

# ClearSCADA 2017 R3

Software for Telemetry and Remote SCADA Solutions



Release Notes

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# Welcome

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Welcome to ClearSCADA 2017 R3.

## Licenses

All users upgrading to this release will require a new license file available from customer support. This is required for both server and client upgrades.

## Support

Please refer to this page for support information

<http://resourcecenter.controlmicrosystems.com/display/CS/ClearSCADA+Support>

# New Features and Enhancements

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## Support for new SCADAPack 570/575 RTU Features

ClearSCADA 2017 R2 delivered a new integration experience with the SCADAPack 570/575 RTUs. The RTUs are the first models that are able to share programs with Schneider Electric Modicon M340 and M580 PACs (Programmable Automation Controllers).

ClearSCADA 2017 R3 builds on that enhanced functionality by providing the following:

- Support for SCADAPack x70 system data
- Support for routing tables:
  - IP Routing Table
  - DNP3 Routing Table
- Support for an IP Whitelist that you can use to control the flow of network traffic to and from a SCADAPack x70 device
- Firmware download capability, available as a 'Download Firmware' pick action
  - A new SCADAPack x70 Firmware Image item is available and is linked via a field on the Device Configuration item for the SCADAPack x70 device.
- Alarm limits tuning on protocol-specific analog and counter points
- A new SCADAPack x70 Security Configuration item that can be used to import a Security Configuration file
- DNP3 Pulse Actions.

Other enhancements include:

- The DNP3 and Modbus tabs on SCADAPack x70 Analog, Digital, and Counter Configuration items are now optional
  - Validation errors for SCADAPack x70 configurations with conflicting address/register assignments are only raised if the tab for the associated communications protocol (DNP3 or Modbus) is enabled.
- SCADAPack x70 logic programs are validated against the ClearSCADA configuration to confirm they are compatible
- ClearSCADA now uploads logs from SCADAPack x70 devices following a configuration download. These can be viewed using a pick action on the protocol-specific outstation that is associated with the SCADAPack x70 device. Additionally, ClearSCADA will raise an alarm if it detects errors in the log file. The errors themselves are logged in the Event Journal, and can be viewed using the Events List.
- You can now remove the local copy of the SCADAPack x70 logic application that has been imported into ClearSCADA. You can do this using a 'Remove Logic Application' pick action on the SCADAPack x70 Device Configuration item.

We recommend that you open the ClearSCADA Help for further details regarding how to configure these device features.

## WITS-DNP3 V3.0 Support

The ClearSCADA product team is continuing to demonstrate commitment to the Worldwide Industrial Telemetry Standards WITS-DNP3 Protocol by adding version 3.0 support.

We have extended ClearSCADA's WITS Device Profile support. This has been extended to include support for WITS 3.0 device profiles, and device profiles that contain an 'Implementation of persistence' section (1.6.6).

From version 3.0 of the WITS-DNP3 standard, there are optimizations to the protocol. These optimizations can significantly reduce the number of messages that are exchanged between a Master Station and Field Device, particularly when a communications session is first established. These optimizations can be particularly beneficial with on-demand battery powered devices, as they help to prolong the life of the battery. For more information, see the topic 'How do I Configure ClearSCADA to Optimize the Use of the WITS-DNP3 Protocol?' in the ClearSCADA help.

The following changes apply to DNP3-WITS outstations only:

- When using Unsolicited mode, the 'Disable Unsolicited' message is now skipped when supported by the WITS 3.0 outstation (as per its device profile) and when using an appropriate communications media (dial-up, TCP) or outstation has restarted
- The status of all application programs is only read after a restart, rather than at the start of every communications session
- Support has been added for WITS 3.0 outstations that report a 'file not found' error (instead of opening an empty file) when ClearSCADA is attempting to read the outstation's logged data file and the outstation has no logged data.

