PowerSCADA Expert – Supplemental Guide

Backing up and Restoring a PowerSCADA Expert System

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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.

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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.
- Do not use the software to control remote equipment without proper access control and status feedback.

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

⚠WARNING

INACCURATE DATA RESULTS

- Do not incorrectly configure the software.
- 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.

⚠WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Use cybersecurity best practices to help prevent unauthorized access to the software.

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

Work with the facility IT System Administrator to ensure that the system adheres to the site-specific cybersecurity policies.

Contents

Overview

A PowerSCADA Expert system can be backed up and then restored if the original PowerSCADA Expert system is no longer available.

The procedures outlined in this document describe how to backup and restore standalone and redundant PowerSCADA Expert systems, and include Power Monitoring Expert (Advanced Reporting and Dashboards) and the Event Notification Module.

The PowerSCADA Expert system components and modules you will need to back up will vary, depending on your system architecture and whether your system is redundant.

Document version

Version	Published	Author
Version 1.1	05/2018	
Version 1.0	09/2017	Sudha Sneha Devarakonda

Product versions

The information contained in this document pertain to the following product versions:

- PowerSCADA Expert 8.1, and 8.2

- Event Notification Module 8.3.x

- Power Monitoring Expert 8.1 and 8.2

Note: This procedure does not support distributed PME systems.

Competencies

To maximize your chance of successfully completing the tasks described in this document, you should:

- Have completed the PowerSCADA Expert and Power Monitoring Expert training.
- Be familiar with the power monitoring software products.
- Be familiar with the Windows Operating System.
- Know how to schedule tasks using Windows Task Scheduler.
- Know how to stop and start Windows Services.
- Know how to manage SQL Server databases in SQL Server Management Studio.

Backing up a PowerSCADA Expert system

This section includes the tasks required to create automated backups of a PSE system. It also lists the installation media you need to back up, and the steps you should complete to prepare for the backup process.

Note: Some procedures in this document cite scripts you can use to automate the backup and restore process. These scripts are included in the Appendix.

Before you begin

Installation Media and License backup

The following installation media and license files should be backed up at least one time:

- PowerSCADA Expert (PSE) installation media (the ISO file used for installation)
- PSE License Activation IDs if using software licenses.
- Power Monitoring Expert (PME) installation media; if PME is present on your system.
- PME License Activation IDs; if PME is present on your system.
- PME Custom Report Pack install files; if PME is present on your system.
- Event Notification Module (ENM) installation media; if ENM is present on your system.

Backup directory location

Create a directory structure in a secure location on your network that can be accessed in the event that you can no longer access the original PowerSCADA Expert system. This backup directory location will contain all the backup files required to restore your system; it must be accessible and have relevant permissions for the Administrator account to create the backup files.

System passwords

You will need to access system passwords to recover your PowerSCADA Expert system. However, it is beyond the scope of this document to provide guidance on how you should manage your passwords for back up situations. If you are uncertain how you should back up passwords, consult your IT Department.

Backing up PowerSCADA Expert

You can automate the backing up of PowerSCADA Expert (PSE) to include most of the PSE components that will be required to restore a system. PSE passwords cannot be automatically backed up; they must be backed up manually.

Before you Begin

.NET 4.5.2 and WMF 5.1 are required in order to run the provided scripts. WMF 5.1 is available as an offline windows update installer.

1. Run PowerShell and enter the following command to determine what version of WMF is installed before proceeding:

   `$PSVersionTable.PSVersion`

2. Verify PS Version is 5.1 or greater. If an older version detected see the below table for updating to the required version. The WMF installation is available as an offline windows update (.msu) and will require a reboot after installation.

Download the WMF 5.1 package for the operating system and architecture you want to install it on:

Operating System	Prerequisites	Package Link
Windows Server 2016		Native
Windows Server 2012 R2		Win8.1AndW2K12R2-KB3191564-x64.msu
Windows Server 2012		W2K12-KB3191565-x64.msu
Windows Server 2008 R2	.NET Framework 4.5.2	Win7AndW2K8R2-KB3191566-x64.ZIP

Backing up PSE Automatically

To automate the PSE backup process, you can run the provided scripts (found in the Appendix) which copies the required PSE project folders to the backup directory location. You can also create a scheduled task to run the script.

Note: The automated PSE backup does not include every PSE component that needs to be backed up. The server password key must be manually backed up. After you complete the automated PSE back up, see Backing up the PSE Passwords and Device Profiles for details.

After you automatically back up your PSE system, periodically check the backup directory drive to make sure there is sufficient space for the copied backups. See Deleting Old Backups to automate your system to delete old (stale) backups.

To automate the PSE backup process:

1. In a text editor, open the `PSEv8.x_Backup.ps1` script for your version.

2. Edit the file for your system:

   a. For `<$destinationDir>`, enter your backup directory location.

b. If you did not install PSE to the default install location, edit the *<$pseBin>* and *<$pseData>* to reflect the installed location path.

3. Save the file as `PSE_Backup.ps1` in the following location: `C:\Program Files (x86)\Schneider Electric\BackupTasks`

4. Run PowerShell as Administrator and set the execution policy with the following cmdlet: `Set-ExecutionPolicy Bypass`.

5. Open Windows Task Scheduler create a new task under Schneider Electric with a trigger to run once a week at midnight.

6. Define the new action:

a. For **Action**, click **Start a program**.

b. In **Program/script**, enter the following:

`C:\Windows\syswow64\WindowsPowerShell\v1.0\powershell.exe`

c. In **Add arguments**, enter the following:

`-noninteractive -nologo -file " C:\Program Files (x86)\Schneider Electric\BackupTasks\PSEv8.1_Backup.ps1"`

> **Tip:** Run the scheduled task to confirm that it copied the PSE components to your backup location. Doing so will also help you verify whether you can access the backup location.

Backing up the PSE Passwords and Device Profiles

PSE passwords and device profiles cannot be automatically backed up; they must be backed up manually.

> **Note:** The encrypted file that stores this password cannot be transferred from one machine to another so it is very important that you store this password somewhere secure where it can be retrieved.

Power SCADA Server Password

⚠WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

• Use cybersecurity best practices to store system passwords.

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


Cybersecurity policies governing password creation and management vary from site to site. Work with the facility IT System Administrator to ensure that password management adheres to the site-specific cyber security policies.

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To back up the Power SCADA Server password:
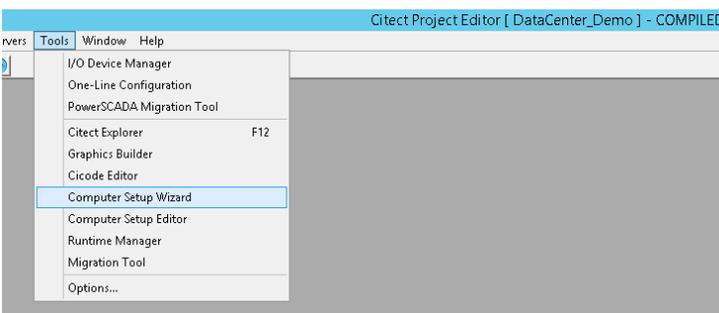
1. Open the Citect Computer Setup Wizard.

