Oil and Gas

**SCADAvantage™**

Release Notes version 5.6.2

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# Table of Contents

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# Section 1  General

## Introduction

SCADAvantage version 5.6.2 has been released, it enumerates known problems encountered in the final testing of this product release and identifies workarounds that help overcome the problem.  The document contains additional notes that may be valuable to the customers and service personnel working with the product, it's recommended to review the 5.6.0 release notes first if you are upgrade from 5.5.0 or older versions. This document replaces the existing release notes for the prior releases and is included on the product media.

Any security measures described in this document, for example, for user access, password security, network security, firewalls, virus protection, and so on, represent possible steps that a user of a SCADAvantage System may want to consider based on a risk assessment for a particular application and installation. This risk assessment, as well as the proper implementation, configuration, installation, operation, administration, and maintenance of all relevant security related equipment, software, and procedures, are the responsibility of the user of the SCADAvantage System.

## Supported Technology

The following technologies are supported in this version of SCADAvantage

- Microsoft Windows 10 LTSB (Version 1607) for operations clients
- Microsoft Windows 10 Semi Annual (Version 1607, 1703 and 1709)  for engineering clients
- Microsoft Windows Server 2016 and 2012 R2
- Microsoft Visual Studio 2017 with Update 4
- Microsoft Visual Studio 2015 with Update 3
- Microsoft SQL Server 2016 and 2014 SP2 Standard Edition - 64-bit only
- Microsoft Office 2016 - 32-bit and 64-bit
- Microsoft Internet Explorer 11
- Microsoft .NET Framework 4.6.2
- ABB Licensing 6.0.0Citrix[1]

The following technologies supported in 5.5.0 and earlier releases are no longer supported

- Microsoft Windows 7 SP1 - 32-bit and 64-bit
- Microsoft Windows 8 or 8.1
- Microsoft Windows Server 2008, 2008 R2 SP2 and 2012

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[1] Only supported on Windows Server 2016 since desktop services is equivalent to Windows 10.

- Microsoft SQL Server 2008, 2008 R2, 2012 SP1

- Microsoft Office 2007, 2010 and 2013

- Microsoft Visual Studio 2010, 2012, 2013

- Microsoft Internet Explorer 9 and 10

- 32-bit version of SCADAvantage RTRDB

- Creating HMI's using Visual Basic 6.0

- Multiple HMI's sharing login credentials

- Multiple HMI's using variables to share information

- I/O List Export

- Deploying HMI's using CAM[2]

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[2] Customers using CAM must now use alternate software deployment services either provided in Windows or by 3rd party vendors.  CAM was removed due to security issues.  More details below in Deploying HMI's without CAM topic.

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# Section 2  Installation and Upgrading

## Before Installing or Upgrading

Operating systems must have Microsoft security patches up-to January 2018 or newer installed before proceeding to install or upgrade SCADAvantage servers.

If you are using Visual Basic Power Pack for drawing lines, rectangles or ovals in your existing HMI, be aware that Microsoft no longer supports this technology for Visual Studio 2017.  It's recommended to continue using Visual Studio 2015 and convert all lines and rectangles to use the new Line Segment component before switching to using Visual Studio 2017.

There are updates to RTRDB between 5.6.1 and 5.6.2, so after installing the software, follow the Upgrade RTRDB procedure in the installation manual.

If you haven't installed any 5.6.1 Server patch, you will receive the following error messages during the upgrade process.

SQL> Error: Cannot drop daytrendsummarizerview because it does not exist

SQL> Error: Cannot drop hourtrendsummarizerview because it does not exist

SQL> Error: Cannot drop trendsummarizerview because it does not exist

These messages are expected and can be ignored.

There are updates to APPRDB between 5.6.1 and 5.6.2, so after installing the software, follow the Upgrade APPRDB procedure in the installation manual.

Instructions for installing a new APPRDB has been removed.  All existing functionality is now available in the RTRDB.  However, the instructions for upgrading or migrating an existing APPRDB are still included in the installation manual.

As a reminder, Windows Automatic Maintenance can interfere and cause installation or upgrade to fail or take a long time to complete.  Make sure Windows Automatic Maintenance (located under Control Panel, Security and Maintenance, Maintenance) is not running and is run prior to installing SCADAvantage.

Automatic Maintenance                              No action needed
    Last run date: 5/4/2016 6:43 AM
    Windows automatically schedules maintenance activities to run on your computer.
        Start maintenance | Change maintenance settings

## Installing and Upgrading

The SCADAvantage Product help includes a completely re-written product installation, upgrade and migration guide.  A printable PDF copy of the installation guide is located on the root of the DVD.  The product help requires Microsoft OneNote.  The product help OneNote book is located in the Update\Release\Media\Documentation\ABBSVHelp folder on the DVD.  This folder can be copied to your personal computer where OneNote is installed for easier reading, searching and printing.

This version of the product has not been tested to install or upgrade on operating systems with newer service packs, security patches or versions of malware protection than those listed above

and in the Cyber Security Guide at the time of release.  It's entirely possible, installation or upgrade may not work correctly after 2017.  ABB may require you to use a newer version of the SCADAvantage or install specific product updates in order to work-around these types of problems.

## Future Compatibility

Support for ODBC in HMI clients will be removed.

Support for storing reports to a SQL-Server database and corresponding CBReportStorageList HMI component will be removed.

It is recommended to remove any hard-coded references to "SCADAVision" in Software Expressions or Control Sequence Trigger Expressions or Control Sequence Step Expressions by replacing "SCADAVision" or "SCADAvantage" to use the internal SERVER variable.  For example, the expression

pv("SCADAVision", "Trend (daily) Log Free %", "value", 100) < 80

becomes

pv(SERVER, "Trend (daily) Log Free %", "value", 100) < 80

Its ABB's intention to drop the use of the SCADAVision DSN in future releases.

SCADAvantage BOT Expressions use Perl syntax for defining an expression.  This syntax will be replaced by a new Regular Expression syntax in a future release.

Storage of reports in the APPRDB will be discontinued in future versions.

Gas Measurement (PDH) and Dynocard storage in SQL-Server will be discontinued in future versions.  It's recommended to begin and complete migration from SQL-Server to the integrated metering system in the real-time database using this version.

Support for PDH Web Access will be discontinued in future versions.  After migrating from PDH to the integrated metering system in the real-time database, the corresponding Metering Web Access can be used.

Launching Explorer add-ins via HMI command button actions will no longer be supported.

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# Section 3   New Functionality and Resolved Issues

## New Functionality

This section contains descriptions of the major new features present in this version of SCADAvantage.

### Trend Gap Analyzer

The Missing Trend Statistics Analyzer Add-Ins allows current hour and day trend history to be searched for gaps. During a system migration, it can help to confirm all trends have been imported.

### Ethernet/IP Protocol

The EtherNet/IP Protocol allows SCADAvantage to read real-time values from and write user-entered values to PLCs and RTUs capable of EtherNet/IP communications. The EtherNet/IP Protocol is implemented similarly to existing protocols within SCADAvantage.

