How can I …

Commission PowerSCADA Expert 8.0 with Advanced Reporting and Dashboards Module?

System Technical Note

PowerSCADA Expert

Safety Information

Important Information

Read these instructions carefully before trying to install, configure, or operate this software. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER
DANGER indicates an imminently hazardous situation which, if not avoided, **will result** in death or serious injury.

⚠ WARNING
WARNING indicates a potentially hazardous situation which, if not avoided, **could result** in death or serious injury.

⚠ CAUTION
CAUTION indicates a potentially hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE
NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Safety Precautions

⚠ WARNING

HAZARD OF INCORRECT INFORMATION

- Do not incorrectly configure the software, as this can lead to incorrect reports and/or data results.
- Do not base your maintenance or service actions solely on messages and information displayed by the software.
- Do not rely solely on software messages and reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Consider the implications of unanticipated transmission delays or failures of communications links.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information that is contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of contents

1. Introduction

1.1. Purpose

This document explains how to deploy PowerSCADA Expert with Advanced Reporting and Dashboard in order to enhance reporting capabilities. PowerSCADA Expert with Advanced Reporting and Dashboard is essentially PowerSCADA Expert and Power Monitoring Expert deployed on the same system. The goal is to provide the customer with a system that has these capabilities and appears as much as possible to have a single HMI and consistent user experience

This document is a System Technical Note (STN). This provides a Tested, Validated and Documented set of instructions which will enable project execution teams to deploy the integrated system in a repeatable and cost effective manner.

On average, the integrated system detailed in this document took an additional six hours to deploy. An experienced application engineer who has already performed the procedure will deploy the architecture in even less time.

1.2. Customer Challenges

This document is intended to meet the following challenges:

- As an application engineer, I want a document that guides me through the basic installation of an integrated PSE/PME system.
- As a sales representative (etc.), I want to understand when I should propose an integrated system vs. a stand-alone one.cc
- As a sales representative or application engineer, I want to understand how these two applications work together.
- As a system designer, I want to understand how to guarantee the customer is satisfied with the performance of the system.
- As a sales representative (SSE, integrator), I want to be confident that an integrated system has no performance issues that affect the function of components on an individual system.

1.2.1. Main considerations

No two deployments of an integrated system will be alike, as each customer will require a system tailored to the reporting they need supported. The focus is therefore on how to create a consistent experience in PowerSCADA Expert for launching the enhanced reporting. Note that device types and system scale are not covered in the scope of this document as these are covered in separate TVD's

1.2.2. Main Requirements

Integration

To the degree possible, the systems should be so well integrated that it the user will not notice that two different systems are being used to provide the functionality required.

Performance

The integrated system should be optimized to perform as similarly to a stand-alone system as possible.

Deployment

The deployment of the integrated system needs to be made as trouble-free and predictable as possible.

1.3. Prerequisites

1.3.1. System Prerequisites

Schneider Software

PowerSCADA Expert version 8.0

PSE Advanced Reporting and Dashboards Module (ie: Power Monitoring Expert version 8.0)

PSE 8.0 Event Notification Module (Optional)

Operating System and Environment

For the integrated Power Monitoring Expert and PowerSCADA Expert system, the following operating systems are supported in both 32 and 64-bit configurations:

- Windows 7 Professional/Enterprise
- Windows Server 2008 R2 Standard/Enterprise
- Windows Server 2012
- Windows 8 Professional/Enterprise

The following table lists the server specifications for the integrated system.

Attribute	Recommendation
Servers: I/O, Alarm, Report, and Trend	
CPU	1 x Core 2 quad Q6600 / 2.4 GHz
RAM	32 GB
Hard drive	500 GB
Operating system	Windows Server 2012
Display Client	
CPU	3.2 GHz
RAM	4 GB
Hard drive	250GB available
Operating system	Windows 7
Graphics Adapter	128MB VRAM

Note: This STN was validated on the Windows 2012 operating system.

1.3.2. Competencies and Training

This document is intended for readers who have been trained on and have previously deployed both PowerSCADA Expert and Power Monitoring Expert. The integration of these two systems should not be attempted by someone who is new to the installation of either product. In addition we recommend that you be familiar with:

- The concepts of power monitoring
- The concepts of energy management
- Microsoft Windows operating systems
- SQL Server configuration and setup

1.4. About this Document

This document is a System Technical Note (STN). A STN is one of the documents created as part of the TVD activity. These consist of:

- TVDA: Tested Validated Documented Architectures
  A Tested, Validated, Documented Architecture (TVDA) provides technical guidelines and recommendations for implementing technologies to address your needs and requirements. This guide covers the entire scope of the project life cycle, from the Selection to the Operation phase, providing design methodologies and source code examples for all system components.
- TVDS: Tested Validated Documented Solutions
  A Tested Validated Documented Solution (TVDS) is similar to a TVDA, but is typically aimed at a complete solution for a segment, and is very specific. Depending on the documentation already produced as part of the Solution, the TVDS may simply be a report summarizing the activities that took place to meet the TVD criteria.
- STN: System Technical Notes
  A System Technical Note (STN) provides a more theoretical approach by focusing on a particular system technology. These notes describe when to use a particular technology, and therefore support you in the Selection phase of a project. TVDAs and STNs are related and complementary. In short, you will find technology fundamentals in an STN and their corresponding applications in one or several TVDAs or TVDSs.

"TVD" itself is the *set of activities* that result in a document or documents that are produced to describe how to achieve a goal for an offer or solution. These activities consist of Testing (or Verifying), Validating, and Documenting. While these activities are part of normal offer development, the difference with TVD is that they are applied with a specific goal in mind; Validation, for example, is done specifically to ensure that the goal of the TVD output is possible. Another way of stating this is that these activities are narrowly focused to ensure a high standard of quality for the system or capability the TVD document describes.

This document is structured as follows:

The **Introduction** gives an overview of the reason for the architecture and the prerequisites necessary to achieve it.

The **Selection** section explains when you would choose this as a solution for a customer.

The **Design** section explains the architecture and design of the deliverables.

The **Configuration and Implementation** section describes how to set up the integrated system.

The **Operation and Maintenance** section describes how to ensure the system continues to function as desired.

The **Validation** section describes how the system was tested, and includes any additional information the lab has collected regarding the performance and limits of the architecture.

The **Conclusion** summarizes the key aspects you should follow to achieve the integration. Read this section if you want to quickly assess your capability to understand and follow the procedures in the document.

The **Appendix** provides reference materials and additional instructions for advanced configurations.

1.5. Glossary

A glossary is available in the appendix chapter of this document. Please refer to it when necessary.

2. Selection

This section is intended to help you determine if PowerSCADA Expert with Advanced Reporting and Dashboards would better meet the customer's reporting needs than a standalone PowerSCADA Expert system. For more information about product positioning, please refer to the offer positioning guide referenced in the appendix.

2.1. Aspects of Reporting Enhancement

2.1.1. Web Reports

With a standard installation, Power Monitoring Expert offers a full set of reports. You can customize these reports to display selected devices, time ranges, and quantities/measurements. If you are familiar with Power Monitoring Expert reports, and have determined that they fill a need not yet met by PowerSCADA Expert, an integrated system is the right approach. Power Quality Reports will require that the Power Quality device communicate with both PSE and PME.

To assist you with this decision, the following tables contain descriptions of PowerSCADA Expert 8.0 and Power Monitoring Expert 8.0 reports.

PowerSCADA Expert Reports

Report Name	Description
Tabular Report	A simple table of time-value pairs grouped by topic and device. Any trended topic in the system can be viewed in this report and aggregated "By Interval" only.
Trend Report	Identical to the Tabular Report but containing a line chart visualization of the tabular data.
Multi Device Usage Report	Usage report displaying only one consumption-based topic, such as Energy across multiple devices. Each device's share of the topic's total consumption over an aggregation period is visualized in a Pie chart and summarized in a tabular form. Data can be aggregated on any of the available aggregation periods ("By Day of Week," "By Hour of Day," etc.).
Single Device Usage Report	Similar to the Multi Device Usage Report except that only a single device may be included in the report, while multiple topics may be included. Each topic has its own page in the report with its data visualized in a line chart, summarized in tabular form and grouped by aggregation type ("By Day of Week," "By Hour of Day," etc.).

Power Monitoring Expert Reports

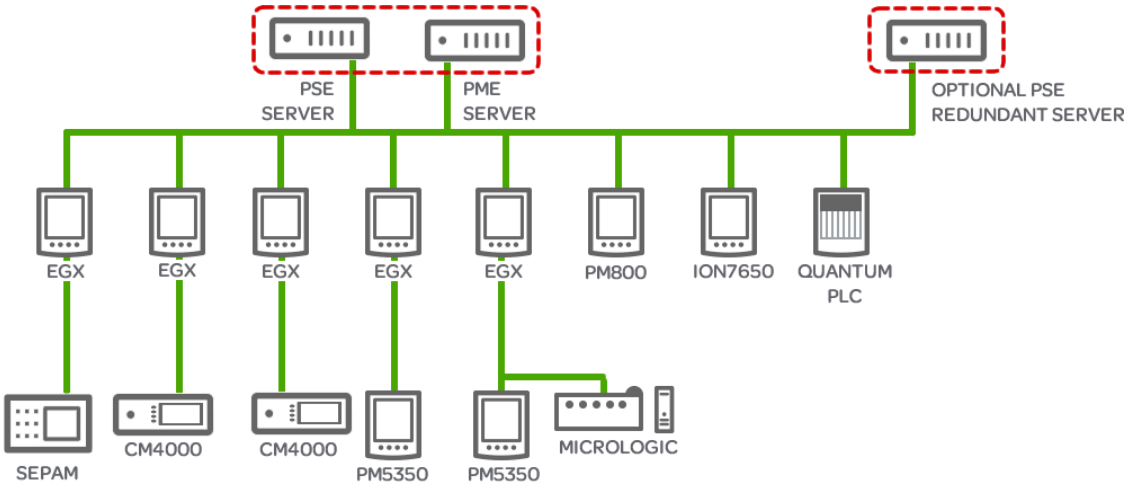
Report Name	Description
Tabular Report	The Tabular report presents data from multiple sources and measurements in a tabular format.
Trend Report	The Trend report displays line/column/bar/pie trend information for multiple devices and measurements.
Multi Device Usage Report	The Multi Device Usage report presents consumption information for multiple devices for a single period, or a comparison of two periods.
Single Device Usage Report	The Single Device Usage report presents energy information for a single device for a single period, or a comparison of two periods.
Load Profile Report	The Load Profile report creates a graphical representation of demand (including peak) or load levels over a period of time. This information can show opportunities for developing strategies to improve energy management.
Energy Period over Period	The Energy Period over Period report compares a measurement from multiple devices over specified time periods.
Energy Usage by Shift	The Energy Usage by Shift report compares a measurement from multiple devices for specified time periods (or shifts)
Event History	The Event History report provides a configurable summary of events or alarms that have occurred in the system.
Power Quality Summary Report + Power Quality Details Report	The Power Quality Report displays all power quality events collected for one or more measuring points for a given period of time. The report shows a summary table of all the events in a given time period and provide the means to see further details in a second report (the Power Quality Details Report) for any given event. The summary report contains a plot of the Information Technology Industry Council (ITI) (also known as ITIC or CBEMA) curve that displays the worst disturbance from each event listed in the summary table.
IEC61000-4-30 Report	The IEC61000-4-30 Compliance Report displays a summary of the IEC61000-4-30 compliance for a set of measuring points in the system for a given period of time. The report includes the following IEC61000-4-30 components: Frequency, Supply Voltage Magnitude, Flicker, Supply Voltage Unbalance and Supply Voltage THD.
EN50160 Report / EN50160 Mains Signaling Report	The EN50160 Report provides signal line frequency statistics for multiple sources, for each observation period in accordance with the power quality standard
Hourly Usage	The Hourly Usage report produces a tabular display of usage of various types of quantities (such as consumption of water, natural gas, etc.) per hour for a specific day.
System Configuration	The System Configuration report provides network administrators with details about the communication network and devices in the network to assess performance and plan for growth.
Billing Module (optional)	The Billing Module provides an easily configurable billing report and flexible tariff engine that enables cost allocation and bill estimation applications tailored to the customer's specific needs. The Billing Module is an optional report and must be purchased as an additional license.

2.1.2. WebReach Network and Device Diagrams

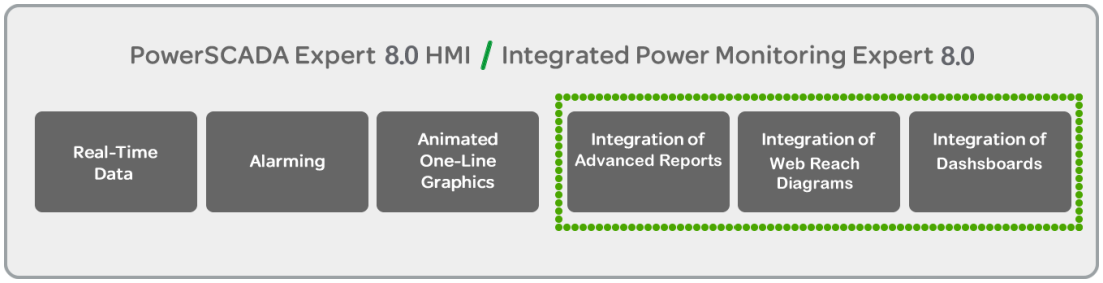
In certain situations, customers may request the type of display available in Power Monitoring Expert device diagrams. In existing deployments where an integrated system was deployed, these have been used as ‘drill-down’ diagrams for a deeper exploration of a problem in the customer’s system. For this reason, this document includes instructions about integrating WebReach diagrams.

2.2. Selected Architecture

A PowerSCADA Expert system with Advanced Reports can be successfully deployed on a single-server architecture, as shown below. Optionally, for standard redundancy, an additional PowerSCADA Expert instance can be deployed on a second server. This server architecture has been validated in the lab. The devices shown in the diagram below are representative and are not meant to convey the actual lab’s device count. The intent was to test the system with devices that were common in the field, to ensure there were no obvious performance issues.



2.3. HMI Integration



Per the requirements, the first key function of the integrated system is to provide integration in the HMI for the customer. The components of this are:

1. Single Sign-On
2. Integrated reports
3. Integrated dashboards
4. Integrated diagrams

2.3.1. Single Sign-On (SSO)

Single Sign-On, or SSO, is recommended for customers who are going to use web reports, dashboards and web diagrams from Power Monitoring Expert. Single Sign-On, as the name implies, avoids the requirement to sign on again to access web reporter, which is key to the experience of working in a single HMI.

2.3.2. Integrated Reports

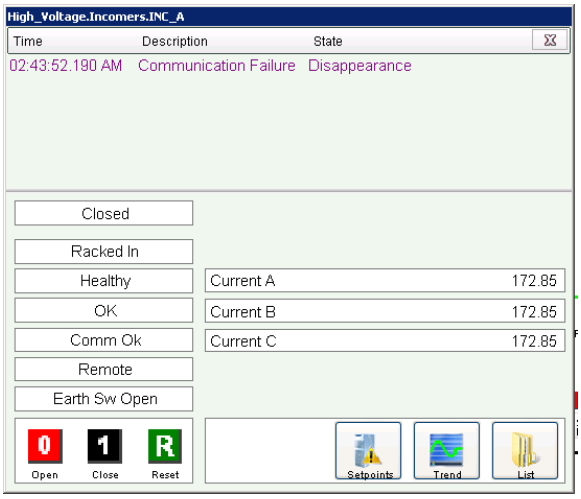
Having enabled SSO, web reports can be accessed directly from PowerSCADA Expert graphic screens without logging in a second time. This is recommended for workflows where the user wants to quickly access historical data reports linked from graphic screens. An example of this would be an operator who is looking at the real-time current value, and notices that it is coming close to a breaker limit. The operator might want to go to a trend report to see if it is a spike or if it has been trending that way. Similarly, an operator might want to see a power quality report for a given point in the one-line.

2.3.3. Integrated Dashboards

As with reports, dashboards can be accessed directly from PowerSCADA Expert graphic screens without logging in a second time. This workflow enables the user to quickly access predefined dashboards and slideshows linked through graphic screens and menu items.

2.3.4. Integrated Real Time Screens

There are three integrated options for the display of real-time data from the devices used in the customer's system. These options are explained in the following paragraphs.



