ABB ABILITY™ OPERATIONS DATA MANAGEMENT ZENON

zenon Manual

Release notes ABB Ability zenon 11.0.1

V.11.0.1

Contents

Information on changes in zenon Software Platform version 11.

The text contains notes about the basis on which changes were made. This consists of a letter and a number. The letter refers to the level in the implementation process; the number refers to the respective number:

Character	Meaning	Description
I	Initiative	New requirement for a product.
F	Feature	Central organization unit for new requirements for development. Refers to Initiatives, consists of Stories.
S	Story	Divides a feature into several clear areas for development. They are formulated from the point of view of the user.
B	Bug	Requirement to rectify an error in the product.

(F 123456) means: The described behavior was implemented due to feature 123456.

1. General

General improvements for the zenon Software Platform.

1.1. Renaming to zenon Software Platform

With version 11, the previously separate products zenon Supervisor, zenon Analyzer, Logic have been combined and renamed to form the zenon Software Platform.

Renaming to zenon Software Platform:

Until the end of 2020	As of version 11 (short)	As of version 11 (long)
zenon Editor	Engineering Studio	Engineering Studio
Logic Workbench	Logic Studio	Engineering Studio – Logic
zenon Analyzer	Report Engine	Report Engine
zenon Analyzer Management Studio	Reporting Studio	Engineering Studio – Reporting
ZAMS	Reporting Studio	Engineering Studio – Reporting
zenon Runtime	Service Engine	Service Engine
Logic Runtime	Logic Service	Logic Service
Report Launcher	Report Launcher	Report Launcher
Service Grid	Service Grid	Service Grid

zenon Web Server	Smart Server	Smart Server
zenon Web Client	Smart Client	Smart Client

Note: Key texts for Language Switch also change with the renaming. They must be amended with project conversions.

1.2. OpenSSL version 1.1.1.i (F 224713)

The OpenSSL version has been updated. All components of the zenon product family now use OpenSSL in version 1.1.1.i.

2. zenon

2.1. General

2.1.1. Help system for zenon product family revised

The zenon Help has been completely revised for version 11.

NEW APPEARANCE
The appearance of the product help has been revised and redesigned.

NEW SEARCH
The search for content has been implemented in a new way for version 11.

- Revision of the search algorithm with significantly increased performance when displaying results.
- Possibility of setting the parameters for different search types:
- Fuzzy search
- Search with regular expressions
- Search according to heading title
- Search in navigation view
- Different output formats for search results
- Real-time updating when activating or deactivating results in the filtered view of the results found.
- Display of search results with preview. With or without hierarchical information (as chosen).
- Display of the search results in a structure tree Forwarding to search results in different views.

BOOKMARKS
Bookmarks can be sorted by dragging & dropping. The bookmarks can also be managed in folders.

2.1.2. 4.1.2 Discontinuation of support for VSTA (F 244699)

Support for VSTA has been discontinued from version 11.

ENGINEERING STUDIO
Engineering Studio still contains the VSTA node. This node is visible when converting older projects. The following steps are possible as a result:

- Simplified migration of older projects into the add-in framework.
- Amendment for projects that were executed in older versions of Service Engine.

The use of VSTA workspace add-ins in Engineering Studio has been discontinued completely with version 11.

SERVICE ENGINE
Compatibility mode VSTA-Projekt-Add-Ins für konvertierte Projekte aus Vorgängerversionen werden in Version 11 der Service Engine weiterhin geladen und ausgeführt. Dies vereinfacht die Migration in aktuelle und zukünftige zenon Versionen.

Zusätzlich können dadurch Brownfield-Szenarien für ältere Projekte und Lösungen - für die keine Upgrades oder Änderungen möglich sind - in Version 11 integriert werden.

Attention

Die Nutzung des Kompatibilitätsmodus erfolgt auf eigene Verantwortung! Mit Version 11 der zenon Softwareplattform werden Support und Wartung für VSTA eingestellt. Beachten Sie, dass die Funktionalität des Kompatibilitätsmodus in zukünftigen Versionen geändert werden kann und nicht mehr in demselben Leistungsumfang zur Verfügung stehen wird.

2.1.3. Data type conversion for ODBC database (F 232787)

Data for AML and CEL can now be stored in any database that can connect via ODBC. The ODBC database processor in Service Engine recognizes the data types of the existing columns in the database and performs the necessary data conversions. Therefore other database systems such as Oracle or MySQL can also be used for the continuous export and external storage of AML and CEL. Tables must be manually created on these systems.

Note: This only applies to the external SQL storage of AML and CEL and the continuous SQL export. The SQL export functions for AML and CEL or other SQL interactions such as actions for the Historian are not affected.

You can find the documentation for this in the sections for continuous export for AML and CEL.

2.1.4. New symbols for zenon applications

The symbols for applications, services, wizards and tools have been modernized and redesigned for version 11. This amendment is applicable for all components of the complete zenon Software Platform.

2.1.5. zenon for Linux OS

Initial partial functionalities of zenon are provided for Linux operating systems from version 11.

SCOPE OF FUNCTION

- Service Engine
- Read values
- Write values
- System driver variables of the following themes:
    - [HW resources]
    - [System information]
    - [Project information]
- Service Grid Gateway
- Diagnosis Server
- Supported drivers
- Modbus_Energy
- MBUS32
- stratonNG
- SNMPNG32

SUPPORTED OPERATING SYSTEMS

The following Linux derivatives are supported with version 11:

- Docker for Ubuntu 20.04
- Ubuntu 20.04
- Raspberry Pi (Raspbian) Buster

2.2. Installation and updates

2.2.1. Supported operating systems (F 244692, F 225464, 244827)

The zenon Software Platform supports the following operating systems:

Desktop:

- Windows 11: The Home version is not supported.
- Windows 10: as of TH1 1607 The Home version is not supported.
- Windows 8/8.1: Engineering Studio, Report Engine and Reporting Studio are not supported.

Server:

- Windows 2016 - from TH1 1607
- Windows Server 2012 and Windows Server 2012 R2: Engineering Studio, Report Engine and Reporting Studio are not supported.
- Windows Server 2008: Engineering Studio, Report Engine and Reporting Studio are not supported.

Support for the following operating systems has been stopped:

- Windows 7 (all versions)
- The application files for Windows CE are no longer supplied. Parameter settings for this operating system are no longer included in th components of the zenon Software Platform.

2.2.2. .NET Framework 4.8 (F 243115)

The .NET framework used in the zenon Software Platform has been changed to version 4.8.

2.2.3. HTML Web Engine - Web Engine supports .NET 6 (F 247307)

Web Engine now supports .NET 6.

The minimum version is still .NET 4.5.

2.2.4. Revision texts for build setups (F 148450)

You now get, for new builds too, a link to the changes between the previous version and the newly-installed one.

2.2.5. New Software Platform setup (F 206426 - 230303 - 225464)

The zenon setup now combines all components of the zenon Software Platform:

- zenon with all Engineering Studios, Service Engines and Services
- Report Engine
- Service Grid
- Setup has been revised (F 243115)

The installation of the packages has been revised.

NEW PACKAGE
There is now a separate installation package available for Engineering Studio and Service Engine.

2.2.6. Uninstall components individually (F 225464)

From version 11, individual components of the zenon Software Platform can also be uninstalled via Windows Apps.

2.2.7. Updates for all components (F 240104)

Updates (build setups) are offered for all installed components together from version 11. When starting a build setup, you get information about which components on which version will be amended.

2.2.8. Install additional components (F 225464)

From version 11, you can install components of the zenon Software Platform that you have not yet installed at any time via the setup. To do this, start the setup for the zenon Software Platform.

2.3. Licensing

2.3.1. Install License Manager (F 237531)

The License Manager can be installed regardless of the components of the zenon Software Platform. To do this, all other components must be deselected during installation of the software platform. Only the checkbox for the License Manager should be selected. The License Manager can then be started as an application.

2.3.2. Demo licenses (F 237264)

If there is no demo license configured for the zenon Software Platform, an entry for the selection of a demo license is shown on the start page of the License Manager. A demo license can be selected here. This is activated immediately and can be used immediately. Only one demo license can be active at any time. Product licenses that have already been obtained are not displayed here.

2.3.3. Licensed screens (F 240270)

Licenses can limit the number of screens usable in Service Engine. Limitations are applicable for all projects loaded in Service Engine together.

You can see how many screens can be opened in the license information:

- 1 screen: A screen can be used in Service Engine. It is not possible to call up further screens after calling this up.
- Defined number: The number of screens that has been licensed can be used in Service Engine. The limitation is applicable for all projects loaded in Service Engine together. If the number is exceeded, the user is informed of this with a corresponding dialog. Service Engine is closed after confirmation.
- Unlimited: Any number of screens can be used.

2.3.4. Licensed Process Gateways (F 240269)

The number of Process Gateway modules and/or communication protocols that can be started at the same time in Service Engine has been limited through licensing. Licenses are available for the number of Process Gateway instances to be started, individual protocols or for groups.

2.3.5. Demo licenses are not automatically issued during setup (F 237264)

The setup of zenon 11 installs the demo licenses for zenon 11. It does not provide these for use automatically however. If, when starting a ABB Ability™ zenon component, no valid licenses is found, the user is notified that they should activate a demo license. In the Wizard view of License Manager, there is a new option with which the scope of the demo license can be selected.

2.3.6. LicenseManagerAutomation.exe command line interface tool: New argument AllValid (F 206936)

The LicenseManagerAutomation.exe command line interface tool now has a new --AllValid argument for the WriteIniTop action.

This is used with the WriteIniTop action. It activates all valid serial numbers that have been found on the computer and puts them in the first place of the valid licenses. If more than one valid license is found, the following sequence applies:

- Hardware dongles before software dongles
- More recent product versions before older ones

Attention: Demo licenses are ignored.

2.3.7. Network: New license options

From version 11, the following license options are available for the network:

- StandaloneOnly: The ABB Ability™ zenon network is not available in Service Engine.
- ServerOnlyNoRedundancy: The computer cannot be used as a standby server.
- OneInstancePerDriver: Only one instance can be started for each driver type in Service Engine.
- ReadOnlyClient: The client only has read-only access.

2.3.8. License Manager can be installed additionally (F 225464)

If there is no License Manager in the system, it can be subsequently installed. To do this, start setup and select the License Manager package in Engineering Studios and Edge Services.

2.4. 4.4 Engineering Studio

2.4.1. Properties: Copying of content (F 216119)

Values of deactivated properties can now be copied in the dialog view of the properties.

This is not possible in the Grouped and All Properties views.

Copying is generally not possible in tree views and drop-down lists.

2.4.2. Menu extras: Add-Ins changed to Programming Interface (F 231346)

In the Settings dialog, which can be called up via the Extras menu entry, the Add-Ins tab has been renamed to Programming Interface.

2.4.3. Menu extras: Programming Interface tab supplemented with option for add-in note (F 231346)

The Programming Interface tab in the Extras menu has been supplemented with a new option: Prefer the usage of the add-in framework

This controls the behavior when an attempt is made to start a VSTA editor or VBA editor directly:

- Active: A notice is displayed when a VSTA editor or VBA editor is selected. It says that you must use the add-in framework. The selected editor is opened after the notice is confirmed.

- Inactive: The selected editor is opened immediately. There is no reference to the add-in framework.

This option is active by default.

2.4.4. Configuration of Process Gateway modules in Engineering Studio (F 210697 & F 218858)

Selected Process Gateway modules and/or communication protocols can now be configured and set in Engineering Studio directly. The full scope of the ABB Ability™ zenon project configuration environment, such as distributed engineering, reloadability in Service Engine and integration into the ABB Ability™ zenon network, including for Process Gateway, can also be used.

- The Process Gateways subnode has been added to the Variables node in the project tree for this. In this node, selected Process Gateway modules can be created and configured. Process Gateway project configurations in Engineering Studio can also be carried out if Service Engine is not running. This configuration was only possible in ABB Ability™ zenon before version 11 in a running Service Engine.
- The parameters for the executing computer(s) on which Process Gateway is started when Service Engine is started can be set with the corresponding properties for each configured protocol or module.
- In the Diagnosis Viewer, the zenProcGatewayDLL module entry is available for the filtering of the new functionality. It can be selected in the Diagnosis Viewer in the Modules tab for the filtering of the LOG entries and represents project configuration in Engineering Studio.

For version 11, the following Process Gateway module and/or communication protocols have been implemented in Engineering Studio for configuration:

- MODBUS
- DNP3

2.4.5. Revision of the graphical user interface (F 206341)

The graphical user interface of Engineering Studio has been fully revised. In doing so, the symbols used in the project configuration environment have been replaced.

2.4.6. Linked variables of the integrated solution can be skipped to from Engineering Studio directly (F 227670)

The Linked elements context menu can now be used to skip to variables in Logic Studio if the corresponding variable is part of the integrated solution.

The context menu entry is available for the list entry of the variable in the variable editor and for linked screen elements.

Select the desired entry in order to skip to the variable in the ABB Ability™ zenon variable editor or ABB Ability™ Logic.

2.4.7. New authorization levels for alarm shelving (S 237560)

For the new alarm shelving function, the Alarm: Shelve and unshelve action has been implemented for the function authorizations of Service Engine.

2.4.8. Output window - warnings contain link (F 247214)

When creating Service Engine files, a corresponding warning is displayed in the output window if a linking to an element is invalid. If the warning contains a link, this link leads to the respective element if clicked on.

2.4.9. Display for messages in the output window (F 247214)

The color for the display of the different message types can be set in the Settings configuration dialog in the Color Scheme tab in the Text color in output window option group. The messages are also marked with symbols. The symbols represent the type of message and visualize whether a message contains information about a linked element.

The pre-existing option for Color of filtered columns in object lists has been renamed and moved to the Color scheme tab. The naming of the column from version 11 is: Filtered columns background color

2.5. Service Engine

2.5.1. Action on reloading (F 219193)

When creating Service Engine files in Engineering Studio, the number of files that are deleted from the Service Engine folder is now displayed. If no files were deleted, nothing is displayed.

When reloading, all screens are first closed and then reopened.

2.6. Web Visualization Service (initiative 171672)

The Web Visualization Service enables the use of Service Engine by means of a platform-independent visualization that is based on HTML5. This visualization can be opened using a web browser without further installation.

You can find information on operation, as well as supported functions in the Web Visualization Service manual.

2.6.1. WVS OPS Manager (F240915)

The OPS Manager (WebVisuOpsManager):

- Is a session manager for the Web Visualization Service and adds multisession functionality to it.
- Receives queries for potentially several different projects.
- Reserves a Web Visualization Service for each initial connection from a browser and
- Forwards all subsequent requests that belong to the same browser session to the same Service Engine instance

2.6.2. New tab for Web Visualization Service in the Startup Tool (F 191662)

For the Web Visualization Service, the settings for the connection in the network can now be configured in the Startup Tool. The new Web Visualization Service tab was implemented for this.

2.7. Modules

2.7.1. Alarm Message List

2.7.1.1. Alarm causes - display of the GUID (F 206432)

The display of alarm causes in the Alarm message List can now be supplemented with the alarm cause ID. It can be selected for display in Engineering Studio by means of the Screen switch function in the column setting. In addition, the text and GUID of the alarm causes can be exported with the AML.

2.7.1.2. Evacuate alarm files (F 206719)

Alarm data can now be evacuated. The Select storage location property was implemented for this.

The following is available:

- Local Service Engine
- Microsoft SQL Server
- Service Grid Data Storage

2.7.1.3. Continuous export (F 206719)

Continuous export continuously writes the data from the save location to an SQL database. You configure the evacuation file and options by means of the new Continuous Export project property.

2.7.1.4. Alarm Shelving (E 244213)

- With the new Alarm Shelving functionality, occurring alarms can be snoozed (= shelved). The new development is in compliance with the standards ISA 18.2-2016 and IEC62682.
- During operation in Service Engine, incoming alarms are shelved in an alarm message list screen by clicking on a button. This is done when a dialog is opened in which the duration of the shift (= shelving) and the alarm shelving reason are parameterized. The alarm is automatically moved back to the Alarm Message List on expiry of the shelving duration.
- The following new features and enhancements have been implemented:
- New Alarm Shelving reasons in the Alarm node in the project tree of Engineering Studio. In this node, alarm shelving reasons for the selection in Service Engine are set. Alarm shelving reasons can also be configured in a global project.
- Addition of the Alarm: shelve and unshelve action to the Service Engine function authorizations.

- Enhancement of the categorization. To this end, the following entries were added in the Alarm Message List node in the Engineering Studio project tree:
    - 303 AML entry shelved.
    - 304 AML AML entry unshelved.
- Enhancement of the Screen switch function: When switching to a Alarm Message List screen, the following views can be selected in the new Display Options group in the General tab:
- Alarm Message List: "classic" Alarm Message List with gathered alarm information.
- View:Shelved alarms Alarm Message List for displaying shelved alarms. Only shelved alarms are visualized in this view.
- Enhancement of the Alarm Message List screen for productive operation in Service Engine:
- New columns:
    - Time shelved: Time at which the incoming alarm was snoozed (= shelved).
    - Shelve expires: Time when the alarm snooze expires.
    - Shelving reason: Reason for the alarm snooze
- New screen elements:
    - Shelve alarms: snoozes incoming alarms. The new Shelve alarms dialog is called up for this.
    - Unshelve alarms: withdraws an alarm snooze (= shelving).
- Amendment of the existing control elements to the respective display options. Depending on the visualization, the functionality or information of the buttons is applied to the respective display type.

