

**EcoStruxure™**

# **Geo SCADA Expert 2021**

Software for Telemetry and Remote SCADA

Release Notes

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# Welcome

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Welcome to EcoStruxure Geo SCADA Expert 2021.

## 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:

<https://tprojects.schneider-electric.com/telemetry/display/CS/ClearSCADA+Support>

# New Features

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For further information on new features please consult the context-sensitive help (available via the F1 function key) and the Schneider Electric Exchange SCADA and Telemetry Knowledge Base web site, available at:

<https://community.exchange.se.com/t5/Geo-SCADA-Knowledge-Base/Resource-Center-Home/ba-p/279133>

Context-sensitive F1 help will not yet contain all updates within Geo SCADA 2021, and updates will be delivered through Monthly Updates.

## Device Protocol Support

### OPC UA Client Driver

This addition to the suite of Geo SCADA Expert drivers is for the OPC UA protocol. The driver enables the transfer of data between Geo SCADA Expert and third-party OPC UA compatible servers. The driver provides support for security and encryption that might be required to access particular items in an OPC UA compatible server. You can also make use of discovery services that enable OPC UA compliant clients to connect to any of the OPC UA servers that are registered with a 'Discovery Server'.

Conversion of database items will preserve the relevant configuration fields for database items of the Advanced OPC DA driver.

For more information about the driver, see in the help: Introduction to the OPC UA Driver, and see Configure OPC UA Items.

### IEC 61850 Driver

This addition to the suite of Geo SCADA Expert drivers is for the IEC 61850 driver. The driver enables communication between Geo SCADA Expert and IEC 61850 compatible IEDs (Intelligent Electronic Devices) directly. This driver is used to interface with the substation equipment at station level. It can import or consume any of the applicable Substation Configuration Language (SCL) file types, in order to configure, and communicate with, the substation equipment.

The IEC 61850 driver uses the MMS protocol to communicate with IEDs. This driver supports TLS or MMS certificate-based security. For more information about the driver, see in the help: Introduction to the IEC 61850 Driver.

## SCADAPack x70 Driver

The SCADAPack x70 driver has been extended with the ability to upload the complete configuration from a SCADAPack x70 device into the Geo SCADA Expert database, creating and updating all the database configuration items as required (see in the help: Upload Configuration). Configuration items are created, and protocol items (for DNP3) can be created from a right-click option on the configuration item if required.

Similarly, the driver has been extended with the ability to import the complete configuration for a SCADAPack x70 device from RemoteConnect using an .RTZ file (see in the help: 'Import from RemoteConnect' in the SCADAPack x70 Driver Guide).

These new features enhance the configuration management process for SCADAPack x70 devices by allowing two-way synchronization of configuration between Geo SCADA Expert and the SCADAPack x70 devices / RemoteConnect.

Except where stated otherwise for specific features, this driver provides support for functionality that is available in SCADAPack x70 devices that are running firmware up to and including the following version(s):

| Application and Firmware                | Latest Version Supported | Earliest Version Supported |
|---|--------------------------|----------------------------|
| SCADAPack x70 Release                   | R2.6.1                   | R2.0                       |
| SCADAPack x70 RemoteConnect Application | 3.8.3                    | 3.4.1                      |
| SCADAPack x70 Firmware version          | 9.5.3                    | 9.1.1                      |

### X70 Alarm Limits Database Structure Change

The enhancement to the SCADAPack x70 driver has necessitated database configuration changes that could result in a “breaking” change when upgrading some existing SCADAPack x70 configuration that has been deployed into earlier versions of our product.

The breaking change concerns the use of SCADAPack x70 analog and counter points that use limits which are defined in the configuration object as ‘disabled’.

The details are discussed in Appendix A. This also explains the preparation work that you should perform **before upgrading**, to detect whether your existing SCADAPack x70 configuration is affected. It also provides guidance how to identify the configuration that needs to be changed and decide what changes to make before and after upgrade to Geo SCADA Expert 2021.

## SCADAPack Modbus Realflo Driver

The SCADAPack Modbus Realflo driver has been extended to support Realflo firmware version 7.02. This includes support for:

- AGA-9 flow calculation type (multipath ultrasonic transit-time flow meters used for the measurement of natural gas)
- AGA-8 compressibility calculation types
- Flow rate quality detection register/digital object in input configuration
- USM (Ultrasonic meters) events and alarms.

## Connection Retries

Connection Retries enable TCP/IP-based outstations using the DNP3 family of protocols to be retried on loss of the TCP connection without raising an outstation communications alarm.

The number of retries is determined by the **Transaction Attempts** field on the **Scan Parameters** tab of the channel.

The screenshot shows the 'Scan Parameters' configuration window. It features a tabbed interface with 'Scan Parameters' selected. The configuration includes:
 

- Comms Retries:** A text input field containing the value '3'.
- Transactions Attempts:** A text input field containing the value '2'.
- Standard Reply Delay:** A text input field containing '1000' followed by a 'Milliseconds' label.
- Line Speed:** A dropdown menu currently set to 'Undefined' with a 'Bits/second' label.

 A note at the bottom states: 'Line speed is used to calculate the transmission time of each message'.

You also have to enable the **Retry Connections** check box on the **Connection** tab of the channel.

The screenshot shows the 'Connection' configuration window. It features a tabbed interface with 'Connection' selected. The configuration includes:
 

- Connection Type:** A dropdown menu set to 'Network'.
- TCP/IP Type:** A dropdown menu set to 'TCP'.
- Merge Connections:** An unchecked checkbox.
- Independent Connections:** A checked checkbox.
- Retry Connections:** An unchecked checkbox.

There are configuration validation rules to ensure that Retry Connections is only enabled for network connections where the 'TCP/IP Type' is TCP.

Connection Retries apply to connections initiated by the master and permanent connections initiated by the outstation. It applies to "always available" outstations and applies to periodically available outstations if the connection was established by the driver (see the help: 'Configure a Channel's Network Connection Properties' in the Drivers Guide).

## DNP3 Driver Persistence

The DNP3 driver has been enhanced to permit the calculation of alarm persistence within the driver process. This feature adds persistence where it is not provided by the RTU.

A feature of this is Away from Normal persistence, which allows persistence timers for analog points to expire even when a value is crossing limits. For example, a point crossing between High and High-High limits will not restart the High limit persistence timer. The behavior includes Over-range and Under-range states.

| Limit          | Severity | Description | Color      | Persistence Duration |
|----------------|----------|-------------|------------|----------------------|
| Full Scale 100 | Alarm    | High        | Overrange  | 20                   |
| High High 77   | Alarm    | Medium      | High High  | 20                   |
| High 66        | Alarm    | Medium      | High       | 20                   |
| Normal         | None     | Normal      |            | 10                   |
| Low 0          | None     | Low         |            | 0                    |
| Low Low 0      | None     | Low Low     |            | 0                    |
| Zero Scale 0   | Alarm    | High        | Underrange | 0                    |
| Invalid        | Alarm    | High        | Normal     |                      |

Hysteresis: 0

Engineering Units Exceeded: Use Reported Value

Out of Range Check: Both

Persistence Type: **Away From Normal**

The image above shows the field 'Persistence Type' set to 'Away From Normal'.

## Other Driver Changes

The DDE and Hilscher drivers are no longer included in Geo SCADA Expert 2021.



# Server Feature Changes

## Consequential Alarms

We have implemented an alarm suppression by expression feature. This extends the current Consequential Alarm feature.

The screenshot shows a configuration window titled "Consequential Alarms". It contains several fields and controls:

- Type:** A dropdown menu set to "Consequential".
- Mode:** A dropdown menu set to "By Expression".
- Parent Alarm Object:** A text input field containing "TestPoint", followed by a "..." button and a "Go To" link.
- Parent Alarm Condition:** An empty text input field followed by a "..." button.
- Parent Alarm Tag:** A text input field containing "CurrentState", followed by a "..." button.
- Operator:** A dropdown menu set to "Equals".
- Value:** A text input field containing "0".
- Unsuppress Delay:** A text input field containing "1M", followed by a "..." button.
- Suppress Pre-existing Alarms:** A checkbox that is checked.

When the **Type** is set to Consequential or Maintenance, it is possible to set up a new **Mode** 'By Expression', which will evaluate the condition of a linked alarm object's tag value. The tag may be any numeric-based field value. When the value, operator and tag are evaluated to be true, alarm suppression commences. It is not released until after the unsuppression delay has expired.

With either type of alarm suppression, you can now also:

- Specify an **Unsuppress Delay**, which comes into force once the parent suppression has ended. This delay is intended to keep alarms suppressed for a short time afterward, in case the parent suppression reoccurs shortly after it has ended. The delay is intended to help prevent fleeting changes in the suppression status of the child alarms.
- Specify whether to **Suppress Pre-existing Alarms** on the 'child' database items, in addition to any new alarms that get raised on those database items while the alarm suppression (or any **Unsuppress Delay**) is in force.

A series of status attributes on the Status displays of the 'child' database items indicate their current suppression status. The status attributes are only displayed for database items on which alarm suppression is configured.

Alarm suppression only hides suppressed alarms on alarm displays, such as the Alarm Banner and Alarms Lists. Alarms that are suppressed can still be viewed on non-alarm displays, including Mimics. You might want a visible indication as to whether alarms are

suppressed on such displays. We have therefore added a **Consequential Alarms Palette** that you can enable on the Server Configuration Tool, in order for suppressed alarms on non-alarm displays to be assigned:

- An **Alarm Suppressed** system color while the parent suppression is in force
- An **Alarm Suppression Clear Pending** system color once the parent suppression has ended, until the **Unsuppress Delay** timer expires.

For more information, see in the help: 'Specify Whether to Use the Consequential Alarms Palette' in the Server Administration Guide. For an example that demonstrates the use of such system colors, see in the help: 'Example of 'By Expression' Suppression' in the Core Configuration Guide.

Note that 'By Expression' suppression does not affect the parent alarm object's Suppressed Alarm Count displayed in the Alarm Banner.

## Client Feature Changes

### Database Explorer Update

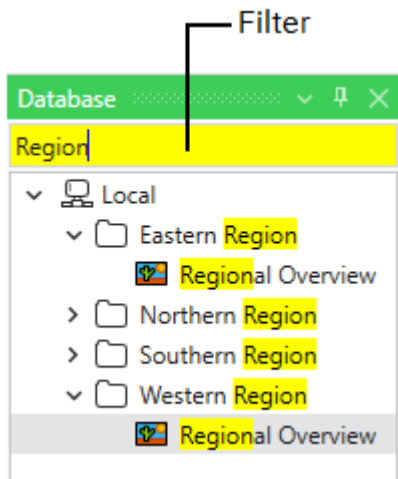
Geo SCADA 2021 has a new Database Explorer with changes to its appearance. It applies to ViewX and Virtual ViewX. This gives several new features.

