. It will appear to work but it won’t.*
2. If you see a dialog box asking for permission to run the software, click *Run.*
3. In the installer dialog box, click *Start.*
4. In the *Start Setup* dialog box, click *Install.*
5. In the MS Setup Project Setup dialog box, click the *Install* button.
6. Accept the terms of a license agreement for Microsoft products if asked.
7. If the installer doesn’t find a supported version of SQL Server on the machine, you will be prompted to install SQL Server Express 2012.
8. If you’re running Windows Server 2008, you may see the *Security Warning* dialog box. This is asking permissions to install the .NET framework, which Power Xpert Insight needs. Click *Run.*

Installing Power Xpert Insight

After component installation is complete, the Setup Wizard appears.

1. Click the *Next* button.
2. Scroll through the license agreement and accept it. Click *Next,* which is enabled after acceptance.
3. Choose a location for the installed file folder or accept the default. Click *Next.*
4. Click the *Install* button to install the Power Xpert Insight components.
5. When installation is complete, click the *Deploy* button to launch the Deployment Validation Utility.

Deploying Power Xpert Insight

The Deployment Validation utility checks IIS, creates required Windows groups for Power Xpert Insight users, opens firewall ports, and creates the required databases. If a red or gray icon is shown for any indicator, click it and refer to the following instructions for that tab.

If you’d prefer to manually create the required databases, the utility also provides a script that you can use. It also provides an interface for manually creating the monthly databases used to store store data from devices.

When all of the tab indicators are blue checks, you can start the two Power Xpert Insight services in the *Summary* tab. The utility provides a convenient way to stop and start these services as well as to check the status of any of the required configurations.

Windows Groups

Two user groups, *Eaton Power Xpert Read Users* and *Eaton Power Xpert Write Users,* must be created. Click the *Create Users Group* button to create the groups. All Power Xpert Insight users must be assigned to one of these groups. The *Read* group is for users that can view most things, but can’t acknowledge alarms or change settings. The *Write* group can view and modify anything in the system.

Configure IIS

IIS is the Windows web server and Power Xpert Insight needs this to provide browser access. If the indicator icon isn’t a blue check, click the *Register ASP.NET 2.0 and IIS* button.

Firewall Ports

This task checks if the Windows Firewall is active (listed under *Status*) and will open the required ports on the Windows Firewall. Click *Open Ports* if necessary. If you have a third-party firewall, see the *Third Party Firewall Settings* chapter.
Database

Within this panel you select the instance of SQL Server that Power Xpert Insight will use, test the connection, and then deploy the databases. If you’re using another version of SQL Server,

1. Select either Local Machine or Remote Machine.
2. If you’re using SQL Server Express, the Server Instance name should be (local)SQLEXPRESS. If not, type the instance name into the field or browse to the instance.
3. Unless you have a reason for changing this, leave the default location for the Power Xpert Insight database files as is.
4. Click the Test Connection button. If you see the Confirm box, click the Start button to deploy the Power Xpert Insight databases. This will take a few minutes and you can watch the progress in the Task Details pane. As each step completes it should have a blue check icon. When it’s done, go on to the Summary tab.

Note: You can manually create databases by clicking the provided hyperlink. You can copy-and-paste a script to create the main Power Xpert Insight database. You can manually create monthly databases from the same dialog box. After you’ve finished creating the databases, return to the deployment utility and click Start on the Database panel.

Summary

After all of the other deployment tasks have been completed and the associated indicator icons for all other tabs are blue, click Summary.

Before starting the services, you must specify the account under which the Eaton Power Xpert Insight service will run. This is the account Power Xpert Insight will use to authenticate to SQL Server and therefore must have sufficient privileges to create and modify databases. The best practices for choosing an account are:

- Power Xpert Insight and SQL Server both reside on the same machine: create a local account on that machine and enter that.
- Power Xpert Insight and SQL Server are on separate machines: create a domain account and enter that.