Adaptation of existing functionality:

- The flashing and the Play audio file and Start continuous tone functions are suppressed for shelved alarms.
- New [Alarms] number of shelved alarms system driver variable: Shows the number of all shelved alarms.
- Class linking of alarm areas with equipment modeling:
- New Number of shelved alarms property in the Aggregated alarms and Class linking property groups.
- Complete integration into the ABB Ability™ zenon network including integration project(s), Distributed engineering as well as integration into the Process Recorder module.

2.7.1.5. AML - change of the rules for color of the alarm/event classes (bug 251726, 210538)

The behavior of the coloring of AML columns has been changed for ABB Ability™ zenon 11. It is now different from the behavior up to and including version 11.

The following is applicable from version 11:

- All columns are colored with the color of the alarm/event class if these conditions have been met:

- Alarm/event class color has the value as a text color.
- Apply status text color to has the value complete row.
- All columns - except time columns and group columns - are colored with the color of the alarm/event class if these conditions have been met:
- Alarm/event class color has the value as a text color.
- Apply status text color to has the value time columns.

Note the amended behavior when converting projects in version 11. Amend your projects to the amended behavior.

2.7.1.6. Unbuffered alarm aggregation (F 248386)

The buffering of the alarm aggregation for alarm areas can be switched to unbuffered mode. The Unbuffered alarm aggregation property in the project properties in the Service Engine settings group has been implemented for this.

Behavior with the property active: The alarm aggregation is not periodically evaluated. Each alarm that has an influence on the status or the number of aggregated alarms is evaluated individually. In addition, if the property is activated, the time stamp of the most recent alarm event is forwarded to the linked status variables.

The property is deactivated by default. This increases the performance.

For example: 5 alarms come in an alarm area or alarm class within 100 milliseconds. The variables with the number of alarms is increased 5 times by 1. If, during this, the value of the status variable is already 1, there is no new writing of the set value to the status variable. If the property is deactivated, there is 1 increase by 5.

2.7.1.7. 4.7.1.5 Unix time stamp for exported alarm data (S 248238)

To guarantee support for the Unix time stamp beyond the year 2038 for evacuated and SQL-exported data, the database schematic has been amended accordingly.

For the following columns for exported alarm data, the data type was changed from INT to BIGINT:

- COMES_S
- GOES_S
- QUIT
- REACT_S
- LASTING_S
- COMES_INTERNAL_S
- COMES_EXTERNAL_S
- GOES_INTERNAL_S
- GOES_EXTERNAL_S
- REACT_INTERNAL_S
- REACT_EXTERNAL_S

- LASTMODY_S

2.7.2. Equipment Modeling

CLASS LINKING FOR SHELVED ALARMS (S 240921)
Shelved alarms can be linked to an equipment modeling equipment group or an alarm area. The new Number of shelved alarms property has been implemented in the Class linking and Aggregated alarms property groups for this. With this property, a variable can be linked that contains the number of shelved alarms.

2.7.2.1. Linking of screen elements (S 242726)

Screen elements can be linked to an equipment model. The Equipment Groups property is also available for screen elements in the General property group from version 11.

2.7.3. Historian

Changes to the Historian module in version 11:

2.7.3.1. Lot name from variable - call up name on starting (F 237140)

The lot name from a variable can now also be obtained and assigned when starting the lot. Changes to the variable are ignored after that. The Get lot name from the variable at start option has been implemented for this.

Tip: Use this option if lots are to be used with Batch Control.

The Get lot name from the variable at stop option remains the default.

2.7.3.2. SQL evacuation in the event of a missing license (F 244330)

SQL evacuation requires its own license. If there is no appropriate license in Service Engine, the evacuation is set to the internal database (*.arx). Evacuation will take place as long as enough storage space is available.

2.7.3.3. 4.7.3.3 Swinging door algorithm for spontaneous archives (F 245359)

For spontaneous archives, the number of entries that are transferred to an archive file is reduced with the functionality of the swinging door algorithm. In doing so, the values are not transferred to the archive within the tolerance range.

- This functionality is activated in the Edit archive dialog in the Save tab with the new Use Swinging Door Algorithm option.
- The parameters for the tolerance value are set with the new Tolerance for Swinging Door Algorithm variable property.

2.7.3.4. Unix time stamp for evacuated or exported archives and lot archives (S 248230)

To guarantee support for the Unix time stamp beyond the year 2038 for evacuated and SQL-exported data, the database schematic has been amended accordingly.

The data type has been changed from INT to BIGINT for the following columns:

- Evacuated or exported archive data
- TIMESTAMP_S

- Evacuated or exported lot archives
- START_S
- END_S

2.7.4. Automatic Line Coloring

STYLE TYPE ENHANCED WITH PROPERTIES FOR ALC (F 241956)
The Line style type supports the configuration of Automatic Line Coloring for lines and polylines.

2.7.5. Batch Control

New features in the Batch Control module.

2.7.5.1. Phase - read in set value limits of the parameters (F 236445)

When inserting a phase, its set value limits are now read in and applied. The values are read and set each time the attendant phase is selected.

2.7.5.2. Copy and paste (F 222807)

For PFC recipes, elements can now be copied and pasted at suitable places. This is possible via the respective toolbar or the Copy and Paste elements.

2.7.5.3. Redundancy (F 243856)

Batch Control now supports ABB Ability™ zenon redundancy. If the Server 1 fails, batch operation is continued seamlessly with Server 2.

The following is applicable with active redundancy:

- Recipe images are transferred to Server 2 immediately. In doing so, all started recipes are taken into account.
- All changes for REE and/or recipes are synchronized.
- REE is started on Server 2.
- Server 2 continues the batch process if Server 1 fails or redundancy switches.
- Redundancy switching:
- Planned switching: The switching is carried out once a safe stopping point has been reached.
- Switching in the event of a failure: The duration of the set network timeout is waited for (default: 30 s). The switching takes place after that.

You configure how recipes act after switching with the Action for redundancy switch property.

2.7.5.4. Batch identifiers (F 237140, 236659, 237140)

Batch Identifiers enable the unique naming of recipes. These identifiers are used for lot identification in the CEL. The batch identifier is created for master recipes and control recipes. The batch identifier is written to a variable when a recipe is started. This variable is defined in Engineering Studio.

- Identifiers for master recipes consist of:
- Name or ID of the master recipe
- Version (for name)
- Underscore
- Execution counter

Master recipes get a counter for the execution of tests. This counter is increased by 1 each time a master recipe is started.

Identifiers for control recipes consist of:

- Name or ID of the master recipe
- Dot
- Name or ID of the control recipe

Because control recipes can only be executed once, no execution counter is needed.

SELECT FROM LIST
Batch Identifiers allow you to select a control recipe for a report from the recipe list via a variable in Service Engine.

2.7.5.5. Lot filter supports batch recipes (F 236730)

In the CEL, entries that correspond to a particular lot can now be created for batch recipes.

If the lot name matches a batch identifier, the recipe that matches the selected lot can be identified. The CEL messages of this recipe are also displayed then. When using a lot filter, the display is extended to include the affected recipes. These are displayed as a recipe list. Entries relating to the execution of the batch recipe are also included in the CEL. If no matching recipes are found, the list will remain empty. If recipes are found, these are displayed as a separate section at the end of the lot list.

Note: This functionality is available for:

- Screen switch to a CEL screen type: Lot filter tab
- Screen switching to a Faceplate screen: Lot filter for CEL container tab
- Screen switching to a Report Viewer screen: Lot filter in the time filter tab Export CEL function Lot tab

2.7.5.6. CEL - placeholders (F 236730)

For CEL entries from reactions, there are now also placeholders for the recipe reference and for positioning: Placeholders are evaluated regardless of upper case / lower case:

RECIPE REFERENCE
The following are available:

Default:

- ;%phaseEvent;: Type of event
- ;%phaseContext;: ID of the phase (name of the unit, name of the phase, position of the phase, information on the operation)

- ;%recipeContext;: Recipe type and recipe name (including version)

Recipe reference reactions:

- ;%phaseEvent;: type of reaction of the phase
- ;%phaseIdentifier;: Identifier of the phase (phase active)
- ;%recipeIdentifier;: Identifier for recipe
- ;%recipeType;: Type of recipe

POSITIONING

The position of a phase can now be given in the CEL.

The position is added to the %PhaseIdentifier parameter as a column and row.

Configuration is by means of the Element position property in the CEL/CEL logging group. Default: (@column@ ;%elementCol; - @row@ ;%elementRow;)

2.7.5.7. CEL - display of recipes for lots (F 236730)

When using a lot filter in the CEL, the display of lots is extended to include the affected recipes. These are displayed as a recipe list. If no matching recipes are found, the list will remain empty. If recipes are found, these are displayed as a separate section at the end of the lot list. These configurations are also available for reports from the Report Viewer.

2.7.5.8. CEL - syntax for identifiers (F 236730)

The recipe identifier for batch recipes is now written in a defined syntax. It is thus also possible to filter for the identifier.

Syntax for:

- Master recipe: <Name of master recipe> <(Vx) x = recipe version
- Control recipe: <Name of master recipe> <(Vx).<Name of control recipe> x = recipe version
- Operation template: <Name of operation template>
- Operation instance <Format host recipe format> (master recipe or control recipe)

2.7.5.9. Log parameter values with time stamp in the CEL (F 236730)

Parameter values can be logged in the CEL with an indication of the point in time at which they appear.

The new CEL logging via reactions property and Tags CEL entries property group are available for this. The following can be selected for logging in the properties group:

- Initial tag set value
- Initial tag actual value
- Value tag set value
- Value tag actual value
- Return tag actual value

In Service Engine, the parameter values are logged in the CEL with the time at which they occur. To do this, the parameter in the phase must be selected. If the phase has a control strategy, it must be selected in the control strategy.

2.7.5.10. Report with batch identifier (F 236730)

Batch Identifiers can now be used for the filtering of control recipes. To do this, when switching to a Report Viewer viewer screen for the Recipe filter settings option, the Use Batch Identifier for selection of the control recipe entry is selected. Filtering for name or ID can be configured in the control recipe filter.

2.7.5.11. Report - limit value text available (238033)

The TagValueLimitText column name is now available in the report definition file. This name shows the limit value text in the report.

2.7.5.12. End time point in the control recipe (F 236730)

Control recipes have the new Ended on property.

If a control recipe is closed, the time of this is entered in the property. The time indicated is always rounded up to the next-highest second. Ended means: Canceled, stopped or completed.

The time for Ended at can be displayed:

- in the recipe list
- via the API
- in Report Viewer reports

2.7.5.13. Transitions - tooltip and detail view enhanced (F 245285)

Detail view and tooltips have been enhanced:

DETAIL VIEW
In the detail view of a transition, you now receive the following information if the recipe is in execution mode or if the transition is active or has already been run through:

- Status of the condition
- Variable values
- Logical and relational operators (bitwise operators & and | are not supported)

If the recipe is outside execution mode, transitions that have not yet been reached are displayed with full variable names. Condition result or value is not displayed in this case

TOOLTIPS
Tooltips for transitions now contain, in the context of recipes in execution, information about variable names and values. If the execution is not active, the complete name of the variable is displayed without value.

2.7.5.14. Versioning of batch identifier (F 236730)

The version number of a master recipe is also used in certain cases if the Versioning active option has been switched to inactive.

The version number is always used for:

- Batch identifier (from name)
- Search for a matching recipe for a lot
- CEL entries regarding a recipe
- Filtering in the CEL (recipe name incl. version)

The default setting for the Versioning active property is now active.

2.7.6. Command Processing

2.7.6.1. Support for QoC for set value input action type (F 213794)

The set value input action type supports Qualifier of Command. The Use Qualifier of Command and Qualifier of command properties for setting parameters in Engineering Studio have been unlocked for this.

2.7.7. User administration

2.7.7.1. Active Directory - secure TLS connection (F 224810)

The connection to Active Directory can now be encrypted in Service Engine by means of TLS. To do this, activate the new Use encrypted communication project property in Engineering Studio in the User Administration group.

2.7.7.2. Service Engine enables login via Identity Service (F 225770, B 238636)

The Service Grid Identity Service can now be used to log into Service Engine. It supports user logins via third-party systems, known as Identity Providers. Microsoft Active Directory and RADIUS are supported for login to Service Engine.

Please note the following limitations for logging in to the Identity Service in Service Engine:

- Service Engine can authenticate users either by the internal user administration of the Identity Service or by means of the Identity Provider. The simultaneous use of the internal user administration and the Identity Provider cannot be configured and is not possible.
- Service Engine can only use one Identity Provider at a time for user authentication. Several Identity Providers cannot be used at the same time by Service Engine.
- User passwords can only be changed by Service Engine if the internal user administration of the Identity Service is configured in the ABB Ability™ zenon project. If the use of an Identity Provider has been configured for Service Engine, changing user passwords has no effect on this user. User passwords from external systems (Identity Provider) can only be changed by the options provided by these systems.

2.7.7.3. Change password dialog for signature and eSignature (F 267406)

When the entry key of the Signature or eSignature is password protected, this must be entered during the operator action. If the user logs in to Service Engine for the first time during this action, they must initially change their password. In this case, the dialog to change the password is called up before the signature process.

2.7.7.4. 4.7.6.2 Invalid user names can be suppressed in CEL (F 245176)

If an invalid user name is used on login, this is logged in the CEL. The event and user name used are displayed by default.

The display of the invalid user name in the CEL can now be suppressed. The Do not include user data for login in CEL entry project property has been implemented for this. If this property is activated, the display of the user name is suppressed. The property is deactivated by default.

2.7.7.5. Temporary user block (F 248385)

Users can now be blocked for a certain period of time if they enter an incorrect password. There can be 2 lockout times with a defined number of login attemptsand a suitable time range can be defined.

The number and names of the blocked users can be retrieved via system driver variables:

- [User Administration] Number of blocked users
- [User Administration] Names of blocked users

In the ABB Ability™ zenon network, locks are performed via the Primary Server. This synchronizes the status with the relevant client.

2.7.7.6. Reset time without operator action (F 246983)

With login without password, the counter (time without operation) can automatically be reset automatically for each login. The option is configured in the Login without password function. It is applicable for all logins in the projects in which the function has been configured. If this option is active, the counter is reset on each login. The counter also runs in the event of a new login by default. The counter for time without operation can now also be reset for login via RFID cards.

2.7.8. Screens

2.7.8.1. Filter - display in Service Engine optimized (F 199160)

The display of the filter with the screen element Set Filter (Detail List) has been enhanced. Specific filter components are also displayed from version 11.

The enhanced display is also available for:

- AML
- Archive revision
- CEL
- ETM
- Report Viewer

2.7.8.2. HTML screens use the Chromium Embedded Framework for display (F 172721)

HTML screens now use the Chromium Embedded Framework (CEF) by default for display. For compatibility purposes, the use of Internet Explorer can be forced by means of an entry in zenon6.ini. To enable this and to remain compatible at the same time, the following new entries have been created.

Entry	Description
[BROWSER]	Settings for browser selection.
IE=	Selection of the browser.
[CEF]	Settings for Chromium Embedded Framework (CEF).
Entry	Description
IGNORE_CERTIFICATE_ERRORS=	Handling of errors in certificates.
RENDER_PROCESS_LIMIT=	Number of rendering processes.
CACHE_PATH=	Path for caching in zenon6.ini, which can be defined.

2.7.8.3. Linking of screen elements (S 242726)

Screen elements can be linked to an equipment model. The Equipment Groups property is also available for screen elements in the General property group from version 11.

2.7.8.4. Additional symbols for line start and line end (F 241955)

There are 3 respective new symbols available for the screen elements Line, Arc and Polyline for the configuration of the line start and line end

New selection for Start type property

- 
- 
- 

New selection for End type property

- 
- 
- 

2.7.8.5. Apply substitution rules for linked symbols multiple times (F 251149)

Substitution rules for linked symbols and combined elements can now be applied multiple times per source variable or function.

The new Apply several rules option in the Element input dialog has been implemented for this.

Note: This dialog is called up for a ABB Ability™ zenon symbol with the Preview property in the Linking rule property group.

2.7.9. Chronological Event List

2.7.9.1. Evacuate event data (F 206719)

Event data can now be evacuated. The Select storage location property was implemented for this.

The following is available:

- Local Service Engine
- Microsoft SQL Server
- Service Grid Data Storage

2.7.9.2. Continuous export (F 206719)

Continuous export continuously writes the data from the save location to an SQL database. You configure the evacuation file and options by means of the new Continuous Export project property.

2.7.9.3. Continuous CEL export to Service Grid Data Storage (F 228824)

The continuous CEL export can now also save data in the Service Grid Data Storage. Configuration is carried out using the project setting Continuous export in the Chronological Event List group.

2.7.9.4. Unix time stamp for exported CEL data (S 248238)

To guarantee support for the Unix time stamp beyond the year 2038 for evacuated and SQL-exported data, the database schematic has been amended accordingly.