#### An Explorer tool window per container

It is possible now to have an Explorer tool window per container (with the container defined in the startup configuration). Context-sensitive menus in the Explorer are extended on items in the Display group. These menus are extended with a drop-down choice of window container name in order to direct windows to be opened on a choice of head.

#### Filtering by Name

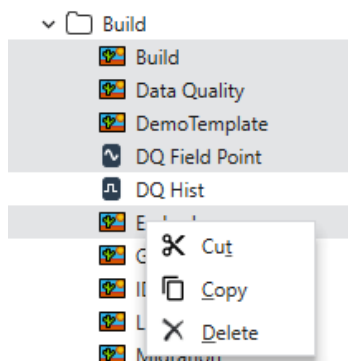
You can filter the entries in the Database Bar and Operator Documents Bar. You can also filter the entries in the Display References window. Use the filter to restrict the entries down to those for which the name includes the text that is specified in the filter field. The filter applies to the names of group folders that are currently visible in the Explorer Bar, including group folders that are currently scrolled out of view. It also applies to the items in any group folders that are expanded (and any expanded lower-level group folders that are nested within those expanded group folders). The filter applies to the items of those expanded group folders, even if the some of the entries are currently scrolled out of view.



See the online help: 'Filter the Entries in an Explorer Bar' in the ViewX and Virtual ViewX Clients Guide.

### Multi-select operations

You can select multiple Database items simultaneously if they are at the same group and level, either with the SHIFT key or the CTRL key with the left mouse button. You can copy, move or delete these multiple selections as a single operation.



### Change to drag and drop across systems

Drag and drop of one or more SDE files from an external application into the Database Explorer now triggers an 'import merge' operation, rather than an 'import copy'. This is the same behavior as the Database Explorer's 'Import' context-sensitive menu command.

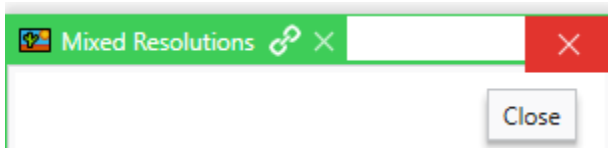
## Window Appearance

Inset windows (pop-up windows) now have a close button on the top right. This is in addition to the close button in the window tab. The red infill and close tooltip appear when the pointer hovers over the close button:

Close button when not hovered:



Close button when hovered: (This also shows the close button in the tab)



## Change in Help Window Behavior

When you press F1 for help in ViewX, the help window will appear as a tool window within the ViewX container. You can drag this window outside of the ViewX container, but it will always be on top if you overlap it. This is also the behavior for Virtual ViewX help.

In previous Geo SCADA releases the ViewX help appeared in a separate window which could float behind ViewX. For security reasons we needed to replace the help viewer browser, and this currently restricts its appearance.

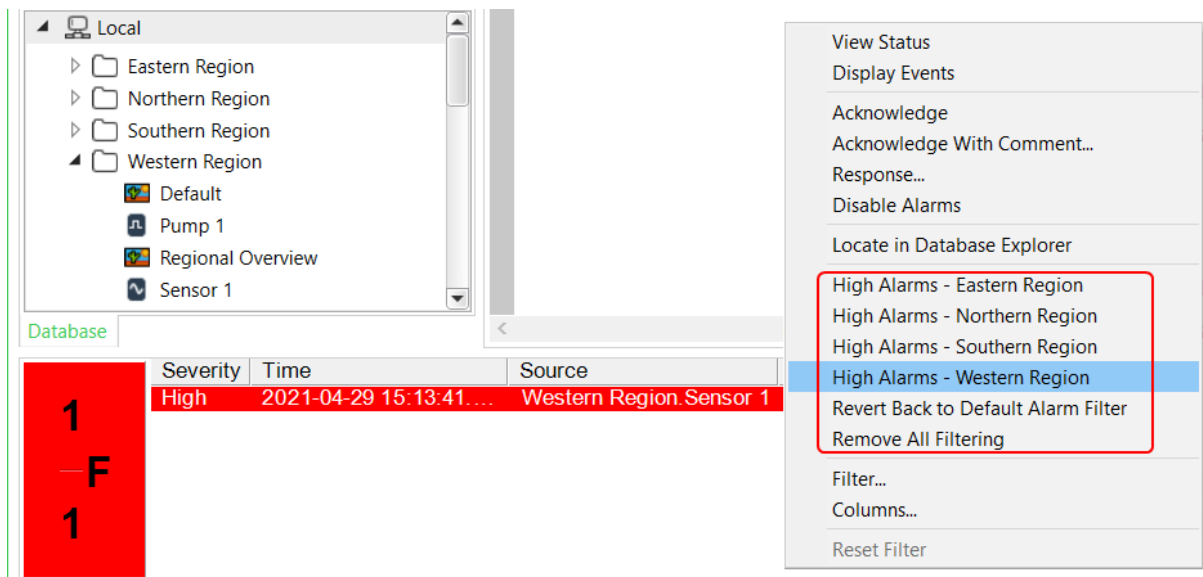
To help you work with the help viewer you can either:

- Drag the help out to a separate monitor, or
- Set the tool window to Auto Hide - click its pushpin or the 'v' arrow menu.

## Custom Filter Options for the Alarm Banner

We have expanded the feature set that is available for Alarm Banner scripts. Further script functions and a property have been added to enable you to write scripts to provide custom alarm filter options that users can access from the Alarm Banner's context-sensitive menu.

The **AlarmBanner.SetFilterForSystem** function is useful for providing access to frequently used alarm filters, instead of operators having to use the Filter window to specify the required filter settings. You can use the function, for example, to provide a custom filter to temporarily restrict the Alarm Banner entries to just alarms that relate to a particular area of plant. The sample screen displayed below shows a set of custom menu options that have been added and use this function.



You can also use:

- The **AlarmBanner.GetFilterForSystem** function to provide an option for users to check which filter options are currently in force on the Alarm Banner
- The **AlarmBanner.DefaultFilter** property to revert any custom filtering back to the Default Alarm Filter that is specified for the logged-on user's User Account.

For more information and example script, see in the help:

'**AlarmBanner.SetFilterForSystem**' in the Geo SCADA Expert Guide to Scripting.

## Links to Resource Center and Forum

The Resource Center web content has moved to the Schneider Electric exchange site, and now known as the Geo SCADA Knowledge Base:

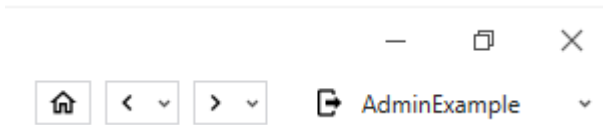
<https://community.exchange.se.com/t5/Geo-SCADA-Knowledge-Base/bg-p/geo-scada-knowledge-base>

## Virtual ViewX

This Geo SCADA 2021 version contains an updated version of Virtual ViewX which has a number of enhancements. The licensing system requires a 'V3' Virtual ViewX license which the licensing team can issue. If you are upgrading a system, then the previous Virtual ViewX license will be compatible with this version provided the license was issued before build date of Geo SCADA 2021.

Some of the changes include:

- Additional Forward, Back and Home navigation buttons in the Virtual ViewX border. These are always visible and make navigation simpler, as the browser's buttons cannot be used. They are also visible in ViewX in normal and full-screen display modes.



- While added in previous releases, this is a consolidated list of User Interface improvements for Virtual ViewX:
  - The ribbon menu is automatically minimized, and the alarm banner is now hidden on login to Virtual ViewX.
  - Virtual ViewX login screens are now visible on portrait and landscape views of small screen devices.
  - The mimic right-click action (long press) shows the zoom menu in addition to any layer selection menu.
  - Users can log in using the syntax '<system name>@<user name>' to cause ViewX to log in only to that specified system.
- Updates of the user location through Virtual ViewX using the geolocation feature of the web browser.
- The HTTP Web port is no longer set up in a default install, only the HTTPS port is set up. If you wish to use HTTP it can be re-enabled. For HTTPS, you must perform one of the following:
  - Ignore browser warnings for HTTPS
  - Add a self-signed certificate to your browser's store
  - Obtain a public certificate for the web server.
- Two Factor Authentication for Virtual ViewX login is supported via a TOTP token, commonly available as a smartphone app. Please see this document as a guide: <https://schneider-electric.box.com/shared/static/wydtq706nc1w6foa4ye1n8sxxm6p8pqu.pdf>
- License Server for Virtual ViewX allows a set of Virtual ViewX servers to share the same pool of licenses. Please see this document as a guide: <https://schneider-electric.box.com/shared/static/7p40kwubposppai06y34eaob0qszzays.pdf>
- Note that the number of open windows in a Virtual ViewX client is still limited to 5 for performance reasons.

## System Changes

### Optional Database Emulation on Upgrade

With Geo SCADA Expert 2021 onwards, you can opt to enable **Database Emulation** when you upgrade the version of Geo SCADA Expert that is running on your servers (see in the help: 'Database Emulation Configuration' in the Installation Guide). This can prove a useful temporary stage while you run checks to ensure that the upgrade has been successful. While Database Emulation is enabled, the database files continue to be saved in the same

format as the version of database that was running on the servers just prior to the upgrade. This provides a smoother downgrade path, if you decide to downgrade following the upgrade.

Once checks that been made to ensure that the upgrade is successful, you should disable the Database Emulation (see in the help: 'Disable Database Emulation after a Successful Upgrade' in the Installation Guide). This enables Geo SCADA Expert to provide access to the database items and properties that are only available from the version of software to which your servers have been upgraded. To accommodate this, the database files are then stored in the format that applies to the upgraded version of the software.

Database Emulation is disabled by default. If you wish to take advantage of this feature when you upgrade your servers, you have to enable it in the Installation Wizard. The Installation Wizard reflects the current status of the feature. You can change this setting in the Server Configuration Tool (see in the help: 'Specify the Default Setting for the Database Emulation Feature' in the Server Administration Guide).

The database can be emulated back to Geo SCADA Expert 2020 inclusive. You should ensure that all of your servers are running the same build of Geo SCADA Expert 2020 or later software before enabling the Database Emulation feature while you upgrade those servers to Geo SCADA Expert 2021 or later software. Once checks have been made to ensure that the upgrade was successful, you should ensure that all of your servers are running the same build of upgraded software before then disabling the Database Emulation feature. For more information, see in the help: 'Types of Emulation Supported by Geo SCADA Expert' in the Installation Guide.

When in emulation mode, hovering the mouse over the server icon will indicate if emulation mode is enabled. To exit emulation, a context-sensitive menu on the server icon is available. See in the help: 'Disable Database Emulation after a Successful Upgrade' in the Installation Guide.