IMPORTANT: You can use the Local System account for the service only if Power Xpert Insight and SQL Server 2008 reside on the same machine. The Local System account is not automatically given the Sysadmin fixed server role in SQL Server 2012 and therefore won’t work.

Click the Start buttons for both Eaton Power Xpert Insight and Eaton Power Xpert bridge.

Power Xpert Insight is now installed, and you can close the Deployment Validation Utility.
Accounts and Security

Power Xpert Specific User Groups

IMPORTANT: Each account, whether local or domain, that will access Power Xpert Insight must be assigned to either the Eaton Power Xpert Read Users or the Eaton Power Xpert Write Users groups. These groups were created during initial deployment. Even domain administrators, local administrators, or the built-in administrative account for the server must be assigned to one of these groups if they will access Power Xpert Insight.


Read Users Group Permissions

Assign users that should not acknowledge alarms or change settings to the Eaton Power Xpert Read Users group. Such users can:

- View information throughout the system
- Select Favorite devices
- Select user preferences

Read users can’t:

- Add, delete, or modify publishers and devices
- Create one-lines
- Acknowledge alarms
- Change settings
- Change devices in the Energy tab

Write Users Group Permissions

Members of Eaton Power Xpert Write Users have full read and write access to all parts of the system. They can:

- Acknowledge alarms.
- Add or delete publishers and devices
- Create one-lines
- Change settings
- Change the device list for the Energy tab

Typically, system administrators and system integrators are members of this group. The Power Xpert Insight Essentials guide was written for Write group users, and details all of the things they can do.
Connecting Web Clients

You can access Power Xpert Insight via HTTP at the following URL:

http://server/PXInsight

Where server is the DNS name or IP address of the machine hosting the Power Xpert Insight web server. You may be prompted to provide your Windows user name and password.

If you are using HTTPS, first see the Using SSL with Power Xpert Insight chapter. You should be able to connect with:

https://server_ip_address/PXInsight

but you may need to specify the port as in:

https://server_ip_address:443/PXInsight

Any browser that supports Microsoft Silverlight should work. Microsoft Internet Explorer versions 8 and 9 as well as the desktop version of Internet Explorer 10 are supported. Both the latest versions of Mozilla Firefox and Google Chrome are also supported.

If users are have difficulty connecting, review the Accounts and Security chapter and make sure that each account connecting to Power Xpert Insight is in one of the required groups.

IMPORTANT: Internet Explorer 10 under Windows 8 has an issue with Microsoft Silverlight and may not be able to refresh a Power Xpert Insight page. If this occurs, close and relaunch the browser and then re-open Power Xpert Insight.
You can configure Power Xpert Insight to use an SSL certificate and communicate to the web client using HTTPS. As a prerequisite to enabling secure communications, you must first use the IIS manager to:

- Import an SSL certificate to the IIS root authority.
- Add an HTTPS binding to port 443 for the default web site and specify the imported certificate for the binding.
- Set the PxInsight web site to require SSL.

To configure Power Xpert Insight to use SSL:

1. In the \Program Files\PXInsight\WindowsService folder, rename the Eaton-PowerXpertInsight.exe.config file to EatonPowerXpertInsight.exe.bak.
2. Rename the app.ssl.config file to EatonPowerXpertInsight.exe.config.
3. Edit EatonPowerXpertInsight.exe.config and find the `<serviceCredentials>` element:
   ```xml
   <serviceCredentials>
   <!-- Use one of the following method to load the certificate. -->
   <serviceCertificate storeLocation="CurrentUser" storeName="Root" x509FindType="FindBySubjectName" findValue="TODO: my cert's subject name" />
   <!--<serviceCertificate storeLocation="CurrentUser" storeName="Root" x509FindType="FindByThumbprint" findValue="TODO: my cert's thumb string without any space" />-->  
   </serviceCredentials>
   ``
4. By default, the method used to identify the certificate is through the certificate’s subject name. If you wish to use that method, in the `<serviceCertificate>` element change the value of the `findValue` attribute to the certificate’s subject name. If you wish to use the certificate’s thumbprint, comment out the `<serviceCertificate>` element containing the “x509FindType="FindBySubjectName"” attribute, then uncomment the `<serviceCertificate>` element with the x509FindType="FindByThumbprint" attribute. Change the value of the `findValue` attribute to the certificate’s thumbprint string.
5. In the \Program Files\PXInsight\WebUI folder, rename Web.config to Web.config.bak.
7. Restart the Power Eaton Power Xpert Insight service.
Advanced Configuration
Offsite Configuration

You can set up a Power Xpert Insight system offsite, load it into another copy of Power Xpert Insight, and then automatically discover and connect all of the devices. You can do this through placeholders, which take the place of publishers and devices. Placeholders behave just like real publishers or devices except that they produce no data. In the target system, you connect placeholder publishers and devices to real ones either automatically or via drag-and-drop. To connect them automatically, you must correctly match specific information between placeholders and real publishers and devices.

- For publishers, you must match the IP address, port, user name and password of your placeholder Publisher to that of the actual Publisher for Power Xpert Insight.
- For Devices, you must exactly match the name and model with that of the actual device.
- Publishers and devices that aren’t automatically matched can be manually merged using drag and drop see the Merging Leftover Placeholders section below.

The workflow is:

1. Create a publisher and device spreadsheet and then import it in your configuration version of Power Xpert Insight or create placeholders in Power Xpert Insight itself. You can set up placeholders using both methods if you wish.
2. Set up the system, including:
   - Creating one-lines.
   - Creating graphics and positioning devices in one-lines.
   - Create state change rules for devices.
   - Adding devices to the Energy tab.
   - Setting devices as mains.
3. Export the configuration to a .zip file.
4. Import the configuration .zip file into the target instance of Power Xpert Insight.
5. Connect the placeholders to real devices.

Creating the Publisher and Device Spreadsheet

You can export a spreadsheet from Power Xpert Insight:

1. One the One-lines tab (tree view), click Edit.
2. Under Global Actions, click Export.
3. Save the .zip file to a working folder.

4. Unzip the file using 7zip, Winzip, or the Windows Explorer.
5. Extract the OnelineTree.xlsx file.

You can also find a copy of a blank spreadsheet in the Power Xpert Insight section under http://www.eaton.com/Eaton/ProductsServices/Electrical/ProductsandServices/PowerQualityandMonitoring/Software/index.htm

The spreadsheet is in Microsoft Excel format and we recommend that you use Excel, although you may be able to edit the file using third party spreadsheet software such as Google Sheets, Apple Numbers, or OpenOffice.

IMPORTANT: Once configured, you should use the same precautions in controlling the distribution of the OnelineTree.xlsx spreadsheet as you would with any records of the device accounts and passwords. The accounts and passwords for all placeholder devices are stored in plain text in the spreadsheet.

One-lines and Devices Tab

This tab defines the One-lines and the devices in them. It does not define publishers, which are listed on their own tab. The following figure shows a typical One-lines and Devices tab.

