PQView® DE Administrator Software Manual

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If there are any concerns, please call the EPRI Customer Assistance Center (CAC) toll free in the U.S. or Canada at 800-313-3774 or internationally at +1-650-855-2000. Alternatively, send an e-mail to support@electrotek.com or askepri@epri.com.

Difficulties accessing the application

If there are difficulties accessing the application after standard installation on Windows 7, Windows 8, Windows 10, Windows Server 2008 R2, Windows Server 2012 R2, or Windows Server 2016, please consult with internal IT department personnel to ensure proper access permissions are set. If the problem cannot be resolved, please call the EPRI Customer Assistance Center (CAC) toll free in the U.S. or Canada at 800-313-3774 or internationally at +1-650-855-2000. Alternatively, send an e-mail to support@electrotek.com or askepri@epri.com.

CONTENTS

Summary of Administrator Features

Below is a list of all features provided in the PQView 4 Administrator:

- Administration Options
  - o Site Link maintenance
  - o Require GDPR Cookie Consent
  - o Require Email Addresses for Users
  - o Enforce NERC CIP Passwords Compliance
  - o Expire Passwords
  - o Expire Password Exclusion List
  - o Outgoing Email Settings and SMTP Test option
- User Management
  - o Create, Edit & Delete Users
  - o Create, Edit & Delete Recipients (for notifications)
  - o Password strength indicator for aiding in the creation of strong passwords
  - o Optional Enforcement of NERC CIP password compliance
  - o Optional Password expiration
- Resource Management
  - o Edit SQL Server Database resources.
  - o Database connections with Windows credentials.
  - o Advanced database connection options.
  - o Test connection to Database resources.
  - o Edit PQDMS resources.
  - o Test connection to defined PQDMS resources.
  - o View composition of resources in a PQDMS pool.
- Reports
  - o Create, Edit & Delete Event Reports
  - o Create, Edit & Delete RMS Variation Reports
  - o Create, Edit & Delete Data Log Reports

Whenever a record is being Created or Edited, the Save button is only enabled once field values have been entered or changed. In this document, required fields are denoted with an asterisk(*).

Important web.config Settings

Error Logging

Informational messages and any unhandled errors that occur within the PQView Administrator website, are logged using the Log4Net utility, which is configured inside the web.config. By default, the log will output as a text file to the ProgramData directory and to the Application Event Log. It is recommended to keep this logging enabled as it may be helpful for troubleshooting in the event of a problem. However, to change the location of the text file, locate and update the following file value:

```
<configuration>
   ...
   <log4net>
       <appender name="FileAppender"
type="log4net.Appender.FileAppender">
           <file
value="${ALLUSERSPROFILE}/Electrotek/PQView4Administrator/l
ogfile.txt" />
```

To turn off the Event Viewer logging, comment out this line:

```
<configuration>
   ...
   <log4net>
      ...
      <root>
          <!-- <appender-ref ref="EventLogAppender" /> -->
      </root>
```

By default, the logging only includes Errors, however the verbosity of the log can be increased by changing the LogLevel from "Error" to Warning, Info or Debug:

```
<configuration>
   ...
   <appSettings>
     <!--LogLevel defaults to Error, but may be set
to:Debug, Info, Warning or Error-->
      <add key="LogLevel" value="Error"/>
```

Password Token Timeout

When user authentication occurs in PQView® 4 Admin Service, the password itself is not used, but rather a time-sensitive encryption token that represents a hash of the

password. A new token is generated each time the user logs on, however it is re-used multiple times as requests are made to other services such as the PQDMS. The encrypted token protects the hashed password and the hash protects the password itself, but it is still possible for a man-in-the-middle attack to allow someone to find the token and re-use it for additional data requests as long as it has not expired. Lowering the amount of time for the token to expire, or time out, will decrease the time this token could be used inappropriately before authentication is rejected and the user must log in again.   The token should stay active long enough for a typical user session, so it is advised not to make the timeout too short, and certainly no shorter than the session timeout of a PQView® DE website.

```
<configuration>
  ...
  <appSettings>
   ...
   <!--This setting determines how quickly a password token
will timeout, in minutes.-->
    <add key="PwdTokenTimeout" value="60"/>
```

Administration Options

Override Link for Current Site

The PQView® DE website provides a link to the PQView Administrator site for users with Super Administrator permissions. The URL that creates the link is generated automatically the first time the PQView Administrator site is accessed, however it may be desirable to override this URL with an alternative domain name entry than was used at the time of the first access. For example, when testing the installation from the same server, the first access may come from "localhost" or an IP address instead of a fully-qualified domain name. If that need arises, the URL may be manually overridden in this setting.