The following changes apply to all DNP3 outstations in ClearSCADA:

- Support has been added to optionally cache device attributes so that they do not need reading at the start of every communications session. Instead, they only need reading after a master or outstation restart.
- Support has been added to optionally only read static data for string points after a master or outstation restart, following an Event Buffer Overflow, or after a WITS device On/Off Scan action.
- A 'String Events Scan Group' has been added to enable separate polling of events associated with string points.
- A 'Minimum Drift' property is now available when the 'Check Clock Drift' property is enabled. You can use the 'Minimum Drift' property to prevent an outstation's clock from being set if the master and outstation clocks are already synchronized within acceptable limits.
- A new 'Integrity Poll' option has been added to the 'Check Clock Drift' property to defer the set clock at the start of every communications session until after the initial integrity poll has been performed. When combined with 'Minimum Drift' property, this allows the clock set to be skipped entirely (if clocks are already synchronized).

We have also added support for:

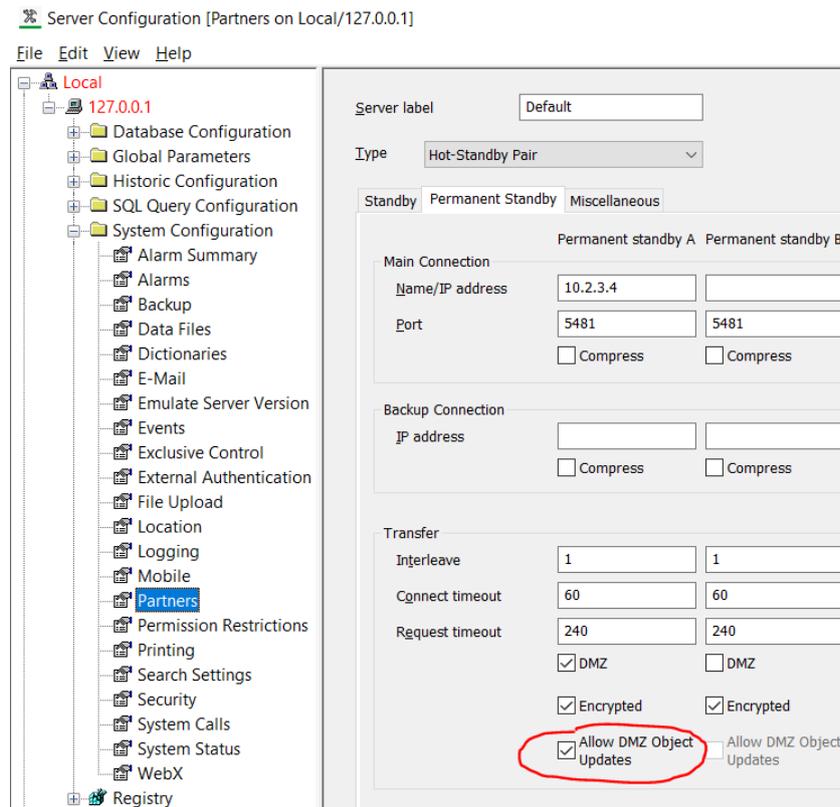
- Defining analog input point high speed sampled data cycle size in either records (WITS 3.0) or hours (WITS 1.3)
- WITS 3.0 incident logs and significant change logs
- Additional DNP3 device attributes. This includes integration of the new location attributes (latitude, longitude and altitude) with the ClearSCADA geo-location features:
  - A DNP3 slave outstation will report its configured location (if any)
  - A DNP3 master outstation will update its location with the values read from the outstation (if its location source is set to dynamic).

We recommend that you open the ClearSCADA Help for further details regarding how to configure these device features.

## Management of Passwords and Users from DMZ Server

A DMZ server is a configuration feature of a Permanent Standby server. When a DMZ server is accessed by a user, the user cannot modify the database.

There are a restricted set of circumstances where users do need to update the Main database. The functionality prior to ClearSCADA 2017 R3 allows user logins to be correctly recorded, even though they were carried out from the Permanent Standby. This would take place if the setting 'Allow DMZ Object Updates' was set:



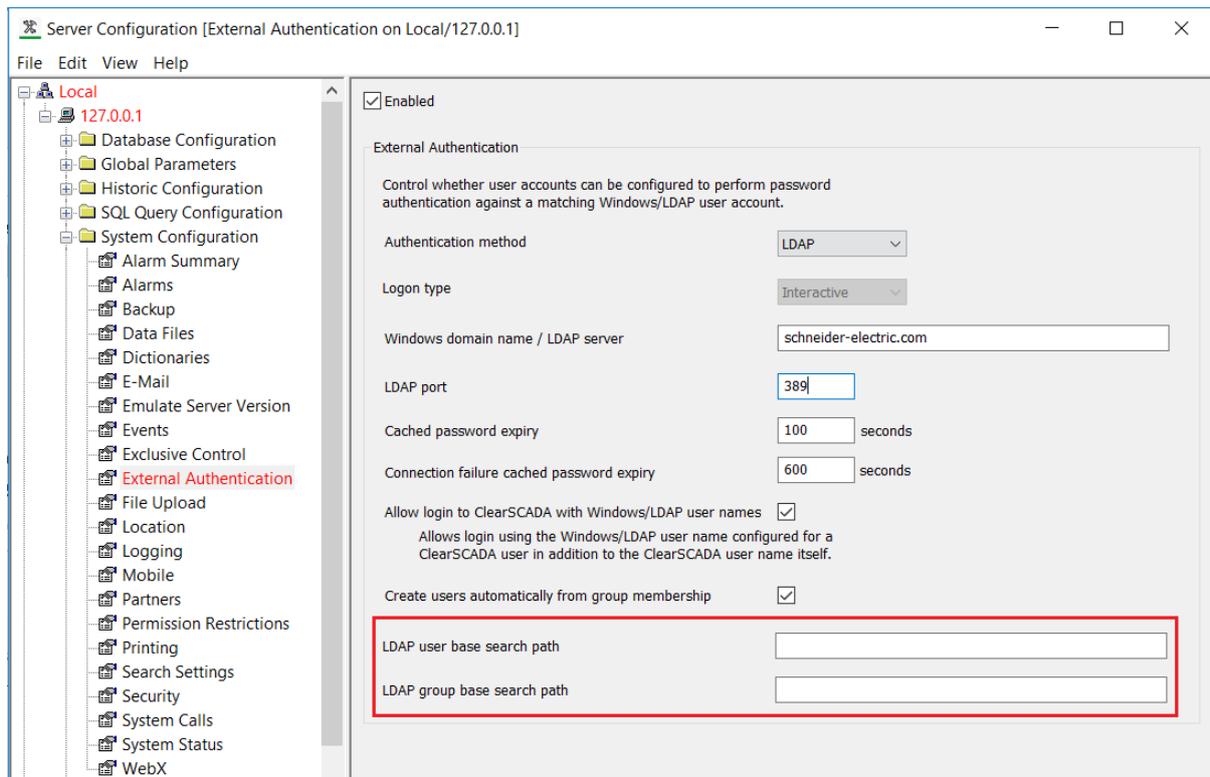
From this version of ClearSCADA, if that setting is enabled, then in addition to recording logins from the DMZ server, users are permitted to change their passwords, which will result in the password being written to the main database.

Also, for those systems that are configured to create user accounts automatically from an Active Directory or LDAP connection, account settings and group memberships will be created and updated in the same way as they are for non-DMZ Permanent Standby and Main/Standby servers. Note that in this case the first login attempt will update the Main database, but will not take effect until the second attempt. This is because the Permanent Standby database update is not synchronous to the login.

## External Authentication - LDAP Group Membership Search Enhancement

We have added options to the 'External Authentication' section of the Server Configuration tool to enable users to specify a base search path for users and groups when determining group memberships on an LDAP server.

Groups outside of the group search path will not be returned and their memberships will not be queried. This enables ClearSCADA to narrow the searches and thus can provide a benefit in terms of search speed. It also aids in situations involving unneeded referrals, where configuring a more specific path may prevent a referral from occurring.