   PowerSCADA Expert 8.2:

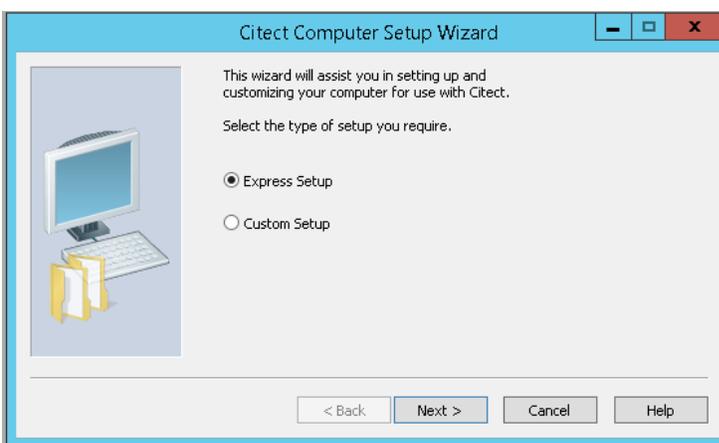   a. In Power SCADA Studio, in the Projects menu click Setup Wizard.
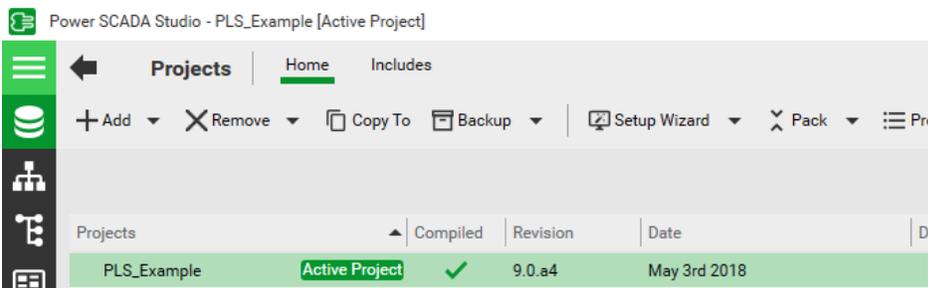
   Power SCADA Expert 8.1:

   a. In the Project Editor, click **Tools→ Computer Setup Wizard**.

2. Select Express Setup and click 'Next'

3. Update the password and save it to the backup directory location.

Device Profiles

1. In Windows Explorer, navigate to the folder containing the device profiles.

   The default location is: `C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.x\Applications\Profile Editor`

2. Copy the entire folder and then paste it to the backup directory location.

3. To restore profiles, copy the backed-up device profiles from the backup location to the following location on the Destination Server:

   `C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.x\Applications\Profile Editor`

Backing up Redundant PSE Systems

For a redundant system only, on the secondary system repeat Backing up PSE automatically.

Backing up Power Monitoring Expert

This description of backing up PME:

- Applies to a standalone server implementation.

- Expects that the new PME server has the same name as the original.

- Expects that the same version of PME and SQL Server are used on both the new and old servers.

- Does not include the following items which can be configured again for a new instance:

    o Dashboard Images

    o Dashboards

    o Data Center Edition Images

    o Database archives

    o EWS config

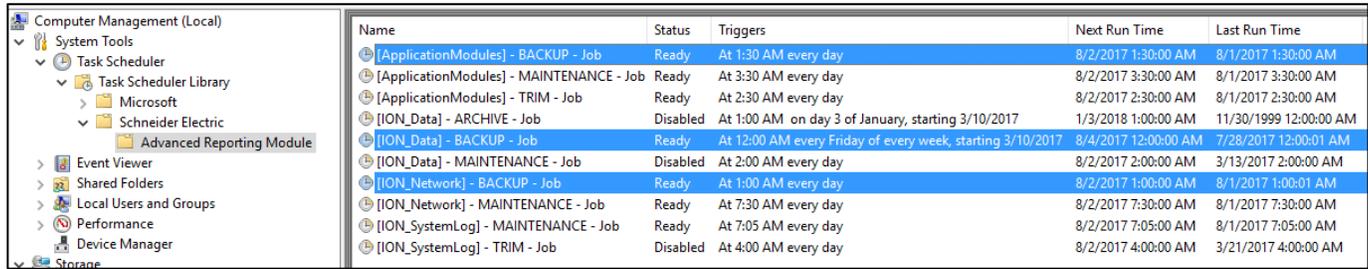   o Report Subscriptions

    o SQL Script Files

PME Databases

The following PME databases must be backed up to a location off the PME server:

- ION_Data (PME backs up weekly)

- ION_Network (PME backs up daily)

- ApplicationModules (PME backs up daily)

The best way to ensure that the system configuration data and the metered data is backed up is to use the database backup that is automatically configured during the system install. Be sure to check that the backup process is operating once set up. For details, see "Scheduled jobs in Windows Task Scheduler" in the PME 8.2 – User Guide.

For the default standalone PME install, databases are typically backed up to a local drive on the PME server, as defined in the PowerShell script that is run by the Windows Task Scheduler. It will be up to the customer to back these files up onto a different location in the network.

For details, see Scheduled jobs in Windows Task Scheduler in the *PME – User Guide.*

PME \config folder

To reproduce the system in the case of a catastrophic failure, a copy of the \config folder should be stored in an off PME server location. This holds all the files that make your PME system unique. The copy of the \config folder only needs to be done once unless subsequent changes are made to the system.

PME Diagnostics

Run a diagnostic capture using the Diagnostics Tool available in PME. Doing so stores information about the source PME system—including server specifications and OS/SQL versions—that are necessary to rebuild the system. Store the resulting .cab file in the off PME server location.

Backing up Event Notification Module

The following Event Notification Module (ENM) databases need to backed up and stored in a secure backup location off the server:
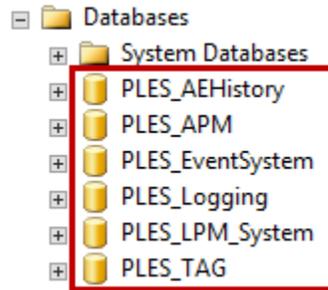
Backing up ENM Automatically

To automate the ENM backup process, you can run a script that copies the ENM databases to your backup directory location. You must also create a scheduled task to run the script.

Note: After you automatically back up the ENM databases, periodically check the backup directory drive to make sure there is sufficient space for the copied backups.

To automatically back up the ENM databases:

1. In a text editor, open `ENM_Backup.ps1`.

2. Edit the file for your system:

    a. For `<servername>`, enter your server name.

    b. For `<Backup Directory Location>`, enter your backup directory location.

3. Save the file as `ENM_Backup.ps1` under `C:\Program Files (x86)\Schneider Electric\BackupTasks`

4. Create a Windows scheduled task to trigger this script to run weekly once at midnight.

5. Define the new action:

    a. For **Action**, click **Start a program**.

    b. In **Program/script**, enter the following path:

`C:\Windows\syswow64\WindowsPowerShell\v1.0\powershell.exe`

    c. In **Add arguments**, enter the following:

`-noninteractive -nologo -file " C:\Program Files (x86)\Schneider Electric\BackupTasks\ENM_Backup.ps1"`

> **Tip:** Run the scheduled task to confirm the ENM databases were copied to your backup location. Doing so will also help you verify whether you can access the backup location.

Deleting Old Backups

Backups can quickly fill up your backup directory drive. You can automate your system to delete old (stale) backups. The following procedure demonstrates how to delete backup files that are older than 15 days.

To delete backup files that are 15 days or older:

1. In a text editor, open `Delete_old_Backups.ps1`

2. Edit the file for your system:

   a. For ENM backups: update the ENM path.

      For example: `C:\PSE\ENMBackups`

   b. For PSE backups: enter the path of the PSE_Backups folder.

      For example: `C:\PSE\PSE_Backups`

3. Save the file as `Delete_old_Backups.ps1` under `C:\Program Files (x86)\Schneider Electric\BackupTasks`

4. Create a Windows scheduled task to trigger this script to run weekly once at midnight.

5. Define the new action:

   a. For **Action**, click **Start a program**.

   b. In **Program/script**, enter the following path:

```
C:\Windows\syswow64\WindowsPowerShell\v1.0\powershell.exe
```

   c. In **Add arguments**, enter the following:

```
-noninteractive -nologo -file " C:\Program Files (x86)\Schneider
Electric\BackupTasks\Delete_old_Backups.ps1"
```

Restoring a PowerSCADA Expert system

This section describes the tasks that are required to restore a PSE system on a new (Destination) server.

Restoring PowerSCADA Expert

Before you Begin

The following must be verified before restoring the backups on the Destination PSE Server:

- PSE is installed and working on the designated Destination Server.

- The licenses are activated on the destination system.

- All the relevant software and OS updates have been applied to the Destination Server.

Restoring PSE from an Automated Backup

If you have a redundant system, you must also restore the redundant servers. See Restoring a redundant PSE system for details.

To restore PSE from an automated backup on the Destination Server:

1. Copy the `PSEv8.x_Restore.ps1` script on to the server.

2. Edit the file for your system:

   a. For `<$sourceDir>`, enter your backup directory location.

   b. If you did not install PSE to the default install location, edit the `<$pseBin>` and `<$pseData>` to reflect the installed location path.

