



## OPC Unified Architecture – Advantages and possibilities of use for manufacturers and users of automation, IT or MES products

### OPC UA

→ OPC Unified Architecture is the new technology generation of the OPC Foundation for the secure, reliable and vendor-neutral transport of raw data and pre-processed information from the manufacturing level into the production planning or ERP system. With OPC UA, all desired information is available to every authorised application and every authorised person at any time and in any place. This function is independent of the manufacturer from which the applications originate, the programming language in which they were developed or the operating system

on which they are used. OPC UA supplements the existing OPC industry standard by important characteristics such as platform independence, scalability, high availability and Internet capability. OPC UA is no longer based on DCOM, but has been conceived on the basis of a service-oriented architecture (SOA). OPC UA can therefore be ported very easily. Today, OPC UA already forms the bridge between the Enterprise level down to embedded automation components – independent of Microsoft-, UNIX- or other operating systems. ■



### Standardised communication via Internet and via firewalls

→ OPC UA uses an optimized TCP-based UA binary protocol for data exchange; Web Services and HTTP are additionally supported. It is sufficient to open up just a single port in a firewall. Integrated security mechanisms ensure secure communication via the Internet.

### Open

- > 450 members
- Platform-neutral
- All areas of application
- All connections

### Productivity

- Industry standard
- Manufacturer-independent
- Interoperability
- Reliability

### Collaboration

- Device Integration
- IEC 61131-3 / PLCopen
- Analyzer Device Integration
- ISA-95, ISA-88
- MTConnect
- Smart Grid
- Field Device Integration
- EDDL and FDT

### ADDRESS:

OPC Foundation  
16101 N. 82nd Street  
Suite 3B  
Scottsdale, AZ 85260-1868  
USA

### CONTACT:

Phone: (1) 480 483-6644  
Fax: (1) 480 483-7202  
[office@opcfoundation.org](mailto:office@opcfoundation.org)

### INFORMATION:

[www.opcfoundation.org](http://www.opcfoundation.org)

## OPC Unified Architecture – Standardised communication

### PROTECTION AGAINST UNAUTHORISED DATA ACCESS

→ The OPC UA technology uses a mature security concept to ensure protection against unauthorised access or sabotage of process data and as well against errors due to careless operation. The OPC UA security concept is based on World Wide Web standards and encompasses options for user authentication, the signing of messages and the encryption of the transmitted user data.

### DATA SECURITY AND RELIABILITY

→ OPC UA defines a robust architecture with reliable communication mechanisms, configurable timeouts, automatic error detection and recovery mechanisms. The communication connections between OPC UA clients and servers can be monitored. OPC UA offers redundancy features that can be applied to server and client applications to prevent loss of data and to implement highly available systems. ■

### SECURITY

- X509 certificates
- OpenSSL encryption
- User / password
- Access rights for each attribute

## PLATFORM INDEPENDENCE AND SCALABILITY

→ Due to the use of service-oriented basic technologies, OPC UA is platform-independent and enables the implementation of completely new, cost-saving automation concepts. Embedded field devices, process control systems, programmable logic controllers, gateways or operator panels can contain lean OPC UA server implementations, which can be ported directly to operating systems such as Windows Embedded, Linux, VxWorks, QNX, RTOS or others. A separate Windows PC for the OPC server, which up to now has provided access to the data on devices

with non-Windows platforms, is no longer necessary. However, OPC UA components can also be used in IT systems, in ERP systems, in production planning and control software and in other eBusiness applications with Unix operating systems such as Microsoft Windows, Solaris, HP-UX, AIX and others. The functionality of OPC UA components is scalable: from a lean implementation in embedded devices up to the maximum configuration in company-wide data administration systems on mainframe computers. ■

### COOPERATION:

- PLCopen
- ISA
- MIMOSA
- FDT
- ECT

## Extended possibilities despite simplified interface – New OPC UA communication is fast, secure and flexible on all platforms

### SIMPLIFICATION BY UNIFICATION

→ OPC UA defines an integrated address space and an information model in which process data, alarms, historical data and program calls can be represented. The items of information are defined as typed objects, which can be placed in relationship to each other. Beyond that, OPC UA supports the use of complex data structures. This allows complex procedures and systems to be described completely with OPC UA.

With Classic OPC three different OPC servers – DA, AE and HDA – with different semantics are necessary in order, for example, to acquire the current value of a temperature sensor, a high temperature event and the historical average value of the temperature. This can be achieved very easily with OPC UA in just one component. Configuration and engineering times can thus be significantly reduced.

### STRONG PERFORMANCE

→ Through the development of its own, lean TCP-based UA binary protocol with efficient data coding, OPC UA offers very efficient data transfer for the fulfillment of the highest performance requirements.

### MORE APPLICATION OPTIONS

→ The versatile usability of the OPC UA technology enables the implementation of completely new vertical integration concepts. By cascading OPC UA components, information can be transferred securely and reliably from the shop floor to the production planning or ERP system. Embedded UA servers at the field device level, UA components at automation level and integrated UA Clients in ERP systems at Enterprise level can thereby be connected to one another. The respective UA components can be geographically distributed and easily separated from one another by firewalls.

OPC UA offers standardisation organisations the possibility to use UA services as a transport mechanism for their information models. Today, the OPC Foundation cooperates with different standardisation groups, such as PLCopen, ISA or ECT (EDDL Cooperation Team), on companion standards. ■

## OPC UA – Platform independence and scalability

### PROTECTION OF INVESTMENT

→ OPC UA will replace Classic OPC in the long term. In the mid term, however, DCOM-based OPC products and UA products can co-exist. The migration strategy of the OPC Foundation enables the combination of Classic OPC and OPC UA products. In this way the installed base of several thousand Classic

OPC products with millions of installations can be used from the beginning with the new OPC UA products. This gives the user advantages, because he can use any desired products from different manufacturers – Classic OPC and OPC UA. ■

### MORE INFORMATION

[www.opcfoundation.org](http://www.opcfoundation.org)