Require GDPR Cookie Consent

The General Data Protection Regulation was approved by the EU Parliament in 2016 and will be enforced as of May 25, 2018. In accordance with this regulation, any personal data collected via cookies must require explicit consent from the end user. This option is provided for companies that operate within the EU. Enabling this setting will cause PQView® DE to present a consent request to end users.

Require Email Addresses for Users

Several PQView features rely on sending emails, however not all PQView or PQView® DE users necessarily have email addresses. Therefore, an Administration option will govern whether or not email addresses are required to Add or Edit a User. This option is turned on by default at installation time.

Enforce NERC CIP passwords compliance

For organizations mandated to comply with the Critical Infrastructure Protection standards, Standard CIP-007-3 includes the following requirement:

R5.3. At a minimum, the Responsible Entity shall require and use passwords, subject to the following, as technically feasible:

> **R5.3.1.** Each password shall be a minimum of six characters.
> **R5.3.2.** Each password shall consist of a combination of alpha, numeric, and "special" characters.

R5.3.3. Each password shall be changed at least annually, or more frequently based on risk.

By checking this administration option, all newly entered passwords (either for new users or for users changing their existing passwords) will be subject to the restrictions in this CIP rule. When choosing a selection for the *Expire Passwords* option, the "Never" option will not be allowed if the CIP compliance option is selected.

Expire Passwords

By default, PQView passwords do not expire. To require users to change their passwords regularly, change this option. Expiration will apply to all existing as well as new passwords. For example, if the selection is changed to 90 Days and an existing user last changed their password 100 days ago, the user will be prompted to change their password upon their next login attempt.

This option will require a setting other than "Never" if the *Enforce NERC CIP Passwords Compliance* option is selected, in accordance with CIP-007-3 Requirement 5.3.3, which states "Each password shall be changed at least annually, or more frequently based on risk."

Expire Password Exclusion List

When passwords are set to expire, there may be specific high-level users who should be exempted from this requirement so that the exempted user can still administer these settings. Any such users should be added to this *Exclusion List* so that *Password Expiration* will not apply to that user. However, to fully maintain compliance with the Critical Infrastructure Protection standards, each exempted user must still change their password annually, at minimum. Please note that the *Exclusion List* only applies to the password expiration policy, and does NOT apply to the force password change feature discussed in the users section.

Outgoing Email Settings

Several PQView features rely on sending emails. In order for any of these features to work properly, enter the SMTP settings here. At minimum, a valid *SMTP Server* and *From Email* address must be saved. If the SMTP server uses a non-standard port, enter it in the port field. If the SMTP server requires authentication, enter the appropriate username and password. If the SMTP server requires SSL, check off the *Use SSL* option. Optionally a *Display Name* for the *From Email* can also be set in this section.

User Management

Click on the Users menu to see the current list of both Users and Recipients. Recipients represent a person or group that may receive Notifications but who do not use the PQView or PQView® DE systems.

Three default Users are created at the time of installation to provide out-of-the-box Users who have already been assigned their appropriate Resources and Permissions via Profiles:

- Admin: This is the default User with the "Super Administrator" Permission, and is necessary for logging in to PQView Admin for the first time.
- PQView: This is a default User with the "PQView-Web Access" and "PQDMS Access" Permissions. This User is also set as a "Shared" user, which means it is intended to be shared among multiple individuals. This User can be used to immediately access the PQView® DE website, including access to PQDMS Real-Time data and Read-only access to PQDMS setup. For more information, see Permissions.
- PQDMSEdit: This is a default User with the "PQDMS Editor" Permission, to allow for managing monitors, templates, analysis modules, communication and notification settings, but without the full permissions to manage the PQDMS configurations or create new monitors that the Admin user has.

Default Users will be forced to change their password upon the first login attempt, except for "PQView" since it is a shared user. Once the password has been changed, the User will again be prompted to login with the newly created password in order to gain access to the Admin website or the PQView® DE website. Once logged in, the Users may be Edited to have a more explicit name (defaults to "Administrator" and "PQView Shared User" respectively) or username, or to set additional information for the User. If the "Require Email Addresses for Users" option is turned on, which it is by default, an email address must be provided for the User before any Edit User changes can be saved.