### Web Bulk Template Loader

The Web Bulk Template Loader Add-Ins provides the same Load and Unload BOT template functionalities than the Bulk Template Loader Add-Ins. This new feature consists by using the SCADAvantage Web Service, allowing the BOT templates to be loaded/unloaded on a remote or SCADAvantage cloud servers.

### InfoPad Log Book

InfoPad functionality has been extended to provide a more flexible way to log book entries within a richer interface. Two ways to use the InfoPad within HMIs are available now.

### Frozen Value Indication

The Frozen Value indication provides a way to identify points having their values not changed for a determined time when communication is working.

### Keywords (Points and EFM Meters)

Keywords provide a way to label SCADAvantage Points and EFM Meters with relevant keywords that could be used for analytics or display organization.

### EFM Gas Analysis Last Sample and rescheduling

Last Sample and rescheduling feature provides a way to determine when the next Gas Analysis are due or overdue for EFM Meters.

### EFM Meter Parameter Last Calibration and rescheduling

Last Calibration and rescheduling feature provides a way to determine when the next Calibration are due or overdue for EFM Meters.

## Resolved Issues

This section details fixes delivered as patches to the previous major release of SCADAvantage that are now integrated into this version. The ID number used by ABB to track the issue is included.

| Server Issues | |
|---|---|
| **WID** | **Release Note** |
| 994 | Fixes an issue with Trend Group List |
| 1859 | Fixes an issue with displaying units on EFM Meter Trends |
| 1860 | Default Reason is now returned during meter upload |
| 1873 | Fixes incorrect schema version |
| 1756 | Fixes an issue with Totalflow events when using Legacy Communication Method |
| 1766 | Added an extension attribute to an EFM Stored Procedure |
| 1792 | Fixes an issue with Daily History - Reason for Change is not updated upon re-upload for data previously marked as Invalid |
| 1809 | Dates are now displayed in local time in SCADAvantage Explorer summaries |
| 1708 | Fixes an issue with signatures missing from EFM Meter history uploads |
| 1728 | Fixes an issue where a scheduled write gas analysis command failed |
| 1595 | Fixes an issue with the preview history |
| 1656 | Adding trend upload commands for Totalflow VCone/SUVCone ADTs |
| 1647 | Stability improvements for Control Sequencer |
| 1208 | Web Service Run Report now sets Content-Type header to 'application/pdf'. |
| 1467 | - Fixes issues with the Trend Summarizer<br>- Allows a longer delay, up to 30 minutes, for re-summarization Write Delay parameter |
| 1476 | Corrects the OptionListRef for the 'ReportUnits' meter parameter for Roc devices. |
| 1593 | Fixes an issue in SVService that could happen during a shutdown. |

| Server Issues | |
|---|---|
| **WID** | **Release Note** |
| 1015 | Add Float Swap Words data type conversion for a floating point number that allows 2 bytes to be swapped |
| 1233 | BOTs loading no longer requires system account |
| 1238 | Corrected issues upgrading a 5.3.1 .NET HMI to 5.6.1 |
| 1330 | Corrected errors reported by OPC Server in diagnostics log |
| 1335 | Corrected error with DVI connecting to an OPC Server |
| 1278 | Fixed several issues in 3-way disaster recovery failure handling |
| 879 | Fixes a memory leak issue with Control Sequence Processor |
| 981 | Fixes an issue causing DVI crash when reconnecting to Route. |
| 999 | State Limit Group now shows properly when assigned to Alarm Group |
| 1013 | Corrected exception that would cause Control Sequence Processor to stop. |
| 1051 | Fixes an issue when uploading daily data from scheduler. |
| 1058 | Corrected exception that would cause Trend Summarization to stop. |
| 1143 | Added capability to read EFM Meter History via OData web-service endpoint |
| 1168 | SVWebServices now properly supports encoded URLs |
| 777 | EFM Metering upload working properly when Daylight Saving Time is active |
| 770 | Dates now show local time in history audit trail |
| 793 | EFM Metering now able to retrieve data if configured on modem pool |
| 813 | EFM Metering now respecting Zone declaration |
| 854 | Correct privilege issues with non-system user when modifying Changing Digital, Output, Resultant State fails even with Configuration Maintenance:<br><br>1. Open SCADAvantage Explorer, logon as SYSTEM user<br>2. Open SQL editor add-in<br>3. Copy and paste the following SQL statements steps on the SQL editor |

| Server Issues | |
|---|---|
| **WID** | **Release Note** |
| | grant update (stateWinColor, stateText) on DigoutTelemetryView to PUBLIC |
| 859 | Correct privilege issues that causes Point to not exit alarm state when RTN and Normal Inhibit options enabled:<br>1. Open SCADAvantage Explorer, logon as SYSTEM user<br>2. Navigate to the tree tap Security  -> Application User<br>3. Locate user "svcalcengine" and open Properties from right-click menu<br>Change "Non-Covered Zone Privilege" option from "Process_View" to "NonCovered Acknowledge" |
| 634 | Correct privilege issues with non-system user when modifying EFM/Estimated meter gas analysis.  Follow these steps to correct:<br><br>1. Open SCADAvantage Explorer, logon as SYSTEM user<br>2. Open SQL editor add-in<br>3. Copy and paste the following SQL statements steps on the SQL editor one by one, and then execute them one by one.<br><br>revoke update on Efm GasAnalysisComponentView from Public<br><br>grant update ( manualValue, lastUploadedValue, lastDownloadedValue) on EfmGasAnalysisComponentView to PUBLIC<br><br>grant update (value, lastUploadedValue, lastDownloadedValue) on EfmGasAnalysisComponentView to svwebservices |
| 495 | EFM Settings contract hour set to 0 causes missing data in Daily History Editor |
| 498 | Corrected issues with Partial data upload |
| 140 | Checking for duplicate "entity" history items no longer causes the PDH Import utility to crash |
| 338 | Changed Importer to save Device Source Trend History to AltTrend1 |
| 340 | Specific Gravity component of Gas Analysis is now properly imported. |
| 173 | Estimated meters excluded from meter counts. |
| 343 | Hourly data no longer recorded in the trend when history type is Exception and History Summarization is None. |

| Server Issues | |
|---|---|
| **WID** | **Release Note** |
| 332 | Liquid Meters now included in PDH Export when migrating configuration. |
| 148 | Callout Report timestamp is now given in GMT |
| 415 | Corrected issue counting service licenses. |
| 1142 | Fixed an issue during HMI optimization of Point Labels |