3. Run PowerShell as Administrator and set the execution policy with the following cmdlet: `Set-ExecutionPolicy Bypass`.

4. Right-click on the script file and run with PowerShell.

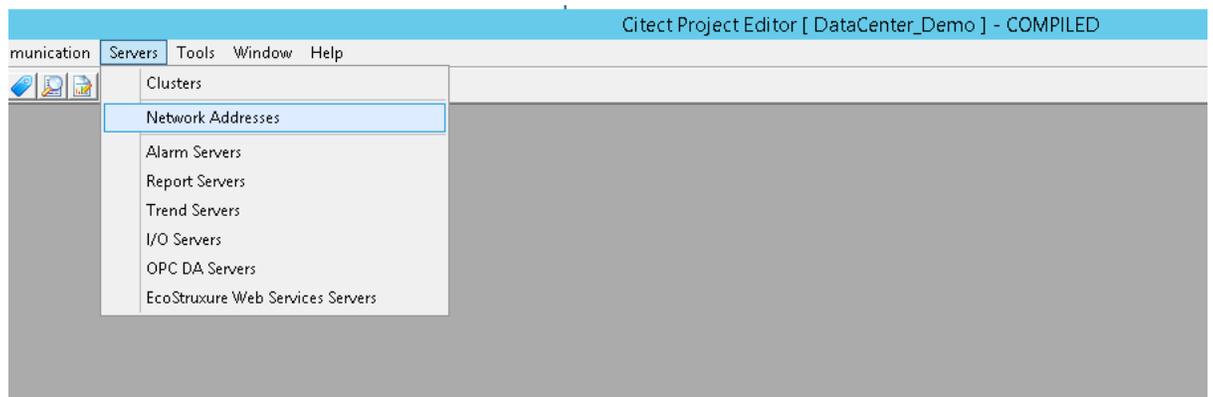5. If the server IP address changed, update the IP address:

   Power SCADA Expert 8.2:

   a. In Power SCADA Studio, click Topology > Edit and then select Network Addresses from the drop-down menu:
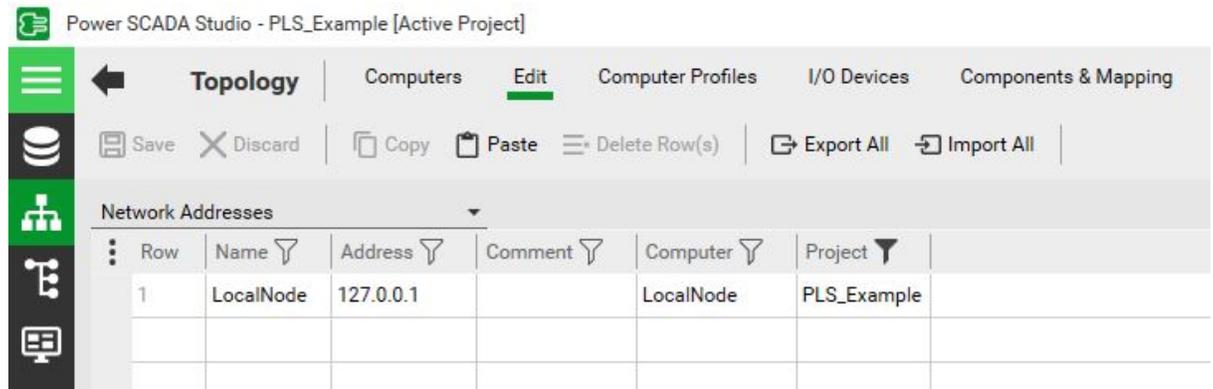
PowerSCADA Expert 8.1:

    a. In the Project Editor, click **Servers** > Network Addresses.

6. Update the IP address.

7. Compile the project.

Restoring Redundant PSE systems

For redundant PSE systems, the following must be performed on the Destination Secondary server:

1. Copy `PSEv8.x_Restore.ps1` script and backup directory to secondary server.

2. Edit the file for your system:

    a. For `<$sourceDir>`, enter your backup directory location.

    b. If you did not install PSE to the default install location, edit the `<$pseBin>` and `<$pseData>` to reflect the installed location path.

3. Run PowerShell as Administrator and set the execution policy with the following cmdlet: `Set-ExecutionPolicy Bypass`.

4. Right-click on the script file and run with PowerShell.

5. Once all the files are restored, pack and compile the project.

Restoring Power Monitoring Expert

Before you begin

Verify the following before restoring the backups on the Destination PME Server:

- PME is installed and working on the new PME Server.

- The new server should have the same name as the original PME Server.

- The SQL Server version of the new system needs to be the same or newer as that of the old system.

- The licenses are activated on the new system.

- All the relevant software and OS updates have been applied to the new PME Server.

.

Replace the \config folder

1. Stop all ION Services:
   a. In Control Panel\Administrator Tools\Services, stop the ION Network Router service. This stops all ION services.
   b. Stop the ApplicationModules CoreServicesHost service. This stops all ApplicationsModules services.
2. Copy the backed up \config folder to the C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert folder. This will update the \config folder with all the files that were unique to the original installation.
3. Leave the ION and ApplicationsModules services stopped for the next topic (Restoring a Database).

Connect the old databases

You need to detach, and then remove, rename, or delete the factory (new) database files before you can connect the old database files to the new system.

Detach the default databases

Before you can remove, rename, or delete the factory installed ION_Data, ION_Network, and ApplicationModules databases on the new PME system with the copies made from the old PME system, you must first detach the factory installed databases.

To detach the ION_Data database from the new system:

1. Go to SQL Server Management Studio and right-click ION_Data > Tasks > Detach.

Note: If you cannot detach a database because of active connections, click

Drop Connections in the detach dialog in SQL Server Management Studio.

For example:
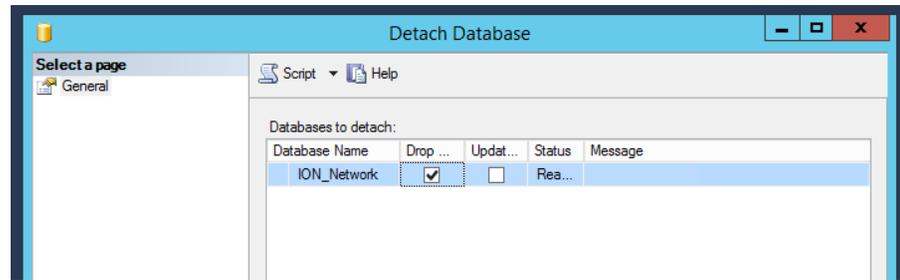
2. Follow the same steps to detach the ION_Network and ApplicationModules databases.

## Remove, rename, or delete the factory databases

Detaching the databases will not remove the database files from the new PME folder structure. Since the old databases that you need to upgrade must be in the same location as the factory ones, you need to delete, remove, or rename the factory database files.

1. Navigate to the location where you installed the factory database files.

> **Note:** The default installation location is ...\Schneider Electric\Power Monitoring Expert\Database. However, you might have picked a different location during installation.

