

# Application Server 2017 Update 3

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## Course Description

The Application Server 2017 Update 3 course is a 4-day, instructor-led class designed to provide an overview of the features and functionality of Application Server. This course provides lectures and hands-on labs to supply and reinforce the knowledge necessary to use these features and functions for plant modeling.

The class demonstrates how to use Application Server technology to connect to field devices, process data, run scripts, handle alarms, and historize alarms and events. This course also provides a fundamental understanding of application maintenance, real-time alarm recording, and security settings, and describes how to set up redundancy for data acquisition.

## Objectives

Upon completion of this course, you will be able to:

- Create a new application
- Model the plant floor
- Employ rapid prototyping using a data simulator
- Acquire data from field devices
- Configure data communication redundancy
- Work with alarm and history configurations in an application
- Maintain application functionality using import and export
- Define the security model for the application
- Implement .NET Scripting to enhance application functionality
- Back up and restore an application

## Audience

Individuals who need to configure or modify Application Server applications

## Prerequisites

Knowledge of the following tools, features, and technologies is required:

- Industrial automation software concepts

# Course Outline

## Module 1 – Introduction

### Section 1 – Course Introduction

This section describes the course and its objectives, intended audience, prerequisites, and agenda.

### Section 2 – System Platform Overview

This section describes Wonderware System Platform, including its components, clients, and services. It also introduces ArcestrA technology.

### Section 3 – Application Server Overview

This section describes Application Server and its components and discusses what a Galaxy is and how to create one.

### Section 4 – The ArcestrA IDE

This section describes the ArcestrA IDE, including the layout, its key functions, toolboxes and how to create them, and the application views available.

### Section 5 – Automation Objects

This section describes automation objects, templates, and instances. It discusses the Object Editor, explains the different states of automation objects and operations when editing objects, and gives a brief explanation of Object Wizards.

### Section 6 – System Requirements and Licensing

This section describes the System Platform computer roles, the software and hardware requirements for Application Server, the ArcestrA Network Account, and how the product is secured and licensed.

## Module 2 – Application Planning

### Section 1 – Application Server Project Workflow

This section describes the suggested project workflow.

### Section 2 – Case Study

This section describes the simulated manufacturing environment to be used for the class and explains the naming conventions used in the simulated process.

## Module 3 – Application Infrastructure

### Section 1 – The Plant Model

This section describes the importance of the plant model and explains the usage of area objects and the Model view in the ArcestrA IDE.

### Section 2 – The Deployment Model

This section describes the Deployment view of the ArcestrA IDE, discusses the hosting relationship between objects, explains the usage of the \$WinPlatform and \$AppEngine objects, and describes the Deployment options.

### **Section 3 – The System Management Console**

This section describes the overall functionality of the System Management Console (SMC). It explains how to back up and restore using the Galaxy Database manager, and includes how to create a new Galaxy from a backup file. It discusses how to use the ArcestrA Logger and Log viewer, and explains how to use Platform Manager.

### **Section 4 – The Runtime Environment**

This section describes the runtime environment of the Galaxy, explains communication between automation objects' attribute references, and introduces the Object Viewer and Platform Manager tools.

### **Section 5 – Data Simulation**

This section describes the OI Simulation Server and explains the configuration of an \$OPCCClient to the OI.Sim.

## **Module 4 – Application Objects**

### **Section 1 – Introduction to Application Objects**

This section describes the application objects in the Galaxy and discusses the basic configuration of the \$UserDefined object.

### **Section 2 – Enhancing Objects with Attributes**

This section describes the attributes page and the features of an attribute. It also discusses the configuration options available for application objects, including automatic and manual I/O binding capabilities.

### **Section 3 – Change Control and Propagation**

This section describes attribute locking and unlocking. It also discusses how template changes can propagate to previously derived objects.

### **Section 4 – Containment**

This section describes containment with templates and application objects, and explains different modeling approaches. It also discusses the naming conventions of contained objects.

## **Module 5 – Device Integration**

### **Section 1 – Device Integration Servers**

This section describes available DI servers, discusses OI servers, and explains the configuration of an OI Server to a Controller.

### **Section 2 – Device Integration Objects**

This section describes DI objects, explains the configuration of a DI object to an OI Server, and discusses how to monitor the connectivity of a DI object in Object Viewer.

### **Section 3 – Connecting Application Objects to Field Data**

This section describes how to change the data source for objects using the autobind capabilities of application objects.

### **Section 4 – Device Integration Redundancy**

This section describes DI redundancy and explains how to configure a redundant DI object.

## **Module 6 – History**

### **Section 1 – Historizing Data for Application Server**

This section describes how Wonderware Historian historizes data. It explains how to configure engines and platforms for historization and describes how to configure objects to historize attributes. It also discusses how to retrieve historical data with InSight.

## **Module 7 – Alarms and Events**

### **Section 1 – Alarms and Events Overview**

This section describes alarms and events. It explains alarms and events reporting of objects through areas, the alarm options for attributes, and how to monitor alarm attributes and states with Object Viewer. It discusses the historization of alarms and events with Historian, as well as how to retrieve alarm history from SQL Server.

## **Module 8 – Object Management**

### **Section 1 – Object Export and Import**

This section describes how to export and import objects from and to a Galaxy. It also explains how to upgrade objects to new versions or revert to previous configurations.

### **Section 2 – Galaxy Dump and Galaxy Load**

This section describes how to use the Galaxy Dump and Galaxy Load features of the ArchedrA IDE. It explains how to use these features to modify and create instances of objects.

## **Module 9 – Security**

### **Section 1 – Security Overview**

This section describes how ArchedrA handles security. It discusses the security models available in the ArchedrA IDE and describes how to configure general security permissions and operational permissions.

### **Section 2 – Object Security**

This section describes the security classifications for object attributes and discusses the security audit trail.

## **Module 10 – Introduction to QuickScript.NET**

### **Section 1 – Introduction to Scripting**

This section describes the scripting environment and basic scripting syntax. It also discusses the execution types and triggers.

### **Section 2 – Variables and Control Statements**

This section describes the usage of variables and control statements in a script.

## **Module 11 – Galaxy Backup and Restore**

### **Section 1 – Galaxy Backup and Restore**

This section describes the SMC and explains how to back up and restore operations using the Galaxy Database manager. It includes a discussion on how to create a new Galaxy from a backup file and describes the ArcestrA Logger and Log viewer.