## Crystal Reports 2020

ViewX now supports Crystal Reports 2020 for report editing and display on the client.

## OPC Factory Server Move

This tool is no longer on the ISO or ZIP distribution with Geo SCADA. When you click the link on the installer menu you will be taken to the Schneider Electric Web site for this product.

## Bulk Edit Tool Move

This tool is no longer on the ISO or ZIP distribution with Geo SCADA. It is available from the Schneider Electric Exchange web site in the Knowledge Base. It is linked from the 'Tools and Samples' page at the following link:

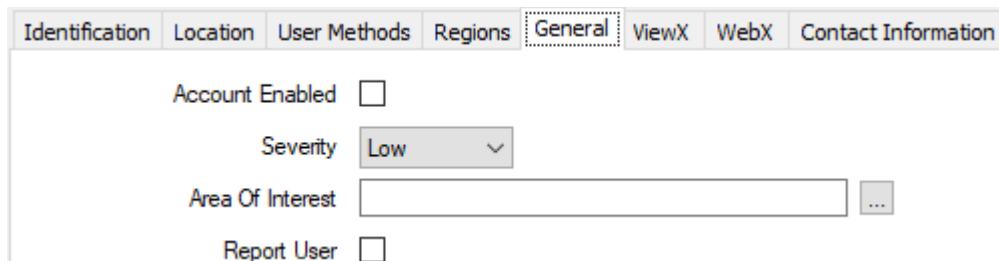
<https://community.exchange.se.com/t5/Geo-SCADA-Knowledge-Base/Tools-and-Samples/ba-p/279123>

## Pager Driver Logging

We have enhanced error messages logged by the Pager Driver when processing SMS messages to trigger methods. Messages now include the PagerID (phone number) of the sender.

## User Property for Report Generation

There is a new check box field named **Report User** which should be checked if the user is used for the generation of Crystal Reports. This setting improves the security of database access for reporting. If you are upgrading Geo SCADA Expert, please check this box for those users specified in Crystal Report database items.



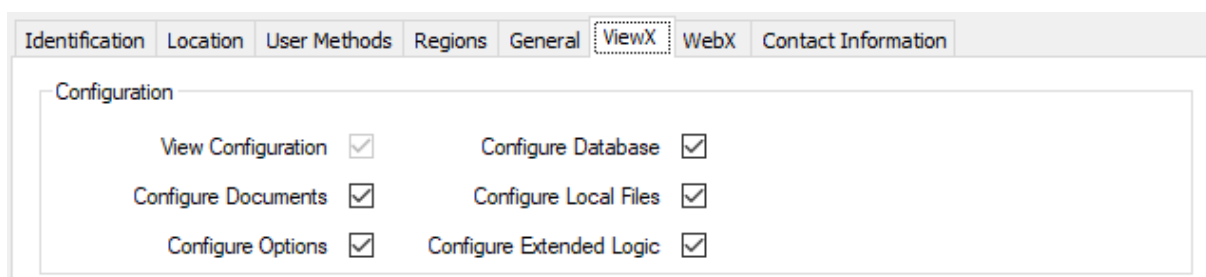
The screenshot shows a user configuration window with several tabs: Identification, Location, User Methods, Regions, General (selected), ViewX, WebX, and Contact Information. In the General tab, the following settings are visible: 'Account Enabled' with an unchecked checkbox, 'Severity' set to 'Low' in a dropdown menu, 'Area Of Interest' with an empty text box and a search icon, and 'Report User' with an unchecked checkbox.

If you do not check this setting on a user you configure for Crystal Report generation, the report will fail to generate. Report users cannot be used for ViewX, WebX or Virtual ViewX.

## User Property for Configuration of Extended Logic Features

There is a new check box field named **Configure Extended Logic** which should be checked if the user needs to edit, compile or import Logic programs which use either of these capabilities:

- Indirect references to objects
- SQL data queries



The screenshot shows the 'ViewX' tab selected in the user configuration window. Under the 'Configuration' section, several checkboxes are checked: 'View Configuration', 'Configure Database', 'Configure Documents', 'Configure Local Files', 'Configure Options', and 'Configure Extended Logic'.

If you do not check this setting on a user, then that user will be unable to import or compile a program written using the above capabilities.



# Security

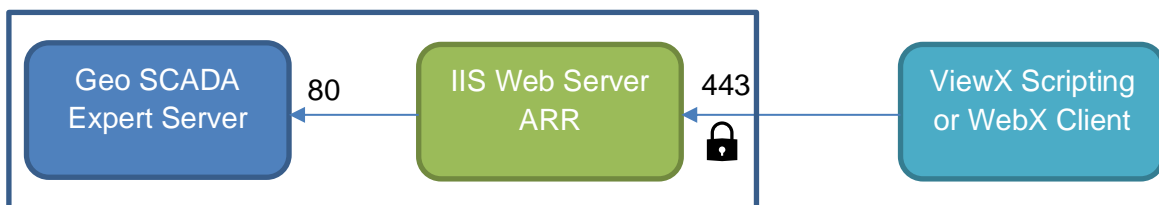
## WebX and Web Services Ports

**IMPORTANT – THE REVISED SETTINGS HERE AFFECT THE OPERATION OF VIEWX SCRIPTING, ORIGINAL WEBX AND THE DATABASE SCHEMA BROWSER.**

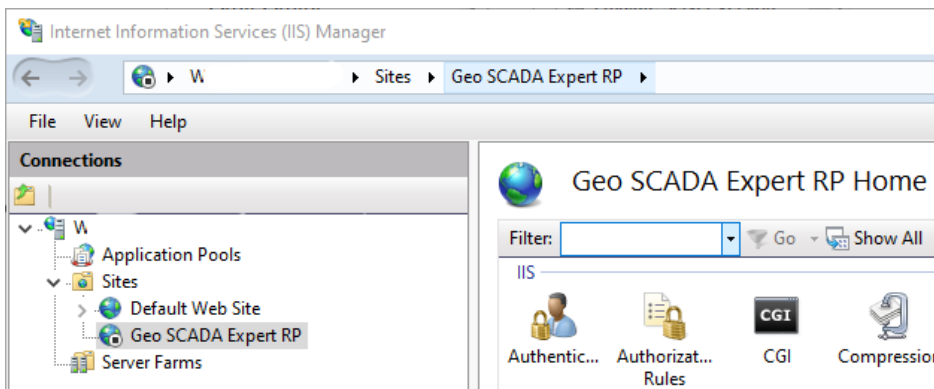
The Geo SCADA Expert installer now installs and configures Microsoft Internet Information Server (IIS) to act as a reverse proxy for Geo SCADA Expert server's internal web server. This increases the security of the web services used by ViewX scripting and by original WebX. (The settings also impact the port used for accessing the Database Schema. See in the help: 'Access the Database Schema' in the Database Guide.)

The reverse proxy enables these connections to use TLS 1.3 and other security features built into IIS. We recommend that you use this local IIS reverse proxy to perform TLS negotiation on behalf of the Geo SCADA Expert server.

This part of the setup is presently mandatory. Therefore, Geo SCADA Expert might not install on a computer that does not support the required IIS features. This might include Windows 10 Home.



The IIS setup uses an Application Request Routing (ARR) module to direct web service calls to the Geo SCADA Expert server. The Geo SCADA Expert installation prerequisites include both IIS and ARR modules and set up a website:

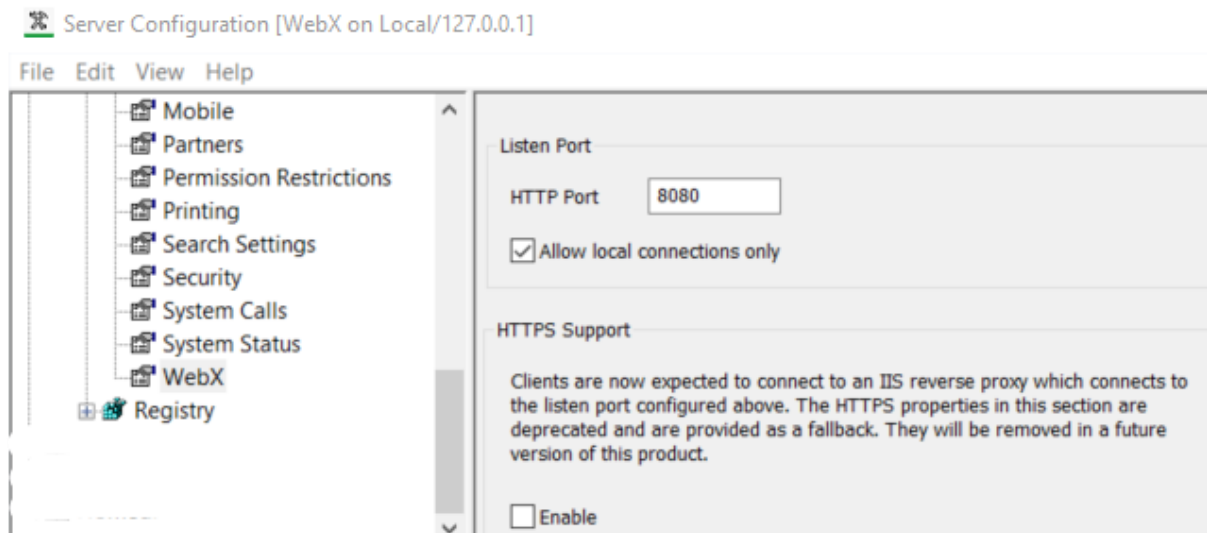


The IIS reverse proxy connects to the Geo SCADA Expert server's **Listen Port**. A revised set of properties are included for **WebX** settings in the Server Configuration Tool, in which you can set up the **Local Proxy** and **Network Proxy** settings. The **Network Proxy** is not usually required unless you have an additional proxy/firewall between the server and clients.

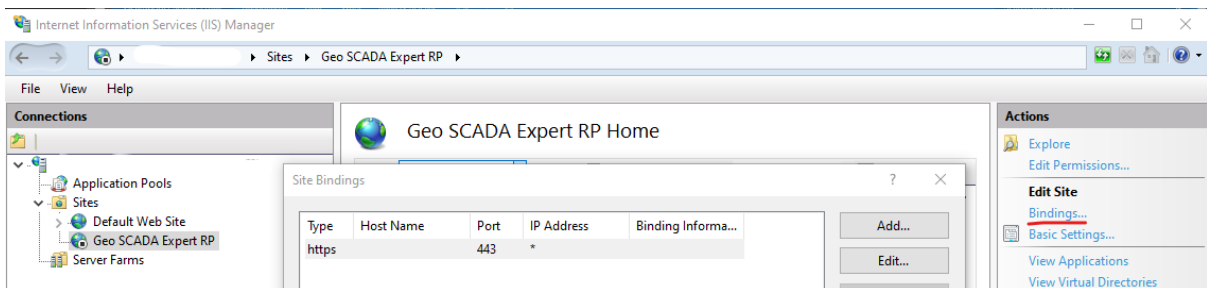
## Local Proxy

The local proxy itself is configured in IIS but the settings in the Server Configuration Tool are used to inform the Geo SCADA Expert server of the current IIS configuration.

