IT Infrastructure Preparation for StruxureWare™ Power Monitoring Expert 8.0 Installation

This document is designed to help aid in the preparation of the information technology (IT) infrastructure for hosting a Power Monitoring Expert 8.0 system. It can be used in conjunction with the PME_8.0_Pre-Install_Checks tool (part of the Installer) to determine whether the hosting server is configured appropriately to allow for a successful installation.

The PME_8.0_Pre-Install_Checks tool does not change your system, nor does it install any software. Although it is possible to run it for all Power Monitoring Expert installation types, it is most useful for Standalone, Database server, and Primary installations.

In this document

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This product must be installed, connected and used in compliance with prevailing standards and/or installation regulations. As standards, specifications and designs change from time to time, always ask for confirmation of the information given in this publication.

Additional information

- *StruxureWare™ Power Monitoring Expert 8.0 Installation Guide*
- *StruxureWare™ Power Monitoring Expert 8.0 User Guide*

Safety information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this manual 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 a hazardous situation which, if not avoided, **will result in** death or serious injury.

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

> ### ⚠ CAUTION
>
> **CAUTION** indicates a 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.

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

During installation or use of this software, pay attention to all safety messages that occur in the software and that are included in the documentation. The following safety messages apply to this software in its entirety.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use the software for critical control or protection applications where human or equipment safety relies on the operation of the control action.
- Do not use the software to control time-critical functions because communication delays can occur between the time a control is initiated and when that action is applied.
- Do not use the software to control remote equipment without securing it with an authorized access level, and without including a status object to provide feedback about the status of the control operation.

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

⚠ WARNING

INACCURATE DATA RESULTS

- Do not incorrectly configure the software, as this can lead to inaccurate 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, equipment damage, or permanent loss of data.

Installation Requirements

Installing Power Monitoring Expert software is a complex operation that installs and configures Power Monitoring Expert components as well as components of the Windows Server operating system and SQL Server.

Required software

The following information describes the software requirements for Power Monitoring Expert software.

Windows operating systems

You can install Power Monitoring Expert software on servers using any of the following Windows operating systems:

- Windows 7 Professional/Enterprise, SP1
- Windows 8.1 Professional/Enterprise
- Windows Server 2008 R2 Standard/Enterprise, SP1
- Windows Server 2012 Standard
- Windows Server 2012 R2 Standard

NOTE: Power Monitoring Expert software can be installed on servers in a domain environment; however, it cannot be installed on domain controllers. If Power Monitoring Expert software is installed on a server that is subsequently changed to a domain controller, the software ceases to function correctly.

SQL Server editions

If no supported SQL Server version is detected during the installation of Power Monitoring Expert on a Standalone Server, then SQL Server 2014 Express is installed.

If a supported edition of SQL Server Express is already installed but not configured with a database instance for use with Power Monitoring Expert, the installer adds the required database instance. Otherwise, one of the following SQL Server editions needs to be installed prior to installing Power Monitoring Expert software.

Note that supported 32-bit and 64-bit SQL Server editions can only be installed on supported 32-bit and 64-bit Windows operating systems, respectively. For example, a 32-bit SQL Server edition is not supported on a 64-bit Windows operating system.

SQL Server Editions	Standalone Server	Distributed Database Server
SQL Server 2008 R2 Express, SP3	Yes	No
SQL Server 2012 Express, SP2	Yes	No
SQL Server 2014 Express	Yes	No
SQL Server 2008 R2 Standard/Enterprise, SP3	Yes	Yes [1]
SQL Server 2012 Standard/Enterprise/Business Intelligence, SP2	Yes	Yes [2]
SQL Server 2014 Standard/Enterprise/Business Intelligence	Yes	Yes [2]

[1] Supported for a distributed database server configuration on Windows Server 2008 R2 Standard/Enterprise SP1.

[2] Supported for a distributed database server configuration on Windows Server 2012 Standard, and on Windows Server 2012 R2 Standard.

Pre-Installation Checks

Depending on your operating system version, your SQL Server edition, and the setup type (server or client) that you select for installation, the Power Monitoring Expert Installer performs some or all of the following tasks prior to the installation of the software:

- Checks for .NET Framework 4.5.2 and automatically installs it if required.
- Installs Power Monitoring Expert 8.0. If a previous version of the software is installed, the Installer checks to make sure that it can be upgraded.
- Verifies that the SQL Server Agent is installed.
- Validates that a supported SQL Server edition and service pack level are installed.
- Verifies the connection to the SQL Server.
- Checks the Database location. The Database must be local for some installation types and remote for others (local for standalone and remote for Primary server).
- Checks for 32-bit SQL Server edition.
- Checks for the presence of ASP.NET.
- Verifies that the appropriate account permissions are defined, for example, that the SQL Server system administrator (sa) account is set with Administrator as the user.
- Verifies that the Windows account that the SQL Server service runs under has the proper folder permissions to proceed.