| Client Issues | |
|---|---|
| **WID** | **Release Note** |
| 994 | Fixes an issue with Trend Group List used in HMI |
| 1831 | Fixes an issue crashing SVEX when the "Quality Indicator Icon" "Drop-Down" arrow is clicked in "State Limits" |
| 1833 | Fixes an issue with Audible Alarms when alarm summary is opened |
| 1850 | CBLabel - Demand Scan now enabled when using Windows Authentication |
| 1858 | Historical trends can now be added to Quick trends |
| 1859 | Fixes an issue with displaying units on EFM Meter Trends |
| 1933 | New Gas Quality Send Out reader sample code to be used with GQSO on server |
| 1635-1636 | Fixes issues with PointLabel<br>    • Demand Scan contextual menu command is now active from HMI<br>    • Tool tip shows correct status information |
| 1697 | Returns correct contract hour when using Audit viewer from History Editor |
| 1766 | Added an extension attribute to an EFM Stored Procedure |
| 1708 | Fixes an issue with the upload signatures |
| 1328 | Fixes an issue with some HMI controls |
| 1595 | Fixes an issue with the preview history |
| 1639 | Fixes an issue with Audible Alarms |
| 1699 | Fixes an issue with EfmSettings allowing Gas Analysis high limit setting to three digits (for percentage vs fractional analyses). |

| Client Issues | |
|---|---|
| **WID** | **Release Note** |
| 1273 | Fixes error handling in Entity Objects. |
| 1372 | Fixes Device-Sourced trend menu items not showing on HMI point control right click menu. |
| 1142 | Fixed an issue during HMI optimization of Point Labels |
| 770 | Dates now show local time in history audit trail |
| 802 | All columns in alarm summary are now resizable. |
| 793 | EFM Metering now able to retrieve data if configured on modem pool |
| 788 | EFM Metering respecting Zone declaration - Allows users to upload data if they have privileges |
| 762 | Line Segments reintroduced (formerly CBPipeSegment) in 5.6. No data binding on right click |
| 765 | Couple of crashes fixed after closing real-time trends |
| 663 | CBGrid SQL property doesn't accept 'from' token unless it is surrounded by whitespace. |
| 749 | BOT generate preview tabs are now displaying correct information |
| 440 | Client applications are now more tolerant of connection latency with remote servers. |
| 537 | A new GrowOnOpen property has been added to the Resizer component to automatically make the contents scale to a larger window when a form is opened.  Also, the documentation for the resizer component has been updated to clarify how it works. |
| 473 | Alarm History Summary now shows Device Column in Full View |
| 483 | Alarm Summary sorted now by priority |
| 524 | Active Monitor changes do not affect a second running HMI |
| 180 | Modified Orifice Gas Meter reports so that Tap Location is specified as Up or Down, not true or false. |
| 372 | Changes to Historical Trend Properties, Relative Time Period now save correctly. |
| 341 | A problem in the GIS Map control that prevented it from loading has been corrected. |

| Client Issues | |
|---|---|
| **WID** | **Release Note** |
| 339 | PDH GA and MP editors no longer depend on SCADAvantage DSN being configured |

| APPRDB Issues | |
|---|---|
| **WID** | **Release Note** |
| 1919 | Fixes an issue in AutoAbortFailedRemoteQueue daemon |
| 332 | Host Liquid Meter Flow Volume is now exported properly from a PDH system. |

## Section 4  Known Issues

### Mercury EFM Gas Analysis

Attempting to view gas analysis fails with the following errors:

Unable to correctly process configuration data.

Refresh of configuration information failed.
IndexOutOfRangeException: There is no row at position -1.
classId = EfmGasAnalysis:merc_GasAnalysis
methodId = guiReadAll

This is expected and not a bug.  Not all Mercury ADT's implement commands to upload/download gas analysis.

### Installing Packaged HMI on Engineering Station

Installing a Packaged HMI on an engineering station is not supported.  When the package is uninstalled, some components of the engineering station are also removed resulting in a non-functional engineering station.  The same issue occurs for administration tools on a server. The only way to correct is to re-install.  This will be corrected in a future version.

### Importing Well Test Configuration

When migrating well test configuration, an informational message similar to the following is reported by the web service in the SCADAvantage diagnostic log

SVWebServices(Information): Unable to find property acknowledge_state for object <name>.

The property name may be different.  These properties are now internal to integrated well testing, so not supported for importing.  These messages are expected and can be ignored.

### History Editor Printing

Several of the history editors provide the ability to switch print settings from portrait to landscape.  Changes to print orientation are not working.  This issue will be fixed in a future release once the components have been ported to Microsoft .NET.

### Device Schedule Memory Leak

The Device Schedule System Process has a small memory leak if nothing is configured in PDH.  As soon as something is configured, the leak stops.

### DynoPlot and DynoPlotList HMI components

If these components are added to the main form of your HMI application, the application will quietly crash (appear in Windows Error Reporting) when the HMI is closed.  This does not happen

if the component is added to a sub-form.  This issue will be fixed in a future release once the components have been ported to Microsoft .NET.

## Package HMI

Selected folder and sub-folder names must be unique.  If not unique, the following error is output.

Wix Light: … error LGHT0091: Duplicate symbol 'Directory:…' found…

If this error occurs for a different reason, try renaming sub-folders until the error clears.

## Daily Gas History Advanced Report Export Restrictions

Restrict By Reason for Change is now case-sensitive.  It was previously case-insensitive when used against SQL-Server.

Filtering based on connections to upstream or downstream Plants or Batteries is not implemented.

## Generate VCone Report

Opening a VCone report fails with an error similar to the following.

Unable to export report to file 'VCone Report.pdf': ActiveReports PDF export DLL error Error 212: Couldn't export PDF using font 'Arial' because characters referencing this font could not be represented with the character encoding 'WinAnsiEncoding.'

This only happens if ROCLINK800 is installed on the same computer as a SCADAvantage client such as an engineering station.  Removing ROCLINK800 corrupts SCADAvantage ability to generate reports.

## SCADAvantage Client compatibility

SCADAvantage 5.6.x client applications such as SCADAvantage Explorer or SCADAvantage HMI's cannot connect to a SCADAvantage Server that is older than version 5.4.0.  A warning popup appears and login is prevented.

A SCADAvantage 5.6.x client (Explorer or HMI) cannot use Windows Authentication to connect to an older RTRDB server.  Polyhedra authentication is the only mechanism supported.  While it may appear to work, it is not supported.

When connecting to an older server, the CAM application, group and elements still appear in the navigation tree, but result in an error when selected.  CAM configuration using 5.6.x is no longer supported.

## Upgrading from SCADAvantage versions older than 5.1.1. is not supported.

For the upgrade process to be successful, only SCADAvantage systems that are version 5.1.1 or newer are supported in the upgrade process.

## Web Service

Swagger UI does not support basic authentication. Using the 'Try Me' button will result in a 404 error unless OData anonymous access is enabled.

When the browser is on the same computer as the web service, using the Swagger UI and entering invalid parameters causes the inner error in the result to include a stack dump. This doesn't happen when the browser is remote and so is not a considered a security issue.

## OPC Server

During installation, an account is associated with the SCADAvantage OPC DA server. The identity of the server is not created correctly and will result in the OPC DA server failing to start. Also, the identity of the SCADAvantage OPC HDA server is not set during installation. It must be setup manually. See Setup OPC Server for more details.