An example spreadsheet, showing

Rows, except for the heading row, define devices. The columns are defined as:

- **Item**: name for either One-line or Device.
- **Name**: the name that will be returned from the device. This should match the name discovered from the actual device.
- **Parent Location**: position in the tree. If One-line or Device is at the top level, its parent is the root, shown as a slash “\”.
- **One-line Label**: the label for one-lines shown in the box in graphics view.
- **Model**: the device model.
• **Main**: defines if the device is designated as a main for that one-line.
• **Parent Publisher or Device**: the publisher for that device (some devices are also publishers). Note the trailing slash.
• **Profile**: the profile file for that device. Normally, you don’t need to set this as Power Xpert Insight will automatically select the correct profile based on the **Model**. However, if you’ve created a custom profile you can specify it here.
• **External Device Page**: the URL for the landing page of a device’s web server. For example http://10.20.30.100/content/.

### Publishers Tab

This includes all publishers for the target system. The columns are defined as:

- **Item**: must be Publisher.
- **Name**: the name you wish to assign to the Publisher in Power Xpert Insight. This will override any name set within the publisher itself once connected.
- **Model**: optional and is used for labeling purposes only.
- **IP Address**: the address for the device.
- **Port**: the port in use.
- **User ID**: a valid user ID.
- **Password**: must be correct for that User ID.
- **SSL**: should be Y only if you’ve installed the necessary certificate and have enable secure communications, otherwise it should be N. See the Using SSL with Power Xpert Insight chapter for more.
- **External Device Page** is the URL to the landing page for the Publisher’s web server. The bridge does not have a web server, but many of the other publishers do.

<table>
<thead>
<tr>
<th>Item</th>
<th>Name</th>
<th>Model</th>
<th>IP Address</th>
<th>Port</th>
<th>SSL</th>
<th>External Page</th>
<th>Username</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Device Models Tab

This is filled in with all of the model names and device profiles supported by Power Xpert Insight at the time of release. Specify any custom profiles in the **Default Profile** field.

### Importing the Spreadsheet

During the import process, Power Xpert Insight will check the spreadsheet and flag any errors. You’ll be able to view the errors to correct them.

1. On the **One-lines** tab, click the **Edit** button.
2. Select **Import** in the **Global Actions** list.
3. In the **Add Publishers and Devices** dialog box, click **Browse**.
4. Navigate to the spreadsheet file and then click **Open**.
5. Verify that the file selection is correct, and then click **Next**.
6. In the **Summary – Placeholder Import** dialog box, you’ll see any validation errors. Click **Review** to look over the list of publishers and devices. If you have errors, you can click **Cancel** and then fix them in your spreadsheet and try again. Click **Import** to load the placeholders into Power Xpert Insight.

Your placeholder devices and publishers will appear in the Tree with diagonal stripes. You can position placeholders, draw connection lines, and even add **State Change Rules** just as you would with real devices.

### Creating Placeholders in Power Xpert Insight

The process for creating placeholders is similar to adding normal publishers and devices.

#### Creating Placeholder Publishers

1. On the **One-lines** tab, click the **Edit** button.
2. Click **Add Publisher**.
3. In the **Add Publishers and Devices** dialog box, fill in the connection and labeling information required for the publisher.
4. The final dialog box confirms that the device was created and summarizes the information for the placeholder publisher. Click Finish and you’ll find the placeholder Publisher at the bottom of the Publisher list. Placeholders are shown in with hash marks.

Creating Placeholder Devices

Note: You must first add the publisher (either placeholder or actual) for a device before adding the device.

1. On the One-lines tab, click the Edit button.
2. Click Add Publisher/Device.