For the following columns for exported alarm data, the data type was changed from INT to BIGINT:

- COMES_S
- COMES_INTERNAL_S
- COMES_EXTERNAL_S

2.7.10. Docker

2.7.10.1. Container: Path indications for Service Engine (F 208513)

With version 11, the naming of Runtime in ABB Ability™ zenon has been changed to Service Engine. The paths to Service Engine are thus:

- From version ABB Ability™ zenon 11: zenon-serviceengine10
- Up to and including ABB Ability™ zenon 8.20: zenon-runtime820

2.7.10.2. Logging of error messages [F 209170]

Error messages about message boxes in Service Engine are now entered into the LOG files by default. The setting is made by means of the Modul0=33 entry in zenon6.ini. This entry is automatically created during installation.

The entry must be deleted if the logging of Messages is to be prevented. Errors continue to be logged.

2.7.11. Extended Trend

2.7.11.1. Display of value for 2nd cursor (F 204010)

The value for the second cursor can now be displayed in the screen. To do this, select the 2nd value entry in the column setting.

2.7.11.2. Limit value colors and auxiliary lines (F 204010)

The status of the variable value in the curve can be displayed in Extended Trend. To do this, curves can be colored with the limit value colors. In addition, the limit values can be signaled with auxiliary lines.

Configuration is carried out in the screen switching via the settings for the curves. To do this, the options Use limit value colors and Display limit values as auxiliary lines have been added to the Curve Settings tab.

The new properties are also available for use with styles.

2.7.11.3. Selectable default setting for cursor when opening a screen (F 232761)

With the new Show cursor after screen switch property, the cursor setting when opening a screen can be defined.

The property is in the filter dialog in the screen switching in the Display tab.

The following options are available for selection:

- None
- Single cursor
- Double cursor

2.7.11.4. Online data - add curves in Service Engine (F 245203)

Curves with online data data origin can now also be added in Service Engine.

Note: Only variables for which the Harddisk data storage active property has been set can be selected.

2.7.12. eSignature (F 214790, 225885)

User actions can also be protected by means of an eSignature. This applies for example, to dynamic elements, variables, data types, actions via a menu or the Recipegroup Manager.

The eSignatureis available for:

- Dynamic elements
- Variables
- Data Types
- RGM variables
- Menus

Configuration is carried out in Engineering Studio via:

- Project properties of the eSignature group
- Properties of elements in the Authorization/eSignature group

USE ESIGNATURE
To use an eSignature, select one of the options in the Signature necessary element property:

- eSignature with "Execute": An eSignature is necessary to operate the element. This can always only be executed by the user who is logged in. The system user is not entitled to do this.
- eSignaturewith "Perform and Verify": An eSignature is necessary to operate the element. This must be confirmed by another person in an additional input field. Executing and verifying must be signed by two different users.
- eSignaturewith "Perform, Verify and Approve": An eSignature is necessary to operate the element. This must be first be checked by two further persons and then confirmed. Performing, verifying and approving must be signed by three different users.

The eSignature is retrieved in Service Engine when attempting to operate the protected element. The eSignature is entered via a dialog or via a configured and linked eSignature screen.

These settings are centrally managed in the Authorization/eSignature property group. In the Recipegroup Manager, this happens in the Authorization/eSignature group for linked variables. Other settings are available in the project properties in the eSignature group.

Which settings are used in Service Engine depends on the Apply authorization properties from variable property. If this is active, the properties configured for this variable are applicable in Service Engine. Local configurations are ignored for these properties

2.7.13. Functions and scripts

2.7.13.1. AML/CEL export - selection of the language (F 208154)

The key language for export can now also be selected for the functions Export AML and Export CEL. All terms are output directly as key terms without translation (including @ character).

2.7.13.2. AML/CEL export - column settings (F 208154, 206813)

When exporting information from the AML or CEL via the Export AML and Export CEL functions, the columns to be exported can now be configured. To this end, the Column Settings tab has been added to the dialogs.

The display of milliseconds and microseconds can now also be configured for the time columns when exporting to SQL.

NOTES ON SQL EXPORT
Columns, when added, are generally added to the end of the table.

Exception: This does not apply for milliseconds and microseconds. They are part of the complete time information given and are added there.

Attention

Do not change the columns for milliseconds or microseconds any more once the table has been created in SQL Server. Export would no longer work correctly in this case.

2.7.13.3. AML/CEL export - Unicode for SQL export (F 206813)

When exporting information from the AML or CEL using the Export AML or Export CEL functions, Unicode can now be selected as a format for SQL export.

Unicode is the default setting from version 11. The setting is left as ANSI for converted projects. A direct switch between ANSI and Unicode is not possible.

Recommendation: Always retain the setting once set.

2.7.13.4. Export alarm causes as a context list (F 210758)

Alarm causes can now be exported to SQL Server by exporting the context list in Service Engine. To do this, use the Export Context list function in the AML and CEL node. After they are exported, the alarm causes are available for use in Report Engine.

2.7.13.5. Execute script when Service Engine starts depending on the computer: Instructions (F 211401)

The execution of scripts when Service Engine starts can also be configured in a computer-dependent manner. In this case, a script is only executed if the script is started on a certain computer. This possibility has already existed in many versions. The steps to do this have now been integrated into the documentation.

You can find the instructions in the Functions and scripts manual in the Execute script depending on computer.

2.7.13.6. Start - close - restart archives (F 237140)

The previous start archive and close archive functions have been combined into a new function. The new function of a restart has also been added. You can now do the following with the Start/stop archive(s) function:

- Start archive
- End archive
- Restart archive

The relevant action can be applied to several archives at the same time. When restarting, the selected archives are first closed and then restarted.

When converting from previous versions, the previous functions are transferred to the new function.

2.7.14. Categorization

CEL ENTRIES FOR ALARM SHELVING (S 240873)
The following entries have been added to the CEL entries of the categorization for the new alarm shelving function in the Alarm Message List node:

- 303 AML entry shelved.
- 304 AML AML entry unshelved.

2.7.15. Message Control

New features for Message Control.

2.7.15.1. Support of TLS 1.3 for SMTP and POP (F 242427)

POP and SMTP now support TLS up to version 1.3.

POP and SMTP were added to the Encryption property for this. These now offer the following in the drop-down list:

- none: The connection established will not be secure.
- Automatically negotiate the highest TLS version available with server (up to TLS 1.3): The connection is automatically established with the highest available TLS protocol version that can be negotiated with the server. Maximum: TLS version 1.3
- TLS version 1: The connection is established with TLS 1.
- TLS version1 is the successor of SSL and is equivalent to SSL 3.1.
- TLS version 1.1: The connection is established with TLS 1.1.
- TLS version 1.2: The connection is established with TLS 1.2.

The default value has been amended from None to Automatically negotiate highest TLS version available with server (up to TLS 1.3).

2.7.15.2. STARTTLS support for SMTP and POP (F 242427)

For SMTP and POP connections, the following can now be configured for a TLS connection:

- direct setup
- by means of STARTTLS delayed setup

2.7.16. Process Gateway

2.7.16.1. Licensing (F 240269)

The number of Process Gateway modules and/or communication protocols that can be started at the same time in Service Engine has been limited through licensing. Licenses are available for the number of Process Gateway instances to be started, individual protocols or for groups.

2.7.16.2. Configuration of Process Gateway modules in Engineering Studio (E 211417 & F 210697 & F 218858)

Selected Process Gateway modules and/or communication protocols can now be configured and set in Engineering Studio directly. The full scope of the ABB Ability™ zenon project configuration environment, such as distributed engineering, reloadability in Service Engine and integration into the ABB Ability™ zenon network, including for Process Gateway, can also be used.

- The Process Gateways subnode has been added to the Variables node in the project tree for this. In this node, selected Process Gateway modules can be created and configured. Process Gateway project configurations in Engineering Studio can also be carried out if Service Engine is not running. This configuration was only possible in ABB Ability™ zenon before version 11 in a running Service Engine.
- The parameters for the executing computer(s) on which Process Gateway is started when Service Engine is started can be set with the corresponding properties for each configured protocol or module.

- In the Diagnosis Viewer, the zenProcGatewayDLL module entry is available for the filtering of the new functionality. It can be selected in the Diagnosis Viewer in the Modules tab for the filtering of the LOG entries and represents project configuration in Engineering Studio.

For version 11, the following Process Gateway module and/or communication protocols have been implemented in Engineering Studio for configuration:

- MODBUS
- DNP3
- ICCP/TASE.2
- OPC UA Server
- IEC870 Slave
- SNMP Agent
- SQL Online Interface
- Syslog
- Gateway for MS Azure

2.7.16.3. Project administration - transfer Service Engine files (F 236810)

For Process Gateways, the Service Engine changeable data project property can now be used to decide whether changes between Engineering Studio and Service Engine are transferred.

2.7.16.4. AccessAzure (I 206199)

NEW ISINTEGRITY FLAG FOR EVENT HUB MESSAGES (F 211018)
IsIntegrity has been added to the message format for the Event Hub. As a result, a distinction can be made between spontaneous value changes and value changes of an integrity interval.

COMMAND LINE PARAMETER /IGNOREERROR FOR PROCESS GATEWAY START (F 211029)
With this command line parameter, the AccessAzure Prozess Gateway also starts if configured variables are missing in Service Engine. The start is no longer canceled by an error message. If Service Engine runs as a service, the gateway will now start with an incorrect configuration. Errors are logged accordingly.

2.7.16.5. MS Azure services - project configuration in Engineering Studio (F 237589)

Process Gateways for the AccessAzure module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.6. DNP3 outstation

The following additions have been implemented for the Process Gateway DNP3_SG module for version 11:

2.7.16.6.1. Optional doubled events with and without timestamp (F 210144)

The outstation can, as an option, support the sending of two events for the same change: once with a timestamp and also once without a timestamp. The sending of such events is not compliant with IEEE standard (TM) 1815. This functionality must be activated globally. The sending of doubled events can then also be configured via the drop-down list:

- For individually-configured variables as Event Variation
- Globally as a Default Event Variation of a group

The response to an Integrity Poll (Class 0) always only provides a single statistical value.

2.7.16.6.2. MODBUS slave - AccessMODBUS (S 215949)

Process Gateways for the AccessDNP3_SG module can be newly configured in Engineering Studio directly. The project configuration is validated when creating Service Engine files. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.6.3. Sequence of the processing of events can be configured (B 222011)

The sequence of processing received changes can now be configured in the configuration dialog. The configuration dialog for the AccessDNP3_SG-Prozess-Gateway in the Events/Unsolicited node has been supplemented with the Event order option.

With this option, you can configure how received changes are processed. You can sort and process these events chronologically according to time stamp (Timestamp) or in the sequence in which these occur in the received data (Occurence).

The chronological sequence of occurrence corresponds to that of TB2018-001 published by the DNP user group.

2.7.16.6.4. Redundancy for serial communication (F 210143)

The DNP3_SG Process Gateway supports communication to a single Master via two redundant serial interfaces. To do this, in the configuration dialog for the Outstation node in the Serial port option, the possibility has been created, in addition to selection from the drop-down list, to configure a second port manually (separated by commas). The Outstation receives queries via both interfaces and sends the response via the interface from which the query was received. If there is no response, any possible Retries are sent via the same interface. If Unsolicited Responses are configured in the Outstation, an Unsolicited Response is sent via the last-used interface. The Unsolicited Response when the Outstation is started is sent to the first configured interface.

2.7.16.6.5. Visualization of connection information (F 202371)

A new mechanism has been added to the Dnp3_SGProcess Gateway, which makes it possible to read the current status of the DNP3_SGProcess Gateways in Service Engine. To do this, configure the numeric variables of the internal driver, in accordance with a fixed naming scheme. The result is visualized in Service Engine with the configured variables.

The following information can be set to variables:

- Process status of Process Gateway
- Connection status
- Connection statistics

Several instances of the Process Gateway in Service Engine can be monitored, such as in instance on the Primary Server and an instance on the Secondary Server. The variables and their nomenclature are documented accordingly.

2.7.16.6.6. Configurable behavior for command routing (F 232043)

For Binary Outputs, the parameters of behavior for Command routing can now be set. To do this, the option for Command routing has been expanded in the Binary Output node.

Previously, with Command routing active, there was always a wait for successful command execution before the DNP3 outstation sent an Operate Response. Now an Operate Response can already be sent as soon as a positive response to the command has been received.

2.7.16.6.7. Dynamically permit/turn off control commands (F 243946)

Control commands can now be permitted or turned off by means of a variable. The respective mode is dynamically selected with the value of a linked ABB Ability™ zenon variable.

- Remote mode - Select, Operate or Direct Operate are allowed.
- Local mode - Select, Operate or Direct Operate are not permitted.

2.7.16.6.8. Enhancements for communication with redundant communication channels (F 229753)

The following enhancements have been implemented for communication with redundant communication channels for version 11:

- Redundant communication via UDP: In the configuration dialog in the Datalink node, IP addresses for a master can be configured for UDP-based communication. The addresses are separated by a comma (,) when setting parameters. The following is applicable here:
  - The response and Unsolicited Responses are sent to the IP address from which a request was last received.
  - The Unsolicited Response when starting, it is always sent to the first configured IP address.
- No UDP communication on the standby server: If the new Silent on standby server option has been activated in the configuration dialog in the Outstation node, the Process Gateway on the current standby server does not respond to UDP queries.
- Clearing of the event buffers with redundancy switching: The parameters for the behavior of redundancy switching for the higher-level primary server can be set. If the new Purge event Buffer and delay Master connect option has been activated, master connections are only activated after a wait time of 10 seconds and an automatic restart of the outstation. The event buffer on the (new) primary server is also cleared with this option.

2.7.16.6.9. Inversion of values for binary inputs (F 243944)

Variable values for binary inputs can be avoided/inverted.

The new Invert value checkbox was added in the configuration dialog in the Binary Input node for the Binary Input option group for this. Time stamp and status of the variable are not changed as a result.

2.7.16.6.10. No new event on change of the time stamp without value change or status change (F 241476)

The creation of a new value can also be optionally suppressed if only the time stamp of a variable changes, but the value and status remain the same.

The new Events on value and status change only option was added for configuration in the Events/Unsolicited node for this.

2.7.16.6.11.Scaling factor for analog inputs (F 245590)

ABB Ability™ zenon variable values for analog inputs can optionally also be scaled/multiplied with a factor.

The new Scaling factor option was added in the configuration dialog in the Analog Input node for the Analog Input option group for this. Time stamp and status of the variable are not changed as a result.

2.7.16.6.12. Amendment of status and statistics variables to the project configuration in Engineering Studio (F 238677)

- The naming of status and statistics variables has been enhanced for Process Gateway project configurations in Engineering Studio.
- Configuration in Engineering Studio: [Computer name on which the Process Gateway is running].[Domain name]_[GUID of the Process Gateway]_[Name of the specific information]
- Configuration with external parameterization: For Process Gateways with external parameter setting, the naming remains the same: [Name of the configuration file for the Process Gateway]_[DLL name of the Process Gateway]_[Name of the specific information]

2.7.16.6.13.Subset level qualifiers - compatibility amendments (F 245592)

The DNP3 qualifiers of the outstation were optimized for compatibility during communication to DNP3 masters. It is thus guaranteed the DNP3 masters also accept and process the events of the outstation that contain outstation qualifier codes that are not supported by the master and would thus be rejected by the master.

2.7.16.6.14. TLS communication (F 246808)

TCP/IP Process Gateway connections for the DNP3 module can now be secured via TLS. To do this, the new IEC 62351-3/TLS button has been implemented in the Datalink node in the configuration dialog.

It opens the new TLS Settings configuration dialog for setting parameters of secure communication:

- TLS communication is configured per master.
- Password support when using the PKCS#12 file format.

Implementation was carried out in accordance with the IEC TS 62351 standard.

Attention

This invalidates TLS configurations set in the .INI file previously to version <11.

2.7.16.7. ICCP/TASE.2 - IEC 60870-6/TASE.2

The following additions have been implemented for the Process Gateway AccessICCP module for version 11:

2.7.16.7.1. Secondary IP address or host name and port (F 230234)

For connection redundancy, it is possible to configure a secondary address or port in the General configuration dialog for the options IP Address/Hostname and Port. The ICCP gateway as ICCP client uses the secondary IP address or host name if a connection via the primary IP address fails. The same settings for PSEL, SSEL, TSEL, AE qualifier and AP title are used for both settings.

2.7.16.7.2. Select routing/command routing in control direction (F 218782)

The AccessICCPProzess-Gateway enables the setting of Select-Routing parameters for Device Object ICCP server variables.

- Select (reading the CheckBack ID) is always answered positively.
- After an Operate command, Select, and subsequently, Operate will be carried out via command processing. A corresponding write response with success or error is sent after completing.

2.7.16.7.3. Configurable datasets (F 230239)

The following Optional Fields can now be requested for datasets that are created by the AccessICCP Prozess-Gateway as an ICCP client:

- Transferset Name
- DSConditions Detected
- Event Code Detected
- Transferset Timestamp

For the Transfer Sets, the parameters for DSTransmissionPars and DSConditionsRequested can now be configured.

It is possible to configure whether the ICCP client deletes existing data sets or creates new data sets when establishing a connection.

Parameters are set by means of entries in the .INI file.

2.7.16.7.4. Variables from subprojects (F 230229)

Variables from subprojects are also supported for the AccesICCP Process Gateway. This is applicable for both server and client variables.

To do this, in the configuration dialog of the Process Gateway module, the options in the Server Variables and Client Variables tabs have been amended accordingly:

- The SCADA Variables option has been supplemented with the Project column.
- The Available for ICCP option contains the project names as a prefix in front of the variable name, separated with the # character.