2. Rename the factory database files.

For example:


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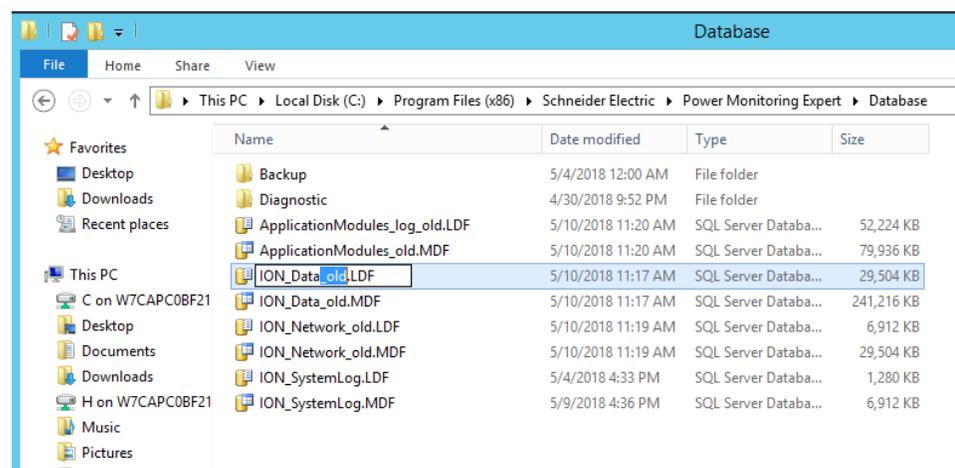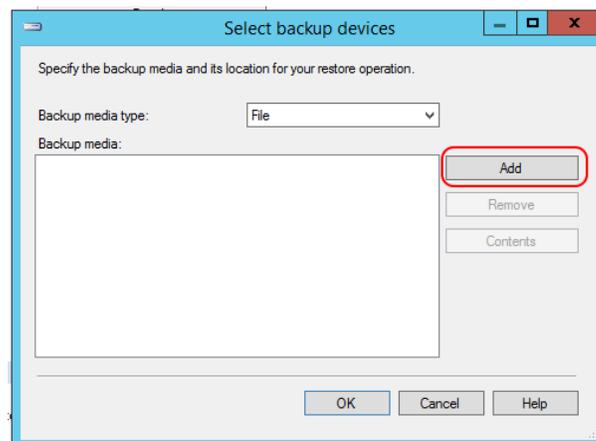
Restore the databases from the old system

Restore the backed-up databases to the new PME system at their installation location.

To restore copies of the backed up PME databases into the new PME system:

1. In SQL Server Management Studio, right-click Databases and then click Restore Database.

2. Click Device and then click ... (the ellipsis button).
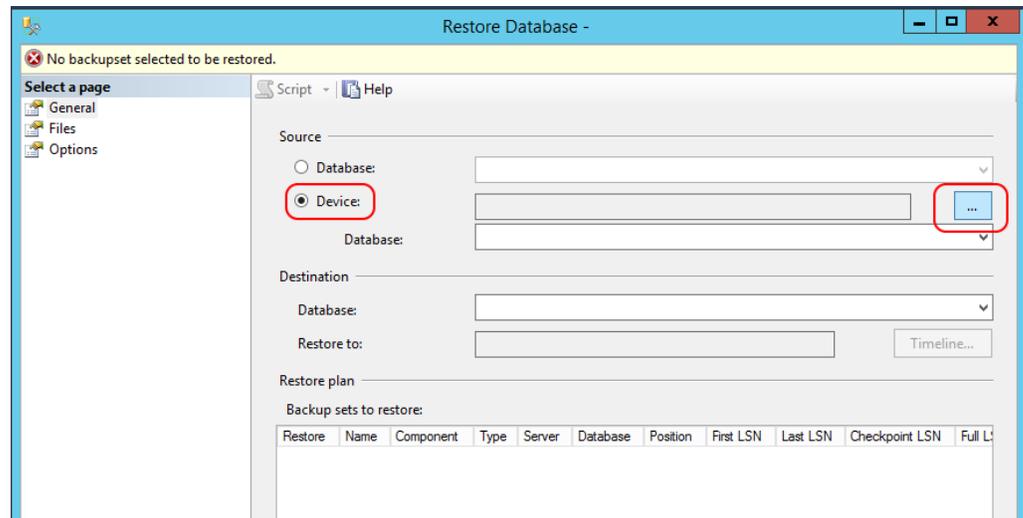
3. Click Add.

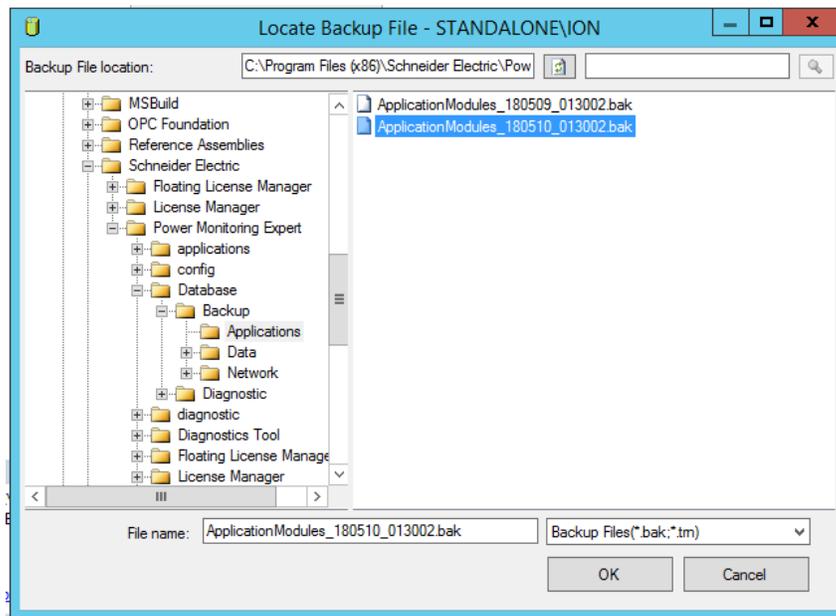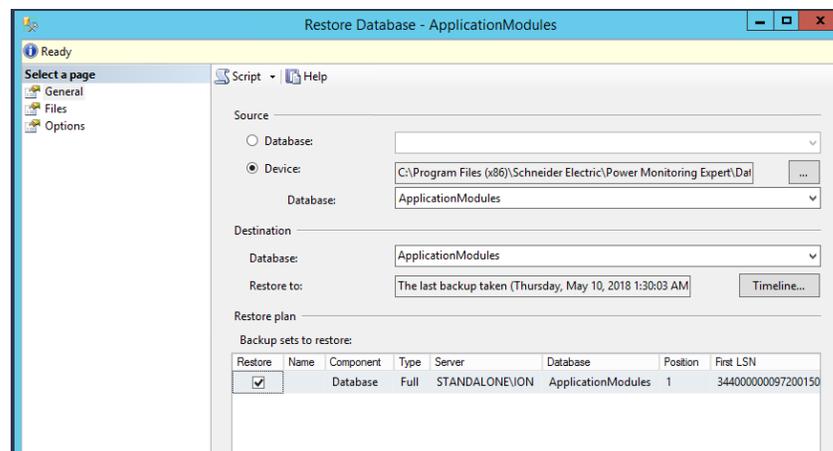4. In the Locate Backup File dialog, navigate to the location where the backup database files are stored and enter the database name in the File name field.

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For example:

5. Click OK.

6. Make sure that Restore is checked:

7. Click on the Files tab on the upper left of the window, click Relocate all files to folder, and then select the location for restoring the database:
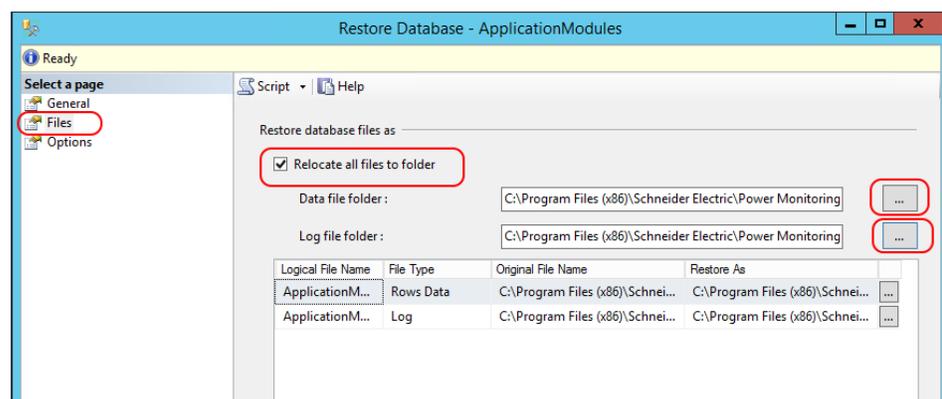
8.　Select the default location for the PME databases. For example:
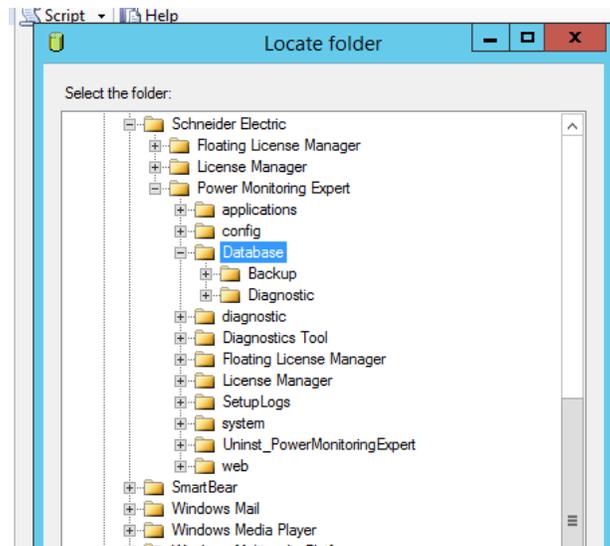
9.　Click OK.