Option 1: Use PowerSCADA Expert Device Popups

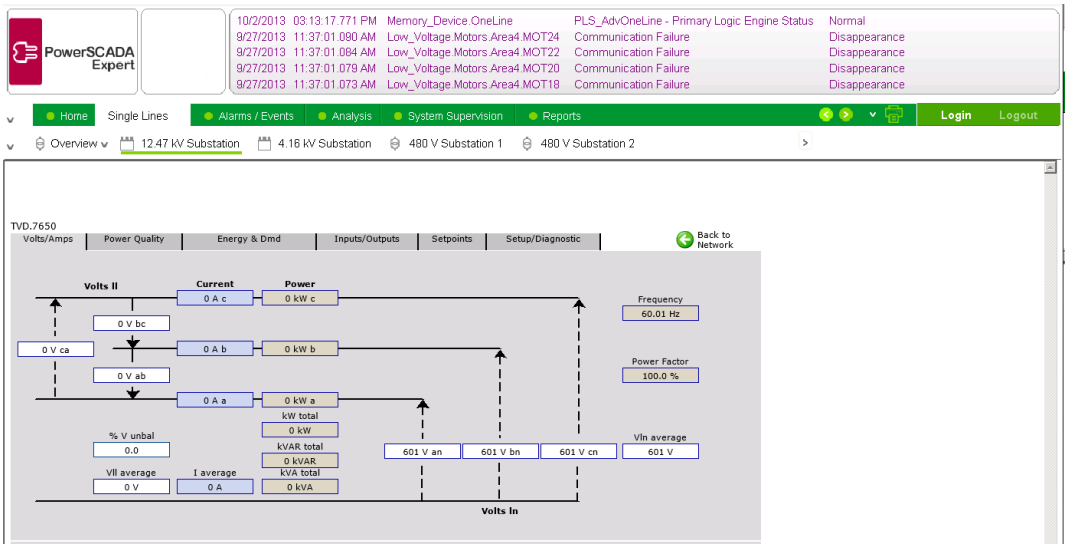
This option simply uses the device pop-ups available out of the box in PowerSCADA Expert 8.0. The advantage of this option, vs. the other options, is the savings in deployment time.

Option 2: Integrate Main WebReach Page with PowerSCADA Expert

This option integrates the root WebReach page (the network diagram) into PowerSCADA Expert. The advantage of this is that the integration is relatively simple, and all of the individual diagrams in Power Monitoring Expert can be accessed via the primary page.

Option 3: Integrate Device Diagrams with PowerSCADA Expert

The device diagrams from Power Monitoring Expert can be integrated into the PowerSCADA Expert real-time screens. The advantage of this is the ability to immediately access the historical logs collected in Power Monitoring Expert, and to access device diagrams unavailable in PowerSCADA Expert.



Option 2 and 3, PSE screens with WebReach diagrams embedded

2.4. Redundancy

Native PowerSCADA Expert redundancy is supported in this architecture. Redundancy for Power Monitoring Expert is possible using third-party tools like Marathon and Avance, but is not documented here. Some information on the use of Avance is available in the installation documentation for the Power Monitoring Expert - Data Center Edition solution. See the appendix for a link to the referenced file.

For this architecture, only native redundancy for PowerSCADA Expert is selected because Power Monitoring Expert redundancy requires licensing, and the third-party tools necessary to its implementation take additional time to set up.

2.5. Performance and Deployment

Performance and deployment are key aspects of this STN, and will be detailed in the Design and Configuration sections for the architecture selected above.

2.6. Preparation to Upgrade to Version 8.0

The following scenarios are supported by both PME 8.0 and PSE 8.0. During preparation for migration it is important to verify you have the required documentation to execute the PME migration. See the below tables to identify the required documentation which is located both on the PME install media and within this document.

2.6.1. ION 6.01 Scenarios

PSE v 7.20	PSE 7.30/7.40	PSE not present	Documents required
√			SBS Version Upgrade from ION E 6.0.1 to PME 8.0 Procedural Document V1.0.docx Section 8.1.
	√		SBS Version Upgrade from ION E 6.0.1 to PME 8.0 Procedural Document V1.0.docx Section 8.2.
		√	SBS Version Upgrade from ION E 6.0.1 to PME 8.0 Procedural Document V1.0.docx

2.6.2. SPM 7.01 Scenarios

PSE v 7.20	PSE 7.30/7.40	PSE not present	Documents required
√			SBS Version Upgrade from ION E 7.0.1 to PME 8.0 Procedural Document V1.0.docx Section 8.1.
	√		SBS Version Upgrade from ION E 7.0.1 to PME 8.0 Procedural Document V1.0.docx Section 8.2.
		√	SBS Version Upgrade from ION E 7.0.1 to PME 8.0 Procedural Document V1.0.docx

2.6.3. PME 7.2.2 Scenarios (including segment editions)

PSE v 7.20	PSE 7.30/7.40	PSE not present	Documents required
√			SBS Version Upgrade from ION E 7.2.2 to PME 8.0 Procedural Document V1.0.docx Section 8.1.
	√		SBS Version Upgrade from ION E 7.2.2 to PME 8.0 Procedural Document V1.0.docx Section 8.2.
		√	SBS Version Upgrade from ION E 7.2.2 to PME 8.0 Procedural Document V1.0.docx

3. Design

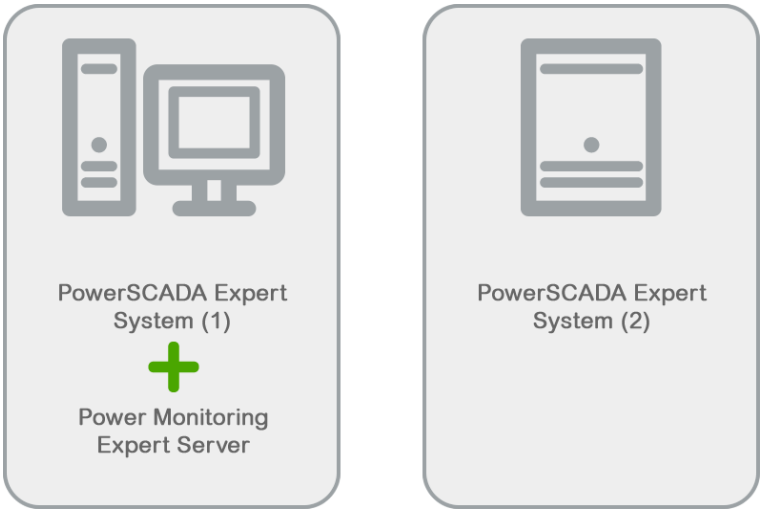
This section explains design elements key to the function of the integrated system.

3.1. Server Configuration

The validated architecture consists of two physical machines:

- The first hosts the primary PowerSCADA Expert instance as well as the Power Monitoring Expert server.
- The second, optional, server hosts the redundant PowerSCADA Expert server.

In this architecture, PowerSCADA Expert uses native redundancy, and Power Monitoring Expert has no redundancy.



3.2. Designated Functions of PowerSCADA Expert and Power Monitoring Expert

An integrated PowerSCADA Expert/Power Monitoring Expert system should be designed to take advantage of the strengths of the respective applications without sacrificing performance. For that reason, the following guidelines are suggested:

Function	PowerSCADA Expert	Power Monitoring Expert
Real Time Monitoring	√	
Historical Trending	√	
Reporting	Per requirements	Per requirements
Power Quality		√
Alarming	√	
Control	√	

These functions and the rationale for assigning them to a particular system are further explained below. In most cases, PowerSCADA Expert will act as the data acquisition engine for the system, communicating with devices on the network and passing historical data to Power Monitoring Expert using ETL (Extract Transform Load). Two notable exceptions are for devices that include Power Quality measurements or branch circuit data. Power Monitoring Expert must communicate directly with those devices to provide Power Quality and Branch Circuit reports.

3.2.1. Real-Time Monitoring

Similar to alarming, PowerSCADA Expert is designed for scalable, fast real-time monitoring. However, in some instances, it may be desirable to link the default diagrams provided with Power Monitoring Expert. These default diagrams can provide additional detail useful for troubleshooting, PQ analysis, and access to historical trend data. The Power Monitoring Expert diagrams would be linked from individual objects in one-line graphics or, optionally, as a tab displaying the Network Diagram.

3.2.2. Historical Trending

Historical Trending is assigned to PowerSCADA Expert for the following reasons:

- While trend data is important, it does not have the priority of real-time or alarm data. It can be assigned a lower priority in communications configuration, and lag is more tolerated when presenting trend data to the customer.

  You can reduce the load on the overall system by using the ETL that sends the historic information gathered by PowerSCADA Expert into the Power Monitoring Expert database. This will allow the system to use the data acquisition speed of PowerSCADA Expert with the reporting capabilities of Power Monitoring Expert.
- The reporting capabilities of Power Monitoring Expert are ideal for this function. Intervals come pre-configured and roll-over is accounted for at the software level.

3.2.3. Reporting

In the table above, the reporting function is assigned “per requirement,” which indicates that you need to know the customer's requirements and determine whether it is necessary to make the Power Monitoring Expert web reporting available via the PowerSCADA Expert interface. This is advised because of the variety of reports. You need to become familiar with the reports that are available in order to make a decision in this regard.

From a design standpoint, the addition of a link to the main web report root in Power Monitoring Expert adds little time to the configuration of PowerSCADA Expert. If you wish to add links to reports from specific graphics screens, you will need more time, as documented below.

3.2.4. Power Quality

Power Quality (PQ) is assigned to Power Monitoring Expert because it provides built-in functionality for dealing with Power Quality. From a design standpoint, PQ data would be exposed either through reports or by linking to specific device diagrams in WebReach.

Waveform transfer in Power Monitoring Expert is one possible way that communications can become bottlenecked. For this reason, waveforms are limited to PQ devices in Power Monitoring Expert. A method in further limiting the waveform acquisition in Power Monitoring Expert is later documented in this STN. As mentioned earlier, any devices that have PQ capabilities will need to communicate with both PSE and PME.

3.2.5. Alarming

While alarming is supported in Power Monitoring Expert, PowerSCADA Expert is designed to provide extremely responsive alarms in large environments, and the configuration is typically provided out of the box. Alarming will be disabled in Power Monitoring Expert in all cases except for PQ devices as alarming information is required for a number of PQ reports.

3.2.6. Control

Control functionality is a dedicated function of PowerSCADA Expert and is not recommended in this architecture using Power Monitoring Expert. Note that no specific control functions are specified in this STN. It is assumed that this may be one of the reasons PowerSCADA Expert was specified in the first place. Regardless, please review the safety information at the beginning of this document before implementing any control functionality.

4. Configuration and Implementation

This section details specific procedures for creating an integrated PowerSCADA Expert/Power Monitoring Expert system. For general recommendations about setting up your PowerSCADA Expert system, please refer to the *Design Reference Guide* (see reference at in the appendix). For general recommendation about setting up your Power Monitoring Expert system, please refer to the *System Design Guide* (also referenced in the appendix).

4.1. Power Monitoring Expert and PowerSCADA Expert Installation

In terms of general deployment, it is possible to install either Power Monitoring Expert or PowerSCADA Expert first, but **we recommend that you install Power Monitoring Expert first, due to differences in licensing**.

Both systems need to be set up before you proceed with the steps listed in the Single Sign-On section, and beyond. Per the pre-requisites listed in the beginning of this document, it is assumed that you are familiar with the installation of both products.

If you plan to follow the guidelines in section 3.2 (Designated Functions), read section 4.2 (Configuring Trending and Power Quality) *before* deploying the systems, so that you will know when to implement the steps required.

4.1.1. Licensing Versions

Licensing, in the form of the Schneider Electric License Manager and the Schneider Electric Floating License Manager, is fully installed and integrated into version 8.0 of Power Monitoring Expert. PowerSCADA Expert uses a physical dongle licensing mechanism that is separate from the Schneider Electric License Managers.

4.2. Configuring Power Quality

Follow these instructions if you want to follow the guidelines set up in section 3.2, Designated Functions. You can optimize the integrated system slightly in this way:

1. Modify the Log Inserter in Power Monitoring Expert to ignore waveforms.
2. Turn on the ability to easily display waveforms in PowerSCADA Expert.

If you do not want waveforms to have any priority in PowerSCADA Expert, refer to the last section (Modifying citect.ini to Throttle Waveform Bandwidth) for information on changing the citect.ini file to disable waveform uploads.

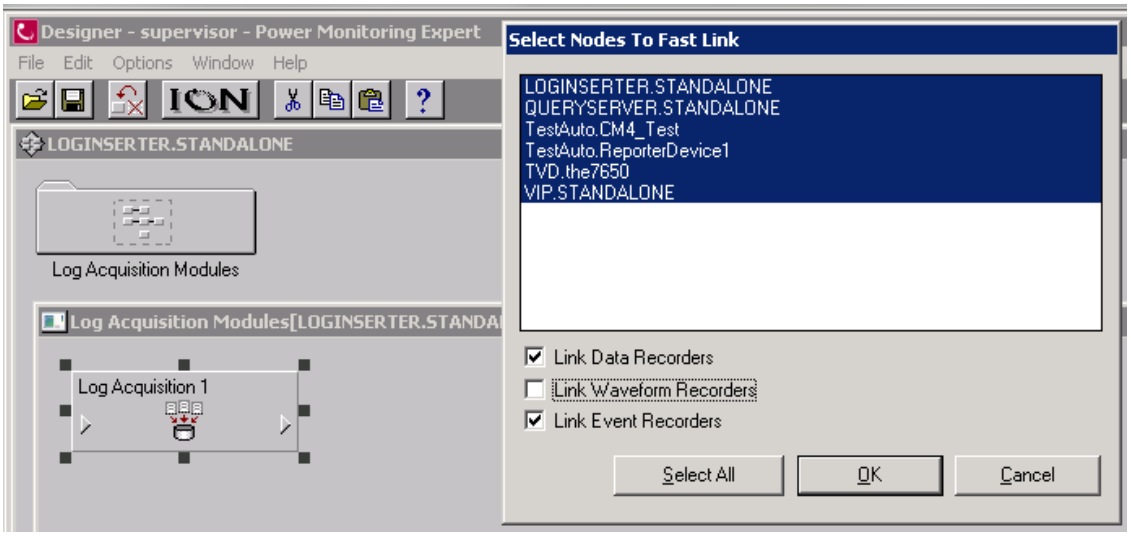
4.2.1. Modifying Log Inserter to Ignore Waveforms

One potential source of communication saturation is the waveform upload to Power Monitoring Expert when a power quality event occurs. If the customer does not need waveforms, or if exposing them via PowerSCADA Expert is satisfactory, you can configure a custom log inserter to ignore waveforms. Note that:

- This procedure is optional and has not been validated for performance improvement.
- These steps configure only the software; the device configurations are not modified.
- The process is easily reversed.

The steps for doing so are as follows:

1. Open Designer in Power Monitoring Expert.
2. Open the Loginserter.[ServerName] node from the File >> Open menu.
3. Double-click the Log Acquisition Modules to open the Log Acquisition node.
4. Hold the CTRL (control key) and left click the left arrow (the inputs arrow) on the node. This opens the **Select Nodes To Fast Link** window.
5. Select all of the nodes. Uncheck the *Link Waveform Recorders* box, then click OK.

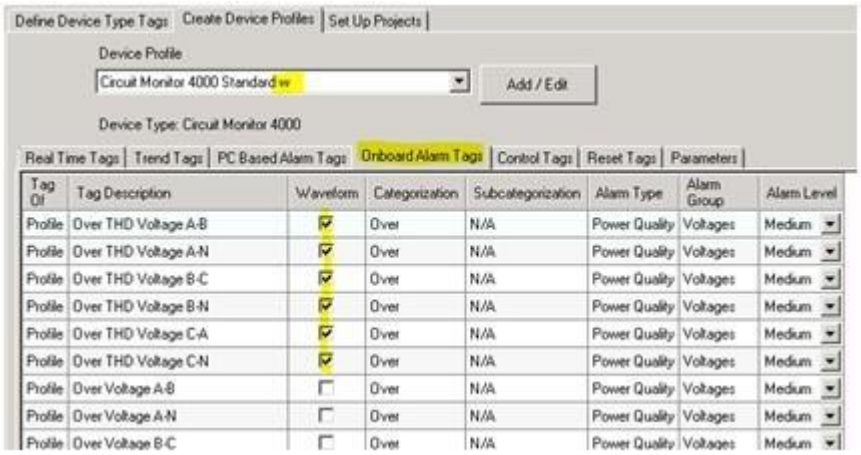


4.2.2. Enabling Waveform Display from Alarms in PowerSCADA Expert

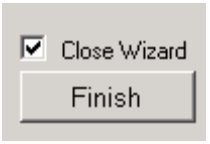
The following steps enable the user to quickly display waveforms in PowerSCADA Expert by right-clicking the alarms that are generated during power quality events.

1. Open the Profile Editor and click the Create Device Profiles tab.
2. In the Device Profile dropdown, select the first device that records waveforms. If you have several devices that capture waveforms, you must repeat these steps for each device type.
   a. Click the Add/Edit button, and then select the Create From option.

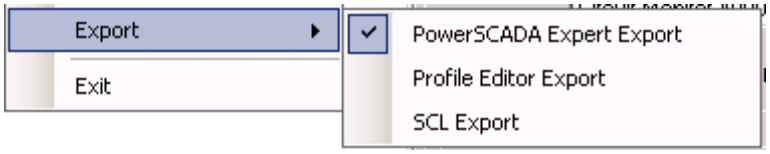
   b. **Modify the name of the Device Profile**. You must do this because the default profile for the device is locked and you can't edit it. In the image below a 'w' has been added to the default device profile name.



3. Click Next, Next, then select the Close Wizard box and click Finish.



4. Select the *Onboard Alarm Tag* tab for the device
5. To select all the waveforms, check the option boxes.
6. Save the profile and export.