The SCADAvantage 5.6.0 OPC Server cannot be used to connect to older versions of SCADAvantage real-time database (only 5.6.0 and newer).

## HMI Crash Closing a Form during Failover

The HMI may crash if a form containing a SCADAvantage component is closed at the exact moment the real-time database is failing over.

## Potential HMI Crash when Configuration window Open when Server goes Offline

For any point control on display, if the State Limit, Fleeting Limit or Properties window is open when the server goes offline, clicking anywhere in the window besides the Close button will result in crashing the HMI. This problem happened in older releases and has not been fixed in this release.

## Runtime Error Popup when Application is Closed

The HMI may briefly show a popup indicating a runtime error as the application is closing. While undesirable, it is expected and does not generate a Windows System Error Report.

## HMI Slow to Exit

After the final window closes, a HMI may take up-to an additional 10 seconds to exit. This is more likely to happen when accessing features of the metering system.

## PDH Meter Configuration

After opening configuration for a meter, the +/- boxes do not expand or collapse the display. Also, the buttons next to each attribute to show audit trail or device events do not work.

The PDH Main menu cannot be opened at the same time as the EFM Main menu. One must be closed before the other one opens correctly.

After selecting a function in the PDH menu, when selecting a meter and clicking on the [Filter] option at the bottom any column in the grid, entering a partner %x (ends in x), results in an error

"Unable to apply filter".  This is a limitation of the ActiveX ADO Filter technology being used to populate the grid.  The same problem occurs from the EFM meter menu too.

## EFM Meter Configuration

Viewing the audit history for changes to individual attributes of an EFM is currently not supported (like it was in PDH).  To work-around, use the event summary, maintenance view and filter on the meter name to see a history of configuration changes.

After migrating PDH configuration into the real-time database, viewing which objects an EFM meter references is currently not supported.  Its currently only supported for real-time and connector objects.

A deep copy version of Save As is not supported for EFM meters.

## EFM Meter History

Hourly and Daily History Editor, right click actions that open new windows, results in duplicate windows each time Show Associated Events is selected.  This also occurs for the PDH History editor and was present in previous versions of SCADAvantage.

Hourly and Daily History editor grid doesn't always refresh.  To work-around, right click and Refresh.

When exporting data from PDH, event signatures are not exported.

## EFM Metering Application Settings

Changes to EFM Meter Application settings can take up-to 5 minutes to be effective within the HMI or SCADAvantage Explorer.  Restarting the client causes the new settings to be immediately used.

## EFM Meter Parameters

Some meter parameters that were visible in a PDH meter are not visible via EFM meter parameters editor.

## Metering Names

Names for any object under metering cannot contain the '/' (slash) character, or the single quote character as these are used internally.

## Migrating PDH Configuration

Only meter types developed by ABB are supported.  Custom meter types developed by a 3rd party are not supported.  For your convenience, when importing configuration, these meter types are moved to an Unsupported sub-folder, to make it easier to migrate at a later time.  Modification to import these custom meter types must be completed before migrating PDH history in order to avoid problems with the resulting archive data.  Contact ABB for a quote to provide assistance.

Last downloaded meter parameter values are not preserved during import.

## Migrating PDH History

Only meter types developed by ABB are supported.  Custom meter types developed by a 3rd party are not supported.  Any history for an unsupported meter type is discarded.  It's not recommended to attempt migrating PDH History until the meter configuration is supported.  Contact ABB for a quote to provide assistance.

History file names are generated to ensure the oldest data is imported first. If an exception is reported while importing the file jumps to the newest file name.  After clicking Start Monitor, importing does restart at the oldest file; it's just a UI issue.

The import client only supports importing trend history that is exported from PDH.  It is currently not able to import general trend data into the database history.

## HMI Component Behavior at Runtime

The following SCADAvantage HMI components may crash if properties are changed at runtime via custom code.

- CBAlarmSummary
- CBGrid
- CBSmartMap
- CBTrend

## Trusted Server Login

Trusted Server login to real-time servers older than version 5.6.x is not supported.  Upgrade all servers to version 5.6.0 first.  After this, trusted server login is only supported for SCADAvantage accounts mapped to Windows Accounts.  If accounts are mapped to Windows workgroup accounts, be sure to use .\ in front of the account name, e.g. .\wguser, otherwise, login will fail.  If accounts are mapped to Windows domain accounts, this work-around isn't needed.

## Quality Indicators

Support for displaying Quality indicators is missing from the .NET Communication Summary grid control.  This will be added in a future release.

## Control Sequence Engine

Sequences are not run in parallel which can limit its performance if a large number of sequences are triggered at once.  If control sequences that are triggered every minute, are taking more than 1 minute to complete, the control sequence engine may appear to leak memory.  It's recommended to allow more time to process the commands before new ones are triggered.  This issue will be corrected in a future patch or release.

## Visual C++ Runtimes fail to install without Update KB2999226

On Windows Server 2012 R2, the installation of the Visual C++ runtimes during the initial installation of SCADAvantage will fail unless Windows Update "KB2999226" is installed on the machine. This update can be installed via Windows Update. The following popup will occur if this update is not present.
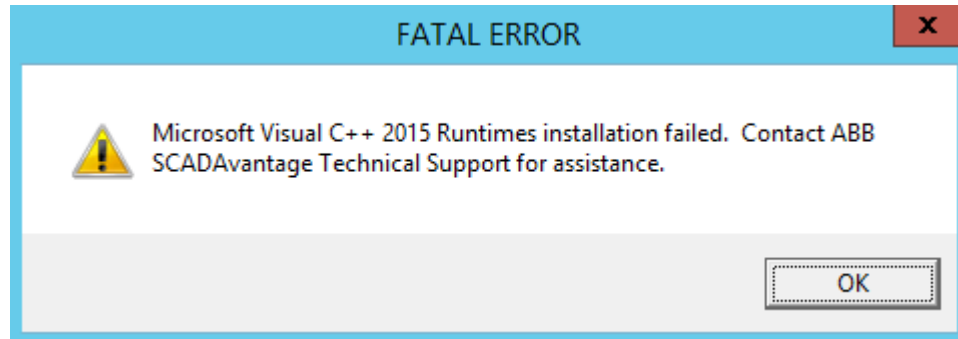


## SCADAvantage Explorer

The application may crash or hang on server restart, when configuring, when monitoring or when changing login.

When configuring a system user, trust, if the APPRDB is not connected, it's possible to get a runtime error and crash explorer.

When deleting a large number (>200) of rows such as Scheduled Requests or Exceptions, the application will be unresponsive for several minutes.  Closing the application will abort the request in the server.

These problems will be corrected in a future release when the application has been ported to Microsoft .NET.

## Replication

Before a SCADAvantage 5.5 server can be a replication subscriber with a 5.6.x publisher, the 1.11 or higher server and client patch must be installed on the 5.5 server.  Without this, errors occur in the replication event log.

