

Course Exercises Guide

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

Course code ZM003 ERC 1.0



## April 2017 edition

### Notices

This information was developed for products and services offered in the US.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

*IBM Director of Licensing  
IBM Corporation  
North Castle Drive, MD-NC119  
Armonk, NY 10504-1785  
United States of America*

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

### Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

© Copyright International Business Machines Corporation 2017.

**This document may not be reproduced in whole or in part without the prior written permission of IBM.**

US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

# Contents

<b>Trademarks</b>	<b>vii</b>
<b>Exercises description</b>	<b>viii</b>
<b>Exercise 1. Working with IBM MQ connectivity</b>	<b>1-1</b>
Section 1: Create and start queue managers MFTU and USR1	1-2
Section 2: Review the object definitions and changes that are required for queue manager MFTU and run the script by using the <code>runmqsc</code> utility	1-5
Section 3: Review the object definitions and changes that are required for queue manager USR1 and run the script by using the <code>runmqsc</code> utility	1-8
Section 4: Start the channel to queue manager USR1 and send a test message	1-10
Section 5: Start the channel to queue manager MFTU and send a test message	1-14
Section 6: Test IBM MQ Client connectivity to queue managers MFTU and USR1	1-15
<b>Exercise 2. Configuring IBM MQ Managed File Transfer</b>	<b>2-1</b>
2.1. Base configuration	2-3
Section 1: Review the existing directory structure before any configuration tasks are completed	2-4
Section 2: Identify the coordination queue manager and set up the configuration directory structure	2-4
Section 3: Identify the queue manager that serves in the role of command queue manager	2-7
Section 4: Identify the agent queue manager and create agent MFTUAGT1	2-8
Section 5: Review the results of the <code>fteCreateAgent</code> command and create the agent required queue manager definitions	2-9
Section 6: Start and list agent MFTUAGT1	2-13
Section 7: Create file logger MFTULGR1 for the MFTU configuration	2-16
Section 8: Review the results of the <code>fteCreateLogger</code> command and create the logger required queue manager definitions	2-17
Section 9: Start the MFTULGR1 logger and review the results	2-20
Section 10: Create a test transfer by using <code>fteCreateTransfer</code>	2-23
Section 11: Review the results of the file transfer	2-23
Section 12: Compare the IBM MQ Explorer Transfer Log entries with the MFTULGR1 logger entries	2-27
2.2. Add a second agent with a dedicated agent queue manager to the base configuration	2-30
Section 1: Review the status of the queue managers and create agent USR1AGT1	2-31
Section 2: Start, list, and test agent USR1AGT1	2-33
Section 3: Locate your last transfer entries in the file logger	2-35
<b>Exercise 3. Transfer initiation options</b>	<b>3-1</b>
Section 1: Log on and start an IBM MQ Explorer session for later use	3-2
3.1. Use a transfer request file	3-3
Section 1: Create a transfer request file and use the transfer request file to create a transfer	3-3
3.2. Schedule a transfer	3-6
Section 1: Transfer a file by scheduling a transfer	3-6
3.3. Use a monitor to transfer based on file activity	3-9
Section 1: Review the contents of the <code>xfr.go</code> trigger file	3-9
Section 2: Create the transfer request file <code>task.xml</code> with variable <code>\${contentSource}</code> as the source specification	3-10
Section 3: Create the monitor	3-11
Section 4: List the monitor with the verbose parameter and check its status	3-11
Section 5: Copy the trigger file to the monitored directory	3-12

3.4. Transfer by using the agent command queue .....	3-14
Section 1: Initiate a transfer in asynchronous mode by putting a message to the agent command queue .....	3-14
Section 2: Initiate a transfer in synchronous mode by putting a message to the agent command queue and requesting status in a reply .....	3-15
3.5. Transfer by using a transfer template .....	3-18
Section 1: Create a transfer template by using command <code>fteCreateTemplate</code> .....	3-18
Section 2: Transfer a file by using the transfer template .....	3-18
3.6. Transfer by using IBM MQ Explorer .....	3-20
Section 1: Use IBM MQ Explorer to initiate a transfer .....	3-20

#### **Exercise 4. Working with protocol bridge and redistributable agents .....4-1**

4.1. Check that resources are available .....	4-4
Section 1: Log on and start an IBM MQ Explorer session for later use .....	4-4
Section 2: Check that the FTP server is active .....	4-4
Section 3: Check that agents MFTUAGT1 and USR1AGT1 are in READY status .....	4-5
4.2. Work with a protocol bridge agent .....	4-6
Section 1: Create a protocol bridge agent .....	4-6
Section 2: Review the extra information that is returned by using the <code>fteCreateBridgeAgent</code> command .....	4-7
Section 3: Review the <code>agent.properties</code> file for agent PBRGAGT1 .....	4-8
Section 4: Review and adjust the <code>ProtocolBridgeProperties.xml</code> file .....	4-9
Section 5: Create the definitions that are required in the agent queue manager for agent PBRGAGT1 .....	4-11
Section 6: Copy and review the <code>ProtocolBridgeCredentials.xml</code> file .....	4-12
Section 7: Start and list the protocol bridge agent .....	4-13
Section 8: Create a transfer from the bridge agent to the standard agent .....	4-15
Section 9: Create a transfer from the standard agent to the bridge agent .....	4-17
4.3. Work with the redistributable agent .....	4-19
Section 1: Expand the redistributable agent package into the <code>C:\LabFiles\RedistClient</code> empty directory .....	4-19
Section 2: Set the path for the redistributed agent package and build the data directory for the new configuration .....	4-22
Section 3: Set up the directory structure and identify the coordination queue manager for the redistributable agent .....	4-23
Section 4: Identify the command queue manager .....	4-25
Section 5: Identify the agent queue manager and create a new standard redistributable agent ..	4-25
Section 6: Create the agent queue manager definitions that are required by agent RDSTAGT1 ..	4-26
Section 7: Start and list the redistributable agent .....	4-27
Section 8: Transfer a file by using the redistributable client .....	4-29

#### **Exercise 5. Working with IBM MQ and IBM MQ Managed File Transfer security .....5-1**

Section 1: Ensure that queue manager USR1 is running .....	5-5
Section 2: Stop agents and logger that user queue manager MFTU .....	5-5
Section 3: Stop queue manager MFTU .....	5-5
5.1. Work with IBM MQ default connection and channel authentication settings .....	5-7
Section 1: Create and start queue managers MFTS .....	5-7
Section 2: Review the initial channel authentication and connection authentication settings in the new queue manager .....	5-7
Section 3: Review the object definitions for queue manager MFTS and create the objects by using the <code>runmqsc</code> utility .....	5-9
Section 4: Review the object definitions added to queue manager USR1 and run the script by using the <code>runmqsc</code> utility .....	5-11
Section 5: Start the channel from queue manager MFTS to queue manager USR1 and send a test message .....	5-12

Section 6: Start the channel from queue manager USR1 to queue manager MFTS and send a test message .....	5-15
Section 7: Test IBM MQ Client connectivity to queue managers MFTS .....	5-17
Section 8: Confirm your findings by retesting with an ID and password .....	5-19
Section 9: Add a channel authentication rule to resolve the blocked channel under an administrative user ID .....	5-20
Section 10: Repeat the test with the user ID and password .....	5-21
5.2. Harden security and create a new configuration .....	5-22
Section 1: Replace connection authentication settings and add the back-stop rule to queue manager MFTS .....	5-22
Section 2: Confirm the results of the changes .....	5-23
Section 3: Review the preconfigured MQMFTCcredentials.xml file .....	5-26
Section 4: Identify the coordination queue manager and set up the MFTS configuration directory structure .....	5-26
Section 5: Identify the queue manager that serves as the command queue manager .....	5-30
Section 6: Identify the agent queue manager and create agent MFTUAGT1 .....	5-30
Section 7: Create the required IBM MQ objects for agent MFTSAGT1 .....	5-31
Section 8: Start the agent, review the output0.log, and list the agent, in the order given .....	5-32
Section 9: Create logger MFTSLGR1 for the MFTS configuration .....	5-34
Section 10: Create the required logger definitions in the coordination queue manager .....	5-34
Section 11: Start logger MFTSLGR1 .....	5-35
Section 12: Test agent MFTSAGT1 by creating a one-agent transfer .....	5-36
Section 13: Check the transfer results by checking the logger file .....	5-37
Section 14: Add agent USR1AGTS with agent queue manager USR1 to the MFTS configuration .....	5-37
Section 15: List the agents in the MFTS configuration .....	5-38
Section 16: Create a channel authentication rule to allow the USR1.MFTS channel to connect ..	5-40
Section 17: Test that the rule works by using amqsput from USR1 to MFTS .....	5-42
Section 18: Re-create agent USR1AGTS with force -f parameter .....	5-43
Section 19: Check whether the agent shows on the fteListAgents command .....	5-44
Section 20: Create the required agent queue manager objects for USR1AGTS .....	5-44
Section 21: Start agent USR1AGTS .....	5-45
Section 22: Transfer a file from agent USR1AGTS to agent MFTSAGT1 .....	5-46
Section 23: Create an MFTS configuration in the redistributable agent environment .....	5-48
Section 24: Identify the redistributable MFTS configuration command queue manager .....	5-50
Section 25: Create redistributable agent RDSTAGTS to use the MFTS queue manager for all roles .....	5-51
Section 26: Create a type ADDRESSMAP channel authentication rule to allow the fteadmin user to connect to MQMFT.MFTS.SVRCONN .....	5-52
Section 27: Create the required agent RDSTAGTS objects while you have the MFTS runmqsc session open .....	5-54
Section 28: Re-create and start agent RDSTAGTS .....	5-54
Section 29: Transfer a file from agent RDSTAGTS to agent MFTSAGT1 .....	5-57
5.3. Work with basic object authorizations .....	5-59
Section 1: Display the authorizations of the fteadmin user for USR1 queue SYSTEM.FTE.COMMAND.USR1AGT1 .....	5-59
Section 2: Display the authorizations of the fileusr1 user for USR1 queue manager queue MFTS .....	5-59
Section 3: Display the authorization to connect to queue manager MFTS for user fileusr1 .....	5-61

## **Exercise 6. Working with administrative tasks ..... 6-1**

6.1. Use other IBM MQ Managed File Transfer commands .....	6-4
Section 1: Create the definitions that are required for an agent by using the fteDefine command ..	6-4
Section 2: Use fteShowAgentDetails to display information about an agent .....	6-4
Section 3: Obfuscate passwords by using the fteObfuscate command .....	6-6
Section 4: Display component versions by using the fteDisplayVersion -v command .....	6-7
Section 5: Cancel a transfer by using the fteCancelTransfer command .....	6-8
Section 6: Use the fteCleanAgent command .....	6-10

6.2. Work with a relative path .....	6-13
Section 1: Create a transfer that uses the default relative path for the destination .....	6-13
Section 2: Change the relative path for agent USR1AGT1 .....	6-13
6.3. Change the default configuration .....	6-16
Section 1: Change the default configuration by using the <code>fteChangeConfigurationOptions</code> command .....	6-16
6.4. Set a trace at the command level .....	6-19
Section 1: Request a trace in the <code>fteCreateTransfer</code> command .....	6-19

---

# Trademarks

The reader should recognize that the following terms, which appear in the content of this training document, are official trademarks of IBM or other companies:

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide.

The following are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide:

Bluemix®

Initiate®

Notes®

WebSphere®

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Windows is a trademark of Microsoft Corporation in the United States, other countries, or both.

Java™ and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

UNIX is a registered trademark of The Open Group in the United States and other countries.

VMware and the VMware "boxes" logo and design, Virtual SMP and VMotion are registered trademarks or trademarks (the "Marks") of VMware, Inc. in the United States and/or other jurisdictions.

Other product and service names might be trademarks of IBM or other companies.

---

# Exercises description

This course includes the following exercises:

- Exercise 1, Working with IBM MQ Connectivity. In this lab exercise, you set up the IBM MQ infrastructure that is required to define the IBM MQ Managed File Transfer base configuration with two agents. You also complete the connectivity tests between the different connection types to mitigate IBM MQ problems in the IBM MQ Managed File Transfer configuration.
- Exercise 2, Configuring IBM MQ Managed File Transfer. This exercise uses the IBM MQ infrastructure that you completed and tested in Exercise 1. In this exercise, you define the MFTU IBM MQ Managed File Transfer configuration. You create a file logger, MFTSLGR1, and two agents, MFTUAGT1 and USR1AGT1.
- Exercise 3, Transfer initiation options. In this lab exercise, you experience different ways to start a transfer.
- Exercise 4, Working with protocol bridge and redistributable agents. In the first part of this lab, you obtain familiarity in configuring a protocol bridge agent. The second part of this lab introduces you to the new redistributable agent released with V9.0.1, and shows you how to configure a redistributable agent in relocatable mode. Relocatable mode means collocated with an IBM MQ Managed File Transfer configuration, but isolated to its own environment.
- Exercise 5, Working with IBM MQ and IBM MQ Managed File Transfer security. Exercise 5 combines elements from Exercises 1, 2, and 4, and also incorporates the IBM MQ security mechanisms connection authentication and channel authentication. You also have exposure to object authorization work. In some cases, you might opt to work through Exercise 5 a second time. At the start of the exercise, you see the steps that you need to take to back out your work if you choose to repeat this exercise.
- Exercise 6, Working with administrative tasks. In this exercise, you work with some of the IBM MQ Managed File Transfer commands that are not used in earlier labs. You work with the relative path, obfuscation of credentials that are now in clear text, and setting of traces at different levels. In the lecture that accompanies this lab, two areas are identified for your follow-up after you complete this course:
  - Advanced property file attributes with extra options to influence the behavior of IBM MQ Managed File Transfer processes. You can review these extra options by looking for each of the IBM MQ Managed File Transfer property file documentations at IBM Knowledge Center.
  - A reference to JVM and other capacity planning documents. It is suggested that you obtain the document as suggested before you finalize your IBM MQ Managed File Transfer infrastructure.

In the exercise instructions, you can check off the line before each step as you complete it to track your progress.



**Important**

Online course material updates might exist for this course. To check for updates, see the Instructor wiki at: <http://ibm.biz/CloudEduCourses>

---

---

# Exercise 1. Working with IBM MQ connectivity

## Estimated time

01:00

## Overview

This exercise reviews IBM MQ connectivity and sets up the infrastructure that is used in the IBM MQ Managed File Transfer configuration.

## 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

## Introduction

In this lab exercise you establish the IBM MQ infrastructure for the IBM MQ Managed File Transfer configuration that is used in subsequent lab exercises.

## Requirements

IBM MQ V9 with IBM MQ Managed File Transfer components installed

IBM MQ object definition and change files for queue managers MFTU and USR1

## Exercise instructions

### Preface

In this exercise, you create the IBM MQ environment that is used in Exercises 2 – 5. You are creating queue manager MFTU, which contains the base configuration, and queue manager USR1, which is used for an extra agent.

The IBM MQ V9 installation for this course is named IBMMQV9. You see IBMMQV9 in any display that features the installation name, instead of Installation1.

The queue manager scripts that you use in this lab disable channel authentication and channel authentication rules so that you can focus on the IBM MQ Managed File Transfer aspects of the work. However, ensuring that you recognize and rectify security problems is paramount. In the last lab exercise, you work with a new queue manager for which channel authentication and channel authentication rules are enabled.

- \_\_\_ 1. Follow the directions that are provided to you to reach the lab VMware image.
- \_\_\_ 2. Log on to the VMware image with `fteadmin` as the user ID and `web1sphere` as the password.

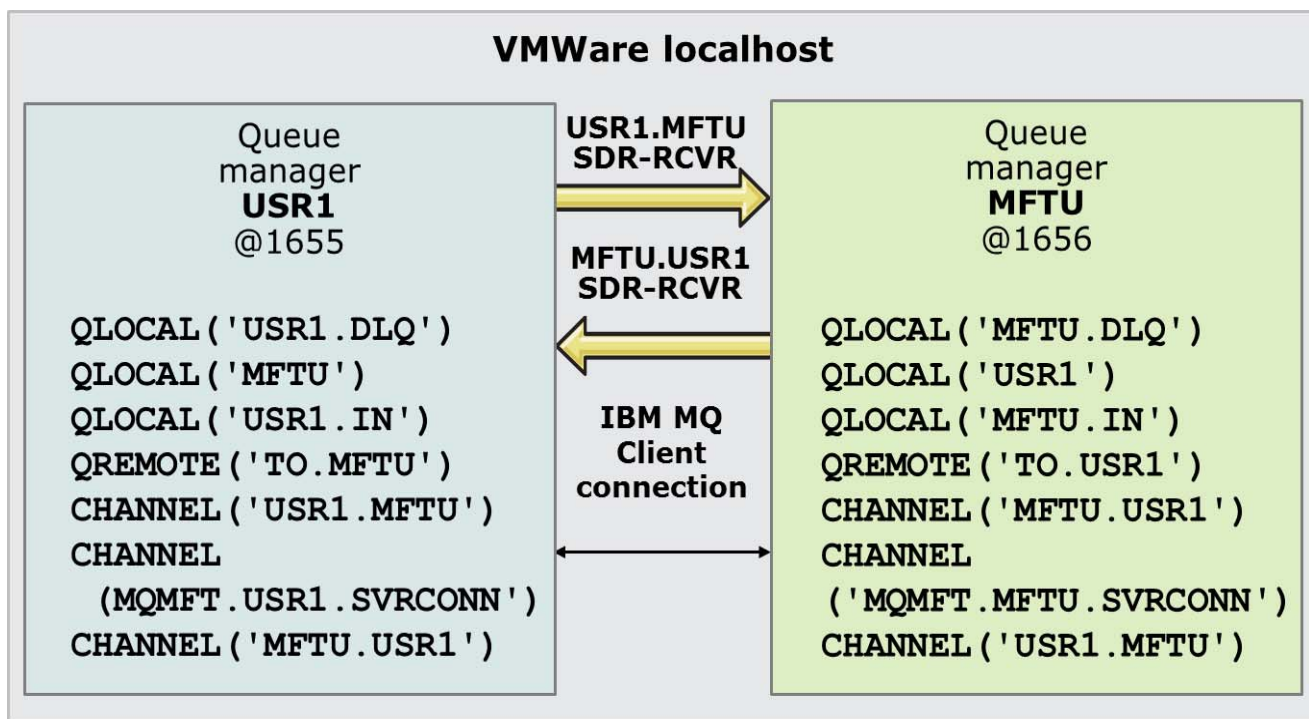



Figure 1-1. Course queue managers for exercises 1 - 5

### Section 1: Create and start queue managers MFTU and USR1

- \_\_\_ 3. Open a Windows command prompt by clicking the command prompt icon  in the Windows taskbar.
- \_\_\_ 4. Create queue manager MFTU by typing the command as shown in the text box and pressing the Enter key.

---

```
crtmqm -p 1656 -u MFTU.DLQ MFTU
```

Expected results:

```
IBM MQ queue manager created.

Directory 'C:\ProgramData\IBM\MQ\qmgrs\MFTU' created.
The queue manager is associated with installation 'IBMMQV9'.
Creating or replacing default objects for queue manager 'MFTU'.
Default objects statistics : 87 created. 0 replaced. 0 failed.
Completing setup.

Setup completed.
```

---

- \_\_ 5. Start queue manager MFTU as a service by typing the command as shown in the text box and pressing the Enter key.
- 

```
strmqm -ss MFTU
```

Expected results:

```
IBM MQ queue manager 'MFTU' starting.

The queue manager is associated with installation 'IBMMQV9'.

5 log records accessed on queue manager 'MFTU' during the log replay
phase.

Log replay for queue manager 'MFTU' complete.

Transaction manager state recovered for queue manager 'MFTU'.

IBM MQ queue manager 'MFTU' started using V9.0.0.0.
```

---

- \_\_ 6. Create queue manager USR1 by typing the command as shown in the text box and pressing the Enter key
- 

```
crtmqm -p 1655 -u USR1.DLQ USR1
```

Expected results:

```
IBM MQ queue manager created.

Directory 'C:\ProgramData\IBM\MQ\qmgrs\USR1' created.
The queue manager is associated with installation 'IBMMQV9'.
Creating or replacing default objects for queue manager 'USR1'.
Default objects statistics : 87 created. 0 replaced. 0 failed.
Completing setup.

Setup completed.
```

---

- \_\_ 7. Start queue manager USR1 as a service by typing the command as shown in the text box and pressing the Enter key.

---

**strmqm -ss USR1**

Expected results:

IBM MQ queue manager 'USR1' starting.

The queue manager is associated with installation 'IBMMQV9'.

5 log records accessed on queue manager 'USR1' during the log replay phase.

Log replay for queue manager 'USR1' complete.

Transaction manager state recovered for queue manager 'USR1'.

IBM MQ queue manager 'USR1' started using V9.0.0.0.

---

\_\_\_ 8. Keep the command prompt window open.

## Section 2: Review the object definitions and changes that are required for queue manager MFTU and run the script by using the *runmqsc* utility

- \_\_\_ 9. The IBM MQ script commands in file `MFTU.mqsc` are copied in the text box for this step. Review these definitions. You see how connection authentication and connection authorization are disabled. Do not change the script.

```
*****
* ZM003 Exercise 1 student script* Queue manager name: MFTU
* Create this queue manager by typing: crtmqm -p 1656 -u MFTU.DLQ MFTU
* Start this queue manager as a service by typing strmqm -ss MFTU
* Queue manager platform: Windows
*****
ALTER QMGR +
  CCSID(437) +
  CERTLABL('ibmwebspheremqmftu') +
  CHLAUTH(DISABLED) +
  CLWLUSEQ(LOCAL) +
  CONNAUTH('SYSTEM.DEFAULT.AUTHINFO.IDPWOS') +
  DEADQ('MFTU.DLQ') +
  FORCE
alter authinfo(SYSTEM.DEFAULT.AUTHINFO.IDPWOS) +
  authtype(IDPWOS) +
  chckclcl(optional) chckclnt(optional)
refresh security type(connauth)
DEFINE QLOCAL('MFTU.DLQ') +
  REPLACE
DEFINE QLOCAL('MFTU.IN') +
  MAXDEPTH(5000) +
  REPLACE
DEFINE QREMOTE('TO.USR1') +
  RQMNAME('USR1') +
  RNAME('USR1.IN') +
  XMITQ('USR1') +
  REPLACE
DEFINE QLOCAL('USR1') +
  INITQ('SYSTEM.CHANNEL.INITQ') +
  MAXDEPTH(5000) +
  TRIGGER +
  TRIGDATA('MFTU.USR1') +
  USAGE(XMITQ) +
  REPLACE
DEFINE CHANNEL('MFTU.USR1') +
  CHLTYPE(SDR) +
  CONNAME('localhost(1655)') +
  TRPTYPE(TCP) +
  XMITQ('USR1') +
  REPLACE
```

```

DEFINE CHANNEL('MQMFT.MFTU.SVRCONN') +
  CHLTYPE(SVRCONN) +
  TRPTYPE(TCP) +
  REPLACE
DEFINE CHANNEL('USR1.MFTU') +
  CHLTYPE(RCVR) +
  TRPTYPE(TCP) +
  REPLACE
*****

```

- \_\_\_ 10. In the command prompt window, change to directory C:\LabFiles\Unit1 by typing the command that is shown in the text box and pressing the Enter key.

---

**cd C:\LabFiles\Unit1**

Expected results:

Your command-line prompt now shows: C:\LabFiles\Unit1>

- 
- \_\_\_ 11. Ensure that the expected command files are present by listing the directory by typing the command that is shown in the text box and pressing the Enter key. Look for two .mqsc suffixed files: MFTU.mqsc and USR1.mqsc

---

**dir**

Expected results (abbreviated for clarity)

```

Directory of C:\LabFiles\Unit1
12/30/2016  10:02 AM                1,448 MFTU.mqsc
12/30/2016  10:02 AM                1,501 USR1.mqsc
                2 File(s)                2,949 bytes

```

- 
- \_\_\_ 12. Process the MFTU.mqsc script by typing the command as shown on the text box and pressing the Enter key. Ensure that you capture the results in a file so that you can review that each command was completed successfully. Ensure that you are in the C:\LabFiles\Unit1> directory before you type the command.

---

**runmqsc MFTU < MFTU.mqsc > mftu.out**

All expected output goes to file mftu.out.

- 
- \_\_\_ 13. From the same directory in the command prompt window, check the runmqsc utility results:
- \_\_\_ a. Open the mftu.out file by typing **notepad mftu.out** and pressing the Enter key.
  - \_\_\_ b. Scroll to the end of the output. You should see:
 

```

10 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.

```

- \_\_\_ c. If you see that the commands are processed and have no errors, continue to the next numbered step.
  - \_\_\_ d. If the results were not as expected, review the output and correct any errors before you proceed.
  - \_\_\_ e. Close file `mftu.out`.
- \_\_\_ 14. Keep the command prompt window open at the `C:\LabFiles\Unit1` directory.



### Section 3: Review the object definitions and changes that are required for queue manager USR1 and run the script by using the *runmqsc* utility

- \_\_\_ 15. The IBM MQ script commands in file `USR1.mqsc` are copied in the text box for this step. Review these definitions. You see how connection authentication and connection authorization are disabled. Do not change anything in the script.

```
*****
* ZM003 Exercise 1 student script
* Queue manager name: USR1
* Create this queue manager by typing: crtmqm -p 1655 -u USR1.DLQ USR1
* Start this queue manager as a service by typing strmqm -ss USR1
* Queue manager platform: Windows
*****

ALTER QMGR +
  CCSID(437) +
  CERTLABL('ibmwebspheremqusrl') +
  CHLAUTH(DISABLED) +
  CLWLUSEQ(LOCAL) +
  CONNAUTH('SYSTEM.DEFAULT.AUTHINFO.IDPWOS') +
  DEADQ('USR1.DLQ') +
  FORCE

alter authinfo(SYSTEM.DEFAULT.AUTHINFO.IDPWOS) authtype(IDPWOS) +
chkcklcl(optional) chkcklnt(optional)
refresh security type(connauth)
DEFINE QLOCAL('MFTU') +
  INITQ('SYSTEM.CHANNEL.INITQ') +
  MAXDEPTH(5000) +
  TRIGGER +
  TRIGDATA('USR1.MFTU') +
  USAGE(XMITQ) +
  REPLACE
DEFINE QREMOTE('TO.MFTU') +
  RQMNAME('MFTU') +
  RNAME('MFTU.IN') +
  XMITQ('MFTU') +
  REPLACE
DEFINE QLOCAL('USR1.DLQ') +
  DISTL(NO) +
  MAXDEPTH(5000) +
  REPLACE
DEFINE QLOCAL('USR1.IN') +
  DISTL(NO) +
  MAXDEPTH(5000) +
  REPLACE
DEFINE CHANNEL('MFTU.USR1') +
  CHLTYPE(RCVR) +
  TRPTYPE(TCP) +
```

```

REPLACE
DEFINE CHANNEL('MQMFT.USR1.SVRCONN') +
  CHLTYPE(SVRCONN) +
  TRPTYPE(TCP) +
  REPLACE
DEFINE CHANNEL('USR1.MFTU') +
  CHLTYPE(SDR) +
  CONNAME('localhost(1656)') +
  TRPTYPE(TCP) +
  XMITQ('MFTU') +
  REPLACE
*****

```

- \_\_\_ 16. You should still be at the `C:\LabFiles\Unit1` and see the `USR1.mqsc` file upon listing the directory by typing `dir` and pressing the Enter key. If you moved away from the directory, refer to the previous instructions to return to the `C:\LabFiles\Unit1` directory.
- \_\_\_ 17. Run the `USR1.mqsc` script by typing the command as shown on the text box and pressing the Enter key. Ensure that you capture the results in a file so that you can review that each command was completed successfully. Ensure that you are in the `C:\LabFiles\Unit1>` directory before you type the command.

---

```
runmqsc USR1 < USR1.mqsc > usr1.out
```

All expected output goes to the `usr1.out` file.

---

- \_\_\_ 18. From the same directory in the command prompt window, check the `runmqsc` utility results.
  - \_\_\_ a. Open the `usr1.out` file by typing `notepad usr1.out` and pressing the Enter key.
  - \_\_\_ b. Scroll to the end of the output. You should see:
 

```

10 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.
          
```
  - \_\_\_ c. If you see that the 10 commands are processed and have no errors, continue to the next numbered step.
- \_\_\_ 19. If the results were not as expected, review the output and correct any errors before you proceed.
- \_\_\_ 20. Close file `usr1.out`.
- \_\_\_ 21. Keep the command prompt window open.

## Section 4: Start the channel to queue manager *USR1* and send a test message



### Information

When you reviewed the object definitions that were made in queue manager *MFTU*, you might notice that sender channel *MFTU.USR* was triggered by having its transmission queue, *USR1* defined to be triggered. However, a new message channel is in *STOPPED* state, and the channel must be manually started to get it out of *STOPPED* state. After the channel is out of *STOPPED* state, it can then be trigger-started when messages arrive at queue *USR1*.

```
DEFINE QLOCAL('USR1') +
  INITQ('SYSTEM.CHANNEL.INITQ') +
  MAXDEPTH(5000) +
  TRIGGER +
  TRIGDATA('MFTU.USR1') +
  USAGE(XMITQ) +
  REPLACE
DEFINE CHANNEL('MFTU.USR1') +
  CHLTYPE(SDR) +
  CONNAME('localhost(1655)') +
  TRPTYPE(TCP) +
  XMITQ('USR1') +
  REPLACE
```

- 
- \_\_\_ 22. Start the `runmqsc` session for queue manager *MFTU* by typing `runmqsc MFTU` and pressing the Enter key.
  - \_\_\_ 23. After you are in the `runmqsc` session, start the channel by typing the command as shown in the text box and pressing the Enter key. Do not exit the `runmqsc` session.
- 

```
start chl(MFTU.USR1)
```

Expected results:

```
1 : start chl(MFTU.USR1)
AMQ8018: Start IBM MQ channel accepted.
```

- 
- \_\_\_ 24. Display the channel status by typing the command as shown in the text box and pressing the Enter key.

---

```
dis chs(MFTU.USR1)
```

Expected results:

```
2 : dis chs(MFTU.USR1)
AMQ8417: Display Channel Status details.
CHANNEL(MFTU.USR1)          CHLTYPE(SDR)
CONNNAME(127.0.0.1(1655))   CURRENT
RQMNAME(USR1)               STATUS(RUNNING)
SUBSTATE(MQGET)             XMITQ(USR1)
```

---


- \_\_ 25. Type **end** and press the Enter key to exit the `runmqsc` session.
- \_\_ 26. If the channel status shows it is running, you can proceed to the next numeric step. If the channel status is anything other than running, such as retrying, then stop and resolve the problem by following the hints in the troubleshooting box.



## Troubleshooting

If channel **MFTU.USR1** did not show **STATUS(RUNNING)**, use these instructions.

You might need to repeat the same process on both queue managers, MFTU, and USR1. Start with queue manager MFTU.

- Open a Windows Explorer panel by clicking the Windows Explorer icon  in the taskbar.
- Expand the Computer menu until you see the Local Disk (C:) entry.
- Locate the MFTU queue manager logs by drilling down to **ProgramData > IBM > MQ > qmgrs > MFTU > errors**. It is important that you follow the path that is shown so that you are in the queue manager (qmgrs) logs. If you do not drill down to the queue managers log, you might be looking at IBM MQ system logs, which do not help in case a channel is not starting.

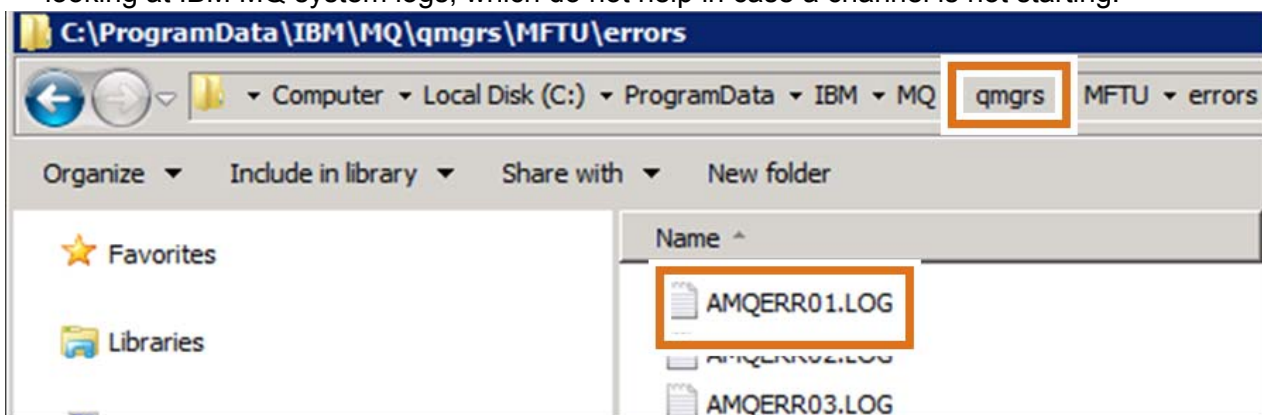
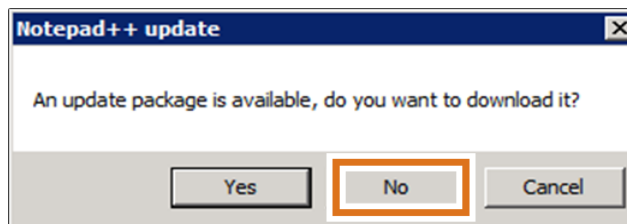


Figure 1-2. Directory path to the queue manager logs

- Right-click the **AMQERR01.LOG** file and select Edit with Notepad++. Alternatively, you can use any other method that you might prefer to open the file.
- If you used Notepad++ and get a window that requests you to update Notepad, select **No** to close the window.



- Scroll to the end of the log, and look for messages that refer to the channel. Usually, you need to look for more than one message to obtain all details.
- Ensure that you are looking at log entries for the correct date that the **start chl** command was issued.
- After you resolve the problem, repeat the steps to start the channel and display the channel status.

If you did not find any conclusive messages in the queue manager MFTU error log, repeat the same troubleshooting process, but this time for queue manager USR1.



## Information

When you reviewed the MFTU object definitions, you might notice a remote queue definition. You use this queue to test sending messages to the USR1 queue manager. You use the name of queue remote TO.USR1 in the `amqspu` sample program. TO.USR1 uses transmission queue USR1, which means that if the channel is not running, any messages stop in queue USR1 unless they go to the dead-letter queue. After the messages get to queue manager USR1, they go to USR1 local queue USR1.IN.

```
DEFINE QREMOTE('TO.USR1') +
  RQMNAME('USR1') +
  RNAME('USR1.IN') +
  XMITQ('USR1') +
  REPLACE
```

- 
- \_\_\_ 27. Start sample program `amqspu` by typing the request as shown on the text box and pressing the Enter key **one time**. Ensure that the request is typed exactly as shown.
- 

`amqspu TO.USR1 MFTU`

Expected reply:

```
Sample AMQSPUT0 start
target queue is TO.USR1
```

---

- \_\_\_ 28. Type any text such as **abc** to be sent as a message, and then press the Enter key two times to end the sample program. Expected results are:

```
Sample AMQSPUT0 end
```

- \_\_\_ 29. Use a second sample program to determine whether the message arrived at the USR1.IN queue in the queue manager USR1 by typing the request as shown on the text box and pressing the Enter key one time. The sample program runs for 15 seconds waiting for more messages. Ensure that the request is typed exactly as shown.
- 

`amqsget USR1.IN USR1`

Expected results:

```
Sample AMQSGET0 start
message <abc>
no more messages
Sample AMQSGET0 end
```

---

- \_\_\_ 30. If your channel started successfully and showed a running status, and you did not make any inadvertent errors, ensure that your results resemble the results that are shown in the text box.
- \_\_\_ 31. If you did not get the test message from queue USR1.IN in queue manager USR1, check your previous steps for any typographical errors. Do not proceed until you determine the reason that the message did not arrive.

## Section 5: Start the channel to queue manager MFTU and send a test message

- \_\_\_ 32. Start the `runmqsc` session for queue manager USR1 by typing `runmqsc USR1` and pressing the Enter key.
- \_\_\_ 33. After you are in the `runmqsc` session, start the channel by typing the command as it is shown in the text box and pressing the Enter key. Do not exit the `runmqsc` session.

```
start chl(USR1.MFTU)
```

Expected results:

```
1 : start chl(USR1.MFTU)
AMQ8018: Start IBM MQ channel accepted.
```

- \_\_\_ 34. Display the channel status by typing the command as shown in the text box and pressing the Enter key.

```
dis chs(USR1.MFTU)
```

Expected results:

```
2 : dis chs(USR1.MFTU)
AMQ8417: Display Channel Status details.
CHANNEL(USR1.MFTU)                CHLTYPE(SDR)
CONNNAME(127.0.0.1(1656))          CURRENT
RQMNAME(MFTU)                      STATUS(RUNNING)
SUBSTATE(MQGET)                    XMITQ(MFTU)
```

- \_\_\_ 35. Type `end` and press the Enter key to exit the `runmqsc` session.
- \_\_\_ 36. If the channel status shows it is running, you can proceed to the next numeric step. If the channel status is anything other than running, such as retrying, then stop and resolve the problem by following the hints in the troubleshooting box that was provided earlier in this exercise.



### Information

When you reviewed the USR1 object definitions, you might notice a remote queue definition. You use this queue to test sending messages to the MFTU queue manager. You use the name of queue remote TO.MFTU in the `amqspout` sample program. TO.MFTU uses transmission queue MFTU, which means that if the channel is not running, any messages stop in queue MFTU unless they go to the dead-letter queue. After the messages get to queue manager MFTU, they go to MFTU local queue MFTU.IN.

```
DEFINE QREMOTE('TO.MFTU') +
  RQMNAME('MFTU') +
  RNAME('MFTU.IN') +
  XMITQ('MFTU') +
  REPLACE
```

- \_\_\_ 37. Start sample program `amqspout` by typing the request as shown on the text box and pressing the Enter key **one time**. Ensure that the request is typed exactly as shown.