If any Users without an email address have selected the "Forgot Password" link, that user will be flagged on this list as seen in the example below:

Home	Users	Resources	Permissions	Profiles	Reports	Help ▾		⚙ Admin ▾

Users & Recipients Index [Create New]

Name	Username	Email	Type		Forgot Password
Standalone Recipient		vgtest@test.com2abc	Recipient	Edit | Delete	
VTest	vtest		User	Edit | Details | Delete	✔

Create/Edit Users

To create a new User, from the Users & Recipients Index, click the Create New button and from the drop-down, choose User. To edit an existing User, select the Edit link for the User in the Index list. Enter values for:

- Name*: This is a display name to help the Administrator identify the individual(s) the username represents. Multiple Users may have the same Name, so it is recommended to use a middle initial or additional Notes to further identify the individual.
- Username*: The username for logging in to the PQView Admin or PQView® DE websites. This must be unique across all Users in this system. This field may be updated to a new value as long as that username is not already in use by another User, and the previous value will no longer be a valid login username. Usernames are not case-sensitive.
- Email (optionally required): The email address at which this User will receive email notifications.
- New Password*: The password for logging in. This field is only required when creating a new User, and does not need to be entered when updating a User.
- Confirm New Password*: To ensure the password entered did not have a mistake.
- Force Password Change: This option is a defensive mechanism intended to aid recovery from a security breach and is also useful when creating a new user. A New Password must be created (or choose the Generate Random Password option) when selecting this option, which will force the User to the Change Password page upon successfully entering the new password. In

addition, if the Outgoing Email Settings has been entered and the user has an email address listed, the next two options will become enabled. Once the Force Password Change option is selected and the Save button is pressed, this option cannot be un-set, however the password can be re-updated.

- Generate Random Password: This option is only available in conjunction with the Force Password Change option and will generate an 8-character NERC CIP-compliant random password which is emailed to the User. This option forces the Email Temp Password option to be selected as there is no other way for the User to know the randomly generated password.

- Email Temp Password to User: This option is only available in conjunction with the Force Password Change option and will email the temporary password to the user using the Outgoing Email Settings and the email address entered. When using this option, the User has 12 hours to successfully change their password, otherwise the new password will expire. If that happens, simply update the password again and the 12 hours will reset.

- Shared Account: This option indicates this username is intended to be used by multiple individuals. This option will affect how the User's preferences are stored, either in the Admin Service database for non-shared Users so that the same preferences are available across multiple environments, or in browser cookies for shared Users who may want different preferences based on where the User is logging in from. Note: This option is disabled and will always be False if the Authentication Type is set to Windows since Windows accounts cannot be shared.

- Language: This option is the default language that the PQView application will display in for this User. The available languages are based on which PQView language modules are installed on the server.

- Notes: Information to help the Administrator identify the individual(s) the User represents.

To delete a User, select the "Delete" link for the User in the Index list, and confirm the deletion on the next page.

User Details

To access a User's Details, select the Details link for the User in the Index list. All of the User's setup properties will be displayed, followed by the list of Profiles that the User has been assigned to. To view the Permissions and Resources a Profile grants to the User, click anywhere in the row to expand it and see those details. To assign the User to one or more Profiles, select the "Add to Profile" button, select one or more Profiles in

the popup window, and select the "Save" button. To remove a User's assignment to a Profile, select the "Remove" link in the User's Profiles list, and confirm the action.

Create/Edit Recipient

To create a new Recipient, from the Users & Recipients Index, click the Create New button and from the drop-down, choose Recipient. To edit an existing Recipient, select the Edit link for the Recipient in the Index list. Enter values for:

- Name*: This is a display name to help the Administrator identify the individual or distribution group represented. Multiple Recipients may have the same Name, so it is recommended to use a middle initial or additional Notes to further identify the individual or group.
- Email*: The email address at which this Recipient will receive email notifications.
- Notes: Information to help the Administrator identify the individual or group the Recipient represents.

When creating a Recipient, multiple can be created at one time by either entering or pasting multiple semicolon-delimited(;) email addresses into the Email field, which will automatically split the email addresses into multiple records, or by selecting the plus icon to the right of the last record.

Recipients are only used for PQView Notifications and therefore cannot be assigned to Profiles.

To delete a Recipient, select the "Delete" link for the Recipient in the Index list, and confirm the deletion on the next page.

Resource Management

Click on the Resources menu to see the current list of all Resources. The license expiration date displays at the top of the page.

