

# IBM WebSphere Admin with MQ and Message Broker Training

## I) IBM WebSphere MQ System Administration (Windows)

### Course description

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This course provides the basic skills required by an administrator for any of the WebSphere MQ queue managers except WebSphere MQ for z/OS or WebSphere MQ for iSeries.

### General information

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- Learning objectives:** After completing this course, students should be able to:
- Plan the implementation of WebSphere MQ on a selected platform
  - Install WebSphere MQ
  - Perform simple customization and administrator tasks
  - Enable a queue manager to exchange messages with another queue manager
  - Enable a queue manager to support a WebSphere MQ client
  - Implement basic restart and recovery procedures
  - Perform basic problem determination

### Notes

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### Course agenda

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#### Unit 1. Review of WebSphere MQ

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- Learning objectives:** After completing this unit, students should be able to:
- Describe the features and benefits of WebSphere MQ
  - Identify the level of function in each WebSphere MQ queue manager
  - Classify the application models that WebSphere MQ can support
  - Find further information on specific aspects of WebSphere MQ

**Exercises:** None

#### Unit 2. Installation and configuration

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- Learning objectives:** After completing this unit, students should be able to:
- Install WebSphere MQ with reference to the relevant documentation
  - Demonstrate the WebSphere MQ Explorer
  - Create and configure a queue manager

- Test a queue manager configuration
- Start and stop a queue manager and perform other simple administration tasks

**Exercises:**

- Working with queues

### **Unit 3. The MQI and triggering**

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**Learning objectives:** After completing this unit, students should be able to:

- Provide an overview of the MQI
- Describe the triggering process
- Enable triggering for a local queue
- Explain conditions that cause triggering to fail
- Examine publish/subscribe and identify where it is supported

**Exercises:**

- Implementing triggering

### **Unit 4. Robust messaging**

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**Learning objectives:** After completing this unit, students should be able to:

- Determine the state of a queue manager and demonstrate how to recover from a problem
- Design procedures for recovering messages in the event of a failure
- Describe where to look for error messages and other information that may help to identify the cause of a problem
- Start and stop the WebSphere MQ tracing function

**Exercises:**

- Recovery

### **Unit 5. Clients, security, and SupportPacs**

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**Learning objectives:** After completing this module, students should be able to:

- Describe how to install and configure a WebSphere MQ client
- Identify the security features of WebSphere MQ
- Describe how message context fields and options can be used as a component of application security
- Describe how secure socket layer (SSL) works
- Distinguish one channel exit from another
- Describe WebSphere MQ SupportPacs and where to find them

**Exercises:**

- Implementing clients

## II) IBM WebSphere Message Broker Administration Training

### Course description

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This course teaches students how to administer the IBM WebSphere Message Broker V6.1 product on the distributed platforms (Windows /Linux). This course is designed specifically for those who will administer the Message Broker environment, including Message Broker developers who also work in an administrative capacity.

Web Sphere Message Broker provides universal connectivity and transformation in heterogeneous IT environments by distributing business event data in real time to people, applications, and devices throughout the enterprise and beyond. This course teaches students how to use common WebSphere Message Broker administrative interfaces such as the Message Broker toolkit and the command line interface. Students learn how to perform initial installation and subsequent maintenance tasks, environment configuration, and routine administration tasks such as backup and recovery of the environment. Interactive discussions cover topics that include product requirements planning, problem determination and resolution, performance monitoring and tuning, and techniques for extending WebSphere Message Broker's capabilities. This course also covers the publish/subscribe model and provides students with a review of message transport protocols, including WebSphere MQ, Java Messaging Service (JMS), and Web services.

In the hands-on lab exercises, students learn how to perform essential installation, configuration, and administrative tasks for the Message Broker environment. Exercises include configuring the installed Message Broker environment by using the Message Broker toolkit, command line and Configuration Manager API interfaces, creating and configuring a broker domain, configuration manager and user name server, and ensuring the efficient operation of the broker domain. Other exercises help students build critical skills needed to back up and restore the Message Broker environment, configure security parameters, and use tracing and debugging tools for problem determination and resolution. Students also get hands-on experience with the publish/subscribe message topology, configuring Java Message Service nodes and Web services, and extending Message Broker's base functionality by implementing user-defined extensions.

### General information

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**Delivery method:** Classroom

**Audience:** This course is designed for WebSphere Message Broker administrators, including WebSphere Message Broker developers who will act in an administrative capacity in their environments.

**Learning objectives:** After completing this course, students should be able to:

- Install and configure a WebSphere Message Broker instance
- Establish, maintain, and manage a broker domain
- Perform basic administration tasks in the management of the broker domain
- Work with the Message Broker Toolkit
- Use problem determination aids to diagnose and solve development and runtime errors

## Notes

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The unit and exercise durations listed below are estimates, and may not reflect every class experience. If the course is customized or abbreviated, the duration of unchanged units will probably increase.

