

# **SYS600 9.4**

## **Release Notes**

**17.06.2014**

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## INTRODUCTION

MicroSCADA Pro is a product family designed mainly for substation automation, electrical SCADA and distribution management applications.

The products of the MicroSCADA Pro family are:

- MicroSCADA Pro Control System SYS600
- MicroSCADA Pro Compact System SYS600C
- MicroSCADA Pro Distribution Management System DMS600

MicroSCADA Pro SYS600 9.4 is a direct successor of SYS600 9.3 and is backwards compatible with earlier versions of SYS600.

This document describes the new features of SYS600 9.4, and modifications and corrections made.

# IMPORTANT NOTICE WHEN UPGRADING TO SYS600 9.4

## Upgrade preparation

This guideline is intended to get applied on project computer for an upgrade project. The goal is to deliver a clean system not having unnecessary files and programs installed.

### **Installation**

1. Do not restore the complete sc directory from projects made with pre 9.4 version
2. Install SYS600 9.4 on a clean system. If you need to install 9.4 on a system with older versions installed Step 2 a/b should be executed **before** 9.4 installation.
  - a. Run the Unregister commands from Appendix 1. This to prevent that after step 2b and 9.4 installation some the old registered components remains in the registry.
  - b. Rename old sc directory
3. In case the application use classic LIB5xx based components install the latest LIB5xx version

### **Application restoration**

4. Restore application(s)
  - a. Before first application start it's recommended to take a backup of all product application objects which might has been changed (see Project-specific changes to product files)
  - b. Consider to clean the application directories, in particular in Hot stand-by systems to reduce the time needed to synchronize the systems
    - i. Remove/move old History database files from apl\_ directory  
APL\_YYMMDD.PHD and APL\_YYMMDD.PHI
    - ii. Remove old backup files, e.g. display view file backup's in the pict directory
    - iii. Remove files only needed during the application engineering phase, e.g. SCD and LOF files, Application Object import files
5. Restore project/custom specific graphic engine palettes:  
\\sc\prog\graphicsEngine\Palette\xx – Custom palette

### **System configuration restoration**

6. Restore system configuration files if System Configuration Tool (SCT) used to create the system configuration
  - a. signals.ini and sysconf.ini from the sys\_ directory

- 
- b. All user defined SCIL programs if used in system configuration
    - sys\_/NETx.SCL for NET nodes
    - sys\_/NETx\_LINK\_y.SCL for lines
    - sys\_/STA\_N\_xxx.SCL for station objects
  - c. Modify local IP addresses and serial port numbers as needed in system configuration
7. IEC 61850 communication configuration
- a. Restore the External OPC DA client configuration files, usually stored in the sys\_ directory
  - b. Restore the IEC 61850 OPC Server configuration files from  
\\sc\prog\61850\_OPC\_Server\IEC61850 OPC Server\bin  
\\OPCS\_IEC61850\_x directory (x = OPC Server instance number).
  - c. Upgrade CET project for IEC 61850 OPC Server
    - i. OPTION 1:
      - 1. Export project from old system
      - 2. Create new project and import
      - 3. Reset and update project in CET
      - 4. It might be needed to update the OPC DA client configuration files with the new OPC DA Server class ID which can found from ...
    - ii. OPTION 2:
      - 1. Create new project
      - 2. Create new computer node and OPC Server instance object(s)
      - 3. Select the OPC Server instance and choose the SCL import option. Browse to and select the corresponding OPC Server system.xml file to import
8. If used restore the modbus slave configuration ini-file(s):  
\\sc\prog\modbus\_slave\config.ini
9. Take the new sys\_bascon\$com template in use
- a. Rename to sys\_bascon.com
  - b. Modify sys\_bascon.com to cover your project setup
10. Take the new sc\prog\exec\shutdown\$cin template in use
11. Take the new sys\_\sys\_config\$par memory definition file in use

### System cleanup

12. As final step the renamed old renamed sc directory step 2 should be removed

## **Secure communication**

Due to major enhancement to the communication security special attention has to be taken if any of the following system configurations are used.

### **SYS-SYS encryption**

Application Communication Protocol (ACP) communication between SYS600 nodes will be encrypted. By default the system run in a learning mode where the first connection between nodes is automatically accepted and the encryption certificate is stored for future use. It is possible to disable the learning mode and require user acceptance for any new connections between SYS nodes. See more information in System Configuration and System Objects manuals.

### **System with SYS600 version mixture**

By default SYS600 doesn't accept unencrypted communication from the network. If there is a need to establish communication between system running older version of SYS600 and SYS600 9.4, the unencrypted communication needs to be allowed. See details in System Configuration manual.

### **External OPC DA Client, Modbus Slave and CPI protocol implementations**

If any of these run in a separate computer and communicates with the base system over the network, the unencrypted communication needs to be allowed. See details in System Configuration manual. If they run in the same computer as SYS600, there is no need to change the default encryption settings.

### **OPC Authentication**

By default the SYS600 OPC Data Access Server requires OPC client authentication using the IOPCSecurityPrivate interface. This will affect 3rd party OPC client connections to SYS600 OPC DA Server. If it is not possible to use the authentication with 3rd party OPC client, the authentication can be disabled. See details in System Objects and SYS600 OPC Server manuals.

### **SCIL-API Programs**

By default external SCIL-API programs are not allowed to access SYS600. Access can be allowed with DENY\_EXTERNAL\_API\_ACCESS attribute. See more information in System Objects manual.

### **DMS600**

DMS600 4.4 FP1 supports the new security features of SYS600 9.4. If older DMS600 version needs to be used with SYS600 9.4, the OPC Authentication needs to be disabled. See details in System Objects manual.

## **Classic LIB5xx**

### **Login to Classic Monitors**

Due to changes in Classic Monitor start-up procedures, applications needs to be prepared again for Base Tools. This is done in Control MicroSCADA Applications Dialog.

### **LIB510 event based disturbance record upload**

LIB510 Event based disturbance recording uses LIB500 invisible monitor with automatic login with admin rights. According to tightened security policy this is not supported anymore.

### **LIB520**

The Parameter Setting Tool (PST) included in LIB520 will fail to work because of obsolete SCIL-command usage. Please contact SA-T SupportLine for further information.

## **User account management**

The existing MicroSCADA user, authorization groups and authorization level will be automatically migrated to the new user account database.

In case of having user in the application with different authorization level in some authorization group's new roles will be created for every single user.

## **Localization**

New dialogs and text has been introduced in Monitor Pro specific resource files \*\_EN.dll. Localized resource files needs to be updated.

In general only the text from the String Tables needs to be translated.

Dialogs will be loaded from the main EXE for FrameWindow and from the corresponding DLL's for Reports and Trend Displays.

For Event, Alarm, Blocking and User Activity Log Display the dialogs will be loaded from the resource file (\*\_'LanguageCode'.dll).

Using old pre 9.4 resource files \*\_\_'LanguageCode'.dll is possible but new text will of course be shown as defined in the new 9.4 \*\_EN.dll resource file.

For Event, Alarm and Blocking Display the "General Settings" dialog must be copied from the new 9.4 \*\_EN.dll resource file to the "old" localized resource file.

See SYS600 Application Design manual (17. Localizing application) for more information about the localization process.

---

## **Project-specific changes to product files**

If project-specific changes have been made to standard files and application objects (for example command procedures) that are part of this product release, these changes have to be backed up before installing a new version and, if needed, restored manually after the installation.

The program code of all SYS\_\* command procedures is automatically backed up and stored in the PICT/ SYS\_CPROC.BAK file.

The following command procedures and process objects that are known to be changed on a project-specific basis will be updated by this product release, and they need to be backed up manually:

**BGU\_AL**  
**BGU\_ALARMINDS**  
**BGU\_BAYLR**  
**BGU\_BLOCK**  
**BGU\_CALEN**  
**BGU\_CALMP**  
**BGU\_CONTROL**  
**BGU\_CREATEDB**  
**BGU\_DIALUP**  
**BGU\_DST1**  
**BGU\_DST2**  
**BGU\_EL\_TS**  
**BGU\_RDRE**  
**BGU\_STALR**  
**BGU\_TRAFO**  
**BGU\_UPDATE**  
**SAGR\_EAB\_MAIN**  
**SAGR\_OBJNAV\_MAIN**  
**SAGR\_REPORTS\_\***  
**COM\_\***

The following files, which have been updated in this product version, have to be manually taken into use by renaming the files, for example shutdown\$cin -> shutdown.cin. Possible project-specific changes in the existing files have to be transferred to the new file manually. To ensure the correct operation of the product, it is important that the new files are taken into use.

It is mandatory to update the following files:

sys\_bascon.com based on the template sys\_bascon\$com.

# LAST MINUTE REMARKS

## Historian

Historian Real Time Database (RTDB) has been validated with variables counts 50314 and count of transformations 150920

For this calculated parameters the WindowCacheSize should be at least 402468 and MemoryMapAddressSpaceLimit should be at least  $402468 * 65536 = 26376142848$ .

In order to tune up above parameters, DBSIZE should be set to High because this setting is not available in Historian 1.1 installation wizard.

Hence following manual configuration is needed:

- 1) Change DBSIZE parameter to High in "%app\_root%\setup\Setup\_Answers.bat"
- 2) Run script file  
"APP\_PostInstallDatabaseConfigure\_AdjustCacheSizeParams.template.bat"  
to recalculate
- 3) Restart RTDB service

## KNOWN ISSUES

### **OPC UA Server**

Quality attribute for bad value, substituted value and obsolete time are not mapped.

Only current values and their historical values are published by OPC UA server but not their aggregates, e.g. the 15 minutes average.

Event history not implemented.

Access control not working properly for non-anonymous users (All users get the credentials of the first user logged in).

Certificate based user authenticated not available.

### **Historian**

It's not recommended to use Non-English Operating System for the computer the Historian package is intended to be installed on.

### **Measurement Reports configuration**

The option to skip the Reports upgrade procedure has been removed. Prior 9.3 FP2 Monitor PRO Measurement Reports must be upgraded to the most recent one.

Classic LIB510 based Reports can still be used as long no Monitor PRO Measurement Reports will be configured.