Installer Actions

The Installer performs configuration tasks during the installation process. Some of those tasks include the following:

- Installs SQL Server backwards compatibility.
- Configures the SQL Server Agent.

- Configures ASP.NET.
- Configures SQL Server.
- Registers and starts the Power Monitoring Expert Services.
- Installs and configures Internet Information Services (IIS).
- Installs Schneider Electric License Manager, Schneider Electric Floating License Manager, and trial licenses.

To view all of the actions performed by the Installer, see the Installation log that is available at the conclusion of the installation process. The log is located in the `Schneider Electric/Power Monitoring Expert/SetupLogs` folder.

Windows Server Configuration

The Power Monitoring Expert Installer must run under a local system administrator account. During installation, the Installer makes changes to the Windows Server hosting Power Monitoring Expert applications.

The following two standard Windows accounts are created: IONUser and IONMaintenace. Both accounts have their passwords set to factory configured values, and the passwords are set to never expire.

IONUser is used to run report subscriptions. If the subscription involves writing to a file share, the IONUser account requires write permissions to that folder.

IONMaintenance is used for periodically running SQL maintenance jobs against the Power Monitoring Expert databases.

If a Domain Password Policy is in effect, the preset passwords for IONMaintenance and IONUser may not be compliant.

IIS Configuration

During installation, IIS is installed and configured to host various Power Monitoring Expert Web applications.

IIS Configuration

Application Pool	Application
Application Modules App Pool	EWS
	HierarchyManager
	RateEditor
	SystemDataService
	Trends
	TrendsWebService
	Web
ION App Pool	AlarmConfiguration
	ION
	ION/diagrams
	IONReportDataService
	WebServices
WebReporterAppPool	Web Reporter

SQL Server

Power Monitoring Expert requires SQL Server to host several databases.

During installation, SQL Server and SQL Agent must be running under the NT Authority\System (also known as the "Local System" account).

These permissions are needed to allow for the creation of databases in the Program Files directory and to write to the current log in the user's Temp directory.

Several logins are created in SQL Server as part of the installation process.

SQL Logins

Logins	Authentication	Roles	User Mapping
AMUser	SQL	Public	ApplicationModules
ION	SQL	Public, sysadmin	ION_Data, ION_Network, ION_SystemLog, ApplicationModules
ionedsd	SQL	Public	ION_Data, ION_Network
ionedsd	SQL	Public	ION_Data
IONMaintenance	Windows	Public	ApplicationModules, ION_Data, ION_Network, ION_SystemLog

Application Modules Database

This database contains all of the configuration data for the Dashboards and Tables applications.

User	Membership
AMUser	AMApplicationRole
IONMaintenance	db_backupoperator, db_ddladmin, Maintenance

ION Data Database

This database contains the logged historical data events and waveforms.

User	Membership
Report	Db_datareader, ION_Reader
Ionedsd	ION_DSD_Reader
Report	Db_datareader, ION_reader
IONMaintenance	db_backupoperator, db_ddladmin, Maintenance

ION Network Database

This database contains device communications information and general Power Monitoring Expert settings.

Users	Memberships
Ionedsd	NOM_DSD_Reader
IONMaintenance	db_backupoperator, db_ddladmin, Maintenance

ION System Log Database

This database contains Power Monitoring Expert events that occur during the operation of the software.

