

IBM MQ V9 Managed File Transfer Concepts, Use, and Administration

ZM003 (Self-paced)

Course description

In this course, you learn how to configure, use, and administer IBM MQ Managed File Transfer. You work with IBM MQ connectivity and security that is critical to the correct functioning of an IBM MQ Managed File Transfer configuration in a Windows operating system. You also learn various ways to start a transfer, and learn about the protocol bridge and the V9.0.1 redistributable agent.

The course starts with an IBM MQ baseline that focuses on testing the IBM MQ infrastructure before you start the IBM MQ Managed File Transfer configuration. As you create the definitions, you learn about the directory structure that various commands create. You also learn various ways to initiate transfers.

You also learn how to extend the IBM MQ Managed File Transfer configuration by using the protocol bridge and the V9.0.1 redistributable agent. The course also incorporates the IBM MQ security mechanisms connection authentication, channel authentication, and object authorization to the definition and use of a new configuration. Most of the troubleshooting scenarios in the course content are derived from field experiences.

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

http://www.ibm.com/training

General information

Delivery method

Self-paced virtual classroom (SPVC)

Course level

ERC 1.0

Product and version

IBM MQ Managed File Transfer V9.0, IBM MQ Managed File Transfer Redistributable Agent V9.0.1.

Audience

This course is designed for IBM MQ administrators who need to incorporate IBM MQ Managed File Transfer skills. It also applies to application architects, application developers, and quality assurance professionals who need to work with IBM MQ Managed File Transfer.

Learning objectives

After completing this course, you should be able to:

* Summarize the IBM MQ components that affect the IBM MQ Managed File Transfer environment
* Describe basic IBM MQ connectivity checks that must take place before IBM MQ Managed File Transfer is configured
* List the queue manager roles that IBM MQ Managed File Transfer requires
* Explain the configuration commands fteSetCoordination, fteSetCommands, and fteCreateAgent
* Summarize how to use the fteCreateLogger command to create a logger to retain transfer history
* Describe the IBM MQ Managed File Transfer directory structure and where to find agent and transfer information
* Summarize steps to configure IBM MQ Managed File Transfer in the z/OS operating system
* Explain various options that can be used to initiate a file transfer
* Describe how to use the protocol bridge to exchange files between a standard agent and FTP, FTPS, or SFTP agents
* Describe how to install, configure, and use the V9.0.1 redistributable IBM MQ Managed File Transfer agent
* Describe connection authentication, channel authentication, and object authorizations
* Explain how to incorporate IBM MQ connection authentication, channel authentication, and object authorizations into the IBM MQ Managed File Transfer configuration
* Summarize how to identify and resolve IBM MQ security problems that might surface during configuration or file transfer activities
* Summarize how IBM MQ Managed File Transfer uses relative path and how the location can be modified
* Explain recovery in IBM MQ Managed File Transfer
* Describe how to set IBM MQ Managed File Transfer traces

Prerequisites

* Successful completion of course *IBM MQ V8 System Administration (using Windows for labs)* (WM207G) or *IBM MQ V8 System Administration (using Windows for labs)* (ZM207G), or equivalent experience
* High-level understanding of an FTP server

Duration

2 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 a complete rewrite of course ZM960, *Implementing IBM Integrated File Transfer Solutions*.
* While this course applies to distributed platforms, most concepts also apply to the z/OS operating system.
* Course WM302, *IBM MQ V8 System Administration for z/OS*, contains one unit that details the IBM MQ Managed File Transfer installation and configuration for z/OS. Course WM302 includes a lab exercise that teaches how to define and test the IBM MQ Managed File Transfer configuration in the z/OS operating system.