10. Repeat steps 1 to 9 for the remaining database files (ION_Data and ION_Network).

The following image shows the restored databases:
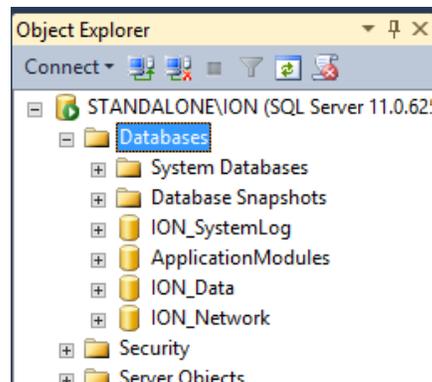
Start the PME Services

This is best done by rebooting the PME server. Alternatively, you could manually restart all Application Module and ION Services of Automatic startup type.

Post-restoration checks

1. Check system log in the Management Console for errors.

2. Log in to Web Applications and ensure all applications work. For example, run the System Configuration Report.

3. Check the Vista diagrams and correct any Query Server or VIP links if necessary.

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Restoring Event Notification Module

Before you begin

Verify the following before restoring the backups on the ENM Destination Server:

- Ensure that ENM is installed and configured on the Destination Server.

- All the relevant software and OS updates have been applied to the Destination ENM Server.

Note: The restore procedure is greatly simplified if you restore the server with the same machine name, IP address, and SQL instance name.

Restoring ENM

To restore ENM:

1. Stop all ENM services:
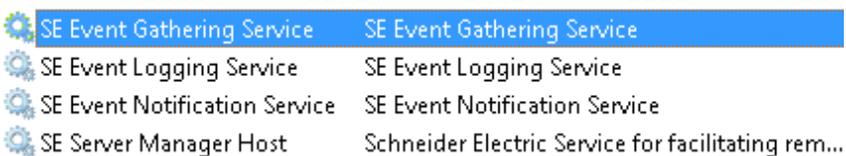
2. Backup the existing ENM databases (PLES_*) from the Destination Server:
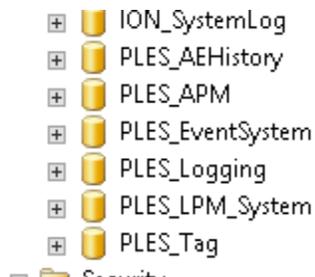
3. Delete the existing ENM databases:
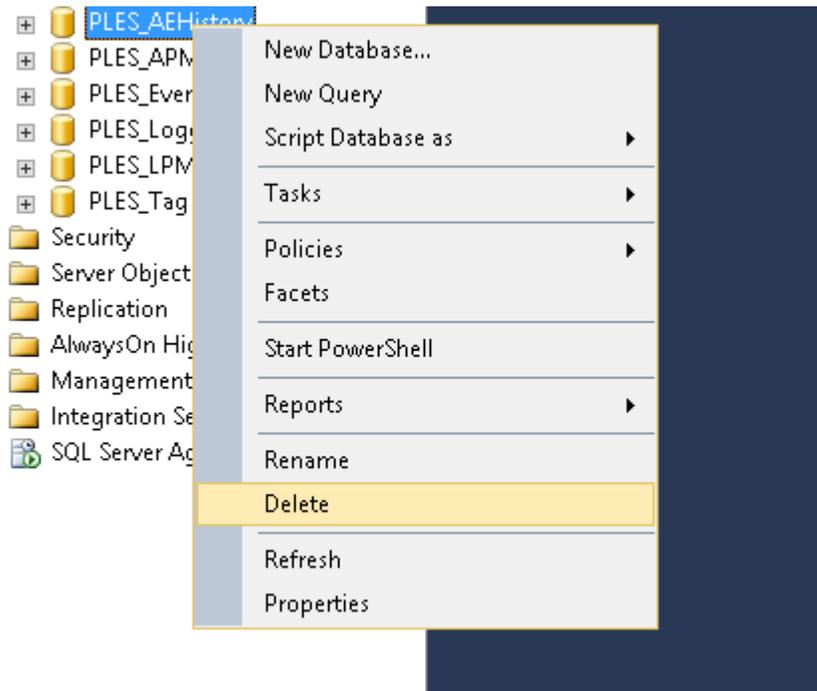
4. Select **Close existing connection** and click **OK**.
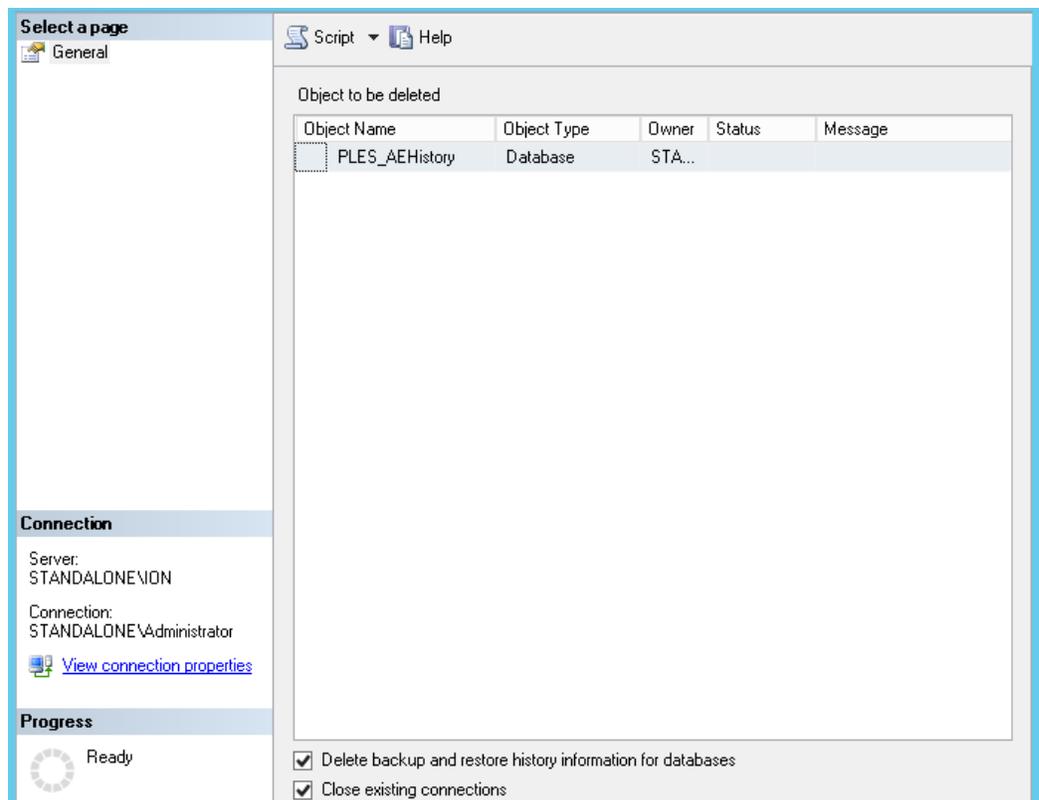
5. Restore the six ENM databases you backed up to the Destination Server.

6. Click Security > Logins > ENS and ensure that the correct user mapping and other properties are setup. (Right-click **ENS** and then click **Properties**.)