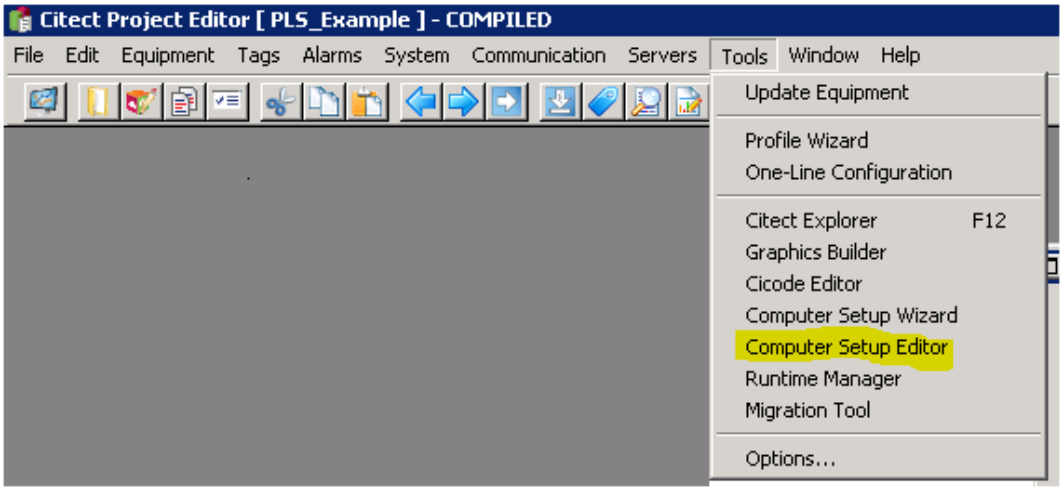
7. Add the devices per standard commissioning in the Profile Wizard.

Note that this does not enable or disable waveform capture, but it simply enables the ability to right-click the alarm and access waveforms for the alarm/disturbance.

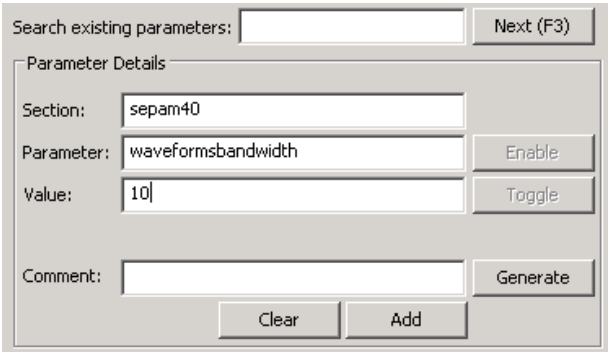
4.2.3. Modifying citect.ini to Throttle Waveform Bandwidth

If you intend to use Power Monitoring Expert for waveform display, you should disable or throttle the upload of waveforms in PowerSCADA Expert. The steps for doing so follow.

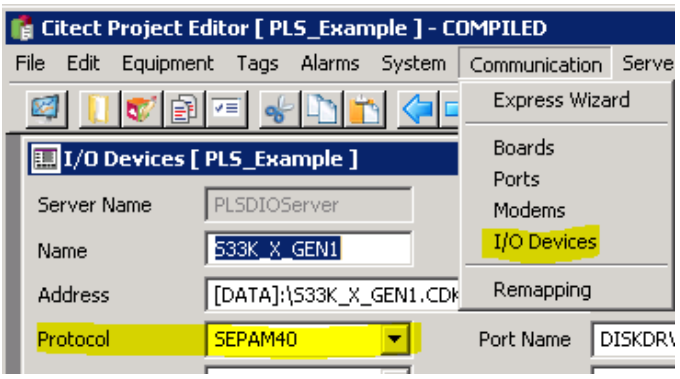
1. In the Citect Project Editor, open the Tools menu and click the Computer Setup Editor.



2. In the Parameter Details section, type the driver name for the devices in your system that capture waveforms, and set the *waveformsbandwidth* parameter.



a. If you need to find a list of the driver names, go back into Project Editor and click Communication >> IODevices, then click the Protocol drop-down list. For example, the driver name for the CM4000 is *plogic4000*.



b. A value of zero disables the waveform download. A value of 10 typically lowers the priority of waveforms below any other type of device communication.

This type of throttling is also possible for other types of device communications, namely:

- Realtimebandwidth
- Eventsbandwidth
- Commandsbandwidth

The values for these are percentages, and can be assigned at your discretion.

This type of throttling is also possible at a cluster, port, and device instance level, by using the [devicetype.clustername], [devicetype.clustername.portname], and [devicetype.clustername.portname.devicename] properties.

4.3. Setting up Single Sign-On for Web Reporter Access

4.3.1. Overview

The following section outlines the recommended approach for setting up PowerSCADA Expert 8.0 to link to Power Monitoring Expert 8.0 Web Reporter, without having to go through the regular Power Monitoring Expert authentication process.

4.3.2. Set Up PowerSCADA Expert to Access Power Monitoring Expert via Single Sign On

The steps to accomplish this are detailed in the appendix, but this is a summary.

- Add SSO settings to your citect.ini file (see Application Services, Section 8.5.1.).

- Configure SSO users in the application configuration utility (Web Reporter,Dashboards, Diagrams). (See Single Sign On (Security) in Section 8.5.3.
- Determine how you want to display the report—in a separate page or in the same page as other graphics.
- Create a separate page if you need it.

Follow the steps in the appendix before proceeding with the sections that follow.

4.3.3. How to Build the Single Sign-On URL for Web Reports

For simplicity, the configuration validated here calls the web report from the input code in a menu object.

PowerSCADA Expert needs to perform the following steps to build the URL that uses Power Monitoring Expert authentication and displays Web Reporter.

1. **Background and Design:** To display Web Reporter, PowerSCADA Expert will need to create a URL with specific parameters. This URL will contain a token, which is a unique string. The URL to Web Reporter for token-based Single Sign-On is of the form:

```
http://[servername]/reporter/default.aspx?userToken=[key]
```

2. **About the PLS_ShowWebReportDsp Cicode**: In this step, you will call the PLS_ShowWebReportDsp function from a menu configuration. This function is part of the Cicode in the *PLS_Applications.ci* file, which is packaged with this document. The code is shown below for reference.

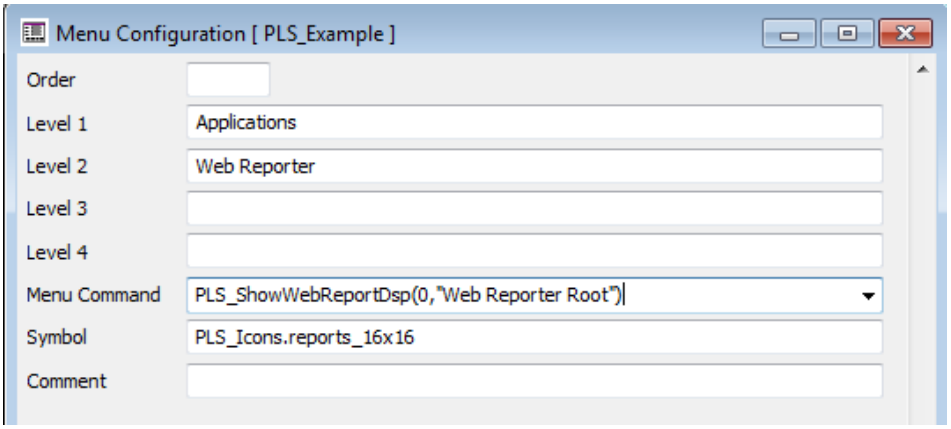
```
FUNCTION PLS_ShowWebReportDsp(INT iReportID, STRING sTitle = "")
    IF ("" = sTitle) THEN sTitle = "Reporting"; END
    STRING sUrl = _PLS_Apps_BuildWebReporterUrl(iReportID);
    IF ("" <> sUrl ) THEN
       PLS_WebDsp(sUrl, sTitle, "PLS_ShowWebReportDsp",
          IntToStr(iReportID) + ",^"" + sTitle + "^"");
END
END
```

Important things to note about this code:

- **iReportID** is the unique identification number of the desired report, determined in the step below.
- **sTitle** is the title of the page.
- The function builds a URL based on the provided Host in the Citect.ini.
- It will also dynamically create the object with PLS_WebDsp so there is no need for an AN object name reference.

After you are on the Web Reporter page, you stay logged in until you close the browser or refresh the page.

1. From the Citect Project Editor, navigate to menu configuration located under system. Enter the call to the ShowWebReportDsp function (found in the PLS_Applications.ci file), with the ReportID (if desired), and the page title.



2. If you have multiple reports configured, and want to display a different report for different devices, repeat this procedure for each button, with the correct ReportID.
3. Save, compile, and run the project to test the functionality.

How and where you display the web report root should be considered carefully. PowerSCADA Expert 8.0 has native reports, and the customer needs to be presented with a consistent interface as much as possible. When you modify the menu, removing certain native links (in the PLS_Example project) or being selective about where the root is displayed will help maintain the experience of using a single HMI.

4.3.4. How to Build the Single Sign-On URL for Dashboards

As with Web Reporter, the configuration validated here calls the Dashboard from input code in a menu object

PowerSCADA Expert needs to perform the following steps to build the URL that utilizes Power Monitoring Expert authentication and display Dashboards.

1. **Background and Design:** Dashboards single sign-on relies on the same PLSApplication.ci cicode file in which both Web Reporter and Diagrams use.
2. **About the PLS_ShowDashboardDsp Cicode**: In this step, you will call the PLS_ShowDashboardDsp function from a menu configuration. This function is part of the Cicode which is packaged with this document. The code is shown below for reference.

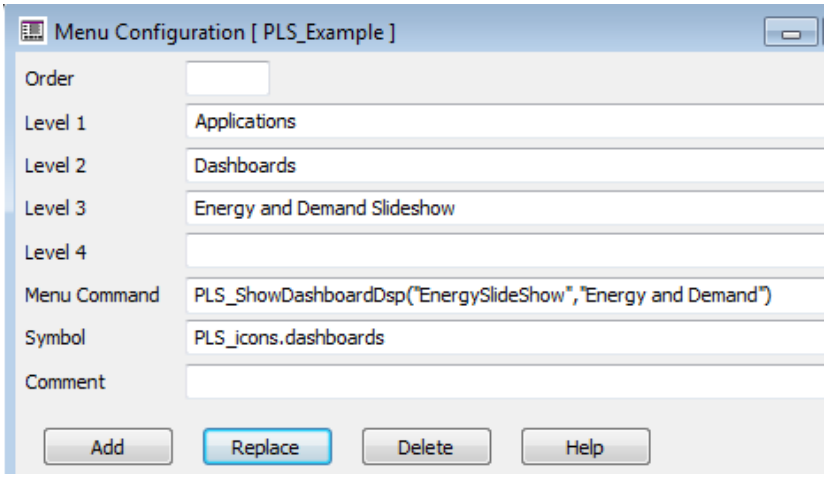
```
FUNCTION PLS_ShowDashboardDsp(STRING sSlideShow = "", STRING sTitle =
"")
 IF ("" = sTitle) THEN
     IF ("" = sSlideShow) THEN
         sTitle = "Dashboards";
     ELSE
         sTitle = "Dashboards - " + sSlideShow;
     END
 END
 STRING sUrl = _PLS_Apps_BuildDashboardUrl(sSlideShow);

 IF (sURL <> "") THEN
     PLS_WebDsp(sUrl, sTitle, "PLS_ShowDashboardDsp",
         "^"" + sTitle + "^"");
 END
END
```

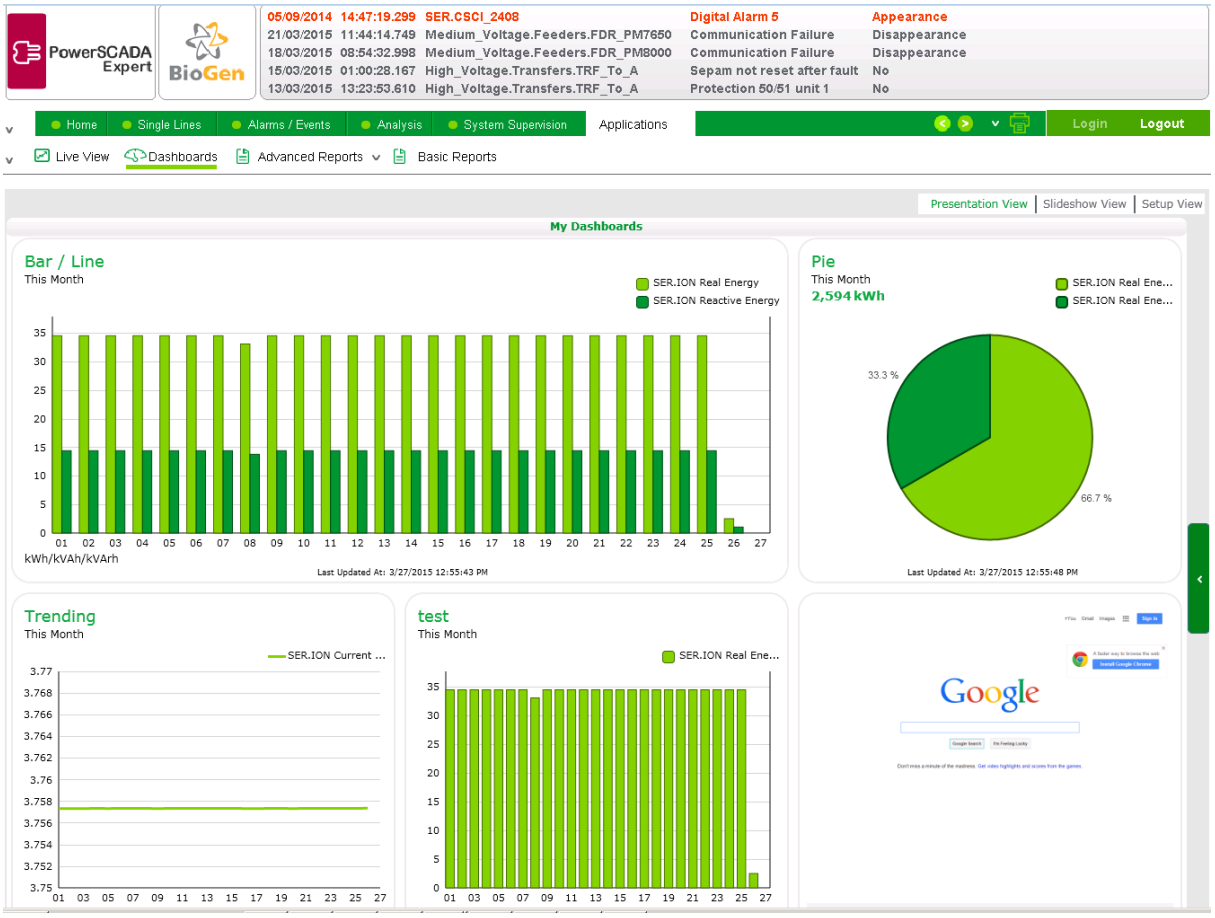
Important things to note about this code:

- **sSlideShow** is the an optional parameter to call a predefined dashboard slideshow.
- **sTitle** is the title of the page.
- The function builds a URL based on the provided host in the Citect.ini.
- It will also dynamically create the object with PLS_WebDsp so there is no need for an AN object name reference.

3. From the Project Editor, click System and navigate to Menu Configuration. Enter the call to the ShowDashboardDsp function (found in the PLS_Applications.ci file), with the slideshow (if desired), and the page title.



4. If you have multiple slideshows created, and want to display a different Dashboard for each slideshow, repeat this procedure for each button, with the correct Slide Show name.
5. Save, compile, and run the project to test the functionality.



4.4. Displaying WebReach Diagrams in PowerSCADA Expert Pages

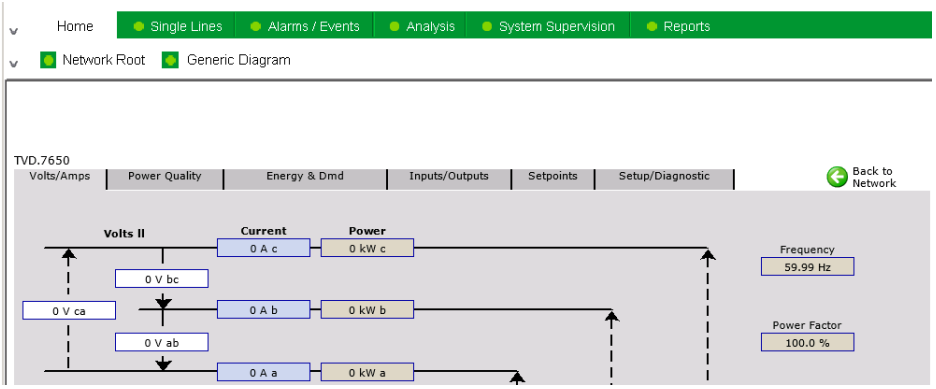
The following instructions detail how to display WebReach diagrams. The following paragraphs describe ways that you can display WebReach diagrams.