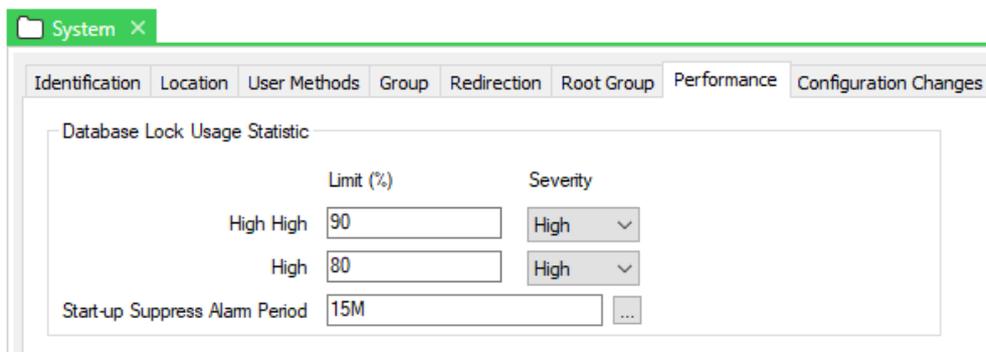
We recommend that you open the ClearSCADA Help for further details regarding how to configure these new properties.

## Server Performance Alarms

The ClearSCADA database has a primary measure of performance, which is the total database lock time. This time is a percentage value, and is used to measure how busy the server is in performing data read, calculations and fulfilling client requests.

The lock statistics are shown in detail using the Server Status tool, on the General/Locks page and also on the Database/Read/Write Lock Diagnostics page. They are also recorded in the ClearSCADA server snapshot log files.

ClearSCADA now monitors a single metric each minute – the ‘Database Lock Usage Statistic’ - which measures the overall database read and write lock usage per minute. This value is compared against two alarm thresholds, and will raise (text/one-shot) alarms when the thresholds are exceeded. The configuration is specified on the ‘Performance’ tab of your system’s Root Group:



The alarm settings are set by default, but can be altered if required.

The ‘Start-up Suppress Alarm Period’ is used to prevent unnecessary alarms being raised for a time after the server is started.

At any time, hovering the mouse over the server icon will show the current lock statistic:



When an alarm is raised, it is reported also as a visual indication on the server icon:



A message is also shown on the main page of the Server Status Tool, indicating the value that raised the alarm:



## Query Security

You can now restrict the ability to edit the SQL queries that are used in Queries Lists (Lists other than Alarms Lists). This is done by restricting the availability of the 'Edit Query' option on such Lists. Access to this option can be restricted on either a per server, or per user, basis. When access to the 'Edit Query' option is restricted, the restriction also extends to QueryPad, the SQL query diagnostics tool that is supplied with ClearSCADA. When the restriction is in place, users will be unable to connect QueryPad to the database. For more information, see the following sections in the online help on:

- Specify Whether SQL Queries can be Edited using the Clients on this Server
- Define the SQL Editing Settings for a User
- Connect QueryPad to a Database.

The restriction does not impact on a user's ability to edit SQL configuration elsewhere from a ViewX client (for example, SQL animations on Mimics). However, as with previous versions of ClearSCADA, the users' User Accounts must be assigned the relevant configuration permissions and access for those users to have configuration access to those features and database items.

## Operational Improvements

ClearSCADA 2017 R3 delivers further User Interface improvements, including those listed below.

### ViewX and WebX Enhancements

We have added support for Quick Filter actions on cells in array columns. These are used, for example, by User Accounts to refer to Groups, and by database Points to refer to historic exports.

We have also added object methods to the Script Library to get and set the script code. External programs can now read and write script library code, and so can be used to audit the contents of scripts.

If the ViewX process terminates unexpectedly and a crash dump is produced, it is captured into a zip file along with the process log files. The target location is set in the Windows registry.

### WebX Enhancements

Expressions for elements of the Trend user interface (such as the Trend Title, Y-Axis Label, and Trace Label) are now evaluated. This enables animated Trend Titles and Labels to be rendered on WebX HTML5 Trends.