A mixture of classic and Monitor PRO Measurement Reports is no longer supported.

## RECOMMENDATIONS

### **PCM600 version**

It is recommended to use PCM600 version 2.6 or newer if PCM600 and SYS600 are installed in the same computer.

## SUPPORTED OPERATING SYSTEMS

SYS600 9.4 can be used on the following operating systems:

- Windows 7 Professional, 32 Bit and 64 Bit
- Windows 7 Ultimate, 32 Bit and 64 Bit
- Windows 7 Enterprise, 32 Bit and 64 Bit
- Windows Server 2008 SP2 Standard, 32 Bit
- Windows Server 2008 SP2 Enterprise, 32 Bit
- Windows Server 2008 R2 SP1 Standard, 64 Bit
- Windows Server 2008 R2 SP1 Enterprise, 64 Bit
- **Windows 8.1 Pro ,32 Bit and 64 Bit**
- **Windows 8.1 Embedded Industry Pro, 32 Bit and 64 Bit**
- **Windows Server 2012 R2 Standard, 64 Bit**
- **Windows Server 2012 R2 for embedded systems Standard, 64 Bit**

With SYS600 9.4 supports for the above bolded operating systems has been added.

**Note:**

With SYS600 9.4 supports for Windows XP and Windows Server 2003 operating systems has been removed.

For PCM600, check the supported operating systems from PCM600 Release Notes.

## NEW FEATURES

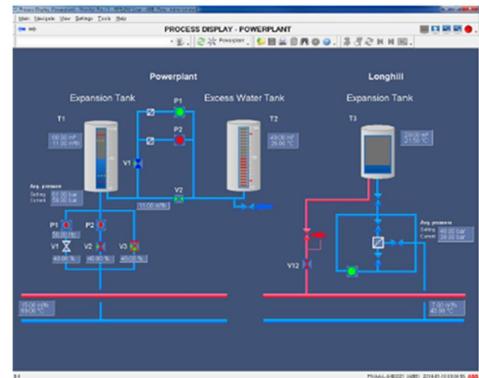
This chapter highlights the main new features of this release. More new features and improvements are listed in the following chapters.

### Pipeline Library

The Pipeline Library makes it more efficient to use SYS600 for monitoring and control of various pipeline processes like gas or water distribution, district heating/cooling, water treatment, etc.

The Library contains the process control functionality, user interface components such as dialogs and process display symbols such as pipes, tanks, valves, pumps, etc. for designing and building the applications.

For more information and more detailed description of included components see the Pipeline Application Design and Pipeline Operation manuals.



### Sequencer Tool

SYS600 Sequencer is the software intended for creation and execution of switching device command sequences. The sequences can be used to pre-configure more complex operational tasks like switching busbars or performing load shedding operations.

The sequences are created with the Sequence Configuration tool. For each step of the sequence the command to be executed is defined together with optional precondition and postcondition checks or delays. Currently supported commands are switching device open/close command or message box display.

The sequences can be started in several ways:

- by the operator using the Sequence Execution tool
- from an event
- based on time or calendar schedule
- by a command from a remote control center via COM500i gateway
- from DMS600 e.g. for fault isolation and power restoration

For more information see the Operation and Application Design manuals.

### OPC UA Server

SYS600 Historian now comes with optional OPC UA server implementation (OPC UA server version 1.01) of the OPC Unified Architecture (UA) – a specification defined by OPC Foundation. OPC UA is the next generation version from popular OPC industry

standard interoperability specifications. OPC UA combines all the previous specifications under one homogenous information model and does this using the best IT security practices and cross platform capabilities.

The OPC UA server is used to publish data to 3<sup>rd</sup> party systems using the OPC UA interface. An OPC UA client is able to read current values by using the connection to the OPC UA server. Most UA specific features are available, such as specifying the queue size and separate sampling interval for the monitored items. The reading of aggregated history values is not yet supported.

## **Security Compliance Tool**

Windows security configuration can now be deployed with a graphical user interface instead of using security scripts. As with the scripts, this tool can only be used to harden Windows operating system. Engineer can select the security features, which are deployed, and it gives better control over the settings compared to scripts.

See the Cyber Security Deployment manual for more information.

## **Encryption of SYS-SYS Communication**

The internal communication between SYS600 nodes is now encrypted. This protects the communication from for example sniffing and tampering of the traffic. The secure communication between SYS600 nodes is based on the TLS protocol and public key cryptography based authentication.

For easy setup and configuration two different key distribution modes have been implemented i.e. learning mode and normal mode and the key management is designed to be as automatic as possible.

For compatibility reason 9.4 will accept unencrypted connections with earlier versions. A new hardening switch has been implemented to control the usage of unencrypted connections.

The switch REQUIRE\_ENCRYPTED\_ACP has three different values:

- NONE – does not require encryption at all
- NETWORK – requires encrypted connections to all nodes except localhost
- ALL - requires encrypted connections to all nodes

NETWORK is the default setting. NONE must be used to connect to SYS600 nodes of older versions than 9.4. For new installations the value ALL or NETWORK should be used.

See the System Objects manual chapter Encrypted Communication for more information.

## **Central User Account Management**

The user account management function (UAM) now works in two modes, local and central. In local mode the user account management, user authentication and user authorization is managed locally by SYS600 as before. In central mode, SDM600 and its Central Account Management (CAM) function is used for user authentication, user data management and

password policy management, whilst role management, authorization management and authorization are handled by SYS600.

## **Role Based Access Control**

The revised User Account Management tool now supports defining roles and assigning them to the user accounts. Defining roles for the users instead of using the authorization groups directly allows the fast and easy way of maintaining permissions of multiple same level users.

With this tool it is possible to:

1. Manage users
2. Manage groups and roles
3. Define password policy rules
4. Define Monitor Pro timeouts for roles

If Central User Account management is in use, items 1 and 3 are disabled in the tool and these tasks are handled by SDM600.

For more information and more detailed description see the Application Design manual.

## **User Activity Logging**

User session and user account management related events are separated from other types of events in the system. These user activity related events are categorized as cyber security related events and are therefore treated differently. This means that the events are stored securely in a dedicated location and they are viewed with a dedicated viewer that requires specific access rights.

The user activity events can also be published to SDM600 and/or 3<sup>rd</sup> party security systems using the SYSLOG protocol.

See the System Configuration manual, chapter User Account Logging, for more information.

## **OPC Authentication**

A SYS600 login is now required from OPC clients connected to the system via OPC Data Access Server (OPCS). The clients must implement the login according to the IOPCSecurityPrivate interface of the OPC standard. For more information, see the OPC Server manual.

The strict requirement to login via OPC may be relaxed by the system hardening attribute. See the System Objects manual for more information.

## **Control Panel**

The control panel has been completely revised.

The main functionality of Control Panel can be divided to four parts:

- SYS600 service activation and supervision
- Application, process and service monitoring
- Base system configuration includes editing of essential files (SYS\_BASCON.COM, SHUTDOWN.CIN, and SYS\_CONFIG.PAR) and launching configuration programs for different device drivers
- License handling includes importing, viewing and validating SYS600 license.

## **Measurement Reports and Trends Display – Graphical View**

### **Curve highlighting**

Curves and their associated Y-axis can be highlighted (inversed color blinking) for a short time when the object is selected in the legend. This helps to locate the selected curve in the graph. Also if a curve is selected in the graphical area the associated legend line will be selected. This feature is limited to PLOT and AREA type of curve.

Right mouse click on some curve in the graphical view will open the curve properties contextual menu. With right mouse click on some axes the axes properties dialog can be opened.

Legend general settings are now independent from pre-configurations.

### **Global curve settings**

In Curve properties of Graph Settings dialog, “Use as global” checkbox is added for setting curve properties global. Default preconfiguration uses curve properties from global curve settings file. Preconfiguration uses global curve properties when select the curve as “Use as global” from Curve Properties and save preconfiguration.

## **Measurement Reports**

### **Leap hour data**

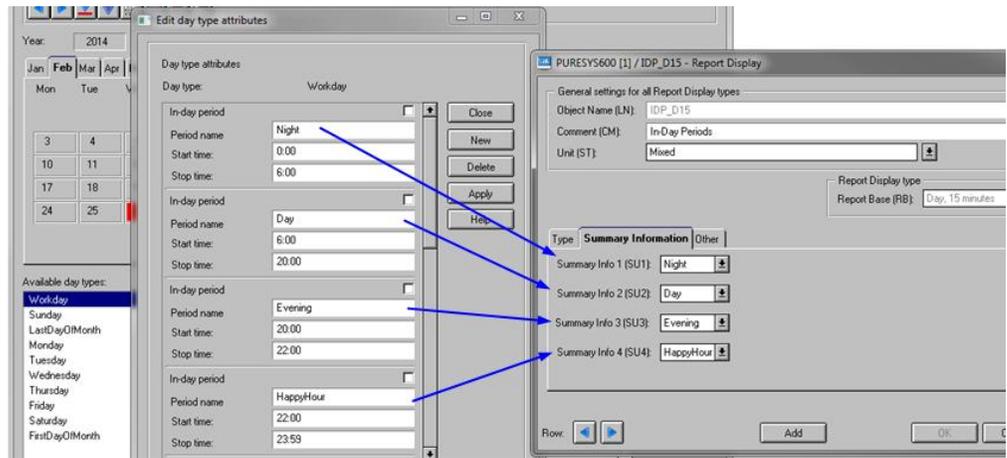
The data collected from the extra hour during the switch from daylight saving time (DST) to the standard time are now made visible in the tabular view for day reports.

The extra hour data will also be used for the summary information data calculation.

### **In-Day periods for summary information**

In case so named In-Day periods has been defined in help of the calendar tool they can be selected for the summary information data calculation.

This special summary information should be selected only for report display objects of DAY base type.



The summary data calculation for this special periods is based on the used report object type ID, e.g. if the report object type ID is “MX – Measured, max calculated” the maximum value for every selected period will be used for the summary information presentation.