When Alarm Acknowledge Replication is enabled, when an alarm for a point in manual is acknowledged at the replication publisher, the alarm does not acknowledge as expected at replication subscribers.

Replication of EntityXXXX tables and history is not implemented.  As a result, connectors and real-time meters are not replicated.  Also, replication of dynocards is not implemented. Contact SCADAvantage support if this feature is a requirement for your project or installation.

## Calculation System Process

Repeated loading and unloading a large number of points containing software expressions can cause the Calculation Engine to consume CPU for a few minutes before calculations resume. This problem will be corrected in a future release when the Calculation Engine has been ported to Microsoft .NET.

## Import/Export

For now, SCADAvantage only supports import/export configuration using the database SYSTEM account.  This is different than previous versions which supported any user with Administrator privilege in the system zone.  A future version shall restore the need for only Administrator privilege.

The default location for importing and exporting has changed from %svhome%\database\text to %userprofile%\Documents\SCADAvantage\database\text.

When importing System User configuration, accounts are Disabled by default.  This is an expected change in behavior.  Accounts must be enabled manually or in bulk using SQL-Editor.

## Trusted Server Configuration

It's not possible to configure a trusted server that references an APPRDB for a prior version of SCADAvantage.  The error '<DSN>' version is not compatible with '<APPRDB DSN>' is expected.

On a previous version of SCADAvantage, it's not possible to configure a trusted server that references an APPRDB for a newer version of SCADAvantage.  The trusted servers roles are no longer present in the newer APPRDB.

## SCADAvantage Explorer

Any Summary: Right click -> Print or File -> Print : page setup has landscape mode option, but print preview always shows page in portrait.

Any Summary: Right click -> Find or Edit -> Find : scroll bar moves to bring found row into view, but doesn't highlight/select it.

Text editing in any properties forms: Ctrl-A doesn't select all text (although Right click -> Select All does work).

Switching between opening a trend window using SCADAvantage Explorer and opening a trend window from a .NET HMI on the same computer causes the window to appear small in the upper left corner of the screen or hugely magnified.  This problem does not happen on a computer that is dedicated to showing a .NET HMI only.

These problems will be corrected in a future release when the application has been ported to Microsoft .NET.

## APPRDB access to RTRDB

The APPRDB no longer uses SQL-Server's linked server mechanism for communicating with the RTRDB.  .NET stored procedures are now used.  These stored procedures hard-code the use of the FTSCADAvantage ODBC DSN to connect to a real-time database.

## HMI Resizer

Graphics designed for a 4:3 display are not resized as expected on a 16:9 wide screen display.

The resizer does not automatically resize HMI windows if the resolution of the device's screen changes while the HMI is running.  Look in the %svhome%\media\samplecode folder for an example of a Resizable HMI using the .NET Screen class along with SCADAvantage variables and property assignments.

The resizer does not work when used inside a HMI template. Instead, use it in the form hosting the CBTemplateViewer for resizing to work as expected.

## SMS Web Service

A SCADAvantage text callout device is currently limited to one type of SMS Web Service account.

## SMS Callout Acknowledgement

Upon acknowledgement of a SMS callout via SMS (regardless if it is acknowledged by level 1 user or escalated user), ONLY level 1 users will receive an 'Alarm Acknowledged by - <user>' SMS message. Also, level 1 SMS callout user will not receive such SMS message if the alarm was acknowledged by non-SMS method; such as acknowledging from HMI.

## HMI with a large number of Event Summary displays will use an excessive amount of CPU and sometimes crash

Each event summary pops up a dialog to pick the type of log and period. After picking 'Event Log' and a 1 minute period on the first several, if no period is selected on subsequent calls to the event summary, an error indicating too many rows will appear followed by an HMI crash.

## Event Summary Properties

Accelerator keys (Alt+<key>) are not working. Use the Mouse to select options and buttons. When Device Event Log is selected, device events stored in the APPRDB are displayed. The Summary only shows data if the SQL-Server DSN is called APPRDB.

## HMI Start when server Offline or First Login Cancelled

If a HMI is started when the server is offline or first login is cancelled, any CBStatus that is subsequently displayed, does not show data after successfully logging into the server. If the HMI has several CBGrids or CBInfoPads, this can also happen. In this condition, the application may not exit properly and must be closed using Windows Task Manager.

An event summary may display <Error>, with the tooltip indicating "unknown column referenced: timestamp". Selecting Filter when in this state causes the HMI to crash.

## Infopad Text Formatting not preserved when printing

When printing information from the InfoPad HMI control, text formatting is not preserved.

## Command button Run Report does not support parameters

The CBCommandButton supports a Run Report command. However, this command does not support the ability to have any parameters passed to the report.

## 64-bit HMI Applications are not supported

All SCADAvantage HMI applications must be compiled as 32-bit applications. The option to compile HMI applications as 64-bit exists when developing .NET HMI's but is unsupported. HMI applications will be compiled as 32-bit by default.

## If SCADAvantage is uninstalled from a computer, an older version of SCADAvantage cannot be installed to that machine

Due to certain incompatibilities between versions of the software, older versions of SCADAvantage installed on computers to which SCADAvantage was previously installed will not operate correctly.

## HMI performance will be degraded if the "Store User Preferences on this Server" option is utilized

"Store User Preferences on this Server" is an option available to System User objects in a SCADAvantage server. This option causes an increase in the amount of data transferred to a machine running a client HMI and results in a decrease in performance.

## SCADAvantage servers will use excessive CPU resources if more than 300 zones and/or users exist

In situations in which more than 300 zones and/or users exist, log-in times can be more than 2 seconds.

## SCADAvantage HMI applications should be restarted once every month

If a Trend Display or Event Viewer display is left open on a SCADAvantage Client machine (in SCADAvantage Explorer or a SCADAvantage HMI) the application will eventually crash. ABB recommends an HMI or Client application be restarted once per month.

## Email a report is not retried

Only one attempt is currently made to email a report.  No retries are attempted.  An error is recorded in the event log when this happens.  This will be corrected in a future version.

## Installation Folder

During installation it's possible to Browse to an alternate folder to install the SCADAvantage software.  Installing to the My Documents folder does not work since the folder is user specific and not visible to system accounts.

## Export to XAML

Graphic files containing custom code behind, 3rd party controls or non-visible controls such as CBResizer, CBCommandManager or CBDisplayCycler are not supported.

Reloading template graphics is also not supported.

## CBFloodbar Memory Leak

The CBFloodbar uses the SymbolFactory Cutaway control which contains a small memory leak.  A HMI leaks about 15MB of memory for every 1000 copies of the control created.  ABB has reported the issue to Software Toolbox.

## Trend Importer Crash

Make sure the instantaneous, hourly and daily archive streams are enabled, otherwise, SCADAvantage Explorer can crash when importing large files that result in archives being created while importing.