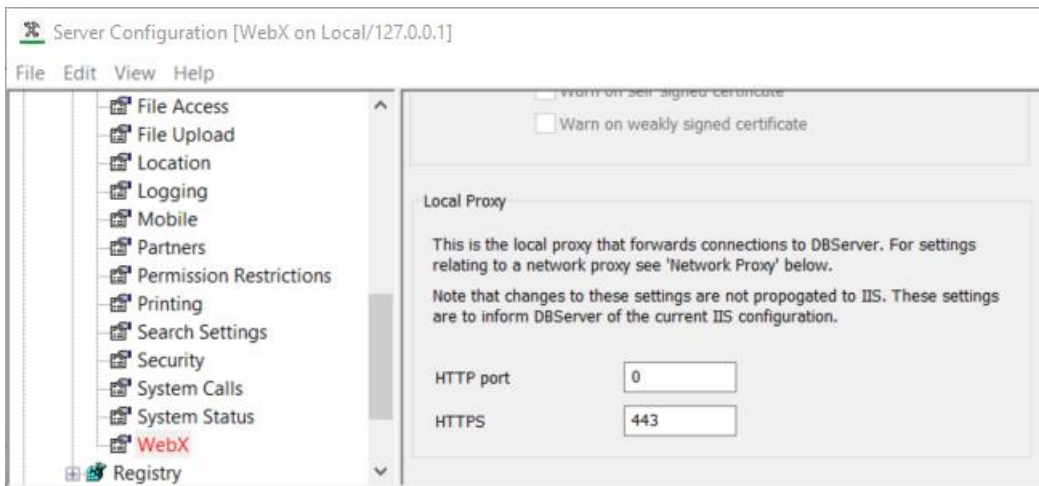
Because of this change, the internal web server's 'Listen' port will now default its HTTP port to 8080 and will disable its HTTPS port. The HTTPS port can be re-enabled if desired but will only support TLS 1.1. Both internal HTTP and HTTPS ports will by default only be available for connection (binding) from localhost clients and will not be available externally to the server.



The IIS reverse proxy will offer HTTPS connections on port 443 by default, and optionally can be configured for HTTP connections.



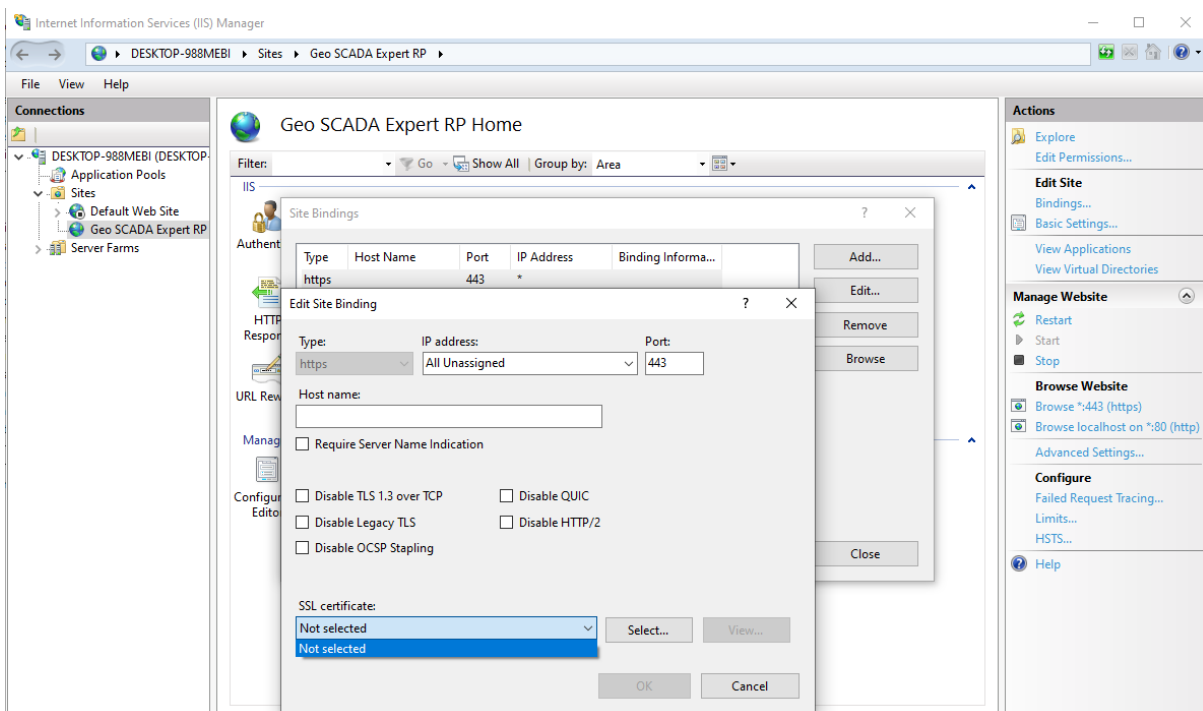
The Geo SCADA Expert server must be aware of the port(s) offered by the IIS server, and these are configurable in the **Local Proxy** section of the **WebX** page of the Server Configuration Tool (see in the help: 'Configuring Security and Connection Settings for Original WebX Clients' in the Guide to Security). This is required for ViewX to be advised of the web port(s) to be used for Mimic script access.



The Server Status tool shows the ports the Geo SCADA Expert server is using and, for information, the ports that are set up for the local proxy.

## The Web Port Will Not Work Without a Certificate

The IIS Reverse Proxy setup does not automatically set up an SSL certificate, and the web proxy will not work until this is done. You can do this in the IIS Manager tool if you already have a certificate to add. This image shows the configuration dialog boxes:



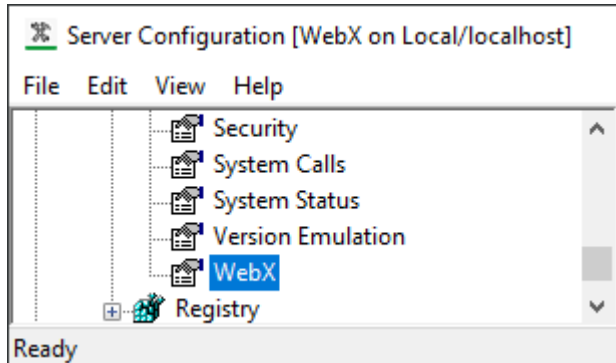
If you do **not** have a certificate, then you can either:

- Ignore the Reverse Proxy, disable it and configure the Geo SCADA Expert Server's web port number(s) to match the **Local Proxy** settings, or
- Configure the Reverse Proxy to be available on port 80 and add this to the **Local Proxy** settings. While this will not be secure, it would allow you to test the Reverse Proxy function.

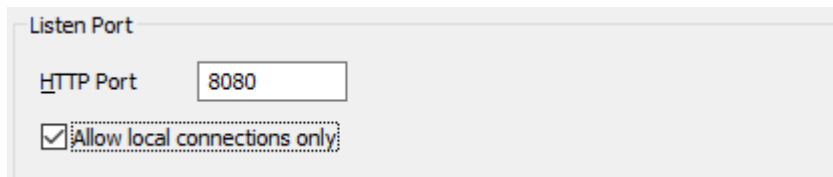
The following screen images show how to set up each option.

## Option A - Configure the Reverse Proxy for Unencrypted Communication

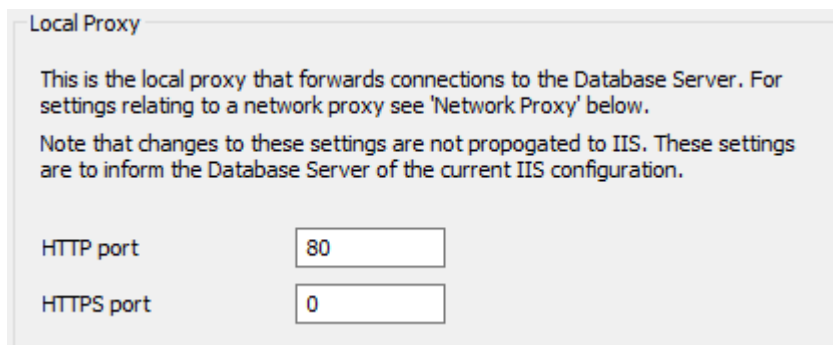
In the **WebX** section of the Server Configuration tool:



Use the default setting for the **HTTP Port**:

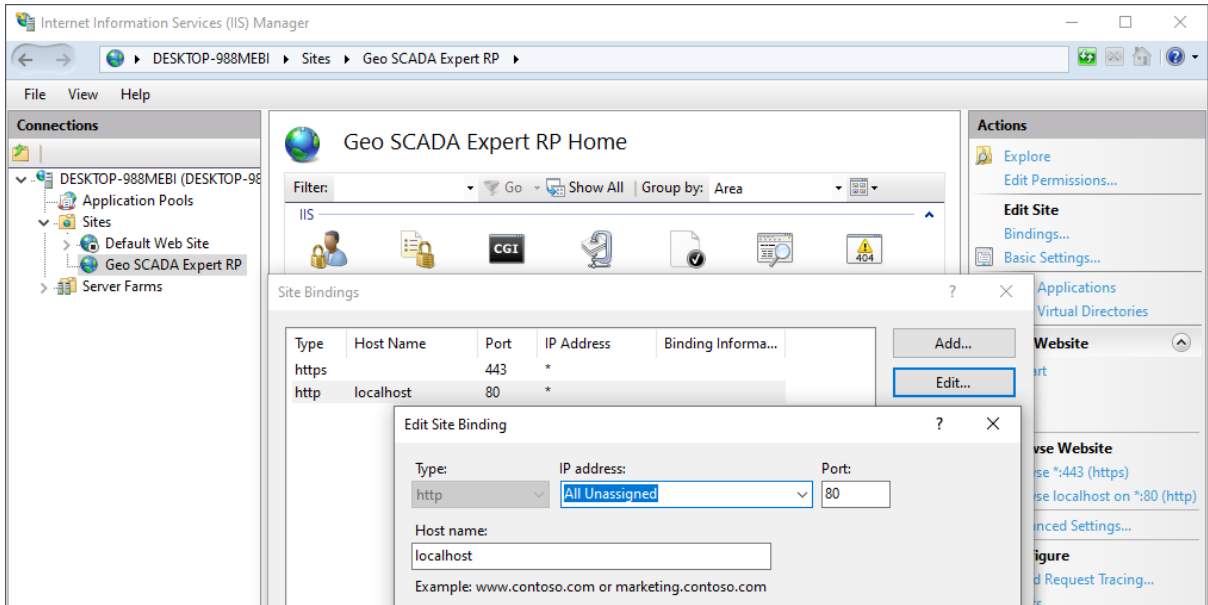


Configure the **Local Proxy** ports to 80 and 0, these tell ViewX to find the web server at this port.