---

```
amqspout TO.MFTU USR1
```

Expected reply:

```
Sample AMQSPUT0 start
target queue is TO.MFTU
```

---

- \_\_\_ 38. Type any text such as `xyz` to be sent as a message, and then press the Enter key two times to end the sample program. Expected results are:

```
Sample AMQSPUT0 end
```

- \_\_\_ 39. Use a second sample program to determine whether the message arrived at the MFTU.IN queue in queue manager MFTU by typing the request as shown on the text box and pressing the Enter key one time. The sample program runs for 15 seconds waiting for more messages. Ensure that the request is typed exactly as shown.

---

```
amqsget MFTU.IN MFTU
```

Expected results:

```
Sample AMQSGET0 start
message <xyz>
no more messages
Sample AMQSGET0 end
```

---

- \_\_\_ 40. If your channel started successfully and showed a running status, and you did not make any inadvertent errors, ensure that your results resemble the results that are shown in the text box.
- \_\_\_ 41. If you did not get the test message from queue MFTU.IN in queue manager MFTU, check your previous steps for any typographical errors. Do not proceed until you determine the reason that the message did not arrive.

## Section 6: Test IBM MQ Client connectivity to queue managers MFTU and USR1

---



### Information

As you review the definitions that are made in queue managers MFTU and USR1, you might notice the definition of server connection, or SVRCONN channels. These channels are intended for IBM MQ Client, or MQI type connectivity to each queue manager:

- The server connection channel that is defined for the MFTU queue manager is `MQMFT.MFTU.SVRCONN`. Queue manager MFTU listens on port 1656.
- The server connection channel that is defined for the USR1 queue manager is `MQMFT.USR1.SVRCONN`. Queue manager USR1 listens on port 1655.



When IBM MQ Managed File Transfer uses IBM MQ Client type connections, it uses the code method to connect to a queue manager server connection channel. IBM MQ sample program `amqscnxc` is an IBM MQ Client utility that connects to a queue manager in a similar way as IBM MQ Managed File Transfer. You use `amqscnxc` to test the IBM MQ Client type connectivity to each queue manager.



### Important

#### Location of the `amqscnxc` sample program

The `amqscnxc` sample is located in the `bin64` directory. Your lab environment is set so that the path to `C:\Program Files\IBM\MQ\Tools\c\Samples\Bin64` is preset in the Windows PATH variables. However, if the command is not recognized when you type it in the command prompt window, the simplest way to proceed is to change to the `Bin64` directory. To change to the `Bin64` directory, type:

```
cd C:\Program Files\IBM\MQ\Tools\c\Samples\Bin64
```

and press the Enter key.

Run the `amqscnxc` connectivity steps for both queue managers from the same directory.

- 
- \_\_\_ 42. Test the IBM MQ Client connection to queue manager MFTU by using the `amqscnxc` sample program exactly as it is shown in the command that is provided in the text box.
- 

```
amqscnxc -x localhost(1656) -c MQMFT.MFTU.SVRCONN MFTU
```

Expected results for first part:

```
Sample AMQSCNXC start
```

```
Connecting to queue manager MFTU
```

```
using the server connection channel MQMFT.MFTU.SVRCONN  
on connection name localhost(1656).
```

```
Connection established to queue manager MFTU
```

```
Sample AMQSCNXC end
```

---

- \_\_\_ 43. If you receive the message `Connection established to queue manager MFTU`, proceed to the next step. If you did not successfully connect, refer to the Troubleshooting text box.
- 



### Troubleshooting

If you get an error code, use the `mqrcc` command followed by the numeric return code to determine the meaning of the error.

- For example, if you get a 2540 error:

```
mqrcc 2540
```

Expected result:

```
2540 0x000009ec MQRC_UNKNOWN_CHANNEL_NAME
```

- If you see a 2540 return code, you likely typed the channel name in error. Review your previous **amqscnxc** and **retype**. You can use the same command to obtain a summary of the error.
- If you received a 2035 return code when you ran the **amqscnxc** connectivity test, check the queue manager log for the failing test. For example, if the connection to the USR1 queue manager failed, check the **AMQERR01.LOG** file in the `C:\ProgramData\IBM\MQ\qmgrs\USR1\errors` directory.
- If you see the **AMQ5541** message in the log as shown, the security cache might need a refresh:

```
AMQ5541: The failed authentication check was caused by the queue manager
CONNAUTH CHCKCLNT(REQDADM) configuration.
```

**EXPLANATION:**

The user ID 'fteadmin' and its password were checked because the user ID is privileged and the queue manager connection authority (CONNAUTH) configuration refers to an authentication information (AUTHINFO) object named 'SYSTEM.DEFAULT.AUTHINFO.IDPWOS' with CHCKCLNT(REQDADM).

- If message **AMQ5541** is present in the failing queue manager log, take the following actions:
  - Look at your **MFTU.out** file and ensure that the command that is shown in this sentence ran successfully: **alter authinfo**(SYSTEM.DEFAULT.AUTHINFO.IDPWOS) **authtype**(IDPWOS) **chcklocl**(optional) **chckclnt**(optional)
  - If the **alter authinfo** command ran successfully, refresh the queue manager security cache by starting a **runmqsc** session for the failing queue manager, and typing the command as shown.

```
refresh security type(connauth)
```

**Expected results:**

```
1 : refresh security type(connauth)
AMQ8560: IBM MQ security cache refreshed.
```

- 
- \_\_\_ 44. Test the IBM MQ Client connection to queue manager USR1 by using the **amqscnxc** sample program exactly as it is shown in the command that is provided in the text box.
- 

```
amqscnxc -x localhost(1655) -c MQMFT.USR1.SVRCONN USR1
```

**Expected results for first part:**

```
Sample AMQSCNXC start
```

```
Connecting to queue manager USR1
```

```
using the server connection channel MQMFT.USR1.SVRCONN
on connection name localhost(1655).
```

```
Connection established to queue manager USR1
```

```
Sample AMQSCNXC end
```

---

- \_\_\_ 45. If you received message `Connection established to queue manager USR1`, proceed to the next step. If you did not successfully connect, check your work for typographical errors, and repeat the step until you obtain a successful connection by using `amqscnxc`.
- 



## Stop

If any part of the connectivity and message exchange tests failed, do not proceed to the next lab. A critical prerequisite of IBM MQ Managed File Transfer is to have the IBM MQ infrastructure operational. If any of the tests failed, correct any problems before you proceed with any further work. Use the previous troubleshooting box for assistance with the problem.

---

If all the connectivity and message exchange tests were successful, you completed Exercise 1.

## End of exercise

## Exercise review and wrap-up

In this lab exercise you established the IBM MQ infrastructure for your IBM MQ Managed File Transfer configuration. You:

- Created and started queue managers MFTU and USR1
- Defined queues and channel objects in queue managers MFTU and USR1
- Started the channels from MFTU to USR1, and from USR1 to MFTU
- Determined the status of the channels after the start command was completed
- Tested that messages flow bidirectionally between both queue managers by using the `amqsput` and `amqsget` sample programs
- Tested IBM MQ Client connectivity to queue managers MFTU and USR1 by using the `amqscnxc` sample program

---

# Exercise 2. Configuring IBM MQ Managed File Transfer

## Estimated time

01:30

## 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.

## 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

## Introduction

Exercise 2 has two parts. First, you configure and test the base topology, which uses queue manager `MFTU` for all IBM MQ Managed File Transfer roles. The base topology includes agent `MFTUAGT1`. In part 2.2, you add an extra agent that uses queue manager `USR1` in the agent queue manager role.

## Requirements

Completion of Exercise 1 with successful connectivity tests

## Exercise instructions

### Preface

The instructions in this exercise focus on work with IBM MQ Managed File Transfer commands from the command prompt, and inspection of the resulting directory structure as the configuration progresses. A good understanding of what happens from the time you start working with an empty directory structure, to the completed configuration directory structure, is critical in future configuration and troubleshooting.

Take time to review the directory structure as each part of the configuration is completed.



#### Note

Throughout this exercise, you can either type the commands as shown, or copy and paste each command from the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`. Commands follow the names of the section from which they are used.

Shorter commands are omitted from the `Lab2_copyAndPaste.txt` file.

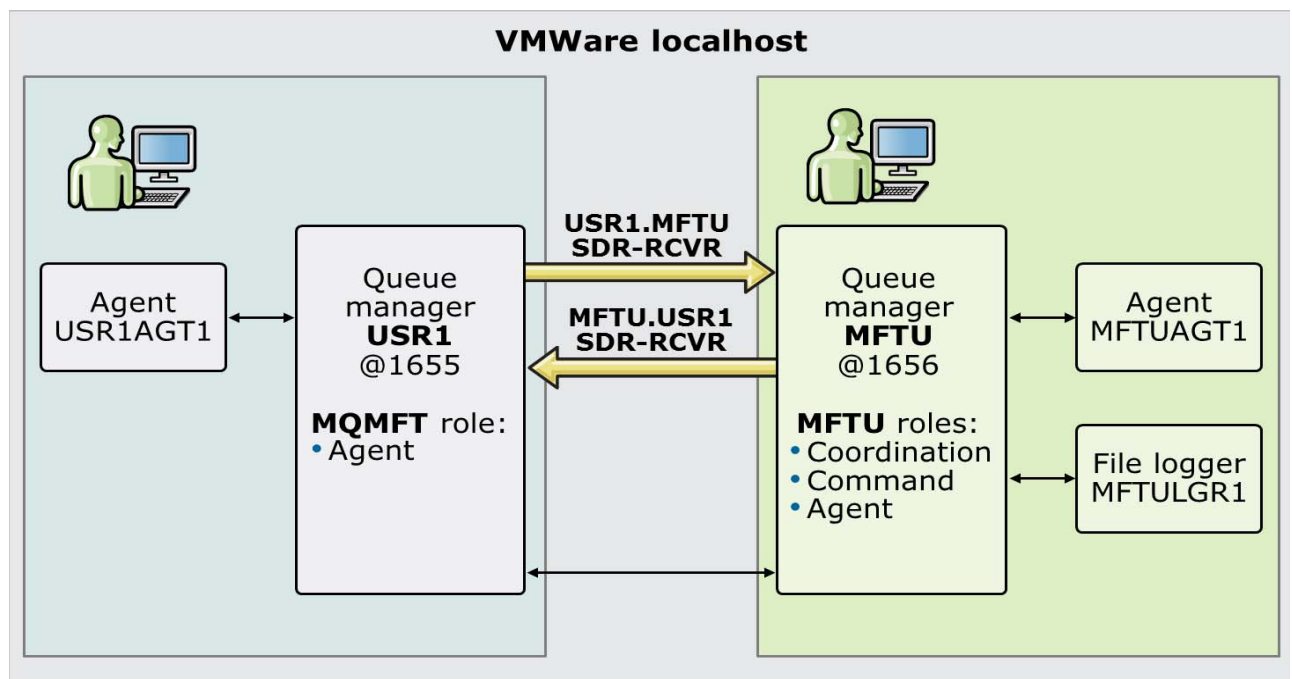


Figure 2-1. Course configuration

## 2.1. Base configuration

In the base configuration, you use queue manager `MFTU` to serve the coordination, command, and agent roles. The base configuration is depicted in the box to the right in the diagram. After you set the directory structure, you create agent `MFTUAGT1` and then file logger `MFTULGR1`. You review the directory structure that results from the configuration work, and start the agent and logger.



### Stop

Do not proceed with this lab exercise unless all connectivity and message exchange tests in Exercise 1 were successful. The IBM MQ infrastructure must work correctly for the IBM MQ Managed File Transfer configuration to function properly.



### Troubleshooting

If your channels go into retry status, or if your connection is blocked due to security issues, you need to resolve the problem before you can continue your work. Your channels might go into retry due to different events, such as restarting the VMware image before first stopping the queue managers. **You do not need to restart the VMware image.**

If the results of an `fteListAgents` command are unexpected, such as an agent not listed, or an agent in UNKNOWN status, you must check the connection between the agent queue manager and the coordination queue manager. To check for any problems, you must look in the coordination queue manager log. For example, to check the logs for queue manager `MFTU`, you open file `AMQERR01.LOG` in directory `C:\ProgramData\IBM\MQ\qmgrs\MFTU\errors`. You must always go under the “qmgrs” directory for the correct coordination queue manager log. An extra `errors` directory that is higher in the directory structure holds software errors, but the name of the file is the same, `AMQERR01.LOG`. The higher-level directory file does not help for specific queue manager information.

Look from the end of the `AMQERR01.LOG` file, and scroll up until you find the channel error. For instructions on how to resolve channel problems:

- Open a browser session by clicking the Firefox link on the taskbar. If, when you click the Firefox browser you get a box to enter a password, click **No**. The browser still opens after you select **No**.
- Use the IBM Knowledge Center bookmark in the Firefox browser. After you are in the IBM Knowledge Center, search for section “When a channel refuses to run”. Depending on the contents of the error entry in the queue manager log, select the correct action.

Problems with security issues are addressed in the lab steps. However, problems due to incorrect shutting of the queue manager must be addressed by resolving the channel problems by checking the links that are mentioned in this text box.

## Section 1: Review the existing directory structure before any configuration tasks are completed



### Hint

If you plan to use the `Lab2_copyAndPaste.txt` file, use Windows Explorer to navigate to the `C:\LabFiles\Unit2` directory, and double-click the file name `Lab2_copyAndPaste.txt`.

Leave the `Lab2_copyAndPaste.txt` file open throughout this lab exercise. Ensure that you do not accidentally corrupt the contents of file `Lab2_copyAndPaste.txt`.

- \_\_\_ 1. Log on as the `fteadmin` user.
- \_\_\_ 2. Open a command prompt window.
- \_\_\_ 3. Navigate to directory `C:\ProgramData\IBM\MQ\mqft` by typing `cd C:\ProgramData\IBM\MQ\mqft` and pressing the Enter key.
- \_\_\_ 4. Ensure that you are in directory `C:\ProgramData\IBM\MQ\mqft`.
- \_\_\_ 5. Recursively list the contents of the directory by typing the command as shown in the text box and pressing the Enter key.

```
dir /b /s
```

Expected results:

```
C:\ProgramData\IBM\MQ\mqft\config
C:\ProgramData\IBM\MQ\mqft\installations
C:\ProgramData\IBM\MQ\mqft\logs
```

- \_\_\_ 6. Review the contents of the `C:\ProgramData\IBM\MQ\mqft` directory before you start the configuration. You see three empty subdirectories: `config`, `installations`, and `logs`.

## Section 2: Identify the coordination queue manager and set up the configuration directory structure

- \_\_\_ 7. Identify the coordination queue manager and set up the configuration directory structure by typing the `fteSetupCoordination` command exactly as shown in the text box. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file that is found in directory `C:\LabFiles\Unit2`.



---

```
fteSetupCoordination -coordinationQMGr MFTU
```

#### Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
 BFGCM0242I: Direct the following MQSC definitions for your coordination queue manager 'MFTU' to an MQSC session if you have not already done so.

```
DEFINE TOPIC('SYSTEM.FTE') TOPICSTR('SYSTEM.FTE') REPLACE
ALTER TOPIC('SYSTEM.FTE') NPMGDLV(ALLAVAIL) PMSGDLV(ALLAVAIL)
DEFINE QLOCAL(SYSTEM.FTE) LIKE(SYSTEM.BROKER.DEFAULT.STREAM) REPLACE
ALTER QLOCAL(SYSTEM.FTE) DESCR('Stream for MQMFT Pub/Sub interface')
* Altering namelist: SYSTEM.QPUBSUB.QUEUE.NAMELIST
* Value prior to alteration:
DISPLAY NAMELIST(SYSTEM.QPUBSUB.QUEUE.NAMELIST)
ALTER NAMELIST(SYSTEM.QPUBSUB.QUEUE.NAMELIST) +
  NAMES(SYSTEM.BROKER.DEFAULT.STREAM+
    ,SYSTEM.BROKER.ADMIN.STREAM,SYSTEM.FTE)
* Altering PSMODE. Value prior to alteration:
DISPLAY QMGR PSMODE
ALTER QMGR PSMODE(ENABLED)
```

BFGCM0243I: A file has been created that contains the MQSC definitions for your coordination queue manager. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\MFTU.mqsc'.

---

- \_\_\_ 8. The command displays a number of object changes and definitions that need to be made to coordination queue manager MFTU. The output also informs you of the location of the directory where command file `MFTU.mqsc` can be found.
  - \_\_\_ 9. Before you proceed to create the objects, list the existing directory structure by typing the command as shown in the text box and then pressing the Enter key.
- 

```
dir /b /s
```

#### Expected results:

```
C:\ProgramData\IBM\MQ\mqft\config
C:\ProgramData\IBM\MQ\mqft\installations
C:\ProgramData\IBM\MQ\mqft\logs
C:\ProgramData\IBM\MQ\mqft\config\MFTU
C:\ProgramData\IBM\MQ\mqft\config\MFTU\coordination.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\MFTU.mqsc
C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9
C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9\installation.properties
C:\ProgramData\IBM\MQ\mqft\logs\MFTU
```

---

- \_\_\_ 10. Review the changes in the directory structure after the `fteSetupCoordination` command ran.
- \_\_\_ a. A new subdirectory, `MFTU`, is under the `config` directory. This directory is your configuration directory.
  - \_\_\_ b. Property file `coordination.properties` is created. Open the `coordination.properties` file with your preferred utility and look at its contents. The expected results are as shown, except for the date and time:
 

```
#
#Sun Jan 01 12:21:43 PST 2017
coordinationQMGr=MFTU
```
  - \_\_\_ c. Close file `coordination.properties`.
  - \_\_\_ d. The IBM MQ command file `MFTU.mqsc` is also present. The contents of the `MFTU.mqsc` file resembles the definitions that were displayed as output when you typed the `fteSetupCoordination` command.
  - \_\_\_ e. Now look at the installations directory. A new subdirectory is created which uses the name of the IBM MQ installation. In the course lab server, the IBM MQ V9 installation was named `IBMMQV9`, which is the name of the installations subdirectory.
  - \_\_\_ f. File `installation.properties` is created. Open the `installation.properties` file with your preferred utility. Expected results should be similar to the results that are shown, except for the date and time.
 

```
#
#Sun Jan 01 12:21:43 PST 2017
defaultProperties=MFTU
```
- \_\_\_ 11. This directory indicates the default IBM MQ Managed File Transfer configuration. Since you are creating the first configuration for this server, the configuration automatically becomes the default configuration. You can change which is the default configuration. For now, you keep the MFTU configuration as the default configuration.



### Information

In older versions of IBM MQ Managed File Transfer, the `installation.properties` file was called `wmfte.properties`.

- \_\_\_ 12. Last, under the logs directory, you now see an MFTU subdirectory. No logs are there currently, but the configuration subdirectory is created.
- \_\_\_ 13. Navigate to subdirectory `C:\ProgramData\IBM\MQ\mqft\config\MFTU` by using command `cd C:\ProgramData\IBM\MQ\mqft\config\MFTU` and pressing the Enter key.
- \_\_\_ 14. Create the objects that the coordination queue manager role in queue manager MFTU requires by invoking the `runmqsc` utility as shown in the text box:

---

```
runmqsc MFTU < MFTU.mqsc > mftu.out
```

Expected results are contained in the `mftu.out` file.

---

- \_\_\_ 15. Open file `mftu.out` by typing **notepad mftu.out** and pressing the Enter key.
  - \_\_\_ 16. Scroll to the end of the `mftu.out` file and check that the results are exactly as shown in the text box.
- 

```
8: ALTER QMGR PSMODE(ENABLED)
AMQ8005: IBM MQ queue manager changed.
8 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.
```

---

- \_\_\_ 17. If your results show that eight commands were read and you see “**No commands have a syntax error**”, proceed to the next step.
  - \_\_\_ 18. If your results are not exactly as shown and any part of the command failed, review the error message in the `mftu.out` file, and make any necessary corrections before you continue.
- 



### Information

The last command in the `MFTU.mqsc` file, `ALTER QMGR PSMODE(ENABLED)`, was copied to the display. If you recall in earlier lectures, IBM MQ Managed File Transfer requires the use of queue publish/subscribe. The `PSMODE`, or publish/subscribe mode, queue manager attribute set at `ENABLED` specifies that queued publish/subscribe needs to be active in queue manager MFTU.

---

- \_\_\_ 19. Keep the command prompt window open in the same directory.
- \_\_\_ 20. Close file `mftu.out`.

## ***Section 3: Identify the queue manager that serves in the role of command queue manager***

---



### Note

Although the configuration that is used in the course exercises shares the queue manager for the coordination, command, and agent roles, you need to identify the queue manager that serves each role. The command queue manager is identified by using the `fteSetupCommands` command. The command queue manager does not require extra IBM MQ object definitions.

---

- \_\_\_ 21. Identify the command queue manager by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file that is found in directory `C:\LabFiles\Unit2`.

---

```
fteSetupCommands -connectionQMgr MFTU
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0245I: The file 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\command.properties'
has been created successfully.
```

---

- \_\_\_ 22. The next property file, `command.properties`, is now created. Check that you are in directory `C:\ProgramData\IBM\MQ\mqft\config\MFTU`.
- \_\_\_ 23. Type **notepad command.properties** and press the Enter key. The expected results are as shown, except for the date and time.

```
#
#Sun Jan 01 13:26:02 PST 2017
connectionQMgr=MFTU
```

- \_\_\_ 24. Close file `command.properties`.
- \_\_\_ 25. Keep the command prompt open and stay at the current directory location, `C:\ProgramData\IBM\MQ\mqft\config\MFTU`.

#### ***Section 4: Identify the agent queue manager and create agent MFTUAGT1***

- \_\_\_ 26. Identify the agent queue manager and create agent `MFTUAGT1` by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.

---

```
fteCreateAgent -agentName MFTUAGT1 -agentQMgr MFTU
```

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
```

```
BFGCM0238I: Direct the following MQSC definitions for agent 'MFTUAGT1' to queue manager 'MFTU'.
```

```
Expected results:
```

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
```

```
BFGCM0238I: Direct the following MQSC definitions for agent 'MFTUAGT1' to queue manager 'MFTU'.
```

```
DEFINE QLOCAL(SYSTEM.FTE.COMMAND.MFTUAGT1) +
```

```
... ..
```

```
... .. <=== The lines that display agent object definitions were omitted for brevity.
```

```
... ..
```

```
+BFGCM0239I: A file has been created containing the MQSC definitions to define the agent MFTUAGT1. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_create.mqsc'.
```

```
BFGCM0241I: A file has been created containing the MQSC definitions to delete the agent MFTUAGT1. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_delete.mqsc'.
```

```
BFGPR0127W: No credentials file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM MQ authentication has been disabled.
```

```
BFGCL0053I: Agent configured and registered successfully.
```

---

## Section 5: Review the results of the fteCreateAgent command and create the agent required queue manager definitions

Several pieces of information are important to review when the agent gets created. These items are highlighted in bold.

- \_\_\_ 27. Look at the first message, **BFGCM0238I**. You can ignore the **BFGCM0238I** message as you manually create the definitions by using the runmqsc utility with **MFTUAGT1\_create.mqsc**, which the command generates.
- \_\_\_ 28. Check message **BFGCM0239I**. This message indicates where the **MFTUAGT1\_create.mqsc** file is created so that you can define the agent queue manager role required definitions before you start the agent.
- \_\_\_ 29. You also see message **BFGCM0241I**. This command definition file is created to remove the agent definitions from the agent queue manager in case you need to delete the agent later.
- \_\_\_ 30. Next, you see the **BFGPR0127W** file, which advises you that no credentials file is available. If the queue manager that is used for the agent role does not require connection authentication, you can safely ignore this message.
- \_\_\_ 31. The next item to look out for is one that you do not see, which is any type of warning or error message that might preclude your agent from becoming registered. No such messages are in the display, which is a good result.

- \_\_\_ 32. A **critical message to carefully check** is the **BFGCL0053I** message. Ensure that you see that your agent is **registered successfully**. It is easy to miss this message and then have inexplicable problems with the agent, which are due to a missed error. **You can see a message that states that the agent was configured, but if it is not registered, it presents a problem.**



### Attention

What type of queue manager connection did you use for the coordination, command, and agent configuration? If you refer to the diagram at the start of this exercise, you see the base configuration components. By defining the coordination, command, and agent components with the queue manager name, without extra connectivity information, you request a bindings type connection. The bindings type connection creates a local connection, without use of TCP/IP. If you use the IBM MQ Client type connection, by providing the host, port, and channel information, you use TCP/IP.

At times, an IBM MQ Client type connection is required, such as:

- IBM MQ is not installed on the remote agent. The remote agent connects to a remote queue manager from an IBM MQ Managed File Transfer Agent component, or as formerly referred to in older IBM MQ versions, a WebSphere MQ File Transfer Client.
- If an agent queue manager is in a server other than where the coordination queue manager is defined. That is, the agent and the coordination queue manager are in different servers.

- 
- \_\_\_ 33. Before you proceed to create the required agent objects, return to the `mqft` directory by typing `cd C:\ProgramData\IBM\MQ\mqft` and pressing the Enter key.
- \_\_\_ 34. List the existing directory structure after the agent was created by typing the command as shown in the text box then pressing the Enter key.

---

```
dir /b /s
```

Expected results:

```
C:\ProgramData\IBM\MQ\mqft\config
C:\ProgramData\IBM\MQ\mqft\installations
C:\ProgramData\IBM\MQ\mqft\logs
C:\ProgramData\IBM\MQ\mqft\config\MFTU
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents
C:\ProgramData\IBM\MQ\mqft\config\MFTU\command.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\coordination.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\MFTU.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\mftu.out
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\agent.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\exits
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_create.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_delete.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\UserSandboxes.xml
C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9
C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9\installation.properties
C:\ProgramData\IBM\MQ\mqft\logs\MFTU
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1
```

---

- \_\_\_ 35. Review the results of the configuration directory after agent **MFTUAGT1** was created. The new entries are highlighted in bold in the listing.
- \_\_\_ a. Under the < >**\mqft\config** directory, you see that an **agents** subdirectory is created under the **MFTU** configuration directory.
  - \_\_\_ b. Another subdirectory with the agent name **MFTUAGT1** is created in the **agents** subdirectory.
  - \_\_\_ c. You see the **agent.properties** directory listed. The contents of the **agent.properties** file are expected to be:
 

```
#
#Mon Jan 02 04:26:26 PST 2017
agentQMgr=MFTU
agentDesc=
agentName=MFTUAGT1
```
  - \_\_\_ d. You also see a subdirectory for exits.
  - \_\_\_ e. You see file **UserSandboxes.xml**, which is used for file system security. You learn about **UserSandboxes.xml** later in this course.
  - \_\_\_ f. Under the < >**\mqft\logs** subdirectory, you now see another **agents** subdirectory, which contains another subdirectory that is named after agent **MFTUAGT1**.



## Information

Throughout the IBM MQ Managed File Transfer configurations:

- The `<>\mqft\config` directory keeps configuration type information.
- The `<>\mqft\logs` directory keeps information specific to an agent, such as logs and file logger files.
- The `<>\mqft\installations\version\` directory keeps the `installation.properties` file. The `installation.properties` file determines which is the default configuration when more than one configuration exists in a server.

- 
- \_\_\_ 36. Navigate to the directory where the object definitions for agent `MFTUAGT1` were created by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1` and pressing the Enter key.
  - \_\_\_ 37. Confirm that the contents of the `agent.properties` file resemble the example by typing `notepad agent.properties` and pressing the Enter key.
  - \_\_\_ 38. After you complete the review, close the `agent.properties` file.
  - \_\_\_ 39. Create the objects that are required by the agent queue manager role in queue manager `MFTU` by invoking the `runmqsc` utility as shown in the text box. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.
- 

```
runmqsc MFTU < MFTUAGT1_create.mqsc > mftu.out
```

Expected results are contained in the `mftu.out` file.

---

- \_\_\_ 40. Open file `mftu.out` by typing `notepad mftu.out` and pressing the Enter key.
  - \_\_\_ 41. Scroll to the end of the `mftu.out` file and check that the results are exactly as shown in the text box.
- 

```
AMQ8006: IBM MQ queue created.
```

```
11 MQSC commands read.
```

```
No commands have a syntax error.
```

```
All valid MQSC commands were processed.
```

---

- \_\_\_ 42. If your results show that 11 commands were read and you see “**No commands have a syntax error**”, proceed to the next step.
- \_\_\_ 43. If your results are not exactly as shown and any part of the command failed, review the error message in the `mftu.out` file, and make any necessary corrections before you continue.



## Section 6: Start and list agent *MFTUAGT1*

- \_\_\_ 44. Start the agent by typing the command exactly as shown in the text box and pressing the Enter key.

---

**fteStartAgent MFTUAGT1**

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0030I: The request to start agent 'MFTUAGT1' on this machine has been
submitted.
BFGCL0031I: Agent log files located at: C:\ProgramData\IBM\MQ\mqft\logs\MFTU\age
nts\MFTUAGT1\logs
```

---

- \_\_\_ 45. Review the feedback generated. Notice that the results do not state “agent started”, but “request to start agent submitted”. However, you can check that the agent successfully started by checking its status in the `fteListAgents` command.
- \_\_\_ 46. List the agent by typing the command as shown on the text box and pressing the Enter key.

---

**fteListAgents**

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
Agent Name:      Queue Manager Name:      Status:
MFTUAGT1         MFTU                                     READY
```

---

- \_\_\_ 47. Review results of listed agents.
- When the agent status is `READY`, it is started.
  - When the agent status is `ACTIVE`, it is processing a file transfer.
- \_\_\_ 48. Occasionally, the first time that an agent starts might not generate data in the agent log. To capture some of the agent log details, you first try to refresh the Windows Explorer view. If you still do not see the agent log, restart agent `MFTUAGT1` by typing the commands as shown in the text box and pressing the Enter key after each command:

---

**fteStopAgent MFTUAGT1**

**fteStartAgent MFTUAGT1**

Expected results are similar for each command: a “request has been submitted” message appears.

---

- \_\_\_ 49. Navigate to the agent log directory by typing  
`cd C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs` and pressing the Enter key.

- \_\_\_ 50. List the MFTUAGT1 logs directory by typing **dir** and pressing the Enter key. Expected results are shown. While data remains in the `output0.log` file, do not be concerned if your results do not exactly match the results in the display.

```

01/02/2017 06:39 AM          2,271 output0.log
01/02/2017 08:55 AM            0 output0.log.lck
01/02/2017 06:39 AM        1,613 pcevent0.log
01/02/2017 08:55 AM            0 pcevent0.log.lck
01/02/2017 08:55 AM            0 stderr.log
01/02/2017 08:55 AM          88 stdout.log
        6 File(s)          3,972 bytes

```

- \_\_\_ 51. Open the `output0.log` file by typing **notepad output0.log** and pressing the Enter key.
- \_\_\_ 52. Scroll to the end of the file and locate the last occurrence of message `BFGAG0169I: A request to shut down this agent has been received.`
- \_\_\_ 53. By starting from the `BFGAG0169I` message, the output that is displayed in the text box includes the last agent stop request, and then information that is provided upon the last agent start request. A similar display is expected in the `output0.log` file that you opened.
- \_\_\_ 54. Take time to review the key information that is provided in the excerpt of the `output0.log` file that is provided in the text box that follows this step.

**Important**

The output0.log file date format is DD/MM/YYYY. As shown in the text box, 02/01/2017 is January 2, 2017.

```

... ..
[02/01/2017 06:39:52:062 PST] 0000001c AgentIPCListe I   BFGAG0169I: A request to
shut down this agent has been received.
[02/01/2017 06:39:52:124 PST] 00000001 AgentRuntime I   BFGAG0060I: The agent has
completed its current transfers and is now stopping.
***** Start Display Current Environment *****
Build level: V9.0.0.0 p900-L160512.4
Java runtime version:
    JRE 1.8.0 IBM J9 2.8 Windows Server 2008 R2 amd64-64 Compressed References
20160427_301573 (JIT enabled, AOT enabled)
    J9VM - R28_Java8_SR3_20160427_1620_B301573
    JIT   - tr.r14.java.green_20160329_114288
    GC    - R28_Java8_SR3_20160427_1620_B301573_CMPRSS
    J9CL   - 20160427_301573
The maximum amount of memory that the Java virtual machine will attempt to use is:
'512'MB
ICU4J version: 56.1.0.0
Properties:
    agentDesc=, agentName=MFTUAGT1, agentQMgr=MFTU, agentType=STANDARD,
coordinationQMgr=MFTU
    defaultProperties=MFTU
Install Locations:
    com.ibm.wmqfte.product.root=C:\Program Files\IBM\MQ\mqft

IBM MQ Components:
    IBM MQ JMS Provider / 9.0.0.0 / p900-L160512.4
    IBM MQLight Service for Bluemix JMS Provider / / p900-L160512.4
    Common Services for Java Platform, Standard Edition / 9.0.0.0 / p900-L160512.4
    Java Message Service Client / 9.0.0.0 / p900-L160512.4
    IBM MQ classes for Java Message Service / 9.0.0.0 / p900-L160512.4
    IBM MQ classes for Java / 9.0.0.0 / p900-L160512.4
***** End Display Current Environment *****
[02/01/2017 08:55:45:999 PST] 00000001 CredentialsUs W   BFGPR0127W: No credentials
file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM
MQ authentication has been disabled.
[02/01/2017 08:55:46:374 PST] 00000001 Agent           I   BFGAG0115I: Relative path
transfer root directory: C:\Users\fteadmin
[02/01/2017 08:55:46:374 PST] 00000001 Agent           W   BFGAG0125W: The maximum
size to which the java heap can grow is '512'MB, which is the default value. This
value may be too low dependent on the agent's work load.
[02/01/2017 08:55:46:374 PST] 00000001 AgentRuntime I   BFGAG0058I: The agent has

```

successfully initialized.

[02/01/2017 08:55:50:078 PST] 00000001 AgentRuntime I BFGAG0059I: The agent has been successfully started.

---

- \_\_\_ a. The **\* Start Display Current Environment \*** provides version information on the components that are installed. This section of the `output0.log` file also provides information that is related to the JVM and memory that the JVM uses.
- \_\_\_ b. The Properties section of the `output0.log` file provides information specific to the agent.
- \_\_\_ c. The next section in the `output0.log` file lists the installed IBM MQ components. IBM MQ Managed File Transfer **does not require** the IBM MQ Light Service.
- \_\_\_ d. By now you might be familiar with message `BFGPR0127W: No credentials file has been specified to connect to IBM MQ.` The message confirms the omission of a credentials file. Queue manager MFTU does not enforce connection authentication.
- \_\_\_ e. A key piece of information and important concept is found in message `BFGAG0115I: Relative path transfer root directory: C:\Users\fteadmin`, which confirms the agent relative path.
- \_\_\_ f. Message `BFGAG0125W` reiterates Java heap information in case you need to adjust this value.
- \_\_\_ g. The last two messages that are displayed show two parts of the agent startup. First, the agent is initialized. The last message confirms that the agent started.

## **Section 7: Create file logger MFTULGR1 for the MFTU configuration**

- \_\_\_ 55. Return to the MFTU configuration directory by typing  
`cd C:\ProgramData\IBM\MQ\mqft\config\MFTU` and pressing the Enter key.
- \_\_\_ 56. Create file logger MFTULGR1 by typing the command exactly as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.

```
fteCreateLogger -loggerQMgr MFTU -loggerType FILE -fileLoggerMode CIRCULAR
-fileSize 5MB -fileCount 3 MFTULGR1
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

**BFGCL0426I:** Direct the following MQSC definitions for logger 'MFTULGR1' to queue manager 'MFTU'.