## Uninstall Licensing

After uninstalling licensing, the ABB Client License Provider remains listed under Windows Services.  This has no negative impact to re-installing the ABB licensing software again.

## SCADAvantage Uninstall

The SCADAvantage uninstall does not completely unregister all components.  After uninstalling this version, installing an older version of SCADAvantage results in a non-functioning system.  It is recommended to re-install Windows before installing an older version.

## GIS Map Geographic Coordinate Support

The SCADAvantage GIS Map component only supports loading Shape Files saved using the WGS84 Geographic coordinate system (SRID=4326)

## GIS Map Shape File Path

The GIS Map Shape File layer requires selecting a path to .shp and .dbf files.  To avoid errors when deploying to an operator station, the .shp and .dbf files must be located in a folder relative to     %svhome%\custom\bin.  It is recommended to store them in a sub-folder called GISData and use the same folder when designing the GIS Map Shape File layer on an engineering station.

## GIS Map Shape File Complexity

SCADAvantage GIS Map does not spatially index the contents of a shape file.  This limits the complexity to a few hundred points, lines or polygons only.  Higher than this results in slow performance during map call-up or movement.

## HMI Graphic Fails to Refresh Correctly on Windows 8 / Windows 2012 or newer

A HMI graphic that displays two or more Boolean values may not refresh correctly on Windows 8 / Windows 2012 or higher after disconnecting and reconnecting to the real-time database.  The graphic must be closed and opened to show all the data correctly.

## Visual Basic Power Pack in Visual Studio 2013 and 2015

Visual Studio 2013 and 2015 no longer includes the Visual Basic Power Pack components for drawing shapes in a form.  However, the Power Pack can be manually installed from the product DVD under the ThirdPartyPrograms folder.

After installing the Power Pack into Visual Studio 2013 or 2015, manually update the HMI project to reference the downloaded version of the assembly.

## Quick Trend Syntax

Because the Quick Trend syntax uses a '.' to separate class from point name when defining a pen, point names containing '.' are not supported.  It is recommended to configure trend groups instead and use the Display Trend Group command.

## Pipe Segment HMI Component

The Pipe Segment HMI component has been removed from the product due to designer and runtime issues within .NET WinForms.

## Database Business Logic

The existing encrypted CL files (ECL) are no longer supported. They have been replaced by a more robust encryption scheme (BCL).  The product does not support adding custom business logic to the real-time database.

## Device Scheduler

If a device is inhibited after a request is scheduled, the request remains stuck in the scheduler until manually removed.

## OPC Server Identity

When OPC server is selected for installation, after setup, the identity of an OPC DA and HDA servers is not correct. The service account password must be re-entered using Windows DCOMCNFG tool. See Setup OPC Server for more details

## OPC Client Protocol

When the SCADAvantage OPC client is connected to a remote OPC server, Windows DCOM is used. OPC Client Protocol DCOM Configuration provides details on configuring this scenario.

If the network between the SCADAvantage OPC client and remote OPC server is interrupted, timeouts in SCADAvantage can be a lot longer than configured. This is a limitation of Windows DCOM, not SCADAvantage.

SCADAvantage route switching does not work as expected for an OPC device configured for a remote OPC server with multiple IP addresses. Windows DCOM does not support protocol switching when a remote computer is multi-homed (has multiple IP addresses). To work-around, use network teaming to present a single IP address at the remote computer. This way, switching is done at the hardware level.

Windows DCOM can be bypassed by using MatrikonOPC Tunneller™.

## Disaster Recovery Installation

When selecting this feature during installation, only RTRDB can be selected.

Uninstall of Disaster Recovery does not work. Installing Disaster Recovery, then uninstalling it, the server still thinks disaster recovery is installed.

## Alarm Suppression

Multi group membership for a point (a member of more than one group that may be suppressed by more than one first out) is not working. As a result, cascading suppression (one group suppresses another group) is also not working. This issue will be corrected in a future patch.

## Report Exporting

When logged in with domain credentials using Windows Authentication: when exporting reports it is recommended to export to the users Documents folder. Attempting to export to the root of the C:\ drive will result in the file being saved to the %appdata%\Local\VirtualStore\ path. The file explorer will display the file at the C:\ however the file does not exist at that location.

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# Section 5   Work Arounds

## Lines not appearing in HMI graphics

If your HMI graphics contain line or rectangle shapes, these shapes use Microsoft's Visual Basic Power Pack.  This was included in Visual Studio 2012, but is a separate download for 2015. To work-around, install the Power Pack.  It's included on the product DVD under the ThirdPartyPrograms folder (vb_vbpowerpacks.exe).

It's recommended to switch to the new Line Segment component for drawing lines in your HMI before using Visual Studio 2017.

## Adding Disaster Recover

Adding Disaster Recover to an existing RTRDB installation does not correctly register the Disaster Recovery Windows Service, to work-around, run the following commands as an Administrator user

cd /d %svhome%\bin

%windir%\Microsoft.NET\Framework\v4.0.30319\installutil .\SVDRService.exe

Reboot the computer and continue with the instructions for configuring Disaster Recovery.

## RTRDB stops responding when archive device unavailable

When an archive device (such as a network share), is unavailable for several hours, the RTRDB may become unresponsive (clients are disconnected) when retrying to load archives.  To work-around, move the archives to a different device to allow them to come online.  Leaving the database unable to load archives for a prolonged period is not recommended and will cause a failover when redundant.  ABB will correct this issue with a release.

## EFM Meter Settings

After changing EFM Meter application settings Device Scheduler First History Upload Days setting, the Device Scheduler System Process must be restarted before the new value takes effect.

## Error Opening HMI Form Design in Visual Studio

Creating a new HMI application in Visual Studio, closing the solution, then creating a second new HMI application and opening a form results in the error "Object reference not set to an instance of an object".

To work-around, restart Visual Studio.  This problem only happens when creating a second new HMI without restarting Visual Studio.  It doesn't happen if opening or switching between existing HMI's.
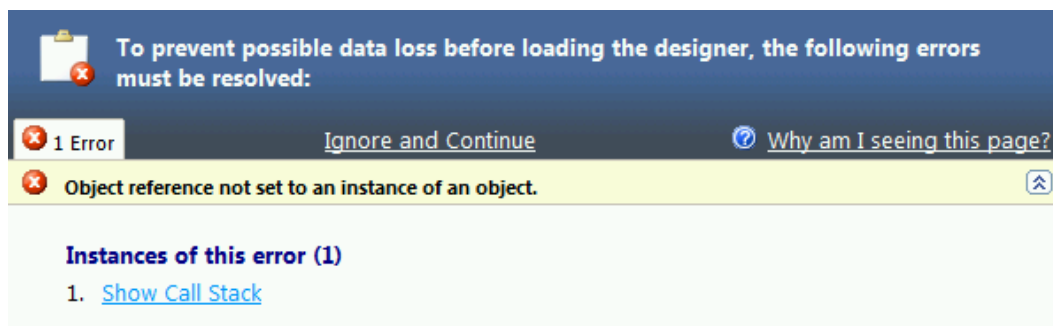
## ExectuteSQLAsUser and ExecuteSurrogateSQLAsUser Functions

Make sure all SQL statements use views.  SQL statements using direct table access will result in an insufficient privilege errors in the security event log.