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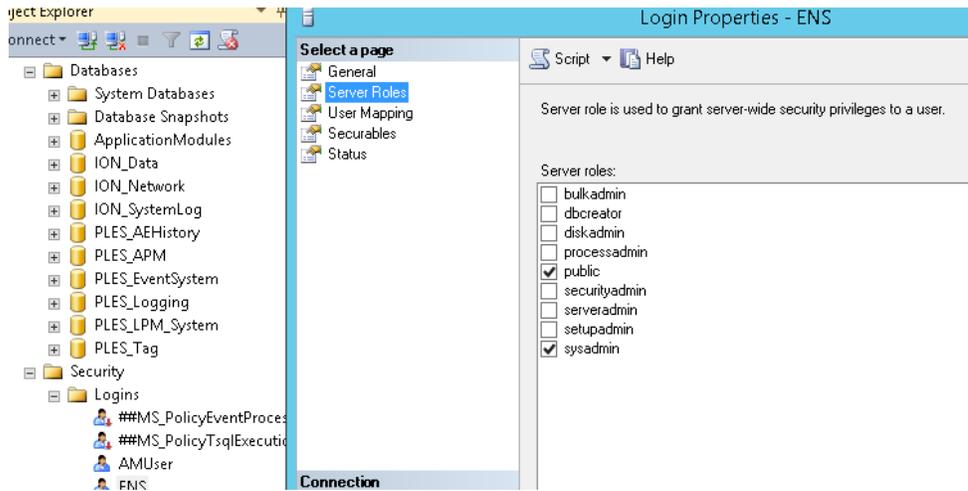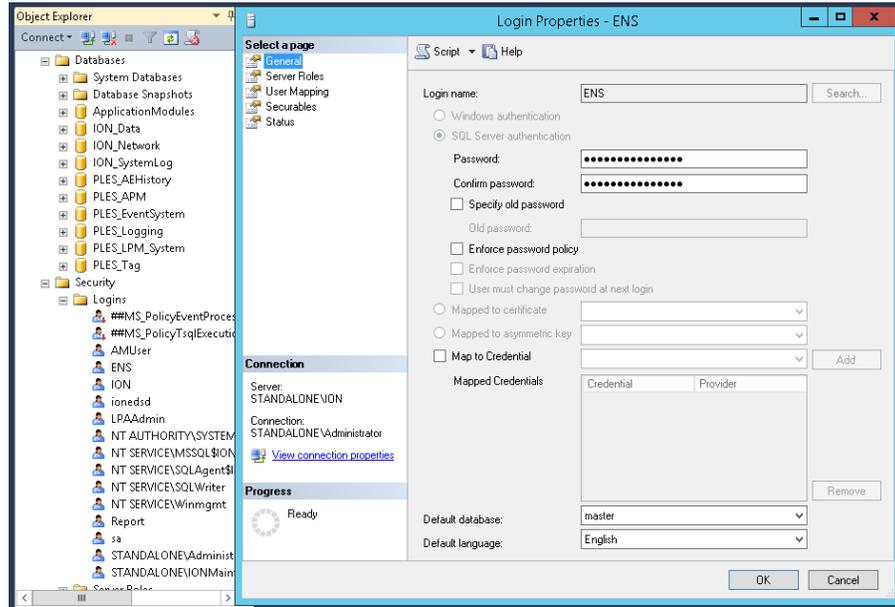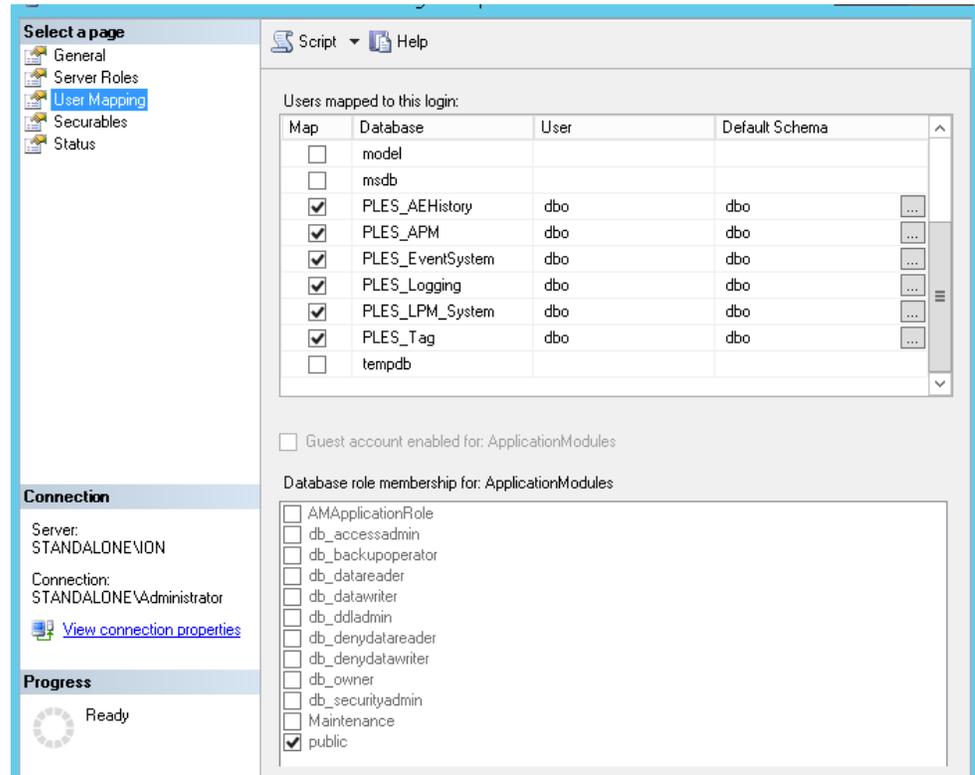
7. Verify that notifications are sent on the new server.

8. Restart the ENM services.

9. In a redundant system, repeat the process on the Secondary Destination Server.

Appendix – Scripts

PSEv8.2_Backup.ps1

```
#-------------------------------------------------------------------------------
# Script: PSE 8.2 Backup comments: .NET Framework 4.5 and WMF 5.1 required
#-------------------------------------------------------------------------------

#Modify these paths to point to correct directories.
$pseBin = "C:\Program Files (x86)\Schneider Electric\PowerSCADA Expert\v8.2"
$pseData = "C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.2"
$destinationDir = "C:\PSE"

#check if directory exists, if not, create it.

If(!(test-path $destinationDir))
{
    New-Item -ItemType directory -Path $destinationDir
}

# Self-elevate the script if required
if (-Not ([Security.Principal.WindowsPrincipal]
[Security.Principal.WindowsIdentity]::GetCurrent()).IsInRole([Security.Principal.Wind
owsBuiltInRole] 'Administrator')) {
 if ([int](Get-CimInstance -Class Win32_OperatingSystem | Select-Object -
ExpandProperty BuildNumber) -ge 6000) {
  $CommandLine = "-File `"" + $MyInvocation.MyCommand.Path + "`" " +
$MyInvocation.UnboundArguments
  Start-Process -FilePath PowerShell.exe -Verb Runas -ArgumentList $CommandLine
  Exit
 }
}

#Copy files
$ItemToCopy = $pseBin + "\Applications\AppServices\bin\configuration.xml"
Copy-item $ItemToCopy $destinationDir
$ItemToCopy = $pseBin + "\Applications\AppServices\bin\Services.xml"
Copy-item $ItemToCopy $destinationDir

Write-Output "Backing up Logs"
#Backup Logs
$ItemToCopy = $pseData + "\Logs"
$logDestination = $pseData +"\Logs_Backup" + ((Get-Date).ToString('yyyy-MM-dd'))
if(Test-path $logDestination) {Remove-Item $logDestination -Recurse}
Copy-Item -Path $ItemToCopy -Destination $logDestination -Recurse
#Start-sleep -m 500


$destinationDirPse = $destinationDir + "\PSE_Backups"
If(!(test-path $destinationDirPse))
{
    New-Item -ItemType directory -Path $destinationDirPse
}

Write-Output "Creating compressed backup. Backup times will vary depending on data
directory size."
#Zip up data directory excluding log files(required for online backup)
```

```
$excludes=@("Logs")
$zipFile = $destinationDirPse + "\PSE_Backup" + ((Get-Date).ToString('yyyy-MM-dd')) +
".zip"
$files= Get-ChildItem -Path $pseData -Exclude $excludes
Compress-Archive -Path $files -DestinationPath $zipFile -Force

Write-Output "Backing up Cipher"
#Export Cipher
$cipherPath = $pseBin + "\bin\PowerLogic.Cipher.dll"
$assembly = [Reflection.Assembly]::LoadFile($cipherPath)
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseBin +
"\Applications\AppServices\bin\")
$instance.ExportKey($destinationDir + "\AppServicesCipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Config\")
$instance.ExportKey($destinationDir + "\SCADACipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Applications\Profile Editor\")
$instance.ExportKey($destinationDir + "\ProfileEditorCipher.aes")
```