For status variables, <projectname># must be placed in front if necessary.

NOTE ON COMPATIBILITY
A pre-existing project entry has been taken into account for existing configurations. Otherwise the start project is assumed.

2.7.16.7.5. ICCP TASE.2 - project configuration in Engineering Studio (F 237592)

Process Gateways for the AccessICCP module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.7.6. TLS and MMS authentication (F 209878)

The Process Gateway connections for the AccessICCP module can now be protected by means of TLS and/or MMS authentication. A new Communication Security tab was implemented in the configuration dialog for this:

- A separate certificate for TLS client and TLS server is used for TLS communication.
- A separate certificate is used for MMS authentication.
- Password on signing and encryption for PKCS #12 files.

Additional parameters for interoperability are possible in the .INI file.

Implementation was carried out in accordance with standards IEC TS 62351-4:2007/compatibility mode in IEC 62351-4:2018.

2.7.16.7.7. Configuration of optional, user-defined ICCP datasets (F 241756)

By default, the ICCP Process Gateway in the role as ICCP client automatically creates DataSets, depending on the configured ICCP client variables and the APDU size.

A file can be selected with the new Custom data set configuration file option in the General tab of the configuration dialog. In this file, user-defined DataSets can be configured for the configured ICCP client variables.

2.7.16.8. IEC EC60870-5-101/104 slave

The following additions have been implemented for the Process Gateway Slave for IEC60870-5-101/104 protocol module for version 11:

2.7.16.8.1. Project configuration in Engineering Studio (F 223885)

Process Gateways for the AccessIEC870SL module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.8.2. 4.7.13.7.2 Only send values for general interrogation (F 207365)

The Process Gateway AccessIEC870SL module supports parameter settings with values only being communicated once during a general interrogation (GI). The new Only at GI option in the configuration dialog for the sectors Information object settings (Sector tab) in the Data Transfer option group has been implemented for this.

If this option has been activated, no more-recent data is communicated.

2.7.16.8.3. 4.7.13.7.3 T00 IOA19 - internal status variable for the activation/deactivation of communication (F 243917)

With the new T00 IOA19 variable, it is possible to control communication. This variable only needs to be set up for one sector of a master and is applicable globally for the gateway. Communication is permitted depending on the value of the variable (value 1) or suppressed (value <>1).

As a result, it is possible, for example, for the Process Gateway on the primary server to allow communication with the IEC 60870 master and the Process Gateway on the secondary server to not send any data to the master.

2.7.16.8.4. 4.7.13.7.4 Support for redundancy in accordance with IEC 60870-5-104 ed2.0 (F 181246)

For communication to a master via the IEC 60870-5-104 protocol, several connections in a redundancy group are now also supported:

- The new 870-104 redundancy option for protocol selection was implemented for this.
- In addition, when setting the parameters of a master in the Device tab, the input of several IP addresses in the (protocol-dependent) IP-Addresses of redundant Masters (870-104) input field is possible. These IP addresses are separated by a comma.
- For the configured master, the 870 slave accepts TCP connections from all configured IP addresses.
- The current status of the redundancy group can be monitored by means of internal variable.

This enhancement conforms to the standard IEC 60870-5-104_ed2.0_b - section 10. It is redundancy at connection level. The 870 master is responsible for selecting the active connection.

2.7.16.8.5. Support for UTC time (F 246335)

The Process Gateway AccessIEC870SL module supports the UTC time format for the time stamp.

The new UTC time option was added to the configuration dialog for this. If this option is deactivated - as in previous versions - local time is used.

2.7.16.9. MODBUS slave - AccessMODBUS (F 215944)

Process Gateways for the AccessMODBUS module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.10. OPC UA Server

The following enhancements have been implemented for the AccessOPCUA Process Gateway:

2.7.16.10.1.Limitation of the maximum TCP connections (F 225045)

The following additions have been implemented for the Process Gateway AccesOPCUA module for TCP connections:

A maximum of 100 TCP connections at the same time are accepted

- TCP connections that have been established are separated if no data is exchanged for 30 seconds.
- Only secure connections are accepted by default.

2.7.16.10.2. Use of a new file format for the configuration file (F 192911)

The configuration file for the Process Gateway Module AccessOPCUA is saved in a new file format (UTF-16 LE). Configurations from previous versions are executable in the current version.

Attention

The created Service Engine files are no longer executable in previous versions. Therefore, changes of the parameterizations are only possible for use with Version 11 onwards.

2.7.16.10.3. Configurable number of client sessions (S 246559)

The maximum number of permitted client sessions on the AccessOPCUA Process Gateway can now be set. The new Sessions option group has been added in the configuration dialog in the Server tab for this.

If the number of permitted sessions has been reached, all further sessions are rejected with a BadTooManySession error during the CreateSession request.

2.7.16.10.4. OPC UA server optimizations (F 239316, F 219312)

The AccessOPCUA Process Gateway has been optimized.

- Support for AML, CEL and archives in the AccessOPCUA Process Gateway can be activated or deactivated. This reduces the start duration of the AccessOPCUA Process Gateway.
- Implementation of Server Diagnostics. As a result, OPC UA clients can monitor the AccessOPCUA Process Gateway.

- The connection to OPC UA clients is no longer separated if the support of AML, CEL or archives is inactive and variables are added or removed. Unnecessary interruptions in communication are thus avoided.
- The AccessOPCUA Process Gateway can be configured in Engineering Studio.
- The configuration changes in Engineering Studio are applied after being transferred to the target system on which Service Engine runs, without an interruption to communication on reloading. A requirement for this is that the support for AML, CEL or archives is inactive.
- Data from CEL now also contains the CEL categories.

2.7.16.10.5. Project configuration in Engineering Studio (F 223887)

Process Gateways for the AccessOPCUA module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

- The parameters for paths can be set with the %CD_SYSTEM% environment variable.
- If the Process Gateways for the AccessOPCUA module in Engineering Studio have been configured and the corresponding certificates are not on the client computer, they are created automatically without an additional warning message.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.10.6. Server diagnostics (S 241998)

From version 11, the prescribed ServerDiagnostics in the AccessOPCUA Process Gateway OPC UA information model are supported.

2.7.16.10.7. Secure and encrypted communication (F 239431)

Secure and encrypted communication has been enhanced.

The new Endpoints tab has been added to the configuration dialog for this.

The parameter setting contains:

- Client authentication on the server
- Anonymous login
- Authentication by means of user name and password
- Certificate-based authentication
- Secure communication for configured endpoints.
- Selectable encryption algorithms with selectable option signed (sign) or signed & encrypted (sign + sign & encrypt)
- Certificate administration with definable save locations.
- Setting of parameters of OPC UA validation exceptions

Information

The OPC UA Process Gateway now always supports authentication by means of user name and password, even if there are no local users in the ABB Ability™ zenon project. This is also applicable for existing configurations from previous versions. Authentication is also possible with external users, such as with an Active Directory user.

Authentication by means of user name and password can be deactivated in the configuration for the endpoints.

The security policies Basic128RSA15 and Basic256, used in previous versions, have been marked as obsolete. These policies have been deactivated by default for existing and new configurations. If OPC UA clients need these policies for compatibility reasons, they can be activated in the configuration for the endpoints.

Attention

In a ABB Ability™ zenon project, check the System lock for wrong external authentication project property to prevent unintentional block of Service Engine by an OPC UA client. Alternatively, you can also deactivate the authentication with user name and password in the new configuration dialog.

2.7.16.11. SNMP - project configuration in Engineering Studio (F 237593)

CONFIGURATION IN ENGINEERING STUDIO
Process Gateways for the AccessSNMP module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

NO MULTIPLE START
From version 11, the AccessSNMP module can only be started once. The reason for this is that the module uses the Windows SNMP service, which always communicates with the same port. This is visualized with a warning dialog.

2.7.16.12. SQL - project configuration in Engineering Studio (F 237594)

Process Gateways for the AccessSQL module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.13. IEC 870 slave - configuration in Engineering Studio (F 223885)

Process Gateways for the Syslog module can be configured in Engineering Studio. Existing configurations from previous versions can still be run in Service Engine.

Attention

Please note that only new Process Gateway configurations in Engineering Studio are possible. Existing configurations of previous versions cannot be changed in Engineering Studio.

2.7.16.14. IEC60870-5-104 server contains vulnerability (BUG 182863)

IEC60870-5-104 server vulnerability has been fixed.

2.7.17. RGM

2.7.17.1. Protect actions in Service Engine (F 249393)

Actions that are executed in the RGM screen by means of buttons can now be protected by means of linking to an equipment model. The editing or deleting of recipes, for example. You configure the protection using the Operating authorization in the network project property and the Equipment model relevant for operating authorization property.

Actions can thus only be executed via buttons in Service Engine if permitted by the linked equipment model.

2.7.18. Reporting

2.7.18.1. Report Viewer: Filter display (F 209308)

In Service Engine, you can display which data from which sources are currently being visualized. In addition, the filter that is currently being applied is displayed.

To do this, use one of these new possibilities:

- Filter settings dataset: Project configuration in screen switching.
- Set filter (detail list) screen element: Project configuration in the Report Viewer screen

2.7.19. Smart Objects

The functionality of the Smart Object module has been further developed and expanded.

2.7.19.1. Recipes including Recipegroup Manager (F 207419)

For the configuration of Smart Object Templates, recipes and recipe groups are supported in the Recipegroup Manager.

The functions and screens of the Smart Object Template configuration have been enhanced accordingly with functionality for the Recipes module.

2.7.19.2. Frames (F 206241)

The following restrictions apply for the configuration of Smart Object Templates:

NOTE ON COMPATIBILITY
Due to the support for frames in the Smart Object Template configuration, the project frames are no longer used for a Smart Object. As a result, the following manual adaptation is necessary when using Smart Objects from prior versions:

The required frames must be exported from the project as an XML file. This exported XML file must be added in the Smart Object Template project configuration by means of XML import.

2.7.19.3. Revised variable assignment and new assignment dialog (F 230959)

The internal process and the dialog for the assignment of variables when using a Smart Object has been revised. The dialog is automatically opened if a Smart Object is created and the Smart Object Template contains a configuration that supports the assignment of project variables.

- Allocation:
- From version 11, complex variables (arrays, user-defined structure data types) can be assigned as a project variable.
- Assigned project variables are always retained and are no longer deleted.
- Automatic variable creation: Variables of a Smart Object Template project configuration are created automatically in the project when using a Smart Object. These variables are marked graphically in Service Engine both with a symbol in the Status column as well as by the display of the entry in blue text color.
- With the automatically-created variables, the name of the Smart Object (ABB Ability™ zenon Smart Object property Name) is used for the new Smart Object variable property.
- Transfer of variable parameter settings of a Smart Object Template: Parameter settings can, as an option, be transferred from the variable properties of the Smart Object Template project configuration. To do this, the Use variable properties of Smart Object option has been added to the dialog.
- If the option is activated, this information is also applied in the Source variable property.
- The assignment dialog now offers additional information
- Smart Object variable description option - Description of the variable from the Smart Object Template configuration
- Property origin - Visualization of whether variable properties are applied from the Smart Object Template project configuration or local project variables

NOTE ON COMPATIBILITY
For Smart Objects from prior versions, the following manual parameter settings are necessary during variable assignment:

- The variable assignment must be resolved in projects from prior versions before conversion to version 11. There can be no variable assignments.
- In the current version, the variables of a Smart Object Template project configuration must be newly assigned to the respective project variables in the variable assignment dialog.

2.7.19.4. XML import and export of Smart Object configurations (E 132307)

Individual configuration content of the modules of a ABB Ability™ zenon project can be imported via XML in the Smart Object Templates project configuration environment. The same is applicable for content of a Smart Object Template configuration.

To do this, the XML export function has been installed into the project configuration environment for a Smart Object Template in the tree view for the respective node.

This is applicable for project configuration content for all supported models in the tree view of a Smart Object Template.

2.7.19.5. API access to Smart Objects and Smart Object Templates (F 207422. 233431)

The ABB Ability™ zenon API offers a possibility to access the Smart Object Templates and Smart Objects of a ABB Ability™ zenon project. You can find more information in the online help for the ABB Ability™ zenon object model.

2.7.19.6. Enhancements (F 202141)

The following enhancements have been implemented for version 11:

2.7.19.6.1. Optimized Logic project for Smart Object Templates (S 206635)

Logic Studio is started with an optimized Logic project for the configuration of a Logic project in a smart object template.

2.7.19.6.2. Visualization of the project configuration origin (S 188781)

The origin of project configuration content that has been defined in Smart Object Templates has been integrated into the ABB Ability™ zenon project configuration environment.

The project configuration origin of Smart Object or Smart Object Template reference content is displayed graphically with a corresponding symbol in front of the ABB Ability™ zenon element. In addition, the name of the origin object, from which the configuration is taken, is visualized with the new Smart Object property. In doing so, they can be Smart Object Templates, Smart Objects or Smart Object Template references. This information is also available in the new Smart Object column in the detail list of the element in Engineering Studio.

2.7.19.6.3. Visualization of unsaved changes for Smart Object Template configurations (S 210716)

If the configuration environment for Smart Object Templates contains project content that has not been saved, this is displayed with a symbol in the Smart Object Templates tab of the Project Manager.

In addition, when a project is activated, there is an evaluation to see whether the current project still contains unsaved Smart Object Template configurations. A dialog is shown in this case.

2.7.19.7. Rule-based variable mapping (F 236748)

In the Variable Mapping: Project -> Smart Object dialog, variables can now also be assigned to rules. The dialog was enhanced with a new option group for this. In addition, the assignment type is visualized in the assignment list with a graphical symbol.

2.7.19.8. 4.7.15.2 Mapping rules for Logic variables (F 251149)

Substitution rules for linked symbols and combined elements can now be applied multiple times per source variable or function.

The new Apply several rules option in the Element input dialog has been implemented for this.

Note: This dialog is called up for a ABB Ability™ zenon symbol with the Preview property in the Linking rule property group.

2.7.19.9. API access to Smart Objects and Smart Object templates (F 207422, F 233431)

The ABB Ability™ zenon API offers the possibility to access the Smart Object Templates and Smart Objects of a ABB Ability™ zenon project. You can find more information in the online help for the ABB Ability™ zenon object model.

2.7.20. Language File

Language files can now be linked to language codes. They can be selected when creating a new language file in the dialog for new language files.

Language codes for pre-existing language files can be linked manually in the Description property.

The entries for available languages are created from the language codes in the operating system. All languages without a hyphen are included. They are available for selection.

This means: The de language code is shown. It is applicable for all German language variants. The language code de-AT is ignored.

Exception: For Chinese, zh-CHS (simplified Chinese) is available.

Attention: Each language code can only be used once. If several language files refer to the same language code, these language files are ignored by the Metadata Synchronizer.

2.7.20.1. 4.7.16.1 Missing key words (F 242148)

If keywords for linked elements or variables are missing in the language file, this will now be indicated when Service Engine files are created:

- All missing entries are highlighted orange in the output window.
- Double-clicking on an entry leads to the linked element.

2.7.20.2. 4.7.16.2 Import and export for ODS (F 239982)

Language files can now also be exported to Open Document (ODS) format or imported from an ODS file.

2.7.20.3. Import preview (F 240038)

When importing a language file in CSV or ODS format, a preview is now shown before import.

- The preview allows you to:
- Preview the texts that will be imported
- Exclusion of keywords
- Exclusion of languages
- Exclusion of already existing keywords
- Comparison of imported and existing entries

It is also possible to filter for differences. Differences between import file and entries present in the project are highlighted in color. Key words and languages can be excluded from the import.

2.7.20.4. Key word - display usage in project (F 244336)

The use of key words can now be displayed via the project analysis. To do this, ABB Ability™ zenon project analysis is started: You select the Keyword usage entry in the context menu or toolbar. Keyword usage is analyzed. The result is displayed in the project analysis window. In the result window, you can jump directly to the linked element for each entry.

- The analysis takes into account the use of keywords in:
- Alarms: Alarm groups, alarm classes, alarm areas and shelving cause
- Screens: Name and description
- Screen elements
- Screen switches: Column configurations
- Reaction Matrices
- RGM: RGM settings and RGM variables
- Variables
- Interlockings

2.7.21. Styles

STYLE TYPE ENHANCED WITH PROPERTIES FOR ALC (F 241956)
The Line style type supports the configuration of Automatic Line Coloring for lines and polylines.

2.7.22. Variables

2.7.22.1. Variable diagnosis - new columns (F 245286)

There are additional optional columns available for the variable diagnosis screen:

- Resource label: Character sequence for export
- Project: unique project name

These columns can be shown in Service Engine by the user.

2.7.22.2. Variable diagnosis - equipment groups can be linked (F 245286)

Variable diagnosis screens now also support equipment groups.

Equipment groups can be displayed in the variable diagnosis screen. The equipment model screen type can use update variable diagnosis screens for screen-type-specific actions.

2.7.23. ABB Ability™ zenon network

2.7.23.1. ABB ZENON PRP supports gigabit (F 245943)

The PRP configuration and diagnose tool now also supports 1-gigabit Ethernet connections.

In addition, the new Entry forget time option was added in the configuration dialog. This option can be used to amend the monitoring of the speed of the respective computer network connections.