Both functions include a parameter for specifying the password of the user to execute the SQL statement.  This is stored as clear text in the real-time database and HMI compiled code.  Use an account with the least privilege needed to complete the operation.  It is not recommended to use the system account name or password.

## Excel Add-in

The Excel add-in uses a function with clear text user name and password to connect to the database.  It's recommended to Set a Password on an Excel Spreadsheet to encrypt the file.

## APPRDB Monitor

The APPRDB Monitor system process is removed during upgrade.  The equivalent functionality is now in SCADAvantage Monitor by adding the /sqlserver command line argument.  This argument isn't automatically added during upgrade and must be manually added.

## Running Report Fails

Running reports fail due to changes in security.


Error 5000 : Error in processing report.

[ Extended Info:[Polyhedra][ODBC Driver]Communication link failure]

Edit the report definition. Review the user name of the ADO connection.  The guest user is disabled by default.  It's recommended to create a specific user account for reports, rather than enabling the guest account.  Once changed, reports work as expected.

## HMI Errors connecting to Previous Version RTRDB

Before a 5.6 HMI can connect to an older server, the previous version server must be patched. Without this, the HMI will exhibit errors in the point controls such as the tooltip showing the error "unknown column referenced: 'dvireliable'", exception popups on server failure or failover and errors in trend displays.

If the older RTRDB is version 5.5, the server must have the 550Server-v1.15  or higher patch installed to clear this error.

If the older RTRDB is version 5.4, the server must have the 540Server-v1.16 or higher patch installed to clear this error.

In both cases, the latest version of the server patch is recommended.

## SCADAvantage Explorer

After changing a password, at the first login prompt, entering valid credentials does not show the tree view.  To work-around, click Cancel after the first login prompt.  After this, right click on the DSN and select Connect or double click to login normally.

Creating a new real-time meter or connectivity type causes SCADAvantage Explorer to hang.  To work-around, make sure latest Microsoft security patches are installed.

## Script Errors when opening PDH Meter Configuration

When opening PDH meter configuration errors such as "javascript:parent.ABB_SV_PDH_GRAPHICS()" or "javascript://parent.ABB_SV_PATH_TEXT()" appear in a popup window.  To work-around,

On Windows Server, open the Windows Server Manager application.  On the Local Server properties, locate the "IE Enhanced Security Configuration" option and set to Off.  IT security or group policy rules may prevent changing this option.  The rules must be overridden for this feature of SCADAvantage to function correctly.

## Trend Pen Properties Drop-down Lists

For an historical trend, when configuring the properties, on the Historical tab, Granularity sub-tab, drop-down lists under the Roll-up, Sample Period and F(x) columns may not appear as expected when running on Windows 10, Windows 2012R2 Server or newer. To work-around, the up and down arrow keys can be used to cycle through the options.  Note that the possible options are listed in the Bulk Pen Settings drop downs which can also be used to change the pen settings.

## Error Renaming User with Administrator privilege

Trying to rename or delete user with System Zone privilege set to Administrator, results in the following error

Could not delete from table users because of referential integrity constraint:…

To work-around, change the System Zone privilege to Configurator and Save.  Then rename or delete.

## OPC HDA Not Shutting Down

When a SCADAvantage Device that's configured to communicate with the SCADAvantage OPC HDA server is inhibited, the HDA server does not shutdown.  To work around, inhibit the corresponding network instead.

## System Processes Don't Start the First Time

After installing a new SCADAvantage server, the first time the server starts, the System Processes may not start.  To work-around, reboot the computer and, if using a central license server, make sure it's available.

## After Upgrading, HMI Login Problems when using Polyhedra Authentication

When starting a HMI, the login prompt is slow, login fails for no reason or the security log records "Anonymous logon failed".  To work-around, add the following to the HMI's app.config and recompile.

```
<appSettings>
  <add key="UseWindowsAuthentication" value="false"/> </appSettings>
```

## HMI Upgrades

Upgrading a HMI from Visual Studio 2008 or earlier directly to Visual Studio 2015 is not supported.  To work-around, use Visual Studio 2012 or 2013 to open the Visual Studio 2008 solution and perform a HMI optimization.  After this, the solution can be opened in Visual Studio 2015.  The Winforms designer in Visual Studio 2015 is not 100% compatible with code behind layout prior to Visual Studio 2010.

## Virtualization

SCADAvantage does not function correctly on a virtual machine with only 1 CPU assigned.  To work-around, 2 or more CPUs are required.

## "Please insert disk 1" during installation

To work-around, copy the contents of the DVD to a folder on the hard disk and install from there.
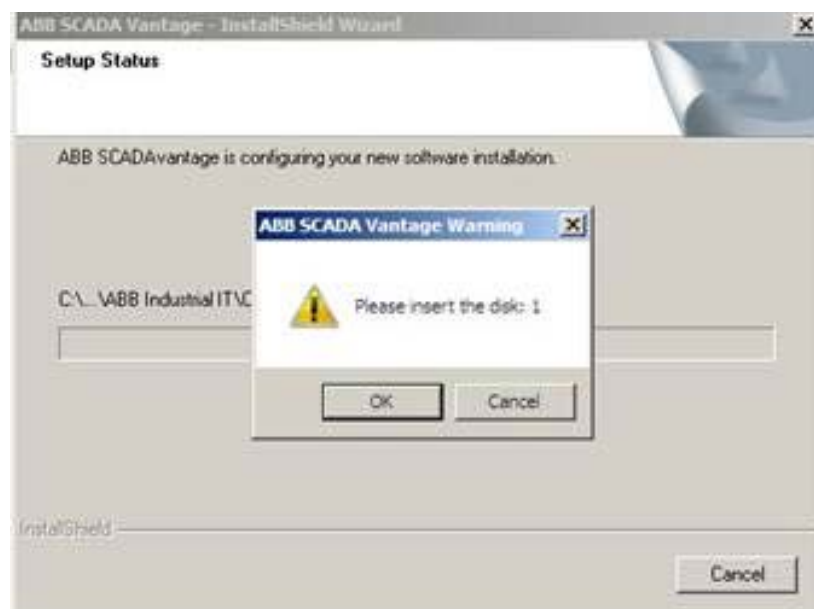


## I/O List Export add-in removed from SCADAvantage Explorer

The I/O List Export add-in is a customer specific solution.  It requires a specific set of BOT variables, components and templates which are not shipped with the product.  The source code is provided under %svhome%\Media\SampleCode\SVIOList for those customers who wish to continue using this functionality and/or improve/customize the original implementation.