PSEv8.2_Restore.ps1

```
#------------------------------------------------------------------------------
# Script: PSE 8.2 Restore comments: .NET Framework 4.5 and WMF 5.1 required
#------------------------------------------------------------------------------

#Modify these paths to point to correct directories.
$pseBin = "C:\Program Files (x86)\Schneider Electric\PowerSCADA Expert\v8.1"
$pseData = "C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.1"
#Location of Backups
$sourceDir = "C:\PSE"

# Self-elevate the script if required
if (-Not ([Security.Principal.WindowsPrincipal]
[Security.Principal.WindowsIdentity]::GetCurrent()).IsInRole([Security.Principal.Wind
owsBuiltInRole] 'Administrator')) {
 if ([int](Get-CimInstance -Class Win32_OperatingSystem | Select-Object -
ExpandProperty BuildNumber) -ge 6000) {
  $CommandLine = "-File `"" + $MyInvocation.MyCommand.Path + "`" " +
$MyInvocation.UnboundArguments
  Start-Process -FilePath PowerShell.exe -Verb Runas -ArgumentList $CommandLine
  Exit
 }
}

#Unzip data directory
$zipFile = read-host "Enter the name of your zip file including the .zip extension in
the PSE_Backups directory. eg PSE_Backup2018-05-03.zip"
Write-Output "Restoring data directory, existing files will be overwritten. Restore
times will vary depending on data directory size."
$zipPath = $sourceDir + "\PSE_Backups\" + $zipFile
Expand-Archive -Path $zipPath -DestinationPath $pseData -Force

#Import Cipher
$cipherPath = $pseBin + "\bin\PowerLogic.Cipher.dll"
$assembly = [Reflection.Assembly]::LoadFile($cipherPath)
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseBin +
"\Applications\AppServices\bin\")
$instance.ImportKeyFromFile($sourceDir + "\AppServicesCipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Config\")
$instance.ImportKeyFromFile($sourceDir + "\SCADACipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Applications\Profile Editor\")
$instance.ImportKeyFromFile($sourceDir + "\ProfileEditorCipher.aes")

#Copy files
$destinationDir = $pseBin + "\Applications\AppServices\bin\"
$ItemToCopy = $sourceDir + "\configuration.xml"
Copy-item $ItemToCopy $destinationDir
$ItemToCopy = $sourceDir + "\Services.xml"
Copy-item $ItemToCopy $destinationDir
```

PSEv8.1_Backup.ps1

```powershell
#-----------------------------------------------------------------------------
# Script: PSE 8.1 Backup comments: .NET Framework 4.5 and WMF 5.1 required
#-----------------------------------------------------------------------------
#Modify these paths to point to correct directories.
$pseBin = "C:\Program Files (x86)\Schneider Electric\PowerSCADA Expert\v8.1"
$pseData = "C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.1"
$destinationDir = "C:\PSE"

# Self-elevate the script if required
if (-Not ([Security.Principal.WindowsPrincipal]
[Security.Principal.WindowsIdentity]::GetCurrent()).IsInRole([Security.Principal.Wind
owsBuiltInRole] 'Administrator')) {
 if ([int](Get-CimInstance -Class Win32_OperatingSystem | Select-Object -
ExpandProperty BuildNumber) -ge 6000) {
  $CommandLine = "-File `"" + $MyInvocation.MyCommand.Path + "`" " +
$MyInvocation.UnboundArguments
  Start-Process -FilePath PowerShell.exe -Verb Runas -ArgumentList $CommandLine
  Exit
 }
}

#Copy files
$ItemToCopy = $pseBin + "\Applications\AppServices\bin\configuration.xml"
Copy-item $ItemToCopy $destinationDir
$ItemToCopy = $pseBin + "\Applications\AppServices\bin\Services.xml"
Copy-item $ItemToCopy $destinationDir

Write-Output "Backing up Logs"
#Backup Logs
$ItemToCopy = $pseData + "\Logs"
$logDestination = $pseData +"\Logs_Backup" + ((Get-Date).ToString('yyyy-MM-dd'))
if(Test-path $logDestination) {Remove-Item $logDestination -Recurse}
Copy-Item -Path $ItemToCopy -Destination $logDestination -Recurse
#Start-sleep -m 500

Write-Output "Creating compressed backup. Backup times will vary depending on data
directory size."
#Zip up data directory excluding log files(required for online backup)
$excludes=@("Logs")
$zipFile = $destinationDir + "\PSE_Backup" + ((Get-Date).ToString('yyyy-MM-dd')) +
".zip"
$files= Get-ChildItem -Path $pseData -Exclude $excludes
Compress-Archive -Path $files -DestinationPath $zipFile -Force

Write-Output "Backing up Cipher"
#Export Cipher
$cipherPath = $pseBin + "\bin\PowerLogic.Cipher.dll"
$assembly = [Reflection.Assembly]::LoadFile($cipherPath)
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseBin +
"\Applications\AppServices\bin\")
$instance.ExportKey($destinationDir + "\AppServicesCipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Config\")
$instance.ExportKey($destinationDir + "\SCADACipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Applications\Profile Editor\")
$instance.ExportKey($destinationDir + "\ProfileEditorCipher.aes")
```

INTERNAL DISTRIBUTION ONLY

PSEv8.1_Restore.ps1

```powershell
#-----------------------------------------------------------------------------
# Script: PSE 8.1 Restore comments: .NET Framework 4.5 and WMF 5.1 required
#-----------------------------------------------------------------------------

#Modify these paths to point to correct directories.
$pseBin = "C:\Program Files (x86)\Schneider Electric\PowerSCADA Expert\v8.1"
$pseData = "C:\ProgramData\Schneider Electric\PowerSCADA Expert\v8.1"
#Location of Backups
$sourceDir = "C:\PSE"

# Self-elevate the script if required
if (-Not ([Security.Principal.WindowsPrincipal]
[Security.Principal.WindowsIdentity]::GetCurrent()).IsInRole([Security.Principal.Wind
owsBuiltInRole] 'Administrator')) {
 if ([int](Get-CimInstance -Class Win32_OperatingSystem | Select-Object -
ExpandProperty BuildNumber) -ge 6000) {
  $CommandLine = "-File `"" + $MyInvocation.MyCommand.Path + "`" " +
$MyInvocation.UnboundArguments
  Start-Process -FilePath PowerShell.exe -Verb Runas -ArgumentList $CommandLine
  Exit
 }
}

#Unzip data directory
$zipFile = read-host "Enter the name of your zip file including the .zip extension in
the PSE_Backups directory. eg PSE_Backup2018-05-03.zip"
Write-Output "Restoring data directory, existing files will be overwritten. Restore
times will vary depending on data directory size."
$zipPath = $sourceDir + "\PSE_Backups\" + $zipFile
Expand-Archive -Path $zipPath -DestinationPath $pseData -Force

#Import Cipher
$cipherPath = $pseBin + "\bin\PowerLogic.Cipher.dll"
$assembly = [Reflection.Assembly]::LoadFile($cipherPath)
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseBin +
"\Applications\AppServices\bin\")
$instance.ImportKeyFromFile($sourceDir + "\AppServicesCipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Config\")
$instance.ImportKeyFromFile($sourceDir + "\SCADACipher.aes")
$instance = New-Object PowerLogic.Cipher.StrongCipher -ArgumentList ($pseData +
"\Applications\Profile Editor\")
$instance.ImportKeyFromFile($sourceDir + "\ProfileEditorCipher.aes")

#Copy files
$destinationDir = $pseBin + "\Applications\AppServices\bin\"
$ItemToCopy = $sourceDir + "\configuration.xml"
Copy-item $ItemToCopy $destinationDir
$ItemToCopy = $sourceDir + "\Services.xml"
Copy-item $ItemToCopy $destinationDir
```