Time	IL 1 Min	IL 1 Max
00:00 - 01:00	1.0	1.0
01:00 - 02:00	1.0	2.0
02:00 - 03:00	2.0	3.0
03:00 - 04:00	3.0	4.0
04:00 - 05:00	4.0	12.0
05:00 - 06:00	5.0	6.0
06:00 - 07:00	6.0	7.0
07:00 - 08:00	7.0	8.0
08:00 - 09:00	8.0	9.0
09:00 - 10:00	9.0	9.0
10:00 - 11:00	10.0	11.0
11:00 - 12:00	11.0	12.0
12:00 - 13:00	12.0	21.0
13:00 - 14:00	13.0	14.0
14:00 - 15:00	14.0	15.0
15:00 - 16:00	15.0	16.0
Night	1.0	12.0
Day	6.0	21.0

## IEC 61850 Ed2 Support

SYS600 9.4 is IEC 61850 Ed.2 compliant.

## Process Display object highlight

Clickable objects are now highlighted with a frame when the mouse hovers on top of the object. This function must be activated in the Display Builder. The colors and frame size can be configured.

## **Object Navigator extensions**

A new Copy/Paste special feature for BAY level Process Objects has been implemented.

With this new feature, available from the Object Navigator object tree, it's more easy to multiply fully configured and tested bay Process Object groups.

During the paste special operation the following data will be modified based on user input.

### **Process Object attributes:**

- Logical Name (LN)
- Object Identifier (OI)
- Unit Number (UN)
- Item name (IN)

### **Process Object group configuration data (CD):**

- Bay name (BAY\_NAME)
- Process Object LN (P\_OBJECT\_LN)

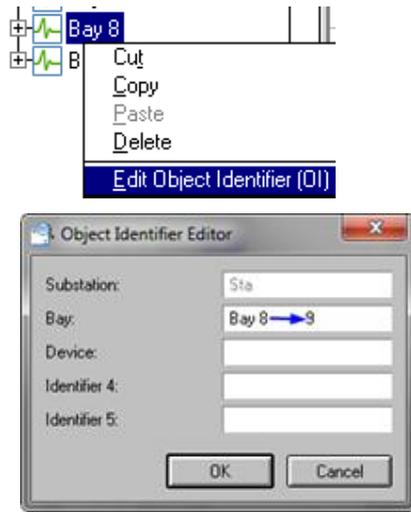
This paste operation and data modification will be done for all Process Object groups and indexes belonging to the selected bay based on the Object Identifier.

It's now possible to edit the Object Identifiers for a selected group of Process Objects by levels in one step.

### **Example:**

All Process Objects belonging to Bay 8 should be edited in a way that they will be assigned to not yet existing Bay 9.

The "OI Editor" can be selected from the object tree (Process Objects – By Object Identifier) context menu.



Also the associated configuration data like BAY\_NAME will be modified too.

# SYS600 9.4 IMPROVEMENTS AND ERROR CORRECTIONS

The SYS600 9.4 includes also a number of corrections and improvements done, based on valuable feedback from our users.

## Base system

### Obsolete functionality removed

The following functionality has been removed from the base system:

- MicroTerminal support and IND type base system objects
- DCP/MUX support (incl. RAM\_PROTOCOL)
- PICL (semigraphic picture documentation tool)
- Picture cache (incl. SYS attributes PC and PU)
- SYS attributes HM, MM, EP, ED, TP, TD, FM and FU
- Functionality of the SYS attribute DM (Debug Mode). The attribute itself remains for SCIL usage.
- APL attribute ON
- MON attributes EX, ON, ND, TN, DC, MA, IA and CA
- LIN attributes MA, IA, BR, SB, PY, FC, ER, EN, RE and SD
- SCIL command #SET\_SYSPAR
- SCIL functions SYSPAR and WORKSTATION\_CALL

The documentation of many of these has been removed earlier.

### Error logging

#### **New error logging severity (Notification Only)**

A new severity argument value “N” (for Notification Only) has been implemented in SCIL function CONSOLE\_OUTPUT for testing purposes. Severity N messages are delivered to Notification Windows, but not written to SYS\_ERROR.LOG.

## **Hot Stand-by**

### **HSB to preserve file dates**

HSB now preserves the creation date and modified date of files copied from hot to stand-by application. This allows for applications that keep track of old files (e.g. Disk Management Tool) to work in an HSB system.

## **Process and Report Database**

### **Ghost alarms from free type process objects**

Free type process objects with alarm limits (LI and HI) generated ghost alarms even if their alarm class was 0.

This problem was introduced in 9.3 FP2 and 9.3 FP1 HF8.

### **Intermediate states of DNP Double Binary objects in the Event List**

When a DNP DB object (consisting of 2 binary signals in IED) changed its state from 01 to 10 or vice versa, intermediate state 00 or 11 was erroneously reported to the Event List together with the correct state.

### **Proxy stations caused false Object Status 2 values**

When either the primary or the secondary station of a proxy got suspended, all the process objects of the proxy were marked invalid by OS value 2, even when the fail-over was successful.

### **Proxy station state error in an IMAGE application**

When one of the stations that made up a proxy station got suspended, a SUSPENDED message was sent to the corresponding STA object in the IMAGE application even if the other station of the proxy, as well as the proxy itself was in RUNNING state. Consequently, the process objects of the image station were marked as obsolete (OS = 2).

### **Time channel lost its synchronization**

If a time channel was taken out of use (IU = 0) prior to the transition to daylight saving time and taken back to use (IU = 1) soon after the transition, it lost its original synchronization. For example, if the channel was supposed to run two times an hour at 13 minutes and 43 minutes, its synchronization was reset to 0 and 30 minutes.

### **Malfunction at shadowing start-up**

A corrupted process database file (reported as 'Dangling process object: A\_SPA\_ANSW – Ignored' at the application start-up) led to an inconsistent RAM process database. In an HSB system, the inconsistency caused a malfunction in the stand-by application at shadowing start-up.

## **Process Communication**

### **Proxy station malfunction**

When a proxy station was first forced to use either primary or secondary station (by setting STAn:BAS to 1 or 2) and then unforced by setting AS to 0, the proxy station did not switch to use the other one when the forced station was suspended.

## **Mirroring**

### **Mirroring of an IMAGE station stopped working**

When the last mirrored process object of a unit was taken out-of-use and immediately back to use in an IMAGE application, the mirroring of the unit occasionally stopped working due to a racing problem. Setting the Switch State (SS) from AUTO to MAN and back to AUTO caused the same problem.

### **Host events DISABLED and ENABLED not activated**

If an image application was connected to the secondary application of a redundant host, the predefined mirroring events DISABLED and ENABLED were not activated when the HE attribute for the host application was set to 0 and 1.

## **Network Topology**

### **Wrong voltage level coloring**

Network Topology calculation now correctly sets voltage levels in situations where two powered transformers are looped by faulty or intermediate state switching devices.

### **Program halted by “PROF\_Update\_Feed\_Info”**

Truck handling of network topology calculation contained an error. The switch and the truck should always be in the same state if the truck is not open. Due to a bug in the kernel, this invariant was broken. A program stop occurred when the states of the truck and the switch were updated in certain order.

### **OPC Server closed**

The communication between the kernel and the OPC DA Server stopped working (‘OPC Server closed:0’), when the communication to IED’s was lost or re-established while large overview displays were shown.

Because of an error in triggering a topology calculation, the process object status (OS) changes from 2 to 0 and vice versa caused a big amount of excessive topology calculations, which generated a huge amount of data for the overview displays. That data overflowed the data buffer between the kernel and the OPC Server causing the ‘OPC Server closed’ problem.

The problem existed only in 61850 substations.

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## **Inconsistent coloring with earth switches**

Earth switch symbol did not propagate faulty or intermediate state as expected, which lead to inconsistent coloring.

Also, the problem with two earth switches connected to same busbar and having different coloring has been corrected.

## **SCIL**

### **#WHEN statement malfunction**

If the selector of a #WHEN statement was given as a range of object attribute values without any spacing characters around the two dots, the SCIL interpreter failed to evaluate the range correctly. An example of such a statement:

```
#WHEN A:PLI1..A:PLW1 .Do_Something
```

### **DATA\_MANAGER malfunction**

A deep data access, such as DATA\_MANAGER("GET", file, "SECTION", "A", "B"), sometimes failed with status 243 (SCIL\_LIST\_VALUE\_EXPECTED) or 640 (SCIL\_VECTOR\_VALUE\_EXPECTED).

## **Visual SCIL**

### **Malfunction of context popup menu for VS\_GRAPH object**

Error related to mouse move on the context popup menu of VS\_GRAPH object has been resolved.

### **Disabled VS\_MENU Items**

Look and feel of disabled VS\_MENU items has been harmonized with Monitor Pro disabled menu items

### **NONE\_SELECTED method for VS\_TREE**

The action method NONE\_SELECTED will be executed only when all nodes and leafs in the VS\_TREE are deselected.

### **\_SELECTED\_CELLS attribute for VS\_TABLE**

Selection of multiple cell groups greater than two happens properly

### **VS\_NOTEBOOK page option "Current Page"**

Notebook page will now be copied with "Current Page" option unselected.

### **Multiline titles for VS\_BUTTON**

Now the titles for VS\_BUTTON object can be displayed in multiple lines. See Visual SCIL objects manual for more information.

## **UP/DOWN sort arrow for VS\_TABLE header**

Optional a up/down arrow can be shown in the column header to visualize a possible column data sort direction. See Visual SCIL objects manual for more information.

## **OSEH Operating System Event Handler**

### **OSEH now supports all Windows versions**

OSEH has been rewritten to use the Windows Event Log API in Windows 7 and newer.

## **Historian Communication**

### **Historian value updates within same millisecond**

Process objects updated within the same millisecond were not received properly in the Historian. Now each update is ensured to have unique timestamp and each update will be logged by the Historian.

## **OPC Data Access Client**

### **Double update of OPC\_DA process objects**

When a process object was created into an OPC\_DA type station on-the-fly, two (identical) OPC item subscriptions were created in the OPC client (OPCC).

Consequently, the process object was updated twice whenever its value changed. Excessive subscriptions were generated also when the process object was taken out of use and then back to use.

Subscriptions were done correctly at application start-up. Therefore, the problem vanished after restarting the application.

