SIEMENS
Ingenuity for life

SCADA system

Modern archiving, enhanced Security

SIMATIC WinCC Open Architecture V3.17

siemens.com/wincc-open-architecture

Technical product description

SIMATIC WinCC Open Architecture V3.17

SIMATIC WinCC Open Architecture forms part of the SIMATIC product family and is designed for use in applications requiring a high degree of client-specific adaptability, large and/or complex applications and projects that require specific system functions. As a SIMATIC SCADA system it is well-prepared to connect to SIEMENS PLCs and to handle huge amounts of data even on smaller hardware solutions.

Highlights SIMATIC WinCC Open Architecture:

- Object orientation facilitates efficiency in engineering and flexible system expansions
- Possibility to create single server solutions
- Scales up to 2,048 servers within distributed systems
- Scalable up to networked redundant high-end systems with more than 10 million tags
- View and control all servers via a central control center
- Platform-independent and available for Windows, Linux, iOS and Android
- Hot Standby Redundancy and Disaster Recovery System guarantee highest reliability and availability even for geographically distributed systems
- Platform for customized solutions
- Comprehensive range of drivers and connectivity: SIMATIC S7, PROFISAFE/PROFINET, MQTT, OPC UA, XML, Modbus, IEC 60870-5-101/104, DNP3, IEC 61850, IEC 61400, Ethernet/IP, S-Bus, MindSphere Connector, ...

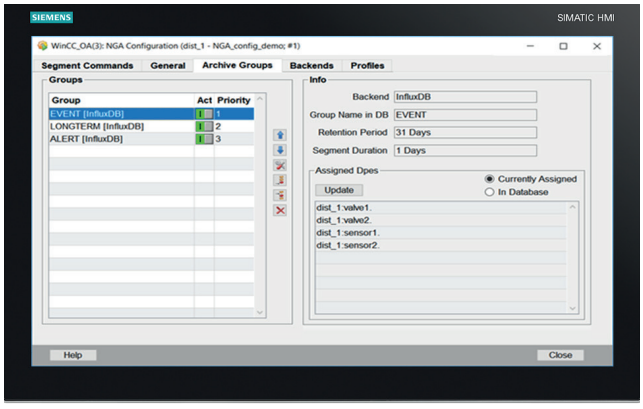
Supported operating systems

- Microsoft
  - Windows 10 (CB&LTSB)
  - Windows Server 2016
  - Windows Server 2019
- Linux
  - RedHat Enterprise Linux 8.x
  - CentOS 8.x
  - SUSE Linux Enterprise Server (SLES) 15
  - SIEMENS Industrial OS 2.0
- VMware
  - ESXi 6.5
- Supported operating systems for mobile devices
  - iOS 12.3 or higher
  - Android 6 or higher

New in SIMATIC WinCC Open Architecture V3.17

Next Generation Archiver

The NGA opens up a new way of archiving through support of InfluxDB, a database optimized for time-series data. It has a smaller footprint and better performance in both reading and writing compared to previous archiving technology. No separate Oracle license is necessary. The same data can be archived into a local as well as a centralized database. This gives a distinct advantage over the classic RDB by introducing a new level of flexibility. Compared to the RDB, the NGA consumes 87% less storage and allows archiving of events and alarms without RAIMA.



Next Generation Archiver

New license technology

WinCC OA V3.17 comes with completely new software licensing. With Wibu CodeMeter, customers can manage their licenses autonomously without requiring any interaction with the product vendor. It allows more flexibility in changing licensed software configurations.