In the **Internet Information Services (IIS) Manager**'s tool (found in the Start menu in the 'Windows Administrative Tools' folder):

1. Find the Site 'Geo SCADA Expert RP' in the **Connections** tree.
2. In the **Actions** pane on the right, select the **Bindings** option.
3. Select the **Add** button and configure a binding named 'localhost' on port 80.
4. Select **OK** and restart the web server in the 'Manage Website' section.

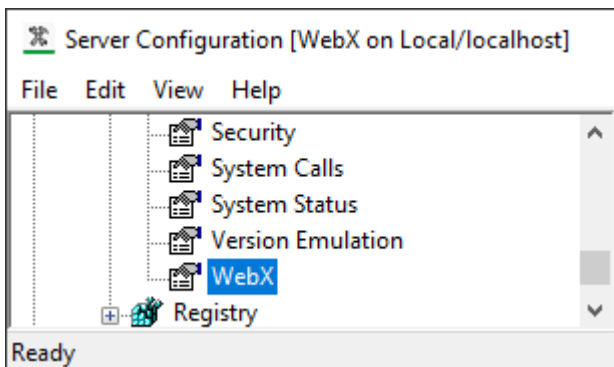


## Option B - Bypass the Reverse Proxy (Unencrypted or Encrypted with TLS 1.1)

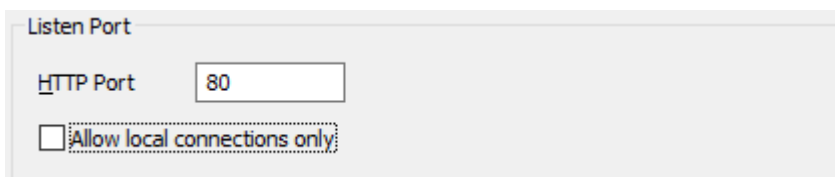
You can use the unencrypted port 80 of the Geo SCADA Expert Server.



In the **WebX** section of the Server Configuration tool:



Set the **HTTP Port** to 80 and uncheck for local connections only.



Configure the **Local Proxy** ports to 80 and 0, these tell ViewX to find the web server at this port.

Local Proxy

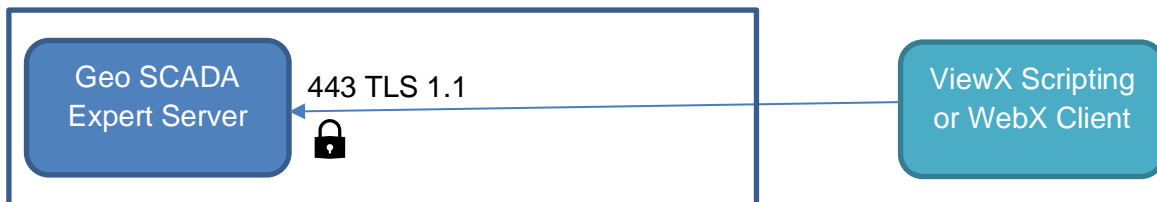
This is the local proxy that forwards connections to the Database Server. For settings relating to a network proxy see 'Network Proxy' below.

Note that changes to these settings are not propagated to IIS. These settings are to inform the Database Server of the current IIS configuration.

HTTP port

HTTPS port

Alternatively, you can use the existing Geo SCADA Expert Server's web port using TLS 1.1 only.



Re-enable the legacy TLS 1.1 port:

HTTPS Support

Clients are now expected to connect to an IIS reverse proxy which connects to the listen port configured above. The HTTPS properties in this section are deprecated and are provided as a fallback. They will be removed in a future version of this product.

Enable

HTTPS Port

Minimum Supported Protocol

And configure the **Local Proxy** ports to 0 and 443, these tell ViewX to find the web server at this port.

**Local Proxy**

This is the local proxy that forwards connections to the Database Server. For settings relating to a network proxy see 'Network Proxy' below.

Note that changes to these settings are not propagated to IIS. These settings are to inform the Database Server of the current IIS configuration.

HTTP port

HTTPS port

## Client Certificate Checks

Please note that as with later releases of Geo SCADA 2020, you can configure the Server to direct the ViewX client whether to check for certificates. The configuration for this is in the **Security** section of the **WebX** page in the Server Configuration Tool.

**Security**

Allow logon and database writes over non-secure HTTP:

ViewX Script Certificate Checks

Controls whether ViewX performs validation of the Geo SCADA server's HTTPS certificate.

For more information, see in the help: 'Database Web Server Connection Problems' in the Server Status Tool Guide.

## Guest User's Access to SQL Queries

An option to control whether the guest user can execute SQL has been added. For a new install this option is off. For an upgrade install this option remains on. The setting is in the **Parameters** section of the **SQL Query Configuration** branch of the Server Configuration tool.

Server Configuration [Parameters on Local/localhost]

File Edit View Help

Local

- localhost
  - Database Configuration
  - Global Parameters
  - Historic Configuration
  - SQL Query Configuration
    - Historic Views
    - Linked ODBC Tables
    - Parameters**
  - System Configuration
  - Registry

SQL Query Parameters

Query row limit

Query size limit  MB

Allow clients to edit SQL  (subject to User properties)

Allow guest user to execute SQL

## Password Dictionary

For performance reasons the user password dictionary is limited to 20 entries. If there are more entries in a user's profile, their password dictionary will be truncated to the latest 20 entries on the next password change.

## Installation

### Operating Systems

Geo SCADA Expert 2021 is compatible with Windows Server 2022. We have not yet completed verification against Windows 11. Therefore Windows 11 is not yet supported, but it will be supported during the life of Geo SCADA Expert 2021.

### C++ Libraries and .Net Version Change

Installation prerequisites now include the Microsoft VC++ 2019 redistributable.

The VC++ 2015 redistributable is no longer required.

Geo SCADA core code now uses .Net 4.8. Existing DDK drivers and tools using the .Net Client interface using older .Net versions will need to be recompiled.

### Prerequisites

The Geo SCADA Expert installer now installs and configures Microsoft Internet Information Server (IIS) to act as a reverse proxy for Geo SCADA Expert server's internal web server.

This part of the setup is optional, and if not chosen then only client installation options are presented.

Therefore, Geo SCADA Expert server might not install on a computer that does not support the required IIS features. This might include Windows 10 Home, which is not a supported operating system.

### 64 Bit Windows Only

Geo SCADA Expert does not support 32-bit operating systems. For server and client installations, you have to use computers that are running a suitable 64-bit operating system.





# Appendix A – X70 Alarm Limits Database Structure Change

## Background Information

In Geo SCADA Expert 2021 the SCADAPack x70 driver has been enhanced to upload the device configuration directly from a device or via RemoteConnect. Previously, you could only upload or import logic into the driver, to facilitate a download of the configuration from the Geo SCADA master station to the device.

As a consequence of the enhancement to upload the complete SCADAPack x70 device configuration, a breaking change has had to be implemented in Geo SCADA 2021. The rest of this section explains how to determine if this issue affects your current system's SCADAPack x70 configuration. It also explains how to use the tools that we provide to audit your Geo SCADA Expert 2019 installation to determine the impact **before** upgrading your system. It then provides guidance on how to limit the impact of the breaking change and correct any invalid configuration.

The issue is associated with alarm limits. Specifically, 'Master Station only' limits. That is, limits that are specified purely for the purpose of defining the Master Station's limits, and not to enable any limits in the SCADAPack x70 device itself.

In Geo SCADA Expert 2019 with the configuration object's **Alarm Limits** and **Out of Range Limits** can have limit values specified even though those limits are 'disabled' or 'not enabled'. This configuration enabled the protocol-specific points to have local alarm and Out of Range limits specified for use purely in the Geo SCADA Expert master station, without those limits being downloaded to the SCADAPack x70 device.

In Geo SCADA Expert 2021, the enhancement to enable upload of the complete SCADAPack x70 device configuration into Geo SCADA Expert, this is no longer a viable approach to supporting local alarm and out of range limits. As soon as an upload from the device occurs, the local configuration is now overwritten. The revised approach in Geo SCADA Expert 2021 is for the DNP3 analog and counter points to have separate **RTU Limits** (populated via the configuration item and uploaded/downloaded from/to the device) and **Limits** which are a Master Station only set of limits for out of range and high and low limits. **RTU Limits** implement limits in both the device and the Master Station. **Limits** configure limits in the Master Station only, leaving the devices without any limits configured.

When upgrading from Geo SCADA Expert 2019 to Geo SCADA Expert 2021 any local 'Master Station only' limits are lost.

There are two options if 'Master Station only' limits are in-use in Geo SCADA Expert 2019 systems:

1. Change the Master Station configuration to enable the limits in the configuration before the upgrade of Geo SCADA 2021.
2. Upgrade to Geo SCADA 2021 and fix the limits to use the new SCADAPack x70 DNP3 analog and counter points' (local) **Limits** instead of **RTU Limits**. This is a

critical task because the newly upgraded server will have some SCADAPack x70 configuration problems and will not be fully operational until corrected.

Option 1 is the favoured approach because it minimises the impact on the operation of the Master Station. If no limits are to be configured in the device, the configuration of SCADAPack x70 DNP3 point **Limits** (and removal of **RTU Limits**) can be affected after the upgrade to Geo SCADA Expert 2021 and before any download to the device is actioned. See 'SCADAPack x70 Driver' documentation.

Let's consider an example point – looking at the configuration object's configuration and the DNP3 x70 Analog point's configuration (both from the configuration item and the point's directly edited configuration).

## Example of the upgrade issue

In this case, a SCADAPack x70 Analog Configuration item.

### Geo SCADA 2019, Pre-Upgrade

#### Configuration Object:

SCADAPack x70 analog configuration item Alarm Limits have specified Limits but the **RTU Event** is Disabled.

The screenshot shows the configuration interface for a SCADAPack x70 Analog Configuration item. The 'Alarm Limits' section is expanded, displaying a table with the following data:

|        | Limit | RTU Event |
|--------|-------|-----------|
| 4 High | 100   | Disabled  |
| 3 High | 100   | Disabled  |
| 2 High | 70    | Disabled  |
| 1 High | 60    | Disabled  |
| 1 Low  | 40    | Disabled  |
| 2 Low  | 0     | Disabled  |
| 3 Low  | 0     | Disabled  |
| 4 Low  | 0     | Disabled  |

The Out of Range Limits have specified Limit values, but they are not Enabled.