Users	Memberships
IONMaintenance	db_backupoperator, db_ddladmin, Maintenance

Power Monitoring Expert Windows Services

Power Monitoring Expert uses the following Windows services:

Service	Description
PME ION Alert Monitor	Checks the computer's communications ports continuously for high priority events occurring at remote modem sites. When a high priority event happens, Alert Monitor initiates a communications connection to the remote modem site.
ION Component Identifier Service	Locates local and remote product components. Although this service is configured as Manual, the service starts when the client attempts to connect to it.
ION Connection Management Service	Determines the connection status of sites and devices in the system, and handles allocation of resources such as modems. This service manages the state of site and device connectivity for the system. To establish the most appropriate state for the system, each connect and disconnect request is evaluated against the overall state of the system and availability of communications channels.
ION Event Watcher Service	Monitors system events for conditions specified in Event Watcher Manager.
ION Log Inserter Service	Provides historical data collection and storage for your power monitoring system. See the "Log Inserter" topic in the **Database Manager and Windows Task Scheduler** chapter of the *StruxureWare Power Monitoring Expert 8.0 User Guide*.
ION Managed Circuits	Creates individual real-time and historical data sources for multi-circuit meters.
ION Network Router Service	Routes all information between the software components, such as client workstations, and the Log Inserter. The service dynamically detects changes to the network configuration including the addition of new servers. It can also recognize new software nodes, such as Vista, that are added to an existing server.
ION OPC Data Access Server	Manages and is responsible for supplying OPC data to client applications. Although this service is configured as Manual, the service starts when the client attempts to connect to it.
ION PQDIF Exporter Service	Translates data from the product's databases to PQDIF file format and manages scheduled PQDIF exports.
ION Query Service	Provides historical data retrieval for your power-monitoring system. See the "Linking a Data Log Viewer or Event Log Viewer" topic in the **Vista** chapter of the *StruxureWare Power Monitoring Expert 8.0 User Guide*.
ION Real Time Data Service	Manages and provides access to real time data from the power management system.

Service	Description
ION Report Subscription Service	Manages report subscriptions in the Reports application. (This service is only available if you are using a supported edition of SQL Server Standard or Enterprise with the software product.)
ION Site Service	Manages communication links to and from the product. ION Site Service is responsible for handling packet communications to system devices and controlling direct device communications. The service reacts to changes in network configuration. For example, often changes to certain channels, configuration parameters, ports, or device parameters can interrupt a connection. You can add, delete, or change channels, configuration parameters, ports, and devices without restarting the ION Site Service, the ION Network Router Service, and the ION Connection Management Service.
ION Virtual Processor Service	Provides coordinated data collection, data processing, and control functions for groups of meters. See the "Virtual Processor setup" topic in the **Management Console** tools chapter of the *StruxureWare Power Monitoring Expert 8.0 User Guide*.
ION XML Subscription Service	Manages subscriptions to XML data for Vista user diagrams. This service is used only by the Diagrams application. When you open a Vista user diagram in a web browser, the ION XML Subscription Service creates a subscription and delivers the real-time data in XML format.
ION XML Subscription Store Service	Stores XML data subscriptions for the power monitoring devices on the network. This service is used only by the Diagrams application.
ApplicationModules CoreServicesHost	Hosts common web services used by the Web Applications component.
ApplicationModules DataServicesHost	Hosts web services that provide low-level access to system data for the Web Applications component.
ApplicationModules ProviderEngineHost	Hosts web services that provide data processing for the Web Applications component.
ION Software Alarm Service	Hosts the mechanism to perform software server based alarm monitoring and generation.

Ports

Depending on the Power Monitoring Expert configuration and the desired features, some or all of the ports listed below may be required.

Note: All ports are TCP ports. Power Monitoring Expert does not use UDP.

Power Monitoring Expert uses the following ports:

Port Number	Used For
23	Telnet (used for meter diagnostics)
25	(Required for email communications)
502	Modbus™ TCP
3721	Ethernet access for the 3720 ACM meter
7700	ION
7701	Modbus™ RTU
7800	EtherGate simultaneously through available COM ports
7801	EtherGate through the meter's COM1
7802	EtherGate through the meter's COM2/COM4
7803	EtherGate through the meter's COM3
13666, 13670	Power Monitoring Expert services use these ports. These ports are used if a client machine needs to access the Designer and/or Vista components of Power Monitoring Expert.
13668	This port is used when the Power Monitoring Expert system contains a Secondary Server.
1433	SQL Server uses this port. (1)
1434	Microsoft SQL Monitor uses this port to identify named database instances.
139	NetBIOS and Windows "File and Printer Sharing" use this port.
80	HTTP (required for Diagrams, Reports and Internet access) uses this port. The EWS server also use this port.
57777	Real-time Data Service uses this port to transfer real-time data to Power Monitoring Expert clients. (2) • SQL Server uses this port if you use the default instance when you install Power Monitoring Expert. If you use a named instance when you install Power Monitoring Expert, it is recommended that you configure the named instance to use port 1433. • You can configure the ION Real Time Data Service to use a different port.