2.7.23.2. Set parameters for encrypted communication for the ABB Ability™ zenon network (F 244244)

Communication in a (redundant) ABB Ability™ zenon network between Server(s) and Client(s) as well as communication between Smart Server and Smart Clients(s) can now also optionally be protected with TLS.

The parameters of the certificates are set in the Startup Tool. The Encrypt network communication option group in the Application settings dialog of the Network configuration tab has been revised for this.

2.8. HTML Web Engine

2.8.1. Use of font lists from global projects is supported (F 209773)

The HTML Web Engine can now also use the fonts from a global project. If there is a global project, the fonts are transferred to the font lists of the compiled projects when compiling the HTML Web Engine.

2.8.2. Use of graphics files and audio files from global projects is supported (F 209773)

HTML Web Engine can now also use graphics files and audio files from local and global projects.

The files of the local project are used in principle. If there are no such files in the local project, a search for them is carried out in the global project and the corresponding files are used.

2.8.3. AML and CEL support the display of additional data and columns (F 209772)

The screen types AML and CEL now also support the display of the following data and columns for the HTML Web Engine:

- Alarm/Event Class
- Alarm/event class number
- Alarm/event class symbol
- Alarm/Event Group
- Alarm/event group number
- Alarm/event group symbol
- Alarm area
- Alarm area number

2.8.4. HTML Web Engine available as a Docker image (F 201576, 221527)

The use of the HTML Web Engine is now also possible as a Docker Container. It is a Linux-based Docker Image.

The HTML Web Engine as a Docker Container is designed for use with Service Grid.

The licensing has been amended for the operation of the HTML Web Engine in the Docker Container.

2.8.5. HTML Web Engine supports the display of Gantt charts in the ETM (F 201455)

The HTML Web Engine can now also visualize Gantt charts in the ETM and supports:

- Definition of the Gantt line height
- The automatic positioning of the Gantt Lines
- The arrangement of the Gantt lines from bottom to top
- Coloring of the Gantt lines from data from numerical reaction matrices, limit value definitions or color definitions in the screen switching function.

2.8.6. Frame behavior in the event of a loss of focus can be defined (F 202117)

The configured frame behavior in the event of a loss of focus is taken into account in the display in the HTML Web Engine.

The parameters for the behavior are set in Engineering Studio in the following properties:

- Close after losing focus
- Do not close after losing focus

2.8.7. Moving of screens using the mouse (F 202117)

Screens can be moved with the mouse in the HTML Web Engine if the Move Frame via mouse frame property of the respective screen is active in Engineering Studio.

2.8.8. Opening of screens dependent on mouse pointer or element position (F 202117)

Frames can be opened depending on the position of the mouse cursor or element. The position of display is defined for frames.

If there is no mouse cursor position, a defined position is used.

The last-known position is used for devices with touchscreens.

2.8.9. Display of newly-opened screens in the foreground (F 202117)

Newly-opened screens with the Always in the foreground property activated are always displayed in the foreground.

2.8.10. Configurable Y-axis for Web Engine trend (F 218413)

The configuration of the Y-axis for the Web Engine trend supports the following properties:

- Axis active
- Position (only to the left or the right of the diagram)
- Axis title (static, variable name)

- Labeling of the axis ticks
- Color
- Use color from curve

The display of several axes is possible.

The colors of curves and axes are configurable.

2.8.11. Web Engine compiler optimized for large projects (F 222290)

The Web Engine compiler has been optimized and the compilation time has been reduced.

2.8.12. Update to .NET core 3.1 and SignalR 1.1.4 (F195896)

The Web Engine has been updated with the more recent versions of .NET core 3.1 and SignalR 1.1.4.

2.8.13. Support for Internet Explorer discontinued

Internet Explorer will no longer be supported for HTML Web Engine from version 11 and above.

2.8.14. Support for equipment model type filter (F 212400)

The screen types AML and CEL now also support the equipment model filter.

2.8.15. The HTML Web Engine supports the equipment model screen type (F 212400)

The HTML Web Engine now also supports the set value input screen type.

It can also be used as a filter for AML and CEL and to execute the functions linked to the equipment group. As an option, alarms for the hierarchical alarming via equipment model can also be displayed as a text.

2.8.16. Zooming / moving with curve configuration as a Gantt line in the Extended Trend deactivated (F 225379)

Zoom and move function in the line diagram. However, as soon as at least one curve in Extended Trend is configured as a Gantt line, you cannot zoom or move in either the line diagram or in the Gantt display.

2.9. Programming interface

New function “Start/stop project service extension services” (F 226815)

The new Start/Stop Project Service Extension function in the Add-In function group allows you to start or stop a project service extension service in Service Engine.

2.9.1. [Alarm administration] ALARM SHELVING (F 239935)

The implementation for the new ABB Ability™ zenon alarm shelving functionality has been transferred to the ABB Ability™ zenon object model.

In doing so, the object model includes the following functionality: Recreate shelving cause and process existing causes. This is applicable for both the default causes prescribed by the system as well as the user-defined causes.

ALARM/EVENT GROUPS AND ALARM EVENT CLASSES (F 237856)
Existing project configurations of alarm/event groups and alarm event classes can now be read off in the ABB Ability™ zenon object model.

2.9.2. [ALC] enhancements (F 242770)

The following functionality has been added to the object model for ALC:

- Parameter setting for the line topological element available: The LineName Property was added to the ITopologicalElement interface for this.
- New function type for lines: The Enum:FunctionType was enhanced with the Line and Busbar values.
- Additional information for transformers: The IProceduralElement interface has been enhanced with three Properties :
    - TapChangeMinimum
    - TapChangeMaximum
    - TapChangeNominal

These enhancements make standards-compliant parameter setting for the CIM CGMES standard easier.

2.9.3. [AML] Access to "Alarm cause GUID” column (F 206432)

The Alarmcause GUID column in the Alarm Message List can be reached via the API. To do this, the CauseGuid DynProperty was added in the IChronologicalEventList interface.

With the CauseGuidAnz DynProperty, which is also new, the length of the Alarmcause GUID column can be defined.

2.9.4. [AML and CEL] Access to AML and CEL raw data (F 173110)

AML & CEL raw data can be read via the API in a language-dependent way in ISO 8601 format.

To do this, the classes IEventEntry and IAlarmEntry were enhanced with the GetFieldData method.

- IEventEntry - GetFieldData(AlarmFieldId, DataTextFormat, MeasuringUnitFormat)
- IAlarmEntry - GetFieldData(EventFieldId, DataTextFormat, MeasuringUnitFormat)

2.9.5. [AML] Expansion of Enum:AlarmFieldId by the value LatestChange - "last change" AML column (F 160866)

In the AlarmMessageList namespace, the Enum:AlarmFieldId was enhanced with the LatestChange value. As a result, the "Last Change" AML column can also be accessed via API.

2.9.6. [AML] enhancement of Enum:EventFieldId with the value categories - "Category" CEL column (F 173222)

In the ChronologicalEventList namespace, the Enum:EventFieldId was enhanced with the Categories value. As a result, the "Category" CEL column can also be accessed via API.

2.9.7. API for Smart Object module (F 207422, F 233431)

The SmartObject has been added to the API. As a result, content from the Smart Object module can be contacted via API.

- Import and export of Smart Object templates
- Creation of Smart Objects
- Administering Smart Objects
- Configuration of Smart Object templates

2.9.8. [Batch Control]

ADAPTATION FOR ADD-IN (F 244699)
The API commands for the Batch Control module have been released for the add-in programming interface. The VSTA programming language has thus been replaced; it is no longer supported with version 11.

TIME FOR RECIPE EXECUTION (F 236730)
The ControlRecipe class has been supplemented with the FinishedTime property. This property contains the time stamp if a batch recipe (of any desired type) has been executed. In doing so, the status of execution is not significant.

As a result, there is the possibility in the Chronological Event List to filter this time stamp according to executed batch recipes.

BATCH IDENTIFIERS (F 237140)
The newly-implemented ABB Ability™ zenon properties for the implementation of batch identifiers have been transferred to the ABB Ability™ zenon object model.

MEASURING UNITS FOR OBJECT (F 238318)
The RecipePhase class has been supplemented with the Unit property. This property returns the measuring unit of the object as a result.

2.9.9. Control Service Engine services (F 237856)

Add-in Service Engine services can now be controlled and monitored via API. The new IAddIn namespace with the IAddInContext interface was implemented for this:

- Enum:StartStopOperation
- Completed
- NotFound
- ErrorDuringOperation
- AlreadyRunning
- Enum:ServiceExtensionStatus

- Started
- Stopped
- NotFound

2.9.10. [eSignature] - support for authentication of third-party providers (F 248392)

By using new events in the API, authentication can also be used through solutions from third-party providers (such as biometrics) in the eSignature workflow. For each individual step in the process, an event is triggered, which can be used to transfer the user name and the password to the workflow. A response value can be used to stipulate the way in which the login information should be used:

- User name only (like login without password)
- User name and password (normal login).

The login information provided by the third-party components is visualized in Service Engine.

The ESignature Namespace was enhanced for this accordingly.

2.9.11. [Engineering Studio] New event HistoryChangedEntryAdded for IWorkspace interface (216417)

In order to be able to detect changes to Engineering Studio objects, the new

HistoryChangedEntryAdded event has been implemented for the IWorkspace interface. All changes made to objects can be tracked with this event.

If the event is triggered, an instance of the new class HistoryChangedEntryAddedEventArgs is transferred. This new class can be reached in the root namespace Scada.AddIn.Contracts.

2.9.12. [Equipment modeling] enhancement (F 242770, F 236365)

The following functionality has been added to the object model for equipment modeling:

An equipment model can be set with a type from version 11. To do this, the IEquipmentModel interface was enhanced with the new Property ModelType. Values for Enum:ModelType:

- 1 = Substation
- 2 = 3DModel

An equipment group can be set with a type from version 11. To do this, the IEquipmentGroup interface was enhanced with the new Property EquipmentGroupType. Values for Enum:EquipmentGroupeType:

- 1 = Substation
- 2 = GeographicalRegion
- 3 = SubGeographicalRegion

These enhancements make standards-compliant parameter setting for the CIM CGMES standard easier.

IMPROVED ACCESS TO THE EQUIPMENT MODEL VIA API
In addition, new functions and Properties have been added to the IEquipmentModeling Interface.

- GetEquipmentGroupsByPath - Function to read the path of the equipment group. The transfer parameter can be given as a string or as a string array.
- New Properties: Guid, Name and Description. - Four new Properties were added to the IEquipmentGroup Interface: FullPath, Guid, Name and Description

The equipment model can be read directly with this implementation. Workarounds, like the interpretation via XML files, are no longer necessary. Information for paths, GUID and name of a model are now available in an object.

2.9.13. [Historian] - apply aggregation type from source archive (F 246612)

When adding a variable to an archive, the aggregation type can be taken from the source archive. The transfer parameter for the source archive has been added to the overloadings (operator overloading) of the AddVariable function in the IEditorArchiveVariable Interface.

2.9.14. [Licensing] new values for Enum modules of the namespace license (F 229218)

For the new license options, the Enum Module modules in the License namespace were extended with the following values:

- StandaloneOnly
- ServerOnlyNoRedundancy
- OneInstancePerDriver
- ReadOnlyClient
- SingleProjectOnly

2.9.15. [Licensing] New information available

The API for licensing now supports queries for the licensing forms "one project only" as well as "one process image only".

- The Enum:LicenseModule has been supplemented with the SingleProjectOnly value.
- The new value NumberOfProcessScreens has been implemented for the Enum:Module.

LICENSE INFORMATION FOR PROCESS GATEWAY MODULES (F 240269)
The licensing possibilities for the Process Gateway modules are now shown in the object model. This information has been amended to the licensing according to price groups. The following new entries have been implemented for the Enum:Module:

- NumberOfProcessGatewaysInPriceGroupL
- NumberOfProcessGatewaysInPriceGroupM
- NumberOfProcessGatewaysInPriceGroupN

2.9.16. [Logic Studio] cross-reference from and to Logic Studio (F 228450)

The new OpenLogicVarXRef method was implemented in the Workspace namespace for this. With this method, references in Logic Studio can be called up in Engineering Studio.

An IVariable object is to be used as a transfer parameter. This object references a Logic Studio variable for the transfer in ABB Ability™ zenon.

2.9.17. Restore Engineering Studio project as a new project (F 246701)

ABB Ability™ zenon project configurations can be read back as a new project via the API in the workspace of Engineering Studio.

A new overflow (operator overloading) of the RestoreProjectBackup function has been added to the IWorkspace Workspace.

2.9.18. [Screen elements] SVG element - evaluate download status (F 247380)

The Namespace ScreenElement has been enhanced with the IBrowserDownloadHandler interface. The status of a download in the ABB Ability™ zenon SVG element screen element can be queried.

- DownloadStartingEventArgs Download was started.
- DownloadUpdatedEventArgs Current status of download.

2.9.19. Time stamp supports 64-bit (F 55182)

With support for 64-bit, time stamps can now be processed with nanosecond precision. The time stamp for the following interfaces is a long data type from version 11:

- IArchiveFilter - The methods QueryBlock() now return an array with 7 entries for each value:
- Entry 5 is a long as DateTime ticks.
- Entry 6 is a ulong as 64bit state.
- IArchiveValue
- IEventEntryData
- IVariable

This is applicable for both internal and external time stamps.

2.9.20. [ABB Ability™ zenon screens] swipe & lock, snap scrolling functionality and information for zenon screens (F 239217)

The Screen namespace has been enhanced with methods and classes for the support of additional devices as well as the control of Swipe & Lock and Snap functionalities.

In addition, an event has been implemented that is triggered when the position of the screen changes or when the zoom level is changed. This event provides information about the current position and zoom level of the screen.

2.10. Drivers

2.10.1. Communication via modem connection no longer available (F 230753)

The communication of drivers to a PLC via modem is no longer supported from version 11. In current ABB Ability™ zenon projects, neither new modem connections nor a connection to a PLC via modem can be set up. Communication details variables for modem information have the status bit INVALID from version 11.

Projects from prior versions that are upgraded have a special status. The following is applicable for these converted drivers:

- Creation of Service Engine files
- When creating Service Engine files for current versions, no modem support for drivers is included.
- Modem support is only supported for the creation of Service Engine files for prior versions up to version 8.20.
- Setting parameters in Engineering Studio
- If the modem connection has been deactivated in the driver's configuration dialog, it can no longer be activated again.
- The parameters for driver modem connections configured in prior versions can also be changed in the current version.
- The parameter settings for upgraded projects are only available if the computer on which Engineering Studio has been started also has a modem configured.

2.10.2. Online variable import can be filtered for upper case and lower case letters (F 215830)

When importing variables online from a PLC, it is possible to filter for upper-case letters and lower-case letters.

This filtering can be activated by means of an INI entry. To do this, the existing entry,

CASESENSITIVEFILTER= in the zenon6.ini file in the [EDITOR] section is now also used for online variable import.

2.10.3. Alternative interprocess communication via zenDrvOpsManager.exe (F 190696)

From ABB Ability™ zenon version 11, the zenDrvOpsManager.exe application is used for interprocess communication between Service Engine and drivers, as well as between Engineering Studio and drivers. The application is started automatically in the background and only permits local communication.

2.10.4. New drivers

The following new drivers are available from version 11:

2.10.4.1. OCPP driver - driver for communication with OCPP charging points (F 213006)

The OCPP driver fulfills the role of the central management system for communication with charging points for electric vehicles in accordance with version 1.6 of the Open Charge Point Protocol on the basis of WebSocket communication with JSON message format (OCPP1.6-J).

In contrast to most ABB Ability™ zenon drivers, the OCPP driver does not establish an active connection. The OCPP driver waits and receives incoming connections from the charging point. In principle each incoming TCP connection is accepted by the driver. Only in the next step, if the communication partner sends an update message, is the query checked to see whether this message comes from a configured charging point.

OVERVIEW

- The driver accepts incoming TCP connections of pre-configured charging points and, as an option, can also support secure communication in accordance with OCPP 1.6 Security Whitepaper Edition 2.
- The driver represents incoming messages from the charging point as a JSON message on string variables and sends an automatic response.
- For Authorize.req, StartTransaction.req and DataTransfer.req, an appropriate password must be sent by the application in that a corresponding suitable JSON message is written to the corresponding string variable.
- The driver supports the sending of queries from the central management system to the charging point as JSON messages, by writing string variables.
- Individual content from StatusNotification.req messages and MeterValues.req messages can be reproduced to variables with a corresponding driver object type.
- MeterValues can also be included in the StopTransaction.req message and mapped to ABB Ability™ zenon variables

2.10.4.2. .NET Driver API - Generic .NET Driver (F 197149)

The driver is a host for assemblies that you program yourself. The .NET API of the driver makes it possible to connect Service Engine via self-programmed .NET assemblies to any applications you want. They are called DriverExtension.

Among other things, this enables access to third-party software that provides IoT protocols/interfaces, such as REST WebServices or MQTT/AMQP interfaces.

2.10.4.3. VASS driver (F 69994)

The new VASS driver communicates with controllers with implemented Volkswagen VASS 5 (Step-7) and VASS 6 (TIA) modules. The driver is used for applications for Zentralen Anlagen Überwachung (ZAÜ).

The development is based on the Schnittstellenbeschreibung Zentrale Anlagenüberwachung-SPS in the version dated 07/22/2015.