A default Database Resource is created at the time of installation to provide an out-of-the-box Database setup:

- PQViewData: This is a default PQView Database configuration pointing to 'Localhost'.

PQDMS Pool Resources

The pool's name and description are derived from the common database in the PQDMS pool, but these fields may be edited. The pool is then assigned to one or more Profiles in order for a user to gain access to the PQDMSs in the pool. The PQDMSs themselves are NOT assigned to Profiles, as the access permissions to the PQDMSs must be the same within the pool.

Create/Edit PQDMS Resources

To edit an existing PQDMS Resource, select the Edit link for the Resource in the Index list. Enter values for:

- Name*: This is the display name by which the Resource will display in PQView® DE.
- Description*: This is a description to help the Administrator further identify the Resource.
- Host URL*: The URL which hosts the PQDMS server.

Create/Edit PQView Database Resources

To edit an existing Database Resource, select the Edit link for the Resource in the Index list. Enter values for:
- Name*: This is the display name by which the Resource will display in PQView® DE.
- Description*: This is a description to help the Administrator further identify the Resource.
- Server Name*: The SQL Server instance name on which the database resides.

11

- Database Name: The database name.
- Username: The username which has access to the database, or blank if using Windows Credentials.
- Password: The password for the username which has access to the database, or blank if using Windows Credentials.
- Use Windows Credentials: Indicates that Windows Integration Services will be used to connect to the database. When using this option, make sure that the service which is accessing the database (PQDMS service or PQView® DE IIS application pool) is running under a Windows account that has access to the database.
- Advanced Connection Options: For any additional connection options that are supported by the database connection, they can be entered here using the proper connection string syntax. Any advanced options entered will be validated against the connection string available properties and syntax.

Profile Management

Profiles replace the concept of "Groups" in previous versions of PQView® DE. Profiles define the feature-level Permissions and the Resources a set of users have access to.

Three default Profiles are created at the time of installation to provide out-of-the-box Profiles which have been configured to provide the default Users with access to the default Resources and appropriate Permissions:

- PQView-PQDMS Profile: This is the default Profile for the "PQView" User which assigns the PQDMS Access Permission.
- PQView Admin: This is the default Profile for the "Admin" User which assigns the Super Administrator Permission.
- PQDMS Editor Profile: This is the default Profile for the "PQDMSEdit" User which assigns the PQDMS Editor Permission.

Reports Management

PQView 4 Reports correspond to Analytics event query pages in PQView® DE. Event Reports are used to filter various types of events (RMS variations, Transients, Frequency deviations, etc.). Trend Reports are used to display Data Logs (trends) for specific Channels, Aggregations and Harmonics. RMS Reports are used to filter RMS events by size, duration, and filter flags, as well as to aggregate RMS data. All reports and queries are designed to be able to execute for single or multiple devices across one or many databases.

Event Reports

Several Event Reports are installed by default but may be modified or deleted, and new ones can be created. To create a new Event Report, from the Event Reports Index, click the Create New button or to create a new Report based on the definition of an existing Report, select the Clone link in the Index list. To edit an existing Event Report, select the Edit link for the Report in the Index list. As there are many selections that may define an event report, the options are laid out in tabs:

- Name*: This is the display name by which the Report will display in PQView® DE.
- Options tab:
    - RMS Variations: Indicates the Report will retrieve RMS Variations.
        - Show Sags Between: If this is selected only RMS Sags between the start and end points will be retrieved with this Report. If not selected, all RMS Sags will be retrieved.
        - Show Swells Between: If this is selected only RMS Swells between the start and end points will be retrieved with this Report. If not selected, all RMS Swells will be retrieved.
    - Show Transients: Indicates the Report will retrieve Transients.
        - Show Transients Between: If this is selected only Transients between the start and end points will be retrieved with this Report. If not selected, all RMS Transients will be retrieved.
    - Frequency Variations: Indicates the Report will retrieve all Frequency Variations.
- Filters tab:

- o Invalid: Some events may be flagged as Valid or Invalid. This filter returns events based on this selection. The default is to not use the filter, indicating all events regardless of this flag will be returned.
- o Load Interruption: Some events may be flagged as Load Interrupted or not. This filter returns events based on this selection. The default is to not use the filter, indicating all events regardless of this flag will be returned.
- o Manually Entered RMS Variation: Some events may have manual values entered for RMS. This filter returns events to include only the events with this data, or to exclude events with this data. The default is to not use the filter, indicating all events regardless of this data will be returned.
- o Manually Entered Interruption: Some events may have the Load Interrupted flag set manually. This filter returns events to include only the events with this data, or to exclude events with this data. The default is to not use the filter, indicating all events regardless of this data will be returned.
- o b1-b3: These are custom flags that can be set for an event. PQView® DE provides an option to rename these flags in each database, so the flags may be named differently once used in PQView® DE, however they still represent the three custom flags provided. This filter returns events with these flags set to True or False. The default is to not use the filter, indicating all events regardless of these flags will be returned.
- o SARFI Source: This filter returns events based on the SARFI source of the event. The default is to not use the filter, indicating all events regardless of this source will be returned.
- Properties tab: This tab is for filtering events returned based on the values of one or more event properties. Adding multiple event property filters to this list will mean that events are filtered by both event property and value selections as a logical AND. Filtering events with a logical OR is not currently supported. To use a range of values for the event property evaluation, select the same property twice, once with a less than value, and once with a greater than value, and the results will return all events between the two.

RMS Reports

There are no RMS Reports installed by default, however new ones can be defined. To create a new RMS Report, click the Create New from the RMS Reports Index, or to create a new Report based on the definition of an existing Report, select the Clone link in the Index list. To edit an existing RMS Report, select the Edit link for the Report in the Index list. As there are many selections that may define an event reports, the options are laid out in tabs:

- Name*: This is the display name by which the Report will display in PQView® DE.
- Options tab:
  - Show Sags Between: If this is selected only RMS Sags between the start and end points will be retrieved with this Report. If not selected, all RMS Sags will be retrieved.
  - Show Swells Between: If this is selected only RMS Swells between the start and end points will be retrieved with this Report. If not selected, all RMS Swells will be retrieved.
  - Duration: This filter returns RMS events with the duration length within the range specified. The lower limit can not be any shorter than 0.004167s.
  - Phases Selected for Analysis: By default, the 6 standard phases will all be included. To filter the results for specific phases only, de-select those that should not be returned.
- Filters tab:
  - Invalid: Some events may be flagged as Valid or Invalid. This filter returns events based on this selection. The default is to not use the filter, indicating all events regardless of this flag will be returned.
  - Load Interruption: Some events may be flagged as Load Interrupted or not. This filter returns events based on this selection. The default is to not use the filter, indicating all events regardless of this flag will be returned.
  - Manually Entered RMS Variation: Some events may have manual values entered for RMS. This filter returns events to include only the events with this data, or to exclude events with this data. The default is to not use the filter, indicating all events regardless of this data will be returned.
  - Manually Entered Interruption: Some events may have the Load Interrupted flag set manually. This filter returns events to include only the events with this data, or to exclude events with this data. The default is to not use the filter, indicating all events regardless of this data will be returned.
  - b1-b3: These are custom flags that can be set for an event. PQView® DE provides an option to rename these flags in each database, so the flags may be named differently once used in PQView® DE, however they still represent the three custom flags provided. This filter returns events with these flags set to True or False. The default is to not use the filter, indicating all events regardless of these flags will be returned.

- o SARFI Source: This filter returns events based on the SARFI source of the event. The default is to not use the filter, indicating all events regardless of this source will be returned.
- Aggregation tab: To aggregate RMS records, choose one of the Aggregation Level options. Currently RMS records can be aggregated by Phase, Measurement or Time. Once selected, additional options may become available to further define the aggregation options.

Data Log Reports

Several Trend Reports are installed by default but may be modified or deleted, and new ones can be created. To create a new Trend Report, click the from the Trend Reports Index, click the Create New button or to create a new Report based on the definition of an existing Report, select the Clone link in the Index list. To edit an existing Trend Report, select the Edit link for the Report in the Index list. Enter values for:

- Name*: This is the display name by which the Report will display in PQView® DE.
- Channels: The Channels that will be retrieved by this Report. If the User running the Report has selected a Database that does not contain all of these Channels, only the Channels that are in the Database would be displayed in the Report.
- Formats: The Formats that will be retrieved by this Report.
- Aggregation Function: The Aggregation that will be applied to the data in this Report.
- Aggregation Interval: The Aggregation Interval that will be applied to the data in this Report.
- Harmonics: The Harmonics that will be retrieved by this Report.

Since the Channel list is very long and may not be able to display all the selected Channels in one view, the Assigned Channels will list the Channels that have been selected and Saved for this Report.