Out Of Range Limits

|                                | Limit                            | Enabled                  |
|--------------------------------|----------------------------------|--------------------------|
| Overrange                      | <input type="text" value="101"/> | <input type="checkbox"/> |
| Underrange                     | <input type="text" value="-1"/>  | <input type="checkbox"/> |
| Zero Threshold                 | <input type="text" value="0"/>   | <input type="checkbox"/> |
| Unsolicited Events (DNP3 Only) |                                  | <input type="checkbox"/> |

### DNP3 Analog / Protocol Point:

The SCADAPack x70 DNP3 analog point Alarm Limits have **Limit** values that are values populated from the above configuration item. The **Severity** is configured within the SCADAPack x70 DNP3 analog point itself.

Alarm Limits

|            | Limit                            | Severity |          | Description | Color                |
|------------|----------------------------------|----------|----------|-------------|----------------------|
| Overrange  | <input type="text" value="101"/> | Alarm    | Critical | Overrange   | <input type="text"/> |
| 4 High     | <input type="text" value="100"/> | Alarm    | Medium   | 4 High      | <input type="text"/> |
| 3 High     | <input type="text" value="100"/> | Alarm    | Medium   | 3 High      | <input type="text"/> |
| 2 High     | <input type="text" value="70"/>  | Alarm    | High     | 2 High      | <input type="text"/> |
| 1 High     | <input type="text" value="60"/>  | Event    | Medium   | 1 High      | <input type="text"/> |
| Normal     |                                  | None     |          | Normal      | <input type="text"/> |
| 1 Low      | <input type="text" value="40"/>  | Event    | High     | 1 Low       | <input type="text"/> |
| 2 Low      | <input type="text" value="0"/>   | None     |          | 2 Low       | <input type="text"/> |
| 3 Low      | <input type="text" value="0"/>   | None     |          | 3 Low       | <input type="text"/> |
| 4 Low      | <input type="text" value="0"/>   | None     |          | 4 Low       | <input type="text"/> |
| Underrange | <input type="text" value="-1"/>  | Alarm    | High     | Underrange  | <input type="text"/> |
| Invalid    |                                  | Alarm    | High     | Invalid     | <input type="text"/> |

## Geo SCADA 2021, Post Upgrade

Now let's examine the prevailing configuration after the upgrading of this system.

### Configuration Object:

SCADAPack x70 analog configuration item Alarm Limits have specified **Limits** but the RTU Event is Disabled (no change).

|        | Limit                            | RTU Event                                 |
|--------|----------------------------------|---|
| 4 High | <input type="text" value="100"/> | Disabled <input type="button" value="v"/> |
| 3 High | <input type="text" value="100"/> | Disabled <input type="button" value="v"/> |
| 2 High | <input type="text" value="70"/>  | Disabled <input type="button" value="v"/> |
| 1 High | <input type="text" value="60"/>  | Disabled <input type="button" value="v"/> |
| 1 Low  | <input type="text" value="40"/>  | Disabled <input type="button" value="v"/> |
| 2 Low  | <input type="text" value="0"/>   | Disabled <input type="button" value="v"/> |
| 3 Low  | <input type="text" value="0"/>   | Disabled <input type="button" value="v"/> |
| 4 Low  | <input type="text" value="0"/>   | Disabled <input type="button" value="v"/> |

|                                | Limit                            | Enabled                  |
|--------------------------------|----------------------------------|--------------------------|
| Overrange                      | <input type="text" value="101"/> | <input type="checkbox"/> |
| Underrange                     | <input type="text" value="-1"/>  | <input type="checkbox"/> |
| Zero Threshold                 | <input type="text" value="0"/>   | <input type="checkbox"/> |
| Unsolicited Events (DNP3 Only) | <input type="checkbox"/>         |                          |

## DNP3 Analog Point / Protocol Point:

By default, the **RTU Limits** are specified, but because the disabled limits are ignored:





- The Overrange and Underrange limits default to the Double Maximum and Double Minimum values. This can adversely impact the point processing of received values.
- The high and low limits have been copied into the **RTU Limits** but because the configuration item has those limits disabled, the limit is disabled in this point too. No alarm or event reporting will be active. If some of the configuration item's limits had been enabled, this point will have some limits enabled. This may result in a configuration error in the point and thus no value collection will occur until a repair has been completed.

| Alarm Limits   |                                  |                          |  |          |          |             |       |
|--|----------------------------------|--------------------------|--|----------|----------|-------------|-------|
| Use RTU Alarm Limits <input checked="" type="checkbox"/> |                                  |                          |  |          |          |             |       |
|  | Limit                            | RTU Enabled              | RTU Limit                                      | Severity |          | Description | Color |
| Overrange  | <input type="text" value="101"/> | <input type="checkbox"/> | <input type="text" value="3402823060737096E"/> | Alarm    | Critical | Overrange   |       |
| 4 High   | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="100"/>               | None     |          | 4 High      |       |
| 3 High   | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="100"/>               | None     |          | 3 High      |       |
| 2 High   | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="70"/>                | None     |          | 2 High      |       |
| 1 High   | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="60"/>                | None     |          | 1 High      |       |
| Normal   |                                  |                          |  | None     |          | Normal      |       |
| 1 Low  | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="40"/>                | None     |          | 1 Low       |       |
| 2 Low  | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="0"/>                 | None     |          | 2 Low       |       |
| 3 Low  | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="0"/>                 | None     |          | 3 Low       |       |
| 4 Low  | <input type="text" value="0"/>   | <input type="checkbox"/> | <input type="text" value="0"/>                 | None     |          | 4 Low       |       |
| Underrange   | <input type="text" value="-1"/>  | <input type="checkbox"/> | <input type="text" value="-3402823060737096"/> | Alarm    | High     | Underrange  |       |
| Invalid  |                                  |                          |  | Alarm    | High     | Invalid     |       |

## Analysis of V81 Geo SCADA Expert 2019 system prior to upgrading

SQL queries can discover potentially affected SCADAPack x70 configuration. Here we provide the information for an analysis of a whole system's database.

An SDE is provided to import these SQL queries contained within three Mimics. It is available on the Geo SCADA Expert Knowledge Base website. The Mimics will list potentially affected configuration. A decision on how to approach the upgrade will need to be made. An offline, test system running the same database might be useful to trial the upgrade and confirm the impact to the SCADAPack x70 configuration.

- ▼  \_x70 Upgrade Issues
  -  HighLimits in Counters
  -  HighLowLimits
  -  OutOfRangeLimits

1. High Low Limits
  - a. Display the potentially affected Configuration Objects
  - b. Display the DNP3 x70 Analog points associated with the problematic configuration objects
2. Out of Range Limits
  - a. Display the potentially affected Configuration Objects
  - b. Display the DNP3 x70 Analog points associated with the problematic configuration objects
3. High Limits in Counters
  - a. Display the potentially affected Configuration Objects
  - b. Display the DNP3 x70 Counter points associated with the problematic configuration objects

## Out of Range Limits

### Display Configuration Objects:

```
SELECT WITH TEMPLATES
    ID, ID, FULLNAME, CASE WHEN PARENTTEMPLATEID > 0 THEN TRUE ELSE FALSE END AS
TEMPLATE, FULLSCALE, OVERRANGELIMITON, ZEROSCALE, UNDERRANGELIMITON,
PARENTINSTANCEID, PARENTTEMPLATEID
FROM
    CX70ANALOG
WHERE
    ( FULLSCALE <> 0 AND OVERRANGELIMITON = FALSE ) OR ( ZEROSCALE <> 0 AND
UNDERRANGELIMITON = FALSE )
ORDER BY
    "Id" ASC
```

### Display DNP3 Analog Points:

```
SELECT WITH TEMPLATES
    FULLNAME, CASE WHEN PARENTTEMPLATEID > 0 THEN TRUE ELSE FALSE END AS
TEMPLATE, RAWFULLSCALE, RAWZEROSCALE
FROM
    CDNP3X70ANALOG
WHERE
    X70CONFIGOBJECTID IN ( SELECT WITH TEMPLATES ID FROM CX70ANALOG WHERE (
FULLSCALE <> 0 AND OVERRANGELIMITON = FALSE ) OR ( ZEROSCALE <> 0 AND
UNDERRANGELIMITON = FALSE ) )
```



## High Low Limits

### Display Configuration Objects:

```
SELECT WITH TEMPLATES
    ID, ID, FULLNAME, CASE WHEN PARENTTEMPLATEID > 0 THEN TRUE ELSE FALSE END AS
TEMPLATE, HIGH1LIMIT, HIGH1RTUEVENT, HIGH1LIMIT, HIGH1RTUEVENT, HIGH1LIMIT,
HIGH1RTUEVENT, HIGH1LIMIT, HIGH1RTUEVENT AS LOW1LIMIT, LOW1RTUEVENT, LOW2LIMIT,
LOW2RTUEVENT, LOW3LIMIT, LOW3RTUEVENT, LOW4LIMIT, LOW4RTUEVENT
FROM
    CX70ANALOG
WHERE
    ( HIGH1LIMIT <> 0 AND HIGH1RTUEVENT = 0 ) OR ( HIGH2LIMIT <> 0 AND HIGH2RTUEVENT =
0 ) OR ( HIGH3LIMIT <> 0 AND HIGH3RTUEVENT = 0 ) OR ( HIGH4LIMIT <> 0 AND HIGH4RTUEVENT =
0 ) OR ( LOW1LIMIT <> 0 AND LOW1RTUEVENT = 0 ) OR ( LOW2LIMIT <> 0 AND LOW2RTUEVENT = 0 )
OR ( LOW3LIMIT <> 0 AND LOW3RTUEVENT = 0 ) OR ( LOW4LIMIT <> 0 AND LOW4RTUEVENT = 0 )
ORDER BY
    "Id" ASC
```

