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## **2549-Advanced Distributed Application Development with Microsoft Visual Studio 2005**

Two days; Instructor-Led

### **Introduction**

This two-day instructor-led workshop provides students with the knowledge and skills to develop advanced distributed applications using Microsoft Visual Studio 2005. The workshop focuses on advanced features of Web Services Enhancements (WSE) 3.0 and message queuing.

### **Audience**

This workshop is intended for corporate or independent software vendor (ISV) application developers who have a desire to learn more about specific technology areas in Microsoft Windows application development.

#### **At Workshop Completion**

After completing this workshop, students will be able to:

- Implement WSE 3.0 security and policy
- Implement WSE 3.0 custom policy assertions
- Handle large data transfer by using WSE 3.0
- Implement WSE 3.0 SOAP messaging
- Implement SOAP headers and extensions
- Implement WSE 3.0 routing
- Optimize and protect Microsoft Message Queuing client and server applications

# Prerequisites

Before attending this workshop, students must:

- Must have attended or studied Workshop 2548A, Core Distributed Applications or possess equivalent knowledge and skills.
- Must be able to create Web services.
- Must be able to write applications that use Web services.
- Be able to send and receive messages by using Message Queuing

## Workshop Outline

### Unit 1: Implementing WSE 3.0 Security and Policy

This unit introduces Web Services Enhancements (WSE) 3.0. It explains the Web service WS-\* standards implemented by WSE and the WSE 3.0 architecture. The unit also shows how to protect Web services with WSE using policies, encryption, digital signing, and security credentials.

#### Lessons

- What is WSE 3.0 Security?
- Implementing WSE 3.0 Policies

### Lab 1: Implementing WSE 3.0 Security and Policy

- Exercise 1. Protecting a Web Service by Using X509 Certificates
- Exercise 2. Using a WSE 3.0 Policy from a Web Service Client
- Exercise 3. Protecting a Web Service by Using Username Tokens

After completing this unit, students will be able to:

- Protect a Web service by encrypting data with X509 certificates
- Apply a WSE 3.0 policy to a Web service
- Protect a Web service by using a Username token

### Unit 2: Implementing WSE 3.0 Custom Policy Assertions

This unit introduces the WSE 3.0 custom policy assertion mechanism. It shows the architecture of the custom policy assertions in WSE 3.0 and how to use custom policy assertions in a Web service.

#### Lesson

- What is a WSE 3.0 Custom Policy Assertion?

- Applying Custom Policy Assertions

#### **Lab 2: Implementing WSE 3.0 Custom Policy Assertions**

- Exercise 1. Configuring a Web Service to Use a WSE 3.0 Custom Policy Assertion
- Exercise 2. Configuring a Client Application to Use a WSE 3.0 Custom Policy Assertion
- Exercise 3. Examining the WSE 3.0 Custom Policy Assertion

After completing this unit, students will be able to:

- Configure a Web Service to use a WSE 3.0 custom policy assertion
- Configure a client application to use a WSE 3.0 custom policy assertion
- Verify the operation of a WSE 3.0 custom policy assertion

#### **Unit 3: Handling Large Data Transfer by Using WSE 3.0**

This unit describes how to send and receive large files by using WSE 3.0. It discusses the Message Transmission Optimization Mechanism (MTOM) protocol, how to send and receive files, and how to handle bulky data in binary format in SOAP messages.

##### **Lesson**

- What is the Message Transmission Optimization Mechanism (MTOM)?
- How to Use MTOM with WSE 3.0

#### **Lab 3: Handling Large Data Transfers with WSE 3.0**

- Exercise 1. Handling Large Data Transfer with WSE 3.0

After completing this unit, students will be able to:

- Implement large data transfers by using WSE 3.0.

#### **Unit 4: Implementing WSE 3.0 SOAP Messaging**

This unit describes how to implement SOAP messaging. It describes how to send and receive SOAP messages in Web services by using different sets of protocols.

##### **Lessons**

- What is SOAP Messaging?
- Sending and Receiving SOAP Messages
- TCP and HTTP Messaging

#### **Lab 4: Implementing WSE 3.0 SOAP Messaging**

- Exercise 1. Creating a SOAP Web Service using the TCP Protocol
- Exercise 2. Sending and Receiving SOAP Messages

After completing this unit, students will be able to:

- Create a Web service that uses the TCP protocol
- Send and receive SOAP messages by using the TCP protocol

#### **Unit 5: Implementing SOAP Headers and Extensions**

This unit describes SOAP headers and extensions. It explains what a SOAP header is, and how a Web service processes a SOAP extension.

##### **Lessons**

- What is a SOAP Header?
- What is a SOAP Extension?

#### **Lab 5: Implementing SOAP Headers and Extensions**

- Exercise 1. Implementing a SOAP Header
- Exercise 2. Implementing SOAP Extensions

After completing this unit, students will be able to:

- Implement and use a SOAP header in a Web service
- Implement and use a SOAP extension in a Web service

#### **Unit 6: Implementing WSE 3.0 Routing**

This unit discusses the routing mechanisms supported in WSE 3.0. It explains how to route Web method calls and how to implement content-based routing.

##### **Lessons**

- What is Routing?
- Using WSE 3.0 Routing

#### **Lab 6: Implementing WSE 3.0 Routing**

- Exercise 1. Implementing WSE 3.0 Routing
- Exercise 2. Implementing WSE 3.0 Content-based Routing

After completing this unit, students will be able to:

- Route Web method calls to a Web server by using WSE 3.0.
- Implement content-based routing with WSE 3.0

### **Unit 7: Optimizing and Protecting Message Queuing**

This unit discusses techniques for improving the security and optimizing the performance of applications that use the queuing mechanisms. It also describes how to verify whether messages posted to a queue are delivered successfully and how to correlate a message reply posted to a queue with the original message.

#### **Lessons**

- How to Reduce Message Queue Bottlenecks
- How to Verify Message Delivery
- How to Correlate Message Replies
- How to Use Encryption and Authentication in Message Queues

#### **Lab 7: Optimizing and Protecting Message Queuing**

- Exercise 1. Encrypting and Authenticating Messages
- Exercise 2. Optimizing Message Queuing Applications
- Exercise 3. Verifying Message Delivery
- Exercise 4. Correlating Messages and Responses

After completing this unit, students will be able to:

- Encrypt and authenticate messages
- Read from a message queue asynchronously
- Verify that a message was delivered successfully
- Correlate a message reply with the original message