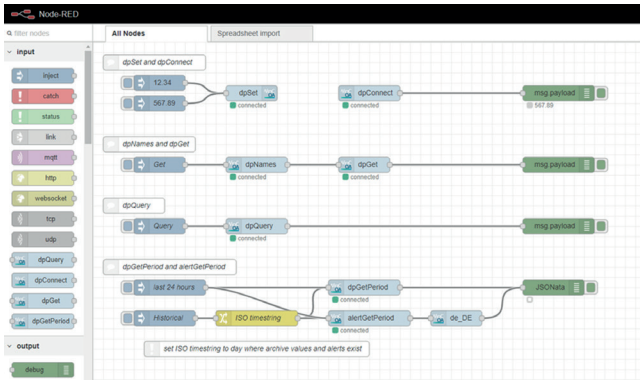
"CodeMeter WebDepot" is the web-based central license management for customers. There they can e.g. activate licenses for their target devices. It offers the ability to assign licenses either to a software container or a hardware dongle. Access is granted via a ticket the customer receives after purchasing the licenses.

Locally, a new integrated service (CodeMeter Control Center) provides the user with an overview of all licenses currently assigned to the device.

Modern archiving, enhanced security

Node-RED integration

Node-Red is a Node.js based workflow engine which lets the user create workflows in a visual editor. It provides many useful pre-programmed nodes, e.g. for data exchange. WinCC OA provides a Node-RED contribution including a unique function node package for data access and transfer. The graphical editor reduces engineering effort and lets you extend your SCADA application even without programming knowledge. Never seen before new possibilities, such as e.g. importing data from ERP systems or connecting WinCC OA to internet services like weather information can be easily implemented.



Node-Red Screenshot

QT Web Engine Support

The WinCC OA WebView EWO's underlying browser engine was switched from Qt WebKit to Qt WebEngine. This yields a performance and enhanced feature range comparable to Chrome 68.

ULC UX for mobile browser

Additional to the Mobile UI App, you can now use ULC UX on your mobile device without having to install anything. With new multitouch support, more efficient full screen mode and window handling, it is now better aligned with native UI functionality than before.

PDF View EWO

A new EWO allows displaying PDF files directly within WinCC OA, e.g. manuals and allows viewing additional information without leaving the WinCC OA context.

MindSphere Connector

MindSphere Connector is a north-bound interface for transferring data natively to the MindSphere cloud. A wizard helps you to easily onboard WinCC OA assets. You can freely select the data point elements you want to transfer and fully control the transmission process with a CTRL++ interface. The connector's compatibility with MindApps means you can use WinCC OA data with such applications as "Performance Insight". This efficient out-of-the-box solution for MindSphere connectivity enables hybrid solutions running on premise and in cloud operations.

Easy adaption of know-how protected projects after commissioning

Encrypted panels and CTRL scripts can be decrypted after commissioning, therefore enabling their changeability on customer side without losing know-how protection.

JavaScript WebView EWO for ULC UX

The enhanced WebView widget for JavaScript allows bidirectional data transfer between WinCC OA and custom JavaScript implementations. It greatly enhances WinCC OA User Interface abilities with a widespread range of existing libraries or customer-implemented JavaScript objects, which can be easily integrated – can also run locally on the client.

New drivers, enhancements and updates

- MQTT driver
- PROFINET/PROFISAFE driver
- OPC UA enhancements
- Modbus enhancements
- Stricter and more precise CTRL++ function implementation
- Secured online user switch
- QT version upgrade to V5.12