1. As a ‘placeholder’ page in the PowerSCADA Expert menu that would be called and loaded with the diagram specified in a button or genie call: Use this option if you want the diagram to appear to be ‘anchored’ in the menu, and not have a pop-up appearance.
2. As a pop-up page that would appear over the page of the button or genie calling it: Use this option if you want the user to be able to look at the diagram and then close it to return to the calling page.
3. As a pop-up page launched from within a meter genie. Use this option if your PSE equipment name matches your PME Group.Device.

See the instructions and images in the following sections for more detail about setting up the various options.

Displaying a WebReach Diagram in a menu page

Diagram ‘anchored’ to menu



If you want to add the ability to call the diagram for a specific device from a button or genie, do the following:

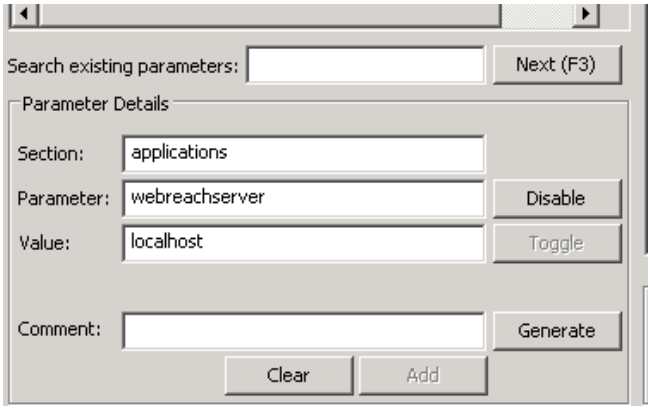
- Add PME server properties into the Citect.ini file.
- Determine the device name in Power Monitoring Expert.
- Test that there are no issues accessing the URL via a browser.
- Add a Cicode function to display the WebReach diagram.
- Insert a call to that function to display the diagram in a menu page.

Follow these steps to add the call function.

Modifying the Citect.ini

To add PME server properties into the Citect.ini file:

1. Open the Citect Project Editor
2. Launch the Computer Setup Editor
   a. Click Tools >> Computer Setup Editor.
   b. Add a new Section named “Applications” and a parameter named “WebReachServer” with a value of either a servername or ipaddress of the PME server.
   c. Click Add and save the Citect.ini



Determining the Device Name and Testing the Direct URL for WebReach Diagrams

To display the diagram, you need to determine the device name using SQL and test the URL in a browser.

1. In SQL Server Management Studio, make sure you are using the ION_Network database.
2. Execute the following query:

   ```
   SELECT Name FROM dbo.device
   ```

3. Find the device name that you want.
4. Open a browser window and enter the following URL to test the diagram display. Replace [device name] with the name you found in the previous step, and [servername] with the name of the Power Monitoring Expert server.

   ```
   http://[servername]/Ion/default.aspx?dgm=OPEN_TEMPLATE_DIAGRAM&node
   =[device name]
   ```

   For example, a real URL would look like:

   http://10.168.94.77/Ion/default.aspx?dgm=OPEN_TEMPLATE_DIAGRAM&node=TVD.7650

5. The device diagram should display in the browser window, and you should be able to navigate around the diagram, per normal WebReach function.

About the WebReachDsp Cicode

In the following step, you will call the WebReachDsp function from a button. This function is part of the Cicode in the *PLS_Include.ci* file, which is packaged with this document. The code is shown here for reference:

```
FUNCTION PLS_WebReachDsp(STRING sDeviceName, STRING sTitle = "")
STRING sPage = PLS_GetWebReachURL(sDeviceName);
IF ("" = sPage) THEN RETURN; END

IF ("" = sTitle) THEN sTitle = sDeviceName; END
PLS_WebDsp(sPage, sTitle);
END
```

There are some important things to note about this code:

- **sDeviceName** is the name of the device, determined in the step above.
- **sTitle** is the title of the page

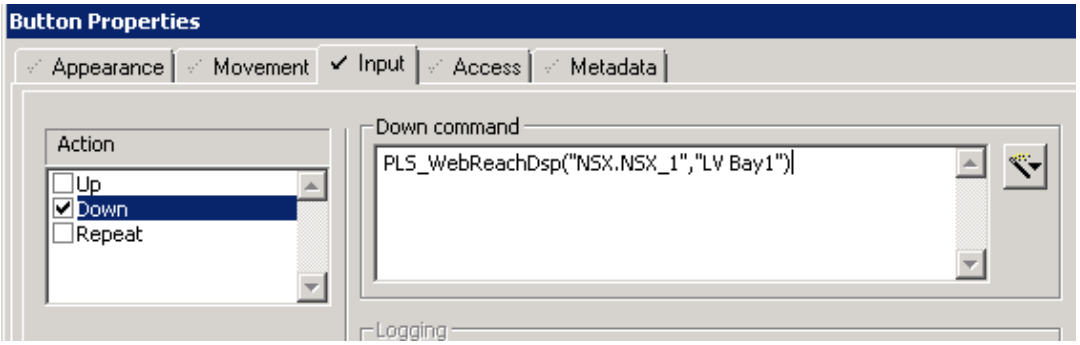
Create a Button and Call the PLS_WebReachDsp cicode

To use a button to display a WebReach diagram:

1. In the Graphics Builder, open the page that you want to call the diagram from, and create a button.
2. In the button's input tab, check the Down action and enter the following code in the Down Command window:

   ```
   PLS_WebReachDsp("[DeviceName]","[Title]")
   ```

   See the section above for descriptions of the parameters and how to fill them out.



3. Click OK to exit the button properties. Save the graphics page, compile the project, and run it, clicking the button to ensure the configuration is working.
4. If the diagram does not display, try the following troubleshooting steps:
   a. Enter the URL of the diagram directly into a browser window; verify that it launches. The URL is:
   `http://[servername]/ION/default.aspx?dgm=OPEN_TEMPLATE_DIAGRAM&node=[device name]`

      If this does *not* work, verify that the WebReachServer is correct in your citect.ini, and the diagram appears correctly in WebReach.

   b. The steps above should resolve most issues. One last option is to test by putting the web browser in a window on the calling page.

4.4.1. Displaying a WebReach Diagram in a Pop-up Page

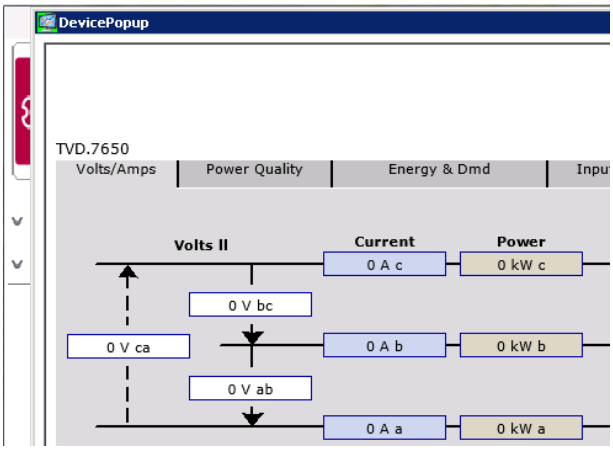


Diagram in a pop-up, appearing offset from parent page

To display a diagram in a pop-up, you need to:

About the PLS_WebReachPopup Cicode

In the following step, you will call the PLS_WebReachDsp function from a button. This function is part of the Cicode in the *PLS_Include.ci* file, which is packaged with this document.. The code is shown below for reference.

```
FUNCTION PLS_WebReachPopup(STRING sDeviceName, STRING sTitle = "")
    STRING sPage = PLS_GetWebReachURL(sDeviceName);
    IF ("" = sTitle) THEN sTitle = sDeviceName; END
    PLS_WebPopup(sPage, sTitle);
END
```

There are some important things to note about this code:

- **sDeviceName** is the name of the device, determined in the step above.
- **sTitle** is the title of the page.
- The function builds a URL based on the provided WebReachServer in the Citect.ini.
- It will also dynamically create the object so there is no need for an AN object name reference.

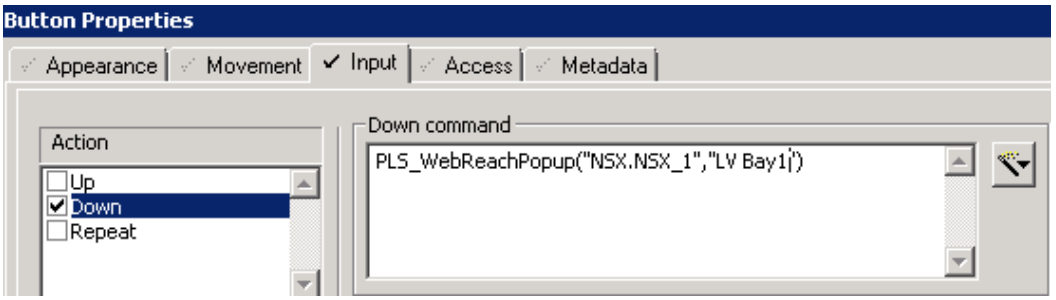
Create a Button and Call the PLS_WebReachPopup cicode

To use a button to display a WebReach diagram:

1. In the Graphics Builder, open the page that you want to call the diagram from, and create a button.
2. In the button's input tab, check the Down action and enter the following code in the Down Command window:

```
PLS_WebReachPopup("[DeviceName]","[Title]")
```

See the section above for descriptions of the parameters and how to fill them out.

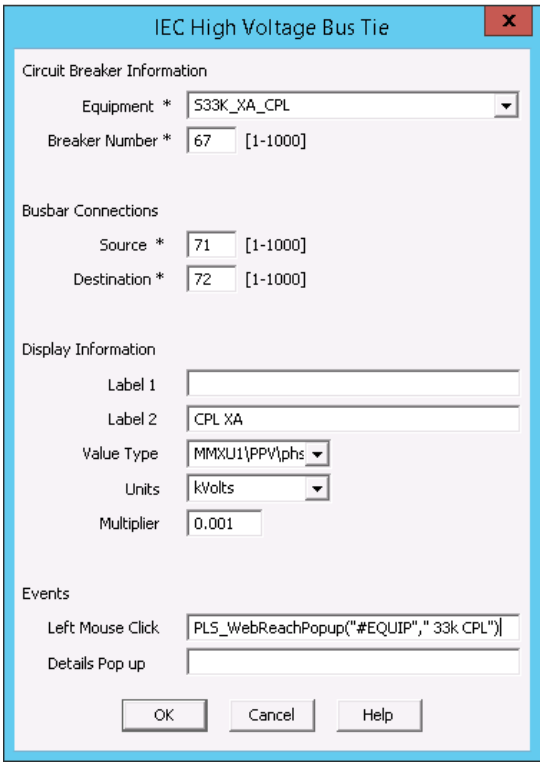


3. Click OK to exit the button properties. Save the graphics page, compile the project; then run it, clicking the button to ensure the configuration is working.
4. If the diagram does not display, try the following troubleshooting steps:
   a. Enter the URL of the diagram directly into a browser window; verify that it launches. The URL is: `http://[servername]/ION/default.aspx?dgm=OPEN_TEMPLATE_DIAGRAM&node=[device name]`
   b. If this does *not* work, verify that the WebReachServer is correct in your citect.ini, and the diagram appears correctly in WebReach.

4.4.2. The steps above should resolve most issues. Displaying the Diagram with a meter genie

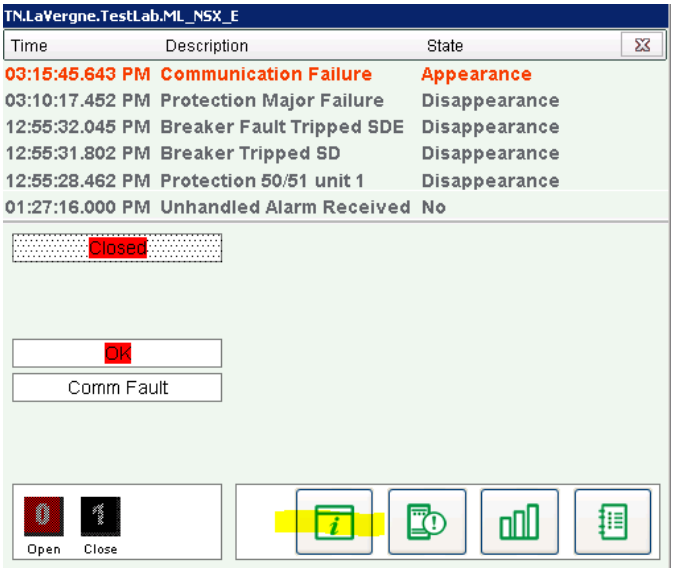
The last display option is to launch the diagram from a meter genie equipment page. This method works well when PME device names are identical to PSE equipment names:

1. Open the PowerSCADA Expert Graphics Builder and navigate to the page on which you want to insert the meter genie.
2. Click Edit >> Paste Genie.
3. Under Library, click pls_meter and select the desired meter genie.
4. Towards the bottom of the page, locate the “Events” fields.
   a. Choose either “Left Mouse Click” or “Details pop up” based on the desired functionality. “Left Mouse Click” will immediately launch the WebReach diagram when you click the meter genie. “Details pop up” will add a “Show Device Details” button onto the equipment details page. That button will launch the pop up.
   b. Using the previous PLS_WebReachPopup Cicode function, populate the desired field. Your genie should appear similar to this:



NOTE: We do not specify the sDevice name but instead pass #EQUIP. This value is a property of the genie.
This method only works when the PSE equipment name is equivalent to the PME group.devicename

The resulting configuration will yield an equipment popup containing a device info popup represented by the following button:



4.5. Configuration Complete

This concludes the Configuration and Implementation section of this document. Please test all functionality before you release it to the end user.

5. Operation and Maintenance

5.1. Operation

Operation of the combined system should behave seamlessly as long as the user logs-in to an account with the necessary privileges on the PowerSCADA Expert system. The integrated system does not require any additional actions on the part of the person deploying the system in order to guarantee seamless function.

5.2. Maintenance

Refer to the standard product documentation for instructions about maintaining PowerSCADA Expert and Power Monitoring Expert. The integrated system requires no special maintenance beyond what is needed for the standalone systems.

5.3. Upgrades

Here is a list of possible concerns with upgrading the PSE and PME system

Before making upgrades on either the Power Monitoring Expert or PowerSCADA Expert systems, contact your regional support center to obtain the latest information regarding new versions and upgrades.

- Single Sign-On

  As long as the security model is not changed in future versions, Power Monitoring Expert upgrades should not affect the integrated system function. This is because the users, groups, and permissions are stored in the database, which is migrated during upgrade.

- Report linking

  All modified and saved reports are also migrated during upgrade.

- Diagram linking

  Unless there is a change to the PME virtual root, diagram linking should be unaffected by upgrades.

- Dashboard linking

  Unless there is a change to the PME web root, dashboard linking should be unaffected by upgrades.

6. Validation

This section includes information about the lab setup used to test the STN, and additional information about performance information.

6.1. Performance Testing

Performance testing results are included in the TVDA *How Can I Integrate and Operate a Large Power Management System?*

6.2. Validation Environments

Validation was performed in several environments:

Stage	Environment	Validation focus
Lab Validation	LaVergne Lab	SSO procedures, Report and Diagram Linking, Performance Testing
TVD Writing	Virtual Machines	SSO procedures, Report and Diagram Linking
Pre Validation	Virtual Machines	All procedures and document itself
Final Validation	LaVergne Lab	All procedures and document itself

6.2.1. Cross-Project Validation

In addition to the validation performed for this system technical note, the validation results from the Power Monitoring Expert Data Center Edition project were reviewed. These results were used as a means of verifying that no basic issues were present on the integrated system. The integrated system used in that project was validated in a lab with the following devices:

Device Type	Count In System
BCPM – A	16
BCPM – E	719
iBCPM	19
ION 7650	14
Micrologic 6.2E	63
Micrologic 6.3E	1157
Micrologic P	1104
PM5320	736
PM5350 PM	39

Device Type	Count In System
PM5350 – Busway	231
PM8000	465
Sepam S42	91

6.3. Time to Deploy

The time to deploy the integrated system was based on the installation of both PowerSCADA Expert and Power Monitoring Expert, the configuration of single sign-on, and the configuration of each of the suggested methods for displaying reports and diagrams.

6.4. Reviewers

Lab validation and TVD writing were done by engineering staff. Preliminary and final validation were performed by technical support.