```
DEFINE QLOCAL(SYSTEM.FTE.LOG.RJCT.MFTULGR1) +
```

```
... ..
```

```
... .. <=== The lines that display logger object definitions were omitted for brevity
```

```
... ..
```

**BFGCL0424I:** A file has been created containing the MQSC definitions to create your logger. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\MFTULGR1\_create.mqsc'.

**BFGCL0425I:** A file has been created containing the MQSC definitions to delete your logger. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\MFTULGR1\_delete.mqsc'.

**BFGCL0415I:** Logger configured successfully.

## Section 8: Review the results of the fteCreateLogger command and create the logger required queue manager definitions

The `fteCreateLogger` command requested creation of a circular file type logger that is named `MFTULGR1`, which uses three log files sized 5 megabytes each.

- \_\_\_ 57. The results of creating a logger are similar to the results of creating an agent, except that different directory locations are used. First look at the **BFGCL0426I** message. Since you create these definitions manually, you can disregard the **BFGCL0426I** message.
- \_\_\_ 58. Next, you see messages that notify you where to locate the IBM MQ definition files to create or to delete the objects that are required for the logger. These messages are **BFGCL0424I** and **BFGCL0425I**. However, when you look at messages **BFGCL0424I** and **BFGCL0425I**, you might notice a new set of subdirectories under the `< >\mqft\config\MFTU` directory for the logger.
- \_\_\_ 59. The last message that the `fteCreateLogger` command generated is the **BFGCL0415I** message, which confirms the logger was configured successfully. Ensure that your results for `fteCreateLogger` also end with the **BFGCL0415I: Logger configured successfully** message.
- \_\_\_ 60. Before you proceed to create the required logger objects, return to the `mqft` directory by typing `cd C:\ProgramData\IBM\MQ\mqft` and pressing the Enter key.
- \_\_\_ 61. List the existing directory structure after the logger was created by typing the command as shown in the text box and then pressing the Enter key.

---

```
dir /b /s
```

Expected results:

```
C:\ProgramData\IBM\MQ\mqft\config
C:\ProgramData\IBM\MQ\mqft\installations
C:\ProgramData\IBM\MQ\mqft\logs
C:\ProgramData\IBM\MQ\mqft\config\MFTU
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents
C:\ProgramData\IBM\MQ\mqft\config\MFTU\command.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\coordination.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers
C:\ProgramData\IBM\MQ\mqft\config\MFTU\MFTU.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\mftu.out
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\agent.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\exits
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\mftu.out
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_create.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_delete.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\UserSandboxes.xml
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\FileLoggerFormat.xml
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\logger.properties
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\mftu.out
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\MFTULGR1_create.mqsc
C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1\MFTULGR1_delete.mqsc
C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9
C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9\installation.properties
C:\ProgramData\IBM\MQ\mqft\logs\MFTU
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\agent.lck
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\agent.pid
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\mqmftpc.lck
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\mqmftpc.pid
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs\output0.log
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs\output0.log.lck
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs\pcevent0.log
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs\pcevent0.log.lck
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs\stderr.log
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs\stdout.log
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1
```

---

**Note**

The directory structure that you see represents the complete `MFTU` base configuration directory structure with one agent and the file logger.

- 
- \_\_\_ 62. Review the results of the configuration directory after logger `MFTULGR1` was created. The new entries are highlighted in bold in the listing.
- \_\_\_ a. Under the `< >\mqft\config` directory, you see that a `loggers` subdirectory is created under the `MFTU` configuration directory.
  - \_\_\_ b. Another subdirectory with the logger name `MFTULGR1` is created in the `loggers` subdirectory.
  - \_\_\_ c. You see a file that is called `FileLoggerFormat.xml`, which can be used as a base to customize the format of the data that the logger captures. If your organization needs to customize the contents of the logger information, you can refer to section **Stand-alone file logger format** in the IBM Knowledge Center for details.
  - \_\_\_ d. You see the `logger.properties` directory listed. The contents of the `agent.properties` file are expected to be:
 

```
#
#Mon Jan 02 09:54:42 PST 2017
wmqfte.logger.name=MFTULGR1
wmqfte.file.logger.fileCount=3
wmqfte.file.logger.fileSize=5MB
wmqfte.file.logger.mode=CIRCULAR
wmqfte.logger.type=FILE
wmqfte.queue.manager=MFTU
```
  - \_\_\_ e. The two other files under the `< >\mqft\config\MFTU\loggers\MFTULGR1` subdirectory are the logger IBM MQ command files to create or delete the logger required objects.
  - \_\_\_ f. Under the `< >\mqft\logs` directory, you see another `loggers` subdirectory, which contains another subdirectory that is named after logger `MFTULGR1`.
- 

**Important**

Directory `ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1` is an important directory to remember. After the logger starts, you find the three file logger files in this directory. You also find a `logs` subdirectory, which contains the logger status files, such as the logger `output0.log` file.

- 
- \_\_\_ 63. Navigate to the directory where the object definitions for agent `MFTULGR1` were created by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1` and pressing the Enter key.
- \_\_\_ 64. Ensure that you are at the  
`C:\ProgramData\IBM\MQ\mqft\config\MFTU\loggers\MFTULGR1` directory.

- \_\_ 65. Confirm that the contents of the `logger.properties` file in your configuration resembles the example by typing `notepad logger.properties` and pressing the Enter key.
- \_\_ 66. After you complete the review, close the `logger.properties` file.
- \_\_ 67. Create the objects that the logger requires in queue manager MFTU by invoking the `runmqsc` utility as shown in the text box. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.

---

```
runmqsc MFTU < MFTULGR1_create.mqsc > mftu.out
```

Expected results are contained in the `mftu.out` file.

---

- \_\_ 68. Open file `mftu.out` by typing `notepad mftu.out` and pressing the Enter key.
  - \_\_ 69. Scroll to the end of the `mftu.out` file and check that the results are exactly as shown in the text box.
- 

```
... ..
AMQ8006: IBM MQ queue created.
2 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.
```

---

- \_\_ 70. If your results show that two commands were read and you see “**No commands have a syntax error**”, proceed to the next step.
- \_\_ 71. If your results are not exactly as shown and any part of the command failed, review the error message in the `mftu.out` file, and make any necessary corrections before you continue.

## Section 9: Start the MFTULGR1 logger and review the results

- \_\_ 72. Start the MFTULGR1 logger by typing command `fteStartLogger` exactly as shown on the text box and pressing the Enter key.
- 

```
fteStartLogger MFTULGR1
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0287I: The request to start the logger on this machine has been submitted.

BFGCL0526I: Logger log files located at: C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1\logs
```

---

- \_\_ 73. Proceed to the logger MFTULGR1 directory by typing `cd ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1` and pressing the Enter key.



---

\_\_\_ 74. List the contents of directory

C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1 by typing **dir** and pressing the Enter key. The expected results are shown in the text box:

---

```
01/02/2017  11:35 AM                0 logger.lck
01/02/2017  11:18 AM                4 logger.pid
01/02/2017  11:18 AM    <DIR>        logs
01/02/2017  11:18 AM                0 MFTULGR10-20170102111838312.log
01/02/2017  11:18 AM                0 MFTULGR11-20170102111838343.log
01/02/2017  11:18 AM                0 MFTULGR12-20170102111838343.log
01/02/2017  11:18 AM                0 mqmftpc.lck
```

---

\_\_\_ 75. Review the contents of the logs logger MFTULGR1 directory.

- \_\_\_ a. The logs subdirectory contains information about the logger, such as the output0.log file.
  - \_\_\_ b. Three log files have a name that has the prefix MFTULGR1 followed by a digit and a date and time stamp for the name. These files are the file logger files. They are empty because no transfers took place.
- \_\_\_ 76. Next, look at the information that is captured in the output0.log file in the logs directory. However, first restart the logger by typing the two commands exactly as shown in the text box to force some information into the output0.log file.
- 

```
fteStopLogger MFTULGR1
fteStartLogger MFTULGR1
```

---

\_\_\_ 77. Proceed to the logs directory by typing **cd logs** and pressing the Enter key.

\_\_\_ 78. List the MFTULGR1 logs directory by typing **dir** and pressing the Enter key. Expected results are similar to the output shown in the text box.

---

```
01/02/2017  11:55 AM                2,403 output0.log
01/02/2017  11:55 AM                0 output0.log.lck
01/02/2017  11:55 AM                1,623 pcevent0.log
01/02/2017  11:55 AM                0 pcevent0.log.lck
01/02/2017  11:55 AM                0 stderr.log
01/02/2017  11:55 AM                83 stdout.log
                6 File(s)            4,109 bytes
```

---

\_\_\_ 79. You should see some data in the output0.log file. Open the output0.log file by typing notepad output0.log and pressing the Enter key. Expected results are shown in the text box. Since the results are similar to the agent version of output0.log, selected results are omitted for brevity. The portion of output0.log that is shown starts after the first shutdown of the file logger.

---

```

[02/01/2017 11:55:06:640 PST] 00000013 LoggerIPCList I   BFGDB0067I: A request to
shutdown this logger has been received.
[02/01/2017 11:55:06:640 PST] 00000013 Logger          I   BFGDB0030I: The logger is
shutting down.
***** Start Display Current Environment *****
Build level: V9.0.0.0 p900-L160512.4
... ..
Properties:
  coordinationQMgr=MFTU, defaultProperties=MFTU, wmqfte.file.logger.fileCount=3
  wmqfte.file.logger.fileSize=5MB, wmqfte.file.logger.mode=CIRCULAR,
wmqfte.logger.name=MFTULGR1
  wmqfte.logger.type=FILE, wmqfte.queue.manager=MFTU
Install Locations:
  com.ibm.wmqfte.product.root=C:\Program Files\IBM\MQ\mqft
IBM MQ Components:
  IBM MQ JMS Provider / 9.0.0.0 / p900-L160512.4
... ..
***** End Display Current Environment *****
[02/01/2017 11:55:18:609 PST] 00000001 Logger          I   BFGDB0051I: The logger is
running as a 64-bit process.
[02/01/2017 11:55:19:046 PST] 00000001 CredentialsUs W   BFGPR0127W: No credentials
file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM
MQ authentication has been disabled.
[02/01/2017 11:55:19:749 PST] 00000001 CircularLogFi I   BFGDB0055I: The file
logger is writing to this directory:
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1
[02/01/2017 11:55:19:749 PST] 00000001 CircularLogFi I   BFGDB0056I: The file
logger is currently writing to this file:
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1\MFTULGR10-20170102111838312.
log
[02/01/2017 11:55:19:781 PST] 00000001 Logger          I   BFGDB0023I: The logger has
completed startup activities and is now running.

```

---

- \_\_ 80. Review the contents of the logger output0.log file.
- \_\_ a. You start by looking at the **BFGDB0067I** and **BFGDB0030I** messages that show that the logger is ending.
  - \_\_ b. You see entries for the start of the current environment display, properties, install locations, and IBM MQ components, except that the Properties contain the logger-specific details.
  - \_\_ c. After the credentials message that you are already familiar with, you see messages **BFGDB0055I** and **BFGDB0056I**, which indicate the location of the logger files. You also see the specific logger file, out of the three logger files, that was in use when the logger started.
  - \_\_ d. Last you see message **BFGDB0023I**, which indicates that the logger completed startup and is running.

## Section 10: Create a test transfer by using `fteCreateTransfer`



### Information

The transfer is tested by using the same agent to copy a file from one directory, `C:\LabFiles\from`, to another directory, `C:\LabFiles\to`.

- 
- \_\_\_ 81. Navigate to the `C:\LabFiles\from` directory by typing `cd C:\LabFiles\from` and pressing the Enter key.
  - \_\_\_ 82. Ensure that file `xferAndRenameMe.txt` is present in the `C:\LabFiles\from` directory. The `xferAndRenameMe.txt` file is a small file with five lines of text that is used to test transfers.
  - \_\_\_ 83. Change to the `C:\LabFiles\to` directory by typing `cd` and pressing the Enter key.
  - \_\_\_ 84. List the `C:\LabFiles\to` directory by typing `dir` and pressing the Enter key.
  - \_\_\_ 85. Check the results. Directory `C:\LabFiles\to` should be empty.
  - \_\_\_ 86. Remain at the `C:\LabFiles\to` directory.
  - \_\_\_ 87. Create the transfer by typing the command as shown in the text box and pressing the Enter key. Ensure that you type the command exactly as shown, and use the full path name for the source and destination file. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.
- 

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da MFTUAGT1 -dm MFTU -de overwrite -df
C:\LabFiles\to\renamed1.txt C:\LabFiles\from\xferAndRenameMe.txt
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
020202020837f695824433703
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---


- \_\_\_ 88. Leave the command prompt window open.

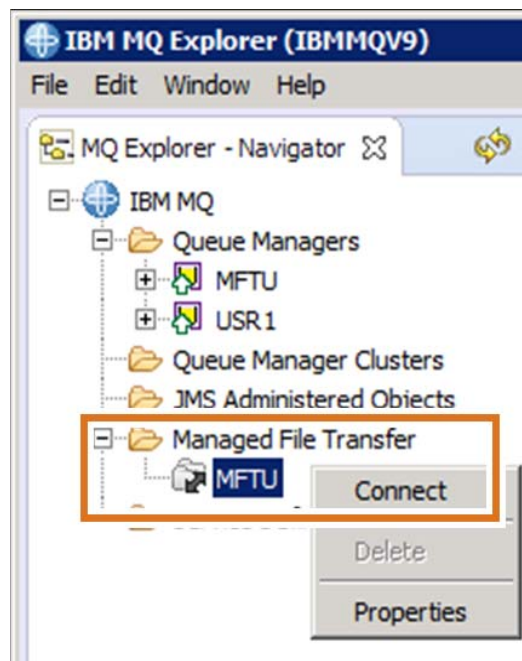
## Section 11: Review the results of the file transfer

- \_\_\_ 89. For the transfer tested, the simpler way to check is to redisplay the contents of the `C:\LabFiles\to` directory and look for file `renamed1.txt` by typing `dir` and pressing the Enter key. After the transfer completes, you see file `renamed1.txt` in the `C:\LabFiles\to` directory.

**Note**

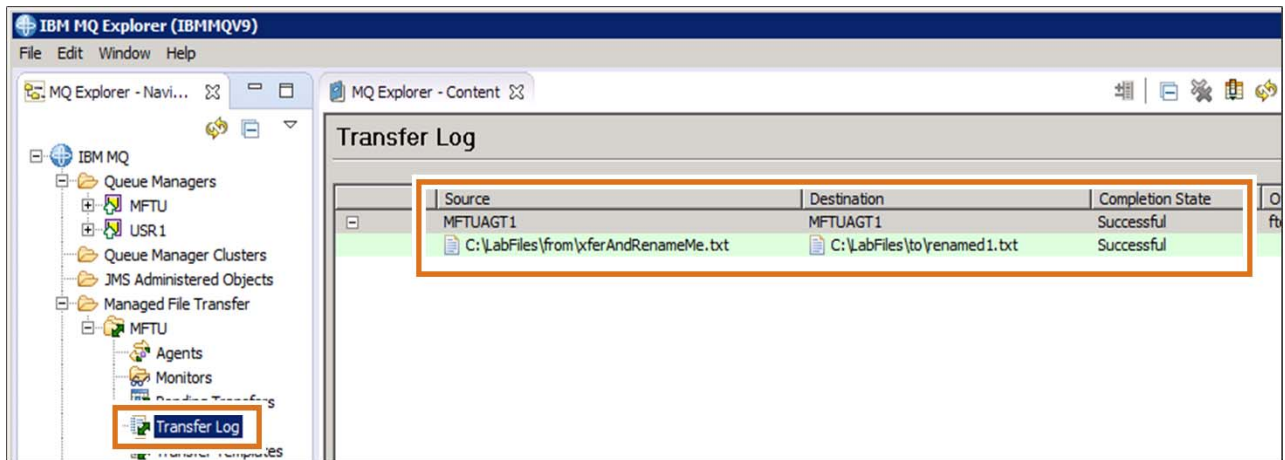
In the previous step, you checked for the completion of the transfer by looking at the destination directory. However, when you check for actual file transfers, the destination directory is in a remote server to which you might not have access and need an accurate way to check the results. In the steps that follow, you check for the transfer results by using IBM MQ Explorer.

- 
- \_\_\_ 90. Start IBM MQ Explorer by clicking the IBM MQ Explorer icon  in the Windows taskbar and waiting a few moments.
  - \_\_\_ 91. On the IBM MQ Explorer Navigator pane, locate and expand the Managed File Transfer menu.
  - \_\_\_ 92. Locate the MFTU configuration entry under the Managed File Transfer menu.
  - \_\_\_ 93. Right-click the MFTU configuration and select Connect.
- 

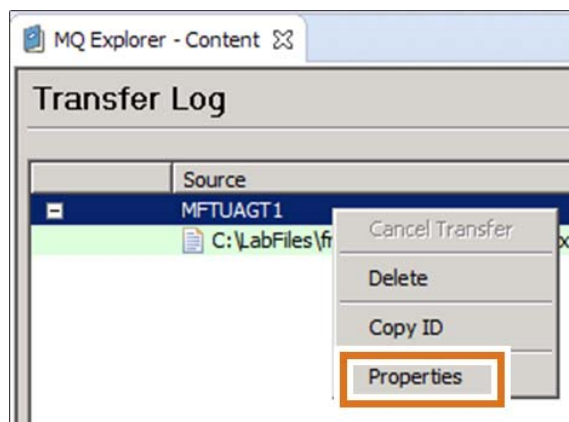


- 
- \_\_\_ 94. After the connection to the MFTU configuration completes, you see a + to the left of the MFTU entry. Expand the + and click the `TransferLog` menu.
  - \_\_\_ 95. Because IBM MQ Explorer was not started when the previous transfer completed, it does not show on the TransferLog list. Return to the command prompt window.
  - \_\_\_ 96. Repeat the transfer request by typing `fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da MFTUAGT1 -dm MFTU -de overwrite -df C:\LabFiles\to\renamed1.txt C:\LabFiles\from\xferAndRenameMe.txt` and pressing the Enter key. Ensure that you used the `-de overwrite` parameter, or the transfer fails because the destination file exists. An alternative to the `-de` parameter is to rename the `renamed1.txt` file.

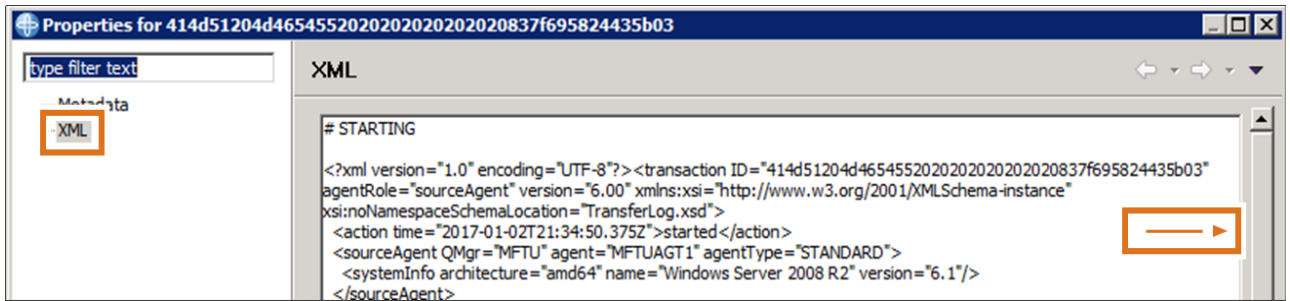
- \_\_\_ 97. It is assumed that IBM MQ Explorer is still connected to the MFTU configuration. Return to the Managed File Transfer menu of IBM MQ Explorer and click **TransferLog**.



- \_\_\_ 98. Proceed to the IBM MQ Explorer - Content pane on the right, and view the Transfer Log window.
- \_\_\_ 99. In the Transfer Log window, you can see various details.
- \_\_\_ a. On the first line, you see the source and destination agent, along with the completion state, which in this case is **Successful**.
  - \_\_\_ b. Expand the + sign to the left of the source agent name. You now see a list of the files along with file paths that are processed in this transfer. In this case, you see one file.
- \_\_\_ 100. If the transfer completed successfully, you do not need many extra details. However, if the transfer failed, you might need more information. Check how to find extra information by right-clicking the transfer entry and selecting **Properties**.



- \_\_\_ 101. A new window opens. Its title is “Properties for” followed by the unique transfer identifier. On the left of this window, select “XML”.



- \_\_\_ 102. When you select XML, you see the formatted details of the transfer. A scroll bar is to the right of the display. You can scroll down through the information by using the scroll bar.
- \_\_\_ 103. Locate the three entries, #STARTING, #IN PROGRESS, and #SUCCESSFUL. If the transfer failed, the sections might be different, such as #STARTING and #SUCCESSFUL. You find an error message that is embedded in the XML in one of the sections.
- \_\_\_ 104. Copy the transfer ID definition and paste it on the line that is provided in this step for use later in this lab. In the example that is shown in the figure, the transfer ID is 414d51204d46545520202020202020837f695824435b03. Copy the transfer ID for your transfer.
- \_\_\_ 105. From your command prompt, open a Notepad window by typing **notepad** and pressing the Enter key.
- \_\_\_ 106. Paste your transfer ID to Notepad. Ensure that you captured the complete transfer ID. Keep this Notepad window open until instructed to close it. You are going to use it within the next few steps.
- \_\_\_ 107. Close the Properties window by selecting **Cancel**.



## Troubleshooting

If IBM MQ Explorer hangs throughout any of the labs exercises, what should you do?

Occasionally, if you exit the VMware image and leave IBM MQ Explorer active, IBM MQ Explorer might become unresponsive. To mitigate or resolve the problem:

- Always exit IBM MQ Explorer before you leave the VMware image.
- Stop the agents and loggers and log off the VMware image when you are done working for the day.
- If IBM MQ Explorer is already unresponsive:
  - Start the Task Manager by right-clicking the Windows taskbar and selecting Start Task Manager.
  - Select **IBM MQ Explorer** from the Task Manager menu and click **End Task**. You might need to repeat the End Task process. IBM MQ Explorer will work correctly after it is restarted.





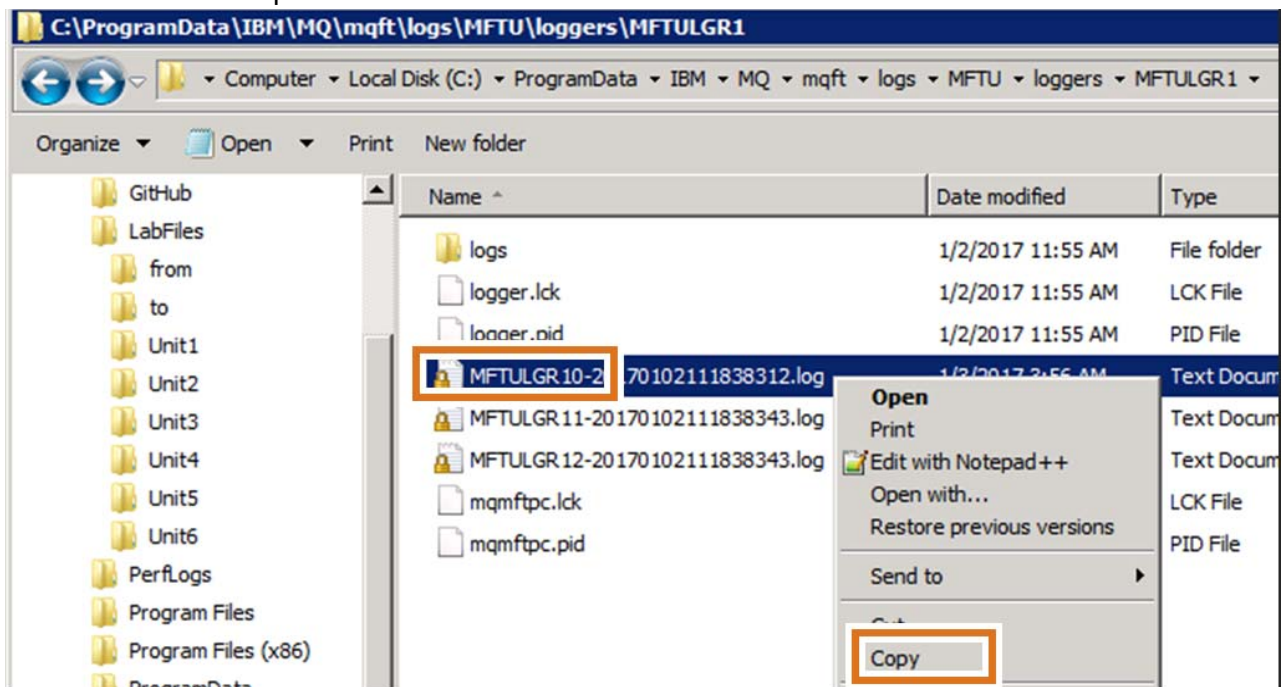
### Important

A new file named `transferlog.bin` is present in the `MFTU` configuration directory at `C:\ProgramData\IBM\MQ\mqft\logs\MFTU`. The file was placed in the directory after you used IBM MQ Explorer to check transfers that ran **after IBM MQ Explorer became active**. The `transferlog.bin` file serves as temporary storage of transfer information for IBM MQ Explorer and is not intended for human use. The file is not retained and cannot be used to replace the information kept in a file or database logger.

You cannot depend on the `transferlog.bin` file to retain logger results for history and audit records. Keep the history and audit information in a file or database logger. Ensure that your organization establishes correct procedures to maintain the files that are used in the logger of choice.

## Section 12: Compare the IBM MQ Explorer Transfer Log entries with the MFTULGR1 logger entries

- \_\_\_ 108. Open Windows Explorer and locate the file logger files by navigating to `C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1`.
- \_\_\_ 109. Copy the first logger file with a name that has the prefix `MFTULGR10` by right-clicking the file and selecting **Copy**. The remaining part of your logger file name is expected to be different from the sample shown.



- \_\_\_ 110. On Windows Explorer, navigate to directory `C:\LabFiles`.
- \_\_\_ 111. Paste the `MFTULGR10` file that you copied to the `C:\LabFiles` directory by right-clicking the `LabFiles` directory and selecting **Paste** from the Windows Explorer menu.
- \_\_\_ 112. Open the copied `MFTULGR10` file with your preferred editor: Notepad, WordPad, or Notepad++.

113. Refer to the transfer ID that you copied to Notepad.
114. Scroll through the copied `MFTULGR10` logger file until you find the first entry that matches the transfer ID that you copied to Notepad. If the transfer succeeded, you find three entries. The example in the text box that is shown uses transfer ID `414d51204d465455202020202020837f695824435b03`. The transfer ID is in the first line of each logger record. A blank line is added in the display for ease of viewing. However, no blank lines exist to separate the records in the file.

```
2017-01-02T21:34:50;414d51204d46545520202020202020202020837f695824435b03;[TSTR];
;MFTUAGT1;MFTU;STANDARD;MFTUAGT1;MFTU;fteadmin;;;com.ibm.wmqfte.SourceAgent=MFTUAGT1,
com.ibm.wmqfte.DestinationAgent=MFTUAGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d46545520202020202020202020837f695824435b03,
com.ibm.wmqfte.Priority=0;
2017-01-02T21:34:50;414d51204d46545520202020202020202020837f695824435b03;[TPRO];0
;C:\LabFiles\from\xferAndRenameMe.txt;261;file;leave
;;;;;C:\LabFiles\to\renamed1.txt;261;file;overwrite;;;;;;
2017-01-02T21:34:50;414d51204d46545520202020202020202020837f695824435b03;[TCOM];0
;MFTUAGT1;MFTU;STANDARD;MFTUAGT1;MFTU;STANDARD;fteadmin;;BFGRP0032I: The file
transfer request has successfully completed.;com.ibm.wmqfte.SourceAgent=MFTUAGT1,
com.ibm.wmqfte.DestinationAgent=MFTUAGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d46545520202020202020202020837f695824435b03,
com.ibm.wmqfte.Priority=0;
```

- \_\_\_ 115. Review the three eye catchers that are highlighted in bold: [**TSTR**], [**TPRO**], and [**TCOM**]. These eye catchers represent some of the logger message types, and correspond to the XML formatted sections in the IBM MQ Explorer Transfer Log properties screen #STARTING, #IN PROGRESS, and #SUCCESSFUL.
- \_\_\_ 116. Each transfer record starts with the date formatted as YYYY-MM-DD. Review the information in each log record, and you find the same information as in the Transfer Log XML display, but captured in a character-separated format that uses the semicolon.



## Information

The IBM MQ Explorer contains an application that formats the transfer information in XML format. Your organization can choose to use the information as provided in the logger records, or develop an application to format these records.

For extra information on the supported logger message types and eye-catchers, also called inserts, refer to the IBM Knowledge Center section ***Stand-alone file logger format***.

117. Close and discard the Notepad file that you used to temporarily store the transfer ID.



\_\_\_ 118. Close the copied MFTULGR10 file.

\_\_\_ 119. Close IBM MQ Explorer.

You completed part 2.1 of Exercise 2.

## 2.2. Add a second agent with a dedicated agent queue manager to the base configuration



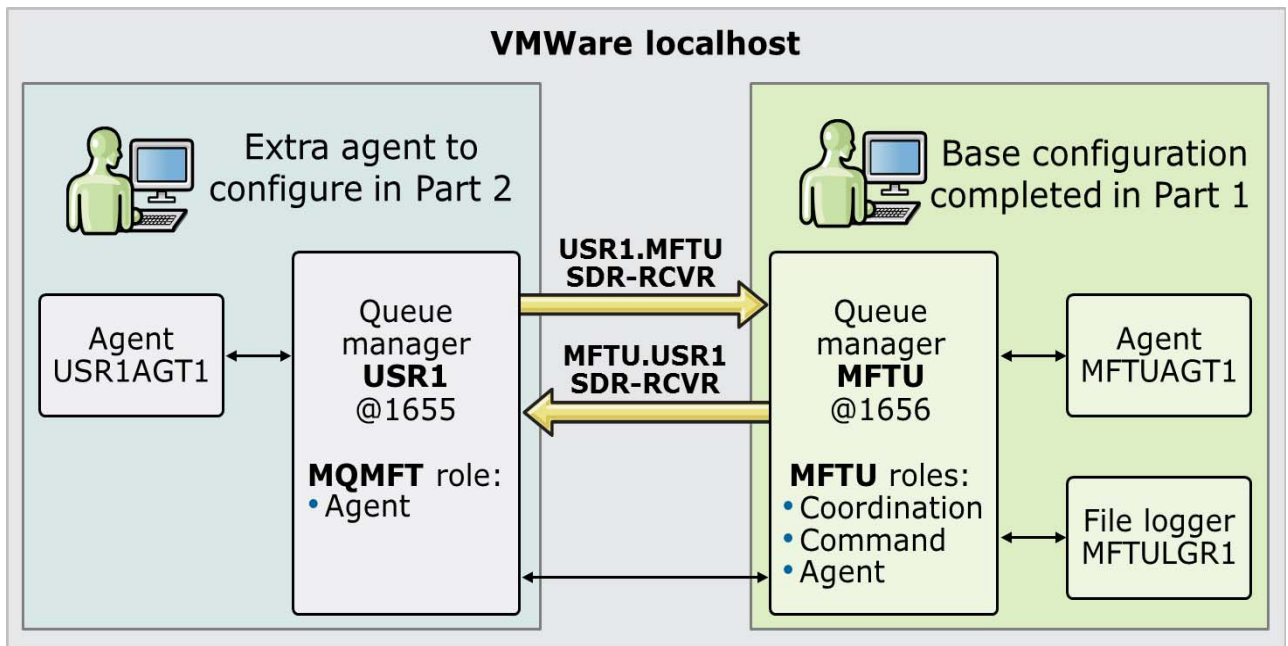
### Important

In a traditional IBM MQ Managed File Transfer environment, agents are added to remote servers to transfer files across these servers.

For simplicity, the course lab environment uses one server. Take time to understand the differences between a two-server configuration and the use of one server to test the addition of the extra agent.

- When you configure an agent in a separate server, you must build the IBM MQ Managed File Transfer directory. You build the partner agent directory by running the `fteSetupCoordination`, `fteSetupCommands`, and `fteCreateAgent` commands.
- However, in the classroom environment, you already have the coordination queue manager and command queue manager identified. The directory structure is in place for the coordination and command queue manager properties of the `MFTU` configuration.
- In the classroom environment, you need to create the new agent, `USR1AGT1`, which is incorporated in the existing `MFTU` configuration directory structure. Queue manager `USR1` serves the agent queue manager role for agent `USR1AGT1`.
- Regardless of whether you use two servers, or the classroom environment, you need to ensure that connectivity is tested between the queue managers in the configuration. In the classroom environment, you tested connectivity between queue managers `MFTU` and `USR1` in Exercise 1.
- When a partner agent is configured in a remote server, the `fteSetupCoordination` that is run in the remote server must use an IBM MQ Client channel type connection to the base server coordination queue manager.
- You **do not need** to run the coordination queue manager object definitions for extra partner agent in the remote server. The coordination queue manager definitions are run **one time** when the coordination queue manager is identified for the base configuration.

Much of the work for the MFTU configuration was completed in part 2.1 of this lab exercise. You now create agent `USR1AGT1`.



## Section 1: Review the status of the queue managers and create agent `USR1AGT1`

- \_\_\_ 120. Proceed to the command prompt window.
- \_\_\_ 121. Ensure that queue managers `MFTU` and `USR1` are active by typing the command as shown in the text box and pressing the Enter key.

```
dspmq
```

Expected results:

<code>QMNAME(MFTU)</code>	<code>STATUS(Running)</code>
<code>QMNAME(USR1)</code>	<code>STATUS(Running)</code>

- \_\_\_ 122. If either queue manager displays any form of "Ended" for the status, start the "Ended" queue manager by typing `strmqm -ss` followed by the queue manager name and pressing the Enter key. Repeat the `dspmq` to ensure that both queue managers are now running.
- \_\_\_ 123. Navigate to the agent configuration directory by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents` and pressing the Enter key.
- \_\_\_ 124. Create agent `USR1AGT1` by typing the command exactly as shown in the text window and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.

---

```
fteCreateAgent -agentName USR1AGT1 -agentQMgr USR1
```

Expected results. *You are already familiar with the output of the fteCreateAgent command. Partial results are displayed for brevity.*

```
... ..
BFGCM0239I: A file has been created containing the MQSC definitions to define
the agent USR1AGT1. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config
\MFTU\agents\USR1AGT1\USR1AGT1_create.mqsc'.
... ..
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0053I: Agent configured and registered successfully.
```

---

- \_\_\_ 125.Ensure that the agent was created with no errors and you found the “BFGCL0053I: Agent configured and registered successfully” message at the end of the results.
  - \_\_\_ 126.Starting from directory C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents in the command prompt window, display the MFTU configuration agents directory structure by typing the command as shown in the text box and pressing the Enter key.
- 

```
dir /b /s
```

Expected results:

```
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\agent.properties
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\exits
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\mftu.out
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_create.mqsc
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\MFTUAGT1_delete.mqsc
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\MFTUAGT1\UserSandboxes.xml
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1\agent.properties
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1\exits
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1\UserSandboxes.xml
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1\USR1AGT1_create.mqsc
c:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1\USR1AGT1_delete.mqsc
```

---

- \_\_\_ 127.Review the additions to the directory structure. The items added by the creation of agent USR1AGT1 are highlighted in bold.
- \_\_\_ 128.You might anticipate the creation of the USR1AGT1 subdirectory under the configuration agents directory, and addition of the same types of files. You also see the exits subdirectory as created for the MFTUAGT1 agent.
- \_\_\_ 129.Navigate to the USR1AGT agent subdirectory by typing `cd USR1AGT1` and pressing the Enter key.

- \_\_\_ 130. Review the contents of the `USR1AGT1.agent.properties` file by typing **notepad agent.properties** and pressing the Enter key. Your results are expected to resemble the results that are shown in the text box, except for the date and time.

---

```
#
    #Tue Jan 03 11:51:17 PST 2017
    agentQMGr=USR1
    agentDesc=
    agentName=USR1AGT1
```

---

- \_\_\_ 131. Create the objects that the agent queue manager role in queue manager `USR1` requires, by invoking the `runmqsc` utility as shown in the text box. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.

---

```
runmqsc USR1 < USR1AGT1_create.mqsc > usr1.out
```

Expected results are contained in the `usr1.out` file.

---

- \_\_\_ 132. Open file `usr1.out` by typing **notepad usr1.out** and pressing the Enter key.

- \_\_\_ 133. Scroll to the end of the `usr1.out` file and check that the results are exactly as shown in the text box.

---

```
AMQ8006: IBM MQ queue created.
```

```
11 MQSC commands read.
```

```
No commands have a syntax error.
```

```
All valid MQSC commands were processed.
```

---

- \_\_\_ 134. If your results show that 11 commands were read and you see “**No commands have a syntax error**”, close the `usr1.out` file and proceed to the next step.
- \_\_\_ 135. If your results are not exactly as shown and any part of the command failed, review the error message in the `usr1.out` file, and make any necessary corrections before you continue.

## ***Section 2: Start, list, and test agent USR1AGT1***

- \_\_\_ 136. Start agent `USR1AGT1` by typing the command as shown in the text box and pressing the Enter key.

