SCADA System

SIMATIC
WinCC Open Architecture

siemens.com/wincc-open-architecture
SIMATIC WinCC Open Architecture forms part of the SIMATIC HMI range and is designed for use in applications requiring a high degree of client-specific adaptability, large and/or complex applications and projects that impose specific system requirements and functions. SIMATIC WinCC Open Architecture enables handling with bigger amounts of data with even smaller hardware solutions.

**Highlights SIMATIC WinCC Open Architecture:**
- Object orientation facilitates efficiency in engineering and flexible system expansions
- Up to 2,048 systems on distributed systems
- Scalable up to networked redundant high-end systems with more than 10 million tags
- Platform-independent and available for Windows, Linux, iOS and Android
- Hot Standby Redundancy and Disaster Recovery System guarantee highest reliability and availability
- SIL 3 certified according IEC 61508
- Platform for customized solutions
- Comprehensive range of drivers and connectivity: SIMATIC S7, S7-1200, S7-1500, XML, OPC, OPC UA, TCPI/IP, Modbus, IEC 60870-5-101/104, DNP3, IEC 61850, IEC 61400, Ethernet/IP, S-Bus ...

**Supported operating systems**
- Microsoft
  - Windows 10
  - Windows 8.1
  - Windows 7 SP1
  - Windows Server 2012 R2
  - Windows Server 2008 R2
- Linux
  - RedHat Enterprise Linux 7.1
  - OpenSUSE 13.2
  - CentOS 7.1
- VMware
  - ESXi 6
- Supported operating systems for mobile devices
  - iOS 8 or higher
  - Android KitKat 4.4 or higher

**New in SIMATIC WinCC Open Architecture V3.14**

**Mobile and flexible**
- The Ultralight Client UX (ULC UX) has been enhanced from the previous versions. The ULC UX is based on HTML5 technology and is used for desktop applications. No installation is required at the client and users only need to log in once (SSO).
- A fully functional client for iOS and Android devices is available as BETA version - which allows you direct access to your plant data no matter when, no matter where. It provides the same functionality as a FAT-client and also resolution-independent graphics for an optimal operation on mobile devices. The client for iOS and Android is available on iTunes App Store and Google Play Store. The official release for productive use is planned for Q1/2016.

**Native user interface for iOS and Android devices**
Modern and state-of-the-art
A couple of new features have been integrated into the graphics editor:
• New animation functions have been built in for example panel transitions like PowerPoint and new animations for objects as well as for more complex animation sequences.
• Own touch gestures can be taught for the realization of individual actions.
• For individual panel and window designs, switchable color schemes can be defined, for instance for day and night.
• Dedicated customer style sheets (CSS) can also be defined which enable the individual design of a complete WinCC OA project or a certain widget. This simplifies the process of customizing the look of the user interface and saves valuable engineering time.
• The trend module has been enhanced. Color and fill pattern for trend curves, pop-up windows and tooltip window were added. Additional attributes for trend areas allow a clearer view.

Efficiency
• To take some of the strain from the system during major historic data retrieval processes, the new version has been upgraded to include a message splitting feature. Message splitting breaks the data package down into smaller data requests. This enables a faster display of the requested data, initial response time is significantly shorter, and the operator is able to analyze the data more quickly.
• Under the Reporting option, description, alias and the data point element unit have been added in the relevant language. These can now also be displayed in the report. The prepared report templates are available in English and German.
• WinCC OA offers the possibility to create your own wizards. These can now be imported or exported to share them and make them available to other users or projects.
• Setup has been completely revised, making installation even simpler and faster, and allowing more convenient brand labeling of the setup for OEMs.

Independence
• In SIMATIC WinCC Open Architecture version 3.14, a number of drivers have been upgraded to enable additional key functions:
  – The OPC UA client now also supports access to historical data (OPC UA HA).
  – For a better overview of the browsed data you can create your own views with the plant model. The OPC UA client is multi-client capable.
  – Drivers IEC 61850 / 61400 support dynamic data sets and 64 bit data types.
• SIMATIC WinCC Open Architecture V3.14 runs with full server functions on the Nanobox IPC 227E / 277E. Dedicated license packages are available for the Nanobox PC. This is ideal for use as a data logger in combination with distributed systems.
• For reliable and trustworthy records in the pharmaceutical and food industry, the declaration of conformity for FDA was renewed for SIMATIC WinCC Open Architecture.
• Windows 10 is now also supported by SIMATIC WinCC Open Architecture version 3.14.
Special functions of SIMATIC WinCC Open Architecture