Technical product description

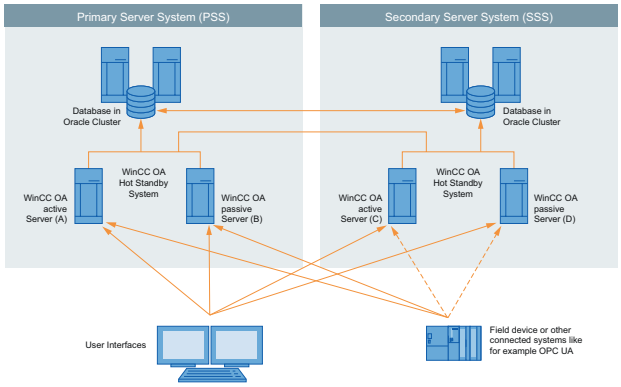
SIMATIC WinCC Open Architecture V3.17

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

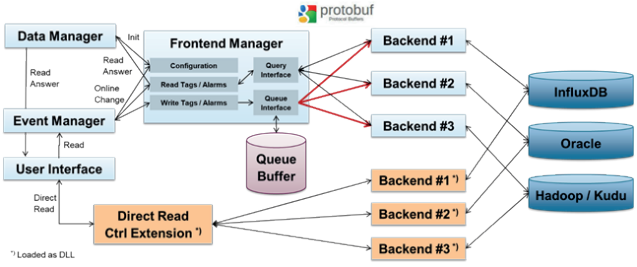
- Hot Standby
- Disaster Recovery System (2x2 Redundancy)
  The aim of this feature is to extend the WinCC OA redundancy concept through a second Hot Standby System. The operability of the system nevertheless remains maintained on another system even in the event of a complete failure on the first Hot 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



Disaster Recovery System

Parallel archiving

The parallel HDB and RDB archiving enables the storage of data into the local historical database and into the central Oracle database. The Next Generation Archiver can archive locally and centrally by itself. Both archiving methods are compatible with the Disaster Recovery System, historical queries and archive compressions.



Next Generation Archiver schematic

Security

- IEC 62443-4-2 certification started – stay tuned
- Blocking via IP-Blacklist
- System stability due to intrinsic safety
- Autonomic systems
- Communication (Standard: SSL encryption, Option: Secure)
- New standard project with highest security setting
- Encryption of panels, scripts and libraries

Maps Widget

Full integration of state-of-the-art cartographic information into WinCC OA, including OpenStreetMap. Possible integration of Web Map Service (WMS) and Google Maps (requires separate license from Google).

Special functions

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. The costs for training, maintenance and operation are also reduced to a minimum. To design a new video solution, you can use our basic package that already includes several useful features. Finalize the planning by simply adding the number of needed cameras to your project.
The video feature is available for Linux, as well as for mobile apps; required platforms are minimum iOS 12.3 or Android 6.*

Trending 2.0

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

IOT Suite

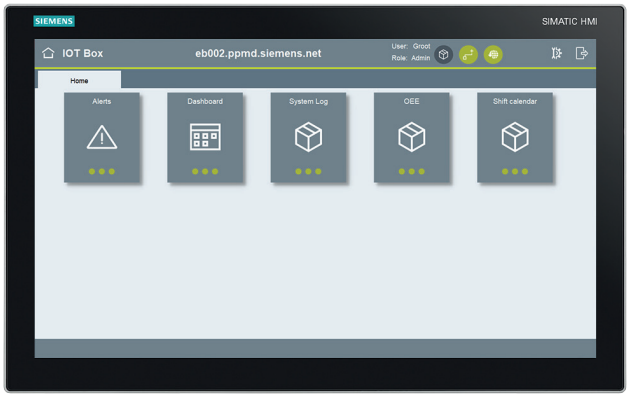
The SIMATIC WinCC Open Architecture IOT Suite is a brand-new Edge Computing System based on WinCC OA technology. Developed for brownfield applications, it provides the technology to retroactively digitalize existing plants with the aid of sensors and actuators. It combines reliable, industrial-grade hardware with proven software based on WinCC OA and intuitive apps for establishing connections, setting controllers, and displaying information.

The solution is scalable for simple as well as complex automation applications and takes less than an hour to commission.

Central distribution of software and updates works right out of the plant infrastructure, including fully automatic and time-controlled deployment.