Course agenda

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| Course introduction  Duration: 15 minutes |

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| Unit 1. IBM MQ baseline  Duration: 1 hour and 30 minutes | |
| Overview | This unit reviews basic IBM MQ functionality with emphasis on concepts that apply to an IBM MQ Managed File Transfer implementation. |
| Learning objectives | After completing this unit, you should be able to:   * Summarize the role of message-oriented middleware * Differentiate between the installation of an IBM MQ Server and an IBM MQ Client * Describe the roles of a queue manager, queues, and channels * Summarize the function calls that are used to process IBM MQ messages * Differentiate between the various types of channels * Describe the path that a message might take when it travels from a local to a remote queue manager * Summarize how to implement an IBM MQ cluster * Describe the history of publish/subscribe and how it affects the IBM MQ Managed File Transfer functionality * Describe the various ways to connect an IBM MQ client to a queue manager |

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| Exercise 1. Working with IBM MQ connectivity  Duration: 1 hour | |
| Overview | This exercise reviews IBM MQ connectivity and sets up the infrastructure that is used in the IBM MQ Managed File Transfer configuration. |
| Learning objectives | After completing this exercise, you should be able to:   * Create and start queue managers MFTU and USR1 * Define queues and channel objects in queue managers MFTU and USR1 * Start the channels from MFTU to USR1, and from USR1 to MFTU * Determine the status of the channels after the start command was completed * Test that messages flow bidirectionally between both queue managers * Test IBM MQ Client connectivity to queue managers MFTU and USR1 |

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| Unit 2. IBM MQ Managed File Transfer components, installation, and configuration  Duration: 1 hour | |
| Overview | This unit describes the IBM MQ Managed File Transfer components, queue manager roles, typical topologies, required connectivity, and configuration. |
| Learning objectives | After completing this unit, you should be able to:   * Summarize the capabilities that are available with IBM MQ Managed File Transfer * Describe the IBM MQ Managed File Transfer components and installation options * Explain the three queue manager roles and interactions * Describe a typical IBM MQ Managed File Transfer configuration * List the steps that are necessary to set up the IBM MQ Managed File Transfer environment * Summarize the types of properties files that are found in an IBM MQ Managed File Transfer configuration * Describe how to configure the coordination queue manager and required objects * Describe how to identify the command queue manager * Describe how to configure an agent and required objects * Explain how to resolve problems that are found during creation of an agent * Summarize how to start an agent and list information about it * Describe how to use a command to create a file transfer to verify the agent * Explain how to use IBM MQ Explorer to check the status of a file transfer * Describe how to configure a file logger * Explain the directory structure that is created with a configuration and describe its importance * Describe IBM MQ Managed File Transfer configuration commands * Summarize the steps that are necessary to configure IBM MQ Managed FileTransfer on z/OS * Explain how to troubleshoot unexpected agent and transfer scenarios |

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| Exercise 2. Configuring IBM MQ Managed File Transfer  Duration: 1 hour and 30 minutes | |
| Overview | In this exercise, you create an IBM MQ Managed File Transfer configuration with two agents and a logger, start the components, transfer files, and check transfer results. |
| Learning objectives | After completing this exercise, you should be able to:   * Use the fteSetupCoordination command to create the configuration directory and identify the coordination queue manager * Use the fteSetupCommands command to identify the commands queue manager * Use the fteCreateAgent command to identify the agent queue manager and create an agent * Use the fteListAgents command to display the agent status * Review the configuration directory structure * Test the agent by using the fteCreateTransfer command * Create a file logger by using the fteCreateLogger command * Use IBM MQ Explorer to review your IBM MQ Managed File Transfer configuration * Add a second agent with a separate dedicated agent queue manager * Test the configuration and the logger by transferring a file between the two agents |

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| Unit 3. Transfer initiation options  Duration: 1 hour | |
| Overview | This unit describes various ways to initiate file transfers. |
| Learning objectives | After completing this unit, you should be able to:   * Summarize the various ways to initiate a file transfer * Describe the parameters that the fteCreateTransfer command uses * Explain how to create a transfer file by using the fteCreateTransfer command * Describe how to schedule a transfer * Differentiate between the use of triggers and monitors to detect file activity * Describe how to use the fteCreateMonitor command * Describe the use of variables in transfer definition files * Summarize the IBM MQ Managed File Transfer Ant script capabilities * Describe how to create a transfer by placing an XML message in the agent command queue * Summarize how to create and use transfer templates * Explain how to use the file logger to troubleshoot a transfer * Explain how to use the agent output0.log file to troubleshoot a monitor problem * Describe how to invoke a program as part of a transfer |

