

WEBSPHERE MQ 9 COURSE CONTENTS

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Course Outcomes:

By the end of the course, participants should:

- Understand IBM MQ's architecture and core components.
- Be able to install, configure, and administer IBM MQ environments.
- Have experience securing MQ systems and integrating them with cloud and container platforms.
- Be familiar with developing applications using MQ APIs and JMS.
- Gain insights into advanced features like clustering, high availability, and message security.

1. Introduction to Messaging and IBM MQ

- **Overview of Messaging and Middleware**
 - Messaging patterns (point-to-point, publish-subscribe, etc.)
 - What is a Message Queue?
- **Introduction to IBM MQ**
 - History and evolution
 - Use cases of IBM MQ in modern architectures
 - Core features of IBM MQ 9
 - Differences between IBM MQ and other messaging systems

2. IBM MQ Architecture

- **Core Components**
 - Queue Managers
 - Queues (local, remote, alias, model)
 - Channels (server, client, sender, receiver)
 - Messages and message types
- **Messaging Concepts**
 - Message persistence
 - Asynchronous messaging
 - Message priority
 - Message expiry
- **MQ Clustering**
 - Benefits of clustering
 - Configuring cluster queue managers and queues

3. Installation and Configuration

- **Installing IBM MQ on different platforms**
 - Windows
 - Linux/Unix
- **Configuring Queue Managers**
 - Creating and starting a queue manager
 - Configuring queues and channels
 - Configuring listeners and services
- **Basic MQ Administration**
 - Command-line tools (MQSC commands)
 - MQ Explorer (GUI tool)
 - Handling MQ logs and error messages
 - Configuring and managing file-based security

4. IBM MQ Security

- **Security Mechanisms**
 - Authentication methods (user, LDAP, and TLS-based)
 - Authorization (object authorities, OAM)
- **SSL/TLS for Securing Channels**
 - Configuring SSL/TLS on MQ channels
 - Managing certificates and keystores
- **Channel Authentication Records (CHLAUTH)**
 - Setting up CHLAUTH rules for security
- **Message-Level Security**
 - Message encryption options
 - MQ Advanced Message Security (AMS) overview

5. IBM MQ Development

- **Programming with MQ APIs**
 - Introduction to MQI (Message Queue Interface)
 - Writing MQ programs in different languages (Java, C, .NET)
- **Using JMS with IBM MQ**
 - JMS concepts and integration with MQ
 - Sending and receiving messages using JMS
- **MQ Patterns and Best Practices**
 - Request-response pattern
 - Publish-subscribe messaging with MQ

6. IBM MQ Distributed Messaging

- **Remote Queue Management**
 - Setting up communication between different queue managers
 - Remote queues and transmission queues
- **Channels and Distributed Communication**
 - Setting up sender/receiver channels
 - Clustered and unclustered communication
- **MQ Multi-instance Queue Managers**
 - High Availability (HA) and Failover concepts

7. Advanced Features and Performance Tuning

- **Message Grouping and Segmentation**
 - Handling large messages
 - Message grouping and segmentation techniques
- **MQ Triggering**
 - What is triggering and how it works
 - Configuring and managing triggers
- **MQ Publish/Subscribe**
 - Configuring publish/subscribe topologies
 - Managing topics and subscriptions
- **Monitoring and Performance Tuning**
 - Performance monitoring tools (MQMon, MQ Statistics)
 - Configuring MQ for high throughput
 - Tuning queue managers, channels, and queues

8. IBM MQ Cloud Integration

- **Using IBM MQ as a Service (MQaaS)**
 - Managed MQ services
 - Setting up hybrid cloud environments
- **MQ in Containerized Environments**
 - Running IBM MQ in Docker containers
 - Deploying and managing IBM MQ on Kubernetes

9. High Availability and Disaster Recovery

- **MQ Clustering for HA**
 - Understanding MQ cluster failover and load balancing
 - Managing clustered queue managers

- **Multi-instance Queue Managers**
 - High Availability setup with multi-instance queue managers
- **Disaster Recovery Solutions**
 - Configuring backup and restore procedures
 - Replication and recovery strategies

10. Monitoring and Troubleshooting

- **Monitoring MQ**
 - IBM MQ Monitoring tools
 - Using MQ Explorer for monitoring and management
 - Monitoring metrics for queues, channels, and queue managers
- **Troubleshooting IBM MQ**
 - Common issues and error messages
 - Diagnosing channel and queue manager problems
 - Log analysis and error reporting
- **IBM MQ Event Monitoring**
 - Configuring event notifications and alerts

11. IBM MQ Security Advanced Topics (Optional)

- **Advanced Channel Authentication**
- **Integration with Enterprise Security Systems**
- **Advanced AMS Setup**

12. Hands-On Labs and Projects

- **Practical Labs**
 - Installing and configuring IBM MQ on a local system
 - Creating and managing queue managers and queues
 - Securing and monitoring MQ environments
- **Mini Projects**
 - Implementing messaging patterns (pub/sub, request-response)
 - Creating a distributed messaging system
 - High availability setup with clustering

13. Certification Preparation (if applicable)

- **IBM MQ 9 Certification Exam Preparation**
 - Mock exams and sample questions
 - Key concepts review and practice exercises