7. Conclusion

The key to using PowerSCADA Expert with Advanced Reporting and Dashboards Module is planning ahead. You need to understand how the users of the system are going to interact with it, and design the interface accordingly. Important points are:

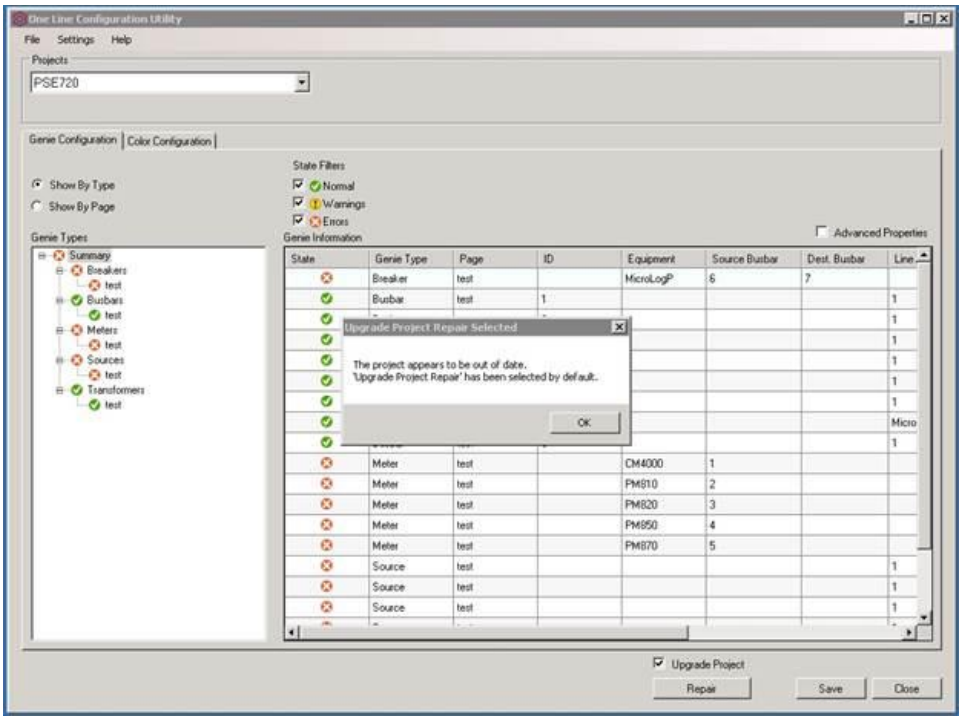
- If you are bidding a system, review this document before committing to performance and interface requirements.
- If you are building a system, review this document before going on site and commissioning the system.
- Determine the workflow the customer wants to follow in order to see dashboards, diagrams or reports. This will enable you to select the appropriate procedure to follow. After you repeat the procedure a few times, it will be very quick to implement.
- Follow the guidelines for designated function in order to determine which system to use for certain functions. Where possible, set the expectation of use with the customer.

If you have comments or suggestions about the contents of this document, please contact your business development representative and ask that they be relayed to the PowerSCADA Expert team.

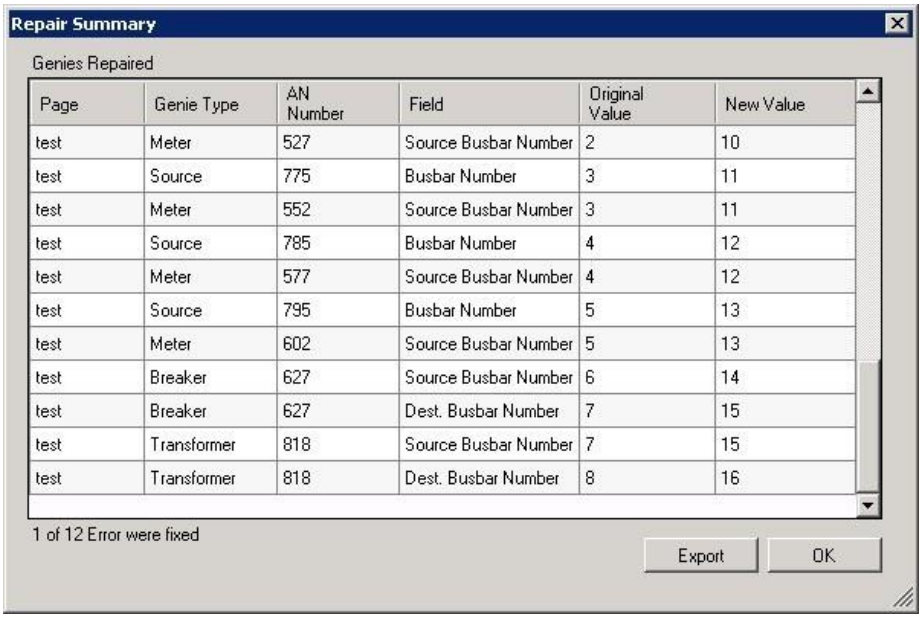
8. Appendix

8.1. Upgrading from PowerSCADA Expert Version 7.20 to Version 8.0

The first step to upgrading a PowerSCADA system is to perform a project backup, which will produce a .ctz file. After you complete the backup, copy the .ctz file to the machine at which PowerSCADA Expert 8.0 is installed. Using Citect Explorer, restore the project on the PowerSCADA Expert 8.0 computer. If you are upgrading from a 7.20 version and have one-line graphics, you need to run the One-Line Configuration Utility. Use this utility to upgrade the old style one-line to the new style advanced one-line. After launching the One-Line Configuration Utility, it may detect that you have an older version project that needs updating. You see a screen similar to this:



Click OK. You will be given the option to attempt to repair the warnings and errors automatically. Select that option to make the repairs. Corrections on a screen similar to this:



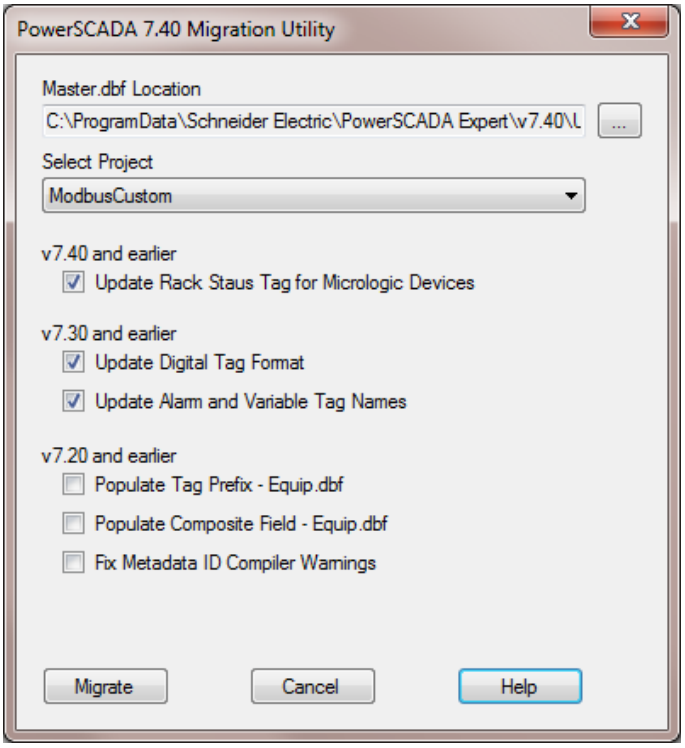
After the repair completes, you may still need to make manual corrections to bring the graphic page to full compatibility with PowerSCADA Expert 8.0. You should not need to do this on a PowerSCADA Expert SCADA 7.30 or v7.40 installation because the Advanced One-Line feature appeared in this release.

8.2. Using the Migration Utility Tool

After you correct the graphics, you need to run the Migration Utility. This tool helps correct several possible problems with the 7.20 and/or 7.30 project upgrades. This tool is not installed as part of PSE 7.40. You can find it in the Upgrade folder in the install files for PowerSCADA Expert 8.0.

The tool is *PSEMigrationUtility.exe*. Launching the tool displays a pop up window, which allows you to select or deselect features as they pertain to your project.

NOTE: If it is a project from 7.20, select all available checkboxes. If migrating a project from 7.30, do not select checkboxes for earlier projects.



After you select the desired options, click Migrate to perform the modifications. After the Migration Tool is run, the project should be ready to run in PowerSCADA Expert 8.0.

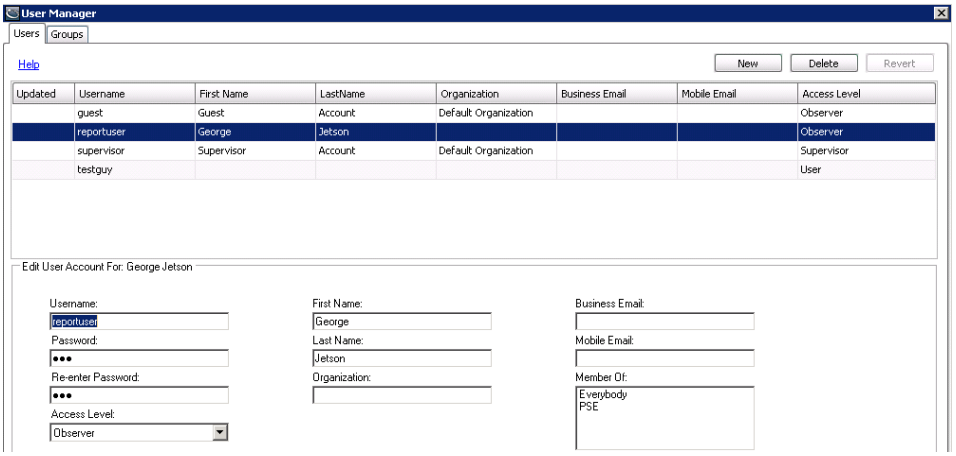
8.3. Procedure: Setting Up Power Monitoring Expert for Single Sign-On

8.3.1. Configure Users in Power Monitoring Expert

When the Web Reporter pages are displayed, the user must be authenticated as a particular Power Monitoring Expert user. Decide which user(s) in Power Monitoring Expert will be used to display Web Reporter in the browser.

For security reasons, we suggest you create one or more new users that have access to the required reports. (For example, you may set up two new users in Power Monitoring Expert: EnergyManager and CostManager, where each user has access to specific reports.)

1. Create these user(s) in Power Monitoring Expert. This is performed in the User Manager in the Management Console. Ensure that the users' access levels are appropriate, such as "Observer."
2. Give these users access to the appropriate reports (using Web Reporter). By default in Power Monitoring Expert, new users are added to the *Everyone* group.

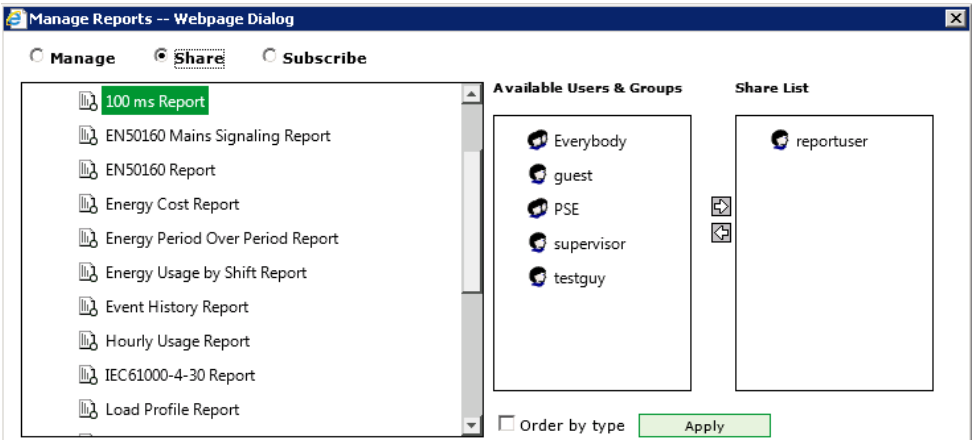


Be aware that if you simply add a user, they will have access to all of the reports in the Power Monitoring Expert system. If you do not have strict requirements about limiting report access, that is not a problem. If you need to limit report access, you have the following options:

a. In the Web Reporter access menu, remove the Everyone group from the access list for all of the reports, then add the individual user to the access list for the reports you want displayed in PowerSCADA Expert. By doing this, you are removing access to the reports for anyone else, unless you individually add them.

b. If you plan to configure reports so that they automatically display data specific to a device or measurement, you are going to be saving the reports (in order to save the configuration). In this case, you can simply edit the report access and add the individual user. The Everybody group is not added by default to the new report's permissions, so only the user will have access to the configured report. However, unless you follow #1 above, the user will have access to all the other reports as well.

c. If you plan to call specific reports from the PowerSCADA Expert interface, you can limit report access on that end as well, by limiting access to the Web reporter ActiveX controllers to certain user privileges. See the section below for more instructions about that approach.



8.3.2. Display a Specific Report

The procedure outlined above will display the list of all reports to which the user has access, allowing the user to select one. To bypass the report list and go directly to a specific report, do the following:

1. Determine the ReportID of the report you want to display. Do this by running the following query against the ION_Network..RPT_Report table:

```
SELECT TOP 1000 [ReportID]
,[AssemblyVersion]
,[Revision]
,[Report]
,[DisplayName]
,[Owner]
,[SubFolder]
,[ReportType]
,[Name]
FROM [ION_Network].[dbo].[RPT_Report]
```

This will display the names and IDs of all the reports that have been configured. An example output of this query, filtered down to just the name and ID, is shown below.

ReportID	DisplayName
13	Tabular Report
14	Trend Report
15	Hourly Usage Report
16	Single Device Usage Report
17	Multi Device Usage Report
19	Billing Report
21	Branch Circuit Energy Report
23	Branch Circuit Power Report
25	Generator Activity Report
26	Generator Battery Health Report
27	Generator Capacity Report
28	Generator Load Summary Report
29	Equipment Capacity Report

It is possible to have two reports with the same name. Running the full query will reveal the subfolder as well, which will enable you to determine the correct one.

8.4. Setting Up PowerSCADA Expert 8.0 for SSO

8.4.1. Add the SSO settings to Citect.INI

Open the Citect.INI file. (See the PowerSCADA Expert documentation for its location, although it is usually in C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.0\Config) In this file, you need to manually add the following SSO values (if they are not already there).

```
[SSO]
Hostname=

SupportsVisitorDashboard=

RemoteCallHandlerServer=

RemoteCallHandlerCluster=

[Application]Area=

[Application]PrivLevel=
```

Complete each parameter with the value specified below, and then save the modified citect.ini file:

- Hostname: This is the name or ip address of the computer that hosts Power Monitoring Expert.
- SupportsVisitorDashboard: This indicates if the Power Monitoring Expert system supports automated visitor login. Set this to 1 (which means true) as Power Monitoring Expert v8.0 supports it. (Earlier versions did not support this option.)
- RemoteCallHandlerServer: This parameter supports SSO with the use of web clients. The value must be an IO server configured in your project
- RemoteCallHandlerCluster: Like the above parameter, this supports SSO with the use of web clients. Its value must be a cluster name associated with the above IOserver.
- [Application]Area: This allows for use of the “area” field associated with citect users. It can be configured on a per application level including: PSEreporting, Reporting (PME), WebReach, and Dashboards, and provides the ability to limit the use of SSO operations to specific areas.
- [Application]Privlevel: This allows for use of the “privilege level” field associated with citect users: It can be configured on a per application level including: PSEreporting, Reporting (PME), WebReach, Dashboards, and provides the ability to limit use of SSO operations to specific privileges.

8.5. Using the Application Configuration Utility

This utility is accessed from the Start menu (Start > All Programs > Schneider Electric > PowerSCADA Expert 8.0 > Config Tools > Application Config Utility. It provides a single source for editing configuration and database settings.

8.5.1. Application Services

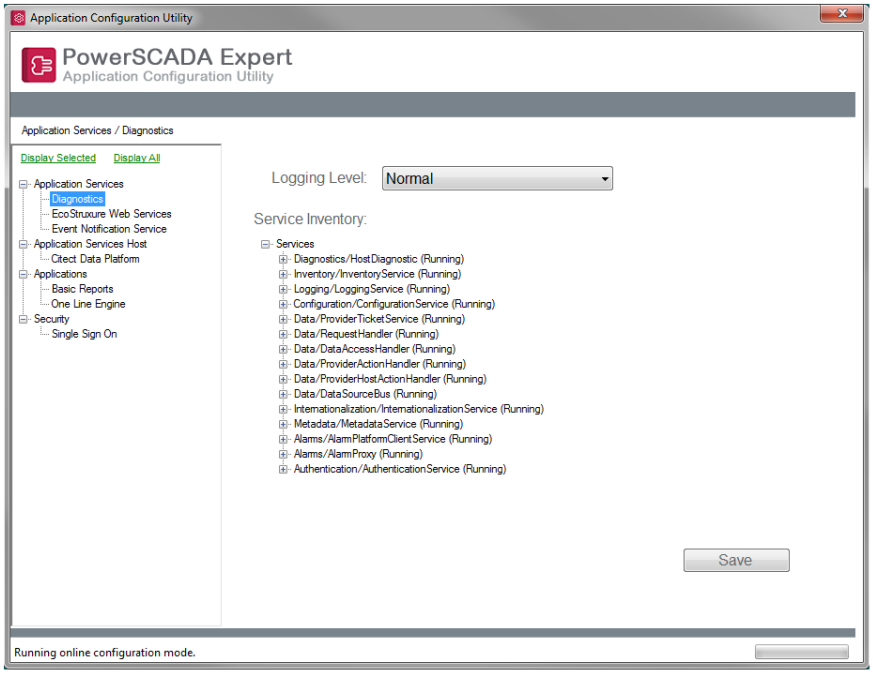
This section is divided into three sections:

Diagnostics

EcoStruxure Web Services

Event Notification Service

Diagnostics



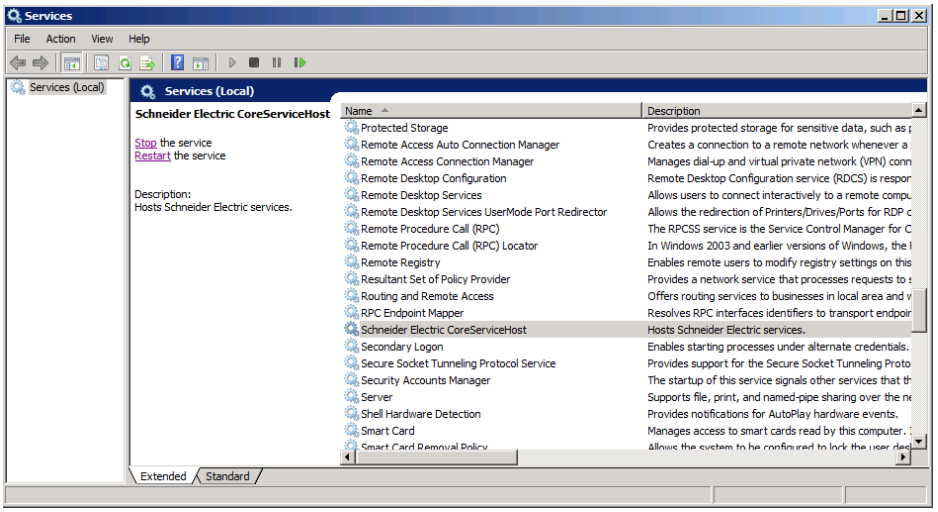
This is a read-only list of web services hosted by the Schneider Electric CoreServiceHost, details about them, and whether they are running. You can also choose the logging level. This section is helpful for troubleshooting and/or technical support.