# Recent Updates

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## Resolved Issues not in Monthly Releases of ClearSCADA 2017 R2

- DEV-12879 Fixed issue with docking positions lost for super favorites.
- DEV-13220 Corrected the first hour of Event Suppression processing of historic events.
- SUP-10118, DEV-13203 Ensured that trend trace colors are honored for TrendSpec in (new)WebX.
- DEV-12935 Fixed parameter passing to Mimics in (new)WebX.
- DEV-12174 Fixed Trace Label Text and Trace Label Text Animation for Trends in (new)WebX.
- DEV-12970 Prevented excess notifications of server state change in WebX.
- DEV-12969 Fixed animation of labels in (new)WebX.
- DEV-12893 Improved ViewX Request Queue to handle larger queues properly.
- DEV-12707 Set ViewX log file location from registry.
- DEV-12900 Fixed potential server crash when setting the value of most analogue output / digital output / string points (e.g. using OPC-DA or logic to set the current value of a point).
- DEV-12888, SUP-10337 Fixed missing field index integrity errors after reordering the elements of an 'array of references' database field, such as Advanced OPC server references. The integrity error would occur on a standby server after synchronizing the change, or after importing an SDE file containing the change.
- DEV-12836, SUP-10315 Fixed issues with handling invalid expressions that end in a comparison operator (equals, less than etc.), for example: 2+2=. The issues included crashes or serialization exceptions (during main-standby synchronisation). These issues affected all expressions throughout the product in the server (e.g. calculation points, method calls, schedules), ViewX (e.g. mimics, trends) and WebX (e.g. mimics, trends).
- DEV-12801, SUP-10279 Fixed advanced driver lockup/crash when a shared outstation set has the interleave option enabled and is out of service or has invalid configuration.
- DEV-12735 OPCA client's use of Refresh produces IOPCEventSink::OnEvent updates with a timestamp of the time that the condition transitioned into the new state or sub-condition, rather than the time the refresh occurred.
- DEV-12776 Corrected ViewX dialogs to use the theme colors specified in the registry.
- DEV-12713 Reinstated the context menus for the Messages window in ViewX.
- DEV-12712 Corrected ViewX handling of DateTimeOffset parameters for methods.
- DEV-12623, DEV-12644 Corrected Registry Server Update to ensure Server denied 'Permission Restrictions' updated on running server.
- DEV-10834 Corrected the datatype of the Blink\_\*, AltBlink\_\*, and UseBGC\_\* values written to the Severities registry key on first DBServer startup.

- DEV-12560 Corrected behavior of ScxCmd HISSTRIP and CS historic optimize/duty-duty merge functions with regard to record ordering and duplicate removal. Previously records with the same timestamp and value could be incorrectly detected as duplicates, even if they were not consecutive (for example, a point rapidly toggling between two values). Additionally, records with the same timestamp could be sorted into an incorrect order based on other attributes.
- DEV-12567 Fixed uninitialized incident log point references on WITS min/max/mean points.
- DEV-12557 Alarm summary write error max alarms and area of interest now default to the correct values in new databases.
- DEV-12482 Fixed issues with WITS data log file parsing as described in WITS-DNP3 TB#62 (item 5, ticket 46).
- DEV-12376 Disabled Static Pressure Type and Atmospheric Pressure fields when SCADAPack RealFlo flow run is configured to use a sensor to measure static pressure.
- DEV-10219 Fixed issue in SNMP driver where a point's quality was not reported correctly following link failure.
- DEV-12430 Added timeout to browser location requests in WebX.
- SUP-10066, DEV-12403 Ensured Long Query Hyperlinks do not crash WebX.
- DEV-10627 Read\Write missing options to SCADAPack 32 RealFlo outstation running firmware later than 6.82. (Previously SCADAPack 32 was considered to be frozen to only support 6.82 and earlier features).
- DEV-12247 Added prompt to restart DBServer after changing Per-user security setting.
- DEV-12083 Corrected SCADAPack E Outstation Port Mode enumeration options enable expression, could have previously allowed the Hayes Modem option when it wasn't valid option.
- SUP-9999, DEV-12265 Fixed a problem whereby using a Time Axis Offset of a Month for a Trend failed to display the trend in new WebX.
- DEV-12201, SUP-9827 Fixed problem where animated items on a mimic could start to 'drift' out of position after a long period of time.
- DEV-11947 Fixed the display of ad-hoc trend when launched from a mimic script.
- DEV-12053 Fixed Mitsubishi Driver fault when Mitsubishi Slave Source PLC Type is changed.
- DEV-11884 Prevented the truncation of timestamps for query and event lists when time format for the user is HH:mm in ActiveX control.