Object orientation
• Referencing of symbols and objects
• Inheritance of structured data point types
• Object hierarchy
• Direct mapping of data point types to objects
• Flexible plant model - different views on the data model realizable

Redundancy
• Hot Standby
• Disaster Recovery System (2x2 Redundancy)
The aim of this feature is to extend the WinCC OA redundancy concept through a second Hot Standby System. The operability of the system nevertheless remains maintained on another system even in the event of a complete failure on the first Hot Standby System. Thus, the data loss and the idle time are kept as low as possible.
• Automatic client switch over
• Automatic recovery
• Automatic process image and history synchronization
• Automatic synchronization of project data
• Redundant networks (LAN)
• Redundant peripheral component support (SIMATIC S7)
• Split mode operation for updates and testing

Parallel archiving
The parallel HDB and RDB archiving enables the storage of data into the local historical database and into the central Oracle database. Local systems do not need an Oracle server installation. This archiving method is compatible with the Disaster Recovery System, historical queries and archive compressions.

Security
• Blocking via IP-Blacklist
• System stability due to intrinsic safety
• Autonomic systems
• Communication (Standard: SSL encryption, Option: Secure)
• Encryption of panels, scripts and libraries

SSL encrypted communication
SSL encryption for communication of managers to each other and to all clients is used consistently. It is implemented by default in the system.

Safety
WinCC OA is SIL3 certified according to IEC 61508. TUEV SUED (Technical inspection agency, South Germany) approved that WinCC OA functions, development processes and supporting documents are conform to IEC standard. A guideline is provided, which describes basic and operational conditions within which WinCC OA can be used for safety critical projects as a process visualization and control system.
GIS Viewer
Full integration of standardized maps of cartographic information (GIS) with SCADA objects in WinCC OA.

Video
Offers the easy possibility to integrate IP-cams, IP-components which fulfill the ONVIF 2.0 standard and complete video management systems into WinCC OA. Due to the integration of SCADA and video management into one system, the interfaces can be reduced and the costs for training, maintenance and operation are also reduced to a minimum.

BACnet
BACnet provides an integrated BACnet conform online-/ offline-engineering solution and a specific object library.

Recipes
Recipe management for parameter sets and set point lists. Unlimited recipe types, unlimited recipe quantities, access control, creation of recipes from real-time process data. Easy-to-use user interface. Import / export of recipes as CSV.

Scheduler
Timer and event programs with simple graphic configuration. Cyclic and acyclic-periodic call-ups, individual events and time lists, special day rules (holidays). Arbitary actions: value changes, recipe starts, reminders, scripts

Reporting
• Web-based Reporting Interface (SOAP)
  – Eclipse BIRT
  – Crystal Reports
  – SIMATIC Information Server
  – Microsoft Excel
  – Several Reporting templates for ECLIPSE BIRT
• Online values, history
• Compressed data, SQL, alarms
• Diagnostics tools
• Audit trail

Trending
Trend widgets for integration into customized screens and a trend application (Var-Trend) as a ready-to-use trend application.

Supports:
• Online and historical values
• Value trend over time or value
• Time comparison trends
• Bar trends 2D and 3D
• Color and filling pattern for trend curves
• Display of invalid values, alarm range and/or value range
• Multiple or shared scales, ruler, automatic legend
• Time resolution in ms, switch during runtime between local and UTC-time
• Zoom / Unzoom of trend areas

Communication Center
Provides remote alarms and remote information. Alarm output to SMS and e-mail.