2.10.5. Additions to existing drivers

The functionality of ABB Ability™ zenon 11 drivers has been enhanced with the following functionalities for version 11:

2.10.5.1. BACNETNG

2.10.5.1.1. Addition of online import via API (F 197154)

The API of the BACNETNG driver was upgraded to enable the online import of variables from a selected connection or a selected device. In addition, as a result of the import, variables that correspond to a programmed filter criterion can be created automatically in Engineering Studio.

This online import, including variable creation, can be carried out in the background without a dialog through the execution by means of API

2.10.5.1.2. Support for LifeSafetyOperation (F 187592)

The BACnetNG driver now supports the sending of LifeSafetyOperation commands

2.10.5.1.3. improved usability for device configuration (F 245945)

The BACnetNG parameter setting of Devices now allows sorting and filtering in configuration.

2.10.5.2. BiffiDCM - support for DCM2 format (F 206430)

The BiffiDCM driver has been upgraded to support the new DCM2 format.

2.10.5.3. BURPVI - configuration of a PVI station address (F 224720)

In a redundant ABB Ability™ zenon network, the driver can communicate on the Server 1 and Server 2 with a different PVI station address. In the configuration dialog for Ethernet connections, the new Source address (Server 2) option was added for the second server.

The workaround solution used up to version 11 is no longer necessary.

2.10.5.4. EUROMAP63 - DOS compatibility (F 217411)

The EUROMAP63 driver now also communicates with older systems that only support directory names and file names in accordance with DOS 8.3 format. The Use DOS compatible file/directory format option was implemented for this. If this option is activated for a connection configuration, file and folder names are amended to the limitations accordingly.

Note: The EUROMAP63 standard does not restrict file and directory naming and also contains examples with file names that are longer than 8 characters.

2.10.5.5. DNP3_TG

The following enhancements have been implemented for the DNP3_TG driver:

2.10.5.5.1. Additional option for double point mapping (F 241754)

The Double Point Mapping of the DNP3_TG driver was enhanced with an additional - not standards-compliant - mapping option. To do this, in the driver configuration dialog, in the Options tab, the drop-down list for the existing Double Point Mapping option was supplemented with the Custom legacy mapping 2 entry.

2.10.5.5.2. TLS communication (F 246808)

The TCP/IP communication of the DNP3_TG driver can be secured by TLS. The new IEC 62351-3/TLS button in the TCP/UDP Link configuration dialog was implemented for this.

It opens the new TLS Settings configuration dialog for setting parameters of secure communication:

- TLS communication is configured per connection.
- Password support when using the PKCS#12 file format.

Implementation was carried out in accordance with the IEC TS 62351 standard.

2.10.5.6. GenericNet - update to .NET 6 LTS (F 24375)

Because support for .NET core 3.1 will end, the driver has been updated to the current version .NET 6 LTS.

2.10.5.7. IEC850

The following enhancements have been implemented for the IEC860 driver:

2.10.5.7.1. Enhanced functionality for file transfer from 850 server (F 213753)

The functionality of an IED (850 server) to the IEC850 driver has been enhanced:

- Use of a time stamp for transferred files. - New Add file timestamp as prefix option in the Basic settings tab of the driver configuration dialog.
- Subfolder for transferred files can be configured for each connection New Subfolder option in the configuration dialog of a connection.
- Additions to the file transfer commands:
- New file transfer commands GETALL, GETNEW, GETDIFF
- Filter for all file transfer commands
- Configuration of monitoring variables

To monitor status, progress and the result of the data transfer for the commands GET, GETALL, GETDIFF, GETNEW, corresponding response variables can be configured. To do this, the UINT data type was added to the existing File Transfer data object type.

2.10.5.7.2. Connection to IPv6 (F 201447)

The IEC 61850 driver now also supports IPv6 communication.

2.10.5.7.3. Always write selected RCB attributes (F 242322)

In the driver configuration in the Server dialog, the new Always write RCB attributes option has been implemented. If this option is activated, the RCB attributes TrgOps, OptFlds, IntgPd and BufTm are always written, regardless of whether the current value of this attribute is already present or not.

For the individual configuration of RCBs, this option is also available in the Statically assigned RCB dialog.

2.10.5.7.4. TLS and MMS parameters can be set via dialog (F 246808)

The TCP/IP communication of the IEC850 driver can be secured by TLS. The new IEC 62351-3/TLS button in the Server configuration dialog was implemented for this.

It opens the new TLS Settings configuration dialog for setting parameters of secure communication:

- TLS communication is configured per connection.
- Password support when using the PKCS#12 file format.

In addition, the parameter setting for authentication has been enhanced. With the new Authentication button, the new MMS authentication settings configuration dialog is opened. This dialog replaces and enhances the options Use Authentication and the [input field for Authentication String] from prior versions.

2.10.5.8. IEC870_10332

2.10.5.8.1. SUPPORT FOR PRIVATE ASDU TYPE 205 (F 239043)

The IEC870_10332 driver now supports the private ASDU type 205 for SIEMENS SIPROTEC 7SJ62 .

2.10.5.8.2. CONFIGURABLE DOUBLE POINT MAPPING (F 241077)

The IEC870_10332 Treiber offers a configuration option for whether a mapping is to be applied to Double Point Values/Double Point Commands. The parameters of this option can be set for each connection.

To do this, the new deactivate DPI/DCO mapping option has been added in the driver configuration dialog in the Connections tab.

2.10.5.9. IEC870

2.10.5.9.1. Map IEC quality descriptor "not topical" (status bit NT_870) and "overflow" (status bit OV_870) as INVALID to zenon variable (F 204652)

Two new options have been added to the driver configuration dialog in the Basic settings tab:

- Not topical as invalid
- Overflow as invalid

If the option is activated, the status bit 18 (INVALID;invalid) is also set for the zenon variable. As a result, the variable is marked accordingly when displayed in Service Engine if the Display status of variable element property has been activated in the project configuration.

2.10.5.9.2. Writing in reverse direction for ASDU types TI36 (M_ME_TF_1) or TI13 (M_ME_NC_1) (F 236998)

The IEC870 driver sends ASDU type TI36 in reverse direction in the event of a value change in Service Engine.

When writing a variable with the ASDU types TI36 (M_ME_TF_1) or TI13 (M_ME_NC_1), the following is applicable in Service Engine:

- The value is sent in reverse direction
- The value written in Service Engine is mirrored to the zenon variable with following parameters. Thereby COT 12 - ret [return information from the local command] (COT bits 2 and 3) is set. As a result, it is possible to detect whether the value in Service Engine has been written to or received from the device.

2.10.5.9.3. TLS communication (F 246808)

The TCP/IP communication of the IEC870 Treiber driver (60870-5-104) can be secured by TLS. The new IEC 62351-3/TLS button in the Device configuration dialog was implemented for this.

It opens the new TLS Settings configuration dialog for setting parameters of secure communication:

- TLS communication is configured per connection.
- Password support when using the PKCS#12 file format.

Implementation was carried out in accordance with the IEC TS 62351 standard.

2.10.5.10. IEC870_103 - new supported private ASDU types (F 205339)

The IEC870_103 driver now supports the following manufacturer-specific ASDU types:

- time-tagged message of switchgear positions - ASDU 33 (with zenon DPI mapping - derived from ASDU 1)
- statistical measurement values (primary values) - ASDU 36 (floating point value with timestamp and duration - derived from ASDU 4)
- measurement values type 3 (primary values) - ASDU 41 (floating point value without assignment - derived from ASDU 9)

2.10.5.11. INTEGRA - send local time to PLC cyclically (F 205811)

The INTEGRA driver automatically cyclically sends the time stamp of the local time of the executing computer to the PLC. The values are written to a datablock:

2.10.5.12. LOGIX_ODVA - support for additional data types (F 248654)

The LOGiX_ODVA driver now also supports the communication method by means of Symbolic Instance. To do this, the new communication method option has been implemented in the driver configuration dialog in the TCP Connections tab. In this option, it is possible to select between "symbolic segment" or "symbolic instance" for each connection. When using the Symbolic Instance methods, communication of simple variables is optimized, as a result of which higher performance can be achieved.

From version 11, for the SPSMERKER and SONDERMERKER driver object types, the ULINT data type is also supported.

- Enhancement of variable import for the creation of unsigned data types in zenon for unsigned LOGIX data types.
- Enhancement of communication with support for these unsigned data types in write and read direction.

Note: These changes require at least firmware version 32 on the PLC.

2.10.5.13. MBUS32 - TCP connection (F 243929)

The MBUS32 driver supports TCP connections to MBUS gateways. The new Connections tab was added in the configuration dialog of the driver.

Different connections can be configured in this tab. With TCP connections, the parameters for the target measuring units per connection are set.

2.10.5.14. OCCP - update to .NET 6 LTS (F 24375)

Because support for .NET core 3.1 will end, the driver has been updated to the current version .NET 6 LTS.

2.10.5.15. OmronEIP

2.10.5.15.1. NEW DATE_AND_TIME DATA TYPE (F 245533)

The OmronEIP driver now also supports the DATE_AND_TIME data type.

2.10.5.15.2. OPTIMIZED READING OF STRING VARIABLES (F 245533)

STRING variables are taken into account with optimized reading (Use Block access option activated in the Connections tab of the driver configuration dialog). In addition, a new LOG message has been implemented, which identifies queries that are too large (by exceeding the string length, for example).

2.10.5.16. OPCUA32

The following enhancements have been implemented for the OPCUA32 client driver for version 11:

2.10.5.16.1. Configurable communication parameters (F 249209)

The following communication parameters have been changed and/or can now be configured:

- Request Timeout:

The default value has been changed from 20 seconds to 30 seconds. The value can also be set higher or lower in the configuration. For communication with OPC UA servers that need a long time for a response, it can make sense to increase this timeout.

- Max. requested references per Node:

When reading the information models in communication, a BrowseRequest now uses a maximum number of 500 subnodes in the query. The number can be configured and can be further reduced for communication with OPC UA servers that need a lot of time for a response with many nodes.

- Session Timeout:

The session timeout is unchanged, but can now be set in the configuration.

2.10.5.16.2. OPCUA - definable queue size (F 235299)

The queue size that is queried by the driver for monitored items, can be configured per connection in the Advanced settings tab using the new Queuesize option.

2.10.5.16.3. Configurable start nodes for online import (F 241981)

The online import of variables has been optimized. Now one or several nodes of the OPC UA information model can now be configured for import, which are taken into account with the Read PLC variables in background command. These nodes can be configured in the Import - Driver - Connection selection dialog with the new Parameter input field.

As a result, online import for partial areas of very comprehensive OPC UA information models is possible.

2.10.5.16.4. Support for further data types for OPC UA data access (F 240675)

The OPCUA32 driver now supports the following data types from the OPC UA data access specification (part 8):

- LocalizedText
- Locale and Text are mapped to separate string variable.
- There must be a current value for a successful write process.
- ByteString
- The values are mapped to a string variable and coded in Base64.
- The byte string must be written in Base64-coded format.
- AnalogItemType
- With the support of EngineeringUnits, InstrumentRange and EURange for the display of areas and units in zenon screens.
- DiscreteItemType
- Truestate, FalseState, Enumstrings, EnumValues and ValueAsText are supported

2.10.5.16.5. Support for OPC UA alarms and conditions (F 217993)

The OPCUA32 driver now supports communication of event reports of an OPC UA server for alarms and conditions, for example. The call-up of OPC UA methods is now also supported, such as for the acknowledgment of OPC UA alarms, for example.

Two new driver object types were implemented for this.

- Event notifier driver object type

Variables of this type contain the content of the received events as a JSON string. The parameters for the fields that are taken into account for the subscription of the event notifier are set in the new Select clauses variable property.

- Method driver object type

Variables of this type can trigger a method call by writing a JSON string. The method that is called and the arguments of the method are encoded in the written string value.

After a successful subscription for an EventNotifier, the OPCUA32 driver automatically requests a ConditionRefresh2 method. The ConditionRefresh method is called if the OPC UA server does not support ConditionReferesh2.

In order for the new driver object types to be available in the driver, the driver configuration must be open and closed with OK.

2.10.5.17. S7TIA

he S7TIA driver (for S7-1200/1500) has been upgraded for TIA17. Both variable import and project optimizations are supported with the TIAtoAGL.exe tool.

2.10.5.17.1.OPTIONALLY OVERWRITE EXISTING VARIABLES DURING ONLINE IMPORT (F 214311)

When importing variables online, you can overwrite existing variables with the variables from the PLC during configuration inEngineering Studio.

In the output window for Engineering Studio the output messages are displayed, summarizing the online import.

In the variable selection dialog for import, the overwrite variables option can be activated. In doing so, the key is the variable name.

2.10.5.17.2. OPTIMIZED READING OF ARRAYS (F 214306)

The S7TIA driver now supports optimized reading of array variables. The driver reads in optimized mode by default if variables have been imported from the controller or from the TIA project. Optimized reading is not possible with the Symbols from precompiled file option.

2.10.5.17.3. SUPPORT FOR SOFTWARE UNITS (F 237601)

The S7TIA driver now also supports software units for communication and variable import.

2.10.5.17.4. SUPPORT FOR TIA17 (F 242299)

The S7TIA driver has been amended to the current TIA version 17. As a result, TIA17 projects and pre-compiled TIA17 files can be used with zenon and variables can be imported.

2.10.5.18. S7TCP32 - support for peripheral addressing (F 209206)

The S7TCP32 driver can alternatively use inputs and outputs directly by means of 'peripheral addressing'. As a result, more inputs and outputs than are available via the image (PII and PIQ) in OB1 can be used.

Two new driver object types were implemented for this:

- PQ area peripheral output
- PI area peripheral input

2.10.5.19. SIMOTION - enhanced variable import (F 215830)

The import dialog for the SIMOTION driver has been enhanced.

2.10.5.20. SNMPNG32

2.10.5.20.1. Support for GETBULK (F 200394)

The SNMPNG32 driver now also supports, as an option, GETBULK for the online import of variables in Engineering Studio as well as for Service Engine communication.

2.10.5.20.2. Support for SNMP INFORM messages (F 200389)

INFORM messages received by the zenSnmpTrapSrv service are forwarded to the applicable SNMPNG32 driver. The receipt of the INFORM message is

2.10.5.21. stratonNG driver (F 249062) STATUS BITS T_INVAL (49) AND T_UNSYNC (53)

When changing the value of a Logic Service variables the stratonNG driver also uses the status bits for the quality of the variable's timestamp: T_INVAL (49) and T_UNSYNC (53.

2.10.5.22. SYSDRV - driver for system variables

The following enhancements have been implemented for the system driver:

2.10.5.22.1. New system driver variables for alarms and events (F 228824)

The following new system driver variables have been implemented for the driver for system variables:

Alarms:

- [Alarms] Data Storage: Storage status
- [Alarms] Data Storage: Time of last successful storage
- [Alarms] Continuous Data Storage export: Storage status
- [Alarms] Continuous Data Storage export: Time of last successful storage
- [Alarms] Continuous SQL export: Storage status
- [Alarms] Continuous SQL export: Time of last successful storage
- [Alarms] SQL: Storage status
- [Alarms] SQL: Time of last successful storage

Events:

- [Events] Data Storage: Storage status
- [Events] Data Storage: Time of last successful storage
- [Events] Continuous Data Storage export: Storage status
- [Events] Continuous Data Storage export: Time of last successful storage
- [Events] Continuous SQL export: Storage status
- [Events] Continuous SQL export: Time of last successful storage
- [Events] SQL: Storage status
- [Events] SQL: Time of last successful storage

2.10.5.22.2. [Alarms] Number of shelved alarms (S 244264)

This system driver variable shows the number of currently shelved alarms.

2.10.5.22.3. [HW resources] available for server (F 236459)

The system driver variables for the display of the hardware resources have been enhanced. They now also output the corresponding values for the server.

2.10.5.22.4. Last completed recipe

There are new system driver variables available, which give the last completed recipe:

- [Batch Control] Last finished control recipe: Batch identifier from IDs
- [Batch Control] Last finished control recipe: Batch identifier from name
- [Batch Control] Last finished Master recipe: Batch identifier from IDs
- [Batch Control] Last finished Master recipe: Batch identifier from name

- [Batch Control] Last finished Master recipe: ID

2.10.6. System driver variables for Service Engine and Service Engine files (F 209019)

For Service Engine and Service Engine, files, the following can now be displayed in Service Engine with system driver variables:

- Main version
- Minor version
- Build number

It is thus possible to check whether the version of the driver data and the Service Engine version correspond.

The build number is also checked during transfer with Remote Transport. If the version of the target version does not correspond to the source version, a warning is given.

2.11. Tools

2.11.1. 3D integration available in the Smart Client (F227847)

3D integration is now available in the Smart Client.

2.11.2. Comparison Tool integrated into Startup Tool (F 236812)

The Comparison Tool can be used to compare two different versions of a file to one another.

To do this, the *.XML files are accessed from the content of the respective *.ZIP file of a zenon project backup.

The *.XML files of both data versions are then compared to one another on a text basis.

The Comparison Tool can be started via the Startup Tool.

2.11.3. DATA PRP supports gigabit (F 245943)

The PRP configuration and diagnose tool now also supports 1-gigabit Ethernet connections.

In addition, the new Entry forget time option was added in the configuration dialog. This option can be used to amend the monitoring of the speed of the respective computer network connections.