Logging Level: This feature turns on extra diagnostic information that you can use when diagnosing problems that occur in application services or its hosted applications (like LiveView). Choose the logging level to be used in all applications.

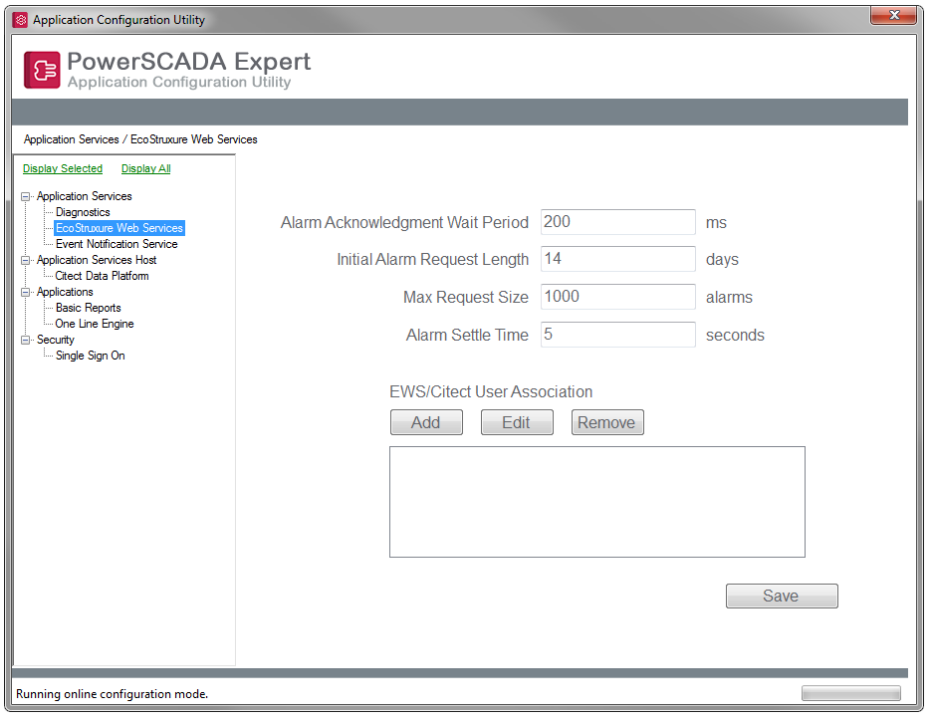
Debug and Verbose the information that is logged during runtime for application such as Basic Reports and LiveView. Options are:

- Normal: Use when the project is live.
- Debug: Should not affect performance in the system during runtime.
- Verbose: Releases additional diagnostic information, such as large lists, that could affect system performance.

Service Inventory: This is a read-only list of web services hosted by the Schneider Electric CoreServiceHosts, details about them, and whether they are running.



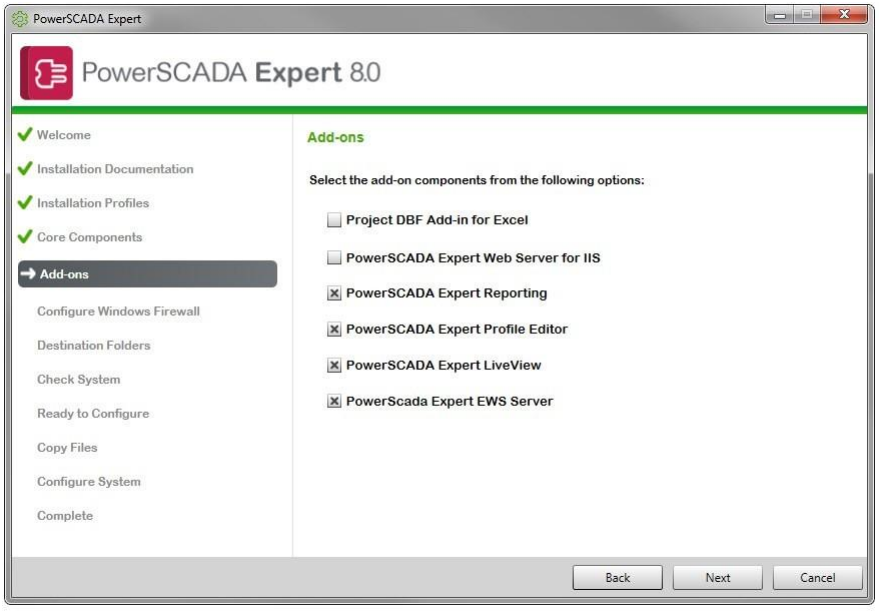
EcoStruxure Web Services



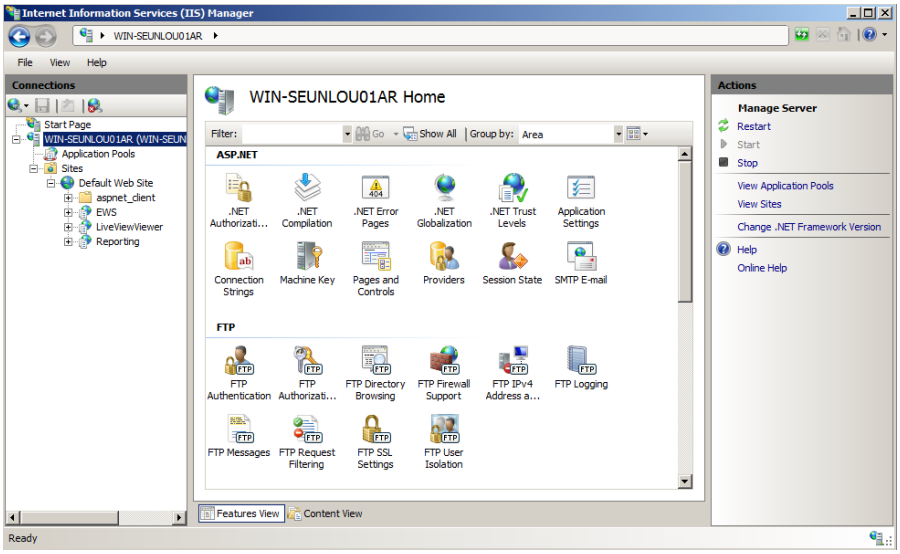
EcoStruxure Web Services (EWS) for PowerSCADA Expert was developed to share real-time, historical, and alarm data with StuxureWare Building Operations (SBO) and historical data with Power Monitoring Expert (PME). It should not be confused with the EWS server implementation that was

released as a part of PowerSCADA Expert/Vijeo Citect version 7.40, which is for tag level process data.

EWS uses web-based http protocol as a means to transfer data. It enables two way data transfers allowing for the acknowledgment of alarms from SBO. To include this new EWS implementation on your installation, select the EWS Server checkbox during installation:



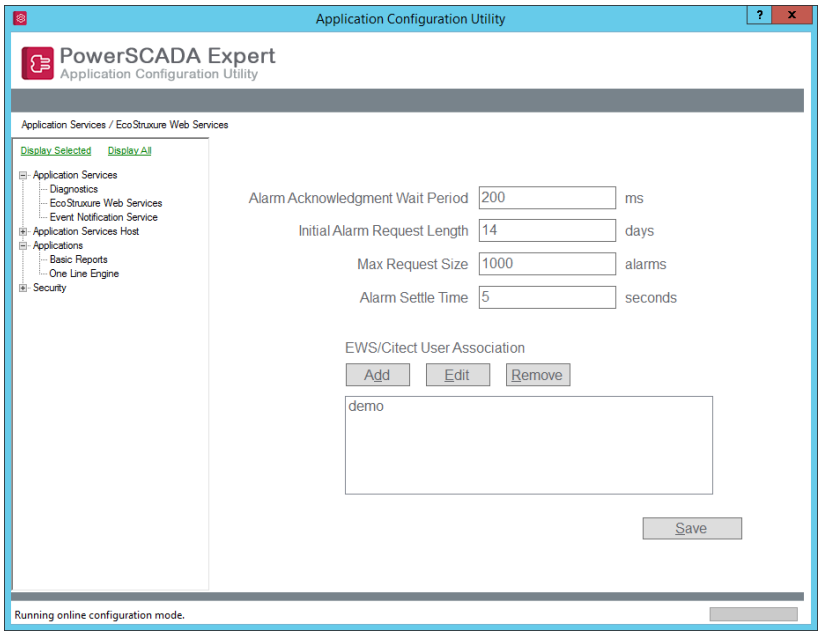
The installation option installs an IIS endpoint that allows SBO and PME to connect to the EWS application in PSE.



The PowerSCADA Expert EWS Server is configured using the Application Configuration Utility. Select the EcoStruxure Web Services page under the Application Services grouping.

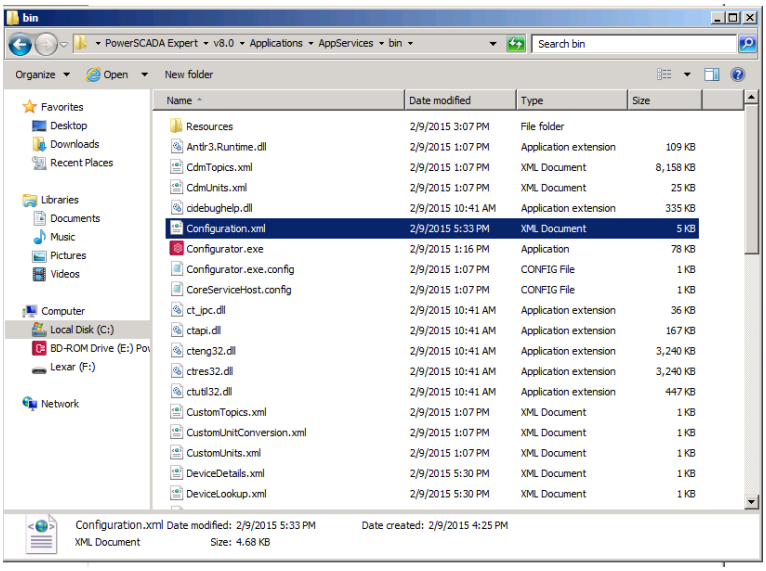
Fields on the EcoStruxure Web Services page:

- **"Alarm Acknowledgment Wait Period"** is the length of time that the system waits before verifying that the acknowledged alarm has indeed been acknowledged in Citect. In most cases the default of 200ms will be sufficient, but it may need to be increased for very large systems if the client is experiencing failed alarm acknowledgments.
- **Initial Alarm Request Length** restricts the number of days of historical alarms and data that the client will receive upon initial setup to avoid overloading the system with old information if it's not desired.
- **Max Request Size** is the number of alarms returned at one time. The default of 1000 alarms should be sufficient to maintain alarm data integrity (making sure all alarms are returned in each call) balancing performance concerns. A very fast client on a network with plenty of capacity can increase this number, and it can also be decreased if the client is experiencing reduced performance.
- **Alarm Settle Time** is a "grace period" to allow the Citect Alarm Server to finish inserting alarms that are in-process at the time of the poll. If this setting is too small, then you could miss alarms. If the setting is too large, then it may take longer for alarms to come into EWS.
- EWS/Citect User Associations can be added, edited or removed by the Application Configuration Utility. User names and passwords must match a username and password added to the PSE project.
- The next screen is what the configurator should look like after successfully adding a user.



Credentials can be tested while adding or editing a user, making sure that the EWS user has been configured in Citect and that the password matches.

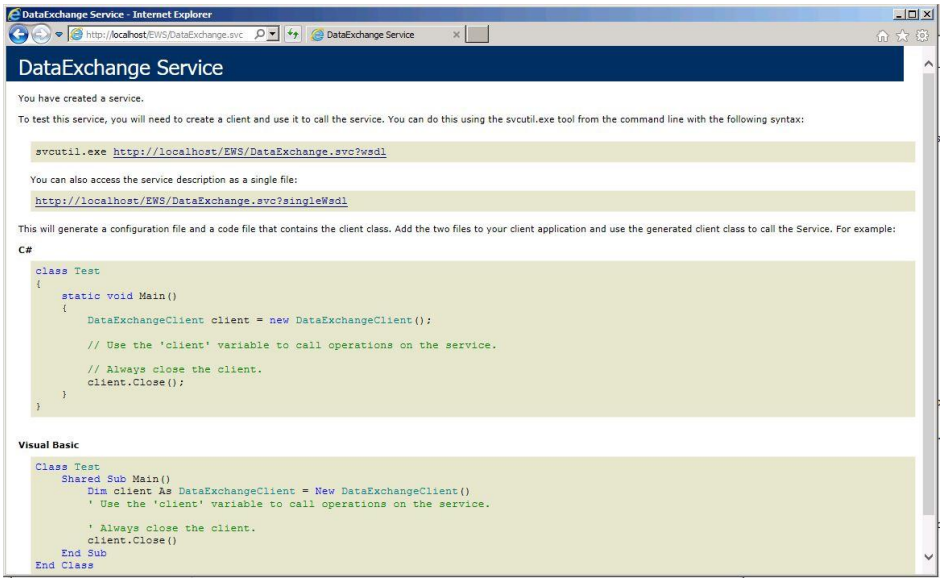
The file that the Application Configuration Utility modifies (and any other application or services that it configures) is located in the AppServices bin directory:



You should not need to edit this file, but it's there if you want to reference it.

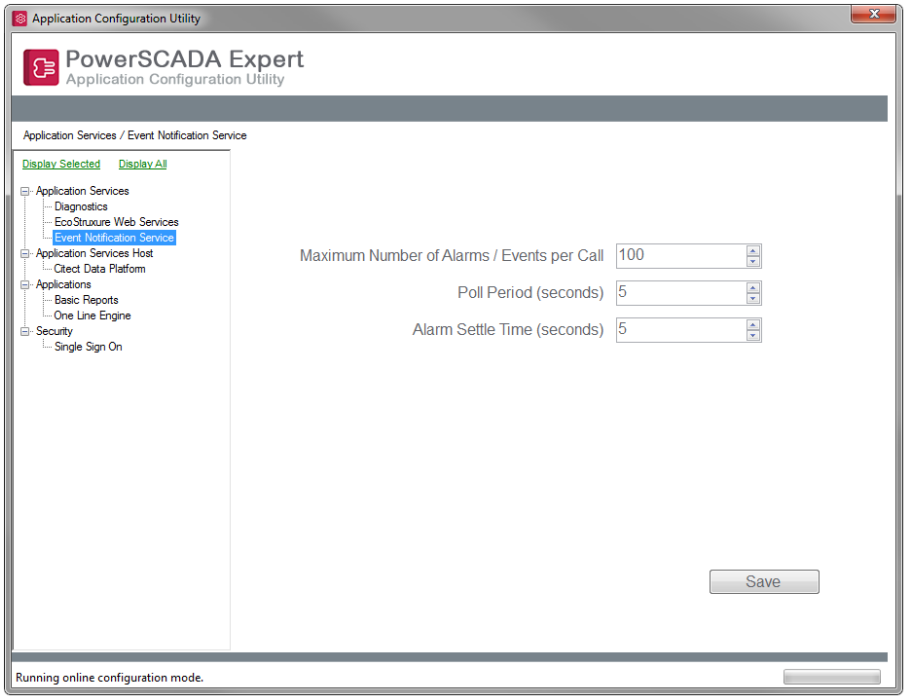
The endpoint that SBO or PME should be pointed to is: http://<PSEHostname>/EWS/DataExchange.svc where <PSEHostname> is the IP address or computer name of the PSE Server. A good way to make sure that EWS is setup properly is to visit http://localhost/EWS/DataExchange.svc on a web browser on the PSE Server. You will be prompted for username and password. Enter one of the ones you setup using the Application Configuration Utility.

If successful, you will see a screen that looks like this:



You should be ready to configure SBO and/or PME to connect to PSE using PowerSCADA Expert EWS Server.