```
fteStartAgent USR1AGT1
```

#### Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
BFGCL0030I: The request to start agent 'USR1AGT1' on this machine has been submitted.

BFGCL0031I: Agent log files located at: C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\USR1AGT1\logs

- \_\_\_ 137. Review the results of the `fteStartAgent` command. You can see that the logs subdirectory for the USR1AGT1 agent under the MFTU configuration was created when the agent was started.



#### Reminder


Occasionally, **the first time a new agent is started**, no data might be written to the agent `output0.log` file. Restart the agent by using the `fteStopAgent` and `fteStartAgent` commands to force the information in the `output0.log` file.

- \_\_\_ 138. Display the agent status by typing the command as shown in the text box and pressing the Enter key.

#### `fteListAgents`

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.  
Therefore, the assumption is that IBM MQ authentication has been disabled.

Agent Name:	Queue Manager Name:	Status:
MFTUAGT1	MFTU	READY
<b>USR1AGT1</b>	<b>USR1</b>	<b>READY</b>

- \_\_\_ 139. Review the agent status output.
- \_\_\_ a. The `fteListAgents` command lists all agents for the MFTU configuration. MFTU is the default configuration because it is the configuration that is identified in the `defaultProperties` parameter of the `installation.properties` file.
  - \_\_\_ b. Along with agent MFTUAGT1, agent USR1AGT1 is active.
  - \_\_\_ c. The entries for the agents reflect that the agent queue manager for agent MFTUAGT1 is MFTU, and for agent USR1AGT1 is USR1.
- \_\_\_ 140. Start IBM MQ Explorer by clicking the IBM MQ Explorer icon  in the Windows taskbar.
- \_\_\_ 141. Expand the Managed File Transfer menu in IBM MQ Explorer.
- \_\_\_ 142. Right-click configuration **MFTU** and select **Connect**.

- \_\_ 143. Leave IBM MQ Explorer open but minimize the window for now.
- \_\_ 144. Return to the command prompt window.
- \_\_ 145. Create a test transfer by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab2_copyAndPaste.txt` file in directory `C:\LabFiles\Unit2`.

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df  
C:\LabFiles\to\renamedagain.txt C:\LabFiles\from\xferAndRenameMe.txt
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.  
Therefore, the assumption is that IBM MQ authentication has been disabled.  
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202  
020202020837f695824440903  
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_ 146. Return to IBM MQ Explorer.
- \_\_ 147. The transfer ID follows the **request ID** label that is highlighted in the previous transfer text box. Open a temporary Notepad file by typing **notepad** in the command prompt window and pressing the Enter key. For example, the transfer ID in the text box is `414d51204d465455202020202020202020837f695824440903`.
- \_\_ 148. Copy the transfer ID from your `fteCreateTransfer` output and paste it to the Notepad file. You are going to use it soon in the next section.
- \_\_ 149. Obtain the transfer results by expanding the **MFTU** configuration under the Managed File Transfer menu and clicking the **TransferLog** option.
- \_\_ 150. The results in the Transfer Log display should be successful. If the results were not successful, investigate the reason by looking at the transfer properties XML and make necessary corrections before you continue.

### ***Section 3: Locate your last transfer entries in the file logger***

- \_\_ 151. Open Windows Explorer and locate the `file logger` files by navigating to `C:\ProgramData\IBM\MQ\mqft\logs\MFTU\loggers\MFTULGR1`.
- \_\_ 152. Copy the first logger file with a name that has the prefix `MFTULGR10` by right-clicking the file and selecting **Copy**. The remaining part of your logger file name is expected to be different from the sample shown.
- \_\_ 153. On Windows Explorer, navigate to directory `C:\LabFiles`.
- \_\_ 154. Paste the `MFTULGR10` file that you just copied to the `C:\LabFiles` directory by right-clicking the **LabFiles** directory and selecting **Paste** from the Windows Explorer menu.



## Important

If you get a window to confirm whether you want to overwrite the existing file, reply **Yes**.

- \_\_\_ 155. Open the copied `MFTULGR10` file with your preferred editor: Notepad, WordPad, or Notepad++.
- \_\_\_ 156. Refer to the transfer ID that you copied to Notepad.
- \_\_\_ 157. Scroll through the copied `MFTULGR10` logger file until you find the first entry that matches the transfer ID that you copied to Notepad. If the transfer succeeded, you find three entries.

2017-01-03T21:28:02;414d51204d465455202020202020202020837f695824440903;[TSTR];  
;MFTUAGT1;MFTU;STANDARD;USRLAGT1;USRL;fteadmin;;;com.ibm.wmqfte.SourceAgent=MFTUAG  
T1, com.ibm.wmqfte.DestinationAgent=USRLAGT1, com.ibm.wmqfte.MqmdUser=fteadmin,  
com.ibm.wmqfte.OriginatingUser=fteadmin,  
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,  
com.ibm.wmqfte.TransferId=414d51204d465455202020202020202020837f695824440903,  
com.ibm.wmqfte.Priority=0;

```
2017-01-03T21:28:02;414d51204d4654552020202020202020837f695824440903;[TPRO];0
;C:\LabFiles\from\xferAndRenameMe.txt;261;file;leave
;;;;;C:\LabFiles\to\renamedagain.txt;261;file;error      ;;;;;;;;;;
```

```
2017-01-03T21:28:02;414d51204d46545520202020202020202020837f695824440903;[TCOM];0
;MFTUAGT1;MFTU;STANDARD;USRLAGT1;USR1;STANDARD;fteadmin;;BFGRP0032I: The file
transfer request has successfully completed.;com.ibm.wmqfte.SourceAgent=MFTUAGT1,
com.ibm.wmqfte.DestinationAgent=USRLAGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d46545520202020202020202020837f695824440903,
com.ibm.wmqfte.Priority=0;
```

- \_\_\_ 158. Review the logger records for your transfer.
  - \_\_\_ a. You see the three logger record types: [TSTR] for the starting transfer, [TPRO] for the transfer in progress, and [TCOM] for the completed successful transfer.
  - \_\_\_ b. You also notice how the MFTU configuration logger, MFTULGR1, records information for transfers of all agents in the configuration. You can see information that refers to agent MFTUAGT1 and information that refers to agent USR1AGT1, both agents in the MFTU configuration.
- \_\_\_ 159. Close and discard the contents of the Notepad file that you used as temporary storage of the transfer ID.
- \_\_\_ 160. Close IBM MQ Explorer if it is still open.



You completed Exercise 2.

## **End of exercise**

## Exercise review and wrap-up

In the first part of this lab exercise, you:

- Used the `fteSetupCoordination` command to create the configuration directory and identify the coordination queue manager
- Used the `fteSetupCommands` command to identify the commands queue manager
- Used the `fteCreateAgent` command to identify the agent queue manager and create an agent
- Used the `fteListAgents` command to display the agent status
- Reviewed the configuration directory structure as the work was done to understand how each part of the directory structure was created
- Tested the agent by using the `fteCreateTransfer` command
- Created a file logger by using the `fteCreateLogger` command
- Used IBM MQ Explorer to review your IBM MQ Managed File Transfer configuration
- Reviewed the logger entries and compared them to the contents of the IBM MQ Explorer Transfer log XML view

In the second part of this lab exercise, you:

- Added a second agent with a separate dedicated agent queue manager to the `MFTU` configuration
- Tested the configuration by transferring a file between the two agents
- Looked at the logger entries for the transfer between the two agents

---

# Exercise 3. Transfer initiation options

## Estimated time

01:30

## Overview

In this exercise, you learn how to use various transfer initiation options.

## 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

## Introduction

In this lab exercise, you gain exposure to different ways of initiating file transfers. Although IBM MQ Explorer is used to confirm some of the transfer results, you are encouraged to work with the command-line utilities. While IBM MQ Explorer might mitigate errors, it is beneficial to work with the command line for two reasons:


- You get a better feel for the syntax.
- If you do make mistakes, troubleshooting enhances your learning experience.

## Requirements

The IBM MQ infrastructure and the MFTU IBM MQ Managed File Transfer configuration must be completed, tested, and operational. This requirement is satisfied by successfully completing Exercises 1 and 2.

## Exercise instructions

### *Section 1: Log on and start an IBM MQ Explorer session for later use*

- \_\_\_ 1. Log on as the `ftadmin` user.
- \_\_\_ 2. Start IBM MQ Explorer by clicking the IBM MQ Explorer icon  in the Windows taskbar and waiting a few moments.
- \_\_\_ 3. On the IBM MQ Explorer Navigator pane, locate and expand the Managed File Transfer menu.
- \_\_\_ 4. Locate the MFTU configuration entry under the Managed File Transfer menu.
- \_\_\_ 5. Right-click the MFTU configuration and select **Connect**.
- \_\_\_ 6. Leave IBM MQ Explorer open, but minimize it.

## 3.1. Use a transfer request file

### ***Section 1: Create a transfer request file and use the transfer request file to create a transfer***

- \_\_\_ 7. Open a command prompt window by clicking the command prompt icon in the Windows taskbar.
- \_\_\_ 8. Navigate to the C:\LabFiles\Unit3 directory by typing **C:\LabFiles\Unit3** and pressing the Enter key.
- \_\_\_ 9. Create a transfer definition file by using the `fteCreateTransfer -gt` option and store it in file `Ex3xferFile.xml` by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab3_copyAndPaste.txt` file in directory C:\LabFiles\Unit3.

---

```
fteCreateTransfer -gt C:\LabFiles\Unit3\Ex3xferFile.xml -sa MFTUAGT1 -sm MFTU -da
USR1AGT1 -dm USR1 -de overwrite -df C:\LabFiles\to\useXferDefFile.txt
c:\LabFiles\from\xferAndRenaneMe.txt
```

#### **Expected results:**

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0204I: Transfer request has been output to C:\LabFiles\Unit3\Ex3xferFile.xml
```

---

- \_\_\_ 10. Review the contents of the file that is generated by using the `fteCreateTransfer -gt` option by typing `notepad Ex3xferFile.xml` in the command prompt Window and pressing the Enter key. The expected results are shown in the text box.

---

```

<?xml version="1.0" encoding="UTF-8"?>
<request version="6.00" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="FileTransfer.xsd">
<managedTransfer>
  <originator>
    <hostName>ws2008r2x64.wasedu.net.</hostName>
    <userID>fteadmin</userID>
  </originator>
  <sourceAgent QMgr="MFTU" agent="MFTUAGT1"/>
  <destinationAgent QMgr="USR1" agent="USR1AGT1"/>
  <transferSet>
    <item checksumMethod="MD5" mode="binary">
      <source disposition="leave" recursive="false">
        <file>c:\LabFiles\from\xferAndRenameMe.txt</file>
      </source>
      <destination exist="overwrite" type="file">
        <file>C:\LabFiles\to\useXferDefFile.txt</file>
      </destination>
    </item>
  </transferSet>
</managedTransfer>
</request>

```

---

- \_\_\_ 11. Review selected sections of the generated transfer file.
- \_\_\_ a. The `request` element is one of three root elements available for the `FileTransfer.xsd` schema.
  - \_\_\_ b. The `managedTransfer` element is a group element, which contains all other elements that are required for a single file transfer, or a group of file transfers.
  - \_\_\_ c. The `transferSet` element is a group element that contains the source and destination file details, and one or more `item` elements.
  - \_\_\_ d. By using more than one `item` element, you can include more than one file in the transfer request. However, although all transfers take place across the two agents that are specified in the `managedTransfer` tags, each `item` element can have different properties, such as mode, and the source and element disposition.
- 
- \_\_\_ 12. Ensure that the command prompt window is still at the `C:\LabFiles\Unit3` directory.
- \_\_\_ 13. Transfer a file with the `fteCreateTransfer` command and the `-td` parameter by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab3_copyAndPaste.txt` file in directory `C:\LabFiles\Unit3`.

```
fteCreateTransfer -td Ex3xferFile.xml
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGPR0127W: No credentials file has been specified to connect to IBM MQ.

Therefore, the assumption is that IBM MQ authentication has been disabled.

BFGCL0035I: Transfer request issued. **The request ID is: 414d51204d4654552020202**

020202020837f695824456903

BFGCL0182I: The request is now waiting to be processed by the agent.

- \_\_\_ 14. **Leave the command prompt window open. You are going to use it frequently throughout this lab exercise.**
- \_\_\_ 15. Expand IBM MQ Explorer.
- \_\_\_ 16. Proceed to the Transfer Log view in the Managed File Transfer menu, and expand the + in the most recent transfer to expose the source and destination file names.

Transfer Log			
	Source	Destination	Completion State
+	MFTUAGT1	MFTUAGT1	Successful
+	MFTUAGT1	MFTUAGT1	Successful
+	C:\LabFiles\from\XferAndRenameMe.txt	C:\LabFiles\to\useXferDefFile.txt	Successful

- \_\_\_ 17. In the transfer definition file, the destination file was renamed to useXferDefFile.txt. Confirm that you are looking at the correct file in the Destination column, and that the transfer completed successfully. A more exact method to confirm that you are looking at the correct transfer is by comparing the request or Transfer ID that was provided as output when the fteCreateTransfer request was made (in bold in the previous text box). It is compared against the Transfer ID found in the Properties XML view of the Transfer Log entry. However, for purposes of this step, confirmation of the destination file name is adequate.
- \_\_\_ 18. Leave IBM MQ Explorer open through the rest of this lab exercise.

## 3.2. Schedule a transfer

### Section 1: Transfer a file by scheduling a transfer



#### Hint

In the next section, you schedule a transfer to occur three times every minute by starting from a time that you specify. To expedite this work, obtain the current time by typing `time` in the command prompt window and pressing the Enter key two times to skip resetting the time. Optionally, you can obtain the time from the rightmost corner of the Windows taskbar.

Estimate the time that it takes you to run the command. Base the time you specify in the `-ss` parameter of the `fteCreateTransfer` command, in the time you determined by looking at the workstation, plus a minute or two to give you time to run the command before the scheduled time arrives.



#### Important

All instructions where you type an IBM MQ Managed File Transfer command require that you use a command prompt window. The step to return to the command prompt window is omitted from most of the sections for brevity. When you see an instruction to type a command, use the command prompt window.

- \_\_\_ 19. Create a scheduled transfer request by typing the command that is shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab3_copyAndPaste.txt` file in directory `C:\LabFiles\Unit3`.

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -tb source -ss 13:00
-oi minutes -of 1 -oc 3 -de overwrite -df C:\to\scheduledThreeTimes.txt
C:\LabFiles\from\xferAndRenameMe.txt
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
0202020837f69582445b103
BFGCL0182I: The request is now waiting to be processed by the agent.
```

- \_\_\_ 20. Display the scheduled transfer information by typing the command as shown in the text box and pressing the Enter key.



**fteListScheduledTransfers****Expected results:**

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
 BFGPR0127W: No credentials file has been specified to connect to IBM MQ.  
 Therefore, the assumption is that IBM MQ authentication has been disabled.

```

Schedule Identifier:      2
Source Agent Name:       MFTUAGT1
Source File Name:        C:\LabFiles\from\xferAndRenameMe.txt
Conversion Type:         binary
Destination File Name:   C:\to\scheduledThreeTimes.txt
Destination Agent Name:  USR1AGT1
Schedule Start Time:     2017-01-04T13:00-0800
Next Transfer:           2017-01-04T13:00-0800
Schedule Time Base:      source
Repeat Interval:         minutes
Repeat Frequency:        1
Repeat Count:            3
  
```

- \_\_\_ 21. Review the scheduled transfer display. You see the parameters that are specified in the command. The first iteration of the scheduled transfer is expected to start at 13:00, or 1:00 PM.
- \_\_\_ 22. Return to IBM MQ Explorer. You must wait until the scheduled time that you specified arrives before you see any results. While you wait, you might want to check how you also find the scheduled transfer information in IBM MQ Explorer **Managed File Transfer > MFTU > Pending Transfers**.
- \_\_\_ 23. Return to the Transfer Log section of IBM MQ Explorer. This time, go to the panel at the end of the Transfer Log information under the tab titled Managed File Transfer - Current Transfer Progress. At about 3 minutes after the first iteration of the scheduled transfer started, you see three entries.

Source	Destination	Current File	File Number	Progress	Rate	Started (America/Los_Angeles)
MFTUAGT1	USR1AGT1	xferAndRenameMe.txt - (0B / 0B)	1 / 1	<div></div>	unknown	# Failed # 1/4/17 11:06:04 AM PST
MFTUAGT1	USR1AGT1	xferAndRenameMe.txt - (261B / 261B)	1 / 1	<div></div>	100%	# Successful # 1/4/17 11:14:36 AM PST
MFTUAGT1	USR1AGT1	xferAndRenameMe.txt - (261B / 261B)	1 / 1	<div></div>	100%	# Successful # 1/4/17 1:00:01 PM PST
MFTUAGT1	USR1AGT1	xferAndRenameMe.txt - (261B / 261B)	1 / 1	<div></div>	100%	# Successful # 1/4/17 1:01:02 PM PST
MFTUAGT1	USR1AGT1	xferAndRenameMe.txt - (261B / 261B)	1 / 1	<div></div>	100%	# Successful # 1/4/17 1:02:02 PM PST

- \_\_\_ 24. If your three scheduled transfers completed successfully, proceed to the next section.
- \_\_\_ 25. If your scheduled transfers did not complete, or seem to have a hanging “Starting” Completion State in the IBM MQ Explorer Transfer Log view, refer to the troubleshooting text box for possible actions.



## Troubleshooting

Any transfer, including a scheduled transfer, might fail for many reasons. A transfer request might show a “Starting” status in the Transfer Log view, yet have other problems that cannot be detected in the IBM MQ Explorer Transfer log view.

In these cases, some actions that you might take are as follows:

- The first action is to take a close look at the command you typed. Particularly:
    - Are there any typographical errors? Typographical errors might be easy to overlook at times.
    - Are there any hidden characters that might be hindering the command? Although hidden characters that might exist in a copy and paste command are possible, hidden character problems normally surface as syntax errors. However, you might want to retype a command that you previously invoked by using a copy and paste example to see whether the problem is rectified with the carefully typed attempt.
  - Look at your file logger records. Look for:
    - Typographical errors, for example, mistyped agent names. However, ***the default logger records do not reflect that an agent name that is typed incorrectly does not exist.***
    - Follow the trail of message type inserts, such as TSTR, TCOM, and many other inserts that indicate a stage or event that occurred. Inserts were also referred to as eye catchers in the lecture.
  - You might also find information in the agent `output0.log`, and in IBM MQ Explorer. However, the logger records provide the most comprehensive information.
-

## 3.3. Use a monitor to transfer based on file activity

### Section 1: Review the contents of the `xfr.go` trigger file

- \_\_ 26. Use Windows Explorer to navigate to directory `C:\LabFiles\Unit3`.
- \_\_ 27. Use your preferred editor to review the contents of the `xfr.go` file, which is used in the monitor steps of this lab exercise. Optionally, you can review the contents that are displayed in this step:

`C:\from\AllNews.txt`

`C:\LabFiles\VendorNews.txt`

`C:\LabFiles\Unit3\Unit3News.txt`

Note how the files to be transferred proceed from different directories.



#### Note

This note is a narrative of your steps. The steps are detailed at the end of these notes. Do not start the work until you reach the numbered steps at the end of this note.

You now set up a monitor that polls a directory to start a transfer. The process requires four actions on your part, detailed in separate sections of this lab exercise. The different components of the monitor process, components that are already created, and the three items you create, are:

- The directory to be monitored is **already created** at `C:\LabFiles\trigdir`.
- Trigger file `xfr.go`, which is **already created** at `C:\LabFiles\Unit3`.
- Your first action is to create the transfer request file `task.xml` to include variable `${contentSource}` so that a list of files can be used as the transfer source when the monitor uses the `-tc` parameter.
- Your second action is to create the monitor. The monitor must check the triggered directory, `C:\LabFiles\trigdir`, for the arrival of any file that matches any name that ends in `.go`, every 30 seconds. The trigger file contains a list of files that are found in different paths, which requires use of the `-tc` parameter when the monitor is created.
- Your third action: List the monitor with the verbose parameter to check its status.
- Your fourth action: Copy the trigger file, `xfr.go`, to the monitored directory. **Do not complete this step until you finish the other actions and are ready to check the transfer.**

The four actions you need to complete to transfer a file by using a monitor are detailed in the next sections.

## Section 2: Create the transfer request file `task.xml` with variable `${contentSource}` as the source specification

- \_\_ 28. Create a transfer definition file by using the `fteCreateTransfer -gt` option and store it in file `C:\LabFiles\Unit3\task.xml` by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab3_copyAndPaste.txt` file in directory `C:\LabFiles\Unit3`.

---

```
fteCreateTransfer -gt C:\LabFiles\Unit3\task.xml -sa MFTUAGT1 -sm MFTU -da USR1AGT1
-dm USR1 -de overwrite -dd C:\LabFiles\to\ ${contentSource}
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0204I: Transfer request has been output to C:\LabFiles\Unit3\task.xml
```

---

- \_\_ 29. Review the contents of the `task.xml` file. Your results are expected to resemble the display in the text box. In particular, check the source and destination specifications, which are highlighted in bold:
- \_\_ a. The source files are left at their original location.
  - \_\_ b. The source specification is `${contentSource}`. Use of this variable causes the monitor to use the files that are listed in the trigger file as the source for the transfer.
  - \_\_ c. The files at the destination directory, `C:\to`, can be overwritten if they already present.

```
<?xml version="1.0" encoding="UTF-8"?><request version="6.00"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="FileTransfer.xsd">
  <managedTransfer>
    <originator>
      <hostName>ws2008r2x64.wasedu.net.</hostName>
      <userID>fteadmin</userID>
    </originator>
    <sourceAgent QMgr="MFTU" agent="MFTUAGT1"/>
    <destinationAgent QMgr="USR1" agent="USR1AGT1"/>
    <transferSet>
      <item checksumMethod="MD5" mode="binary">
        <source disposition="leave" recursive="false">
          <file>${contentSource}</file>
        </source>
        <destination exist="overwrite" type="directory">
          <file>C:\LabFiles\to\</file>
        </destination>
      </item>
    </transferSet>
  </managedTransfer>
</request>
```

---

### Section 3: Create the monitor

- \_\_\_ 30. Create the monitor by using the `fteCreateMonitor` command by typing the command as shown in the text box and pressing the Enter key. Take particular care with the **"match,\*.go"** part. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab3_copyAndPaste.txt` file in directory `C:\LabFiles\Unit3`.

---

```
fteCreateMonitor -mn MFTUMON1 -ma MFTUAGT1 -md C:\LabFiles\trigdir -mt
C:\LabFiles\Unit3\task.xml -tr "match,*.go" -pi 30 -pu seconds -tc
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0188I: The request to create a monitor has been submitted with a request
id of 414d51204d46545520202020202020837f6958244ea203.
BFGCL0251I: The request has successfully completed.
```

---

- \_\_\_ 31. If your results were successful, proceed to the next section.
- \_\_\_ 32. If your results failed with message "BFGCL0220E: The parameter ?tc is not a valid argument for this command", the copy-and-paste command might be corrupted. Type the command manually, and review the command as typed before you press the Enter key. **If you need to retype the command, use the -f force option before the -tc option.**

### Section 4: List the monitor with the verbose parameter and check its status

- \_\_\_ 33. Use the `fteListMonitors` command with the verbose parameter to determine the monitor status. Type the command as shown in the text box to include the verbose option.

---

```
fteListMonitors -v
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
Monitor Information:
```

Name:	MFTUMON1
Agent:	MFTUAGT1
<b>Status:</b>	<b>Started</b>
Resource Type:	Directory
Resource:	C:\LabFiles\trigdir
Poll interval:	30 seconds
Batch size:	1
Condition:	Match
Pattern:	*.go (wildcard)
Content:	Default

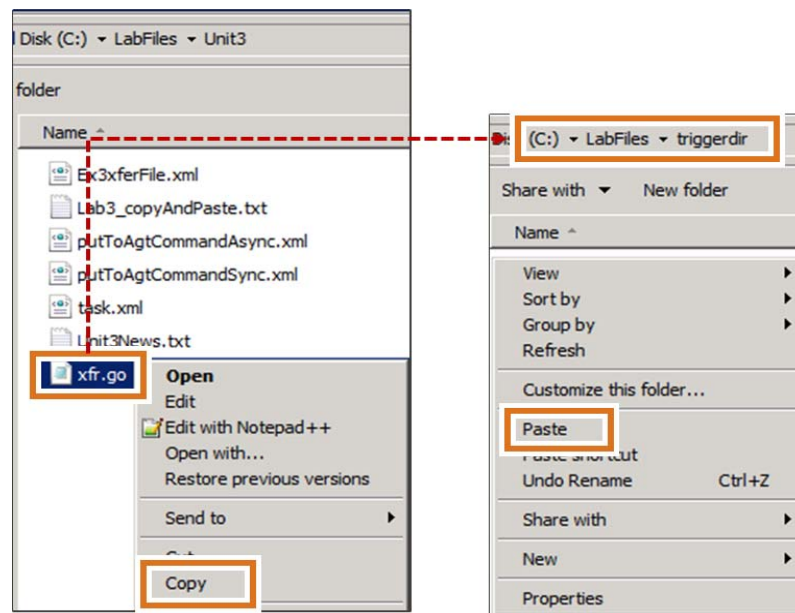
---

- \_\_\_ 34. Ensure that the Status field shows that the monitor is Started. The `fteListMonitors` command shows key information about the monitor.

## Section 5: Copy the trigger file to the monitored directory

The next step is expected to meet the trigger conditions for a transfer to start.

- \_\_\_ 35. Ensure that your IBM MQ Explorer is still open and connected to the MFTU configuration.
- \_\_\_ 36. By using Windows Explorer, right-click file `xfr.go` at `C:\LabFiles\Unit3` and select **Copy** from the Windows menu.
- \_\_\_ 37. Right-click the empty directory at `C:\LabFiles\trigdir` and select **Paste** from the Windows menu to copy the `xfr.go` file to the monitored directory.



- \_\_\_ 38. Open IBM MQ Managed File Transfer and select the Transfer Log for the MFTU configuration.
- \_\_\_ 39. Wait around 30 seconds to a minute for the polling to occur.
- \_\_\_ 40. After a few moments, you might see the transfer display either as `Starting` or as `Successful` in IBM MQ Explorer.
- \_\_\_ 41. After you see a successful return, expand the `+` to see the detail on the files processed.

MFTUAGT1	USR1AGT1
C:\LabFiles\VendorNews.txt	C:\LabFiles\to\VendorNews.txt
C:\LabFiles\from\CourseNews.txt	C:\LabFiles\to\CourseNews.txt
C:\LabFiles\Unit3\Unit3News.txt	C:\LabFiles\to\Unit3News.txt

- \_\_\_ 42. If your transfer completed successfully, proceed to the next section. If the monitor did not intercept any triggered conditions, review the troubleshooting text box. If the task is successful, you see the three files that are specified in the `xfr.go` trigger file, transferred to directory `C:\LabFiles\to`.



## Troubleshooting

If your monitor did not work, try the following actions:

- Remember that IBM MQ Managed File Transfer tracks the trigger files. ***You must remove the trigger file and place it back on the triggered directory when you need to repeat a monitor test.***
- You might need to overwrite the monitor by adding parameters `-c` and `-f` to the `fteCreateMonitor` command. The `-c` parameter clears trigger history, and requires `-f`.
- Review all directory names and file names that are used and ensure that the monitor definition parameters were accurate.
- If all information appears correct, check for any messages in the agents output log by proceeding to directory `C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\MFTUAGT1\logs` by using either Windows Explorer or the command prompt window, and opening file `output0.log` file with your preferred editor.

---

\_\_\_ 43. Keep IBM MQ Explorer open and connected to the `MFTU` configuration.

## 3.4. Transfer by using the agent command queue

### Section 1: Initiate a transfer in asynchronous mode by putting a message to the agent command queue



#### Important

The transfer request files, `putToAgtCommandAsync.xml` and `putToAgtCommandSync.xml`, were generated by using the `fteCreateTransfer` command. However, all end-of-line characters were removed so that the XML travels in a single message when put to the agent command queue, `SYSTEM.FTE.COMMAND.USR1AGT1`. Be extra careful when you work with files `putToAgtCommandAsync.xml` and `putToAgtCommandSync.xml` to ensure that no ends of line characters are introduced. If the transfer request does not travel as a single message, the transfer fails.

- If you want to see the contents of the files, ***wait until after you complete the transfers that use the files*** to view them, to mitigate any chance of corruption. However, the contents of two similar transfers were displayed in the lecture slides for this unit.
- The transfers that are defined in these two files use agent `USR1AGT1` as the source agent, and `MFTUAGT1` as the destination agent.
- When a properly formatted transfer request is placed in the agent command queue, the transfer is processed immediately.
- While the exercise is using a sample program, these scenarios are expected to be processed by an application that formats the XML and places it to the agent command queue. The application could also be an IBM Integration Bus flow.

- 
- \_\_\_ 44. On your command prompt window, ensure that you are in directory `C:\LabFiles\Unit3`.
  - \_\_\_ 45. Display the directory by typing `dir` and pressing the Enter key. Files `putToAgtCommandAsync.xml` and `putToAgtCommandSync.xml` are expected to be in the display.
  - \_\_\_ 46. Place file `putToAgtCommandAsync.xml` as a message to the command queue for agent `USR1AGT1` by using the `amqspout` sample program and typing the entry as shown in the text box and pressing the Enter key.
- 

```
amqspout SYSTEM.FTE.COMMAND.USR1AGT1 USR1 < putToAgtCommandAsync.xml
```

Expected results:

```
Sample AMQSPUT0 start
target queue is SYSTEM.FTE.COMMAND.USR1AGT1
Sample AMQSPUT0 end
```

---



- 
- \_\_\_ 47. Proceed to the IBM MQ Explorer *Transfer Log* and check that the transfer completed successfully. If the transfer completed successfully, proceed to the next section.
  - \_\_\_ 48. If the transfer failed, use the IBM MQ Explorer *Transfer Log XML* view, and if necessary the file logger entries to determine and correct the error.
- 



### Troubleshooting

The agent command queue expects one single XML formatted request message. If an end-of-line or other character gets inserted in the asynchronous or synchronous XML files, the result is multiple failures, as multiple invalid messages might get forwarded to the command queue. If you get several failures on one transfer, carefully check the XML file for unintended characters or spaces between the XML tags.

---

## Section 2: *Initiate a transfer in synchronous mode by putting a message to the agent command queue and requesting status in a reply*

---



### Important

The synchronous scenario is processed like the previous step, with the exceptions shown. These tasks have detailed numbered steps. This text box is a summary narrative. Do not attempt any work until you reach the numbered steps.

- The request is synchronous because the results of the transfer are sent to a permanent dynamic queue. It must be a dynamic queue.
  - You must manually create the permanent dynamic queue by opening the correct model queue with a sample application.
  - You must use `runmqsc` to copy the name of the queue. Then, place the queue name in the correct tag of the `putToAgtCommandSync.xml` XML file.
  - Towards the end of this lab exercise, you edit file `putToAgtCommandSync.xml` with a dynamic queue name. In case you damage the file, a backup of file `putToAgtCommandSync.xml` can be found in file `BKP.putToAgtCommandSync.xml` in the `C:\LabFiles\Unit3` directory. ***Do not introduce any end-of-line characters in the files that are used to put a message to the command queue.***
- 

- \_\_\_ 49. Create a dynamic queue by opening a permanent model queue as shown in the text box and pressing the Enter key ***two times*** to end the `amqsput` sample program.
- 

```
amqsput SYSTEM.DURABLE.MODEL.QUEUE USR1
```

Expected results:

```
Sample AMQSPUT0 start
```

```
target queue is SYSTEM.DURABLE.MODEL.QUEUE
```

```
Sample AMQSPUT0 end
```

---

- \_\_\_ 50. Open a blank Notepad file to save the name of the temporary queue by typing `notepad` and pressing the Enter key.
- \_\_\_ 51. Start a `runmqsc` session for queue manager USR1 to find the name of your dynamic queue by typing `runmqsc USR1` and pressing the Enter key.
- \_\_\_ 52. Display the dynamic queues by typing the command as shown in the text box in the `runmqsc` session and pressing the Enter key.

```
1 : dis q(AMQ*)
```

Expected results:

```
AMQ8409: Display Queue details.
      QUEUE(AMQ.586982FB02BDA322)          TYPE(QLOCAL)
AMQ8409: Display Queue details.
      QUEUE(AMQ.MQEXPLORER.586982FB032AA322)
      TYPE(QLOCAL)ng the Enter key.
```

- \_\_\_ 53. Highlight the name of the temporary queue by right-clicking the heading of the command prompt screen and selecting **Mark** to highlight the queue name. Take care to copy the `AMQ.nnnn` prefixed queue, **not** the `AMQ.MQEXPLORER` prefixed queue.
- \_\_\_ 54. Right-click the heading of the command prompt screen and select **Copy** to copy the name of the temporary queue.
- \_\_\_ 55. Paste the name of the queue to your blank Notepad file. The name of the queue in your Notepad file is supposed to resemble `AMQ.586982FB02BDA322`, but has different alphanumeric characters.
- \_\_\_ 56. Use Windows Explorer to navigate to file `putToAgtCommandSync.xml` in the `C:\LabFiles\Unit3` directory.
- \_\_\_ 57. Right-click the `putToAgtCommandSync.xml` file name and select **Edit** from the Windows menu.
- \_\_\_ 58. Carefully, scroll to the right through the contents of the XML file until you see the `reply` tag, as shown in the text box.

```
<reply QMGR="USR1">AMQ.586982FB02A8A322</reply>
```

- \_\_\_ 59. Very carefully, replace the temporary queue name in the `putToAgtCommandSync.xml` file, with the name of the temporary queue you saved to Notepad. **Do not overwrite any of the XML tags. Ensure that your entry looks exactly as shown in the text box before you proceed. Pay attention to the tags and special characters.**
- \_\_\_ 60. Save and close the `putToAgtCommandSync.xml` file.
- \_\_\_ 61. Keep the name of the temporary queue in the Notepad file, as you are going to use it again in a later step.

- \_\_\_ 62. Place file `putToAgtCommandSync.xml` as a message to the command queue for agent `USR1AGT1` by using the `amqspout` sample program and typing the entry as shown in the text box and pressing the Enter key.

---

```
amqspout SYSTEM.FTE.COMMAND.USR1AGT1 USR1 < putToAgtCommandSync.xml
```

Expected results:

```
Sample AMQSPUT0 start
target queue is SYSTEM.FTE.COMMAND.USR1AGT1
Sample AMQSPUT0 end
```

- 
- \_\_\_ 63. Proceed to the IBM MQ Explorer Transfer Log and check that the transfer completed successfully. If the transfer completed successfully, proceed to the next section.
- \_\_\_ 64. When the transfer completes, retrieve the message from the temporary queue by using the sample `amqsget` utility and typing the command as shown on the text box. **Replace the `queuenameplaceholder` with the 16-character alphanumeric portion the temporary queue name that you saved in the Notepad file.** The “`AMQ.`” with period portion of the name is fixed.

---

```
amqsget AMQ.qnameplaceholder USR1
```

Expected results:

```
message <?xml version="1.0" encoding="UTF-8"?><reply version="6.00" xmlns:xsi="
http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Reply.
xsd" ID="414d51205553523120202020202020fb82695822a3fa02"><status resultCode="0
"></status></reply>
```

- 
- \_\_\_ 65. Review the results of the status message. Look for tab `status`, which includes the `resultCode` field. If you had previous failures in the synchronous step, you might see more than one reply message with the reason code for a prior failure.

## 3.5. Transfer by using a transfer template

### Section 1: Create a transfer template by using command `fteCreateTemplate`

- \_\_\_ 66. Create a template to transfer and rename a file by typing the command as shown in the text box. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab3_copyAndPaste.txt` file in directory `C:\LabFiles\Unit3`.

---

```
fteCreateTemplate -tn "Course ZM003 transfer template" -sa MFT
UAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df C:\LabFiles\to\*.txt
C:\LabFiles\from\*.txt
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0263I: A template has been created and sent to the coordination queue
manager for publication.
```

---



#### Information

In the results, you need to confirm that you see message `BFGCL0263I` to confirm success of the command. The `BFGCL0263I` message follows three instances of message `BFGPR0127W`. The repeated messages were reported to the support team. While it is preferred that one `BFGPR0127W` message is displayed, the extra messages are harmless.

---

- \_\_\_ 67. If your template was created successfully, proceed to the next section.
- \_\_\_ 68. If the `fteCreateTemplate` command did not result in message `BFGCL0263I`, review your command and correct any problems before you continue.
- 



#### Hint

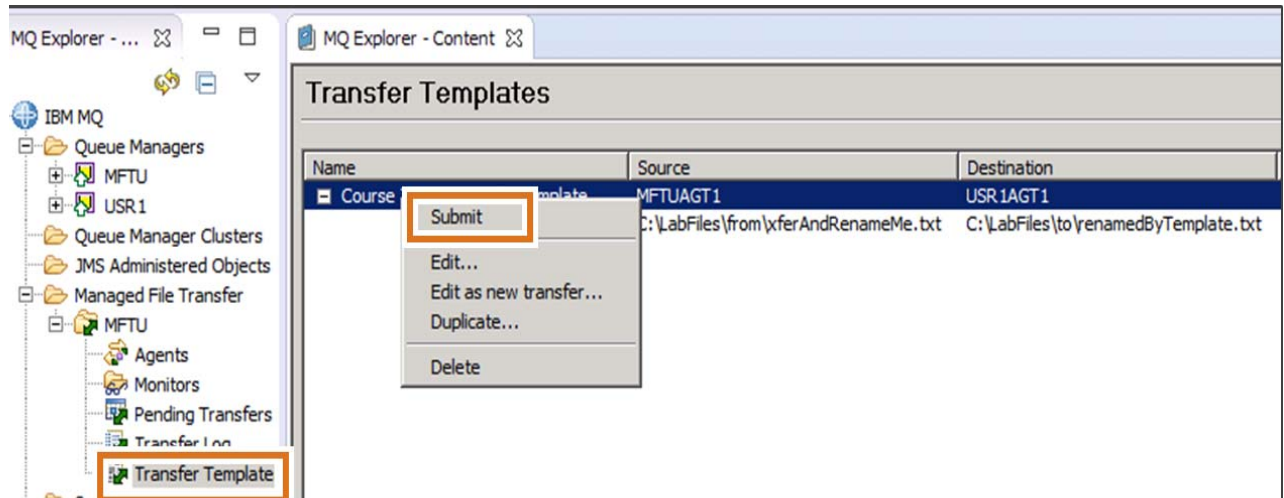
If your template was created, but you need to make changes, use the IBM MQ Explorer Transfer Template view. After you right-click the transfer template definition, you can either choose to Delete and re-create the template in the command line, or choose to Edit the template by following the panels and instructions on IBM MQ Explorer.

---

### Section 2: Transfer a file by using the transfer template

- \_\_\_ 69. Proceed to IBM MQ Explorer.

- \_\_\_ 70. Select the **Transfer Templates** heading from the **Managed File Transfer** menu.
- \_\_\_ 71. In the Transfer Templates main window, expand the **+** in the template to view the template information in the IBM MQ Explorer view. You see the from and to files and directory paths.
- \_\_\_ 72. Right-click the **first line** of the Transfer Template you created, and select the **Submit** option to run the transfer.



- \_\_\_ 73. Click the Transfer Log view and check the transfer results. The expected outcome is:

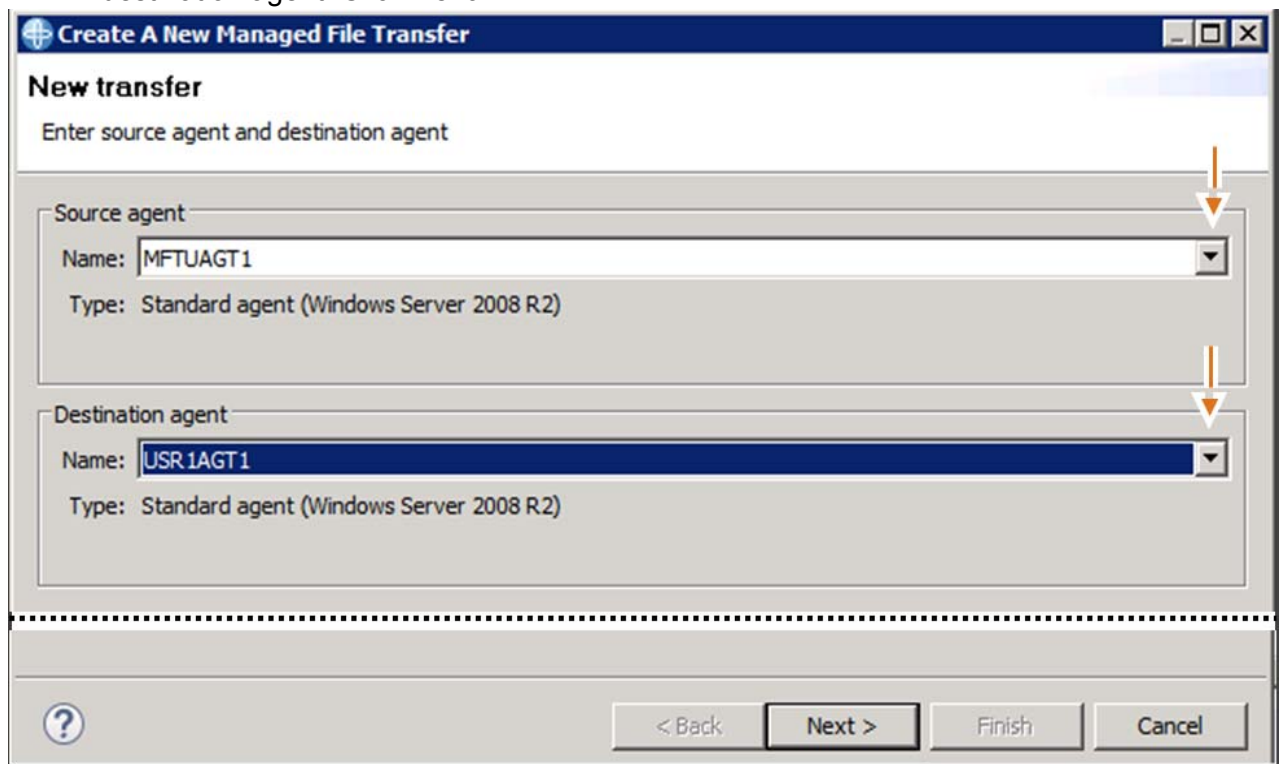
MFTUAGT1	USR1AGT1	Successful
C:\LabFiles\from\XferAndRenameMe.txt	C:\LabFiles\to\renamedByTemplate.txt	Successful

- \_\_\_ 74. Review your results. If the transfer is successful, proceed to the next section. If your transfer did not complete successfully, determine the problem by looking for errors in the IBM MQ Explorer Transfer Log and in the file logger. If necessary, delete and re-create the template, and resubmit the transfer.