## **OPC Data Access Server**

### **RT attribute of command procedure and data objects in UTC time**

RT (Registration Time) attribute of command procedure and data objects was received in UTC time by OPC clients when the attribute changed its value. The initial value was received correctly in local time.

### **OPC item change notifications to Application OPC Server**

In cases where there was constant data flow from OPC DA Server (OPCS) to Application OPC Server (AOPCS) this resulted that call backs starts to aggregate and finally OPCS may have forced AOPCS connection to be closed.

## **OPC Alarms & Events Server**

### **Malfunction of OPC Alarms & Events server**

When a client connected to the OAES.exe and the interface query failed or the client quickly released all interfaces, OAES occasionally stopped.

## **OPC Alarms & Events Client**

### **AC 800M specific OPC A&E client did not work**

OAEC.EXE process entered an eternal loop when the server sent a refresh request to the client. The refresh request is a vendor specific feature of AC 800M A&E server. Consequently, this problem does not appear when any other A&E server is connected to.

This problem was introduced in rev. 9.3 FP2.

# Monitor Pro

## Monitor Pro application window

### Using command line argument -wait

Monitor Pro command line argument -wait has been changed from checking the actual service status, that would require administrator user privileges, to use alternative solution (named pipes).

### User Login Error with command line argument -login

There were some challenges using appropriate password when Monitor Pro command line arguments -login or -loginonce were used when identifying the user credentials. The same situation was applicable also for Monitor Pro instances started with Main – New Window menu command when auto login was configured in FrameWindow.ini. This is now fixed.

### Dialogs outside virtual screen

When Monitor Pro is opened and the visible bounds of the application window is outside current screen resolution, the application window is reset back to normal position without need to move it from out-of-bounds position manually. The same applies to any floating toolbar when it it's logged in and user layout is loaded.

### Toolbar title visibility

Monitor Pro toolbar titles are shown properly with all Windows Themes. There were some challenges with some special Themes to show the floating toolbar titles properly and the issue has been fixed.

### Alarm Notifications / Auto-logout issues

Alarm Notifications / Auto-logout functionalities have now been fixed when computer is waking from sleep or hibernation state. There's now separate thread implemented to Monitor Pro application window making the functionality reliable.

### Open / Save / Select dialog harmonization

Open / Save / Select dialogs are now harmonized in all Displays. In addition all the file or folder manipulation actions are now prevented in all such dialogs in operator use.

### Localization of message header

It is now possible to localize the header of message boxes coming from Monitor Pro application window. The default value of string with ID 127 (“Monitor Pro”) is located in the resource file called FrameWindow\_EN.dll.

### Saved Zoom Areas with Open Display Custom Command

Saved Zoom Areas in Process Display Custom Command didn't work automatically. The saved Zoom Area had to be defined manually since the Arguments field in Monitor Pro - Specify Display dialog did not update to reflect the saved Zoom Area. This has now been fixed.

## GUI Support for Configuration File Items

There's now support in Monitor Pro application window to configure the NewWindow, AlarmCount, FreeDateTimeField and ManualFullPathFileName FrameWindow.ini file item values in Customization Mode. ManualPath and ManualName configuration items are deprecated, the mentioned ManualFullPathFileName should be used instead.

## User layout not saved with each logout

When user logs out the layout was always saved to .tb2 and .chg layout files just to remember the status of toggle menu items and toolbars (visibility). Now the saving of user layout to these files is done only when needed, etc. in Customization Mode or with appropriate menu commands (like Save Layout) and FrameWindow.ini configuration file will be used to store the appropriate information.

## Workplace and User Name to ACK\_SOUND

Workplace and user name is now given to ACK\_SOUND command procedure as an list argument. The command procedure can be modified to acknowledge alarms based on the workplace and user name. In this way it's possible to implement logic to different divisions on a same application as long as it's known to which division each workplace or user belongs.

## Standard User Enhancements

To use Monitor Pro as a standard user, some file system permissions have to be configured. Check Security Guide for more information how to create appropriate Windows users and groups and configure permissions for SYS600 applications. There's now special message shown indicating when there aren't enough file system permissions. Also the mechanism for notifying Note Marker changes has been updated to allow usage for authenticated users from RDP sessions.

## Empty Lines in Find Results

There's now symbol file name shown in the Find results in Monitor Pro. In this way in the results there won't be any empty lines shown when the configuration hides all the other fields in the Find results.

## Clicking symbols mapped to Memory or Constant Data Variables

Clicking symbols mapped to Memory or Constant Data Variables was not handled correctly. This is now fixed.

## Tool disappear when Tooltips enabled

When there were tooltips defined on Process Display, those were shown also when the Monitor Pro application window was inactive. This made the VSCIL tools opened from Tool Manager to disappear behind Monitor Pro application window. This is now fixed.

## Tooltip duration time

It's now possible to modify the Process Display tooltips duration time by modifying the configuration file `\sc\prog\graphicsEngine\etc\dvconfig.dat` related to configuration key DVTOOLTIP\_LIFESPAN. By default Windows specific setting is used.

## **Performance when zooming and panning**

Zooming and panning related performance has been improved related to graphics engine. This makes the usage of Process Displays more fluent.

## **Application Settings dialog**

### **Problem with opening Operation Manual**

A run-time error 326 was displayed, if a Built-in Administrator of Windows 8 computer opened the Operation Manual by clicking Help button in the Application Settings dialog and no external pdf-viewer was installed. In that case an Access denied message was expected. This issue happened due to missing resource that has now been added to the language dll.

### **Control Dialog related settings**

When running more than one SYS600 applications the use of Control Dialog related Application Settings did not work between the logins during Monitor Pro session. This is now fixed.

## **VSCIL-tool integration**

### **Locate Object from Process Display using VSCIL**

Locate Object from Process Display using VSCIL is now possible using LOCATE\_OBJECT identifier in SendDisplayCommand function. See Application Design manual for more information about SendDisplayCommand usage and parameters.

### **DisplayInfo method call**

In some rare cases the DisplayInfo method call from Monitor Pro to an open VSCIL tool has got lost.

### **OpenTool and OpenVso functions in Login Manager**

Functions called OpenTool and OpenVso were removed from Login Manager in 9.3 FP2. These functions are now taken back to use. It is acceptable to use OpenTool, OpenTool5, OpenVso or OpenVso5 function. The functions can be used in custom Control Dialog to launch appropriate VSCIL Tool.

### **Providing OPC Item ID with dots to VSCIL**

OPC Item ID was cut off regarding the first appearing dot when providing the arguments to VSCIL Tools. This has now been fixed. The full list of arguments provided to VSCIL Tools is described in Application Design manual.

### **VSCIL tool size with Custom Commands**

VSCIL tool size related to Custom Commands in Monitor Pro is now honored in menus and toolbars. There were issues especially with tool size value 1 (960 x 720) when it comes to configuration. All the tool sizes can be now used are honored in opened VSCIL tool.

## **Monitor Pro arguments to VSCIL Tools from command line**

Monitor Pro arguments are now given to VSCIL Tools when launched from command line. In this way for example the TOOL\_OFFSET information can be used also in this situation. The full list of arguments provided to VSCIL Tools is described in Application Design manual.

## **Notes dialog**

### **Diacritic letters in Process Display Notes dialog**

It is now possible to add diacritic letters using AltGr + key combination that includes letter 'a' without emptying the whole text contents.

## **Login dialog**

### **Unnecessary logout event**

In Classic Monitor there was an unnecessary logout event, when returning from Tool Manager to process picture. This happened in applications that were prepared for LIB500.

### **Temporary zoom areas when logging out**

When temporary zoom areas were saved and user logged out. Next time logging in the temporary zoom areas did not work correctly. This is now fixed.

## **Process Display**

### **Notify RDP Sessions about Process Display changes**

Monitor Pro instances in RDP sessions are now informed about changes in Process Displays when such file is saved in Display Builder.

### **Notes update in RDP sessions**

Note updates related to RDP sessions have been improved by making use of already existing functionality (named pipes) used for other purposes that has been proved to be reliable. See Security Guide for more information how to configure systems with efficient credentials.

### **Update cycle, refresh issue on objects**

Process Display update cycle was not initialized properly after visiting 0-Session. There were the same symptoms noticed also in situations where computer was restored from sleep or hibernation status. All the mentioned situations are now covered and Process Display update is ensured.

### **Opening Process Display files PICT subfolders**

It is now possible to open Process Display files from PICT subfolders. All other folders are prohibited when opening Process Displays from the command line or using Tool Launcher. When using Open File dialog is any Process Display can be still opened.

### **Not sampled indication**

Not sampled indications (a.k.a. purple question mark) were not shown if the symbol was rotated.

### **Symbol representation for missing Process Object case**

Symbols mapped to non-existing process objects could have been colored wrongly. The variable value of the symbol was cleared after it had been set to correct, in this case state presenting failed signal value. Now the missing process object connection is indicated correctly.

### **Cyrillic characters on Process Display**

Cyrillic characters on Process Display are now working on Process Display with any Monitor Pro window size and anchor positions. There were challenges when activating the window content while resizing the application window. This is now fixed.

### **Process Display Shortcuts authorization improvements**

There have been the following improvements introduced when it comes to authorizing Process Display Shortcuts:

- User specific shortcuts are now be possible to modify with authorization level  $\geq 1$  in GENERAL group.11
- Application specific shortcuts are now possible to modify with authorization level  $\geq 2$  in GENERAL group.
- Other users' shortcuts are now possible to modify with authorization level 5 in GENERAL group (no change).

## **Power Process Library**

### **Configurable BAY\_LR\_POLARITY for Tap Changer**

The Tap Changer standard function has now a configurable attribute BAY\_LR\_POLARITY for defining, if binary bay position values 0 and 1 are interpreted as Local or Remote control.

### **Remote controlling issue with Bay Local/Remote dialog**

A binary Bay standard function for other station types than IEC61850 could not be remotely controlled, if they were configured as Local control with position indication value 0. This has now been fixed.

### **Wrong event and print handling in truck**

When truck was installed with IEC 61850 protocol and control type was Secured command with 5AOs, there were wrong event handling object and format picture assigned to control indexes.

### **Update script issue**

The Network Topology Coloring update script could not be executed, if the attribute LINE\_INDICATOR\_COLORED\_BY was missing from line indicator.