2.11.4. Diagnosis Viewer - filtering for Process Gateway configurations in Engineering Studio (F 210697 & F 218858)

In the Diagnosis Viewer, the zenProcGatewayDLL module entry is available for the filtering of the new functionality. It can be selected in the Diagnosis Viewer in the Modules tab for the filtering of the LOG entries and represents project configuration in Engineering Studio.

2.11.5. File Inspector (F 247533)

The new File Inspector tool is used for system diagnosis and troubleshooting. To this end, the tool uses LOG files created by components of the zenon Software Platform and binary data created by Service Engine during operation.

2.11.6. GIS integration (E 67388)

2.11.6.1. Display of element names as a tooltip (F 233373)

The name of a GIS element can be visualized in Service Engine. To do this, a GIS line element or GIS area element for display has been added to the Description property. The configuration is visible as a tooltip in Service Engine if the mouse pointer is moved over the element.

2.11.6.2. Configuration of local map cache (F 236521)

The configuration of the map cache has been changed. From version 11, the parameters for the project folder for GIS integration in the project.ini file are configured in the new GIS section with the MapCachePath entry. It can be configured as an absolute path or a relative path.

CHANGED SAVE LOCATION
Change of the save location and the parameter settings for buffered data in the cache:

- Up to and including version 8.20
- Save location: C:\ProgramData\GISControlMapCache
- Setting of parameters: In the GIS editor Version 11 and higher:
- Save location: Project directory with INI entry MapCachePath in the GIS section. By default and if no INI entry has been set up: [standard project folder]\RT\FILE\zenon\custom\giscache
- Setting of parameters: Display only in the GIS editor. Setting of parameters in the project.ini file.

2.11.6.3. Additions for marker

SHOW MARKER-NAME IN SERVICE ENGINE (F 217854)
The name of a marker can be visualized in Service Engine. To do this, the new Display name property was added in the GIS editor in the properties for a marker in the Settings group. The visibility in Service Engine is configured with this property.

USER-DEFINED MARKER GRAPHICS WITH LIMIT COLOR FRAME (F 221257)
User-defined markers can visualize configured limit value colors (of data type, variable or reaction matrix) for display in Service Engine. This can be either in the form of background coloring or as a frame. The width of the frame can be set with the new Marker border width property in the marker configuration.

TOOL TIP FOR FAULT MARKER (F 223063)
In Service Engine, additional information for the display of fault locating detail can be visualized. To do this, the Fault marker tooltip text property has been added for configuration in the GIS editor in the main node (CD_GIS).

In Service Engine, the following information can thus be displayed for the fault marker:

- Name of the station

- Distance to the fault location in kilometers
- If configured, CEL message as well as attendant timestamp are displayed.

2.11.6.4. Import GIS configuration from XML file (F 219901)

GIS editor configurations can be imported from an XML file. To do this, the Import XML menu entry has been implemented in the menu bar of the GIS editor in the File menu.

As a result, GIS configurations can be replaced with one another or taken from third-party applications for ABB Ability™ zenon GIS integration.

2.11.6.5. New map providers (F 208929)

There are two new map providers available for visualization in Service Engine. The drop-down list of the Map provider property in the GIS editor was upgraded for this:

- Baidu Map
- BaiduSatelit Map

2.11.7. SIC tool enhanced (F 214285)

The System Information Collector has been revised and enhanced. Data for Report Engine is now collected. Operation has been simplified.

2.11.8. Startup Tool enhanced (F 199133, 208513)

The Startup Tool has been enhanced and modernized.

New features:

- Pre-selection of the version. Only the applications appropriate for the version are offered.
- Start of Report Engine applications:
- Reporting Studio
- Manual Data Editor
- Metadata Editor
- Migration Tool
- Prediction Model Manager
- Tools are offered in a separate tab.
- Start of applications and tools by means of a double-click.
- The Update Help tool for starting the download of documentation is now in the Tools tab.

2.11.8.1. Start components via the command-line interface (F 236660)

Components of the ABB Ability™ zenon Software Platform can now be started using command-line parameters of the Startup Tool. The new parameters -start and -force32 were added for this. The version is registered automatically if necessary.

2.11.8.2. Set parameters for encrypted communication for the zenon network (F 244244)

Communication in a (redundant) zenon network between Server(s) and Client(s) as well as communication between Smart Server and Smart Clients(s) can now also optionally be protected with TLS.

The parameters of the certificates are set in the Startup Tool. The Encrypt network communication option group in the Application settings dialog of the Network configuration tab has been revised for this.

2.11.8.3. New tab for Web Visualization Service in the Startup Tool (F 191662)

For the Web Visualization Service, the settings for the connection in the network can now be configured in the Startup Tool. The new Web Visualization Service tab was implemented for this.

2.11.9. System Information Collector - SIC

COMMAND LINE CALL OF SELECTED FUNCTIONS (F 246805, S 246894)
Selected functions of the System Information Collector are available as a command-line call from version 11.

As a result, information from the SIC can be collected automatically, with a simple .BAT file for example.

INFORMATION ABOUT ACTIVE CONNECTIONS CONTAINS PID (F 246805, S 246882)
The information gathered by the SIC about the active connections now also contains the process ID. The call used in previous versions for analysis netstat -a -b -n has been replaced with the call netstat -a -b -n -o for this in version 11.

2.12. Wizards

2.12.1. Everywhere Essentials QR code generator no longer available (F 232304)

With version 11, all mobile applications have been removed from the ABB Ability™ zenon Software Platform. As a result, the mobile application Everywhere Essentials QR Data App has been removed from the supplied package. The Engineering Studio wizard used for configuration is also no longer included in the supplied package.

2.12.2. Metadata Synchronizer enhanced with dynamic limit value texts (F 248466)

The Metadata Synchronizer now also takes dynamic limit value texts into account.

2.12.3. Waterfall chart improved (F 244897)

Display and configuration of the waterfall diagram have been improved in the wizard and WPF element.

WIZARD
In the Meaning and Waterfall Chart Wizard, the configuration of the Chart for Machine has been revised:

- The bars can now be rearranged by dragging & dropping in the Chart.

- The complete variable names are displayed for each bar with a mouse-over.
- There is a context menu available for the deletion and recoloring of bars.

WPF ELEMENT
In the WPF, it is now possible to configure whether the WPF calculates the value for the last bar or uses the value of the linked variable.

The zenonCalculateLongBars Property has been introduced for this.

2.13. Logic

2.13.1. Release notes Logic 11

The following chapters contain information to the new features of Logic 11.

2.13.2. Fieldbus drivers

2.13.2.1. Driver configuration parameters available in English only (F 243115)

The configuration parameters are available in English language only now.

Some options, properties or buttons might be displayed in the language of the operating system.

2.13.2.2. CAN Bus

Please find all CAN Bus enhancements in the chapters below.

2.13.2.2.1. CAN Bus supports message forwarding (F 240193)

Incoming messages can be forwarded now to other ports via the new properties:

- All messages to port(s) / Port Level
- To port(s) / Message Level

Additionally it is possible to use the new property Substitution ID. This ID will be used instead of the message ID to forward the message.

2.13.2.2.2. CAN Bus supports CAN FD (F 241119)

The CAN Bus driver supports CAN FD (CAN Flexible Data Rate) now.

The length of message data has been increased to 64 bytes.

2.13.2.3. EtherNet IP scanner

Please find all EtherNet IP scanner enhancements in the chapters below.

2.13.2.3.1. Enhanced import of EDS-files (F 202082)

The EtherNet IP scanner supports the import of EDS-files with no defined assemblies from defined connection points.

The settings can be defined in the new Import from EDS dialog.

2.13.2.3.2. New property to declare IO assemblies (F 243253)

The new property Declare IO assemblies is available now in the Master/port configuration dialog.

Some devices with explicit messaging have no IO connection.

In this case ist is possible to declare a server in the configuration with no assembly via the new option.

2.13.2.4. OPCUA Server

2.13.2.4.1. Additonal status variables for information about connected Clients (F 221258)

The following status variables have been added:

- Nb. Use Sessions: displays the number of clients connected (sessions) to the server
- Nb. Used Subscriptions: displays number of subscriptions to the server
- Nb. Used MonitoredItems: displays number of monitored items to the server
- Nb. Used PublishRequest: displays the current managed requests in the server
- Nb. Used NotificationMsg: displays the current number of notification messages send by the server

2.13.2.4.2. TCP connections (F 225045)

The option Use certificate in the properties window for the OPC UA Server fieldbus driver is now activated by default.

For TCP connections the following enhancements have been implemented:

- a maximum of 100 TCP connections is accepted simultaneously
- established TCP connections are disconnected if no data is exchanged within 30 seconds.

2.13.2.4.3. "URI" and "Security Check" available for OPCUA Server (F 244840)

Two new options are available now:

- URI: Used for the certificate authentication. It must be the same as the one configured in the Subject Alternative Name of the server certificate.
- Security Check: Allows to define a level for the check of the certificate (0 - 3).

2.13.2.5. IEC 61850 Server + Goose

SUPPORT FOR SETTING GROUPS (F 21849)
The IEC 61850 Server now provides support Setting Group Management. Application code needs to be created in the program for proper setting group handling.

SECURE MMS AUTHENTICATION (S 205362)
The IEC 61850 Server + Goose supports secure MMS communication with MMS authentication, according to according to IEC TS 62351-4:2007 or "compatibility mode" in IEC 62351-4:2018.

NEW DRIVER-SPECIFIC FUNCTIONS (S 226257)
The IEC 61850 S Fieldbus driver supports two new functions:

- IEC61850S_READCONTROLBLOCK
- IEC61850S_WRITECONTROLBLOCK

These functions can be used to read or write an element of an IEC61850 Control Block.

SUPPORT FOR SIMULATION MODE (F 239149)
The IEC 61850 Server is enhanced with support for GOOSE simulation both as a IEC 61850 GOOSE publisher and a IEC 61850 GOOSE subscriber. This implementation is standard-conform to IEC 61850-7-1 ed2.0 - part 7.8.

- Support for Sim.stVal
- Setting of Simulation bit by GOOSE publisher

2.13.2.6. IEC 61850 client

2.13.2.6.1. IEC 61850 client allows configurable values for TimeQuality and TimeAccuracy via function block (F 202306)

The IEC 61850 client fieldbus driver was enhanced to allow setting user-defined values for TimeQuality and TimeAccuracy via the new IEC 61850 function block IEC61850_SETMQ. The settings are considered during control commands.

2.13.2.6.2. Connection via IPv6 (F 201447)

The IEC 61850 client fieldbus driver now also supports IPv6 communication.

2.13.2.7. TLS Security available for IEC 61850 driver protocols (F 201436)

TLS Security is provided now for the following driver protocols:

- IEC 61850 Server
- IEC 61850 Client

2.13.2.8. Parameter Our IP address available for several drivers (F 204194)

The new parameter Our IP address is available now for the following drivers:

- EtherNet IP point IO driver
- EtherNet IP scanner
- FlexIO/PointIO

If the parameter is not specified in any EIP configuration, the first adapter recognized by the system is used.

2.13.2.9. IEC 60870-5-101/104 Slave

The IEC 60870-5-101/104 Slave fieldbus driver was enhanced with the following improvements.

2.13.2.9.1. Secure Authentication (F 209947)

The IEC 60870-5-101/104 Slave fieldbus driver supports Secure Authentication according to IEC 60870-5-7 and IEC TS 62351-5.

This implementation includes:

- Configuration of Secure Authentication

The Secure authentication can be configured on a per sector-basis.

Notice: For the use of Secure Authentication, one dummy variable per sector must be created. Variables addressing and functions are are generally defined using profiles.

- Security statistics to the master (ASDU 41) - for association 0 - are sent as a response to a counter interrogation command.

All statistic values will be sent automatically to the master spontaneously, when the configured threshold for a specific statistic value is reached. It is not necessary to configure ASDU 41 profile variables.

- Local security statistics can be configured as variables with Type ID 41 in the profile. This configuration is valid for all masters.
- Use of Secure Authentication with a pre-shared Update Key.
- Support for Aggressive Mode messages (following IEC 62351-5 7.2.8.5):
- S_AR_NA_1 (ASDU 83) for critical functions when aggressive mode is enabled
- When aggressive mode is disabled, on receive of S_AR_NA_1 (ASDU 83) an error is returned - S_ER_NA_1 (ASDU 87) - error code 4.

Note: Remote Update of the Update Key is not supported.

2.13.2.9.2. Secure Authentication (F 209947)

The IEC60870-5-101/104 Slave fieldbus driver supports Secure Authentication, according to IEC 60870-5-7 and IEC TS 62351-5 standards with a pre-shared update key.

2.13.2.9.3. Configured masters - diagnostic information (F 234475)

Each master (TCP/IP as well as serial) allows retrieving T00 IOA ASDU values with diagnostic information.

The new driver-specific function IEC60870S_GetInternalStatusValue retrieve internal T00 status variables from different devices and sectors. This offers various information, e.g. connection state of the master, information on buffer overflow and more.

2.13.2.9.4. Communicate only on GI (F 207356)

The IEC60870-5-101/104 slave fieldbus driver supports a configuration that values are only communicated once during a general interrogation (GI).

This was realized with the new property Only at GI in the variable configuration in the IEC60870S2 profile.

If this property is selected, no more current data is communicated.

2.13.2.9.5. File transfer in control direction (F 218316)

The IEC60870-5-101/104 slave fieldbus driver supports file transfer in control direction.

The storage location on the RTU can be configured with the new option File transfer directory in control direction in the fieldbus driver Slave/Data block properties.

2.13.2.9.6. IEC60870-101 slave in Balanced Mode allows to deactivate the sending of FC2 frames (F 202307)

It is possible to deactivate the sending of <2> Test function for link (also called FC2 frames), if the Logic fieldbus driver acts as an IEC60870-101 slave in Balanced Mode.

Use the new parameter Test Frame timeout (ms) [101].

2.13.2.9.7. Support of COT 11 and 12 in IEC60870 slave (F 203024)

The usage of different COT allocations can be enabled via the new property Use specific COT in the Slave/Data Block configuration of the driver.

2.13.2.10. MODBUS

2.13.2.10.1.32 bit variables can be mapped on two consecutive words

For exchanging 32 bit variables (DINT, REAL...) you can select to map the variable on two consecutive words now.

- STRING variables are supported only if a "string" data format is specified.
- 64 bit variable (LINT and LREAL) cannot be extracted directly without lost of accuracy or data.

2.13.2.10.2. New possibility to open/close a MODBUS Master port dynamically (F 187646)

The dynamically opening or closing of a port can be defined now via a command variable. The behaviour can be defined in the new Option Enable connection in the property Operation.

2.13.2.11. Profinet IO controller (2021) implementation (F 242952)

A new Profinet controller driver with the following features has been implemented:

- enhanced slot configuration dialog design
- the MinDeviceInterval parameters from the GSDML file are considered in the "check procedure" of the compilation
- possibility to select another GSDML file, when a file has already been loaded
- new property Do not send SET IP request

2.13.2.12. Read only properties in fieldbus configuration are grayed out (F 212894)

To enhance the usability read only properties in the fieldbus configuration are grayed out now.

This includes texts and/or background colors.

2.13.2.13. IEC61850 MMS server contains vulnerability (BUG 182864, BUG 182865, BUG 182866)

Logic IEC61850 MMS server vulnerability has been fixed.

2.13.2.14. IEC60870-1-104 server contains vulnerability (BUG 182863)

IEC60870-5-104 server vulnerability has been fixed.

2.13.3. Logic Studio

2.13.3.1. New option in vertical fieldbus tool bar (F 160491)

Some entries of the context menues depend on the selected fieldbus configuration.

This specific commands are shown if you click on the Execute additional command option in the vertical fieldbus tool bar.

2.13.3.2. Download process can be aborted (F 160491)

In case of huge applications the download process can be aborted now via a click on the X button in the Load dialog.

2.13.3.3. New possibility to include all files when the source code is sent to the Logic Service (F 160491)

Via the new property Entire project directory it is possible to include all files, when the source code is sent to the Logic Service.

Activate the checkbox if all files should be sent.

2.13.3.4. New option to select the export format in Export Assistant dialog (F 206098)

Now you can choose the export format in the Export Assistant dialog:

- default: XML format 61131-3 specific
- PLCopen TC6: XML format according to PLCopen TC6 (IEC 61131-10)

2.13.3.5. Monitored projects are remembered for following online sessions (F 202225)

If more than one project is monitored at the same time and you go offline, the projects will be remembered to be monitored for the next online sessions too.

2.13.3.6. Removal of connected variables when function block is deleted (F 220451)

Via the new property Remove connected variables when removing function block it is possible to remove the variables connected with the deleted function block automatically. If a variable is used for another function block too, it will not be removed.

Please note, removed variables are not removed from the variable editor.

2.13.3.7. Loading of projects in projects list can be defined (F 219107)

The new property Do not load project when not used allows to define if projects will be loaded in the project file.

So only the Startup project and the used projects are loaded when the project list opens and the checkbox of the property is active.

The usage of the new property improves the performance in case of lots of projects, which should be loaded.

2.13.3.8. New multi-state bitmap in Graphic Library (F 221453)

The new multi-state bitmap TrafficLight_64_64 allows to associate several values to several bitmap paths.

The traffic light has 3 different bitmaps, one for each color.

In the edit mode or if the value is unknown the default bitmap is displayed, which is mandatory for this object.

The variable value can be INTEGER or STRING.