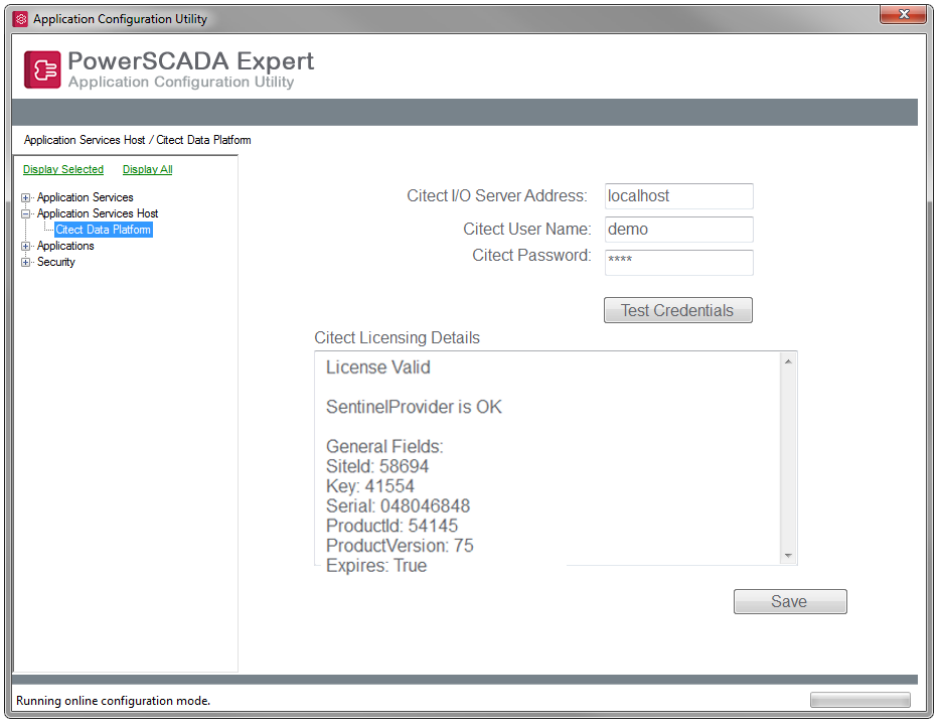
Event Notification Service



The Event Notification Service portion of the Application Configuration Utility provides these fields:

- Maximum Number of Alarms / Events per Call is the maximum number of alarms or events to send in one response. Setting this value too low may result in delays in receiving alarms. Setting this value too high may result in excessive resource utilization.
- Poll Period is the polling period for alarms. Setting this value too low (under 5 seconds) may result in excessive resource utilization. Setting this value too high may result in delayed alarms. The recommended setting is 5 seconds.
- Alarm Settle Time is the “grace period” to allow the Citect Alarm Server to finish inserting alarms that are in process at the time of the poll. If this setting is too small, then you could miss alarms. If this setting is too large, then it may take longer for alarms to come into ENM.

8.5.2. Citect Data Platform (Application Services Host)



The section relates to how the Schneider Electric CoreServiceHost connects to Citect.

Connection Details: Use this area to link a Citect user name and password to be used when the Schneider Electric CoreServiceHost connects with the underlying Citect engine. Before you begin:

- Have Citect running in runtime mode.
- Add the user/password for the user that will connect to this module.

Then:

1. Choose the server address for the project that is running.
2. Type the Citect User Name.
3. At the Citect Password prompt, type the Citect password for this user. Click Save.
4. Click Restart Services
5. Click Test Credentials.

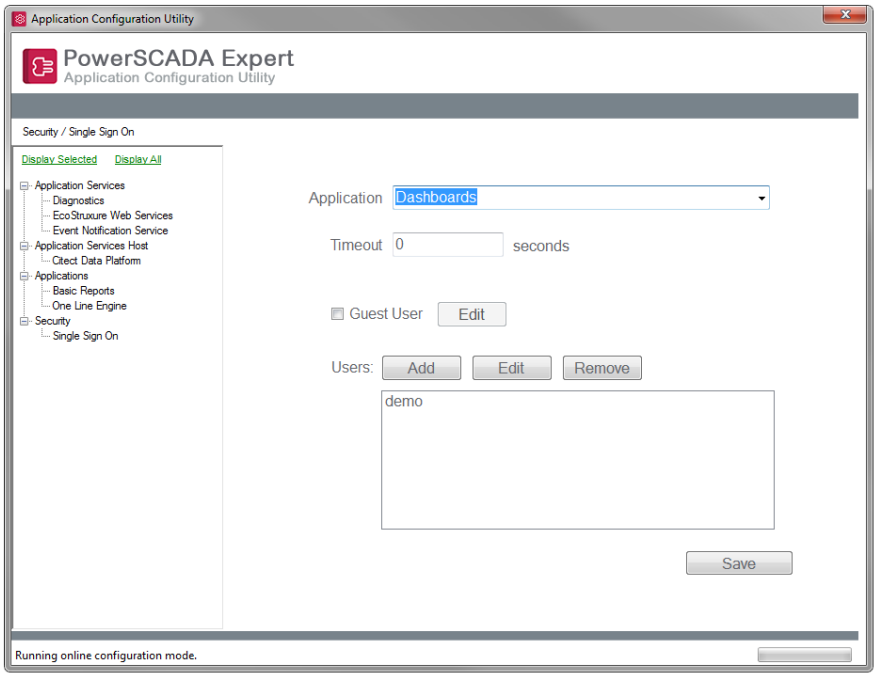
If unsuccessful, ensure that Citect runtime is running and that the username and password are valid in Citect.

If valid, you see Connection Successful. The user name and password can be used to connect to Citect.

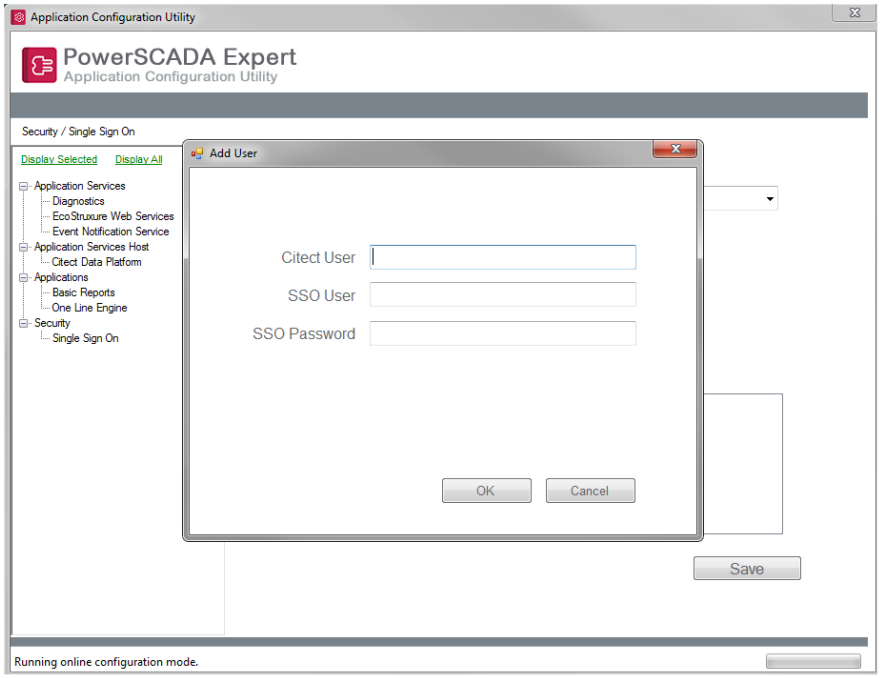
Citect Licensing Details: This is a read-only field that displays the license key being read for this installation.

8.5.3. Single Sign On (Security)

Use the Single Sign On section of the Application Configuration Utility to configure users for Advanced Reporting, Dashboards, Diagrams, and PSE Reporting.

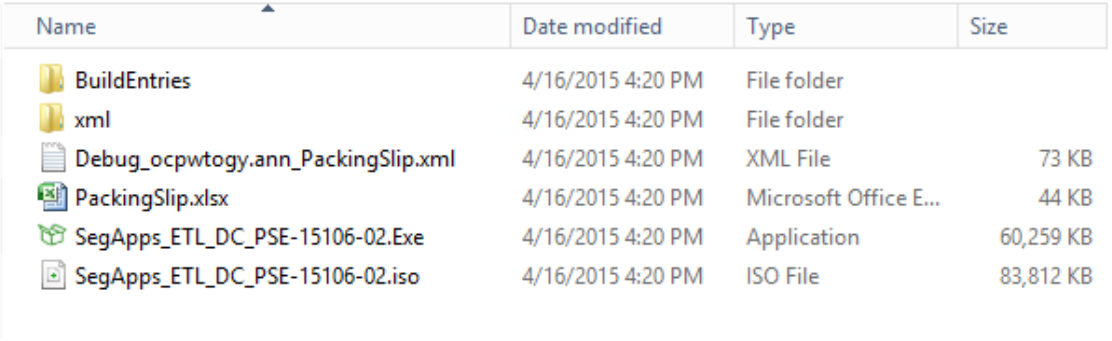


- The Citect user in each case will be the user configured in SCADA that will be entered during runtime login.
- The SSO user for Dashboards, Reporting, and Web Reach are the users configured in PME with sufficient access to each application.
- The SSO user for PSE Reporting should match the Citect user.
- The timeout setting prevents the Application Configuration Utility from locking up when trying to add a user
- Use the Edit button or the Remove Button to edit or remove users for each application.
- Click Save ensure that configuration changes are saved.
- The “Guest User” may be configured separately for each application, and acts as a “default” user login for all users not listed in the application’s user list.

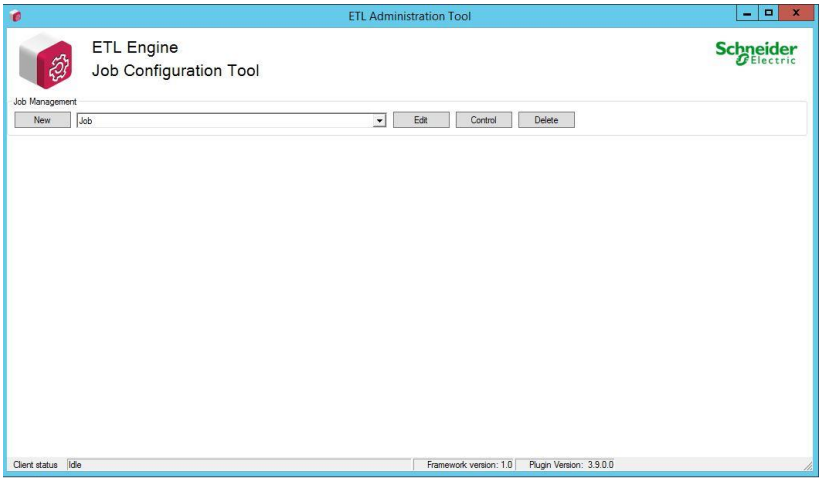


8.6. ETL for Transferring Historical Data from PowerSCADA Expert to Power Monitoring Expert

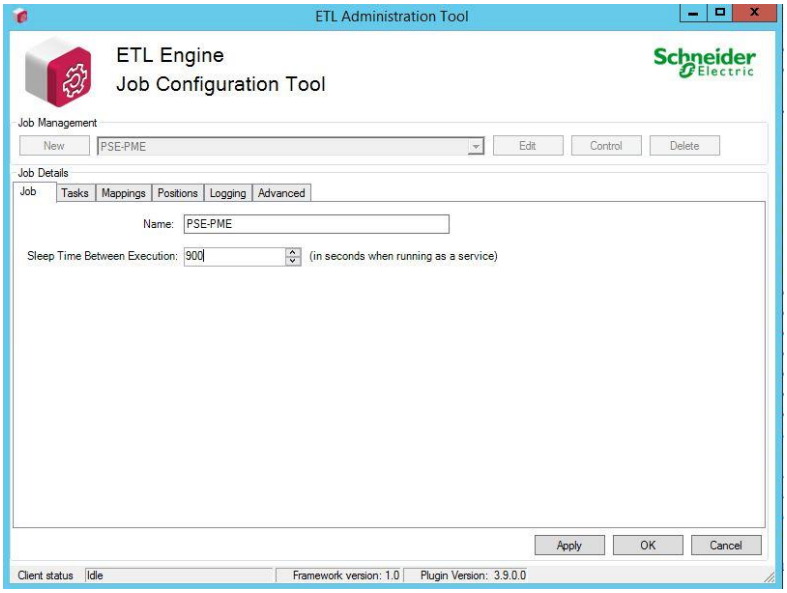
An Extract, Transform. Load (ETL) application has been developed to put historical data from PowerSCADA Expert into the Power Monitoring Expert database for use in Reports and Dashboards. The first step to use this application is to install the ETL on the server hosting the PME database.



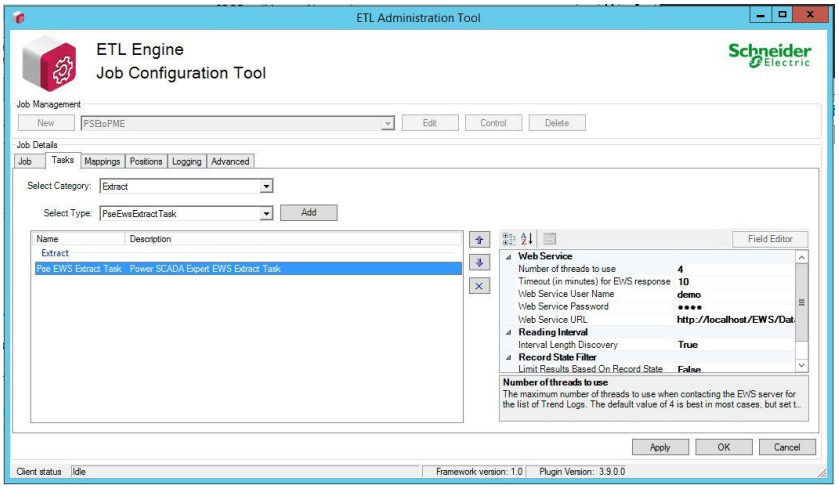
After it is installed, you can launch the ETL from the shortcut installed on the desktop. When you launch ETL, you see this screen:



1. Click New to begin the creation of a new project-specific Job.
2. You can name the job or use the default name. We recommend that you lower the default Sleep Time Between execution to 900 seconds. This puts it more in line with the 15-minute interval that PSE uses when collecting trend data.



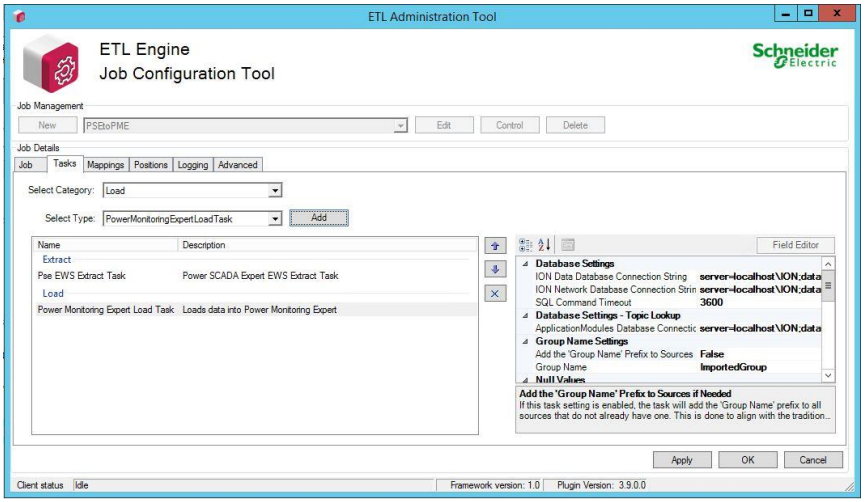
3. Click Apply to save your changes, and click Tasks to begin configuration.
4. Create an Extract task. Select the type “PseEwsExtractTask” and click “Add.” In the details window to the right, be sure to put the correct username and password set up for the PME EWS user in PSE (see EWS configuration instructions) and the correct IP address for the PSE server. If PSE and PME are on the same server, you can use the default of *localhost*.