## **Control Dialogs**

### **Obsolete and invalid status in switch control**

When indication object for switch device has obsolete (OS = 2) or invalid (OS = 1) status, this is indicated with message text in control dialog. In addition, in case of obsolete status, the control buttons for opening and closing the switch device are dimmed.

### **Forced controlling possible when not authorized to control station**

If the station level control authority was disabled by Station Local / Remote Switch and System location setting, it was possible to use Forced operation tab check boxes "Control with interlocking bypass" and "Control with synchrocheck bypass" to activate Open and Close Breaker buttons for controlling. This is now prevented without authority to control the station.

### **Simulation of 3-state switch**

In switch device control dialog the simulation of 3-state switch is fixed.

### **Actions prevented in empty advanced view**

It is not possible to make actions any more in an empty control dialog advanced view.

### **Empty reclosing tab**

When auto-reclosing function was installed and configured within a bay, only an empty reclosing tab was shown in a switch control dialog.

### **Voltage value updating in the Tap Changer dialog**

The voltage value did not update automatically, if the value changed while the dialog was open. This has now been fixed.

The decimal separator of voltage value is now as defined by the regional setting similarly to the reference voltage value.

## **Alarm, Event and Blocking Display**

### **Exporting list data in csv format**

Exporting of the event, alarm and blocking lists in csv format can be accessed from list specific menu item or by right clicking the list and selecting Export... from the pop-up menu. The visibility of the pop-up menu item is configurable in each list General Settings dialog.

### **Login command line argument**

Resolved problem of updating colour in the display at initial time When Monitor Pro application window is started with -login with event list / alarm list / blocking list command line arguments.

Resolved problem of loading Event or alarm list values when Monitor Pro application window is started with -login with event list / alarm list.

## **Layout settings improvements**

Close button has been added to the dialog.

Resolved issue of resource overlapping when minimizes the dialog.

## **Opening list preconfiguration**

When the preconfiguration name given as ToolLauncher parameters contained e.g. uppercase Scandinavian letter 'Ä' and the actual preconfiguration name was given with lowercase 'ä', the preconfiguration could not be opened. Now opening an existing list preconfiguration is done in a case insensitive way.

## **Decimal numbers in coloring rules**

An unhandled exception occurred in case of using decimal number values inside the coloring condition.

## **Alarm Display**

### **Alarm list column widths**

Alarm display defines a minimum column width for all visible list columns. Also saving of 0 width columns is not possible.

### **Alarm Acknowledgement**

It is now possible to acknowledge free type Process Object alarms.

## **Event Display**

### **Event Navigation**

Navigating between event sets did not work properly if all events in the event set had same time stamp.

### **Event list initialization after user logoff**

After user logs out from Monitor Pro and then logs in using same user credential the event list was not always able to show event rows correctly.

### **Missing timeout notification**

Timeout notification was not shown in case where reading events was interrupted due to timeout and the query did not return any events.

## **Blocking Display**

### **Blocking list initialization**

The initial load time of blocking list is improved.

### **User specific color schema**

Blocking list now loads used color schema settings after the blocking list is reloaded after user logout.

### **Blocked signal information fields**

Numbers of Signals information fields are now correctly updated in all cases where the signal blocking state changes.

### **Printout blocking option disabled**

Printout blocking was not working correctly. If LD attribute was defined the Printout Blocking option of the blocking list was disabled.

## **Measurement Reports and Trends Display**

### ***Graphical view***

#### **Default color for X&Y Axis**

Default color for X & Y axis is now inverted to background color unless it is saved as preconfiguration.

#### **Object status indication**

Object Status 1 (Faulty or invalid value), 2 (Obsolete or not updating), 9 (Manual entered value), are indicated with specific marker color in graphical view of Trends and Measurement Reports. Status Color tab of Color setting Tool allows to change marker color for these Object Status.

#### **Improper graph with large values and manual scaling**

Large values in manual scaled Y-axes shows proper clipping in different type of graph

#### **Area fills between two curves**

Corrected area fill between curve2 to curve1 which gives same result when area fill between curve1 to curve2.

#### **BAR width selection**

Corrected problem of changing bar width using spin control

#### **Axes Properties**

Applied standard naming conventions in Axes Properties.

#### **Localization of Legend attribute**

Legend attribute description has been localized. Standard attribute description uses localization text from the system text database, sys\_text.sdb. See SYS600 Application Design manual (15. Localizing application) for more information about the localization process for Legend attributes.

## Layout setting dialog

When we press “Default Settings” button from Layout Settings than it will prompt confirmation message which was not localized. Now it is localized.

Resolved corrupted confirmation message in the same.

## Background and Gridline color

It is possible to set background and gridline color independently using color scheme.

## *Tabular view*

### General Settings dialog

General Settings dialog is added in Tabular view to configure font, context menu, visibility (Application or User specific) and other settings. Other settings include Show gridline, Time Range, and background shading.

### Shading effect in Day Reports

Different row shading is been given for different Day Reports.

E.g. Day Report - 10 minutes shows 6 rows shading for hourly data.

Day Report - 15 minutes shows 4 rows shading for hourly data.

Shading effect can be enabled or disabled from the General Settings dialog.

### Use separator as csv data export

Now Export function uses separator from system settings. Separator can be configured from Control panel → region & Language → customize format → Number tab.

## Trends Display

### Trends Basket default value

Now Trend basket can load default values of Logging Function and Time Channel from trend setup file. If the values are not correct the factory default values will be used.

### Trends settings dialog

Removed icon from title bar

Also added label for Object Identifier and Object text

Resolved malfunction by applying Yes, No, or cancel button after changing Trend log settings and Trend number

### Authorization level-view

The contextual menu “Remove All Logs” in Trend Basket has been disabled for authorization level 0 (i.e. view level)

### **Error handling for OI & OX Attributes**

Improper deletion of process object caused unhandled exception in the system due to invalid values of Object Identifier and Object Text. It has now resolved by replacing the text with “???” to distinguish it with normal values.

### **Curve Visibility in Legend**

When we do refresh operation or change colors from Color settings tool , Graphical display will be refreshed which resulting to display all curves in graph area even though we set different visibly in Legend panel. This problem has resolved and it will show only selected curves which are set from show/hide legend check box.

## **Measurement Reports Display**

### **Maximum number of columns shown**

Number of columns to be selected from show /hide dialog and allowed to be displayed in tabular /graphical view at a time is 100.

### **Week Report malfunction**

The Week report did not work correctly when January 1st of the year falls on Sunday and “go to first page” Option is used.

### **Graphical view**

Resolved hang issue in graphical view while loading default Report settings from Report\_Settings.xml

### **Date/Time format**

Now date/time format of header info in tabular mode is harmonized with the format of other display.

### **Registration time in the legend**

Harmonized date/time format of week, month and year type of Report in Registration time attribute of Legend with tabular mode date/time

### **Legends attribute percentage load duration**

New attribute “Percentage Load Duration” (PLD) has been added which shows latest percentage load duration in Legend area. This attribute can be selected from the Legend Layout settings. Registration time column will be empty when Load duration curve will be selected from Measurement Report contextual menu.

### **Load duration calculation**

Now load duration reaches 100% when all the values are available.

### **Wrong hairline time stamp**

Now hairline time stamp shows correct date/time for week, month and year type of Report.

### **Sorting feature in save/open preconfiguration dialog**

Now it's possible to sort preconfiguration list by visibility, name or modification time.

### **View Authorization level**

Save and Delete buttons are disabled in save Preconfiguration dialog for Quick Reports.

### **Configuring and mapping multiple Y-axes**

Multiple Y-Axes can be configured and saved as per page of report. User can also have same Y-Axes configuration for all pages of report by selecting Checkbox "Common for all pages" which is added in Axes Properties tab of Graph Settings dialog. Checkbox "Common for all pages" will always disable for single page Reports.

### **Saving curves properties in multiple pages per report**

Now user can save multiple pages having different curves properties in user/application specific measPreconf.xml file.

### **New location for report\_settings.xml file**

Now report\_settings.xml file can be accessed from new location "<drive>:\sc\apl<Application Name>\PAR\APL\REPORT\ report\_settings.xml". Old location was "<drive>:\sc\sa\_lib\defaults\report\report\_settings.xml"

### **Restricts Tabular view columns limit**

Measurement Reports now displays maximum 100 columns. Show/ hide curves dialog do not allow to select more than 100 columns.

### **Loading Preconfiguration**

It failed to load preconfigurations while logout and login again. This issue has been resolved.

### **Initialization for sampled period values of MS – summary type**

Data Objects using logging function 4-Difference or 5-Pulse difference are wrong initialized during startup. That caused the first sampled value to get stored as absolute instead of the difference value.

## **System Self Supervision**

### **Localizing table headers in SSS Control Dialog**

It was not possible to localize attribute and value titles in the control dialogs.

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# Cyber Security

## Security Configuration/Scripts

**Note!** SYS600C devices have security configuration deployed by default. The deployment can also be verified from the existence of log files in `sc\setup\security` folder in 9.3 versions. If security scripts have already been deployed to the server, fixes should be done manually.

### Task Scheduler service did not start

The startup type of Task Scheduler service was set to Disabled. This setting was valid in older Windows operating systems but not in newer ones (Windows 7 and later). Automatic startup type has now been set for this service in security scripts.

To manually fix this:

1. Open **regedt32.exe** (Registry Editor)
2. Browse to the key  
`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\Schedule`
3. Set value `Start=2`
4. Close the Registry Editor and reboot the server

### Diagnostics Host Service failed to startup

A Windows service called Diagnostic Host Service did not have proper access rights and Windows event log was filling with events (ID: 7000). Correct access rights have now been set in security scripts.

To manually fix this:

1. Run `secpol.msc` (Local Security Policy)
2. Browse to User Rights Assignment > Profile system performance and open Properties
3. Add user: "NT Service\WdiServiceHost" and confirm changes
4. Close Local Security Policy and reboot the server

### OPC/DCOM configuration in OpenRemoteDesktop

Running `OPCDCOM.cmd` in some operating systems made various Windows functionality unreachable e.g. opening Windows firewall, screen properties, or Windows Explorer started from Taskbar. Proper access rights have now been configured in `OPCDCOM.cmd`.

