Six Steps to Success with OPC UA

An OPC Unified Architecture Quick Start Guide

www.opcfoundation.org/ua

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1 Executive Summary

1.1 Purpose of this document

This document is a starting point for people who wish to build OPC UA products quickly. The OPC Foundation has condensed the required information into a series of six distinct steps.

1.2 Audience for this document

This document contains technical information and is intended for design engineers, technology decision makers, system designers/architects and software developers. Detailed information describing OPC UA can be found on the OPC Foundation website at www.opcfoundation.org/ua.

This document is intended to be used by developers who plan to build OPC UA products using .NET. **The development of embedded OPC UA products is outside the scope of this document**.

1.3 OPC Foundation Membership

This document is primarily intended for members of the OPC Foundation. Many of the referenced documents herein require corporate membership. Information concerning membership is available at www.opcfoundation.org/howtojoin.

2 OPC Unified Architecture

2.1 What is OPC UA?

OPC Unified Architecture (OPC UA) enables secure interoperability for integration within industrial automation systems. It features platform independence and a powerful information model for data and information. OPC UA is backward compatible with all OPC Classic specifications and provides an extensible and scalable architecture which allows growth as new technologies emerge.

2.2 How to get started with OPC UA

This brochure outlines what the OPC Foundation believes are the six steps that will take you, the developer from concept to a fully-compliant OPC UA product. The six steps are:

Step 1 **Background Information**

Step 2 **Comprehension**

Step 3 **Create**

Step 4 **Test**

Step 5 **Certify**

Step 6 **List**

2.3 Step 1 – Background Information

The OPC Foundation provides a number of tutorials and whitepapers on its website that will help you gain a high level understanding of OPC UA. This information can be found at: www.opcfoundation.org/ua, www.opcfoundation.org/ua/webinars and www.opcfoundation.org/ua/whitepapers.

2.4 Step 2 – Comprehension

Having read through the background material, you may wish to gain a deeper understanding by reading the actual OPC UA specifications. The OPC Foundation recommends starting with the **OPC UA Specification Part 4 – Services** which provides an API reference for each of the 35 services that define OPC UA. **Remember:** You must be a member of the OPC Foundation to download this specification at www.opcfoundation.org/ua/part4.

2.5 Step 3 – Create

If you already have an existing OPC COM product (Classic) you have two options for creating an OPC UA product. You can use a wrapper for limited functionality or you can use our quick start to create a native implementation. One major benefit of the native methodology is full access to all the OPC UA functionality.

2.5.1 Wrap an Existing OPC Classic Product

The OPC Foundation wrapper enables an OPC Classic Server to share data with an OPC UA Client or an OPC Classic Client to consume data from an OPC UA Server without writing any lines of code.

- **Wrapper Tutorial** – this 30-minute video explains the concepts and demonstrates how to expose OPC Classic products (*Data Access, Historical Data Access and Alarms & Events*) to OPC UA products: www.opcfoundation.org/ua/wrappertutorial
- **Wrapper** – www.opcfoundation.org/ua/wrapper

2.5.2 New OPC UA Development

Developing a native OPC UA interface offers the best performance and scalability for new products.

- **Quick start source code** – using the below referenced .NET SDK we built a template that allows you to quickly and easily create a UA Server and/or UA Client product. It is located at www.opcfoundation.org/ua/quickstart.
- **OPC UA Software Development Kit (SDK)** – this is for those who wish to have complete control over their UA Server and UA Client development. You can download this at www.opcfoundation.org/ua/.net

2.6 Step 4 – Test

All OPC UA products must be tested for Compliance and reliability. The OPC Foundation provides the OPC UA Compliance Test Tool which can test a UA Server automatically and can also be used to perform supervised UA Client testing.

OPC UA products can be tested for interoperability with other Foundation member products at one of the OPC Foundation Interoperability Workshops which are held yearly in Europe, North America and Asia.

- **OPC UA Compliance Test Tool** – this tool is used for testing OPC UA Servers and UA Clients and is at www.opcfoundation.org/ua/ctt
- **Training Videos** –these videos demonstrate how to test an OPC UA Server and an OPC UA Client and they are at www.opcfoundation.org/ua/ctt
- **OPC UA Server and Client Test Applications** – these provide working UA Server and UA Client reference implementations that allow you to connect the two, start sharing data and learn how the different options/functions behave. You can find them at www.opcfoundation.org/ua/testapplications
- **Interoperability Workshops** – general Interoperability event information is located at www.opcfoundation.org/interop

2.7 Step 5 – Certify

To receive the OPC Foundation "Certified" logo, an OPC UA product must be tested in a Certification Test Lab sanctioned by the OPC Foundation. Lab Certification provides a supervised testing process to verify an OPC UA product (Server or Client) is compliant with the specifications and interoperable with other products. Detailed information about the Certification and Compliance Program is available at www.opcfoundation.org/compliance

2.8 Step 6 – List

After completing the previous five simple steps you are ready to release your OPC UA product(s). OPC Foundation members are encouraged to list their OPC UA products in the OPC Foundation Product Catalog. You can do that at www.opcfoundation.org/addproduct. All certified products will be listed on the web site at www.opcfoundation.org/certifiedproducts upon successful completion of lab testing.

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