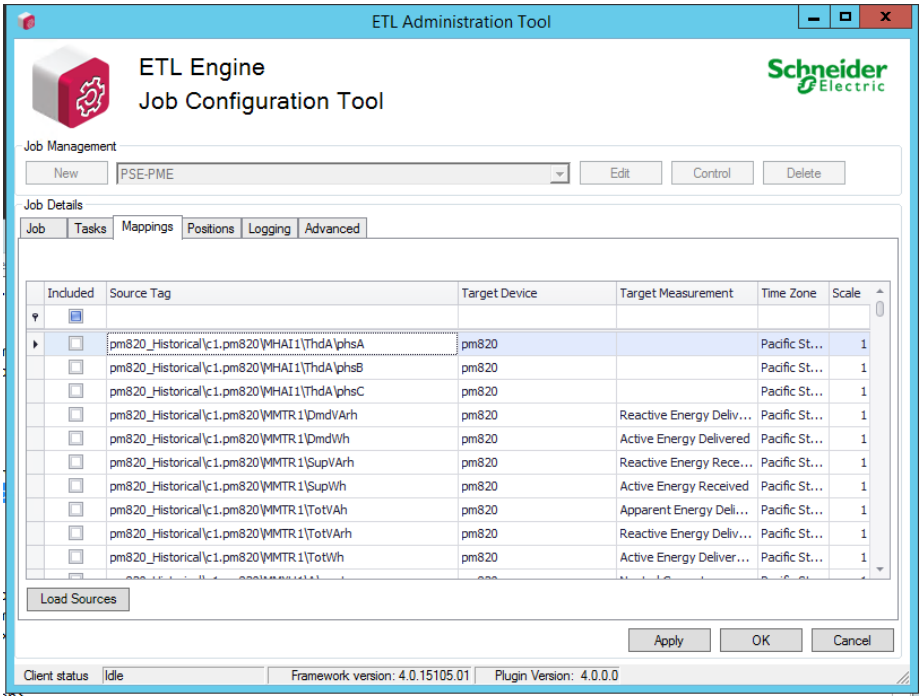
5. Click Apply to save changes, and then change the category to select a Load Task.

NOTE: A transform task is not needed for this particular application.

6. In the Select Type drop-down menu, select “PowerMonitoringExpertLoadTask.”
7. Ensure that the database connection details for the ION Data and Network databases are correct. In most cases, *localhost* can be used because the ETL will be installed on the same server as PME.
8. Click Apply to save changes.



9. The tag data from PSE will need to be mapped to devices and measurements in PME. Click the Mappings tab and then click the Load Sources button. If everything is set up properly, the ETL should poll the PSE server and retrieve a list of tags available.

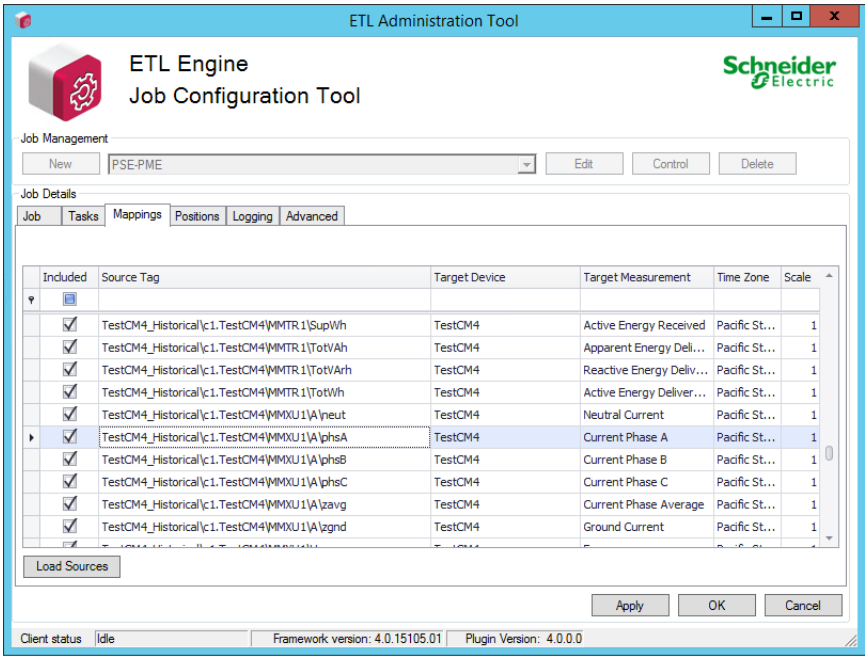


10. You need to map each tag to a Target Device and assign a Target Measurement:
    - Select the Target device from the drop-down menu of existing devices, or enter the new device name in the ETL by typing in the Target Device field next to a tag.
    - Select the Target Measurement from the drop-down menu containing all of the measurement types that PME understands.

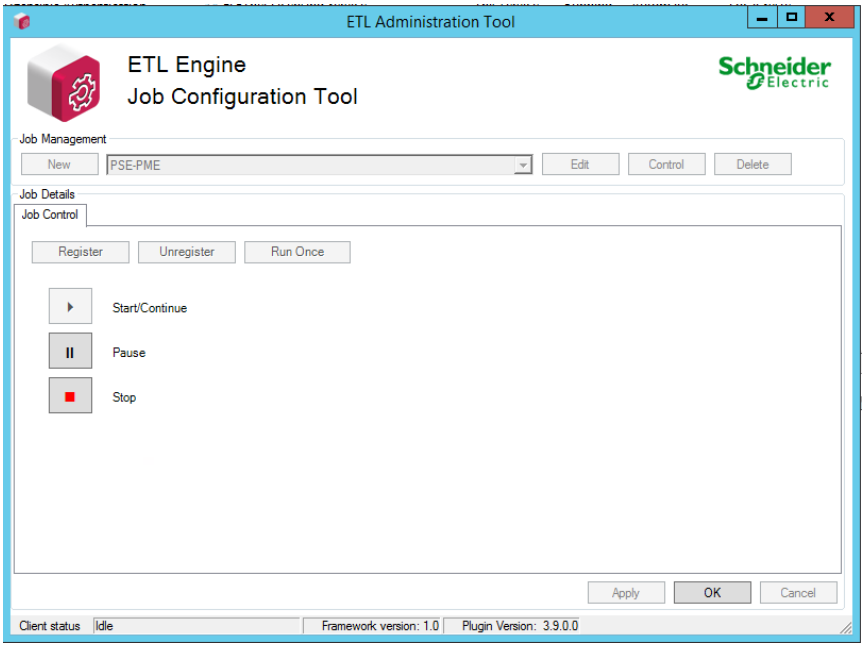
    In the example below, TestCM4_Historical\c1.TestCM4\MMXU1\A\phsA maps to a new device in PME called TestCM4 and the Target Measurement is Current Phase A.

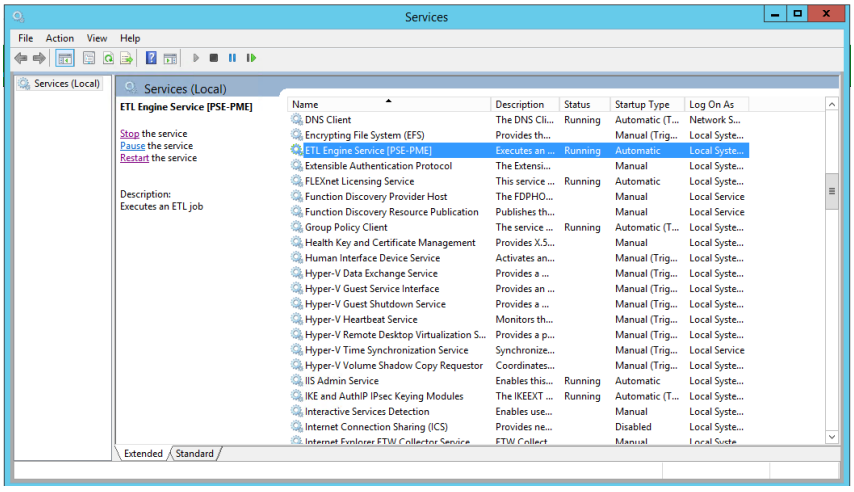
    - Finally, set the Time Zone according to the location of the servers.

    Complete these steps for each tag that you need in PME for Reports or Dashboards.

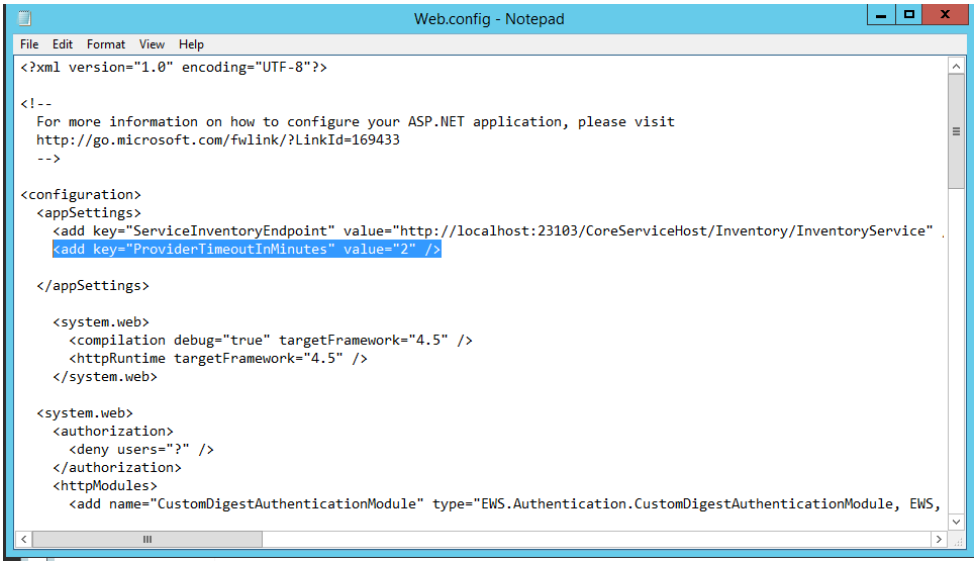


11. Click OK to return to the main Job Management screen. If any changes are needed in the future, select the Job that need changes and click Edit.
12. From the main Job screen, select the newly configured job and click Control. In this window, you can click Run Once to execute the ETL one time to make sure everything works properly. After completion, the ETL will display a window indicating success or failure of execution and a link to the log files it generates. To verify successful operation, ensure that:
    - the devices representing the PSE data are available in PME Reports. They will not appear in Management Console. If they do not appear in PME, verify settings configured previously.
    - the EWS connection is set up properly in PSE and that the devices have some data to poll. They will not appear as a source in PME reports if they do not have any data.
13. Configure the ETL to run as a Windows Service, thus ensuring regular updates to the PME database with data from PSE. Return to the Control window in the ETL Configuration tool. Click Register to register the ETL Job as a service. Then, click Start/Continue to start the service. The ETL will then extract data and load it into PME according to the period set in the initial configuration.





14. If retrieving historical data is timing out, the provider timeout can be increased for EWS on the PSE server. The default is 2 minutes, but this value can be increased as needed for larger systems. The setting can be changed by editing the web.cfg file located at C:\Program Files (x86)\Schneider Electric\PowerSCADA Expert\v8.0\Applications\EWS. As seen in the screenshot below, the value to edit is “ProviderTimeoutInMinutes”. Save the file to initiate the change.



8.7. Displaying ENM Configuration Environment in PowerSCADA Expert Pages

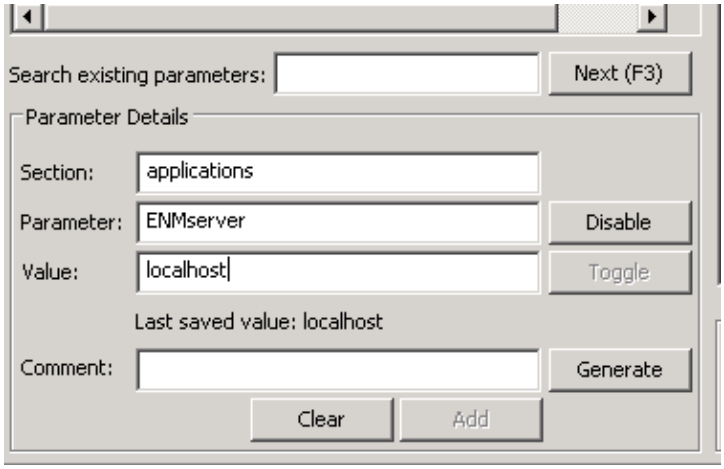
The following instructions detail with how to display the Event Notification Module. The following paragraphs describe the steps required to display the ENM configuration environment.

- Add ENM server properties into the Citect.ini file.
- Test that there are no issues accessing the URL via a browser.
- Add a Cicode function to display the ENM environment
- Insert a call to that function to display the diagram in a menu page.

Modifying the Citect.ini

To add PME server properties into the Citect.ini file:

1. Open the Citect project editor
2. Launch the Computer Setup Editor
    a. Click Tools >> Computer Setup Editor.
    b. Add a new Section named “Applications” and a parameter named “ENMserver” with a value of either a servername or ipaddress of the ENM server.
    c. Click Add and save the Citect.ini



Testing the Direct URL for ENM configuration

1. Open a browser window and enter the following URL to test the diagram display. Replace [servername] with the name you found in the previous step.
   - http://[servername]:82
   - For example, a real URL would look like:
   - http://10.168.94.77:82
2. The device diagram should display in the browser window, and you should be able to navigate around the website.

About the PLS_EnmDSP Cicode

In the following step, you will call the PLS_EnmDSPWebReachDsp function from a menu item. This function is part of the Cicode in the *PLS_Include.ci* file, which is packaged with this document.. The code is shown below for reference.

```
FUNCTION
PLS_EnmDsp(STRING sTitle = "ENM Configuration", STRING sIPAddress =
"",STRING sPort = "")
    STRING sPage;
    IF ("" = sIPAddress) THEN
        sIPAddress = ParameterGet("Applications", "ENMServer",
        "localhost");
    END

    IF ("" = sPort) THEN
        sPort = ParameterGet("Applications", "ENMPort", "82");
    END
```

```
    sPage = "http://" + sIPAddress + ":" + sPort;
    PLS_WebDsp(sPage, sTitle);
END
```

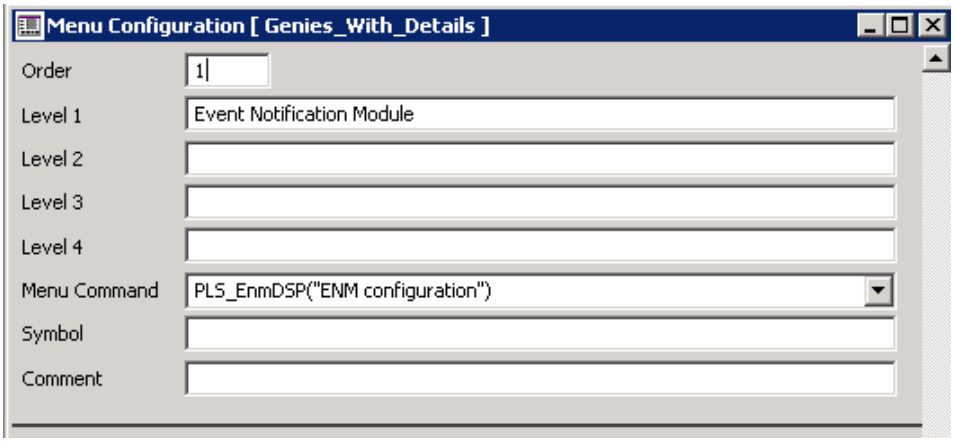
There are some important things to note about this code:

- **sTitle** is the title of the page
- **sIPAddress** is the name or ipaddress of the server, if left blank the value will be determined via the citect.ini file previously modified.
- **sPort** is the port on which ENM resides on the server, if left blank this will default to port 82

Create a menu call using the PLS_EnmDSP cicode

To use a menu button to display an ENM configuration environment:

- In the Project Editor, navigate to System >> Menu Configuration.
- Choose a name for the menu tab and enter the PLS_EnmDSP function in the “menu command”
- PLS_EnmDSP(”[Title]”)
- See the section above for descriptions of the parameters and how to fill them out.



- Click Add and then exit the Menu Configuration.

If the diagram does not display, try the following troubleshooting steps:

- Enter the URL of the diagram directly into a browser window; verify that it launches. The URL is: http://[servername]:82
- If the step above resolves your issue verify your setting in the Citect.ini file under the “applications” section. This should resolve most issues

8.8. Glossary

The following table describes the acronyms and defines the specific terms used in this document.

Term	Description
STN	System Technical Note: A document which explains how to achieve a specified system goal, without being ties to a specific architecture.
HMI	Human Machine Interface – the User Interface through which a user accomplishes desired system functions.

Term	Description
Diagram	Where used, this is typically referring to the Power Monitoring Expert Vista or Web Reach diagrams.
PE	Profile Editor
Pop-up	A window created when the user clicks a button or genie object. The window is smaller than the page that the button/genie is on. When a pop-up is closed, the user returns to the page from which they started the pop-up.
Page	A full-frame page, typically accessed from the PowerSCADA Expert navigation menu. Unlike a pop-up, the page cannot be closed without shutting down the PowerSCADA Expert run time.
PLS	PowerLogic SCADA, previous name for PowerSCADA Expert.
PME	Power Monitoring Expert
PSE	PowerSCADA Expert
EWS	EcoStruxure Web Services, the tool allowing PSE to pass historical data to PME
AppServices	Schneider Electric CoreService Host, a Windows service used by PSE

8.9. Reference Documents

You might want to refer to the following documents when more details are needed. Locate them on the install medium of your application.

- EcoBusiness Supervisory Software Platforms Positioning 2013-05-13 v2
- Vijeo Citect 7.4 SP1 Installation Guide
- PowerSCADA Expert Installation Supplement
- Power Monitoring Expert 8.0 Installation Guide
- System Design Guide – Power Monitoring Expert
- Power Monitoring Expert - Data Center Edition Installation Guide

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Print:

Version 1.00 – 05 2015