### wserver.exe

`Wserver.exe` is a program, which has been used for workstation calls such as playing an alarm sound and printing documents in the workstation computer. This program was copied to the workstation computer where it was running. The functionality of this program is replaced with network printers and OpenRemoteDesktop program. `Wserver.exe` file has been deleted from SYS600 installation package since it contains security vulnerabilities publicly reported by ABB.

### **Security event log filling rapidly**

There was an audit policy setting, which filled Windows security event log rapidly. Correct audit policy settings have now been set in security scripts.

To manually fix this:

1. Open Command Prompt
2. Run following command:  
`auditpol /set /subcategory:"other policy change events" /success:disable /failure:disable`

### **User Management tool**

Only System administrator users can now access Tools > Engineering tools > User Management tool. Standard users can only change their password.

## Tools

### Calendar

#### **Localization issue with In-day period text**

It was not possible to translate the In-day period text to local language, because the used text was fixed. The In-day period text is now taken from a dedicated Text ID, which makes localization possible using Text Translation Tool. Some other missing Text IDs were added also.

### Visual ergonomics

#### **Recent History Implementation**

Recent History and File History Length menus have been added to a set of tools. It is now possible to extend the Recent History to up to 20 items.

#### **Shortcut Key Ctrl+Q not working**

The shortcut key CTRL+Q to exit the tool has failed to work in some tools. This is now corrected.

#### **Harmonize toolbar and menu look & feel in SYS600 Engineering Tools**

Toolbar icon dimensions are made identical across all tools. Menu item shortcut (mnemonics) is been harmonized in all tools and discrepancy of menu names are made identical across all tools.

### Tool Manager

#### **Changing font generates SCIL errors in Visual SCIL Tools**

Changing the font size in Monitor Pro might throw a SCIL error in a tool opened via the Tool Manager, e.g. the Object Navigator.

#### **Toolbar Menus and Menu Items availability**

Menu and menu item availability has been improved based on whether any tool has been selected or not.

#### **Icon Text in Tool Manager**

The text that describes the icons in Tool Manager was getting trimmed and floating together so depending on the length of Icon text, the text is truncated and three dots are added at the end so that Floating of text is avoided.

#### **Shortcut key for Test Dialog**

The keyboard shortcut to open the Test Dialog from the About dialog is enabled.

## **Print Dialog**

The New Print Dialog is assigned to the shortcut key F3. Print will now use the new template when F3 key is used for print operations.

## **Object Navigator**

### **Delete selected objects**

Object navigator deletes only 1000 first selected items even though it allows selecting all shown items. Now the tool will delete everything selected.

### **Paste operation failure**

If a process object has a logging profile (GP <> "") and the logging profile object does not exist in the target application, paste operation fails. Now the logging profile attribute will be cleared before paste operation.

### **IX attribute in Table View**

It was possible to remove Process Object IX attribute from Table View. It caused problems in subsequent actions. Now, the attribute cannot be removed.

### **Rename Process Object LN group**

Renaming of a process object group is possible only when Process Objects node in Navigator's tree is selected.

### **Re-drawing Table View fails**

If a column in Table View was sorted and a user changed attribute values in help of the Edit dialog in a way that the Table View got empty, an error has raised.

### **Show External Applications check box dimmed for external proxy applications**

External proxy applications could not be shown, because Show External Applications check box was always dimmed.

### **Group configure tool does not set OI attribute**

The OI-attribute of process object was not set correctly when using Group Configure tool.

## **Measurement Reports configuration**

### **SCIL syntax check for SCIL command based object attributes**

The SCIL operation check is now more insensitive. Also variables not known at configuration time but during runtime can be used, e.g. for the Report Page operation attribute or the Report Object update instruction.

### **Obsolete Report Object type ID's EN and GA**

As the Report Objects types EN (Entered) and GA (Gauge meter) are not supported anymore they will be converted to "Measured Period (MP)" type during the upgrade

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procedure. MP type can be used in the same way as the obsolete type EN and GA in previous older versions.

### **Upgrade of some general Report data command procedures from LIB510**

In case the common Report data read command procedures BGU\_READSF and BGU\_READPF from LIB510 Measurement Reports are used in an application they will be upgraded so that they can still be used also with the new Report Configuration database.

### **Upgrade confirmation dialog**

If the older Measurement Reports version (2.0, <9.3 FP2) should still be used, the upgrade confirmation dialog will be hidden. It can be released again from the file list context menu.

**NOTE!** Keeping older version prevents any modification to the existing reports configuration.

### **Report Display configuration upgrade fails**

The upgrade fails and stopped if some invalid display configuration DAT files have been found. Now the invalid configuration will be ignored and not upgraded.

### **Stepwise upgrade of LIB510 based Measurement Reports**

Now it's possible to upgrade the old LIB5xx based Reports in several steps and not only in one go only.

### **Report Page configuration empty columns support**

It's now possible to configure empty columns acting as kind of separator in Reports GUI.

### **Measurement Reports navigation menu construction**

The navigation menu construction is now always done in the correct alphabetical order.

## **Test Dialog**

### **Missing menu bar icons**

If tool gets started without visible toolbar, not all menu item icons have been shown.

### **Hidden keyboard shortcut in About dialog**

The Hidden keyboard shortcut is activated and now it is possible to open the Test dialog from Help/About dialog using the keys CTRL+SHIFT+T.

### **Programs tab List header resizable but not list item**

Both List header and list item is made non resizable.

### **Copy and paste to Program/comment doesn't work**

'GOT\_FOCUS' action method is been enabled for all the text in Programs tab which helps in getting the focus and makes copy and paste functionality work properly.

## **Import / Export Tool**

### **Unexpected export exceptions**

Read-only configuration attributes caused unexpected exceptions in export of type CSV. Now, read-only attributes are removed from “All Attributes” list of CSV Attribute tool.

## **Search Tool**

### **SCIL error in case of Remote workstation**

In case of Classic Monitor type VS Remote a SCIL error has been thrown which is now corrected.

## **SCIL Editor**

### **Usage of same shortcut keys**

The “Find next” and “Go to line” menu items used the same shortcut key. That have been changed know.

### **File name in Print format**

In the SCIL Editor print operation, the name of the file which is being printed is added in the print template.

### **File name missing from the Printout.**

The file name is added to the printout of SCIL Editor to make it clear about the file the printout concerns.

## **SCIL Database Tool**

### **Error raised when expanding node**

A SCIL error was raised, when expanding a node containing bit string and text attributes.

## **Dialog Editor**

### **Visual SCIL Object List**

The Visual SCIL Object list column size has been adjusted to prevent that the object names will get truncated.

### **Toolbar icons are disabled even when file is not closed**

Toolbar icons are now enabled when one VSO file is still open.

### **Toolbar icons size when Test Dialog is opened from dialog editor**

The wrong toolbar icon sizes have been used. That’s now corrected.

## **Copy Paste operation between editors**

The Copy and paste functionality between two Dialog editors was not working as the menu items were disabled, if there were no objects in the List. Now based on the Copied data on the clipboard the enabling flag are made active.

## **Message Box Title**

The title of the message box which appears when a user tries to delete an object from the list, is changed from process name to deleting object name.

## **Width adjustment of the text in Object list**

The Object names in the Visual SCIL Object list were truncated, now the width of the List is adjusted so that the truncation is avoided.

## **System Configuration Tool**

### **Default values for new configuration**

For new configuration wrong default values has been set to some of the Node object attributes. An attempt to view the attributes results to some SCIL error. Correct default attribute are now set for new configurations.

### **Default event poll interval for DNP Master station**

The default event polling interval for DNP Master stations has been changed from 100 to 5 seconds.

### **Default value for Line attribute RI**

The tool gave always the same default value for the attribute RI despite of the line type. Now the tool has been corrected so that the attribute RI gets default value 0 if the line type is Modbus TCP.

### **NET node attribute SY value incorrect**

The NET node attribute SY value was incorrect if the online configuration was read all at once (Configuration / Open Online / All). The value was correct if the online configuration was read stepwise (Configuration / Open Online / Stepwise).

### **Icon and shortcut defects for Visual Ergonomics**

Toolbar icons are always small in supervision filter editor tool and no images for menu items and shortcut key is not defined for Exit menu.

### **New attribute OM for ANSI X3.28 half duplex line**

Support for the new ANSI X3.28 OM attribute has been added.

### **System configuration corruption by STA attribute IS definition**

The tool failed to save the IS attribute definition correctly when the definition line length exceeded the line length maximum value. This error was likely to occur when there were more than six or seven image stations to be defined.

## **Group Alarm editor/viewer**

### **Group alarm viewer fails to open**

The Group Alarm viewer fails to open because of missing standard icons for the toolbar. Know the toolbar has been removed because of missing added values.

### **Group alarm viewer Object State handling**

Object state 3 (not synchronized) will now be treated in the same way as Object State 0.

## **Tagout class editor**

### **Tagout data error**

If tagout attribute is enabled and visible but not assigned to any tab the attribute data has not been stored correctly. Now if attribute is visible some tab different than NONE will be automatically selected.

## **Text Translation Tool**

### **Error raised when opening file**

A SCIL error was raised, when opening SCIL database file containing a section of type vector.

## **Disk Management Tool**

### **Error raised when extracting files**

A SCIL error was raised, when extracting files by selecting the destination directory other than default (c :) drive

## **System Self Supervision Log Viewer**

### **Leading zeros for milliseconds**

Leading zeroes for millisecond field in System Self Supervision logs are now shown when needed.

## **System Self Supervision routing**

### **External application alarm status in Hot Stand-by systems**

External application stayed in alarming state even after the shadowing phase reached HOT\_RC. Now when the file and memory dumps have been completed and standby application reaches HOT\_RC state alarming value is cleared from the application state indication.

## **Network Topology Manager Tool**

### **Toolbar and Menubar not harmonized**

Dynamic icon size for toolbar was not working as expected on change of icon size and menu icons were always enabled even when menu item is disabled.

## **Communication Engineering Tool (CET)**

### **IEC 61850 Ed.2 support**

Configurations according to IEC 61850 Ed.2 are now supported.