### Display DNP3 Analog Points:

```
SELECT WITH TEMPLATES
    FULLNAME, CASE WHEN PARENTTEMPLATEID > 0 THEN TRUE ELSE FALSE END AS
TEMPLATE, HIGH1LIMIT, HIGH1SEVERITY, HIGH1SEVERITYTYPE, HIGH2LIMIT, HIGH2SEVERITY,
HIGH2SEVERITYTYPE, HIGH3LIMIT, HIGH3SEVERITY, HIGH3SEVERITYTYPE, HIGH4LIMIT,
HIGH4SEVERITY, HIGH4SEVERITYTYPE, LOW1LIMIT, LOW1SEVERITY, LOW1SEVERITYTYPE,
LOW2LIMIT, LOW2SEVERITY, LOW2SEVERITYTYPE, LOW3LIMIT, LOW3SEVERITY,
LOW3SEVERITYTYPE, LOW4LIMIT, LOW4SEVERITY, LOW4SEVERITYTYPE
FROM
    CDNP3X70ANALOG
WHERE
    X70CONFIGOBJECTID IN ( SELECT WITH TEMPLATES ID FROM CX70ANALOG WHERE (
HIGH1LIMIT <> 0 AND HIGH1RTUEVENT = 0 ) OR ( HIGH2LIMIT <> 0 AND HIGH2RTUEVENT = 0 ) OR (
HIGH3LIMIT <> 0 AND HIGH3RTUEVENT = 0 ) OR ( HIGH4LIMIT <> 0 AND HIGH4RTUEVENT = 0 ) OR (
LOW1LIMIT <> 0 AND LOW1RTUEVENT = 0 ) OR ( LOW2LIMIT <> 0 AND LOW2RTUEVENT = 0 ) OR (
LOW3LIMIT <> 0 AND LOW3RTUEVENT = 0 ) OR ( LOW4LIMIT <> 0 AND LOW4RTUEVENT = 0 ) )
```

## High Limit in Counters

### Display Configuration Objects:

```
SELECT WITH TEMPLATES
      ID, FULLNAME, CASE WHEN PARENTTEMPLATEID > 0 THEN TRUE ELSE FALSE END AS
TEMPLATE, HIGHLIMIT, HIGHENABLED
FROM
      CX70COUNTER
WHERE
      ( HIGHLIMIT <> 0 AND HIGHENABLED = FALSE )
ORDER BY
      "Id" ASC
```

### Display DNP3 Counter Points:

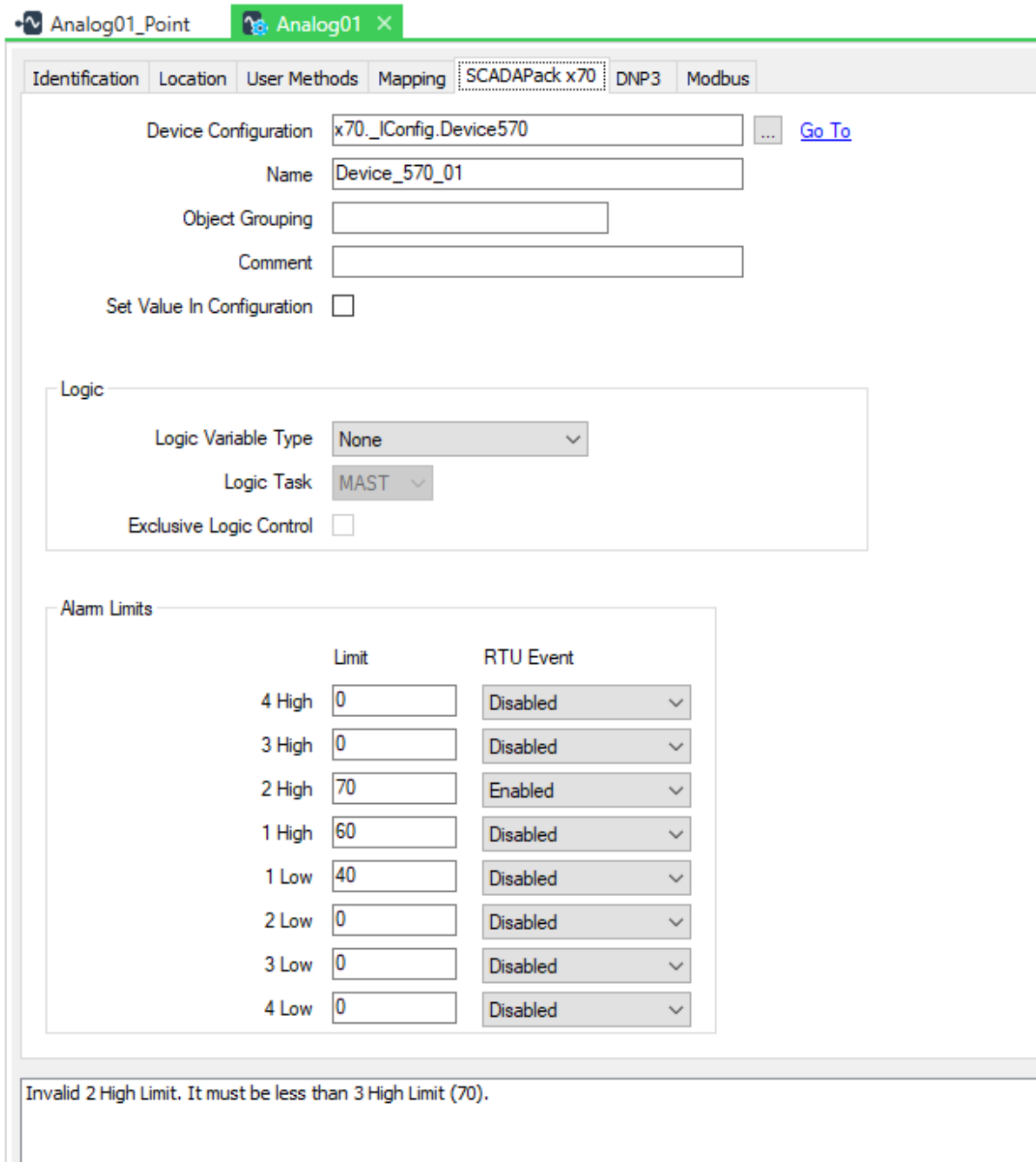
```
SELECT WITH TEMPLATES
      FULLNAME, CASE WHEN PARENTTEMPLATEID > 0 THEN TRUE ELSE FALSE END AS TEMPLATE,
HIGHLIMIT, HIGHENABLED
FROM
      CDNP3X70COUNTER
WHERE
      X70CONFIGOBJECTID IN ( SELECT WITH TEMPLATES ID FROM CX70COUNTER WHERE (
HIGHLIMIT <> 0 AND HIGHENABLED = FALSE ) )
```

## Another Scenario – Configuration Errors disappear

If there is broken SCADAPack x70 configuration in a Geo SCADA Expert 2019 system due to unenabled limits, upgrading the system to Geo SCADA Expert 2021 could result in this invalid configuration becoming valid. In the unlikely event that the operation of the system relies upon this broken configuration, it could cause a change to the operation of the system.

### Geo SCADA Expert 2019, Pre-Upgrade

#### Configuration Object



• Analog01\_Point Analog01 ×

Identification Location User Methods Mapping **SCADAPack x70** DNP3 Modbus

Device Configuration  ... [Go To](#)

Name

Object Grouping

Comment

Set Value In Configuration

Logic

Logic Variable Type

Logic Task

Exclusive Logic Control

Alarm Limits

|        | Limit                           | RTU Event                             |
|--------|---------------------------------|---------------------------------------|
| 4 High | <input type="text" value="0"/>  | <input type="text" value="Disabled"/> |
| 3 High | <input type="text" value="0"/>  | <input type="text" value="Disabled"/> |
| 2 High | <input type="text" value="70"/> | <input type="text" value="Enabled"/>  |
| 1 High | <input type="text" value="60"/> | <input type="text" value="Disabled"/> |
| 1 Low  | <input type="text" value="40"/> | <input type="text" value="Disabled"/> |
| 2 Low  | <input type="text" value="0"/>  | <input type="text" value="Disabled"/> |
| 3 Low  | <input type="text" value="0"/>  | <input type="text" value="Disabled"/> |
| 4 Low  | <input type="text" value="0"/>  | <input type="text" value="Disabled"/> |

Invalid 2 High Limit. It must be less than 3 High Limit (70).

## DNP3 Point:

Not in a configuration error, so the protocol point could be operational and the configuration error in the Configuration item prevents a download to the device.

Analog01\_Point x Analog01

Identification Location User Methods Alarm Redirection Historic Analog Point

Outstation  ... [Go To](#)

SCADAPack x70 Object  ... [Go To](#)

DNP3 Point Number

Severity

Area Of Interest  ...

Scan Group (Confidence Poll)

Level 3 Scan

Alarm Limits

|            | Limit                            | Severity                           |                                       | Description                             | Color                |
|------------|----------------------------------|------------------------------------|---------------------------------------|---|----------------------|
| Overrange  | <input type="text" value="101"/> | <input type="text" value="Alarm"/> | <input type="text" value="Critical"/> | <input type="text" value="Low"/>        | <input type="text"/> |
| 4 High     | <input type="text" value="0"/>   | <input type="text" value="Alarm"/> | <input type="text" value="Medium"/>   | <input type="text" value="4 High"/>     | <input type="text"/> |
| 3 High     | <input type="text" value="0"/>   | <input type="text" value="Alarm"/> | <input type="text" value="Medium"/>   | <input type="text" value="3 High"/>     | <input type="text"/> |
| 2 High     | <input type="text" value="70"/>  | <input type="text" value="Alarm"/> | <input type="text" value="High"/>     | <input type="text" value="2 High"/>     | <input type="text"/> |
| 1 High     | <input type="text" value="60"/>  | <input type="text" value="Event"/> | <input type="text" value="Medium"/>   | <input type="text" value="1 High"/>     | <input type="text"/> |
| Normal     |                                  | <input type="text" value="None"/>  | <input type="text"/>                  | <input type="text" value="Normal"/>     | <input type="text"/> |
| 1 Low      | <input type="text" value="40"/>  | <input type="text" value="Event"/> | <input type="text" value="High"/>     | <input type="text" value="1 Low"/>      | <input type="text"/> |
| 2 Low      | <input type="text" value="0"/>   | <input type="text" value="None"/>  | <input type="text"/>                  | <input type="text" value="2 Low"/>      | <input type="text"/> |
| 3 Low      | <input type="text" value="0"/>   | <input type="text" value="None"/>  | <input type="text"/>                  | <input type="text" value="3 Low"/>      | <input type="text"/> |
| 4 Low      | <input type="text" value="0"/>   | <input type="text" value="None"/>  | <input type="text"/>                  | <input type="text" value="4 Low"/>      | <input type="text"/> |
| Underrange | <input type="text" value="-1"/>  | <input type="text" value="Alarm"/> | <input type="text" value="High"/>     | <input type="text" value="Underrange"/> | <input type="text"/> |
| Invalid    |                                  | <input type="text" value="Alarm"/> | <input type="text" value="High"/>     | <input type="text" value="Invalid"/>    | <input type="text"/> |

Engineering Units Exceeded

## Geo SCADA Expert 2021, Post Upgrade

On upgrading to Geo SCADA Expert 2021, the configuration error disappears because the invalid configuration is no longer enabled, so overall the Configuration item is valid. A Configuration Download to the SCADAPack x70 device will now include this object's configuration.