## 3.6. Transfer by using IBM MQ Explorer

### Section 1: Use IBM MQ Explorer to initiate a transfer

- \_\_\_ 75. Right-click the MFTU configuration name and select **New Transfer**. The New Transfer panel surfaces.
- \_\_\_ 76. Use the menu to select **MFTUAGT1** as the source agent, and **USR1AGT1** as the destination agent. Click **Next**.



- \_\_\_ 77. On the next panel, select the **Add** option to the right of the panel. The **Add a transfer item** panel surfaces.

- \_\_\_ 78. Although you continue with a binary transfer, look at the options in the text transfer menu by selecting **Text transfer**, and expanding the **Advanced text transfer options** menu. You see the many ways that you can alter your transfer. You can do the same processing with the `fteCreateTransfer` command parameters.

**Add a transfer item**

Specify the mode, source, and destination attributes for this item

**Mode**

☐ Binary transfer (no conversion of data)

☒ Text transfer (ASCII/EBCDIC and CF/LF conversion)

▼ Advanced text transfer options

**Source encoding**

☒ Use codepage of agent process

☐ Use specific codepage: \_\_\_\_\_

**Destination encoding**

☒ Use codepage of agent process

☐ Use specific codepage: \_\_\_\_\_

**Destination line ending:** Use default for platform ▼

- \_\_\_ 79. Select **Binary transfer**, and *ensure that you no longer have* the Text transfer checked.
- \_\_\_ 80. On the Source and Destination panels, leave the **Type** as **File**.
- \_\_\_ 81. For the Source - File name, click **Browse** to select a file at `C:\LabFiles\from\xferAndRenameMe.txt`.
- \_\_\_ 82. For the Destination - File name, click **Browse** to select a file at `C:\LabFiles\to\renamedAgain.txt`.

\_\_ 83. Check the **Overwrite files if present** box on the **Destination** side of the panel.

**Add a transfer item**

Specify the mode, source, and destination attributes for this item

**Mode**

☒ Binary transfer (no conversion of data)

☐ Text transfer (ASCII/EBCDIC and CF/LF conversion)

► Advanced text transfer options

**Source**

Agent: MFTUAGT1

Type: Standard agent (Windows Server 2008 R2)

Type: File

File name: C:\LabFiles\from\XferAndRenameMe.txt

Browse...

☐ Remove source file if the transfer is successful

**Destination**

Agent: USR1AGT1

Type: Standard agent (Windows Server 2008 R2)

Type: File

File name: C:\LabFiles\to\renamedAndXfered.txt

☒ Overwrite files if present

\_\_ 84. Click **OK** at the lower right of the panel.

\_\_ 85. Click **Finish** at the lower right of the panel.

\_\_ 86. Proceed to the Transfer Log, and check the results of your transfer.

\_\_ 87. If your transfer is successful, you completed Exercise 3.

\_\_ 88. If your transfer failed, check the IBM MQ Explorer Transfer Log, determine the possible problem, correct, and resubmit.

You completed Exercise 3.

## End of exercise



## Exercise review and wrap-up

In this lab exercise, you:

- Created a transfer request file and used it to initiate a transfer
- Transferred a file by scheduling a transfer
- Created a monitor to initiate a transfer by detecting file activity in a directory
- Initiated a transfer by placing a message to the agent command queue
- Initiated a transfer and requested a status response by placing a message to the agent command queue and including a reply-to queue.
- Transferred a file by using a transfer template and IBM MQ Explorer
- Transferred a file by using IBM MQ Explorer
- Did some troubleshooting for problems with any of the transfers, by using either the file logger or the agent output0.log file

---

# Exercise 4. Working with protocol bridge and redistributable agents

## Estimated time

01:30

## Overview

In this exercise, you implement and use a protocol bridge agent and a redistributable agent.

## 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

## Introduction

In this exercise you work with two features that extend the IBM MQ Managed File Transfer infrastructure.

- The protocol bridge enables exchange of files to or from a protocol server such as an FTP, FTPS, or SFTP server.
- The redistributable agent allows creation of an agent on a host without IBM MQ Managed File Transfer installed.

## Requirements

- The protocol bridge section of this lab exercise requires:
  - FileZilla FTP server with user `fteadmin` available and started, with read and write permission for user `fteadmin`, and default file system at `C:\LabFiles\ftpHomeDir`
  - File `fromFTPRenameMe.txt` in `C:\LabFiles\ftpHomeDir` directory for the protocol to standard agent transfer.
  - Queue managers MFTU and USR1 started
  - Agents MFTUAGT1 and USR1AGT1 in READY status
- The redistributable agent section of this lab exercise requires:
  - Package `9.0.1.0-IBM-MQFA-Redist-Win64.zip` available
  - Empty directory `C:\LabFiles\RedistClient`

## Exercise instructions

## 4.1. Check that resources are available

### Section 1: Log on and start an IBM MQ Explorer session for later use

- \_\_\_ 1. Log on as the `fteadmin` user.
- \_\_\_ 2. Start IBM MQ Explorer by clicking the IBM MQ Explorer icon  in the Windows taskbar and waiting a few moments.



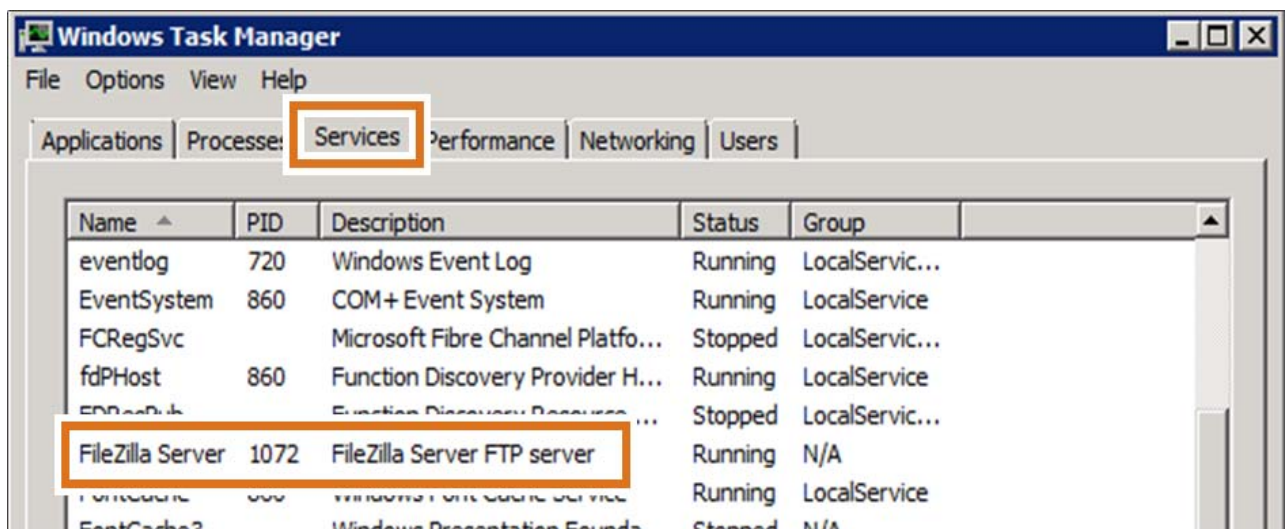
#### Note

If IBM MQ Explorer becomes unresponsive, follow the instructions in Exercise 2, where you started the Windows Task manager, and ended IBM MQ Explorer. Wait a few seconds, and then restart IBM MQ Explorer.

- \_\_\_ 3. On the IBM MQ Explorer Navigator pane, locate and expand the Managed File Transfer menu.
- \_\_\_ 4. Locate the MFTU configuration entry under the Managed File Transfer menu.
- \_\_\_ 5. Right-click the MFTU configuration and select **Connect**.
- \_\_\_ 6. Leave IBM MQ Explorer open, but minimize it.

### Section 2: Check that the FTP server is active

- \_\_\_ 7. Start the Windows Task Manager by right-clicking the Windows taskbar and selecting **Task Manager**.
- \_\_\_ 8. Select the **Services** tab, and scroll down until you find an entry for the **FileZilla Server**.
- \_\_\_ 9. Ensure that the FileZilla Server status is **Running**.



- \_\_\_ 10. Close or minimize the Task Manager window.

### Section 3: Check that agents **MFTUAGT1** and **USR1AGT1** are in **READY** status

- \_\_\_ 11. If you do not have a command prompt window open, proceed to open a command prompt window.
- \_\_\_ 12. Type command `fteListAgents` and press the Enter key to see that agent **MFTUAGT1** and agent **USR1AGT1** are both in ready status. It is OK if other agents are in **READY** status.
- \_\_\_ 13. If the agents are not active, ensure that queue managers **MFTU** and **USR1** are running by typing the command as shown in the text box and pressing the Enter key. **If agents MFTUAGT1 and USR1AGT1 are active, it means that queue managers MFTU and USR1 are also active. If the expected agents are active, skip this step and proceed to the next section.**

---

`dspmqr`

Expected results:

```
QMNAME(MFTU) STATUS(Running)
QMNAME(USR1) STATUS(Running)
```

---

- \_\_\_ 14. If either queue manager **MFTU** or **USR1** is inactive, start it by using the command `strmqm -ss MFTU` or `strmqm -ss USR1` and pressing the Enter key.
  - \_\_\_ 15. **If you had to start the queue managers**, start the agents by typing the commands as shown and pressing the Enter key after each command:
    - \_\_\_ a. `fteStartAgent MFTUAGT1`
    - \_\_\_ b. `fteStartAgent USR1AGT1`
  - \_\_\_ 16. Reissue the `fteListAgents` and ensure that **MFTUAGT1** and **USR1AFT1** are both in **READY** status.
  - \_\_\_ 17. **Leave the command prompt window open. You use it throughout this lab exercise.**
- 



#### Note

Do not proceed to the next part of this exercise until you ensure that all resources in this part are available as described.

---

## 4.2. Work with a protocol bridge agent

### Section 1: Create a protocol bridge agent

- \_\_\_ 18. By looking at the `fteCreateBridgeAgent` command in the step that follows, review the extra parameters that are required to define the protocol (FTP) server part of the protocol bridge agent. The new parameters, along with details to configure previously used `fteCreateAgent` parameters, are:
  - \_\_\_ a. The type of protocol server at the `-bt` parameter is an FTP server.
  - \_\_\_ b. The protocol server name at the `-bh` parameter is `ws2008r2x64`.
  - \_\_\_ c. The protocol server operating system at the `-bm` parameter is a Windows server.
  - \_\_\_ d. The protocol server time zone at the `-btz` parameter is `US/Pacific`.
  - \_\_\_ e. The protocol server local at the `-bsl` parameter is `en_US`.
  - \_\_\_ f. Use IBM MQ Client connections.
  - \_\_\_ g. Use queue manager MFTU to serve as the agent queue manager.
- \_\_\_ 19. Create the protocol bridge agent by typing the command as shown in the text box. **Do not copy the command from the exercise guide.** It contains end-of-line characters and fails. Optionally, you can copy and paste the command from the `Lab4_copyAndPaste.txt` file in the `C:\LabFiles\Unit4` directory.

```
fteCreateBridgeAgent -agentName PBRGAGT1 -agentQMgr MFTU -bt FTP -bh ws2008r2x64
-bm WINDOWS -btz US/Pacific -bsl en_US -bfe UTF8 -agentQMgrHost 127.0.0.1
-agentQMgrPort 1656 -agentQMgrChannel MQMFT.MFTU.SVRCONN
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

**BFGCL0392I:** A protocol bridge properties XML file has been created. This file contains details for the protocol file server specified at protocol bridge agent creation. You must add further details and servers manually. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\PBRGAGT1\ProtocolBridgeProperties.xml'.

**BFGCL0532I:** For this agent to function an additional credentials file must be created manually. By default this file is called ProtocolBridgeCredentials.xml and is located in the home directory of the user who starts the agent. For example, if this user started the agent the location would be:

C:\Users\fteadmin\ProtocolBridgeCredentials.xml

... ..

USAGE(NORMAL) +

REPLACE

**BFGCM0239I:** A file has been created containing the MQSC definitions to define the agent PBRGAGT1. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\PBRGAGT1\PBRGAGT1\_create.mqsc'.

**BFGCM0241I:** A file has been created containing the MQSC definitions to delete the agent PBRGAGT1. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\PBRGAGT1\PBRGAGT1\_delete.mqsc'.

**BFGPR0127W:** No credentials file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM MQ authentication has been disabled.

**BFGCL0053I:** Agent configured and registered successfully.

## Section 2: Review the extra information that is returned by using the *fteCreateBridgeAgent* command

- \_\_\_ 20. Message BFGCL0392I informs you that you need to add a server to the ProtocolBridgeProperties.xml file. However, addition of the protocol server to the ProtocolBridgeProperties.xml file is required when you create the agent without protocol server information. As typed, the command included the information, so you can safely ignore the BFGCL0392I message.
- \_\_\_ 21. Message BFGCL0532I informs you that you must manually create the ProtocolBridgeCredentials.xml file from the sample file at the specified location. When you repeat this work, you need to follow these instructions. However, for this lab exercise, the ProtocolBridgeCredentials.xml is created for you at the C:\LabFiles\Unit4 directory. You copy this file to the required location in a later step.



- \_\_\_ 22. As with standard agents, you have the messages that state where you can find the IBM MQ scripts to create the objects that are required for the new agent. These objects are created in the queue manager that is identified in the agent definition, MFTU.
- \_\_\_ 23. Finally, as with standard agents, you must ensure that you see the message that confirms the agent is configured **and** registered, **BFGCL0053I: Agent configured and registered successfully.**
- \_\_\_ 24. If the results state that the agent is configured successfully, but does not confirm that it is registered, a problem exists. Refer to the `output0.log` file for this agent to determine the reason that an agent might not be registered. Also, check the queue manager log for the coordination queue manager, for any channel errors between the agent and the coordination queue managers.

### ***Section 3: Review the agent.properties file for agent PBRGAGT1***

- \_\_\_ 25. From the command prompt window, navigate to the agent PBRGAGT1 by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\PBRGAGT1` and pressing the Enter key.
- \_\_\_ 26. Use Notepad to open the agent properties file by typing `notepad agent.properties` and pressing the Enter key. Expected results are:

```
#
#Tue Jan 17 12:14:29 PST 2017
agentType=BRIDGE
agentQMGr=MFTU
agentQMGrPort=1656
agentDesc=
agentQMGrHost=127.0.0.1
agentQMGrChannel=MQMFT.MFTU.SVRCONN
agentName=PBRGAGT1
```

- \_\_\_ 27. Review the results.
  - \_\_\_ a. One new piece of information is the agent type. In the earlier agents, STANDARD is the default and was omitted from the `agent.properties` file. In this case, a distinction is made that PBRGAGT1 is a bridge agent.
  - \_\_\_ b. All other fields are as expected. The extra agent queue manager information is added because MQI type connections were specified in the `fteCreateBridgeAgent` command.
  - \_\_\_ c. You do not see information about the protocol, or FTP server. Information about the protocol server is kept in the `ProtocolBridgeProperties.xml` file.
  - \_\_\_ d. Keep the command prompt window in the agent PBRGAGT1 directory.

## Section 4: Review and adjust the *ProtocolBridgeProperties.xml* file



### Attention

Different protocol servers are available: FTP, FTPS, and SFTP. In this course, you focus on the work with IBM MQ Managed File Transfer, rather than with the FTP server configuration. To bypass extra work with the FTP server, a change is made to the *ProtocolBridgeProperties.xml* file that **is not advisable** in a “real” environment.

In this section, you change the `limitedWrite` parameter of the protocol bridge *ProtocolBridgeProperties.xml* file to `true`. This change is required to bypass a problem with the rename of the transferred file at its destination. However, **in an actual engagement, you must work with the FTP administrator to handle the problem in the FTP server side, rather than changing `limitedWrite` to `true`.**

Failure to update the `limitedWrite` parameter in the *ProtocolBridgeProperties.xml* file for the course environment causes error BFGIO0099E: The rename of temporary file `/MFTToFTP.txt.part` to `/MFTToFTP.txt` failed to surface in a file logger TPRO record. The transfer is then considered as failed, although a “.part” file is copied to the destination directory.

**Changing the `limitedWrite` parameter to `true` can lead to corrupt transfers and must be avoided in the protocol agent configuration.**

- \_\_\_ 28. On Windows Explorer, locate the *ProtocolBridgeProperties.xml* file by clicking the PBRGAGT1 directory at **ProgramData > IBM > MQ > mqft > config > MFTU > agents**.
- \_\_\_ 29. Make a backup copy of the *ProtocolBridgeProperties.xml* file that is created by doing the following steps:
  - \_\_\_ a. Right-click the *ProtocolBridgeProperties.xml* file and select **Copy**.
  - \_\_\_ b. Right-click inside the **PBRGAGT1** directory and select **Paste**. The **PBRGAGT1** directory is expected to resemble the figure that is shown.

Name ^	Date modified	Type
exits	1/17/2017 12:14 PM	File folder
agent.properties	1/17/2017 12:14 PM	PROPERTIES File
PBRGAGT1_create.mqsc	1/17/2017 12:14 PM	MQSC File
PBRGAGT1_delete.mqsc	1/17/2017 12:14 PM	MQSC File
ProtocolBridgeProperties - Copy.xml	1/17/2017 12:14 PM	XML Document
ProtocolBridgeProperties.xml	1/17/2017 12:14 PM	XML Document

- \_\_\_ 30. Return to the command prompt window. It is assumed that you are still at the correct agent directory.

- \_\_\_ 31. Use Notepad to edit the `ProtocolBridgeProperties.xml` file by typing `notepad ProtocolBridgeProperties.xml` and pressing the Enter key.
- \_\_\_ 32. The beginning of the file holds a commented out area with configuration information and samples. Scroll down to the end of the file and locate the comment closeout string: `-->`
- \_\_\_ 33. Review the configuration that resulted from the `fteCreateBridgeAgent` command, as shown in the text box:

---

`-->`

```
<tns:serverProperties xmlns:tns="http://wmgfte.ibm.com/ProtocolBridgeProperties"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://wmgfte.ibm.com/ProtocolBridgeProperties
ProtocolBridgeProperties.xsd">
... [comments section omitted for brevity] ...
<tns:defaultServer name="ws2008r2x64" />
  <tns:ftpServer name="ws2008r2x64" host="ws2008r2x64" platform="WINDOWS"
    timeZone="US/Pacific" locale="en_US" fileEncoding="UTF8"
    listFormat="unix" limitedWrite="false" />

  <!-- Define servers here -->
</tns:serverProperties>
```

---

- \_\_\_ a. Note the `defaultServer` tag. Since the server that you work with is the first FTP server that is defined in this environment, it is assumed that `ftpServer ws2008r2x64` is the default server.
- 



### Attention

Pay special attention to the value at the `ftpServer name="ws2008r2x64"` element. The `ftpServer` name value of the `ProtocolBridgeProperties.xml` file must match the `server` name element value of the `ProtocolBridgeCredentials.xml` file.

Even if a bridge agent starts, failure to have matching server names can cause credential mapping errors during a file transfer, which surface as shown in the file logger:

```
BFGTR0072E: The transfer failed to complete due to the exception : BFGBR0088E: No
credential mapping has been found for user 'fteadmin'.
```

---

- \_\_\_ b. Continue the review. You can see the new parameters that are specified for the `fteCreateBridgeAgent` command that apply to the FTP server, such as platform, time zone, and encoding.
- \_\_\_ c. The `limitedWrite` parameter is highlighted with bold. You change the file in a later step. However, you can prevent having to change this file by including the `-blw` parameter in the `fteCreateBridgeAgent` command.

- \_\_\_ d. Toward the end of the file, you see a line that indicates to `<!-- Define servers here -->`. The extra options that are included in the `fteCreateBridgeAgent` command that you used defined one protocol FTP server as the default in this file. However, you can have other non-default servers included.
- \_\_\_ e. You can scroll to the start of the file and look through the examples on how other servers can be manually added to the `ProtocolBridgeProperties.xml` file. In this course, you work with the FileZilla FTP server that was previously added to the `ProtocolBridgeProperties.xml` file.
- \_\_\_ 34. Proceed to the `limitedWrite` parameter, and carefully change the "false" value to "true" so that the `limitedWrite` entry now looks as shown: `limitedWrite="true" /`
- \_\_\_ 35. Before you save the changes, **ensure that you updated the correct server, `ftpServer name="ws2008r2x64"`, and not one of the examples.** If the expected server is not updated, your transfers fail the rename of the file.
- \_\_\_ 36. Save your changes and close the `ProtocolBridgeProperties.xml` file.
- \_\_\_ 37. Stay in the agent `PBRGAGT1` directory.

## ***Section 5: Create the definitions that are required in the agent queue manager for agent PBRGAGT1***

- \_\_\_ 38. While you are in the agent directory, create the IBM MQ definitions by typing the command as shown in the text box and pressing the Enter key.

---

```
runmqsc MFTU < PBRGAGT1_create.mqsc > mftu.out
```

Expected results are contained in the `mftu.out` file.

---

- \_\_\_ 39. Open file `mftu.out` by typing `notepad mftu.out` and pressing the Enter key.
- \_\_\_ 40. Scroll to the end of the `mftu.out` file and check that the results are exactly as shown in the text box.

---

```
AMQ8006: IBM MQ queue created.
```

```
11 MQSC commands read.
```

```
No commands have a syntax error.
```

```
All valid MQSC commands were processed.
```

---

- \_\_\_ 41. If your results show that 11 commands were read and you see "No commands have a syntax error", proceed to the next step.
- \_\_\_ 42. If your results are not exactly as shown and any part of the command failed, review the error message in the `mftu.out` file, and make any necessary corrections before you continue.

## Section 6: Copy and review the ProtocolBridgeCredentials.xml file



### Note

For this course, the ProtocolBridgeCredentials.xml file is completed for you.

You need to take two actions as instructed in the next set of numbered steps:

- Copy the ProtocolBridgeCredentials.xml file from the C:\LabFiles\Unit4 directory to directory C:\Users\fteadmin. **Ensure that you copy it before you review it to mitigate any corruption to the file.**
- Review the ProtocolBridgeCredentials.xml file from the C:\LabFiles\Unit4 directory.

- 
- \_\_\_ 43. By using Windows Explorer, proceed to directory C:\LabFiles\Unit4.
  - \_\_\_ 44. Right-click the ProtocolBridgeCredentials.xml file and select **Copy**.
  - \_\_\_ 45. By using Windows Explorer, proceed to directory C:\Users\fteadmin.
  - \_\_\_ 46. Right-click directory C:\Users\fteadmin and select **Paste** to place the ProtocolBridgeCredentials.xml file in the required directory.
  - \_\_\_ 47. Return to directory C:\LabFiles\Unit4 by using Windows Explorer.
  - \_\_\_ 48. Since the ProtocolBridgeCredentials.xml does not have end-of-line characters, open the file by double-clicking the file name so it is opened and formatted in Internet Explorer. Check that the results resemble the copy in the text box **except for the lines that wrapped**.
- 

```
<tns:credentials xmlns:tns="http://wmgfte.ibm.com/ProtocolBridgeCredentials"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://wmgfte.ibm.com/ProtocolBridgeCredentials
ProtocolBridgeCredentials.xsd ">
  <tns:agent name="PBRGAGT1">
    <tns:server name="WS2008R2X64">
      <tns:user name="fteadmin" serverPassword="webSphere"
serverUserId="fteadmin">
        </tns:user>
      </tns:server>
    </tns:agent>
  </tns:credentials>
```

---

- \_\_\_ 49. Review the contents of the ProtocolBridgeCredentials.xml file.
  - \_\_\_ a. Notice that the first element is the agent name, PBRGAGT1.
  - \_\_\_ b. The next element, server name, contains the value that must match the value used at the ftpServer name element of the ProtocolBridgeProperties.xml file. Compare to ensure that these values match, and show as ws2008r2x64.

**Attention**

If the value at the `ProtocolBridgeCredentials.xml` file appears in uppercase and the value at the `ProtocolBridgeProperties.xml` file appears in lowercase, do not be concerned.

- \_\_\_ c. You might be alarmed to see the user name and password in clear text. However, in the administration lab, you learn how to obfuscate information in the IBM MQ Managed File Transfer credential files. For this lab, it is left in clear text.

## Section 7: Start and list the protocol bridge agent

- \_\_\_ 50. Start the protocol bridge agent by typing the command as shown in the text box and pressing the Enter key.

```
fteStartAgent PBRGAGT1
```

**Expected results:**

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0030I: The request to start agent 'PBRGAGT1' on this machine has been
submitted.
BFGCL0031I: Agent log files located at:
C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\PBRGAGT1\logs
```

- \_\_\_ 51. When you review the results of the command, you see how similar the location of the log files is provided. This output is to a standard agent. You look at the logs in a later step.
- \_\_\_ 52. List the protocol bridge agent by using the `fteListAgents` as shown in the text box and pressing the Enter key.

```
fteListAgents
```

**Expected results:**

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
Agent Name:                Queue Manager Name:      Status:
MFTUAGT1                   MFTU                      READY
PBRGAGT1 ( bridge )      MFTU                    READY
USR1AGT1                   USR1                      READY
```

- \_\_\_ 53. You see how a bridge agent is differentiated from the standard agent with the (bridge) label next to the agent name. If your agent does not display a READY status, follow the suggestions in the troubleshooting box to determine the problem. Do not proceed to the next section until your agent starts successfully and displays a READY status.
- \_\_\_ 54. If your agent displayed in READY status, use Windows Explorer to navigate to the agent output0.log file at: **ProgramData > IBM > MQ> mqft > logs > MFTU > agents\ > PBRGAGT1 > logs.**
- \_\_\_ 55. Double-click the `output0.log` file, or use your preferred editor to open the `output0.log` file. The contents are expected to resemble the text box:

---

```
[18/01/2017 12:53:52:822 PST] 00000001 CredentialsUs W   BFGPR0127W: No credentials
file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM
MQ authentication has been disabled.
```

```
[18/01/2017 12:53:57:603 PST] 00000001 Agent           I   BFGAG0090I: This agent has
been configured as a protocol bridge MQMFT agent.
```

```
[18/01/2017 12:53:57:603 PST] 00000001 Agent           W   BFGAG0125W: The maximum
size to which the java heap can grow is '512'MB, which is the default value. This
value may be too low dependent on the agent's work load.
```

```
[18/01/2017 12:53:57:603 PST] 00000001 AgentRuntime    I   BFGAG0058I: The agent has
successfully initialized.
```

```
[18/01/2017 12:53:57:713 PST] 00000001 AgentRuntime    I   BFGAG0059I: The agent has
been successfully started.
```

---

- \_\_\_ 56. Review the contents of agent PRBGAGT1 output0.log file.
  - \_\_\_ a. As with standard agents, message BFGPR0127W refers to the IBM MQ credentials file, not to the ProtocolBridgeCredentials.xml file. The bridge agent fails to start without the ProtocolBridgeCredentials.xml file.
  - \_\_\_ b. Message BFGAG0090I confirms that the agent is a protocol bridge agent.
  - \_\_\_ c. Messages BFGAG0058I and BFGAG0059I confirm that the agent successfully initialized and started.
- \_\_\_ 57. If your agent started successfully, proceed to the next section.



## Troubleshooting

The best source of troubleshooting information for the agent is the `output0.log` file in directory `C:\ProgramData\IBM\MQ\mqft\logs\MFTU\agents\PBRGAGT1\logs`. Many startup failures are due to credentials mapping issues. If your agent failed to start, check the following details:

- Look at the agent `output0.log` file. If you see the two following messages, the `ProtocolBridgeCredentials.xml` file was not found:  

```
[18/01/2017 12:50:03:651 PST] 00000001 XMLFileLoader E   BFGPR0052E: XML file
C:\Users\fteadmin\ProtocolBridgeCredentials.xml does not exist. The internal
MQMFT data has not been updated.
[18/01/2017 12:50:03:651 PST] 00000001 BridgeManager E   BFGBR0085E: The
protocol bridge default credential mapping function failed to initialize. The
protocol bridge agent will be stopped.
```

**Solution:** Check directory `C:\Users\fteadmin` for the `ProtocolBridgeCredentials.xml` file. If it is missing, carefully repeat the earlier section to copy the `ProtocolBridgeCredentials.xml` file that is provided in the `C:\LabFiles\Unit4` directory to the `C:\Users\fteadmin` directory.

- Other mapping errors:
  - Check the `output0.log` file for any other indications.
  - Check the `ProtocolBridgeCredentials.xml` file for missing element tags, unexpected end-of-line, or invisible characters, or any other type of corruption.



## Reminder

Any specification of a source or destination file for the FTP server assumes the file to proceed, or be destined to, the designated FTP server default directory. This default directory is at `C:\LabFiles\ftpHomeDir`. The FTP server files are typed in the transfer requests with the file name only, no path. Any attempt to include a directory name results in a failure as the FTP server, as configured, does not allow creation of directories.

## Section 8: Create a transfer from the bridge agent to the standard agent

- \_\_\_ 58. Return to the command prompt window.
- \_\_\_ 59. Initiate a transfer from the bridge agent to the standard agent by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the `Lab4_copyAndPaste.txt` file in the `C:\LabFiles\Unit4` directory.



---

```
fteCreateTransfer -sa PBRGAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df
C:\LabFiles\to\FTPtoMQMFT.txt fromFTPRenameMe.txt
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
020202020b3187e5820d95603
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_\_ 60. Check the results of the transfer by using the Transfer Log view of IBM MQ Explorer Managed File Transfer menu.
- \_\_\_ 61. Expand the “-” to expose the source and destination file names. The results should resemble the figure that is shown.

	PBRGAGT1	USR1AGT1	Successful
	/fromFTPRenameMe.txt	C:\LabFiles\to\FTPtoMQMFT.txt	Successful

- \_\_\_ 62. Whether the transfer was successful or not, proceed to the file logger entry for this transfer by using Windows Explorer to navigate to the first of the logger files at: **C:\ > ProgramData > IBM > MQ > mqft > logs > MFTU > loggers > MFTULGR1**
  - \_\_\_ 63. Open the first logger file and review the contents. If your transfer was successful, the logger output is expected to resemble the display in the text box.
- 

```
2017-01-19T14:55:17;414d51204d465455202020202020202020b3187e5820d95603;[TSTR];
;PBRGAGT1;MFTU;BRIDGE;USR1AGT1;USR1;fteadmin;;;com.ibm.wmqfte.SourceAgent=PBRGAGT1
, com.ibm.wmqfte.DestinationAgent=USR1AGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d465455202020202020202020b3187e5820d95603,
com.ibm.wmqfte.Priority=0;
2017-01-19T14:55:18;414d51204d465455202020202020202020b3187e5820d95603;[TPRO];0
;/fromFTPRenameMe.txt;281;file;leave
;;;;;C:\LabFiles\to\FTPtoMQMFT.txt;281;file;overwrite;;;;;;
2017-01-19T14:55:19;414d51204d465455202020202020202020b3187e5820d95603;[TCOM];0
;PBRGAGT1;MFTU;BRIDGE;USR1AGT1;USR1;STANDARD;fteadmin;;BFGRP0032I: The file
transfer request has successfully completed.;com.ibm.wmqfte.SourceAgent=PBRGAGT1,
com.ibm.wmqfte.DestinationAgent=USR1AGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d465455202020202020202020b3187e5820d95603,
com.ibm.wmqfte.Priority=0;
```

---

- \_\_\_ 64. As you review the transfer logger records, note how a protocol bridge transfer captures similar information as a standard agent transfer.
- \_\_\_ 65. If your transfer was not successful, use the information in the logger records to determine the reason for the failure and correct the problem.
  - \_\_\_ a. Ensure that the problem was not a missing `ProtocolBridgeCredentials.xml` file, as noted in the previous troubleshooting text box.
  - \_\_\_ b. Check the file name specification to ensure that a directory path was not included for the bridge file name.

## Section 9: Create a transfer from the standard agent to the bridge agent

- \_\_\_ 66. Return to the command prompt window.
- \_\_\_ 67. Initiate a transfer from the standard agent to the bridge agent by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the `Lab4_copyAndPaste.txt` file in the `C:\LabFiles\Unit4` directory.

---

```
fteCreateTransfer -sa USR1AGT1 -sm USR1 -da PBRGAGT1 -dm MFTU -de overwrite -df
MFTToFTP1.txt C:\LabFiles\from\xferAndRenameMe.txt
```



---

### Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
020202020b3187e5820d95b03
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_\_ 68. Check the results of the transfer by using the Transfer Log view of IBM MQ Explorer Managed File Transfer menu.
- \_\_\_ 69. Expand the “-” to expose the source and destination file names. The results are expected to resemble the figure that is shown.

[-]	USR1AGT1  C:\LabFiles\from\xferAndRenameMe.txt	PBRGAGT1  /MFTToFTP1.txt	Successful  Successful
-----	--	--	------------------------------

- \_\_\_ 70. If your transfer results are successful, it is not necessary to look at the logger records again.  
**You completed the first part of this lab exercise.**
- \_\_\_ 71. If your transfer was not successful:
  - \_\_\_ a. Review the logger records by following the steps in the previous section to determine the cause of the error.
  - \_\_\_ b. Refer to the most recent troubleshooting text box.
  - \_\_\_ c. Refer to the troubleshooting slides and notes in the lecture that preceded this lab exercise.

- \_\_\_ 72. Leave IBM MQ Explorer open. You might want to minimize it until it is needed later in part 4.3.

## 4.3. Work with the redistributable agent

---



### Information

The redistributable agent is a compressed file that is extracted into the designated directory. No installation is involved other than the extraction of its contents. This information box is a narrative summary of the steps to be done. **Do not do any work until you reach the numbered steps.**

For the purposes of this lab exercise, you:

- Treat the distributed agent environment like an outside host without IBM MQ Managed File Transfer installed.
- Establish a configuration directory for this environment.
- Use IBM MQ Client, or MQI type connections in the configuration commands.
- Create a standard redistributable agent, RDSTAGT1, which uses queue manager MFTU for all three queue manager roles.

In this course, the 9.0.1.0-IBM-MQFA-Redist-Win64.zip file is found at directory C:\LabFiles\Unit4.

You extract these files to directory C:\LabFiles\RedistClient by following the next set of instructions.

---

### ***Section 1: Expand the redistributable agent package into the C:\LabFiles\RedistClient empty directory***

---



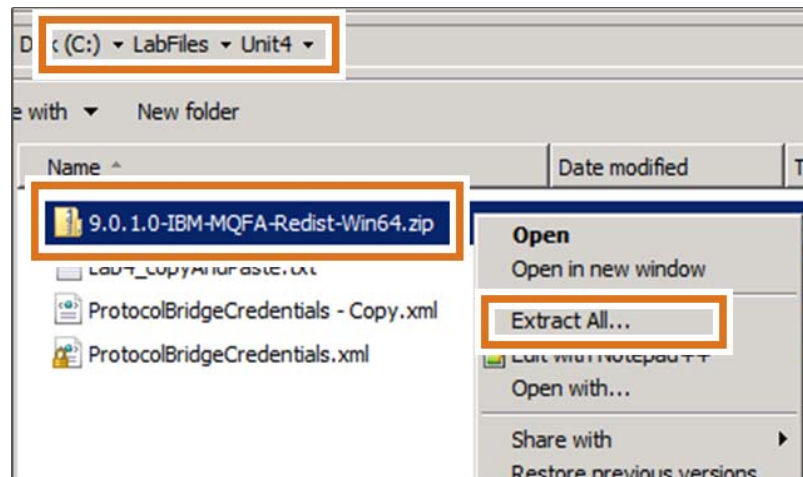
### Attention

The name of the directory that is selected to extract the package was set to RedistClient. You are working with a redistributable **agent**. However, directory name RedistClient must be used as indicated throughout the lab exercise for consistency with all exercise instructions and displays.

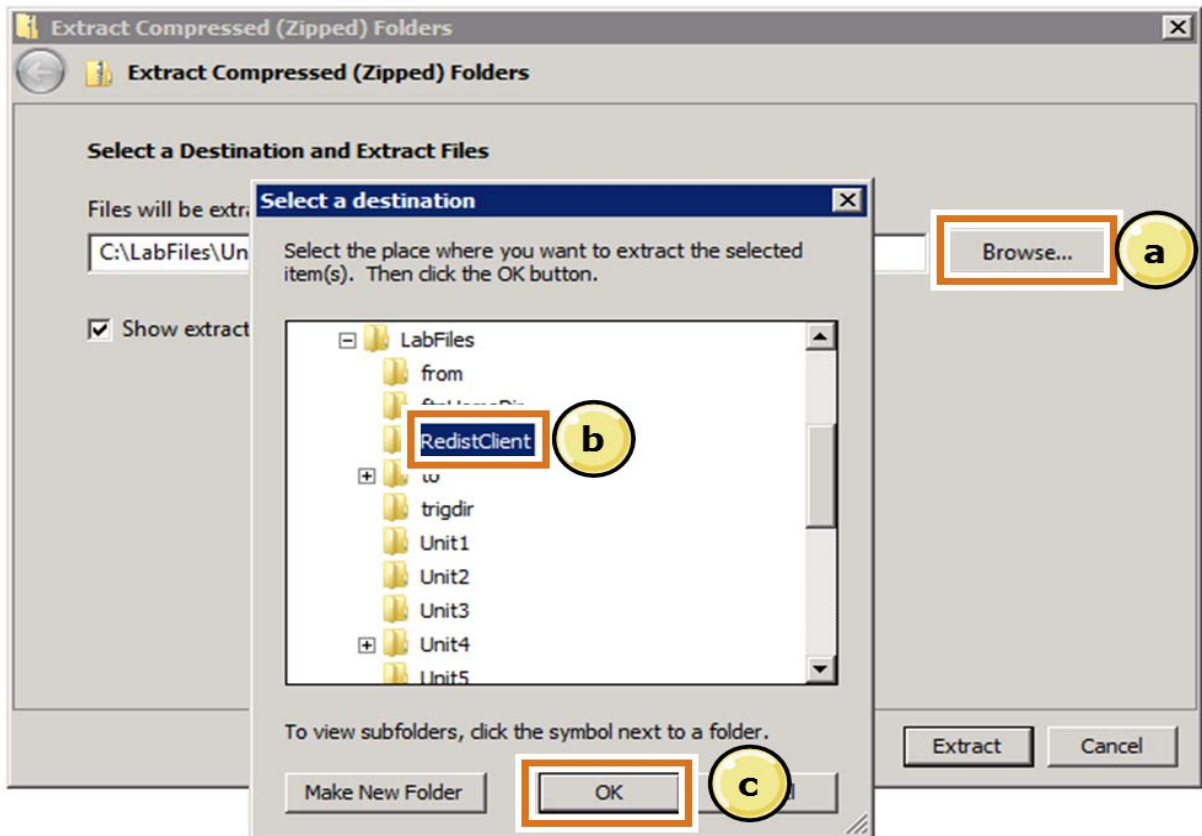
---

\_\_ 73. Use Windows Explorer to navigate to directory C:\LabFiles\RedistClient.