## **SCL Importer**

### **Running Mode attribute missing for OPC DA client configuration**

RunningMode value of 1 will be used by default in external OPC DA Client configuration files created by the SCL Importer.

### **Process Objects created incorrectly if device name mapping has been used**

If device name mapping was used the process objects were created with empty Group Configuration Data (CD) attribute.

### **Improvements to Unit Number mapping**

Unit numbers can now be mapped with a single dialog when importing SCL files containing multiple IED's.

### **Incorrect IN-attribute for some Process Objects**

The IN-attribute generation for some Process Objects which were part of a group consisting of multiple Logical Devices has been fixed. For example in cases where SCL defined ConductingEquipment with CSWI and RSYN in different LDs some of the resulting Process Objects got the wrong IN attribute.

## **Display Builder**

### **Measurement symbol installation from Object Browser**

Data variables for Unit and Decimals are now automatically mapped to Process Object ST (Unit) and DP (Decimals) attribute.

### **Browsing PCM600 Projects in Object Browser**

If there is more than one PCM600 project, at first only the project names are listed in Object Browser. A project can be opened by clicking the project name. In this way the opening of a certain project is faster.

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### **Object Browser RX parsing fails**

String lists separated by ':' character in objnav.ini file were parsed wrongly allowing empty values to be included in the specified criteria. Now all empty values are ignored.

### **Coordinate settings not remembered**

The coordinate setting (World/Screen) was not correctly saved and World coordinates were not correctly used when Display Builder was started the first time from new monitor.

### **SCIL file shadowing in HSB systems**

In HSB systems, the SCIL files used in Data Variable mappings or Tool Launcher are now shadowed.

### **Malformed topology model generation**

In some situations DisplayBuilder generated malformed topology models. The IX's for topology objects were not correctly formatted resulting in TOPO\_OBJECT\_CN\_CROSS\_REFERENCE\_NOT\_FOUND errors.

### **Line indicator mapped to the same LN group**

It was not possible to add several feeding points with independent voltage level definitions to the same process object group. This can be used e.g. to have a line indicator showing the power flow and another feeding the voltage level color to the feeder segment.

### **Sub drawing data variables**

If a sub drawing Data Variable is removed, the display cannot be opened and it will generate a lot of error messages. Now Data Variable definitions in sub drawings are never programmatically removed. The setting Action>On Save>Delete Unmapped Data Variables does not affect sub drawings.

### **Memory leakage with NTC model generation**

The memory allocation was not correctly released when a topology model was generated or display was reloaded.

### **Copy/paste special (Preserve)**

The "Snap and Stretch to symbol" function did not work correct for objects which has been copied between displays using the copy/paste special (Preserve) option.

### **Exporting process display information for DMS600**

Process displays including 90, 180 or 270 degrees right (clockwise) rotated symbols are now accepted in transferring display information from SYS600 to DMS600.

### **Mouse click handling on embedded displays**

Mouse click handling on embedded displays has been improved. There's no need for user to make any separate action on Display Builder to get the mouse clicks working regarding embedded displays on Monitor Pro.

This means that the following menu items are not any more needed and have been removed from Display Builder:

Actions > Batch Operations > Enable Mouse Click

Actions > Options > On Save > Enable Mouse Click to Default Objects

## **Remote Desktop Utility**

### **New configuration parameter for RDP session**

New configuration parameter RDP\_RECONNECT has been introduced. If set to TRUE it is checked whether mstsc processes (RDP session) are running. If there are such processes running, new RDP session won't be opened for the last known hot application. Default value is FALSE so such checking will not be done by default.

### **Double-click action**

When double-clicking OpenRemoteDesktop.exe terminal server sessions are re-opened. It has the same effect as double-clicking the icon on the taskbar. It should be noticed that RDP\_RECONNECT configuration value changes the behavior of this action.

### **Balloon notifications**

Balloon notifications have been replaced with Status dialog which is available also in the context menu of OpenRemoteDesktop icon in Notification area. User is not any more tied to balloon notification settings of Windows.

### **Using only for Audio Alarms**

It's now possible to use OpenRemoteDesktop only for audio alarms without opening any RDP sessions. This can be achieved by leaving all the RDP configuration parameters empty.

## **List Based Engineering Tool**

### **Microsoft Common Dialog Control license not found**

The buttons for opening and saving process displays in the ---Symbols sheet utilized Microsoft Common Dialog Control for choosing the file. To be able to use the common dialog in development environment such as Visual Basic for Applications in LBE, an appropriate license is required. In case the Visual Basic development environment is installed into a computer already having equal or higher version of common dialog, the license key might not be correctly updated.

To overcome this possibility the Open and Save As buttons now use internal file chooser dialog function.

### **Microsoft Office 64 bit version**

The LBE tool only works with the Microsoft Office 2010 32bit version.

## **Error Viewer Tool**

### **Showing wrong Product Name**

Expression checking for COM500 tools is been changed which helps in displaying correct product name in error viewer.

## **Notify Window**

### **Application info will not be shown with log files**

Application info will not be shown when reading a log file. The information may have given a wrong impression of the system state.

### **Notify didn't obey current code page**

If the system code page wasn't ISO-8859-1 then some of the text might have been unreadable. Now Notify uses the code page used by the operating system.

## **Export Exchange Key tool**

### **Key user option disabled**

Option 'key user' which is normally selected when an Export Key need to be created may have been inactive in start-up. This error became visible with some installations of Windows using other languages but English.

## Communication

### IEC 61850 OPC Server

#### **Disturbance recording files corrupted during download treated as valid**

Disturbance recording (DR) files which were corrupted during download due to e.g. communication problems were treated as valid files. Downloading again was executed only if local copies of corrupted files removed by user. Functionality is now changed so that corrupted DR files are deleted together with all files of the DR in case of download error. All the files are downloaded again during the next DR download cycle.

#### **Reporting initialization failed with dynamic datasets**

When using dynamic datasets the dataset was not correctly configured to RCB. Also the handling of a change in dataset was unsuccessful as the dataset was not deleted from IED. Now the dataset is configured to RCB using dataset full pathname. In case of a mismatch in IED and configured dataset the dataset is correctly deleted from IED and communication initialization is restarted.

#### **Reset of diagnostic counters failed**

When resetting the IEC 61850 OPC Server diagnostic counters via e.g. CET Online Diagnostics tools for IED, subnetwork or OPC Server the zero values were not saved. The counter values returned after counter values were again reported by the IEC 61850 OPC Server. This is now fixed so that the zero values are saved for diagnostic counter OPC attributes and the reset functionality is enabled.

### PC-NET General

#### **Attribute initialization sequence modified**

The initialization sequence of the attribute information of the station object has been modified. This modification is not visible in normal situations. The modification has been made to the STA types ADE, ATR, DNP, ICC, PCO, PLC and WES. Furthermore, writing to NET Node attribute ED is not functional anymore.

### Serial interface

#### **Calculated RTS keep up time**

If bit 3 of the line attribute CM Com port mode is set, the RTS keep up time is based on the length of the transmitted message. This feature is useful especially with the V.23 modems which are connected to virtual serial ports.

## **Protocol analyzer**

### **Internal information**

If bit 2 of the line attribute AU Analyzer Usage is set, the protocol analyzer output contains extra information related to internal operation of the line.

## **IEC 60870-5-101 Master**

### **Bitstring command sending possible with bitstream process object**

It is now possible to send a bitstring command (ASDU 51 or ASDU 64) by writing to a bitstream process object in process database.

## **IEC 60870-5-104 Master**

### **Bitstring command sending possible with bitstream process object**

It is now possible to send a bitstring command (ASDU 51 or ASDU 64) by writing to a bitstream process object in process database.

## **IEC 60870-5-104 Slave**

### **Command control CC did not work correctly**

Setting CC=1 did not work correctly if the automatic setting of the Daylight Saving Time in windows is not used. This configuration is needed if the connected IEC 60870-5-104 master uses daylight saving time and COM500i computer does not.

## **DNP 3.0 Master and Slave**

### **Keystorage decryption failed with Windows 2003 server**

The decryption of the keystorage file failed when Windows 2003 server was used. The modification has an effect only if the secure authentication based on IEC/TS 62351-5 is configured for the PC-NET node and Windows 2003 server was used.

## **DNP 3.0 Slave**

### **Extra response sent**

A useless copy of the previous response may have been sent if the operation mode has been configured to quiescent mode. The error is not in versions prior to 9.3FP2.

### **Response to a delay measurement command in aggressive mode fixed**

In case the IEC/TS 62351-5 secure authentication was used with aggressive mode enabled, the response to a delay measurement command was not operating correctly. The problem appears when application layer responses (func 129) were configured to be critical.

### **Modbus Master**

#### **New attribute introduced to filter out TCP suspensions**

Introduced a new IS (Ignore Suspension) attribute. The attribute provides a possibility to filter out occasional suspensions caused by TCP disconnections.

#### **Incorrect data updates when polls are delayed**

In case the configured polls are delayed with several minutes due to response timeouts, it was possible that the incoming response is parsed against wrong topic. As a result of this, wrong data updates may have appeared temporarily.

#### **Setpoint commands fixed**

Analog and digital setpoints initiated from outputs process objects did not work. The error is not in versions prior to 9.3FP3.

# COM500i Application

## Signal Routing

### **SCIL errors from COM\_INIT command procedures**

If a process object had been added to trip signals and the process objects status was Not in Use or Switch State was off, a SCIL error was shown.

### **System event from OPC node**

A system event of OPC node generated an error in COM\_SUSNODE command procedure.

### **Free Integer (FI) attribute usage**

If Report Status to Master signal handling was selected for DNP commands, Signal X-References tool used Free Integer attribute. Now the tool uses GI attribute.

### **Communication lost not sent as event**

If the communication to a process device was lost, the process objects values were not sent to NCC as lost events using DNP slave protocol.

### **Scaling for 32 bit integer values**

The accuracy for 32bit integers were affected in COM\_USAI command procedure because the analog value was always scaled even though there was no scaling defined.

### **Remote command blocking**

If Tagout function has been removed manually after installation some code will remain in COM\_DSCMDBLCK which will fail the execution. Now a check if Tagout function is still installed has been added.