IOT Suite Highlights include:

- Preprocessing data in real time
- Streamlining communication
- Receiving updates automatically through connection to central repository (IOT-OPA)
- Extensions can be created easily by SIMATIC WinCC OA Partners
- All required configurations can be implemented locally directly at the IOT-Box or remotely via WinCC OA Desktop UI or Web UI



IOT Box Software

Reporting

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

* Will be available later in a patch

Technical product description

SIMATIC WinCC Open Architecture V3.17

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 versions
- 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)
- VMware (+Cluster) support

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
- Split on warning areas and alarm areas
- Online change of alarm classes
- Showing Alarms in the trends

Process interfaces / drivers

- Event-driven or cyclic polling
- Several different drivers at the same time on one server
- Periphery time stamps
- TCP/IP: SIMATIC S7, SIMATIC S7 Plus, MQTT, PROFINET/ PROFISAFE, TLS Gateway, Modbus, Ethernet/IP, SNMP Manager & Agent, BACnet
- OPC UA: DA, AC, HA (Client & Server)
- OPC: DA, AE, HDA (Client & Server)
- Tele control / RTU: SSI, IEC 60870-5-101, -104, DNP3, SINAUT, IEC 61850/61400
- Over 25 drivers natively supported
- 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 Wizards
- Mass data engineering and ASCII in / out manager
- Integration of external version management tools (CVS, SVN, ...)
- Simple symbols, EWOs, style sheets, color schemes (incl. Day/Night-Switch)
- Framework for engineering & application user interfaces

Graphical user interface

- Drag & Drop
- JavaScript
- Platform neutral application
- Zooming / Panning
- Cluttering / Decluttering
- Root-, child- and embedded panel
- Multi-monitor operation
- True color / synchronous blinking
- Up to 8 picture layers
- Online tool tips (multilingual)
- Configurable panel topology
- GUI navigation objects
- Online switchable multi language support

Technical data

- Supports the widely used graphical objects and widgets also with comprehensive animation capabilities
- Support of external widgets
- Layout management "Responsive design"
- Multitouch support: zooming, panning, decluttering, safe two-hand operation and custom gestures
- Navigation through panel hierarchy
- 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)
- FDA 21 CFR Part 11 compliant
- Plugin mechanism for external authentication systems like LDAP
- IEC 62443-4-2 compliant

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

Time zone handling
WinCC OA uses UTC time zone and allows to spread distributed systems to different time zones.
For successful connection to the system the time has to be synchronized between the servers.

Archiving
Comprehensive archiving options
- Next Generation Archiver
- Value archives as flat-file structure (HDB)
- ORACLE archiving
- Parallel archiving (Oracle, HDB)
- Data compression
- Correction values
- Laboratory values
- Web-based reporting interface (SOAP)
- Reporting templates based on Eclipse BIRT and SIMATIC Information Server

Object libraries
- WinCC OA standard object library
- BACnet object library
- Library of Basic Processes
- Build up your own libraries and reuse them

Application programming / Scripting
- Interpreter with C-syntax ("Control" language) and multithreading support
- Object oriented aspects like classes
- Libraries and DLLs for customized extensions of the scripting language
- Debugger / diagnostic tools
- Supports a lot of external interfaces, such as: 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 (Panel- / script encryption)
- Additional Businesslogic via C++ or C# API
- TIA Importer supporting TIA projects in Versions V13 SP1, V14, V15

Internet/Intranet
- Desktop UI
- Mobile UI for iOS and Android
- Ultralight Client ULX UX (HTML5)
- mobile App WinCC OA Operator (iOS)
- Webserver, web alarm screen, diagnostics and reporting
- Supports main security functions (HTTPS, SSL, Kerberos encryption, etc.)

Certified standards
- IEC 61508 (SIL3)
- IEC 61850/61400 Client (KEMA/DNV GL)
- OPC UA
- PROFINET/PROFISAFE (Client)
- BACnet (B-OWS)

ETM professional control GmbH
A Siemens Company
Marktstrasse 3
7000 Eisenstadt
Austria
Phone: +43-2682-741-0
www.etm.at
info@etm.at

Subject to changes 12/19
Order No.: 6ZB5370-1EG02-0BA0-V4
Dispo 26100
BR 1219 0.5 EIS 8 En
Printed in Austria

Security information
Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit http://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under http://www.siemens.com/industrialsecurity.