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| Exercise 3. Transfer initiation options  Duration: 1 hour and 30 minutes | |
| Overview | In this exercise, you learn how to use various transfer initiation options. |
| Learning objectives | After completing this exercise, you should be able to:   * Create a transfer request file and use it to start a transfer * Transfer a file by creating a schedule * Create a monitor to detect file activity in a directory * Initiate a transfer by placing a message to the agent command queue * Initiate a transfer and request a status response by placing a message to the agent command queue * Transfer a file by using a transfer template and IBM MQ Explorer * Create a transfer by using IBM MQ Explorer |

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| Unit 4. Protocol bridge and redistributable agents  Duration: 1 hour | |
| Overview | This unit focuses on two features that extend the use of IBM MQ Managed File Transfer. The protocol bridge agent helps transfer files by using a protocol server. The redistributable agent allows creation of an agent in a server where IBM MQ Managed File Transfer is not installed, |
| Learning objectives | After completing this unit, you should be able to:   * Describe the protocol bridge feature * Explain the steps that are required to configure a protocol bridge agent * List the extra options that are included in the fteCreateBridgeAgent command * Explain how to create, start, and manage a protocol bridge agent * Describe the ProtocolBridgeProperties.xml file * Describe the ProtocolBridgeCredentials.xml file and how it relates to the ProtocolBridgeProperties.xml file * Explain how to create transfers between standard and protocol bridge agents * Describe basic troubleshooting for a protocol bridge agent * Differentiate between the IBM MQ redistributable client and the IBM MQ Managed File Transfer redistributable agent * Explain how to set up the command environment for an installed and a non-installed redistributable agent * Describe how to configure the redistributable agent directory structure and agent * Summarize how to create a transfer from the redistributable agent * Explain how to check the results of a transfer to or from the redistributable agent |

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| Exercise 4. Working with protocol bridge and redistributable agents  Duration: 1 hour and 30 minutes | |
| Overview | In this exercise, you implement and use a protocol bridge agent and a redistributable agent. |
| Learning objectives | After completing this exercise, you should be able to:   * Use the fteCreateBridgeAgent command to define a protocol bridge agent * Review the ProtocolBridgeProperties.xml file * Review the contents of a preconfigured ProtocolBridgeCredentials.xml file * Start and display a protocol bridge agent * Transfer a file from a protocol bridge agent to a standard agent * Transfer a file from a standard agent to a protocol bridge agent * Expand the IBM MQ Managed File Transfer agent package to a predefined directory * Use the fteSetupEnvironment command to establish the required distributed agent path * Configure a redistributable agent * Start and display a redistributable agent * Transfer a file from a redistributable agent to another standard agent on the IBM MQ Managed File Transfer server host * Examine the results of a transfer that the redistributable agent initiates |