Help Menu

The help menu currently provides access to the release notes for each release for the Administrator website, the Administration Service, and the PQDMS Service under the Release Notes menu, and version information under the About menu. This is also where you can find page-specific help topics, when available.

Log Files

When troubleshooting an issue in any of the PQView® 4 components, it is helpful to review the log files of the component, and sometimes to increase the verbosity of the log files to include debugging information. This section describes how to find these files and how to change the log settings.

Log File Locations

The log files for most of these components are located in the c:\ProgramData\Electrotek folder on the computer on which they have been installed. Each component has log files in a subfolder of the same (or similar) name as the component. For example, the PQView Admin Service log file can be found in the c:\ProgramData\Electrotek\PQView4AdministrationService folder. In some cases, there are multiple log files as new ones are created when older ones become large. Typically only the most recent log file needs to be inspected. When sending log files to Support, it is a good idea to gather all of the logs from all of the components into a zip file. If all components are installed on the same computer, then just zipping up the c:\ProgramData\Electrotek folder may be sufficient.

Only the PQView® 4 Data Manager Service component keeps its logs in a different location. These are located in the \system\log subfolder of the location it was installed. By default, this is C:\PQView4\PQView4DMS\system\log. The most recent console output is stored in a circular memory buffer. At PQDMS startup and at shutdown this buffer is automatically written to disk. The startup and shutdown log files are named "in_start*.log", "in_stop*.log", and "in_abort*.log". A start/stop or start/abort pair is created each time the service cycles. The most recent pair has a "0" suffix (i.e.," in_start0.log"). Older pairs have "1", "2", "3", "9" suffixes. If console logging is enabled the console output is continuously written to a "circular" set of files named "in_console_*.log The date on which the file was written is suffixed to the name (e.g., "in_console20110708.log"). Because of file locking, the current day's file is not directly accessible when logging is on.

Log File Settings

For each of these components, by default, the log level value is set to Error. The log level can be set to show more detailed diagnostic information in its logs, which can help provide detail when troubleshooting an issue. After changing this value for any component, it is necessary to then reproduce the issue that is being experienced, so that the log file will now have the additional information for troubleshooting. Since verbose

logging may degrade performance, it is recommended to revert the log level settings after an issue has been successfully resolved.

Admin Service

Navigate to where the PQView® 4 Admin Service is installed, and open the *PQView4AdministrationService.exe.config* file to edit. Near the bottom of the file is a section that looks like this:

```
<!--LogLevel defaults to Error, but may be set to: Debug,
Info, Warning or Error -->
<add key="LogLevel" value="Error" />
```

Change the LogLevel value to Debug and save the file. Open the local Services control panel and find "PQView 4 Admin Service" and restart this service.

Web Applications

Navigate to where the web applications are installed, and open each *web.config* file as an Administrator to edit it. Near the bottom of the file is a section that looks like this:

```
<!--LogLevel defaults to Error, but may be set to: Debug or
Error -->
<add key="LogLevel" value="Error" />
```

Change the LogLevel value to Debug and save the file. After saving the updated web.config files for all three web applications, open IIS and re-start the application pools for those web applications.

PQDMS Service

Navigate to where the PQView® 4 Data Manager Service is installed, and open the *PQDMService.exe.config* file to edit. Find the settings that look like this:

```
<add key="logEnable" value="15" />
<add key="logLevel" value="4" />
```

Change the logEnable setting to 31, and the logLevel to 7, for most verbose. Open the local Services control panel and find "PQView 4 PQDMS" and restart this service.

PQDR Service (if PQDR purchased as part of license)

Navigate to where the PQDR Service is installed, and open the *PQDRWindowsService.exe.config* file to edit. Near the bottom of the file is a section that looks like this:

```
<!--LogLevel defaults to Error, but may be set to: Debug,
Info, Warning or Error -->
<add key="LogLevel" value="Error" />
```

Change the LogLevel value to Debug and save the file. Open the local Services control panel and find "PQView 4 Reporting Service" and restart this service.

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The PQView User Group was founded by Electrotek Concepts in October 1996 to provide support to users of PQView and PQView® DE. It also provides an open forum for PQView users to meet and exchange experiences with power quality monitoring. Support services provided by Electrotek Concepts to user group members include software updates, newsletters, technical notes, on-line discussion forums, webcasts, and user group meetings. See www.pqview.com.

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