### Configuration Object:

The screenshot displays the configuration interface for a SCADAPack x70 device. The interface is organized into several sections:

- Identification:** SCADAPack x70, DNP3, Modbus, IEC 60870-5-104
- General Settings:**
  - In Service:
  - Device Configuration: x70\_IConfig.Device570 (with a [Go To](#) link)
  - Name: Device\_570\_01
  - Object Grouping: (empty text box)
  - Comment: (empty text box)
  - Set Value In Configuration:
- Logic:**
  - Logic Variable Type: None (dropdown)
  - Logic Task: MAST (dropdown)
  - Exclusive Logic Control:
- Alarm Limits:**

|        | Limit | RTU Event |
|--------|-------|-----------|
| 4 High | 0     | Disabled  |
| 3 High | 0     | Disabled  |
| 2 High | 70    | Enabled   |
| 1 High | 60    | Disabled  |
| 1 Low  | 40    | Disabled  |

At the bottom of the interface, there is a **Messages** section with a dotted line indicating a scrollable area.

## Analog Point:

The disabled limits are no longer active in the protocol point.

The screenshot shows the configuration for an Analog Point in the SCADA Expert 2021 software. The 'Analog Point' tab is selected, and the configuration is for the object 'x70\_Iconfig.Analog01'. The DNP3 Point Number is 0, Severity is Low, Area Of Interest is World, Scan Group is None, and Level 3 Scan is disabled. The 'Alarm Limits' section is expanded, showing a table of limits with their RTU status.

| Limit     | RTU Enabled                         | RTU Limit         | Severity | Description |
|-----------|-------------------------------------|-------------------|----------|-------------|
| Overrange | <input type="checkbox"/>            | 3402823060737096E | Alarm    | Low         |
| 4 High    | <input type="checkbox"/>            | 0                 | Alarm    | 4 High      |
| 3 High    | <input type="checkbox"/>            | 0                 | Alarm    | 3 High      |
| 2 High    | <input checked="" type="checkbox"/> | 70                | Alarm    | 2 High      |
| 1 High    | <input type="checkbox"/>            | 60                | Event    | 1 High      |
| Normal    |                                     |                   | None     | Normal      |
| 1 Low     | <input type="checkbox"/>            | 40                | Event    | 1 Low       |
| 2 Low     | <input type="checkbox"/>            | 0                 | None     | 2 Low       |

This example illustrates how a SCADAPack x70 Configuration item and its associated SCADAPack x70 DNP3 point could both be impacted by unenabled limits specified in a Geo SCADA Expert 2019 system, on upgrading to Geo SCADA Expert 2021.

## Appendix B – Recent Updates

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### Resolved Issues in Geo SCADA Expert 2021, not included in Geo SCADA Expert 2020 October Release

[CSUP-12614] Corrected validation of Object Identifiers in SNMP driver to make sure it checks for leading dot

[CSUP-12560] Upgraded System.Text.Encodings.Web 4.5.0. to 4.5.

[CSUP-12560] Further improvements to prevent bad Dynacard data from being uploaded. A card with zero values no longer triggers a 'subscript out of range' exception. Derived from DEV-6428

[CSUP-12494] Ensured that mimic script is closed and deallocated before the mimic itself is closed. This also applies to mimic navigation operations

[CSUP-12303] Repaired the restarting of the Logic driver so that all the logic programs being scheduled at the time of stopping the driver and considered for restarting. Logic programs can be re-configured or deleted during the driver being stopped, and such further re-configuration correctly influences which logic programs restart

[CSUP-12527] Ensured that all controls on a database item's configuration properties form are disabled when the form is opened in read-only mode

[CSUP-12524] Ensured that App.Head and Head() always return 0 within the context of Virtual ViewX

[CSUP-12534] Fixed handling of configuration changes (for example disable) to the current channel of a shared outstation with heartbeating enabled. Previously the driver would start heartbeating on the modified channel, causing the channel to become 'stuck' within the driver

[CSUP-12531] Fixed support for WITS 3.0 logged data files (version 4), including related quality flags

[CSUP-12329] Improved the appearance of the Status display (for a database item) in ViewX. The Status Display is now initially sized to occupy 50% of the screen width and 75% of the screen height. Any changes to the size of Status display are used throughout successive invocations (in the same ViewX session). Note that the Status display will always be displayed centered; however, the previous width and height attributes will still be used. Additionally, the widths of the columns in the Status display are used throughout successive invocations (in the same ViewX session)

[CSUP-12441] Fixed problem where the query processor would sometimes add WITH TEMPLATES to an inner SQL query

[CSUP-12513] Ensured that command arguments are included when executing a ViewX System Command

[CSUP-12331] Fixed crash which could occur in the server if a user has the results of a query on display in ViewX showing Shared outstations and one of those outstations is then converted to a standard direct outstation

[CSUP-12392] Revised fix to address the broken ViewX 'Close Document' pick action command

[CSUP-11429, CSUP-12235] Made changes to the core WITS driver to support the T4 extension driver - fixed limit and control profiles

[CSUP-12392] Fixed exception that could occur when navigating between documents within ViewX. Ensured that the 'Close Document' ribbon button will close the active document if it is in an error state. Changed the system monitor poll method such that it no longer tries to connect to an offline server once ViewX is shutting down

[CSUP-12114] Added an option to SCADAPack x70 DNP3 analog and counter points to use either the RTU alarm limits and alert clear value deadband or their own local alarm limits and hysteresis. This allows different alarm limits to be applied at the RTU and master station. Tuning can be applied to whichever limits are currently in use. Includes support for the multiple alarm limits feature (for example, summer and winter limits)

[CSUP-12224] Added a "Reset Transaction Count" method to Group Template and Group Instance database items

[CSUP-12224] Ensured that Template Transaction Count does not become out of sync

[CSUP-12108] x70: Implemented restriction to enforce one-to-one mapping of a DNP3 x70 outstation to an x70 Device Configuration item

[CSUP-12325] Allow Realflo outstations to use set clock when running on x70 hardware

[CSUP-11071] Corrected script interface for Forms not returning the correct value for ListBox Rows

[CSUP-12293] Updated query processor to better handle large queries

[CSUP-11071] Corrected script interface for Forms not returning the correct values when using any of the following properties: The width and height of group boxes, edit boxes and query boxes. The maxlength property of edit boxes and the columns property of lists.

[CSUP-12235] Made an internal method in the WITS driver virtual so that it can be consumed by OEM-SDK developers

[CSUP-12115] Added a configuration option to SCADAPack E outstations to allow the alarm reporting feature to be disabled

[CSUP-12036] Fixed the Trace on a Trend to prevent it displaying the wrong value when the Trace Style is StepLast and a line is being drawn between a point above or below the trace viewing area and a point inside the trace viewing area



[CSUP-12219] Corrected a problem with the App.Head function sometimes returning the wrong value

[CSUP-12194] Fixed a crash in DNP3 Driver whereupon it was using incorrect Database Object IDs. Improved DNP3 Driver database object management to avoid incorrect Database Object IDs

[CSUP-12239] Prevented ViewX crash when opening logic programs that have invalid breakpoints

[CSUP-12148] Fixed the IEC 60870 Slave Driver so that timestamps reported in an interrogation response now obey the time zone setting of the channel instead of always being in UTC

[CSUP-12187] Database Lock Usage Alarm improvement: implemented 'into alarm' deadband, and alarm averaging period

[CSUP-12188] Fixed the advanced driver synchronised timer's handling of clock changes. Previously the timer could be missed when the clock jumps forward. Amongst other things this affected SNMP driver polling, causing polls to be missed

[CSUP-12214] Modified the Advanced Modbus driver to correctly skip digital points that are referencing bits within a register when the register is invalid and the Modbus device returns an error

[CSUP-12192] Fixed ViewX crash that occurred while setting a filter in an embedded list that was showing events

[CSUP-12110] Ensured that the 'Locate in Database' command is available for the document tab context menu for Crystal Report documents when the 'Select Report' prompt is visible

[CSUP-12096] Removed Force Secure Connections from the Server Configuration tool

[CSUP-12045] Improved LUS (Lock Usage Stats) diagnostic logging. Delayed LUS is highlighted and the reports do not include 'NaN' (Not a Number) report then the data is unavailable

[CSUP-12132] Allowed Virtual ViewX to upload files for actions in Geo SCADA (for example DNP3 Profiles)

[CSUP-12093] Fixed a bug in the calculation of EtherNet/IP polling messages

[CSUP-11966] Fixed an exception that occurred when trying to navigate to a document when there is a problem with the URL (for example, the URL is too long)

[CSUP-12024, CSUP-12068] Ensured that the Mimic\_Load and Mimic\_Navigate events occur when a Mimic is opened within a secondary window in ViewX

[CSUP-11999] Fixed a problem where the Back and Next pick actions would not work as expected if the Mimic was opened via a favorite into a secondary window

[SUP-10792] Ensured that the Guest User cannot configure Extended Logic

[SUP-10792] Fixed a crash in the Database server when a guest user imports an SDE which contains a Logic Program that uses Extended Logic

[SUP-10792] Implemented checks in Database server to reject unauthorized attempts by a client to save the compilation artefacts of a Logic Program

[SUP-10792] Stopped a user from being able to import the compiled code part of a logic program if the user does not have permission to compile that logic program; in this case the compiled code is discarded, meaning a recompilation will have to be done

[SUP-10983] Implemented automatic retries to enable alarm reporting after failure on the SCADAPack E driver

[SUP-11793] Allowed login to a specific system via the Virtual ViewX web page, using <system name>@<user name>

[SUP-11900] Disabled URL parameters in VirtualViewX

[SUP-11780] Revised fix: ensured that the Zoom combo box can be fully interacted with when the ribbon is minimized

[SUP-10792] Ensured that the Superuser is able to compile Logic Programs which use 'Extended Logic' (%D, %S and Indirect variables)

[SUP-10792] Ensured that %Q in Logic Programs works

[SUP-11780] Ensured that the Zoom combo box can be fully interacted with when the ribbon is minimized

[SUP-11814] Changed the default object table form title to 'Additional' instead of 'Unused'. This is used, for example, as the tab name in ViewX if a customer adds custom configuration fields to a table that would otherwise have none

[SUP-10792] Enforced the requirement that a user has to be assigned the 'Configure Extended Logic' feature when using Indirect Variables from logic programs

[SUP-10792] Enforced the requirement that a user has to be assigned the 'Configure Extended Logic' feature when using %S and %D from logic programs

[SUP-10792] Enhanced the checking of User permissions when compiling logic programs

[PDEV-990, PDEV-1714, PDEV-2051, SUP-8805, SUP-11566, SUP-11671, SUP-11710] Upgraded the Database Explorer in ViewX.

[SUP-11219] Improved the Server Configuration tool's handling of online life of historic streams, to indicate the impact of the Protected Permanent Standby feature's incremental increasing of online life