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| Unit 5. IBM MQ and IBM MQ Managed File Transfer security  Duration: 1 hour and 30 minutes | |
| Overview | In this unit, you learn how to recognize and resolve problems with IBM MQ security and IBM MQ Managed File Transfer security. |
| Learning objectives | After completing this unit, you should be able to:   * Describe variables that can result in a security 2035 error code * Summarize the terminology that is used with security * Summarize considerations to observe when working with IBM MQ security * Explain connection authentication and the OPTIONAL, REQUIRED, and REQADM settings * Describe the extra parameters that are required in IBM MQ Managed File Transfer commands after connection authentication is required in a queue manager * Summarize the use of the MQMFTCredentials.xml file * Explain two ways to configure and set the path to the MQMFTCredentials.xml file * Summarize channel authentication * Describe the types of channel authentication records and how to determine which type to use * Explain the fields that must be specified when making changes to a channel authentication rule to avoid causing duplication of the rule * Summarize the default channel authentication rules for a new queue manager * Describe how to implement the channel authentication back-stop rule * Summarize recommended practices for managing channel authentication * Explain how to troubleshoot and resolve IBM MQ connection and channel authentication challenges for a new queue manager * Explain how to troubleshoot and resolve agent creation challenges that result from hardened security in a queue manager * Summarize object authorizations and the related IBM MQ control and MQSC commands * Describe the parameters that are required to create IBM MQ object authorizations * Explain two methods to work with object authorities after a queue manager is configured with required connection authentication * Describe how to use the dspmqaut and setmqaut control commands * Describe how to use the DISPLAY AUTHREC and SET AUTHREC MQSC commands * List the IBM MQ group authorizations that apply to IBM MQ Managed File Transfer * List the IBM MQ agent and user authorities that apply to IBM MQ Managed File Transfer * Describe how to troubleshoot an object authorities problem in IBM MQ |

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| Exercise 5. Working with IBM MQ and IBM MQ Managed File Transfer security  Duration: 2 hours and 30 minutes | |
| Overview | In this exercise, you learn how to recognize security-related connectivity problems, the importance of checking the queue manager log, and how to respond to IBM MQ security scenarios that affect the IBM MQ Managed File Transfer configuration. |
| Learning objectives | After completing this exercise, you should be able to:   * Review the queue manager default connection authentication and channel authentication settings * Identify and resolve a connection challenge that results from the default queue manager connection authentication settings * Create a BLOCKUSER type rule to identify and resolve a channel that is blocked by the queue manager default channel authentication setting * Increase connection authentication security settings for the queue manager to require credentials for local and client connections * Increase channel authentication security settings for a queue manager by implementing the back-stop rule * Configure an MQMFTCredentials.xml file to provide credentials when the queue manager requires connection authentication * Set the path to the MQMFTCredentials.xml file by using the -credentialsFile parameter * Create type ADDRESSMAP channel authentication rules to allow expected channels to connect * Display existing object authorizations by using the dspmqaut control command * Grant object authorizations by using the setmqaut control command * Display existing object authorizations by using the DISPLAY AUTHREC MQSC command * Grant object authorizations by using the SET AUTHREC MQSC command * Gain exposure to the type of responses that are provided by the control and MQSC authorities commands |

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| Unit 6. Administration and troubleshooting  Duration: 45 minutes | |
| Overview | This unit describes additional IBM MQ Managed File Transfer considerations, including administration, recovery, and problem determination concepts. |
| Learning objectives | After completing this unit, you should be able to:   * Explain the use of other IBM MQ Managed File Transfer commands * Describe how to designate the default configuration * Summarize behaviors that are controlled by properties in the coordination and agent property files * Describe relative path and ways to change it * Explain recovery timeout options and precedence * Summarize memory and JVM considerations * List troubleshooting facilities and traces in IBM MQ Managed File Transfer * Describe other record types that can be found in the file logger * Summarize IBM MQ Managed File Transfer capabilities in IBM MQ Explorer |

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| Exercise 6. Working with administrative tasks  Duration: 45 minutes | |
| Overview | This exercise includes work with relative file path, selected administrative commands, and creation of a trace at the command level. |
| Learning objectives | After completing this exercise, you should be able to:   * Use the fteDefine command to generate an agent script definition file * Use the fteShowAgentDetails command to obtain various levels of information about an agent * Obfuscate credentials information by using the fteObfuscate command * Use the fteDisplayVersion command to obtain information about the IBM MQ Managed File Transfer environment * Use the fteCancelTransfer command * Use the fteCleanAgent command * Change the relative path by editing the agent.properties file * Change the default configuration by using the fteChangeDefaultConfigurationOptions command * Set an all-inclusive trace for the fteCreateTransfer command |

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| Unit 7. Course summary  Duration: 5 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

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