INTERNAL DISTRIBUTION ONLY

ENM _Backup.ps1

```
#Modify these paths on customer machine as needed
$ServerInstance = 'Localhost\ENM'
$destinationDir = "C:\PSE\ENMBackups"

#check if directory exists, if not, create it.

If(!(test-path $destinationDir))
{
    New-Item -ItemType directory -Path $destinationDir
}

#Begin PLES_APM Backup
Write-Output "Creating PLES_APM backup."
Backup-SqlDatabase -ServerInstance $ServerInstance -Database "PLES_APM" -BackupFile
($destinationDir + "\PLES_APM_"+ ((Get-Date).ToString('yyyy-MM-dd')) +".bak")

#Sleep 1900 minute
Start-sleep -s 900

#Begin PLES_AEHistory Backup
Write-Output "Creating PLES_AEHistory backup."
Backup-SqlDatabase -ServerInstance $ServerInstance -Database "PLES_AEHistory" -BackupFile
($destinationDir + "\PLES_AEHistory_"+ ((Get-Date).ToString('yyyy-MMdd'))+".bak")

#Sleep 1900 minute
Start-sleep -s 900

#Begin PLES_EventSystem Backup
Write-Output "Creating PLES_EventSystem backup."
Backup-SqlDatabase -ServerInstance $ServerInstance -Database "PLES_EventSystem" -BackupFile
($destinationDir + "\PLES_EventSystem_"+ ((Get-Date).ToString('yyyy-MM-dd')) +".bak")

#Sleep 1900 minute
Start-sleep -s 900

#Begin PLES_Logging Backup
Write-Output "Creating PLES_Logging backup."
Backup-SqlDatabase -ServerInstance $ServerInstance -Database "PLES_Logging" -BackupFile
($destinationDir + "\PLES_Logging_"+ ((Get-Date).ToString('yyyy-MM-dd'))+".bak")

#Sleep 1900 minute
Start-sleep -s 900

#Begin PLES_LPM_System Backup
Write-Output "Creating PLES_LPM_System backup."
Backup-SqlDatabase -ServerInstance $ServerInstance -Database "PLES_LPM_System" -BackupFile
($destinationDir + "\PLES_LPM_System_"+ ((Get-Date).ToString('yyyy-MM-dd')) +".bak")

#Sleep 1900 minute
Start-sleep -s 900

#Begin PLES_Tag backup
Write-Output "Creating PLES_Tag backup."
Backup-SqlDatabase -ServerInstance $ServerInstance -Database "PLES_Tag" -BackupFile
($destinationDir + "\PLES_Tag_"+ ((Get-Date).ToString('yyyy-MM-dd'))+".bak")

Write-Output "ENM Backup Complete"
```

Delete_old_Backups.ps1

```
#Change the limit date to custom number of days.
$limit = (Get-Date).AddDays(-15)

#Specify path of the ENM backups.
$ENMpath = "C:\PSE\ENMBackups"

#Specify path of the PSE Backups
$PSEpath = "C:\PSE\PSE_Backups"

# Delete ENM backups older than the $limit.
Get-ChildItem -Path $ENMpath -Recurse -Force | Where-Object {!$_.PSIsContainer -and
$_.CreationTime -lt $limit } | Remove-Item -Force

# Delete PSE backups older than the $limit.
Get-ChildItem -Path $PSEpath -Recurse -Force | Where-Object {!$_.PSIsContainer -and
$_.CreationTime -lt $limit } | Remove-Item -Force
```

INTERNAL DISTRIBUTION ONLY

update_server_name_in_databases.sql

(Optional) If the old and new Power Monitoring Expert server name is the same, you do not need to run the following script. However, if the server name is different, run this script.

1. In a text editor, open `update_server_name_in_daabases.sql`.

2. Update the `@oldName` (PME Source Server name) and `@newName` (PME Destination Server name) values.

   For example: `SET @oldName = OLDPMESERVER`

3. Save and then run the script to update the PME server name.

```
USE ION_Data
DECLARE @OldName nvarchar (100)
DECLARE @newName nvarchar (100)

-- put in your IONE6 and PME server names where indicated
SET @oldName = '<PME Source Server name>'
SET @newName = '<PME Destination Server name>'

-- update Source table
UPDATE SOURCE
SET Name = 'LOGINSERTER.' + @newName
WHERE Name = 'LOGINSERTER.' + @oldName
UPDATE SOURCE
SET Name = 'QUERYSERVER.' + @newName
WHERE Name = 'QUERYSERVER.' + @oldName
UPDATE SOURCE
SET Name = 'VIP.' + @newName
WHERE Name = 'VIP.' + @oldName
UPDATE SOURCE
SET DisplayName = 'LOGINSERTER.' + @newName
WHERE Name = 'LOGINSERTER.' + @oldName
UPDATE SOURCE
SET DisplayName = 'QUERYSERVER.' + @newName
WHERE DisplayName = 'QUERYSERVER.' + @oldName
UPDATE SOURCE
SET DisplayName = 'VIP.' + @newName
WHERE DisplayName = 'VIP.' + @oldName
USE ION_Network

-- update CFG_ITemValue table
UPDATE CFG_ItemValue
SET Value = 'http://' + @newName + '/ionreportdataservice/ReportDataService.asmx'
WHERE Value = 'http://' + @oldName + '/ionreportdataservice/ReportDataService.asmx'

-- update IRM_DeviceInfo table
UPDATE IRM_DeviceInfo
SET Name = 'LOGINSERTER.' + @newName
WHERE Name = 'LOGINSERTER.' + @oldName
UPDATE IRM_DeviceInfo
SET Name = 'QUERYSERVER.' + @newName
WHERE Name = 'QUERYSERVER.' + @oldName
UPDATE IRM_DeviceInfo
SET Name = 'VIP.' + @newName
WHERE Name = 'VIP.' + @oldName

-- update Softwarenode table - new entries will be
-- created as needed by the sw
DELETE FROM softwarenode
```

```
-- update SRC_Source
UPDATE SRC_SOURCE
SET Name = 'LOGINSERTER.' + @newName
WHERE Name = 'LOGINSERTER.' + @oldName
UPDATE SRC_SOURCE
SET Name = 'QUERYSERVER.' + @newName
WHERE Name = 'QUERYSERVER.' + @oldName
UPDATE SRC_SOURCE
SET Name = 'VIP.' + @newName
WHERE Name = 'VIP.' + @oldName
UPDATE SRC_SOURCE
SET DisplayName = 'LOGINSERTER.' + @newName
WHERE DisplayName = 'LOGINSERTER.' + @oldName
UPDATE SRC_SOURCE
SET DisplayName = 'QUERYSERVER.' + @newName
WHERE DisplayName = 'QUERYSERVER.' + @oldName
UPDATE SRC_SOURCE
SET DisplayName = 'VIP.' + @newName
WHERE DisplayName = 'VIP.' + @oldName


-- IAS_MeasurementAddress
DELETE FROM IAS_MeasurementAddress WHERE Segment2 like 'VIP%'
AND ISManual = 0
```

Fix_PME_Users.sql

Run the following SQL script to fix the ionedsd and AMUser users in the PME databases:

```
-- fixes ionedsd user in ION_Data and ION_network
-- also fixes AMUser in ApplicationModules
-- the IONMaintenance users must be manually deleted and recreated
-- since they use Windows authentication
USE ION_Network
ALTER USER ionedsd WITH LOGIN = ionedsd
USE ION_Data
ALTER USER ionedsd WITH LOGIN = ionedsd
USE ApplicationModules
ALTER USER AMUser WITH LOGIN = AMUser
```

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