- \_\_\_ 74. Right-click file 9.0.1.0-IBM-MQFA-Redist-Win64.zip at the C:\LabFiles\Unit4 directory and select Extract All.

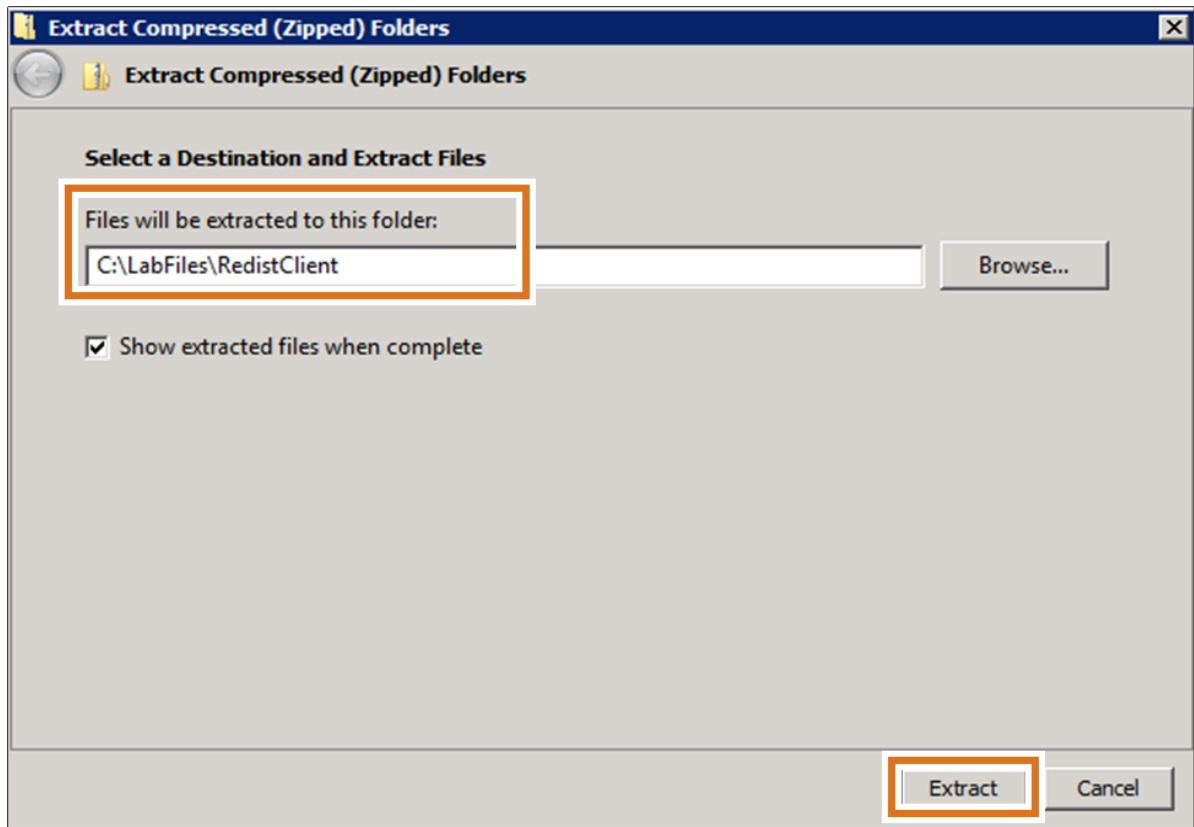


- \_\_\_ 75. A panel titled “Extract Compressed (Zipped) Folders” appears. Follow the instructions under the “Extract Compressed (Zipped) Folders” diagram.



- \_\_\_ 76. From the “Extract Compressed (Zipped) Folders” panel:
- \_\_\_ a. Select the **Browse**. A panel that is titled “Select a destination” appears.
  - \_\_\_ b. From the “Select a destination” panel, navigate to directory C:\LabFiles\RedistClient and click the **RedistClient** directory to select it.

- \_\_\_ c. Click **OK** to close the “Select a destination” panel and set the destination of the extracted files to: C:\LabFiles\RedistClient
- \_\_\_ 77. Refer to the resulting panel in the next figure to ensure that the destination for the extracted files was set correctly to: C:\LabFiles\RedistClient



- \_\_\_ 78. Ensure that the box “Show extracted files when complete” is checked.
- \_\_\_ 79. Press **Extract** to extract the 9.0.1.0-IBM-MQFA-Redist-Win64.zip file to the C:\LabFiles\RedistClient directory.

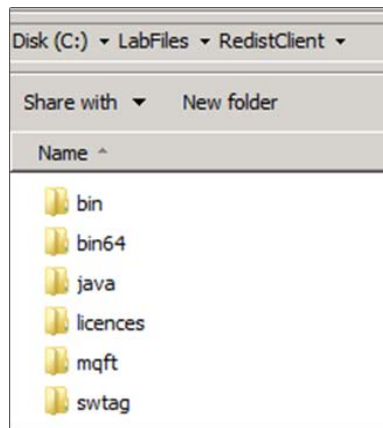


### Attention

The extract process can take a few moments longer than expected. When the extraction is completed, if you checked the “Show extracted files when complete” box, you are expected to see a Windows Explorer panel with directory `RedistClient` and the extracted files.

Wait until the package completes extracting, and you see the `RedistClient` window before you proceed.

- \_\_ 80. Briefly review the contents of the `RedistClient` directory. Your results are expected to resemble the figure.



- \_\_ 81. Keep this Windows Explorer panel open, although you might want to minimize it. You use it throughout some of the steps that follow.

## Section 2: Set the path for the redistributed agent package and build the data directory for the new configuration



### Important

It is important to isolate the Redistributed agent environment from the rest of the IBM MQ Managed File Transfer installation in your command prompt window. It is critical that you work within the environment set by the `fteCreateEnvironment` command **in this window**.

Do not close the command prompt window after you run the `fteCreateEnvironment` command. Use the window for all work unless explicitly instructed otherwise.

- \_\_ 82. Open a new command prompt widow.
- \_\_ 83. Navigate to the `C:\LabFiles\RedistClient\bin` directory by typing `cd C:\LabFiles\RedistClient\bin` and pressing the Enter key.
- \_\_ 84. Display the contents of the `bin` directory by typing `dir` and pressing the Enter key. In this directory, you find many familiar commands, and other not yet used commands.
- \_\_ 85. Set the environment by typing `fteCreateEnvironment` as shown in the text box.

### `fteCreateEnvironment`

Expected results:

```
5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFG_DATA is C:\LabFiles\RedistClient\mfdata
```

- \_\_\_ 86. Review the output of the `fteCreateEnvironment` command. It created an extra directory that is named `mftdata` in the `C:\LabFiles\Redist` directory. It also set variable `BFG_DATA` to the `C:\LabFiles\RedistClient\mftdata` directory.
- \_\_\_ 87. Use Windows Explorer to see the contents of the `mftdata` directory. You find that it is empty.
- \_\_\_ 88. Minimize Windows Explorer.

**Note**

If you accidentally close the command prompt window set to the redistributable directory path, you can return to the `C:\LabFiles\Redist\bin` directory, and run the `fteCreateEnvironment` command.

### ***Section 3: Set up the directory structure and identify the coordination queue manager for the redistributable agent***

**Reminder**

Why create a new configuration structure?

When you use the redistributable agent, in either relocatable or non-installed mode, you isolate its environment. You are working with a relocatable redistributable agent. In this part of the lab, you are pretending to be working on a host without IBM MQ Managed File Transfer installed. So you need to create a new directory structure with complete configuration information.

All work proceeds from the `C:\LabFiles\Redist\bin` directory.

- \_\_\_ 89. Create the directory structure and identify the coordination queue manager by using the `fteSetupCoordination` command as shown in the text box. Optionally, you can copy and paste the command from the `Lab4_copyAndPaste.txt` file in the `C:\LabFiles\Unit4` directory.

```
fteSetupCoordination -coordinationQMgr MFTU -coordinationQMgrHost 127.0.0.1
-coordinationQMgrPort 1656 -coordinationQMgrChannel MQMFT.MFTU.SVRCONN
```

Expected results:

```
5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
```

```
BFGCM0242I: Direct the following MQSC definitions for your coordination queue
manager 'MFTU' to an MQSC session if you have not already done so.
```

```
... ..
... ..
```

```
BFGCM0243I: A file has been created that contains the MQSC definitions for your
coordination queue manager. The file can be found here: 'C:\LabFiles\RedistClien
t\mftdata\mqft\config\MFTU\MFTU.mqsc'.
```



\_\_ 90. Review the results of the command.



### Note

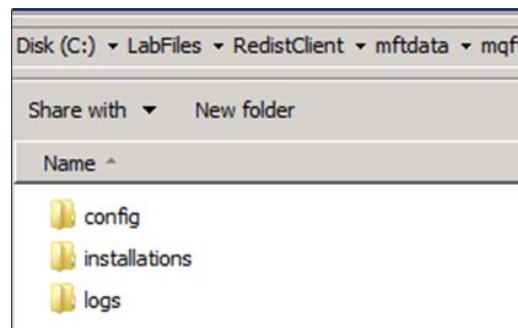
For the MFTU configuration, the definitions for the coordination queue manager were completed when the base MFTU configuration was created. You do not need to run any of these definitions; they were done for the base configuration.

In a redistributed agent environment, the `fteSetupCoordination` command:

- Builds the directory structure for the redistributed agent
- Creates the `coordination.properties` file

However, in the last statement of the result, highlighted in bold, you see that after `fteSetupCoordination` completed, under the `mftdata` directory, subdirectory structure `mqft\config\MFTU` is created.

\_\_ 91. Return to Windows Explorer and navigate to the new `mqft` subdirectory under directory `mftdata`. You are expected to see a new configuration directory structure as shown.



### Note

You see a parallel set of configuration files that are enabled by the redistributable agent. This structure might be familiar to you. If you recall from the lecture, the redistributable agent can be relocatable, or non-installed. You are working with a relocatable environment.

You now create the redistributable agent configuration as if you were in a server without an existing configuration. For this type of setup, as instructed earlier, you must use MQI type channels.

\_\_ 92. By using Windows Explorer, continue to review the contents of the `mftdata\mqft` subdirectories.

- \_\_ a. Look inside the `config` directory. Find a subdirectory called `MFTU` with the configuration name. No other directories exist now, as the rest of the configuration commands are not run.

- \_\_\_ b. Look at the `installations` directory. Instead of the IBM MQ installation in the VMware workstation, which is `IBMMQV9`, it shows `MFTZipInstall`, indicating that the redistributed agent is a separate “installation”.
- \_\_\_ c. Check the `logs` directory. It also has the MFTU configuration name directory. No other files exist so far until after an agent is configured.

### **Section 4: Identify the command queue manager**

- \_\_\_ 93. Return to the command prompt window.
- \_\_\_ 94. Identify the command queue manager by typing the command as shown in the text box. Optionally, you can copy and paste the command from the `Lab4_copyAndPaste.txt` file in the `C:\LabFiles\Unit4` directory.

---

```
fteSetupCommands -connectionQMgr MFTU -connectionQMgrHost 127.0.0.1
-connectionQMgrPort 1656 -connectionQMgrChannel MQMFT.MFTU.SVRCONN
```

Expected results:

```
5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0245I: The file 'C:\LabFiles\RedistClient\mftdata\mqft\config\MFTU\command.
properties' has been created successfully.
```

---

- \_\_\_ 95. Review the results by looking at the `command.properties` file in the location indicated by the results.

### **Section 5: Identify the agent queue manager and create a new standard redistributable agent**

- \_\_\_ 96. Create the redistributed agent by typing the command as shown on the text box. Optionally, you can copy and paste the command from the `Lab4_copyAndPaste.txt` file in the `C:\LabFiles\Unit4` directory.

```
fteCreateAgent -agentName RDSTAGT1 -agentQMGr MFTU -agentQMGrHost 127.0.0.1
-agentQMGrPort 1656 -agentQMGrChannel MQMFT.MFTU.SVRCONN
```

#### Expected results:

5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

... <=== IBM MQ definitions omitted for brevity

BFGCM0239I: A file has been created containing the MQSC definitions to define the agent RDSTAGT1. The file can be found here: 'C:\LabFiles\RedistClient\mftdata\mqft\config\MFTU\agents\RDSTAGT1\RDSTAGT1\_create.mqsc'.

BFGCM0241I: A file has been created containing the MQSC definitions to delete the agent RDSTAGT1. The file can be found here: 'C:\LabFiles\RedistClient\mftdata\mqft\config\MFTU\agents\RDSTAGT1\RDSTAGT1\_delete.mqsc'.

BFGPR0127W: No credentials file has been specified to connect to IBM MQ.

Therefore, the assumption is that IBM MQ authentication has been disabled.

**BFGCL0053I: Agent configured and registered successfully.**

#### \_\_ 97. Review the results.

- \_\_ a. Where is the agent directory and the agent.properties file for agent RDSTAGT1? If you look at the original agents directory for the MFTU configuration, you do not see the redistributable agent there. Since RDSTAGT1 is a redistributable agent, its agent directory is isolated from the IBM MQ Managed File Transfer server configuration. You find it at the redistributable client <inst>\mftdata\mqft path at  
C:\LabFiles\RedistClient\mftdata\mqft\config\MFTU\agents\RDSTAGT1.
- \_\_ b. Ensure that the BFGCL0053I message, which states that the Agent configured and registered successfully displayed at the end of the command output.



#### Note

You created a new agent. The required agent queue manager objects for this agent do not exist. They need to be created in the queue manager that is identified as the agent queue manager. This queue manager is MFTU.

Since the base configuration and the redistributable client are in the same server, you use the RDSTAGT1\_create.mqsc file that was created locally to create the MFTU definitions. In a later unit, you learn how to create these definitions without having to transfer the RDSTAGT1\_create.mqsc file by using the fteDefine command to replicate the agent definitions remotely.

## Section 6: Create the agent queue manager definitions that are required by agent RDSTAGT1

- \_\_ 98. Leave your existing command prompt window open.
- \_\_ 99. Open a second command prompt window.

- \_\_\_ 100. From the **second** command prompt window, navigate to the directory where the RDSTAGT1 definition scripts are located by typing  
`cd C:\LabFiles\RedistClient\mftdata\mqft\config\MFTU\agents\RDSTAGT1` and pressing the Enter key.
- \_\_\_ 101. Create the IBM MQ definitions by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the Lab4\_copyAndPaste.txt file in the C:\LabFiles\Unit4 directory.

---

```
runmqsc MFTU < RDSAGT1_create.mqsc > mftu.out
```

Expected results are contained in the mftu.out file.

---

- \_\_\_ 102. Open file mftu.out by typing **notepad mftu.out** and pressing the Enter key.
- \_\_\_ 103. Scroll to the end of the mftu.out file and check that the results are exactly as shown in the text box.

---

```
AMQ8006: IBM MQ queue created.
```

```
11 MQSC commands read.
```

```
No commands have a syntax error.
```

```
All valid MQSC commands were processed.
```

---

- \_\_\_ 104. If your results show that 11 commands were read and you see “No commands have a syntax error”, proceed to the next step.
- \_\_\_ 105. If your results are not exactly as shown and any part of the command failed, review the error message in the mftu.out file, and make any necessary corrections before you continue.
- \_\_\_ 106. Close the second command prompt window. **Be careful not to close the original window.**
- \_\_\_ 107. **Return to the original redistributable agent command prompt window.**

## Section 7: Start and list the redistributable agent

- \_\_\_ 108. Ensure that you are in the original command prompt window at directory  
`C:\LabFiles\RedistClient\bin`.
- \_\_\_ 109. Start the agent by typing the command as shown on the text box and pressing the Enter key.

---

```
fteStartAgent RDSTAGT1
```

Expected results:

```
5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
```

```
BFGCL0030I: The request to start agent 'RDSTAGT1' on this machine has been submitted.
```

```
BFGCL0031I: Agent log files located at: C:\LabFiles\RedistClient\mftdata\mqft\logs\MFTU\agents\RDSTAGT1\logs
```

---

- \_\_\_ 110. Review the results of the command. Note how the logs for the redistributed agent are kept in the redistributed agent directory structure.
- \_\_\_ 111. If your agent did not start, review the `output0.log` file and resolve the problem before you proceed with any other steps.
- \_\_\_ 112. Use Windows Explorer to locate the `output0.log` file in directory  
`C:\LabFiles\RedistClient\mfdata\mqft\logs\MFTU\agents\RDSTAGT1\logs.`
- \_\_\_ 113. Open the `output0.log` file with your preferred editor.
- \_\_\_ 114. Review the contents of the file. Note how all details are similar to other agents, except for the information shown in the text box:

---

Install Locations:

```
com.ibm.wmqfte.product.root=C:\LabFiles\RedistClient\mqft
```

```
IBM MQ Managed File Transfer Data Path: 'C:\LabFiles\RedistClient\mfdata\mqft'
```

```
Install Type: IBM MQ Managed File Transfer Redistributable Agent Installation
```

---

- \_\_\_ 115. Close the `output0.log` file.
- \_\_\_ 116. Return to the original command prompt window.
- \_\_\_ 117. List the agents by typing `fteListAgents` and pressing the Enter key, as shown in the text box. The results that are shown assume that you worked through the exercises in this course in order.

---

```
fteListAgents
```

#### Expected results:

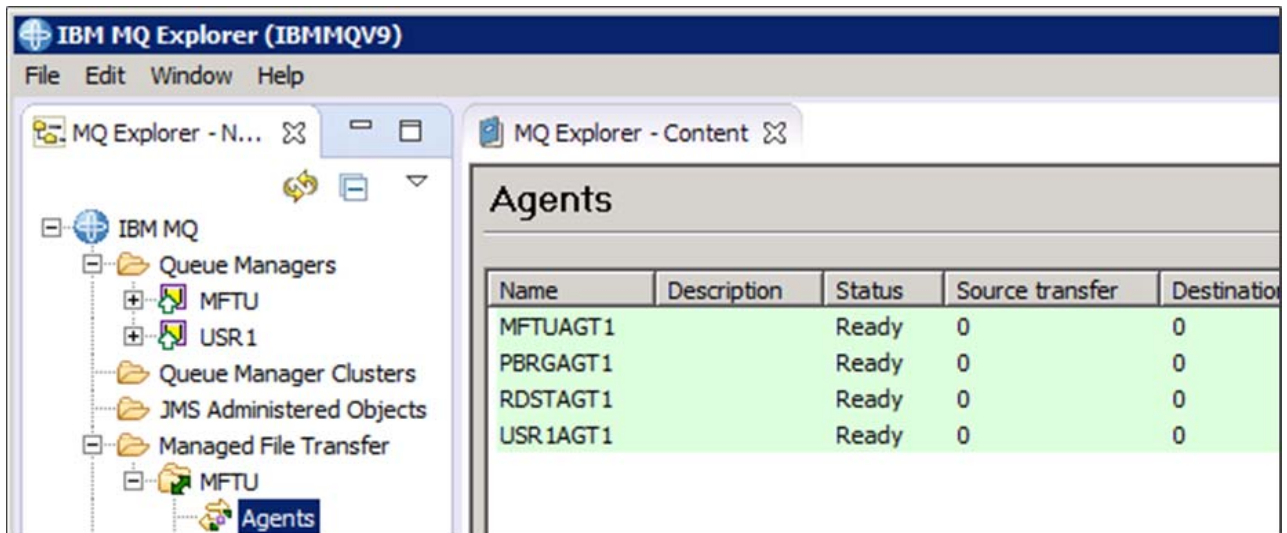
```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
```

Agent Name:	Queue Manager Name:	Status:
MFTUAGT1	MFTU	READY
PBRGAGT1 ( bridge )	MFTU	READY
RDSTAGT1	MFTU	READY
USR1AGT1	USR1	READY

---

- \_\_\_ 118. Go to IBM MQ Explorer.
- \_\_\_ 119. From the Managed File Transfer menu, select the Agents view.

- \_\_\_ 120. Note how the redistributable agent is listed as a standard agent, along with the other agents that are part of the MFTU configuration.



### Note

The redistributable agent is **similar** to an agent created in the original MFTU configuration directory structure as described:

- It belongs in the same IBM MQ Managed File Transfer MFTU configuration. As such, it is listed along with the other agents that belong to the same MFTU configuration.
- Information regarding the status of a transfer is kept in the same logger files as the rest of the MFTU agents.

The redistributable agent is **different** from an agent that is created in the original MFTU configuration directory as described:

- The agent definition files are found in the redistributable directory structure, at `C:\LabFiles\RedistClient\mftdata\mqft\config\MFTU\agents\RDSTAGT1`. However, you are working with a relocatable redistributable agent. When you work with a relocatable redistributable agent, the log files are kept in host where the redistributable agent was implemented. For a non-installed agent, the location of the logs depends on the BFG\_DATA setting at the remote host.
- The log files, such as the `output0.log` file for the redistributable agent, are kept in the redistributable agent directory structure. For this course, the directory path is at `C:\LabFiles\RedistClient\mftdata\mqft\logs\MFTU\agents\RDSTAGT1\logs`. If the redistributable agent is in a remote host, then the directory path is according to the BFG\_DATA path setting in the remote host.

## Section 8: Transfer a file by using the redistributable client

- \_\_\_ 121. Create a transfer by typing the command as shown in the text box and pressing the Enter key.

```
fteCreateTransfer -sa RDSTAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df
C:\LabFiles\to\RedistClt.txt C:\LabFiles\from\xferAndRenameMe.txt
```

#### Expected results:

```
5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
020202020b3187e5820ddbd03
BFGCL0182I: The request is now waiting to be processed by the agent.
```

- \_\_\_ 122.Return to IBM MQ Explorer.
- \_\_\_ 123.Click the Transfer Log.
- \_\_\_ 124.Expand the “-” sign on the latest transfer, which shows RDSTAGT1 as the source agent.  
The expected results are shown in the figure.

	RDSTAGT1	USR1AGT1	Successful
	C:\LabFiles\from\xferAndRenameMe.txt		C:\LabFiles\to\RedistClt.txt
			Successful



#### Attention

Whether the transfer was successful or not, use Windows Explorer to navigate to the first logger file on the MFTU base configuration at **ProgramData > IBM > MQ > mqft > logs > MFTU > loggers > MFTULGR1**.



#### Note

Agent RDSTAGT1 is part of the MFTU configuration. It uses the MFTU queue manager for all three roles, including the coordination queue manager. Regardless of whether the redistributed client is a relocatable client or a non-installed client, the logger function takes place in the host and directory structure where the coordination queue manager is.

The redistributable client `<install>\mftdata\mqft` structure holds configuration information for the redistributable agent, and log information about the redistributable agent. However, if a logger is configured, all transfer information is held in the base configuration logger.

- \_\_\_ 125.If the transfer was successful, the logger records are expected to look similar to the records shown in the text box.

```
2017-01-19T23:33:33;414d51204d465455202020202020202020b3187e5820ddbd03;[TSTR];
;RDSTAGT1;MFTU;STANDARD;USR1AGT1;USR1;fteadmin;;com.ibm.wmqfte.SourceAgent=RDSTAG
T1, com.ibm.wmqfte.DestinationAgent=USR1AGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
```

```

com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d46545520202020202020b3187e5820ddbd03,
com.ibm.wmqfte.Priority=0;
2017-01-19T23:33:33;414d51204d46545520202020202020b3187e5820ddbd03;[TPRO];0
;C:\LabFiles\from\xferAndRenameMe.txt;261;file;leave
;;;;;C:\LabFiles\to\RedistClt.txt;261;file;overwrite;;;;;;
2017-01-19T23:33:33;414d51204d46545520202020202020b3187e5820ddbd03;[TCOM];0
;RDSTAGT1;MFTU;STANDARD;USR1AGT1;USR1;STANDARD;fteadmin;;BFGRP0032I: The file
transfer request has successfully completed.;com.ibm.wmqfte.SourceAgent=RDSTAGT1,
com.ibm.wmqfte.DestinationAgent=USR1AGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net., com.ibm.wmqfte.TransferId
=414d51204d46545520202020202020b3187e5820ddbd03, com.ibm.wmqfte.Priority=0;

```

---

\_\_ 126.If the transfer was not successful, review the file logger records to determine the reason that the transfer failed. Correct the problems and resubmit the transfer.

\_\_ 127.**Stop agent MFTUAGT1 by typing `fteStopAgent MFTUAGT1` and pressing the Enter key.**

\_\_ 128.If your transfer was successful,

- \_\_ a. Close the command prompt window.
- \_\_ b. Close IBM MQ Explorer.
- \_\_ c. Close Windows Explorer.

You completed Exercise 4.

---



#### Note

Keep the MFTU configuration. You work with the MFTU configuration again in Exercise 6.

---

## End of exercise



## Exercise review and wrap-up

In this lab exercise, you learned how to extend the functionality of IBM MQ Managed File Transfer by using the protocol bridge and the redistributed client. As part of this work, you:

- Used the `fteCreateBridgeAgent` command to define a protocol bridge agent
- Reviewed the `ProtocolBridgeProperties.xml` file
- Reviewed the contents of a preconfigured `ProtocolBridgeCredentials.xml` file
- Started and displayed a protocol bridge agent
- Transferred a file from a protocol bridge agent to a standard agent
- Transferred a file from a standard agent to a protocol bridge agent
- Expanded the IBM MQ Managed File Transfer redistributable agent package to a predefined directory
- Used the `fteSetupEnvironment` command to establish the required distributed agent path
- Configured a redistributable client
- Started and displayed the redistributable client
- Transferred a file from the redistributable client to another standard agent on the IBM MQ Managed File Transfer server host
- Examined the results of a transfer initiated by the redistributable agent

---

# Exercise 5. Working with IBM MQ and IBM MQ Managed File Transfer security

## Estimated time

02:30

## 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.

## 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

## Introduction

In this lab exercise, you extend the IBM MQ and IBM MQ Managed File Transfer experience by adding different aspects of security to the configuration. You learn to incrementally identify and resolve security challenges. Connection authentication, channel authentication, or object authorizations in IBM MQ might cause these challenges. Errors in the IBM MQ Managed File Transfer properties or credential files are another possible cause of these challenges. However, regardless of the cause, these challenges normally surface as the same error code: 2035.

Rather than assuming that the last change you implemented did not work, in this exercise you learn the necessity to ***always*** look in the IBM MQ queue manager logs, even for repeated 2035 codes.

In this exercise, ***you are expected to continue to find errors after you complete some of the commands***. The errors are intended as a learning experience.

## Requirements

- IBM MQ V9 with IBM MQ Managed File Transfer components installed.
- Lab5\_copyAndPaste.txt file that contains a Notepad version of selected lab exercise commands.
- MQSC definition file lockSecurity.mqsc in the C:\LabFiles\Unit5 directory.
- MQSC definition files MFTS5.mqsc and USR15.mqsc in the C:\LabFiles\Unit5 directory.
- Preconfigured MQMFTCredentials.xml file in the C:\LabFiles\Unit5 directory.
- File z4.xml in the C:\LabFiles\Unit5 directory, which contains a backup of the MQMFTCredentials.xml file. Not intended for use unless the MQMFTCredentials.xml file gets corrupted.

## Exercise instructions

### Preface

In this exercise, you create a second base configuration. However, you configure strict connection and channel authentication security in the queue manager. By using this new configuration, you discover the possible security errors that you might experience in your work. The IBM MQ definitions for the new MFTS queue manager resemble the MFTU queue manager, except for the security aspects.

You need to account for working with the non-default configuration, which means you either use the `-p` parameter, or set the new configuration as the default. **In this exercise, you use the `-p MFTS` in IBM MQ Managed File Transfer commands** to denote the new configuration name.

Under normal circumstances, all IBM MQ connectivity must be tested before you attempt to start the IBM MQ Managed File Transfer configuration. Whether you are working on the base configuration or adding a new outside partner agent, connectivity must be tested first.

However, this lab exercise is based on actual field experiences. It shows you the possible security errors that you might find when you attempt to complete a base or partner agent configuration where IBM MQ security is not adequately tested.

A challenging part of the configuration is the repeated 2035 return codes. You resolve a problem, yet when you test, you see 2035 again. The first reaction is “it did not work”. However, by constant review of the queue manager log, you learn how a 2035 occurs for different reasons along the way.



### Attention

Exercise 5 is a significantly challenging lab exercise with many opportunities for error. Depending on your level of expertise, and how accurately you are able to follow the steps, you might want to work through this lab a second time.

**If you would like to work through Exercise 5 a second time, here is how to clean up the environment. Depending on how far you progressed, you might or might not need to take all steps that are listed.**

- Stop any agents and logger for the MFTS configuration.
- Delete queue manager MFTS.
- If you progressed through the redistributable agent section, delete the MFTS directory from the redistributable agent directory at C:\LabFiles\RedistClient\mftdata\mqft\config\.
- You do not need to remove the objects that are added to queue manager USR1 to connect to queue manager MFTS. If you completed creation of the USR1 objects, you can skip that section the second time around.
- However, you might need to reset the channel sequence number. **To properly synchronize the channel pair, ensure that you issue this command for the SENDER channel, not the RCVR channel.**
  - If your USR1.MFTS channel is on retry and the queue manager log indicates a message sequence number problem, from a `runmqsc` session for queue manager USR1, type the command: `reset chl(USR1.MFTS)`
  - If your MFTS.USR1 channel is on retry and the queue manager log indicates a message sequence number problem, from a `runmqsc` session for queue manager MFTS, type the command: `reset chl(MFTS.USR1)`
- A recurring problem that was found during testing consisted of accidental reuse of the redistributable agent window. Ensure that you closed the redistributable agent window. If in doubt, close the command prompt window, and open a new command prompt window.

The exercise consists of three parts.


- In part 5.1, you learn to work with connectivity challenges when you connect to a queue manager that uses default connection authentication and channel authorization settings.
- In part 5.2, you increase connection authentication and channel authentication to higher levels. You then learn to incrementally identify and mitigate security challenges by creating a new configuration without previous connectivity tests after the security hardening.
- In part 5.3, you learn to display and change object authorizations by using control and MQSC commands.



### Stop

Close all remaining command prompt windows, and open a new command prompt window before you start this lab exercise. If you have any windows that are left with the redistributable agent environment, your new configuration is created in the redistributable agent directory. To mitigate this possibility, **ensure that you start this exercise with all new command prompt windows.**

## Section 1: Ensure that queue manager USR1 is running

- \_\_\_ 1. Follow the directions that are provided to you to reach the lab VMware image.
- \_\_\_ 2. If you are not already logged on, log on to the VMware image by using user ID `fteadmin`, and password `web1sphere`.
- \_\_\_ 3. Open a Windows command prompt by clicking the command prompt icon  in the Windows taskbar.
- \_\_\_ 4. Display the active queue managers by typing `dsqm` and pressing the Enter key.
- \_\_\_ 5. If queue manager USR1 is in ended status, start it as a service by typing `strmqm -ss USR1` and pressing the Enter key.

## Section 2: Stop agents and logger that user queue manager MFTU

- \_\_\_ 6. List the agents in the MFTU configuration by typing `fteListAgents` and pressing the Enter key.



### Note

The next instruction applies to all agents **except** the redistributable agent RDSTAGT1, whether RDSTAGT1 is in READY status or not.

- \_\_\_ 7. If agent MFTUAGT1 is running, stop it by typing `fteStopAgent MFTUAGT1` and pressing the Enter key.
- \_\_\_ 8. If agent USR1AGT1 is running, stop it by typing `fteStopAgent USR1AGT1` and pressing the Enter key.
- \_\_\_ 9. If agent PBRGAGT1 is running, stop it by typing `fteStopAgent PBRGAGT1` and pressing the Enter key.
- \_\_\_ 10. If logger MFTULGR1 is running, stop it by typing `fteStopLogger MFTULGR1` and pressing the Enter key.



### Hint

Leave the command prompt window open through the end of this lab exercise. Except for occasional use of Windows Explorer, all work is completed by using the command prompt window.

Ensure that when you get to the section that uses the redistributable agent, you open a second command prompt window to set the redistributable agent environment. Take care to use the redistributable agent window exclusively when instructed. Use of the redistributable agent window when not intended causes definitions to be placed in the redistributable agent directory.

## Section 3: Stop queue manager MFTU

- \_\_\_ 11. Stop queue manager MFTU by typing `endmqm -i MFTU` and pressing the Enter key. Your results are expected to resemble the text box.

---

```
Waiting for queue manager 'MFTU' to end.  
IBM MQ queue manager 'MFTU' ending.  
IBM MQ queue manager 'MFTU' ended.
```

---



## Troubleshooting

- If for any reason you need to find the process ID, (PID) of an agent or logger, you can look at the specific component `pcevent.log`. The `pcevent.log` is collocated with the `output0.log` in the `<dir>/mqft/logs` section of the configuration. For example, the `pcevent.log` file for agent `USRLAGTS` is found at  
`C:\ProgramData\IBM\MQ\mqft\logs\MFTS\agents\USRLAGTS\logs`.
  - **Do not resort** to ending a process by using the PID unless the respective `fteStopAgent` or `fteStopLogger` command does not appear to be working. However, during testing of the lab exercises, ***it was not necessary to resort to ending a process.***
  - When you are in the agent or logger log directories, you can also look for the presence of a `*.lck` file. If the process is running, you see the file. When the process ends, the `*.lck` file goes away. Do not disturb the `*.lck` file.
-

## 5.1. Work with IBM MQ default connection and channel authentication settings

### Section 1: Create and start queue managers MFTS

- \_\_ 12. Create queue manager MFTS by typing the command as shown in the text box and pressing the Enter key.

---

```
crtmqm -p 1657 -u MFTS.DLQ MFTS
```

Expected results:

```
IBM MQ queue manager created.
Directory 'C:\ProgramData\IBM\MQ\qmgrs\MFTS' created.
The queue manager is associated with installation 'IBMMQV9'.
Creating or replacing default objects for queue manager 'MFTS'.
Default objects statistics : 87 created. 0 replaced. 0 failed.
Completing setup.
Setup completed.
```

---

- \_\_ 13. Start queue manager MFTS as a service by typing the command as shown in the text box and pressing the Enter key.

---

```
strmqm -ss MFTS
```

Expected results:

```
IBM MQ queue manager 'MFTS' starting.
The queue manager is associated with installation 'IBMMQV9'.
5 log records accessed on queue manager 'MFTS' during the log replay phase.
Log replay for queue manager 'MFTS' complete.
Transaction manager state recovered for queue manager 'MFTS'.
IBM MQ queue manager 'MFTS' started using V9.0.0.0.
```

---

### Section 2: Review the initial channel authentication and connection authentication settings in the new queue manager

- \_\_ 14. From the command prompt window, open a `runmqsc` session for queue manager MFTS by typing `runmqsc MFTS` and pressing the Enter key.
- \_\_ 15. Display the queue manager channel authentication setting by typing `dis qmgr chlauth` and pressing the Enter key. Results are expected to be as shown in the text box.
- \_\_ a. You see that channel authentication is enabled.
  - \_\_ b. Keep the `runmqsc` session open.



---

```
1 : dis qmgr chlauth
AMQ8408: Display Queue Manager details.
      QMNAME(MFTS)                                CHLAUTH(ENABLED)
```

---

- \_\_\_ 16. From the `runmqsc` session, display the existing channel authentication records by typing the command as shown in the text box and pressing the Enter key.
- 

```
dis qmgr chlauth(*) descr
```

Expected results:

```
2: dis chlauth(*) descr
AMQ8878: Display channel authentication record details.
      CHLAUTH(SYSTEM.ADMIN.SVRCONN)                TYPE(ADDRESSMAP)
      DESCR(Default rule to allow MQ Explorer access)
      ADDRESS(*)                                    USERSRC(CHANNEL)
AMQ8878: Display channel authentication record details.
      CHLAUTH(SYSTEM.*)                            TYPE(ADDRESSMAP)
      DESCR(Default rule to disable all SYSTEM channels)
      ADDRESS(*)                                    USERSRC(NOACCES)
AMQ8878: Display channel authentication record details.
      CHLAUTH(*)                                    TYPE(BLOCKUSER)
      DESCR(Default rule to disallow privileged users)
      USERLIST(*MQADMIN)
```

---

- \_\_\_ 17. Keep the `runmqsc` session open.
- \_\_\_ 18. Review the three initial channel authentication rules as displayed in the previous text box. Of particular interest is the last rule in the display, which disallows connections from administrative or privileged users.
- 



### Note

The advice is not to delete any of the initial rules, but to add new rules or modify the initial rules for the required outcome. You work with these rules later in the exercise.

---

- \_\_\_ 19. From the `runmqsc` session, display the queue manager connection authentication setting by typing the command as shown in the text box. Leave the `runmqsc` session open.

---

```
dis qmgr connauth
```

Expected results:

```
3 : dis qmgr connauth
AMQ8408: Display Queue Manager details.
QMNAME(MFTS)
CONNAUTH(SYSTEM.DEFAULT.AUTHINFO.IDPWOS)
```

---

- \_\_\_ 20. The queue manager `connauth` parameter identifies which authentication information object is in force in the queue manager. Display the indicated object by typing the command as shown in the text box and pressing the Enter key.
- 

```
dis authinfo(SYSTEM.DEFAULT.AUTHINFO.IDPWOS) chcklocl chckclnt
```

Expected results:

```
4 : dis authinfo(SYSTEM.DEFAULT.AUTHINFO.IDPWOS) chcklocl chckclnt
AMQ8566: Display authentication information details.
AUTHINFO(SYSTEM.DEFAULT.AUTHINFO.IDPWOS)
AUTHTYPE(IDPWOS)                      CHCKCLNT(REQADM)
CHCKLOCL(OPTIONAL)
```

---

- \_\_\_ 21. Review the results. The initial settings of the default AUTHINFO record show:
- \_\_\_ a. `CHCKLOCL(OPTIONAL)` states that a local bound connection is required to provide a password only if an ID is provided.
  - \_\_\_ b. `CHCKCLNT(REQADM)` states that authentication is required for client type connections from an administrative, or privileged ID. Non-privileged IDs are treated with OPTIONAL authentication.
- \_\_\_ 22. Exit the `runmqsc` session by typing `end` and pressing the Enter key.