## Course agenda

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### Unit 1. WebSphere Message Broker overview

**Learning objectives:** After completing this unit, students should be able to:

- Explain, at a high level, the IBM WebSphere reference architecture, service-oriented architecture (SOA), and enterprise service bus (ESB)
- Describe application connectivity
- Describe WebSphere Message Broker development and runtime components, including broker domain, configuration manager, user name server, and the Message Broker toolkit
- Describe message flow behavior

### Unit 2. Product installation, configuration, and security planning

**Learning objectives:** After completing this unit, students should be able to:

- Explain the hardware and software prerequisites for installing WebSphere Message Broker
- Describe the installation process
- Plan for runtime security considerations

### Exercise 1. Setup and customization

**Learning objectives:** After completing this exercise, students should be able to:

- Configure a Windows XP system for use with IBM WebSphere Message Broker V6.1
- Create a queue manager cluster that includes the queue managers for the configuration manager and the broker queue
- Apply maintenance to IBM WebSphere Message Broker V6.1 and the toolkit using IBM Rational Product Updater
- Add and use the IBM WebSphere MQ Explorer as an additional WebSphere Message Broker toolkit perspective
- Set up basic security
- Navigate the workbench help function

### Unit 3. The WebSphere Message Broker toolkit

- Learning objectives:** After completing this unit, students should be able to:
- Describe the WebSphere Message Broker toolkit
  - Explain how the toolkit is used to:
    - Configure the environment
    - Import a simple message flow
    - Deploy (publish) to a broker
    - Manage a broker archive (.bar) file
    - Test the deployed message flow

## **Exercise 2. Using the WebSphere Message Broker toolkit**

- Learning objectives:** After completing this exercise, students should be able to:
- Establish a connection with a configuration manager
  - Register a broker with a configuration manager
  - Import, deploy, and test a message flow

## **Unit 4. Configuration and administration**

- Learning objectives:** After completing this unit, students should be able to:
- Explain how to administer WebSphere Message Broker via the command line
  - Describe the Configuration Manager Proxy (CMP)

## **Unit 5. Backup and recovery**

- Learning objectives:** After completing this unit, students should be able to:
- Describe the critical components of a Message Broker environment
  - Identify and back up critical resources
  - Plan recovery scenarios and procedures
  - Explain how to achieve high availability

## **Exercise 3. Administration and operations**

- Learning objectives:** After completing this exercise, students should be able to:
- Use the command line to administer WebSphere Message Broker components
  - Use the Configuration Manager Proxy API exerciser
  - Back up and restore the broker domain

## **Exercise 4. Security**

- Learning objectives:** After completing this exercise, students should be able to:
- Grant another student access to the configuration manager
  - Permit and restrict another student's access via security group and access control list functions

## **Unit 6. Monitoring and problem determination**

- Learning objectives:** After completing this unit, students should be able to:
- Describe default message flow behavior when an error occurs
  - Configure message flows for transactional behavior
  - Use problem determination tools to debug message flows
  - Explain how to troubleshoot common problems

## **Exercise 5. Debug and trace**

- Learning objectives:** After completing this exercise, students should be able to:
- Use the debugger and set breakpoints
  - Enable user trace and retrieve trace data
  - Use and configure a trace node within a message flow
  - Use service trace to capture information

## **Exercise 6. Problem determination**

- Learning objectives:** After completing this exercise, students should be able to:
- Describe and predict broker default message exception handling
  - Describe runtime and environmental problem symptoms
  - Isolate a problem to a particular component
  - Determine the exact nature of a problem and correct it

## Unit 7. Performance considerations

- Learning objectives:** After completing this unit, students should be able to:
- Explain broker runtime measurement capabilities
  - Describe tooling to format gathered information, including text output and XML output
  - Describe broker tuning options

## Unit 8. Publish/subscribe applications

- Learning objectives:** After completing this unit, students should be able to:
- Describe the differences between publish/subscribe and point-to-point messaging
  - Use publish/subscribe in message flows
  - Manage subscriptions using RFHUTIL and the Message Broker toolkit
  - Explain the function of the user name server
  - Implement access control at the topic level
  - Configure multi-broker publish/subscribe topologies
  - Explain the differences in publish/subscribe messaging between WebSphere MQ and WebSphere Message Broker

## Exercise 7. Statistics and publish/subscribe

- Learning objectives:** After completing this exercise, students should be able to:
- Build topic-based access control lists (ACLs) with the workbench
  - Register static subscriptions
  - Describe broker responses to publish/subscribe requests
  - Describe active subscriptions in the broker
  - Create and test a simple publication message flow
  - Collect and retrieve broker runtime statistics for performance analysis

## Unit 9. Additional transport protocols

- Learning objectives:** After completing this unit, students should be able to:
- Describe MQ real-time transport
  - Explain WebSphere Message Broker support for multi-cast
  - Describe the MQ Everyplace and SCADA message flow nodes and how they are used
  - Explain Java Messaging Service (JMS) message flow nodes and associated implementation considerations

## **Exercise 8. Configuring Java Message Service nodes (optional)**

- Learning objectives:** After completing this exercise, students should be able to:
- Use the IBM WebSphere MQ JMS administration tool to register administered objects to a JNDI namespace
  - Import and configure a .bar file to use the Java Naming and Directory Interface (JNDI) definitions

## **Unit 10. Configuring Web services**

- Learning objectives:** After completing this unit, students should be able to:
- Define Web services
  - Describe the implementation of the HTTP and HTTPS nodes in Message Broker
  - Explain the implementation of Secure Sockets Layer (SSL) in support of HTTP nodes
  - Use capacity planning methods when implementing HTTP nodes

## **Exercise 9. Web services (optional)**

- Learning objectives:** After completing this exercise, students should be able to:
- Implement HTTP protocol message flows in a broker domain
  - Configure Web service support
  - Implement a Web services flow using HTTPS

## **Unit 11. Extending WebSphere Message Broker**

- Learning objectives:** After completing this unit, students should be able to:
- Find and use available plug-ins
  - Explain the steps required to implement a user-written extension
  - Describe Complex Event Processing (CEP)