4. Fill in the device information. The name must exactly match the name that the device itself will provide. If your device is supported by Power Xpert Insight, select it from the Standard Model list. Check the Hardware Compatibility List, available from the Eaton web site, for a set of devices that are currently supported (the dropdown also contains devices that will be supported between releases). If you have created a custom profile, type in its name.
5. A dialog box confirms that the placeholder device was created and summarizes its details.
6. Click Finish and you’ll find the placeholder device under its associated publisher. Placeholders are shown with diagonal stripes.

Exporting

In addition to publishers and devices, the export .zip file also contains:

- One-line graphics you create
- Device State change rules
- Custom device profiles
- Energy device list
- Mains

Connection Logic

<table>
<thead>
<tr>
<th>Connection</th>
<th>Actual Name</th>
<th>Actual Model</th>
<th>Placeholder Name</th>
<th>Placeholder Model</th>
<th>Match?</th>
<th>After Connection Name</th>
<th>After Connection Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publisher</td>
<td>Doesn’t Matter</td>
<td>Doesn’t Matter</td>
<td>PXG600A Lab</td>
<td>PXG600A</td>
<td>Matches on IP and port number only</td>
<td>PXG600A Lab</td>
<td>PXG600A</td>
</tr>
<tr>
<td>Device</td>
<td>260</td>
<td>IQ 260</td>
<td>IQ 260</td>
<td>IQ 260</td>
<td>Didn’t match on Name, real device discovered and added while placeholder retained.</td>
<td>260</td>
<td>IQ 260</td>
</tr>
<tr>
<td>Device</td>
<td>DT 1150</td>
<td>DT 1150</td>
<td>DT 1150</td>
<td>MOD 1150</td>
<td>Didn’t match on Model, real device discovered and added while placeholder retained.</td>
<td>DT 1150</td>
<td>DT 1150</td>
</tr>
<tr>
<td>Device</td>
<td>250</td>
<td>IQ 250</td>
<td>250</td>
<td>IQ 250</td>
<td>Matched, discovered device added and placeholder removed.</td>
<td>250</td>
<td>IQ 250</td>
</tr>
</tbody>
</table>

IMPORTANT: You should use the same precautions in controlling the distribution of the .zip file as you would with any records of the device accounts and passwords. The accounts and passwords for all placeholder devices are stored in the OnelineTree.xlsx spreadsheet within the .zip file.

To export your configuration:
1. On the One-lines tab, click Edit.
2. From the Global Actions list, select Export.
3. Navigate to the target folder.
4. Click Save.

Importing the .zip File in the Target System

During the import process, Power Xpert Insight will check the .zip file and flag any errors.

1. On the One-lines tab, click the Edit button.
2. Select Import in the Global Actions list.
3. Click Browse.
4. Navigate to the .zip file and then click Open.
5. Click Next.

Connecting Placeholders

1. On the One-lines tab, click the Edit button.
2. Select Connect All from Global Actions or any connect icon or Connect button for a device or publisher.

If any placeholder publishers return a Publisher not found, retry message, you’ll need to check the connection information and try again. The following table shows how placeholder and actual devices are treated during connection:
For publishers, Power Xpert Insight looks for a publisher at the specified IP address and port number, with the specified account and password. If Power Xpert Insight finds a publisher at that address and port number and the account and password are valid, the publisher is added and the placeholder is removed. Whatever Name was set in the placeholder is retained for the real publisher.

For devices, Power Xpert Insight first discovers all of the devices attached to an actual publisher and then compares this set to the set of placeholder devices for the placeholder publisher. All discovered devices are always added. For placeholders, if a placeholder device exactly matches the name and model of a discovered device, that placeholder is removed. If a placeholder doesn’t match, it’s retained under the real publisher. There’s one additional point to keep in mind: when a placeholder device matches and is removed, whatever device profile was specified in the placeholder overwrites the value for the discovered device. This allows you to specify a modified device profile in the placeholder and have that applied to the real device.

**Merging Leftover Placeholders**

If you have leftover placeholder publishers or devices after connecting, you can drag-and-drop these over their actual counterparts in the Publishers section. If you’re matching publishers, Power Xpert Insight will attempt to automatically match their devices. Drag-and-drop merging produces a Confirm Publisher or Confirm Device dialog box. This shows the settings for both the actual publisher or device and the placeholder, as well as what the results will be after the merge. Items highlighted in red mark values that will be overwritten.