### ***Section 3: Review the object definitions for queue manager MFTS and create the objects by using the runmqsc utility***

- \_\_\_ 23. Review the script file, which contains the definitions to be created in queue manager MFTS by using your preferred editor to open file `MFTS5.mqsc`, which is found at the `C:\LabFiles\Unit5` directory. ***Do not change the script.***
- \_\_\_ 24. Observe that the `ALTER QMGR` command is not included. The connection authentication and channel authorization in the MFTS queue manager are used as you reviewed in the earlier steps.
- \_\_\_ 25. Close file `MFTS5.mqsc`.
- \_\_\_ 26. At the command prompt window, change to directory `C:\LabFiles\Unit5` by typing the command that is shown in the text box and pressing the Enter key.

---

```
cd C:\LabFiles\Unit5
```

Expected results:

Your command-line prompt now shows C:\LabFiles\Unit5>

---

- \_\_\_ 27. Ensure that the expected command files are present in the directory by typing the command that is shown and pressing the Enter key. You see two .mqsc suffixed files: MFTS5.mqsc and USR15.mqsc
- 

```
dir
```

Expected results (abbreviated for clarity):

```
C:\LabFiles\Unit5>dir
Directory of C:\LabFiles\Unit5

01/25/2017  12:37 PM                1,178 MFTS5.mqsc
01/25/2017  12:41 PM                1,121 USR15.mqsc
                2 File(s)                2,299 bytes
```

---

- \_\_\_ 28. Run the MFTS5.mqsc script by typing the command as shown on the text box and pressing the Enter key. Ensure that you capture the results in a file so that you can review that each command in the script was completed successfully. Ensure that you are in the C:\LabFiles\Unit5> directory before you type the command.
- 

```
runmqsc MFTS < MFTS5.mqsc > mfts.out
```

All expected output goes to the mfts.out file.

---

- \_\_\_ 29. From the same directory in the command prompt window, check the runmqsc utility results.
- \_\_\_ a. Open the mfts.out file by typing **notepad MFTS.out** and pressing the Enter key.
  - \_\_\_ b. Scroll to the end of the output. You are expected to see:
 

```
7 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.
```
  - \_\_\_ c. If you see seven commands that are processed and no errors, continue to the next numbered step.
  - \_\_\_ d. If the results were not as expected, review the output and correct any errors before you proceed.
  - \_\_\_ e. Close file mfts.out.
- \_\_\_ 30. Keep the command prompt window open at the C:\LabFiles\Unit5 directory.

## **Section 4: Review the object definitions added to queue manager USR1 and run the script by using the `runmqsc` utility**

- \_\_\_ 31. Open the definitions to be created in queue manager MFTS by using your preferred editor to open file `USR15.mqsc`, which is found in the `C:\LabFiles\Unit5` directory. **Do not change the script.**
- \_\_\_ 32. Observe that the definitions in this script are exclusive to the channels and queues that are needed to connect and test exchange of messages with the new queue manager.
- \_\_\_ 33. Close file `USR15.mqsc`.
- \_\_\_ 34. Ensure that you are at the `C:\LabFiles\Unit5` directory, and see the `USR1.mqsc` file upon listing the directory by typing `dir` and pressing the Enter key. If you moved away from the directory, refer to the previous instructions to return to the `C:\LabFiles\Unit5` directory.
- \_\_\_ 35. Run the `USR15.mqsc` script by typing the command as shown on the text box and pressing the Enter key. Ensure that you capture the results in a file so that you can review that each command in the script file was completed successfully. Ensure that you are in the `C:\LabFiles\Unit5>` directory before you type the command.

---

```
runmqsc USR1 < USR15.mqsc > usr1.out
```

All expected output goes to the `usr1.out` file.

---

- \_\_\_ 36. From the same directory in the command prompt window, check the `runmqsc` utility results.
  - \_\_\_ a. Open the `usr1.out` file by typing `notepad usr1.out` and pressing the Enter key.
  - \_\_\_ b. Scroll to the end of the output. You should see:
    - 5 MQSC commands read.
    - No commands have a syntax error.
    - All valid MQSC commands were processed.
  - \_\_\_ c. If you see that the five commands are processed and have no errors, continue to the next numbered step.
- \_\_\_ 37. If the results were not as expected, review the output and correct any errors before you proceed.
- \_\_\_ 38. Close file `usr1.out`.
- \_\_\_ 39. Keep the command prompt window open.

## Section 5: Start the channel from queue manager MFTS to queue manager USR1 and send a test message



### Information

When you reviewed the object definitions that are made in queue manager MFTS, you noticed that sender channel MFTS.USR was triggered by having its transmission queue, USR1, defined to be triggered. However, a new message channel is in the STOPPED state, and the channel must be manually started to get it out of the STOPPED state. After the channel is out of the STOPPED state, it can be then trigger-started when messages arrive at queue USR1.

```
DEFINE QLOCAL('USR1') +
  INITQ('SYSTEM.CHANNEL.INITQ') +
  MAXDEPTH(5000) +
  TRIGGER +
  TRIGDATA('MFTS.USR1') +
  USAGE(XMITQ) +
  REPLACE
DEFINE CHANNEL('MFTS.USR1') +
  CHLTYPE(SDR) +
  CONNAME('localhost(1655)') +
  TRPTYPE(TCP) +
  XMITQ('USR1') +
  REPLACE
```

- \_\_\_ 40. Start the `runmqsc` session for queue manager MFTS by typing `runmqsc MFTS` and pressing the Enter key.
- \_\_\_ 41. After you are in the `runmqsc` session, start the channel by typing the command as shown in the text box and pressing the Enter key. Do not exit the `runmqsc` session.

```
start chl(MFTS.USR1)
```

Expected results:

```
1 : start chl(MFTS.USR1)
AMQ8018: Start IBM MQ channel accepted.
```

- \_\_\_ 42. Display the channel status by typing the command as shown in the text box and pressing the Enter key.

---

```
dis chs(MFTS.USR1)
```

Expected results:

```
2 : dis chs(MFTS.USR1)
AMQ8417: Display Channel Status details.
CHANNEL(MFTS.USR1)           CHLTYPE(SDR)
CONNNAME(127.0.0.1(1655))    CURRENT
RQMNAME(USR1)                STATUS(RUNNING)
SUBSTATE(MQGET)              XMITQ(USR1)
```


---

- \_\_ 43. Type **end** and press the Enter key to exit the `runmqsc` session.
- \_\_ 44. If the channel status shows it is running, you can proceed to the next numbered step. If the channel status is anything other than running, stop and resolve the problem by following the hints in the troubleshooting box.
- 



## Troubleshooting

If channel **MFTS.USR1** did not show **STATUS(RUNNING)**, you might need to repeat the same process on both queue managers, MFTS and USR1. Start with queue manager MFTS.

- Open a Windows Explorer panel by clicking the Windows Explorer icon  in the taskbar.
- Expand the Computer menu until you see the Local Disk (C:) entry.
- Locate the MFTS queue manager logs by drilling down to **ProgramData > IBM > MQ > qmgrs > MFTS > errors**. Ensure that you follow the path that is shown so that you are in the queue manager (`qmgrs`) logs. If you do not drill down to the queue managers log, you might be looking at IBM MQ system logs, which do not help when a channel does not start.
- Use your preferred editor to open the `AMQERR01.LOG` file.
- Scroll to the end of the log, and look for messages that refer to the channel. Usually, you need to look for more than one message to obtain all details.
- Ensure that you are looking at log entries for the correct date that the `start chl` command was issued.
- After you resolve the problem, repeat the steps to start the channel and display the channel status.

If you did not find any conclusive messages in the queue manager MFTS error log, repeat the same troubleshooting process, but this time for queue manager USR1.

---

**Information**

When you reviewed the MFTS object definitions, you noticed a remote queue definition. You use this queue to test sending messages to the USR1 queue manager. You use the name of queue remote TO.USR1 in the `amqspout` sample program. TO.USR1 uses transmission queue USR1, which means that if the channel is not running, any messages stop in queue USR1 unless they go to the dead-letter queue. After the messages get to queue manager USR1, they go to USR1 local queue USR1.IN.

```
DEFINE QREMOTE('TO.USR1') +
  RQMNAME('USR1') +
  RNAME('USR1.IN') +
  XMITQ('USR1') +
  REPLACE
```

- \_\_\_ 45. Start sample program `amqspout` by typing the request as shown on the text box and pressing the Enter key **one time**. Ensure that the request is typed exactly as shown.

`amqspout TO.USR1 MFTS`

Expected reply:

```
Sample AMQSPUT0 start
target queue is TO.USR1
```

- \_\_\_ 46. Type any text such as **abc** to be sent as a message, and then press the Enter key two times to end the sample program. Expected results are:

```
Sample AMQSPUT0 end
```

- \_\_\_ 47. Use a second sample program to determine whether the message arrived at the USR1.IN queue in the queue manager USR1 by typing the request as shown on the text box and pressing the Enter key one time. The sample program runs for 15 seconds waiting for more messages. Ensure that the request is typed exactly as shown.

`amqsget USR1.IN USR1`

Expected results:

```
Sample AMQSGET0 start
message <abc>
no more messages
Sample AMQSGET0 end
```

- \_\_\_ 48. If your channel started successfully, showed a running status, and you did not make any inadvertent errors, your results are expected to resemble the results that are shown in the text box.

- \_\_\_ 49. If you did not get the test message from queue `USR1.IN` in queue manager `USR1`, check your previous steps for any typographical errors. Do not proceed until you determine the reason that the message did not arrive.



### Information

In Exercise 1, connection authentication and channel authentication were disabled in queue manager `USR1`. In this exercise, you added queues and channels to MFTS to queue manager `USR1`. No other security changes were made.

The connection from queue manager `MFTS` to queue manager `USR1` was expected to complete successfully.

You now test the same connections to queue manager `MFTS`. Queue manager `MFTS` is a new queue manager with default connection authentication and channel authentication settings.

---

## Section 6: Start the channel from queue manager `USR1` to queue manager `MFTS` and send a test message

- \_\_\_ 50. Start the `runmqsc` session for queue manager `USR1` by typing `runmqsc USR1` and pressing the Enter key.
- \_\_\_ 51. After you are in the `runmqsc` session, start the channel by typing the command as shown in the text box and pressing the Enter key. **Keep the `runmqsc` session open.**
- 

```
start chl(USR1.MFTS)
```

Expected results:

```
1 : start chl(USR1.MFTS)
AMQ8018: Start IBM MQ channel accepted.
```

---

- \_\_\_ 52. Display the channel status by typing the command as shown in the text box and pressing the Enter key.
- 

```
dis chs(USR1.MFTS)
```

Expected results:

```
2 : dis chs(USR1.MFTS)
AMQ8417: Display Channel Status details.
CHANNEL(USR1.MFTS)                CHLTYPE(SDR)
CONNAME(127.0.0.1(1657))          CURRENT
RQMNAME(MFTS)                     STATUS(RUNNING)
SUBSTATE(MQGET)                   XMITQ(MFTS)
```

---



- \_\_\_ 53. If the channel status shows it is running, you can proceed to the next numbered step. If the channel status is anything other than running, such as `RETRYING`, stop and resolve the problem by reviewing the queue manager log first. Follow the hints in the troubleshooting box provided earlier in this exercise.
- \_\_\_ 54. **If the channel used in the previous exercises for the MFTU configuration, `USR1.MFTU`, is in `RETRYING` status, you can safely ignore it.** In this lab exercise, you do not use queue manager MFTU.
- \_\_\_ 55. Type **end** and press the Enter key to exit the `runmqsc` session.
- \_\_\_ 56. Start sample program `amqspout` by typing the request as shown in the text box and pressing the Enter key **one time**. Ensure that the request is typed exactly as shown.

```
amqspout TO.MFTS USR1
```

Expected reply:

```
Sample AMQSPUT0 start
target queue is TO.MFTS
```

- \_\_\_ 57. Type any text such as **xyz** to be sent as a message, and then press the Enter key two times to end the sample program. Expected results are:
 

```
Sample AMQSPUT0 end
```
- \_\_\_ 58. Use a second sample program to determine whether the message arrived at the `MFTS.IN` queue in queue manager MFTS by typing the request as shown on the text box and pressing the Enter key **one time**. The sample program runs for 15 seconds waiting for more messages. Ensure that the request is typed exactly as shown.

```
amqsget MFTS.IN MFTS
```

Expected results:

```
Sample AMQSGET0 start
message <xyz>
no more messages
Sample AMQSGET0 end
```

- \_\_\_ 59. If your channel started successfully and showed a running status, and you did not make any inadvertent errors, your results are expected to resemble the results that are shown in the text box.
- \_\_\_ 60. If you did not get the test message from queue `MFTS.IN` in queue manager MFTS, check your previous steps for any typographical errors. Do not proceed until you determine the reason that the message did not arrive. The `amqspout` sample uses message channels, or “bindings” type connections to queue manager MFTS. The message channel connections are controlled by the `CHCKLOCL` parameter of the authorization information record in force for queue manager MFTS.

**Information**

In an earlier step, you confirmed that information for the new MFTS queue manager, `CHCKLOCL(OPTIONAL)`. However, `CHCKCLNT`, which controls client type connections, was set to `CHCKCLNT(REQADM)`.

Next, you work with the `amqscnxc` sample utility, which works with client type connections. The work with `amqscnxc` shows you the behavior of the `CHCKCLNT(REQADM)` setting when you work with the administrative or “privileged” user `fteadmin`.

## Section 7: Test IBM MQ Client connectivity to queue managers MFTS

**Attention**

The `amqscnxc` sample is located in the `bin64` directory. Your lab environment is set so that the path to `C:\Program Files\IBM\MQ\Tools\c\Samples\Bin64` is preset in the Windows PATH variables.

However, if the command is not recognized when you type it in the command prompt window, the simplest way to proceed is to change to the `Bin64` directory by typing:

```
cd C:\Program Files\IBM\MQ\Tools\c\Samples\Bin64
```

and press the Enter key. Run the `amqscnxc` connectivity steps for both queue managers from the same directory.

- 
- \_\_\_ 61. Test the IBM MQ Client connection to queue manager MFTS by using the `amqscnxc` sample program exactly as shown in the command that is provided in the text box.
- 

```
amqscnxc -x localhost(1657) -c MQMFT.MFTS.SVRCONN MFTS
```

Expected results:

```
Sample AMQSCNXC start
```

```
Connecting to queue manager MFTS using the server connection channel
```

```
MQMFT.MFTS.SVRCONN on connection name localhost(1657).
```

```
MQCONN ended with reason code 2035
```

---

- \_\_\_ 62. Keep your command prompt window at the  
     `C:\Program Files\IBM\MQ\Tools\c\Samples\Bin64` directory.
- \_\_\_ 63. By using Windows Explorer, proceed to `C:\ProgramData\IBM\MQ\mgrs\MFTS\errors`.
- \_\_\_ 64. Open the queue manager log file `AMQERR01.LOG`
- \_\_\_ 65. Proceed to the end of the log, and work your way backwards until you see the first entry that refers to a 2035 error. The same problem might have two or three records. The expected entries should resemble the results that are shown in the text box. It has three separate entries:

---

1/25/2017 13:38:34 - Process(3568.18) User(MUSR\_MQADMIN) Program(amqzlaa0.exe)  
Host(WS2008R2X64) Installation(IBM MQ V9)  
VRMF(9.0.0.0) QMgr(MFTS)

AMQ5540: Application 'c:\Samples\Bin64\amqscnxc.exe' did not supply a user ID and password

EXPLANATION:

The queue manager is configured to require a user ID and password, but none was supplied.

ACTION:

Ensure that the application provides a valid user ID and password, or change the queue manager configuration to OPTIONAL to allow applications to connect which have not supplied a user ID and password.

---

----- amqzfuca.c : 4340 -----  
1/25/2017 13:38:34 - Process(3568.18) User(MUSR\_MQADMIN) Program(amqzlaa0.exe)  
Host(WS2008R2X64) Installation(IBM MQ V9)  
VRMF(9.0.0.0) QMgr(MFTS)

AMQ5541: The failed authentication check was caused by the queue manager CONNAUTH CHCKCLNT(REQDADM) configuration.

EXPLANATION:

The user ID 'fteadmin' and its password were checked because the user ID is privileged and the queue manager connection authority (CONNAUTH) configuration refers to an authentication information (AUTHINFO) object named 'SYSTEM.DEFAULT.AUTHINFO.IDPWOS' with CHCKCLNT(REQDADM).

This message accompanies a previous error to clarify the reason for the user ID and password check.

ACTION:

Refer to the previous error for more information.

Ensure that a password is specified by the client application and that the password is correct for the user ID. The authentication configuration of the queue manager connection determines the user ID repository. For example, the local operating system user database or an LDAP server.

To avoid the authentication check, you can either use an unprivileged user ID or amend the authentication configuration of the queue manager. You can amend the CHCKCLNT attribute in the CHLAUTH record, but you should generally not allow unauthenticated remote access.

---

1/25/2017 13:38:35 - Process(1752.4) User(MUSR\_MQADMIN) Program(amqrmppa.exe)  
Host(WS2008R2X64) Installation(IBM MQ V9)  
VRMF(9.0.0.0) QMgr(MFTS)

AMQ9557: Queue Manager User ID initialization failed for 'fteadmin'.

EXPLANATION:

The call to initialize the User ID 'fteadmin' failed with CompCode 2 and Reason 2035.

ACTION:

Correct the error and try again.

- \_\_\_ 66. Analyze the entries to determine whether connection authentication or channel authorization caused the “2035” failure.
- \_\_\_ a. The first entry explains that the problem was caused because the password, which is required in this case, was not provided.
  - \_\_\_ b. The second entry further details that the CHCKCLNT, or client connection authentication, is required because fteadmin is a privileged user (REQADM).
  - \_\_\_ c. A channel authentication problem usually contains the word “blocked”. The word “blocked” is not present in any of the log entries.
  - \_\_\_ d. All clues in this scenario point to the connection authentication setting for the client connection. The solution is to provide a password.
- \_\_\_ 67. Close AMQERR01.LOG

## Section 8: Confirm your findings by retesting with an ID and password

- \_\_\_ 68. Use the password option of the `amqscnxc` sample by typing the command as shown and pressing the Enter key. If the test results in a new 2035, do not be alarmed.

```
amqscnxc -x localhost(1657) -c MQMFT.MFTS.SVRCONN -u fteadmin MFTS
```

Results:

Sample AMQSCNXC start

Connecting to queue manager MFTS

using the server connection channel MQMFT.MFTS.SVRCONN

on connection name localhost(1657).

**Type password when prompted:**

Enter password: **weblsphere**

**MQCONN ended with reason code 2035**



### Information

You might get a series of 2035 return codes as you work to complete a successful connection. When you first look at another 2035, the first inclination is to think that the use of the ID with password did not work. You discover otherwise when you look at the logs.

It is critical to check the queue manager log for **each** 2035, or any other return code.

- \_\_\_ 69. Open the MFTS queue manager AMQERR01.LOG file again.

- \_\_ 70. Starting at the end of the file, look at the last message that applies to your test and analyze the error messages. Your results are expected to resemble the display in the text box.

---

```
1/27/2017 06:27:38 - Process(1752.7) User(MUSR_MQADMIN) Program(amqrmppa.exe)
                        Host(WS2008R2X64) Installation(IBM MQV9)
                        VRMF(9.0.0.0) QMgr(MFTS)
```

AMQ9776: Channel was blocked by userid

EXPLANATION:

The inbound channel 'MQMFT.MFTS.SVRCONN' was blocked from address '127.0.0.1' because the active values of the channel were mapped to a userid which should be blocked. The active values of the channel were 'MCAUSER(fteadmin) CLNTUSER(fteadmin'.

ACTION:

Contact the systems administrator, who should examine the channel authentication records to ensure that the correct settings have been configured. The ALTER QMGR CHLAUTH switch is used to control whether channel authentication records are used. The command DISPLAY CHLAUTH can be used to query the channel authentication records.

---



### Information

The previous 2035 related to the connection authentication settings. However, the log entry for the most recent test, which also resulted in 2035, shows the word “blocked” in the error message. When you see wording that states that the channel is blocked, it usually indicates a channel authentication problem.

A channel authentication rule needs to be added to the channel identified in the error message.

---

- \_\_ 71. Close the AMQERR01.LOG file.

## **Section 9: Add a channel authentication rule to resolve the blocked channel under an administrative user ID**

- \_\_ 72. Open a runmqsc session by typing `runmqsc MFTS` and pressing the Enter key.
- 



### Hint

You might want to leave file `Lab5_copyAndPaste.txt` open throughout the rest of this exercise. You can minimize the file and leave it open as you use it often.

**Do not copy commands from the text boxes.** The text boxes might contain invisible characters that cause the command to fail.

---

- \_\_ 73. Type a BLOCKUSER channel authentication rule to stop the blocking of administrative users for channel MQMFT.MFTS.SVRCONN by typing the rule as shown in the text box and pressing the Enter key. You might find this rule to be unconventional. By blocking an unknown user for the particular channel, the administrative user is allowed. Optionally, you can copy and paste the command from the Lab5\_copyAndPaste.txt in the C:\LabFiles\Unit5 directory.

---

```
SET CHLAUTH(MQMFT.MFTS.SVRCONN) TYPE(BLOCKUSER) USERLIST('BOGSUSER') +
DESCR('Allow fteadmin user to connect')
```

Expected results:

```
1 : SET CHLAUTH(MQMFT.MFTS.SVRCONN) TYPE(BLOCKUSER) USERLIST('BOGSUSER')
DESCR('Allow fteadmin user to connect')
AMQ8877: IBM MQ channel authentication record set.
```

---

- \_\_ 74. Close the runmqsc session by typing **end** and pressing the Enter key.

## ***Section 10: Repeat the test with the user ID and password***

- \_\_ 75. Check the effect of the channel authentication rule by repeating the amqscnxc test as shown in the text box and pressing the Enter key.

---

```
amqscnxc -x localhost(1657) -c MQMFT.MFTS.SVRCONN -u fteadmin MFTS
```

Expected results:

```
Sample AMQSCNXC start
Connecting to queue manager MFTS
using the server connection channel MQMFT.MFTS.SVRCONN
on connection name localhost(1657).
```

Type password when prompted

Enter password: **web1sphere**

Connection established to queue manager MFTS

---

## 5.2. Harden security and create a new configuration

### Section 1: Replace connection authentication settings and add the back-stop rule to queue manager MFTS

- \_\_\_ 76. From your command prompt screen, proceed to directory C:\LabFiles\Unit5 by typing `cd C:\LabFiles\Unit5` and pressing the Enter key.
- \_\_\_ 77. The contents of file `lockSecurity.mqsc` are shown in the text box. In the script, each command is documented. Review the script.

---

```
*-----
* Set the back-stop rule
SET CHLAUTH('*') TYPE(ADDRESSMAP) ADDRESS('*') USERSRC(NOACCESS) +
  DESCR('Back-stop rule') ACTION(REPLACE)
*-----
* Create a new authinfo record with required authentication
DEFINE AUTHINFO(QMFT.MFTS.AUTHINFO) AUTHTYPE(IDPWOS) +
  CHCKCLNT(REQUIRED) CHCKLOCL(REQUIRED) REPLACE
*-----
* Set the queue manager CONNAUTH attribute to use the new authinfo
ALTER QMGR CONNAUTH(QMFT.MFTS.AUTHINFO)
*-----
* Refresh connection authentication security details
REFRESH SECURITY TYPE(CONNAUTH)
*-----
```

---

- \_\_\_ 78. From the command prompt, make the security changes coded in the script by typing the command as shown on the text box and pressing the Enter key. Ensure that you capture the results in a file so that you can review that each command in the script was completed successfully. **Ensure that you are in the C:\LabFiles\Unit5> directory before you type the command.** Do not be concerned about overwriting the `mfts.out` file. You do not need the old results.

Optionally, you can copy the command from the `Lab5_copyAndPaste.txt` file.

---

```
runmqsc MFTS < lockSecurity.mqsc > mfts.out
```

All expected output goes to the `mfts.out` file.

---

- \_\_\_ 79. From the same directory in the command prompt window, check the `runmqsc` utility results
- \_\_\_ a. Open the `mfts.out` file by typing `notepad mfts.out` and pressing the Enter key.

- \_\_\_ b. Scroll to the end of the output. You are expected to see:
  - 4 MQSC commands read.
  - No commands have a syntax error.
  - All valid MQSC commands were processed.
- \_\_\_ c. If you see that four commands are processed and have no errors, continue to the next numbered step.
- \_\_\_ 80. If the results are not as expected, review the output and correct any errors before you proceed.
- \_\_\_ 81. Close file `mfts.out`.
- \_\_\_ 82. Keep the command prompt window open.

## Section 2: Confirm the results of the changes

- \_\_\_ 83. In this step, you display the changes by using `runmqsc`. However, your first attempt to use `runmqsc` might not be successful. Start the `runmqsc` session by typing **`runmqsc MFTS`** and pressing the Enter key. Your results are expected to resemble the display in the text box.

---

5724-H72 (C) Copyright IBM Corp. 1994, 2016.

Starting MQSC for queue manager MFTS.

**AMQ8135: Not authorized.**

No MQSC commands read.

No commands have a syntax error.

All valid MQSC commands were processed.

---



### Note

The error is expected because you hardened connection authentication so that any local or client process that connects to the queue manager is challenged, and requires credentials. You confirm the problem by checking the queue manager log.

---

- \_\_\_ 84. Navigate to `C:\ProgramData\IBM\MQ\qmgrs\MFTS\errors` by using Windows Explorer to determine the cause of the error.
- \_\_\_ 85. Use your preferred editor to open log file `AMQERR01.LOG`
- \_\_\_ 86. Scroll to the end of file `AMQERR01.LOG`. You are expected to see an error similar to the display in the text box.



---

```
1/28/2017 08:23:38 - Process(3568.30) User(MUSR_MQADMIN) Program(amqzlaa0.exe)
                        Host(WS2008R2X64) Installation(IBM MQV9)
                        VRMF(9.0.0.0) QMgr(MFTS)
```

AMQ5540: **Application 'les\IBM\MQ\bin64\runmqsc.exe' did not supply a user ID and password**

**EXPLANATION:**

The queue manager is configured to require a user ID and password, but none was supplied.

**ACTION:**

Ensure that the application provides a valid user ID and password, or change the queue manager configuration to `OPTIONAL` to allow applications to connect **which have not supplied a user ID and password.**

---



### Information

If you review the error, you see that the application that is attempting a local connection to queue manager MFTS is `runmqsc`. The authentication requirement is a result of the `CHCKLOCL(REQUIRED)` in the authorization information object now in use by the queue manager.

To satisfy the requirement, `runmqsc` must authenticate by using the `-u` parameter to provide the user ID. When you use the `-u` parameter, `runmqsc` prompts you for the password and then starts your session.

---

\_\_ 87. Start the `runmqsc` session by:

- \_\_ a. Including the `-u` parameter as shown in the text box and pressing the Enter key.
  - \_\_ b. Typing the password `webSphere` when prompted (the password is obfuscated in the display).
  - \_\_ c. **Do not** close the `runmqsc` session
- 

```
runmqsc -u fteadmin MFTS
```

**Expected results:**

5724-H72 (C) Copyright IBM Corp. 1994, 2016.

Enter password:

\*\*\*\*\*

Starting MQSC for queue manager MFTS.

---

\_\_ 88. Display the queue manager connection authentication setting by typing `dis qmgr connauth` and pressing the Enter key. Do not exit `runmqsc`. Your results are expected to resemble the display in the text box.

---

```
4 : dis qmgr connauth
```

```
AMQ8408: Display Queue Manager details.
```

```
QMNAME(MFTS)
```

```
CONNAUTH(MQMFT.MFTS.AUTHINFO)
```

---

- \_\_ 89. Display your CHLAUTH rules by typing the command as shown in the text box and pressing the Enter key.
- 

```
dis chlauth(*) descr
```

```
Expected results:
```

```
3 : dis chlauth(*) descr
```

```
AMQ8878: Display channel authentication record details.
```

```
CHLAUTH(MQMFT.MFTS.SVRCONN)
```

```
TYPE(BLOCKUSER)
```

```
DESCR(Allow fteadmin user to connect)
```

```
USERLIST(BOGSUSER)
```

```
AMQ8878: Display channel authentication record details.
```

```
CHLAUTH(SYSTEM.ADMIN.SVRCONN)
```

```
TYPE(ADDRESSMAP)
```

```
DESCR(Default rule to allow MQ Explorer access)
```

```
ADDRESS(*)
```

```
USERSRC(CHANNEL)
```

```
AMQ8878: Display channel authentication record details.
```

```
CHLAUTH(SYSTEM.*)
```

```
TYPE(ADDRESSMAP)
```

```
DESCR(Default rule to disable all SYSTEM channels)
```

```
ADDRESS(*)
```

```
USERSRC(NOACCESS)
```

```
AMQ8878: Display channel authentication record details.
```

```
CHLAUTH(*)
```

```
TYPE(ADDRESSMAP)
```

```
DESCR(Back-stop rule)
```

```
ADDRESS(*)
```

```
USERSRC(NOACCESS)
```

```
AMQ8878: Display channel authentication record details.
```

```
CHLAUTH(*)
```

```
TYPE(BLOCKUSER)
```

```
DESCR(Default rule to disallow privileged users)
```

```
USERLIST(*MQADMIN)
```

---

- \_\_ 90. Review the results. In addition to the three initial rules, you entered two rules.
- \_\_ a. The first rule is to allow the `fteadmin` administrative ID to connect to the queue manager.
  - \_\_ b. The second rule is the back-stop rule. The back-stop rule blocks all connections. You then allow expected connections by creating other individual channel authentication rules.
  - \_\_ c. As you review these rules, you might realize the value of using the `DESCR` field when you add a rule.
- \_\_ 91. Close the `runmqsc` session by typing `end` and pressing the Enter key.
- \_\_ 92. Keep the command prompt window open.

### Section 3: Review the preconfigured MQMFTCredentials.xml file



#### Stop

In this course, the MQMFTCredentials.xml file is placed in directory C:\LabFiles\Unit5 for convenience. However, in real practice, the MQMFTCredentials.xml file must be in a directory with adequate security.

The objective of this course is to show you how to configure connection authentication security. The choice of location for the MQMFTCredentials.xml file in this course **is not an optimal choice**. If the permissions or location of the directory where the MQMFTCredentials.xml file is placed is deemed questionable, **the agent fails to start**. One example of this error that was found during lab testing is:

```
BFGPR0074E: The security permissions defined for credentials file
'C:\LabFiles\Unit5\MQMFTCredentials.xml' do not meet the minimum requirements for a
file of this type. Reported problem: BFGNV0145E: The 'Users' group has access to
the file 'C:\LabFiles\Unit5\MQMFTCredentials.xml'.
```

To mitigate errors, file MQMFTCredentials.xml file was copied from directory  
`<install>\IBM\MQ\mqft\samples\credentials` to  
 C:\LabFiles\Unit5\MQMFTCredentials.xml and preconfigured.

- 
- \_\_\_ 93. You review the contents of the MQMFTCredentials.xml file. The contents of the MQMFTCredentials.xml file are displayed in the text box. However, the actual file in the C:\LabFiles\Unit5 directory has no end-of-line characters. Review the version that is shown in the text box. The element that is configured is the **qmgr** element, highlighted in bold.
- 

```
<tns:mqmftCredentials xmlns:tns="http://wmqfte.ibm.com/MQMFTCredentials"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://wmqfte.ibm.com/MQMFTCredentials MQMFTCredentials.xsd">
<tns:qmgr name="MFTS" mqUserId="fteadmin" mqPassword="webSphere"/>
</tns:mqmftCredentials>
```

---

### Section 4: Identify the coordination queue manager and set up the MFTS configuration directory structure

- 
- \_\_\_ 94. Identify the coordination queue manager and set up the configuration directory structure by typing the fteSetupCoordination command exactly as shown in the text box. Optionally, you can copy and paste the command that is located under the respective section name in the Lab5\_copyAndPaste.txt file in directory C:\LabFiles\Unit5. If you prefer to copy and paste, ensure that you copy from the Lab5\_copyAndPaste.txt file, **not the lab guide**.

---

```
fteSetupCoordination -coordinationMgr MFTS -credentialsFile
C:\LabFiles\Unit5\MQMFTCredentials.xml -f
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCM0242I: Direct the following MQSC definitions for your coordination queue
manager 'MFTS' to an MQSC session if you have not already done so.
... ..
```

```
BFGCM0243I: A file has been created that contains the MQSC definitions for your
coordination queue manager. The file can be found here:
```

```
'C:\ProgramData\IBM\MQ\mqft\config\MFTS\MFTS.mqsc'
```

---

- \_\_\_ 95. Confirm that your MFTS configuration directory was created in the directory indicated in the output of the `fteSetupCoordination` command.
- 



## Troubleshooting

**If your new configuration ended up in the**

**CC:\LabFiles\RedistClient\mftdata\mqft\config\MFTS directory**, you are still working from the command prompt window setup for the Redistributable agent environment. You need to take two steps:

- Before you continue, use Windows Explorer to manually delete the MFTS configuration directory from `C:\LabFiles\RedistClient\mftdata\mqft\config\`.
  - Close your command prompt window, open a new command prompt window, and repeat the `fteSetupCoordination` command in the new command prompt window.
- 



## Information

You are familiar with the list of the coordination queue manager required object names, which are omitted for brevity.

Notice that since you created a new base configuration, an extra directory is created, named MFTS. You must create the required coordination queue manager objects for the MFTS queue manager.

---

- \_\_\_ 96. Use Windows Explorer to review the changes in the directory structure after the completion of the `fteSetupCoordination` command.
- \_\_\_ a. Navigate to directory `C:\ProgramData\IBM\MQ\mqft\config` and observe that you now have two configuration subdirectories: `MFTS` and `MFTU`
  - \_\_\_ b. Property file `coordination.properties` is created in the `MFTS` subdirectory. Open the `coordination.properties` file with your preferred utility and look at its contents. The expected results are as shown, except for the date and time:

#

```
#Mon Jan 30 05:53:20 PST 2017
coordinationQMGr=MFTS
coordinationQMGrAuthenticationCredentialsFile=C:\\LabFiles\\Unit5\\MQMFT
Credentials.xml
```

- \_\_ c. Close file `coordination.properties`.
- \_\_ d. The IBM MQ command file `MFTS.mqsc` is also present. You use this file later to create the required coordination queue manager objects for queue manager MFTS.
- \_\_ e. Look at the `installation.properties` file under directory `C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9`. Results are expected to resemble the results that are shown in the text box:

```
#Sun Jan 01 12:21:43 PST 2017
```

```
defaultProperties=MFTU
```



### Important

The contents of the `installation.properties` file is unchanged. The default configuration is still shown as MFTU, which means you must use the “-p MFTS” parameter for all subsequent commands for the MFTS configuration.

MFTS is an extra configuration, but it is not the default configuration.

- \_\_ 97. Last, under the logs directory, you now see an MFTS subdirectory. No logs are there now, but the configuration subdirectory is created.
- \_\_ 98. From the command prompt window, navigate to subdirectory `C:\ProgramData\IBM\MQ\mqft\config\MFTS` by using command `cd C:\ProgramData\IBM\MQ\mqft\config\MFTS` and pressing the Enter key.



### Troubleshooting

**If your configuration was not created in the directory as indicated in the last step**, you might be in your redistributable agent environment. To check the environment, display the contents of the `BFG_DATA` by typing `echo %BFG_DATA%` and pressing the Enter key. If the display shows `C:\LabFiles\RedistClient\mfdata\mqft\config`, then:

- Close the command prompt window you are using.
- Use Windows Explorer to navigate to directory `C:\LabFiles\RedistClient\mfdata\mqft\config`.
- Delete the MFTS directory.
- Repeat the `fteSetupConfiguration` command on a new command prompt window.

**Hint**

Due to the security requirements for `runmqsc`, you use a different process to create the coordination and agent queue manager objects.

You copy the entire contents of each IBM MQ “.mqsc” command file, and paste in the authenticated, started `runmqsc` session, as instructed in the steps that follow.

- 
- \_\_ 99. From the command prompt window, open file `MFTS.mqsc` file with Notepad by typing `notepad MFTS.mqsc` and pressing the Enter key.
  - \_\_ 100. Copy the entire contents of the `MFTS.mqsc` file:
    - \_\_ a. Click the Notepad `Edit` menu and select **SelectAll**.
    - \_\_ b. Click the Notepad `Edit` menu and select **Copy**.
  - \_\_ 101. Start the `runmqsc` session by:
    - \_\_ a. Typing `runmqsc -u fteadmin MFTS` and pressing the Enter key.
    - \_\_ b. When prompted to enter the password, type `web1sphere` and press the Enter key.
  - \_\_ 102. On the command prompt window, right-click, and select **Paste**. You see a number of object definitions flash across the screen.
- 

**Attention**

Since you did not use an output file, the results appear on the command prompt window.

You can start by checking the end of the results. If your results do not show any errors, it is not necessary to review all output.

- 
- \_\_ 103. Type `end` and press the Enter key to end the `runmqsc` session.
  - \_\_ 104. Compare your results to the results that are shown in the text box:
- 

```
8 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.
```

---

- \_\_ 105. If your results show that eight commands were read and you see “**No commands have a syntax error**” as highlighted, proceed to the next step.
- \_\_ 106. If your results are not exactly as shown and any part of the command failed, scroll backwards through the screen to review any error messages, and make any necessary corrections before you continue.
- \_\_ 107. Keep the command prompt window open at the same directory.

