

IBM MQ V9 Advanced System Administration (Distributed)

WM213 (Classroom)

ZM213 (Self-paced)

Course description

This course expands the basic skill sets that are developed in courses WM103/ZM103, *Technical Introduction to IBM MQ*, and WM153/ZM153, *IBM MQ V9 System Administration (using Windows for labs)* or WM154, *IBM MQ V9 System Administration (using Linux for labs)*.

The course focuses on advanced features of IBM MQ, such as implementing workload management by using a queue manager cluster, and authenticating connections, channels, and users. It also covers securing channels with Transport Layer Security (TLS), advanced client connection features, event and message monitoring, and publish/subscribe administration.

In addition to the instructor-led lectures, you participate in hands-on lab exercises that reinforce lecture content. The lab exercises give you practical experience with tasks such as implementing security, configuring workload management for a queue manager cluster, and advanced troubleshooting techniques.

Completing this course can also help you prepare for the appropriate IBM MQ Administrator certifications.

For information about other related courses, see the IBM Training website:

http://www.ibm.com/training

General information

Delivery method

Classroom or self-paced virtual classroom (SPVC)

Course level

ERC 1.0

Product and version

IBM MQ V9

Audience

This advanced skills course is designed for technical professionals who require advanced administrator skills for IBM MQ on distributed operating systems, or who provide support to others who administer IBM MQ.

Learning objectives

After completing this course, you should be able to:

* Use conversation sharing, read-ahead, and asynchronous put to improve the performance of MQI client connections
* Use Transport Layer Security (TLS) to secure TCP/IP channels
* Authenticate IBM MQ channels, connections, and users
* Manage the workload in an IBM MQ queue manager cluster
* Implement IBM MQ high availability
* Monitor application activity, events, and messages
* Use the IBM MQ dead-letter queue message handler to manage a dead-letter queue
* Administer distributed publish/subscribe networks
* Use the IBM MQ Console to administer IBM MQ objects and resource usage
* Administer Java Message Service (JMS) in MQ

Prerequisites

Before taking this course, you should possess the skills that are required to complete basic IBM MQ system administration tasks in a distributed environment. You can obtain these skills through practical experience or by successfully completing one of the IBM MQ V9 system administration courses for distributed operating systems:

* *IBM MQ V9 System Administration (using Windows for labs)* (WM153G)
* *IBM MQ V9 System Administration (using Windows for labs)* (ZM153G)
* *IBM MQ V9 System Administration (using Linux for labs)* (WM154G)

Duration

4 days

Skill level

Intermediate

Notes

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

This course is an update of the following previous course:

* WM212/ZM212: *IBM MQ V8 Advanced System Administration (Distributed)*

Course agenda

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| Course introduction  Duration: 30 minutes |

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| Unit 1. Managing clients and client connections  Duration: 1 hour and 30 minutes | |
| Overview | In this unit, you learn about the ways that IBM MQ clients can attach to an IBM MQ server. You also learn about channel performance and monitoring channel activity. |
| Learning objectives | After completing this unit, you should be able to:   * Manage client performance by sharing conversations, using read ahead, and using asynchronous put * Describe the client modes that MQSC supports * Use troubleshooting tools and techniques to monitor and manage clients and connections |

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| Unit 2. Securing IBM MQ channels with TLS  Duration: 1 hour and 30 minutes | |
| Overview | In this unit, you learn how to use Transport Layer Security (TLS) to secure IBM MQ channel communications that include mutual authentication. |
| Learning objectives | After completing this unit, you should be able to:   * Describe the certificate infrastructure that is supported in IBM MQ Manage certificates with IBM Key Management * Manage certificates with IBM MQ Key Management * Describe cipher specifications and their support in IBM MQ * Use certificate revocation lists or Online Certificate Status Protocol (OCSP) to validate currency of certificates * Use TLS to secure IBM MQ channel communications |

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| Exercise 1. Securing channels with TLS  Duration: 1 hour and 30 minutes | |
| Overview | In this exercise, you define and start TLS channels between IBM MQ queue managers, and between an IBM MQ client and an IBM MQ server. |
| Learning objectives | After completing this exercise, you should be able to:   * Use the certificate management utility IBM Key Management to create a certificate request * Secure channels by using TLS on the channel |

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| Unit 3. Authenticating channels and connections  Duration: 2 hours | |
| Overview | In this unit, you learn how to use channel authentication to control the access that is granted to connecting systems at a channel level. You learn how to modify the queue manager to use the local operating system or an LDAP server to authenticate user IDs and passwords of clients or applications that are requesting access to IBM MQ resources. The unit also describes channel exit programs and administration. |
| Learning objectives | After completing this unit, you should be able to:   * Determine the current level of authentication that is enabled on a queue manager and a connection * Add authentication to a channel * Add authentication to a connection * Identify and fix channel authentication and connection authentication problems * Implement a channel exit program for securing messaging channels |

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| Exercise 2. Implementing connection authentication  Duration: 1 hour and 30 minutes | |
| Overview | In this exercise, you modify an IBM MQ network to add connection authentication security. |
| Learning objectives | After completing this exercise, you should be able to:   * Check locally bound connections * Check client connections * Configure the authentication failure delay |