2.13.3.9. New graphic object "Lines" in library (F 221453)

The new graphic objects allows to draw:

- horizontal lines (top or bottom)
- vertical lines (left or right)
- oblique (down or up)

Hint: The new object allows also to draw full polygons or to draw lines in an single object.

2.13.3.10. Unhandled exception (BUG 178008)

Bug has been fixed. Changing the IP address of MMS of an SCL file is now possible.

2.13.4. Programming Environment

2.13.4.1. New system definition for the project name as a STRING (F 236815)

The new predefined string value __APPNAME__ represents the project name.

2.13.4.2. View of Selection dialog definable via property setting (F 239206)

In the editing programs context the view of the Selection dialog can be defined now via the new property Variable selection box: use list of suggestions.

The property setting can be changed at Tools, Options... and Editing.

Checkbox of the property is:

- active: The dialog does not show the tree view, but a list with the prefix entered in the textfield. If the dialog is opened in context with the ST language, the list also includes language keywords and system functions.
- inactive: The dialog shows the tree view, the Variables drop-down menu and the properties Local variables only and Hide FB instances.

2.13.4.3. ST Language accepts "/*" comments too (F 247032)

The ST Language supports comment texts beginning with "/*" and ending with "*/" too.

2.13.4.4. New option to enable or disable warnings one by one (F 244358)

Warnings can be enabled or disabled now one by one in the corresponding program code or in the Global or Local Defines via:

- #warning_on (identifier)
- #warning_off (identifier)

The identifier is the number of the LOG Message (see Output window).

2.13.4.5. New option to define different setting modes (F 243950)

The dialog allows to define and save different setting modes. The default settings can be copied and renamed to be used as base for further setting configurations.

The name of the active setting mode is displayed in the Project settings dialog above the Setting modes button.

2.13.4.6. Support of Bit Fields derived from 64bit integers (F 242000)

Bit Fields derived from 64bit integers are supported now too.

2.13.4.7. Ungroup all variables of a group with one command (F 236815)

Grouped variables can be ungrouped now via the context menu entry Ungroup Variables, if the corresponding group is selected.

2.13.4.8. New option to define extra columns in the Variable Editor (F 245455)

Additional predefined columns can be modified as desired via the new Arrange columns dialog.

The dialog can be opened via a click on the filter symbol in the Variable Editor.

2.13.4.9. Array size has been expanded to 10000000 elements (F 245681)

The total number of items in an array (merging all dimensions) has been expanded to 10000000 elements. This amount cannot be exceeded. The possible range of Arrays reaches from ArrayName[0] until ArrayName[9999999].

2.13.4.10. Alias declared as global define can be used as variable name (F 242285)

An alias declared as global define can be used now as variable name in a fieldbus configuration.

It can replace a full variable name or an array element.

2.13.4.11. Soft oscilloscope displays variable status bits (F234878)

The soft oscilloscope is able to display the variable status bits now in an own dialog.

The View status bits dialog can be opened via a click on the symbol View status bits... in the vertical menu bar.

2.13.4.12. Content preview for graphical objects nodes (F 244265)

Via a click on the desired node the preview of the corresponding graphical objects is available at the bottom of the window.

The size ratio of the nodes tree view and the preview is saved and is available again the next time the preview is opened.

2.13.4.13. New graphical object Rotary Switch is available (F 244265)

This object combines a rotary button and multi bitmap object. It allows user to create several values with an angle for each of them and a bitmap.

The view can be defined via the property Aspect:

- SCALES_ONLY

- BITMAPS_ONLY
- BOTH_SCALES_BITMAPS

The Graduations dialog allows to define possible values (i.e. 0 to 3), an angle for each of them (i.e. steps of 90°) and one bitmap for each value.

2.13.4.14. New options to align graphics vertical and horizontal (F 244265)

Two new options have been added in the toolbar of the watch window for graphic monitoring:

- Center vertical: Aligns the selected items vertical.
- Center horizontal: Aligns the selected items horizontal.

2.13.4.15. New Graphic object property for continuous value sending (F 244231)

The property Writing delay [ms] allows to define a time span in milliseconds for the sending of the variable value while draging the slider position with a click on the mouse.

Hint: The property is available for Sliders and Rotating buttons.

2.13.4.16. New possibilities for Private tag handling in SCL Editor (F 201418)

Private tags can be edited, added and removed now in an own dialog for the following items:

- Logical Devices
- Logical Nodes
- Data Sets
- Report Control Blocks
- GOOSE Control Blocks

2.13.4.17. New option to mark occurrences in ST programs (F 201569)

Via the new option Display all occurrences of the searched string in the menu bar entry Tools, Options and Editing occurrences can be marked.

Activate the property and double-click on the corresponding word in the ST program to use this option.

2.13.4.18. Show variable values in binary format (F 201966)

The visualisation of one online value can be set to binary format via the new property Binary Diplay (This Symbol Only).

2.13.4.19. Autocompletion functionality in ST and IL language menu bar (F 220451)

In ST and IL language you can use now the autocompletion functionality to replace the entered prefix with the whole variable name.

If more than one variable with the used prefix exists, a proposal variable list is shown.

Open the dialog via a click on the Autocompletion symbol of the vertical menu bar or via pressing Ctrl + Space.

2.13.4.20. Cross navigation for integrated solution variables available (F 227670)

The new context menu entry Jump to Variable in Engineering... allows to jump to the variable usage in the corresponding engineering environment, if the variable ist part of the integrated solution.

2.13.5. Tools

2.13.5.1. Graphic export via HTML based Monitoring tool (F 226259, F 236815)

The export of graphics as HTML5 file can be done now via a Wizard.

Select the property Export graphic as HTML5 file in the Select Export Type dialog and define the desired settings in the following dialogs.

2.13.5.2. HTML5 Monitoring Application available (F 226259, F 201873)

A HTML5 Monitoring Application is available now via the menu bar entry Tools and Build Monitoring Application....

Select the property Generate HTML5 (requires JSON Data Server) in the Generate Monitoring Application dialog.

Define your desired settings in the following dialogs.

HTML MONITORING SUPPORTS FAST FILE TRANSPORT USING SFTP

SFTP is used now for a fast file transport in the HTML monitoring.

The tool checks automatically, if the files to be transferred already exist there.

A new popup dialog allows:

- to overwrite all the files on the Remote Server or to
- not overwrite the existing files on the Remote Server, but to upload the files that do not exist yet there or to
- stop the upload process

2.13.5.3. HTML5 Monitoring Application component selection (B 250418)

If the checkbox of a component folder is unchecked in the Export Project for WEB Monitoring dialog, all elements contained in it are also unchecked.

2.13.5.4. SCL editor supports adding, removing and copying of IEDs (F 230756)

Via new context menu entries it is possible to add, remove and copy IEDs in the SCL editor:

- Delete: removes the entire IED
- Duplicate IED: allows to duplicate the selected IED
- Add New IED: allows to add a new IED in the tree. The name is set by the program automatically.

Hint: This allows to create substation descriptions for test purposes.

2.13.5.5. Project comparison dialog provides detailed information about differences (F 160491)

The Project comparison dialog provides statistical information about project differences in %.

2.13.5.6. Enhancement of Import Assistant behavior (F 235404)

Two new properties for the XML import are available now:

- Re-create variables that cannot be changed: allows to delete and recreate a variable due to the import procedure, if active.
- Do not merge private members of UDFBs: prevents the merge of the private members of the UDFBs due to the import procedure, if active.

2.13.6. Function Blocks

2.13.6.1. New function block OSSHELL (F 236793)

Via the new function block it is possible to run a shell command line.

Hint: This function block may be not available on some platforms. Refer to your OEM for more details.

2.13.6.2. New function blocks ISINF(L) and ISNAN(L) available (F 239592)

The following function blocks are available now in the Maths folder:

- ISINF for REAL input values
- ISINFL for LREAL inputs values
- ISNAN for REAL inputs values
- ISNANL for LREAL inputs values

The function blocks ISINF and ISINFL are checking if the input value is infinite.

The function blocks ISNAN and ISNANL are checking if the input value is not a number.

2.13.6.3. MIN and MAX function blocks accept a non fixed number of Inputs (F 238380)

The MIN and the MAX function blocks are resizable in LD and FBD Language now.

The amount of Inputs can be entered in the Select dialog of the corresponding function block.

In the ST Language a variable number of arguments is supported too.

2.13.6.4. IEC 61850S - new driver-specific functions (S 226257)

The IEC 61850 S Fieldbus driver supports two new functions:

- IEC61850S_READCONTROLBLOCK
- IEC61850S_WRITECONTROLBLOCK

These functions can be used to read or write an element of an IEC61850 Control Block.

2.13.6.5. IEC61870 Slave - driver-specific function (F 234475)

The IEC 60870-5-101/104 Slave fieldbus driver get a new function: IEC60870S_GetInternalStatusValue.

By retrieving values from internal T00 status variables from different devices and sectors this function offers information about connection state of the master as well as information on buffer overflow and more.

2.13.6.6. Expansion of CIP range for EIP function blocks (F 204194)

The CIP instance number range has been expanded to 16 bits [1...65535] for the following function blocks:

- eipReadAttr
- eipWriteAttr

Hint: This enhancement is not supported for the EIPADAPTER function block.

2.13.6.7. Real Time Clock mangement function supports Milliseconds (F 231030)

The Real Time Clock function block DTFORMAT supports Milliseconds now.

2.14. Functionality no longer supported

2.14.1. Mobile applications (F 232304)

With version 11, all mobile applications have been removed from the ABB Ability™ zenon Software Platform.

The following modules and applications are no longer included in the supplied package:

- Everywhere Server
- alle Everywhere Apps
- Everywhere Essentials - Alarm Management
- Everywhere Essentials QR Data App including Everywhere Essentials QR Code Generator
- Everywhere App for MS Windows Phone
- Everywhere App for iPhone und iPad
- Everywhere App for Android
- Everywhere Desktop App

2.14.2. SharpDevelop no longer available (F 206816)

The SharpDevelop programming environment has been removed from the Engineering Studio. Microsoft Visual Studio continues to be supported.

2.14.3. Logic Service available on Linux

Logic Service is supported for Linux for different processor architectures like ARM, x86 and x64 now. Example: Logic Service on Ubuntu 20.04 (x64)

2.15. Important information

2.15.1. ActiveX Controls

If customer-specific ActiveX controls are developed, the following must be noted:

If the DISPATCH – which is sent in the „zenonInit" event of zenon – is saved in the ActiveX control, an „AddRef""must be carried out because this DISPATCH is only valid within the „zenonInit"" event. If the „AddRef"" is not called up, this leads to Service Engine crashing completely. A release must also be performed in the „zenonExit"" event.

2.15.2. Buttons and screen elements with screen-type specific functions

Buttons and elements with screen type-specific functions may only be used once on a screen. If there are identical elements on a screen, all duplicates are removed during compilation.

Example: If a button is copied and pasted in the same screen, the copy is removed during compilation.

Exception: Several containers can be created in a Faceplate screen.

2.15.3. Complex vector graphics

Please note when configuring process screens. When using many and/or complex vector graphics, loading screens in Service Engine can take longer.

2.15.4. Converting projects

Before you convert a project, please read back all Service Engine changeable files (User Administration, Standard Recipes, Recipe Group Manager, Scheduler/PFS) into Engineering Studio.

This ensures a complete file conversion. You thus ensure that no changes that have been made in Service Engine are lost. After conversion into the new version, create all Service Engine files, including Service Engine changeable files, as a one-off process.

Note: You can find important information for the conversion of certain versions in the ABB Ability™ zenon help in the Project conversion manual.

CONVERTING MULTI-USER PROJECTS
Multi-user projects can only be converted if no elements are checked out. This means that all people configuring projects have to accept their changes first.

If this is not possible for some reason, you have to create a project backup of the project on the project database server (central project database) and then immediately restore it. This resets all the Under construction information.

Attention: All changes in the local project versions are lost!

The conversion can only be done on the PC, on which the central project database resides. If there is no Engineering Studio installed on this computer (standalone database server – no longer supported), you must first install Engineering Studio on this computer. Only after that can the conversion be done on this PC.

CONVERSION OF PROJECTS FROM A VERSION PRIOR TO 5.50
If a project that has been created using a version prior to 5.50 is activated, the profiles in the schedule structure are converted. The profiles are no longer supported from version 5.50. For each profile, a structure schedule is created, containing the linked schedules. The linked schedules contain all the times which fall within the profile's activation/deactivation times.

The day information contained in the profile schedule is input into the calendar.

The configuration process can be viewed in the Engineering Studio output window.

CONVERSION OF PROJECTS FROM VERSION 6.01 AND 6.20
ABB Ability™ zenon projects from version 6.01 and 6.20 can no longer be directly read back in ABB Ability™ zenon 7.10 or higher.

Background: Versions that are based on MSDE (SQL Server 2000) are not compatible with SQL Server 2012, which is used in ABB Ability™ zenon 7.10.

Solution: First convert the project in ABB Ability™ zenon 7.0 and then in 7.10 or higher.

CONVERSION OF PROJECTS FOR 7.20
For compatibility with version 7.20, there is an additional possible selection - "Most recent version" - available for the Create Service Engine files for property. This can be selected by clicking the 7.20 SP0 + [recent build no.] entry in the drop-down list.

Selecting this option makes the Service Engine files available for the current build of version 7.20. As a result, functionality that has since been incorporated into version 7.20 after the official release of 7.20 is thus supported. This is applicable most of all for enhancements to drivers that are now supported with this option. Note that in order to use the most recent build, you must have ABB Ability™ zenon 7.20 installed on your computer.

Note: Selecting 7.20 SP0 compiles the Service Engine files - as before - to the default settings of 7.20 SP0.

2.15.5. Integration of VBA wizards and VSTA wizards

All VBA wizards are saved by Engineering Studio in the file called ZenWorkspace.vba. All VSTA wizards are saved in Workspace AddIn.

When performing a new installation, these files will only be copied to the configuration computer if they do not already exist in the installation folder. Existing VBA/VSTA files are not overwritten, because all your changes would be deleted in this case.

If the newly-supplied or modified ABB ZENON wizards continue to be used, they must be manually copied in Engineering Studio using the menu entries Extras and Update Engineering Studio VBA/VSTA wizards....

In doing so, it is possible to decide individually which wizards are overwritten.

2.15.6. MS-ActiveX element DBGrid32.ocx does not work

There are several problems known in relation to the use of Microsoft ActiveX element DBGrid32.ocx in Service Engine. You should therefore use other ActiveX elements such as MSDATGRD.ocx.

2.15.7. Reload of projects with Simulator driver variables

Simulator driver variables, not projected as HD variables, are reset to the value 0 with the function “Reload“. Only HD simulator driver variables keep their value after reloading.

2.15.8. Network access - Firewalls

Different components of ABB Ability™ zenon try to access the network and can cause an alarm by firewalls or personal firewalls. If you want to use the network or the zenon Remote Transport, you have to unlock the according TCP/IP ports.

The following ABB Ability™ zenon components result in network access:

- Administration service (zenAdminSrv.exe)
- Engineering Studio (zenone32.exe)
- Database server (zendbsrv.exe)
- Diagnosis Server (zenLogSrv.exe)
- OPC Server (zenOPCsrv.exe)
- Process Gateway (zenProcGateway.exe)
- Network server (zennetsrv.exe)
- Transport service (zensyssrv.exe)
- Drivers with TCP/IP connections
- Smart Server (zenWEBsrv.exe)
- Logic Studio
- Logic Service

2.15.9. Process Desk – killing tasks

The ABB Ability™ zenon Process Desk allows you to end frozen tasks.

Attention: Some drivers need a certain follow-up time, because they write a process image on closing. Premature closing can result in data loss! Use this option only in case of emergency, when you are really sure, that the task will not close on its own.

2.15.10. Saving Report Generator reports in Service Engine

Note that when saving reports in Service Engine, all functions are replaced by the current contents of the cells (numbers). The functions in these reports (.xrs files) are no longer available. These reports can also no longer be edited in Engineering Studio. Use the "Save as" MDI function so that the original reports from Engineering Studio are not overwritten. Moreover, we recommend to define the original reports as read-only.

2.15.11. Logic Intellisense is slow

With large programs, the Intellisense function of Logic Studio can cause the project to open very slowly. In this case you should deactivate the Intellisense function in the Logic Studio.

2.15.12. Overwriting Service Engine files

When creating Service Engine files in Engineering Studio it is possible that Service Engine-changeable files are overwritten. This occurs with the following modules:

- Recipegroup Manager
- Standard Recipes
- User administration
- Production & Facility Scheduler or Scheduler
- Process Gateways

In order to guarantee that data created in Service Engine (recipes, schedules, etc.) is not lost when creating Service Engine files, there is a new tab in the dialog for project configuration: Changeable files in Service Engine. For the modules mentioned above, it is possible to define here whether the corresponding files are to be overwritten when Service Engine files are created. If a checkbox is not activated, the data for the respective option is overwritten!

This behavior is also true for Remote Transport, if the Service Engine files are to be transferred to another computer. So these checkboxes also apply here. If you want to transport all files to the remote system, deactivate all checkboxes. Otherwise the corresponding data will not be transported.

When creating Service Engine, as well as when transferring remote Service Engine files, a message appears in the output window indicating that the corresponding files were not overwritten.

The standard setting is: Service Engine files are not overwritten!