### **Overflow value in Bit Stream**

Overflow value was always 0 in Bit Stream. Now Overflow value is received from the OR attribute of process object.

### **Bit Stream value for multiple NCCs**

Value of Bit Stream message may fail, when multiple NCCs had been used.

### **Command received without select**

Now is possible to select that secured command is sent to a relay, if a received command is a direct command from IEC 60870-5-101 or IEC 60870-5-104 NCC. The selection can be set using Signal Handling attributes of the command.

### **Support for ASDU 33**

Bit string of 32 bit with time tag CP56Time2a (ASDU 33) is supported in Signal Routing and Signal X-References tool.

### **Regulating step command from IEC 60870-5-101/104 to IEC 61850**

If a regulating step command was received from IEC 60870-5-101/104 NCC and the command was sent to IEC 61850 relay using analog output command type 1 output object / direct command, the command was sent to the relay with value 0 or 1. Now the command is sent with values 1 or 2.

### **Communication Lost not sent as event**

If communication was lost to a relay, the process objects values were not sent to master as event in DNP protocol.

## **Signal cross-references**

### **All parameters were not printed**

All parameters were not printed in print page, like NCC Communication, Hot-standby timeout Information, Remote Control Command value.

### **Names of Control Types in Signal X-References tool**

Names of Control Types have been harmonized with the control type names of SA-LIB.

### **Command type was changed**

If process objects have been the same logical name and the process objects were defined for different command type, the tool changed command type of above command.

### **Incorrect Event Channel in command**

If the NCC type was DNP, Set Address Offset in Command Receiving flag in use and a control type of 6 - Secured / 5 Output objects was cross-referenced, the BNCC\_xxxx point was created but it was using wrong Event Channel and the command redirection to the process device does not work.

### **General parameters for a multiple process objects command**

Now is possible to configure general parameters freely for a multiple process objects command and all command type or group parameters can be configured for each process objects before purpose parameters.

### **Paste Consecutive Addresses**

Now is possible to paste consecutive addresses, though the same addresses are another process objects type.

### **Not possible to add more commands**

It was impossible to cross-reference a command, if the cross-reference status was invalid in the apl:bsv26 Cross-References table.

### **License not checked in the Signal X-References tool**

If NCCs were created with license which includes many NCC connections and Signal X-References tool was opened with license which includes less NCC connections, Signal X-References tool shows all NCCs.

### **Import new cross-reference for commands**

Now is possible to Import new cross-reference for Commands. This feature is Construct new cross-references mode in Signal X-References tool.

### **Wrong signal definition**

If a new indication or command signal was created and definitions were added for the signal, the definitions were added for a wrong signal.

### **Faulty Signal Handling value**

If a faulty value was pasted Signal handling field of AO command, the value was saved for the signal. Now the value is checked before the paste operation.

### **Inversed Value signal handling attribute**

Inversed Value Signal handling was possible to select for Analog Output command. Now this signal handling can be selected, if Received as Double command or Received as Single Command signal handling has been selected.

### **Bit address was not copied correctly**

If an address was defined for a signal with bit address and the address was copied to another signal, the bit address was not copied correctly. This happened, if an indication page was not refreshed or the Signal X-References tool was re-opened before the copy operation.

## **Log Viewer**

To be updated if nay, otherwise this section can be deleted

## **Signal Diagnostics**

To be updated if nay, otherwise this section can be deleted

## **Diagnostics Tool**

### **Exit and Copy icons**

Exit and Copy icons have been added to File and Edit Menu.

## External OPC Data Access Client

### External OPC DA Client

#### **Duplicate events received on restart and resynchronization failure**

Duplicate events were received from IED buffers when IEC 61850 OPC Server was restarted or resynchronization failed after a reconnection. This is now fixed in External OPC DA Client so that it checks all event timestamps and marks old events buffered. MicroSCADA base system will discard the events older than the current value in process database removing the duplicates. For the comparison the External OPC DA Client uses a STA specific timestamp which is set to newest of External OPC DA Client startup time, OPC server startup time or STA 'Device connection status'-item = TRUE time.

#### **Amount of on-going transactions increased**

The maximum amount of on-going transactions between External DA client and the MicroSCADA application receiving the data has been increased.

### External OPC DA Client Configuration Tool

#### **Disabled unnecessary localization**

Disabled unnecessary localization to resolve issues with browsing OPC address space in some misbehaving OPC servers. Due to localization to unsupported locations the OPC address space could not be browsed.

#### **Browsing available servers improved**

In a computer with multiple OPC servers installed browsing available OPC servers was difficult. This is now improved so that a filter can be used to hide the unnecessary OPC servers.

## **SYS600 Historian**

### **Historian Aggregate logging**

AVG15minute aggregate logging is implemented in transformation.

Trend template for AVG15minute is introduced in context menu.

## DOCUMENTATION

The user documentation is available as PDF files on <http://www.abb.com/microscada>. The documentation is also included in the product package.

**Notice!** Adobe Acrobat Reader is not included in the delivery of this product, but can be freely downloaded from <http://www.adobe.com>.

### New Manuals

SYS600 Pipeline Library Operation Manual

SYS600 Pipeline Application Design Manual

### Updated Manuals

SYS600 Duo Driver 3.0 Installation Guide

SYS600 Application Design

SYS600 Application Objects

SYS600 Communication Gateway, COM500i

SYS600 Cyber Security Deployment Guideline

SYS600 DNP 3.0 Master Protocol

SYS600 DNP 3.0 Slave Protocol

SYS600 External OPC Data Access Client

SYS600 IEC 60870-5-101 Master Protocol

SYS600 IEC 60870-5-101 Slave Protocol

SYS600 IEC 60870-5-104 Master Protocol

SYS600 IEC 60870-5-104 Slave Protocol

SYS600 IEC 60870-5-103 Master Protocol

SYS600 IEC 61850 Master Protocol (OPC)

SYS600 IEC 61850 System Design

SYS600 Installations and Administration Manual

SYS600 Modbus Master Protocol

SYS600 Modbus Slave Protocol

SYS600 OPC Server

SYS600 Operation Manual

SYS600 Process Display Design

SYS600 Programming Language SCIL

SYS600 Status Codes

SYS600 System Configuration

SYS600 System Objects

SYS600 Visual SCIL Application Design

SYS600 Visual SCIL Objects

SYS600 Historian Configurations and Administration

SYS600 Historian Operation

SYS600 Historian Monitor Configuration

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# INSTALLATION

## **dotNet on Win8/12**

Installation now requires Internet connection, Windows installation media or manual enabling of dotNet 3.5 SP1 on Win8/12

## **Deny interactive logon for user MicroSCADA**

Microscada user now automatically denied to log on interactively

MicroSCADA service (serv.exe) shall not be registered to allow interact with desktop

**ABB Authentication Service** - - New component

**LIB5** - New component

**Installer** - Installer now requires reboot at all times

**HASP Driver** - Updated

**WSERVER** - Removed

**MSXML 4 SP3** - Updated library from SP2

New Microsoft Visual C++ 2010 SP1 Redistributable Package (x86)

New Microsoft Visual C++ 2012 Redistributable Update 1 x86

MicroSCADA license files with extension “paf” are associated to control.exe

Crash dumps in 64-bit OS are now recorded correctly by Windows Error Reporting (WER) service.

## **Installing SYS600 9.4**

The product package consists of several executable files. However, only SYS600\_94.exe should be executed when installing the product.

The documentation is in PDF format and is installed together with the product.

During the installation a computer restart might be requested before the installation is done. In such case the SYS600 9.4 installation needs to be manually started again after the restart.

The SYS600 Historian feature must be installed separately executing **SYS600 Historian 1.1.exe**. It's **not** recommended to install the Historian package on the same computer.

## Appendix 1

Copy the following lines into some batch file (Unregister.bat). DRIVE variable needs to be set to the correct sc installation drive. Execute the batch file.

```

set DRIVE=c:
set OPT1=/UnRegServer
set OPT2=/u /s

%DRIVE%\sc\prog\sa_lib\ControlDlgLaunch.exe %OPT1%
%DRIVE%\sc\prog\sa_lib\instancehandler.exe %OPT1%
%DRIVE%\sc\prog\pcm_client\iedpcm.exe %OPT1%

RegSvr32.exe %OPT2% %DIR%\ControlDlgCommon.ocx
RegSvr32.exe %OPT2% %DIR%\CtrlDlgAlarmIndicator.dll
RegSvr32.exe %OPT2% %DIR%\ControlDlgLR.dll
RegSvr32.exe %OPT2% %DIR%\ControlDlgMeasurement.dll
RegSvr32.exe %OPT2% %DIR%\ControlDlgSwitch.dll
RegSvr32.exe %OPT2% %DIR%\ControlDlgTransformer.dll

RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\ualctl.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\opcdata.dll
RegSvr32.exe %OPT2% %DRIVE%\windows\system32\enable40.dll
RegSvr32.exe %OPT2% %DRIVE%\windows\system32\actbar.ocx
RegSvr32.exe %OPT2% %DRIVE%\windows\system32\ax_ug.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvcustgraphical.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvcustopc.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvfileeffectcontrol.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\datavieweditor.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvuom.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvpiccombo.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvpaletteui.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvpalettectl.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvfileeffectcontrol.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvdataeditorsvr.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvdataeditor.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvcustomeditor.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvaxvp.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\actbar3.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\alarmctl.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\blockingctl.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\eventctl.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\controldlgtransformer.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\controldlgcommon.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\controldlgswitch.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\controldlgmeasurement.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\controldlglr.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\ctrldlgalarmindicator.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\reportprint.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\frameconnectivity.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\mslib500options.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\lib510relaytools.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\eablistcomm.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\measreport.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\sa-helper.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\microscadaloginmanager.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\mscgraph.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\trendapp.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\sacolorsettingtool.ocx
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\objectnavigatorcomm.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvdataeditorgui.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\filehandling.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\libsupport.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\dvpropertiesui.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\graphicsengine\system\opcconnection.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\sa_lib\busbar-1.dll
RegSvr32.exe %OPT2% %DRIVE%\sc\prog\pcm_client\pcmclientserverps.dll

pause

```



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