*Dialog box showing the results of a merge.*
Power Xpert bridge

The Power Xpert bridge provides a connection between Power Xpert Insight and a large number of Modbus and SNMP devices. The Hardware Compatibility List, found in the Power Xpert Insight section under http://www.eaton.com/pxi lists all of the devices supported by Power Xpert Insight. Check this before attempting to add a device to the bridge. Some of the devices listed in the bridge device configuration utility were not supported at release time, but may be shortly after release. Many devices that are not natively supported can be supported through custom device maps. These can be developed and licensed through a system integrator, such as Eaton’s Power Systems Automation team.

Adding the Power Xpert bridge Publisher

You connect to the bridge the same way you would any publisher from within Power Xpert Insight: by IP address, port, user account, and password. For the bridge, the connection parameters are:

- IP Address: localhost
- Port: 81
- User ID: admin
- Password: admin

The Power Xpert bridge always includes a special device called System Channels, which provides status information. See the Essentials Guide for more about adding publishers.

Installing Devices

You connect devices to the bridge through a separate application, the DeviceConfig.exe utility. You can find the utility in the \Program Files\PXInsight\PXBridge folder on the Power Xpert Server. You must run the utility from the server itself. You cannot add devices to the bridge from a Power Xpert Insight client.

Note: When you enter Server Configuration Mode through the DeviceConfig.exe utility, an alarm stating this will appear in Power Xpert Insight.

To install a new device in the bridge:

1. Launch the utility.
2. Select the Start Server Configuration command in the Configuration menu. The ***SERVER CONFIGURATION MODE*** message appears in the window’s title bar. If an administrative password is required, a dialog box will appear in which you must provide that password.
3. Right-click the PX bridge server, then select Install Device.
4. Select the device from the list, and then click Next.
5. Accept the suggested name for the device or enter your own, then click Next to continue.
6. In the settings dialog box that appears, enter the requested SNMP or ModBus configuration information and then click Next.
7. Click Finish to complete the installation. The new equipment will appear in the Tree View.
8. When you’ve installed all devices properly installed, click No in response to Install Another Device?
9. Select **End Server Configuration** in the **Configuration** menu to restore the Power Xpert bridge to normal operation.

**Modifying a Device**

You can modify any existing device using the Device Config utility. The device properties dialog box provides access to the device’s SNMP or ModBus configuration settings. If you add channels or modify channel properties, see the **Device Profiles** chapter and create a modified device profile to reflect these changes.

To edit a device:

1. Right-click the device in the Tree and then choose **Load Driver**. The device and its channel icons will turn purple. You can only have one driver loaded. If you wish to modify another device, right-click the device who’s driver is already loaded and select **Unload Driver**.
2. To modify the device properties, right-click the device and choose **Properties**.
3. To modify a channel’s properties, right-click the channel and choose **Properties**.
4. To add a Channel, right-click the device and choose **Add Channel**.
5. When you’ve finished, right-click the device and choose **Unload Driver**. You can now load the driver for another device that you wish to configure.
6. When you’re finished configuring devices, select **End Server Configuration** from the **Configuration** menu.

**Web Configuration Utility**

The Power Xpert bridge web configuration utility is accessible via browser, although only Internet Explorer 8, 9, and 10 are supported. You can use the web configuration utility to set channel alarm parameters for devices installed in the bridge. You can also view log files for the bridge. To access the utility, point Internet Explorer to:

```
http://server/support/webconfig.htm
```

Where **server** is the name or IP address of the Power Xpert Insight server. If you are using HTTPS, in addition to changing the protocol you may need to append the port to the URL:

```
https://server:443/support/webconfig.htm
```

The utility has its own built-in help, accessible by right-clicking **PX bridge** in the tree and then selecting **Help**.
Device Profiles

Device profiles specify information about a device’s channels to Power Xpert Insight, such as:

- The displayed name, abbreviation, and short name.
- The order of the top 16 channels. Order is relevant because the top four channels display in the device boxes on graphic one-lines.
- If a channel is used for Power, Energy, Demand, and Power Factor graphs and calculations.

Power Xpert Insight comes pre-loaded with profiles for all supported devices, but you can also create custom profiles. You must add custom profiles via spreadsheet import and explicitly select them, they are not chosen by the application during device discovery.

The workflow for custom profiles is:

1. Export a custom profile from Power Xpert Insight. The custom profile is a Microsoft Excel .xlsx file.
2. Edit the profile in Excel or a compatible spreadsheet editor.
3. Validate and import a custom profile into Power Xpert Insight.
4. Manually select the profile for devices in Power Xpert Insight.

Export a Custom Profile

Custom profiles are made by exporting an existing device profile and using this for your modifications. Profiles are Microsoft Excel .xlsx files.

To export a device profile spreadsheet:

1. Click Settings.
2. Click the Device Profiles tab.
3. Locate the device in the profile tree. Device profiles are organized by family.
4. Click the Export button.
5. Select a folder and name for the spreadsheet file.
6. Click Save.

Modifying the Spreadsheet

The spreadsheet has two tabs:

- Device Profile has only one customizable entry: the Profile Name (column 1). This must not match the name of the default profile. An exported spreadsheet has “custom” appended to the default profile name. Unless you intend to create multiple customized versions of a device profile, you can leave this as it is.
- Channels lists all of the channels provided by the device. You can modify:
  - Device Channel Display Name Long, Short, and Abbreviation. These are names displayed throughout Power Expert Insight for each channel.
  - Display Order picks the top 16 channels shown for the device and their order. Enter 1 through 16 in the appropriate field.
- Power, Energy, Demand, and Power Factor pick a single channel (designated with a 1) that will be used for graphs and calculations for those four electrical characteristics.

Important: Don’t modify the Profile Name or the MCL Name.

A typical Channels tab.

Validating and Importing the Customized Device Profile

You can import a profile from any Power Xpert Insight client. Before importing the profile, Power Xpert Insight checks it for errors and, if any are found, provides information about them so that you can correct the spreadsheet. Make sure you close the spreadsheet in Excel before attempting to import it, otherwise you’ll get an error about not having access to the file.

To import a custom device profile in Power Xpert Insight:

1. Click Settings.
2. Click the Device Profiles tab.
3. Click Create New.
4. Import Profiles is selected, so click Next.
Follow the steps in the dialog boxes. If errors are found, click View Errors and fix these. You can use the Back button to go back to the file browser dialog box for another attempt.

When no errors are found, click Import Checked. The custom profile will appear in the list.

**Assigning a Custom Profile to a Device**

Power Xpert Insight selects its default profile for a device during discovery, so you must manually assign custom profiles to devices that need them.

To assign a device profile:

- Click the One-Lines tab.
- Click Edit.
- Select a device in the Tree.
- In the device’s sidebar, select the custom profile from the Device Profile list.

**Using the Standalone Import Utility**

You can also use a separate utility to validate and import device profiles. The drawback to using the utility to import profiles is that you must manually restart the Eaton Power Xpert Insight service, on the server, before the custom profiles appear. The advantage is that you can simply validate a spreadsheet without importing it.

The import utility, EatonProfileImportUtility.exe, can be found:

- On the Power Xpert Insight server in the \Program Files\PXInsight\DeploymentValidation\DeviceProfileManualDeploy folder.
- On the Power Xpert Insight installation DVD, in the \PXInsight\PXInsight\DeploymentValidation\DeviceProfileManualDeploy folder. Copy this folder to your local drive before using the utility. You can’t run the utility directly from the DVD as it must create log files in the DeviceProfileManualDeploy folder.

To validate a device profile:

- Launch the utility.
- Check the connection string. By default, the string is set for a local installation of SQL Server Express. Modify the connection string as required, including credentials, to access a remote instance of SQL Server.
- Click the browse button to load one or more spreadsheets. You can multiselect in the file browser.
- Choose Validate Files Only or Validate and Import Files. If you pick the option to import, the utility will only import a file if it passes the validation tests.

If the utility detected errors, click Yes to view the log file. The last entries in the log file provide details about the type of errors, making them easy to find and correct.

After successfully importing a device profile, restart the Eaton Power Xpert Insight service on the Power Xpert Insight server. You can restart the service using the Deployment Validation Utility. After restart, the custom device profile(s) will appear in Power Xpert Insight.