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| Unit 4. Implementing workload management in an IBM MQ cluster  Duration: 1 hour | |
| Overview | In this unit, you learn how to use the IBM MQ cluster configuration options to balance and manage the workload. |
| Learning objectives | After completing this unit, you should be able to:   * Describe how queue manager clusters assist with workload management * Describe the attributes that affect the workload balancing algorithm * Use multiple transmission queues to separate the workload |

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| Exercise 3. Implementing workload management in a cluster  Duration: 1 hour | |
| Overview | In this exercise, you create a cluster of four queue managers. You then use the cluster mechanism to send messages between queues on all queue managers in the cluster. |
| Learning objectives | After completing this exercise, you should be able to:   * Create a queue manager cluster * Use channel and queue attributes in various combinations to alter the workload distribution in a cluster |

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| Unit 5. More troubleshooting tools and techniques  Duration: 2 hours | |
| Overview | In this unit, you learn more about the IBM MQ tools and techniques for identifying and handling problems. Topics in this unit include event monitoring, message monitoring, and dead-letter queue message handling. The unit also provides some tips and techniques for disaster recovery. |
| Learning objectives | After completing this unit, you should be able to:   * Use IBM MQ events to detect problems in your queue manager network * Uses trace-route messages to determine the last known location of a message and determine configuration problems with a queue manager * Use the IBM MQ unload and load utility to copy messages to or from a file * Implement a dead-letter queue handler to automate the handling of messages on the dead-letter queue * Recover IBM MQ if a failure occurs |

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| Exercise 4. Tracing message routes  Duration: 1 hour | |
| Overview | In this exercise, you use a network of two queue managers that are connected with channels in a linear fashion, with remote queue definitions that pass a message from one queue manager to another and back. You use the display route application to trace the message and observe the results under various scenarios. |
| Learning objectives | After completing this exercise, you should be able to:   * Use the IBM MQ display route application to determine the route that a message took through a queue manager network |

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| Exercise 5. Handling messages on the dead-letter queue  Duration: 1 hour | |
| Overview | In this exercise, you configure IBM MQ to automatically handle messages that arrive on the dead-letter queue by using the dead-letter queue handler. |
| Learning objectives | After completing this exercise, you should be able to:   * Configure the queue manager to use a dead-letter queue * Handle dead-letter messages |

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| Unit 6. High availability  Duration: 1 hour | |
| Overview | In this unit, you learn about the IBM MQ high availability solutions. |
| Learning objectives | After completing this unit, you should be able to:   * Plan for using high availability systems with IBM MQ * Configure and manage a multi-instance queue manager |

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| Unit 7. Introduction to distributed publish/subscribe  Duration: 1 hour and 30 minutes | |
| Overview | In this unit, you learn about the publish/subscribe support in IBM MQ. The unit describes how to use IBM MQ commands and IBM MQ Explorer to define and manage publications and subscriptions. |
| Learning objectives | After completing this unit, you should be able to:   * Describe publish/subscribe in IBM MQ * Explain distributed publish/subscribe topologies * Manage publish/subscribe topics, subscriptions, and topologies * Compare publish/subscribe topologies |

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| Exercise 6. Configuring distributed publish/subscribe  Duration: 1 hour and 30 minutes | |
| Overview | In this exercise, you define and test an IBM MQ publish/subscribe network by using a direct cluster and a topic host cluster. You also use the IBM MQ sample programs and IBM MQ Explorer to test the cluster and the IBM MQ display route command to show the message route through the publish/subscribe cluster. |
| Learning objectives | After completing this exercise, you should be able to:   * Define a direct route publish/subscribe cluster * Define a topic host route publish/subscribe cluster * Test the publish/subscribe cluster * Use the IBM MQ display route (dspmqrte) command to verify the route that the message takes through the publish/subscribe cluster |

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| Unit 8. Supporting JMS with IBM MQ  Duration: 30 minutes | |
| Overview | In this unit, you learn about IBM MQ support for Java Message Service (JMS). |
| Learning objectives | After completing this unit, you should be able to:   * Describe IBM MQ as a JMS provider * Manage JMS resources in IBM MQ Explorer |

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| Unit 9. Introduction to the IBM MQ Console  Duration: 1 hour | |
| Overview | The IBM MQ Console is a web-based user interface that can be used to administer IBM MQ. In this unit, you learn how to use the IBM MQ Console to complete common administration tasks. |
| Learning objectives | After completing this unit, you should be able to:   * List the steps for implementing the IBM MQ Console * Describe how to use widgets and dashboard layouts to manage IBM MQ objects and authority records, and monitor system resource usage |

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| Exercise 7. Getting started with the IBM MQ Console  Duration: 1 hour | |
| Overview | In this exercise, you set up and use the IBM MQ Console for basic administration of IBM MQ objects. You also monitor system resources and configure dashboard layouts. |
| Learning objectives | After completing this exercise, you should be able to:   * Configure basic security to allow users and groups to access the IBM MQ Console * Start the IBM MQ Console * Manage local queue managers * Monitor system resources * Configure dashboard layouts |

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| Unit 10. Course summary  Duration: 30 minutes | |
| Overview | This unit summarizes the course and provides information for future study. |
| Learning objectives | After completing this unit, you should be able to:   * Explain how the course met its learning objectives * Access the IBM Training website * Identify other IBM Training courses that are related to this topic * Locate appropriate resources for further study |

For more information

To learn more about this course and other related offerings, and to schedule training, see **ibm.com**/training

To learn more about validating your technical skills with IBM certification, see **ibm.com**/certify