AMS (Advanced Maintenance Suite)
Advanced Maintenance Suite (AMS) is an easily configurable software tool for efficient planning, management, realization and control of reactive and preventive maintenance.
Product details

SIMATIC WinCC Open Architecture

Architecture
- Client-server-system
- Functional separation into several processes (managers)
- Load distribution on several computers
- Redundancy (Hot Standby)
- Disaster Recovery System
- Multi-server - distributed systems up to 2048 systems
- Heterogeneous operating systems and version distribution
- Multi-monitor operation
- Multi-login on one workstation
- Multi-user system
- Event orientated process
- Internal message compression
- Safety functions to increase reliability (overload detection and regulation, query restrictions)

Alarm system
- VDI 3699 / DIN 19235
- Freely definable alarm classes with 255 different priorities and definition of alarm colors (blinking)
- Standard, discrete and multiinstance alarms
- Up to 255 analog alarm ranges
- Summary alarms
- Automatic filtering of alarms (Handling of alarm floods)
- Panel hierarchy summary alarms
- Combined alarm- and event screen, alarm row with definable column set and colors and advanced sorting and filtering
- Storable configurations
- Direct access to the associated process window
- Comments and attended values on alarms
- Online change of alarm classes

Process interfaces / drivers
- Event driven or cyclic polling
- Several different drivers at the same time on one server
- Peripheral time stamps
- TCP/IP: SIMATIC S7, Modbus, Ethernet/IP, SNMP Manager & Agent, BACnet
- OPC UA: DA, AC (Client & Server), HA (Client)
- OPC: DA, AE, HDA (Client & Server)
- Tele control / RTU: SSI, IEC 60870-5-101, -104, DNP3, SINAUT, IEC 61850/61400
- Additional drivers on request or with a C++ API

Data model
- Object oriented data model with freely definable and easy configurable structure
- Many standard objects included
- Modeling of technological objects in any hierarchy
- User definable tree structure
- Several different properties definable on elements
- Type-in-type (referencing)
- Inheritance
- Groups
- Generate different views on the data model

Engineering environment
- Graphical editor
- Project hierarchy editor (Panel topology)
- Project editor
- Database editor
- Control programming editor, Script Wizard
- Mass data engineering and ASCII in / out manager
- Integration of external version management tools (CVS, SVN,...)
- Simple symbols, EWOs, style sheets, color schemes
- Framework for engineering & application user interfaces
Graphical user interface
- Drag & Drop
- Flexible window technique
- Platform neutral application
- Picture in picture
- Zooming / Panning
- Cluttering / Decluttering
- Root-, child- and embedded panel
- Multi-monitor operation
- Multi-selection
- True color / synchronous blinking
- Up to 8 picture layers
- Online tool tips (multi lingual)
- Configurable panel topology
- GUI navigation objects
- Online switchable multi language support
- UTF-8 for multi language support
- Supports the widely used graphical objects and widgets also with comprehensive animation capabilities
- Support of external widgets (e.g. ActiveX)
- Layout management “Responsive design”
- Multitouch support: zooming, panning, decluttering, safe two-hand operation and custom gestures
- Animations: panel transition, object animations, animation groups

User access
- Full user access security optional with integration into Windows Active Directory (Single Sign On)
- Various permission levels
- Command protocol (Audit trail)
- Conform to FDA 21 CFR Part 11

Internet/Intranet
- Webserver, web alarm screen, diagnostics and reporting
- Web client based on browser plug-in technology
- Ultralight client ULC UX (HTML5)
- Mobile App WinCC OA OPERATOR (iOS)
- Mobile client (iOS and Android)
- Supports main security functions (HTTPS, SSL, Kerberos encryption, etc.)

Archiving
Comprehensive archiving options
- Value archives as flat-file structure (HDB)
- ORACLE archiving
- Parallel archiving (Oracle, HDB)
- DB Logger (MSSQL, MySQL, ORACLE)
- Data compression
- Correction values
- Laboratory values
- Web-based reporting interface (SOAP)
- Reporting templates based on Eclipse BIRT

Object libraries
- WinCC OA standard object library
- SIMATIC S7 object libraries (Basic/Advanced)
- BACnet object library

Application programming / Scripting
- Interpreter with C-syntax (“Control” language) and multithreading support
- Libraries and DLL’s for customized extensions of the scripting language
- Debugger / diagnostics tools
- Supports a lot of external interfaces, like: database access, ADO, COM and XML, XML Parser, XML-RPC-Interface, UART- and TCP-access, WebSockets
- Complete access to attributes of graphical objects
- Know-how protection (Panels/scripts encryption)

UTF-8 for multi language support
All Unicode characters can be represented in four bytes.
Further information:

www.siemens.com/wincc-open-architecture

Find also additional brochures and technical descriptions about SIMATIC WinCC Open Architecture on our website.

Security information:

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