## File Must exist before Upgrading RTRDB

After upgrading in-place from a previous version, make sure %svhome%\supportfiles\upgrade\poly.PRE05.06.00.00.00.cfg exists.  If not, copy the previous version %svhome%\poly.cfg to this file name.

## ExecuteSQLAsUser Runtime Error

A software expression containing this function fails with a runtime error "Connection must be valid and open", "Lost Connection" or "Login Failed!" when the user account is disabled, blocked, the password has expired or the maximum connections has been exceeded.  To work-around, correct the blocked account using security configuration tools.  The same problem occurs for the ExecuteSurrogateSqlAsUser function too.

## Standby Shuts Down with Error

Occasionally, the standby shuts down and the SCADAvantage.log.txt contains the following error message:

RTRDB state … frozen JCP transaction count detected

This occurs because the active server becomes too busy for short periods of time to send updates to the standby.  Rather than the standby becoming out-of-sync for long periods of time, it is designed to shut down after not receiving updates.  Its recommended to determine the root cause of the active being busy before working around the problem.  Details for the work-around are documented in the topic Arbitrator Troubleshooting.

## Path to SCADAvantage Explorer has changed

In 5.3.1, SCADAvantage Explorer is located in the %svhome%\bin folder.  After upgrading, the application is now located in the %svhome%\custom\bin\system folder. Any short-cuts on the Windows desktop or task bar will need to be updated.

## Historical Playback not working when HMI on server

Make sure the workstation name is not LOCALHOST and the name is entered in uppercase.

## EFM Meter History Replication

EFM Meter history appears to missing from the subscriber. To work-around, increase real-time replication buffer from default of 100K to 100M.

## SCADAvantage Explorer or HMI crashes opening a Trend graphic

Open Windows regedit tool and navigate to HKEY_CURRENT_USER\SOFTWARE\Smartcore Systems\iVision\V2.1\Generic\Trend.  Right click and Export to a file with extension .txt.  Please email the exported file to SCADAvantage support.  To work-around the crash, delete the Trend registry key.

## PDH Configuration and History Migration to Integrated Metering

The Web Service is required for migrating meter configuration and history from PDH into the new integrated metering system.  If you don't want to buy a license just for migration, you must tolerate the license annoyance messages until migration is complete or request ABB to perform the migration at an hourly rate.  It's probably better to just buy the license :-) and enable the ability for future mobile applications.

## HMI Packaging

When packaging HMI, ensure third party assemblies.(e.g.: Visual Basic Power Pack) are included within the package

# Section 6  Cyber Security

## Cyber Security Guide

The product help includes a new Cyber Security guide which covers the following topics:

- Authentication
- Access Control
- Security Zones and Network Security
- Virtualization Security
- Intrusion Detection Systems
- Audit Logging
- Secure Storage
- Secure Patch Management
- Physical Security
- Windows Host Hardening
- SCADAvantage Hardening
- Default Security Settings Reference

## Known Security Limitations

The following security limitations are known to ABB.  It is ABB's intention to address these in future releases.

- By default, all System Processes are installed.  Only the most common are enabled.
- By default, all application user accounts are enabled.
- By default, all Protocols are installed.  Only those on the DVI command line are enabled.
- .NET code is not obfuscated and can be reverse engineered
- The SCADAvantage Windows service uses an account that requires Administrator privileges
  - If configured, the Control Sequence Spawn Executable command could allow Administrator access to the machine.  This issue is flagged in the Baseline Security Analyzer.
  - If configured, a Scheduled Task entry can launch a command that allows Administrator access to the machine.
  - If configured, a System Process can launch a command that allows Administrator access to the machine.
- The password policy allows setting the minimum password length to zero.
- The Excel add-in uses a function with clear text user name and password to connect to the database.

- The real-time database does not support encrypted communication using SSL.

- The real-time database does not support separate security administration from configuration of field operations.  Users with System Maintenance automatically inherit Configuration Maintenance.

- The real-time database does not restrict user login to specific times of the day or specific workstations.

- When using SMS to Twilio web service, the port that listens for responses does not restrict access via authentication nor is encrypted.  Setting up a VPN connection is possible, but has not been tested by ABB.

- SCADAvantage applications do not support communication via TCP/IP version 6 (IPv6).

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# Section 7  Technical Support

Contact ABB SCADAvantage technical support at SCADAvantagesupport@ca.abb.com or your local ABB representative for assistance in problem reporting.

## Reporting Issues

When submitting an issue, ABB support and development places highest priority on critical problems such as data loss, data corruption or prolonged server downtime and high priority problems such as application crashes and data or alarms not being presented correctly in the HMI. These types of problems are candidates for a patch unless a work-around is provided.

Patches are typically released once a month.  Patches should be tested in a QA or test environment first to confirm there are no side effect.  For patches immediately installed into a production environment that exhibit side effects, ABB reserves the right not to fix the lesser side effect if the original problem is corrected.  ABB also reserves the right to withhold patches if the customers Software Maintenance Agreement (SMA) is not in good standing.  Finally, in some cases, ABB may require a customer to upgrade to newer 3rd party software such as Windows or Windows patch level, SQL-Server or Microsoft Office in order to fix an issue before releasing a patch.

Before reporting an issue, confirm that rebooting Windows does not fix the issue.  When reporting an issue to ABB support, please include the following common information as well as information specific to understanding and repeating the issue.

SCADAvantage Version:

SCADAvantage Feature:

Severity:

ID: <any ID you are using to track the issue>

Site Name:

Is this an ongoing issue or has it just started happening?

How often is it happening?

Is it specific to one tag or meter or all?

Is it specific to one computer/server or all?

What patches are installed?

Is it easy to repeat? (If Yes, provide specific steps or a simple HMI that demonstrates the problem)

Is this in production or testing?

Is this running on physical hardware or a Virtual Machine?  Does it meet ABB's Hardware requirements?

Is this running in a Windows workgroup or domain?

Is the server running any customize or 3rd party extensions? (system processes, views, protocols, etc.)

In some cases, a backup of your real-time database or HMI source code is needed to repeat an issue.  ABB understands there may be privacy issues and guarantees no copies will be retained

after closing the issue if requested.  Otherwise, support will retain a copy for future support and internal future upgrade testing.

Issues such as unsupported devices or data processing or presentation, unexpected or occasional failovers or restarts of system processes, duplicate data, less than optimal performance under normal load or HMI window management, graphic sizing, call-up time, UI response or backwards compatibility are not considered high priority or candidates for patches. ABB will review these for inclusion in a future release.  Customers are encouraged to confirm submitted issues like these are fixed by participating in the beta or release candidate programs for the next release.

Customers with custom System Processes on the server must disable these processes and confirm the issue remains before submitting to ABB.  Customers running a server in a virtual machine must ensure the VM is not sharing any hardware with other VMs before submitting any performance related issues to ABB.

## Section 8  How to Order

Contact ABB Product Sales at [SCADAvantage.info@abb.com](mailto:SCADAvantage.info@abb.com) or your local ABB representative for ordering and technical sales support.

# Contact us

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