## Section 5: Identify the queue manager that serves as the command queue manager

- \_\_\_ 108. Identify the command queue manager by typing the command as shown in the text box and pressing the Enter key. **Ensure that you include the `-credentialsFile` parameter.** Optionally, you can copy and paste the command that is located under the respective section name in the `Lab5_copyAndPaste.txt` file that is found in directory `C:\LabFiles\Unit5`.

---

```
fteSetupCommands -connectionQMGr MFTS -p MFTS -credentialsFile
C:\LabFiles\Unit5\MQMFTCredentials.xml -f
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0245I: The file 'C:\ProgramData\IBM\MQ\mqft\config\MFTS\command.properties'
has been created successfully.
```

---

- \_\_\_ 109. The next property file, `command.properties`, is now created. Check that you are in directory `C:\ProgramData\IBM\MQ\mqft\config\MFTS`.
- \_\_\_ 110. Type **notepad command.properties** and press the Enter key. The expected results are as shown, except for the date and time.

```
#
#Sun Jan 01 13:26:02 PST 2017
connectionQMGrAuthenticationCredentialsFile=C:\\LabFiles\\Unit5\\MQMFTCr
edentials.xml
connectionQMGr=MFTS
```

- \_\_\_ 111. Close file `command.properties`.
- \_\_\_ 112. Keep the command prompt open and stay at the current directory location:  
`C:\ProgramData\IBM\MQ\mqft\config\MFTS`

## Section 6: Identify the agent queue manager and create agent MFTUAGT1

- \_\_\_ 113. Identify the agent queue manager and create agent `MFTUAGT1` by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command that is located under the respective section name in the `Lab5_copyAndPaste.txt` file that is found in directory `C:\LabFiles\Unit5`.

---

```
fteCreateAgent -agentName MFTSAGT1 -agentQMgr MFTS -credentialsFile
C:\LabFiles\Unit5\MQMFTCredentials.xml -p MFTS -f
```

Expected results:

BFGCM0239I: A file has been created containing the MQSC definitions to define the agent MFTSAGT1. The file can be found here:

'C:\ProgramData\IBM\MQ\mqft\config\MFTS\agents\MFTSAGT1\MFTSAGT1\_create.mqsc'.

BFGCM0241I: A file has been created containing the MQSC definitions to delete the agent MFTSAGT1. The file can be found here:

'C:\ProgramData\IBM\MQ\mqft\config\MFTS\agents\MFTSAGT1\MFTSAGT1\_delete.mqsc'.

BFGCL0053I: Agent configured and registered successfully.

---

## Section 7: Create the required IBM MQ objects for agent MFTSAGT1

- \_\_\_ 114. From your command prompt window, navigate to the directory for agent MFTSAGT1 by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTS\agents\MFTSAGT1` and pressing the Enter key.
  - \_\_\_ 115. Open the definition file for the agent by typing `notepad MFTSAGT1_create.mqsc` and pressing the Enter key.
  - \_\_\_ 116. By using the Notepad **Edit** menu, first **Select All** and then **Copy** the entire contents of file `MFTSAGT1_create.mqsc`.
  - \_\_\_ 117. Close file `MFTSAGT1_create.mqsc`.
  - \_\_\_ 118. Open a `runmqsc` session by typing `runmqsc -u fteadmin MFTS` and pressing the Enter key.
  - \_\_\_ 119. When prompted, type the password by typing `web1sphere` and pressing the Enter key.
  - \_\_\_ 120. At the `runmqsc` session, paste the contents of the `MFTSAGT1_create.mqsc` file by right-clicking in the command prompt window and selecting **Paste**. A number of object definitions flash across the screen.
  - \_\_\_ 121. Type `end` and press the Enter key to end the `runmqsc` session.
  - \_\_\_ 122. Compare your results to the results that are shown in the text box:
- 

```
12 : end
      11 MQSC commands read.
      No commands have a syntax error.
      All valid MQSC commands were processed.
```

---

- \_\_\_ 123. If your results show that 11 commands were read and you see “**No commands have a syntax error**”, as highlighted, proceed to the next step.
- \_\_\_ 124. If your results are not exactly as shown and any part of the command failed, scroll backwards through the screen to review any error messages, and make any necessary corrections before you continue.



## Section 8: Start the agent, review the output0.log, and list the agent, in the order given

\_\_\_ 125. Start the agent by typing the `fteStartAgent` command as shown in the text box.

---

```
fteStartAgent -p MFTS MFTSAGT1
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0030I: The request to start agent 'MFTSAGT1' on this machine has been
submitted.
BFGCL0031I: Agent log files located at:
C:\ProgramData\IBM\MQ\mqft\logs\MFTS\agents\MFTSAGT1\logs
```

---

- \_\_\_ 126. Use Windows Explorer to navigate to the `output0.log` file for agent `MFTSAGT1` at directory `C:\ProgramData\IBM\MQ\mqft\logs\MFTS\agents\MFTSAGT1\logs`.
- \_\_\_ 127. Open the `output0.log` file by double-clicking the file name.
- \_\_\_ 128. Selected sections of the `output0.log` are displayed in the text box. Review this information.
- \_\_\_ a. The agent `output0.log` file has different sections. The `Properties` section of the environment information is included in the text box display. Notice how it confirms the `MQMFTCredentials.xml` file path for the coordination and agent queue managers. If your agent has start problems, you can check the `Properties` section to confirm that your credentials file specification is interpreted correctly.
  - \_\_\_ b. Scroll to the end of the log and look for message `BFGAG0059I`, which confirms that the agent started. If you see this message, you can skip the next substep.
  - \_\_\_ c. If the agent had a problem and did not start, look through the other messages that are shown under the `* End Display Current Environment *` header, for the reason the agent did not start. Resolve the problem before you continue, and repeat the `fteStartAgent` command as instructed.

---

```

***** Start Display Current Environment *****
... ..
... ..
... ..
Properties:
    agentDesc=, agentName=MFTSAGT1, agentQMGr=MFTS,
agentQMGrAuthenticationCredentialsFile=C:\LabFiles\Unit5\MQMFTCredentials.xml
    agentType=STANDARD, coordinationQMGr=MFTS,
coordinationQMGrAuthenticationCredentialsFile=C:\LabFiles\Unit5\MQMFTCredentials.xml
    defaultProperties=MFTU, transferRoot=C:\Users\fteadmin
Install Locations:
    com.ibm.wmqfte.product.root=C:\Program Files\IBM\MQ\mqft
... ..
***** End Display Current Environment *****
[30/01/2017 13:20:21:082 PST] 00000001 Agent      I   BFGAG0115I: Relative path
transfer root directory: C:\Users\fteadmin
[30/01/2017 13:20:21:113 PST] 00000001 Agent      W   BFGAG0125W: The maximum
size to which the java heap can grow is '512'MB, which is the default value. This
value may be too low dependent on the agent's work load.
[30/01/2017 13:20:21:113 PST] 00000001 AgentRuntime I   BFGAG0058I: The agent has
successfully initialized.
[30/01/2017 13:20:21:191 PST] 00000001 AgentRuntime I   BFGAG0059I: The agent has
been successfully started.

```

---

\_\_\_ 129. Display the agent by typing the `fteListAgents` command as shown in the text box and pressing the Enter key.

---

**`fteListAgents -p MFTS`**

Expected results:

```

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
Agent Name:      Queue Manager Name:      Status:
MFTSAGT1         MFTS                      READY

```

---

\_\_\_ 130. Review the results:

- \_\_\_ a. The message “BFGPR0127W: No credentials file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM MQ authentication has been disabled” ***no longer appears***.
- \_\_\_ b. As you confirmed by reviewing the `output0.log` file, agent MFTSAGT1 is now started and ready for transfers.

## Section 9: Create logger MFTSLGR1 for the MFTS configuration

- \_\_\_ 131. Create logger MFTSLGR1 by typing the command as shown in the text box and pressing the Enter key. Ensure that you use the `-p MFTS` configuration parameter. Optionally, you can copy and paste the command from the `Unit5_copyAndPaste.txt` file.

---

```
fteCreateLogger -loggerQMgr MFTS -loggerType FILE -fileLoggerMode CIRCULAR
-fileSize 5MB -fileCount 3 -credentialsFile C:\LabFiles\Unit5\MQMFTCredentials.xml
-p MFTS MFTSLGR1
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCL0426I: Direct the following MQSC definitions for logger 'MFTSLGR1' to queue manager 'MFTS'.

... ..  
 ... ..  
 ... ..

BFGCL0424I: A file has been created containing the MQSC definitions to create your logger. The file can be found here:

'C:\ProgramData\IBM\MQ\mqft\config\MFTS\loggers\MFTSLGR1\MFTSLGR1\_create.mqsc'.

BFGCL0425I: A file has been created containing the MQSC definitions to delete your logger. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTS\loggers\MFTSLGR1\MFTSLGR1\_delete.mqsc'.

**BFGCL0415I: Logger configured successfully.**

---

- \_\_\_ 132. Review the results. If you see message **BFGCL0415I**, which indicates that the logger was configured successfully, proceed to the next section.
- \_\_\_ 133. If the result was not as expected:
- \_\_\_ a. Review that the command was typed exactly as intended by carefully checking. The `fteCreateLogger` is a long command with multiple opportunities for error.
  - \_\_\_ b. Review the error that is displayed in the command output for any other clues.
  - \_\_\_ c. **You can repeat the same command with the correction by adding the `-f` parameter at the end of the command. The previous definition is overwritten.**

## Section 10: Create the required logger definitions in the coordination queue manager

- \_\_\_ 134. From the command prompt, continue to the directory that holds the logger definitions by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTS\loggers\MFTSLGR1` and pressing the Enter key.
- \_\_\_ 135. Open file `MFTSLGR1_create.mqsc` by typing `notepad MFTSLGR1_create.mqsc` and pressing the Enter key.
- \_\_\_ 136. Copy the entire contents of the script file by selecting **Edit > Select All** and then **Edit > Copy**.

- \_\_\_ 137. Start a `runmqsc` session by typing `runmqsc -u fteadmin MFTS` and pressing the Enter key. You are prompted for the password.
- \_\_\_ 138. When prompted for the password, type `webSphere` and press the Enter key.
- \_\_\_ 139. In the `runmqsc` session, paste the contents of the definitions that you copied. You see some definitions roll by the screen. Check the results.
- \_\_\_ 140. If you see “2 MQSC commands read. No commands have a syntax error. All valid MQSC commands were processed”, proceed to the next section.
- \_\_\_ 141. If the results are different, scroll backwards in the command prompt screen, look for any problem, and resolve it before you continue.

## Section 11: Start logger MFTSLGR1

- \_\_\_ 142. Exit the `runmqsc` session by typing `end` and pressing the Enter key.
- \_\_\_ 143. Start the logger by typing the command as shown in the text box and pressing the Enter key.

---

```
fteStartLogger -p MFTS MFTSLGR1
```

### Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
```

```
BFGCL0287I: The request to start the logger on this machine has been submitted.
```

```
BFGCL0526I: Logger log files located at:
```

```
C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1\logs
```

---

- \_\_\_ 144. Use Windows Explorer to navigate to the logger `output0.log` file at `C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1\logs`.
- \_\_\_ 145. Double-click the `output0.log` file and scroll to the bottom of the file. Your results should resemble the partial display that is shown in the text box.

---

```

Properties:
coordinationQMGr=MFTS,
coordinationQMGrAuthenticationCredentialsFile=C:\LabFiles\Unit5\MQMFTCredentials.xml
    defaultProperties=MFTU,
loggerQMGrAuthenticationCredentialsFile=C:\LabFiles\Unit5\MQMFTCredentials.xml
    wmqfte.file.logger.fileCount=3, wmqfte.file.logger.fileSize=5MB,
wmqfte.file.logger.mode=CIRCULAR
    wmqfte.logger.name=MFTSLGR1, wmqfte.logger.type=FILE,
wmqfte.queue.manager=MFTS
... ..
... ..
... ..
[31/01/2017 10:54:00:304 PST] 00000001 Logger          I   BFGDB0051I: The logger is
running as a 64-bit process.
[31/01/2017 10:54:05:679 PST] 00000001 CircularLogFi I   BFGDB0055I: The file
logger is writing to this directory:
C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1
[31/01/2017 10:54:05:679 PST] 00000001 CircularLogFi I   BFGDB0056I: The file
logger is currently writing to this file:
C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1\MFTSLGR10-20170131105405679.
log
[31/01/2017 10:54:05:710 PST] 00000001 Logger          I   BFGDB0023I: The logger has
completed startup activities and is now running.

```

---

\_\_\_ 146. Review the results.

- \_\_\_ a. Notice the `MQMFTCredentials.xml` paths that are displayed for the coordination and logger in the Properties section. If your logger did not start, you might need to check this information.
- \_\_\_ b. Look for message `BFGDB0023I`, which informs you that the logger completed startup and is running.

\_\_\_ 147. If the logger started, proceed to the next section.

\_\_\_ 148. If the logger did not start, resolve the problem before you continue. Use the logger `output0.log` file. If you find any security (2035) errors, you might also look at the MFTS queue manager log. However, the `output0.log` file provides the best information. If you made a mistake in the credentials path, it can be found in the `output0.log` file.

## Section 12: Test agent `MFTSAGT1` by creating a one-agent transfer

\_\_\_ 149. Create a test transfer by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the `Unit5_copyAndPaste.txt` file.

---

```
fteCreateTransfer -sa MFTSAGT1 -sm MFTS -da MFTSAGT1 -dm MFTS -de overwrite -df
C:\LabFiles\to\mfts_renamed1.txt -p MFTS C:\LabFiles\from\xferAndRenameMe.txt
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0035I: Transfer request issued. The request ID is:
414d51204d46545320202020202020a9d588582561ac03
BFGCL0182I: The request is now waiting to be processed by the agent.
```

### ***Section 13: Check the transfer results by checking the logger file***

- \_\_\_ 150. Use Windows Explorer to navigate to the first logger file with a name that has the prefix MFTSLGR10- in directory C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1.
  - \_\_\_ 151. Open the first logger file with a name that has the prefix MFTSLGR10- by double-clicking it. You see the usual [TSTR], [TPRO], and [TCOM] logger records. The [TCOM] record is expected to look similar to the display in the text box.
- 

```
2017-01-31T19:24:10;414d51204d46545320202020202020a9d588582561ac03;[TCOM];0
;MFTSAGT1;MFTS;STANDARD;MFTSAGT1;MFTS;STANDARD;fteadmin;BFGRP0032I: The file
transfer request has successfully completed.;com.ibm.wmqfte.SourceAgent=MFTSAGT1,
com.ibm.wmqfte.DestinationAgent=MFTSAGT1, com.ibm.wmqfte.MqmdUser=fteadmin,
com.ibm.wmqfte.OriginatingUser=fteadmin,
com.ibm.wmqfte.OriginatingHost=ws2008r2x64.wasedu.net.,
com.ibm.wmqfte.TransferId=414d51204d46545320202020202020a9d588582561ac03,
com.ibm.wmqfte.Priority=0;
```

---

### ***Section 14: Add agent USR1AGTS with agent queue manager USR1 to the MFTS configuration***

- \_\_\_ 152. Create agent USR1AGTS with agent queue manager USR1 by typing the command as shown in the text box.

---

```
fteCreateAgent -agentName USR1AGTS -agentQMgr USR1 -p MFTS
```

**Expected results:**

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCM0238I: Direct the following MQSC definitions for agent 'USR1AGTS' to queue manager 'USR1'.

```
... ..
... .. <=== object definitions skipped for brevity
... ..
```

BFGCM0239I: A file has been created containing the MQSC definitions to define the agent USR1AGTS. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTS\agents\USR1AGTS\USR1AGTS\_create.mqsc'.

BFGCM0241I: A file has been created containing the MQSC definitions to delete the agent USR1AGTS. The file can be found here: 'C:\ProgramData\IBM\MQ\mqft\config\MFTS\agents\USR1AGTS\USR1AGTS\_delete.mqsc'.

**BFGCL0053I: Agent configured and registered successfully.**

---

\_\_\_ 153. Review the results.

- \_\_\_ a. The command did not require credentials because commands that need to access the coordination queue manager are used to register the file. Also, the other queue manager roles are using the MQMFTCredentials.xml file that is configured in the properties files.
- \_\_\_ b. If you see the BFGCL0053I message, which indicates that the agent was **both configured and registered** successfully, continue to the next section.

\_\_\_ 154. If the agent was not registered successfully, look at the messages that resulted from the fteCreateAgent to determine the problem.

- \_\_\_ a. Look at the messages that resulted from the fteCreateAgent to determine the problem.
- \_\_\_ b. Ensure that you use the **-p MFTS** configuration in any command used.
- \_\_\_ c. Use **fteDeleteAgent** to remove the incorrectly configured agent.
- \_\_\_ d. Make corrections and ensure that the agent is **created and registered** before you continue.

## **Section 15: List the agents in the MFTS configuration**

\_\_\_ 155. Confirm that agent USR1AGTS is part of the MFTS configuration by typing the fteListAgents command as shown in the text box.

---

```
fteListAgents -p MFTS
```

#### Results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
Agent Name:      Queue Manager Name:      Status:
MFTSAGT1         MFTS                      READY <=== The new agent is not listed!
```

---



#### Hint

Do you have any thoughts on why the new agent is not showing on the list? Agent MFTSAGTS uses queue manager USR1 as its agent queue manager. To register correctly, the agent queue manager needs to communicate with the coordination queue manager, MFTS, to publish the publication. When you configured agent USR1AGTS, you used bindings type connections, which means the channel that is used to communicate with MFTS is USR1.MFTS.

You also set the back-stop rule in queue manager MFTS.

The first stop in any configuration irregularity is to check the queue manager log. In this case, check the MFTS coordination queue manager since it is more likely to originate security-related constraints.

- 
- \_\_\_ 156. Use Windows Explorer to navigate to the MFTS queue manager log at  
C:\ProgramData\IBM\MQ\mqmgs\MFTS\errors.
  - \_\_\_ 157. Double-click file **AMQERR01.LOG** to open it.
  - \_\_\_ 158. Scroll to the end of the log and look for any possible errors between queue managers USR1 and MFTS. You are expected to find a message similar to the display in the text box.
- 

```
1/31/2017 12:42:31 - Process(1752.246) User(MUSR_MQADMIN) Program(amqrmppa.exe)
                        Host(WS2008R2X64) Installation(IBM MQV9)
                        VRMF(9.0.0.0) QMgr(MFTS)
```

#### **AMQ9777: Channel was blocked**

##### EXPLANATION:

The inbound channel 'USR1.MFTS' was blocked from address 'ws2008r2x64 (127.0.0.1)' because the active values of the channel matched a record configured with USERSRC(NOACCESS). The active values of the channel were 'QMNAME(USR1) ADDRESS(ws2008r2x64)'.

##### ACTION:

Contact the systems administrator, who should examine the channel authentication records to ensure that the correct settings have been configured. The ALTER QMGR CHLAUTH switch is used to control whether channel authentication records are used. The command DISPLAY CHLAUTH can be used to query the channel authentication records.

---



- \_\_\_ 159. Review the results. When you created the “back-stop” rule, you blocked all channels so that any new connections had to be explicitly allowed. To have USR1 connect to MFTS, you need to create a new CHLAUTH rule.

## **Section 16: Create a channel authentication rule to allow the USR1.MFTS channel to connect**

- \_\_\_ 160. Open a `runmqsc` session by typing `runmqsc -u fteadmin MFTS` and pressing the Enter key.
- \_\_\_ 161. When prompted, type password `web1sphere` and press the Enter key.
- \_\_\_ 162. Type the rule as shown on the display, taking care to include any special characters exactly as shown. Optionally, you can copy and paste the command from the `Lab5_copyAndPaste.txt` at the `C:\LabFiles\Unit5` directory. **Leave the `runmqsc` session open.**

---

```
SET CHLAUTH('USR1.MFTS') TYPE(ADDRESSMAP) ADDRESS('127.0.0.1') MCAUSER('fteadmin')
ACTION(REPLACE) DESCR('Allow USR1 user fteadmin to connect')
```

Expected results:

```
1 : SET CHLAUTH('USR1.MFTS') TYPE(ADDRESSMAP) ADDRESS('127.0.0.1')
MCAUSER('fteadmin') ACTION(REPLACE) DESCR('Allow USR1 user fteadmin to connect')
AMQ8877: IBM MQ channel authentication record set.
```

---

- \_\_\_ 163. If the rule did not get created, carefully review the error and each parameter, with special attention to any punctuation, to determine any problems. Do not continue with any other steps until the rule is set correctly.
- 



### **Information**

When you start working with channel authentication rules, list all the rules and keep a count to ensure that you have no duplicates or unexpected leftover rules. You soon see the value of including a description when you work with channel authentication rules.

---

- \_\_\_ 164. From the `runmqsc` session, list all the rules you have for queue manager MFTS. Your display is expected to resemble the text box. Ensure that you add the `descr` parameter to the display to see all descriptions.

**dis chlauth(\*) descr**

```

1 : dis chlauth(*) descr
AMQ8878: Display channel authentication record details.
  CHLAUTH(MQMFT.MFTS.SVRCONN)          TYPE(BLOCKUSER)
  DESCR(Allow fteadmin user to connect)  USERLIST(BOGSUSER)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.ADMIN.SVRCONN)        TYPE(ADDRESSMAP)
  DESCR(Default rule to allow MQ Explorer access)
  ADDRESS(*)                           USERSRC(CHANNEL)
AMQ8878: Display channel authentication record details.
  CHLAUTH(USR1.MFTS)                   TYPE(ADDRESSMAP)
  DESCR(Allow USR1 user fteadmin to connect)
  ADDRESS(127.0.0.1)                   MCAUSER(fteadmin)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.*)                   TYPE(ADDRESSMAP)
  DESCR(Default rule to disable all SYSTEM channels)
  ADDRESS(*)                           USERSRC(NOACCESS)
AMQ8878: Display channel authentication record details.
  CHLAUTH(*)                           TYPE(ADDRESSMAP)
  DESCR(Back-stop rule)                 ADDRESS(*)
  USERSRC(NOACCESS)
AMQ8878: Display channel authentication record details.
  CHLAUTH(*)                           TYPE(BLOCKUSER)
  DESCR(Default rule to disallow privileged users)
  USERLIST(*MQADMIN)

```

\_\_\_ 165. Review the results. You are expected to have six rules in total. The rules **are not** listed in alphabetical or date created order.

- \_\_\_ a. You see the three original “Default” rules, identified as such in the description.
- \_\_\_ b. Second from the last, you see the “back-stop” rule, which caused the block of channel USR1.MFTS.
- \_\_\_ c. You might recognize the first rule, MQMFT.MFTS.SVRCONN. You created that rule to allow the administrative user to connect to the queue manager. However, this rule might not get around the back-stop rule. You might do an extra rule for this channel later in this exercise.
- \_\_\_ d. The third rule that is listed is the rule to allow, or “unblock”, the USR1.MFTS connection.

\_\_\_ 166. Type **end** and press the Enter key to exit runmqsc.

**Important**

Normally, new rules go into effect without refreshing CHLAUTH. However, when you remove or replace a rule, it might be necessary to refresh CHLAUTH before you can see its effects.

If a new rule does not appear to be working:

- You might need to refresh the CHLAUTH rules.
- If the refresh does not work, check the rule and its documentation in the IBM Knowledge Center to ensure that it is the correct rule.

---

**Section 17: Test that the rule works by using amqspout from USR1 to MFTS**

---

**Note**

When you used USR1 remote queue TO.MFTS in Exercise 1, you used channel `USR1.MFTS`. You repeat the same test to see whether your rule is in effect and works. It does not matter whether you send a message or not. If the sample connects, and displays the program name and target queue name without a 2035 or other error, the connection worked.

---

\_\_\_ 167. Type the command as shown in the text box and press the Enter key **two times** to start and end the program.

---

```
amqspout TO.MFTS USR1
```

Expected results:

```
Sample AMQSPUT0 start  
target queue is TO.MFTS
```

```
Sample AMQSPUT0 end
```

---



## Troubleshooting

If the test still results in a 2035:

- Stop any agents active in the configuration, such as `MFTSAGT1`, by typing `fteStopAgent -p MFTS MFTSAGT1` and pressing the Enter key.
- Stop the logger by typing `fteStopLogger -p MFTS MFTSLGR1` and pressing the Enter key.
- Stop queue manager MFTS by typing `endmqm -i MFTS` and pressing the Enter key.
- Start the queue manager by typing `strmqm -ss MFTS` and pressing the Enter key.
- Start the logger by typing `fteStartLogger -p MFTS MFTSLGR1` and pressing the Enter key.
- Start the agent by typing `fteStartAgent -p MFTS MFTSAGT1` and pressing the Enter key.
- Repeat the `amqsput` test. If you still have a 2035, it means a problem with the CHLAUTH rule.

A simpler alternative is to use the `REFRESH QMGR`. However, although this longer process is more involved, it ensures that the needed refresh takes place.



## Troubleshooting

If your queue manager does not start due to a pending process followed by a PID (process ID) number:

- Right-click the Windows taskbar and select `Start Task Manager`.
- Select the `Processes` tab.
- If the PID column is not displayed, from the Windows Task Manager, select the **View** menu, and then **Select Columns**.
- Check the PID column and click **OK**.
- Return to the Task Manager Processes window and locate the PID number that is mentioned in the queue manager `strmqm` command.
- Right-click the process, ensuring the correct PID is selected, and press **End Process**.
- You might have to repeat the process more than one time.

It is possible that you might need to repeat this process when you need to stop a queue manager and oversee ending an agent that might be active.

**This process is to be used in the lab environment only.**

## Section 18: Re-create agent `USR1AGTS` with force `-f` parameter



### Attention

**Do not proceed** unless you resolved the 2035 on channel `USR1.MFTS` and successfully completed `amqsput TO.MFTS USR1`.

- \_\_\_ 168.Repeat creation of agent USR1AGTS to ensure that it registers. Re-create the agent by typing the command as shown in the **Notes** box. Optionally, you can copy and paste the command from the Lab5\_copyAndPaste.txt at the C:\LabFiles\Unit5 directory.

---

```
fteCreateAgent -agentName USR1AGTS -agentQMgr USR1 -p MFTS -f
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCM0238I: Direct the following MQSC definitions for agent 'USR1AGTS' to queue
manager 'USR1'.
```

```
... ..
... .. <=== Part of the output omitted for brevity
... ..
```

```
BFGCL0053I: Agent configured and registered successfully
```

---

## Section 19:Check whether the agent shows on the fteListAgents command

- \_\_\_ 169.Repeat the listing of the agents by typing the command as shown in the text box. The command is expected to work.

---

```
fteListAgents -p MFTS
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
Agent Name:      Queue Manager Name:  Status:
MFTSAGT1        MFTS                READY
USR1AGTS        USR1                STOPPED
```

---

- \_\_\_ 170.Review the results. If your agent does not show, follow the earlier troubleshooting sections to determine the problem. Do not continue until the amqspout test works, and the fteListAgents -p MFTS shows the new agent in stopped status.

## Section 20:Create the required agent queue manager objects for USR1AGTS

- \_\_\_ 171.Continue to the directory that contains the agent object definitions by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTS\agents\USR1AGTS` and pressing the Enter key.
- \_\_\_ 172.Queue manager USR1 does not require credentials. You create the objects as usual by typing the command as shown in the text box and pressing the Enter key.

---

```
runmqsc USR1 < USR1AGTS_create.mqsc > usr1.out
```

---

- \_\_\_ 173.Edit file `usr1.out` with your favorite editor and scroll to the end of the file. Results are expected to resemble the text box.

---

11 MQSC commands read.

No commands have a syntax error.

All valid MQSC commands were processed ...

---

- \_\_\_ 174.If your results show that 11 commands were read and you see “No commands have a syntax error”, as highlighted, proceed to the next section.
- \_\_\_ 175.If your results are not exactly as shown and any part of the command failed, scroll backwards through the screen to review any error messages, and make any necessary corrections before you continue. **If the required objects are missing, agent USR1AGTS fails the start with a 2085.**

## Section 21:Start agent USR1AGTS

- \_\_\_ 176.Start agent USR1AGTS from the command prompt window by typing the command as shown in the text box and pressing the Enter key.
- 

```
fteStartAgent -p MFTS USR1AGTS
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCL0030I: The request to start agent 'USR1AGTS' on this machine has been submitted.

BFGCL0031I: Agent log files located at: C:\ProgramData\IBM\MQ\mqft\logs\MFTS\agents\USR1AGTS\logs

---

- \_\_\_ 177.Use Windows Explorer to navigate to the agent output0.log directory at C:\ProgramData\IBM\MQ\mqft\logs\MFTS\agents\USR1AGTS\logs.
- \_\_\_ 178.Open the output0.log file to review its contents. Results are expected to be as partially displayed in the text box.
  - \_\_\_ a. The properties section of the output0.log file provides details about the agent, such as the agent queue manager, coordination queue manager, and location of credentials file for the MFTS coordination queue manager. Connection authentication is not required in the USR1 queue manager.
  - \_\_\_ b. You also see a report that the **default** configuration is MFTU. This item is informational.
  - \_\_\_ c. The first status entry for agent USR1AGTS is the “BFGPR0127W: No credentials ...” entry, which assumes that connection authentication is not enabled. This message is correct, as it refers to the agent queue manager, USR1.
  - \_\_\_ d. However, when you check the coordination queue manager entry, you see a reference to the path of the MFTS configuration MQMFTCredentials.xml file.
  - \_\_\_ e. Look at the last message in the log. You expect to see message BFGAG0059I, which confirms that the agent started.

---

```

... ..
Properties:
    agentDesc=, agentName=USR1AGTS, agentQMGr=USR1, agentType=STANDARD,
coordinationQMGr=MFTS

coordinationQMGrAuthenticationCredentialsFile=C:\LabFiles\Unit5\MQMFTCredentials
.xml
    defaultProperties=MFTU
Install Locations:
    com.ibm.wmqfte.product.root=C:\Program Files\IBM\MQ\mqft
... ..
[02/02/2017 07:47:22:905 PST] 00000001 CredentialsUs W   BFGPR0127W: No credentials
file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM
MQ authentication has been disabled.
[02/02/2017 07:47:23:421 PST] 00000001 Agent I   BFGAG0115I: Relative path transfer
root directory: C:\Users\fteadmin
[02/02/2017 07:47:23:421 PST] 00000001 Agent W   BFGAG0125W: The maximum size to
which the java heap can grow is '512'MB, which is the default value. This value may
be too low dependent on the agent's work load.
[02/02/2017 07:47:23:421 PST] 00000001 AgentRuntime I   BFGAG0058I: The agent has
successfully initialized.
[02/02/2017 07:47:27:124 PST] 00000001 AgentRuntime I   BFGAG0059I: The agent has
been successfully started.

```

---

- \_\_\_ 179.If the agent did not start, look for error messages in the `output0.log` file, and correct any problems before you proceed to the next section.

## Section 22:Transfer a file from agent USR1AGTS to agent MFTSAGT1

- \_\_\_ 180.You can optionally type `fteListAgents -p MFTS` and press the Enter key to confirm that the agent is ready. If you use `fteListAgents -p MFTS`, the agent is expected to display in READY status. However, if the `output0.log` indicates that the agent started, it is not necessary to confirm.
- \_\_\_ 181.Create a test transfer by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the `Lab5_copyAndPaste.txt` at the `C:\LabFiles\Unit5` directory.
- 

```
fteCreateTransfer -sa USR1AGTS -sm USR1 -da MFTSAGT1 -dm MFTS -p MFTS -de overwrite
-df C:\LabFiles\to\usr1_to_mfts.txt C:\LabFiles\from\xferAndRenameMe.txt
```

---

Expected results:

```

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654532020202
020202020dee9915820f76c03
BFGCL0182I: The request is now waiting to be processed by the agent.

```

---

- \_\_\_ 182. Use Windows Explorer to navigate to the first logger file with a name that has the prefix MFTSLGR10- at directory C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1.
- \_\_\_ 183. Double-click the first logger file with a name that has the prefix MFTSLGR10- to open it.
- \_\_\_ 184. Scroll to the end of the log to see the results of the transfer.

---

```
2017-02-02T20:25:09;414d51204d4654532020202020202020dee9915820f77303;[TSTR];
;USRLAGTS;USR1;STANDARD;MFTSAGT1;MFTS;fteadmin;;;com.ibm.wmqfte.SourceAgent=USRLAG
... ..
2017-02-02T20:25:09;414d51204d4654532020202020202020dee9915820f77303;[TPRO];0
;C:\LabFiles\from\xferAndRenameMe.txt;261;file;leave
;;;;;C:\LabFiles\to\usr1_to_mfts.txt;261;file;overwrite;;;;;;
2017-02-02T20:25:09;414d51204d4654532020202020202020dee9915820f77303;[TCOM];0
;USRLAGTS;USR1;STANDARD;MFTSAGT1;MFTS;STANDARD;fteadmin;BFGRP0032I: The file
transfer request has successfully completed.;com.ibm.wmqfte.SourceAgent=USRLAGTS,
... ..
```

---



## Stop

Before you continue, take a moment to recap the work that is completed so that you can distinguish the differences in the remaining tasks.

In this lab exercise, you started with default queue manager security, then added strict connection authentication and channel authentication to the queue manager. You resolved several challenges:

- Ability for an administrative user to connect when default security settings are in force by creating a type **BLOCKUSER** channel authentication rule for a bogus user for channel MQMFT.MFTS.SVRCONN. This type **BLOCKUSER** rule allowed administrative user *fteadmin* to connect to queue manager MFTS when the CHCKCLNT setting is REQADM. The type of rule is important, as you might have to create different **types** of rules for the same channel.
- Resolve connection authentication challenges in the IBM MQ Managed File Transfer configuration by using the *MQMFTCredentials.xml* file.
- Allow access so a channel is unblocked after the “back-stop rule” is in force, by creating an ADDRESSMAP type rule for channel USR1.MFTS. Now you can connect to MFTS by using channel USR1.MFTS. **USR1.MFTS works with the agent “bindings” type connection.**

Before you move to the object authorization part of this lab exercise, you create a redistributable agent that uses queue manager MFTS.

**Can you anticipate what might happen as far as security challenges?**

**Hint: What type of a connection or channel does a redistributable agent require?**

---



## Section 23: Create an MFTS configuration in the redistributable agent environment

- \_\_\_ 185. Open a second command prompt window by right-clicking the command prompt icon and selecting **fteadmin Command Prompt**.
- \_\_\_ 186. Navigate to the redistributable client binary files by typing `cd C:\LabFiles\RedistClient\bin` and pressing the Enter key.
- \_\_\_ 187. Set the redistributable client environment by typing `fteCreateEnvironment` and pressing the Enter key.
- \_\_\_ 188. Ensure that you are working in the redistributable agent environment by typing `echo %BFG_DATA%` and pressing the Enter key. You are expected to see that the redistributable path is returned, `C:\LabFiles\RedistClient\mfdata`.
- \_\_\_ 189. Create the redistributable MFTS directory structure and set the coordination queue manager by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the `Lab5_copyAndPaste.txt` file in the `C:\LabFiles\Unit5` directory.



### Hint

If at any time you need to confirm whether you are in the redistributable client environment window, echo the `BFG_DATA` variable by typing `echo %BFG_DATA%` and pressing the Enter key. The expected display is `C:\LabFiles\RedistClient\mfdata`. Although this hint box might appear repetitious, ensuring that you are in the correct environment might save you later problems.

---



### Note

You now create a second MFTS configuration, but in the redistributable client environment. Agents that are created in this environment must be started and stopped from a command prompt with the `%BFG_DATA%` variable set to the redistributable client libraries.

**Any attempt to manage the redistributable agent from a non-redistributable command prompt window results in a message that states that the queue manager for this agent is unknown.**

---

```
fteSetupCoordination -coordinationQMGr MFTS -coordinationQMGrHost 127.0.0.1
-coordinationQMGrPort 1657 -coordinationQMGrChannel MQMFT.MFTS.SVRCONN
-credentialsFile C:\LabFiles\Unit5\MQMFTCredentials.xml -f
```

Expected results:

5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCM0242I: Direct the following MQSC definitions for your coordination queue manager 'MFTS' to an MQSC session if you have not already done so.

... ..

BFGCM0243I: A file has been created that contains the MQSC definitions for your coordination queue manager. The file can be found here:

'C:\LabFiles\RedistCliet\mftdata\mqft\config\MFTS\MFTS.mqsc'.

---

\_\_\_ 190. Review the results:

- \_\_\_ a. The `fteSetupCoordination` command created the **redistributed client directory** structure for the MFTS configuration.
  - \_\_\_ b. The actual coordination queue manager object definitions were completed when the MFTS configuration was first defined, and can be ignored.
  - \_\_\_ c. Use Windows Explorer to navigate to the redistributable MFTS configuration directory at `C:\LabFiles\RedistClient\mftdata\mqft\config\MFTS`.
  - \_\_\_ d. Use your preferred editor to open the `coordination.properties` file.
  - \_\_\_ e. Ensure that the `coordinationQMGrAuthenticationCredentialsFile` parameter is included and populated in the `coordination.properties` file. For a Windows operating system, the parameter is expected to look as shown in the text box (without a line break). Note the extra “\” preceding special characters. The `agent.properties` file is expected to resemble the display.
- 

#

```
coordinationQMGr=MFTS
coordinationQMGrAuthenticationCredentialsFile=C:\\LabFiles\\Unit5\\MQMFTCredentials.xml
coordinationQMGrHost=127.0.0.1
coordinationQMGrChannel=MQMFT.MFTS.SVRCONN
coordinationQMGrPort=1657
```

---

\_\_\_ 191. Review the `coordination.properties` file and confirm that it resembles the display in the text box.

- \_\_\_ 192. If the `coordination.properties` file does not look like the text box, do not continue. Check your work, correct, and repeat the `fteSetupCoordination` command with the `-f` parameter.

## Section 24: Identify the redistributable MFTS configuration command queue manager

\_\_ 193. Identify the command queue manager by typing the command as shown in the text box.

---

```
fteSetupCommands -connectionQMGr MFTS -connectionQMGrHost 127.0.0.1
-connectionQMGrPort 1657 -connectionQMGrChannel MQMFT.MFTS.SVRCONN -p MFTS
-credentialsFile C:\LabFiles\Unit5\MQMFTCredentials.xml -f
```

Expected results:

5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCL0245I: The file 'C:\LabFiles\RedistClient\mqft\data\mqft\config\MFTS\command.properties' has been created successfully.

---

\_\_ 194. Review the `command.properties` file and confirm that it resembles the display in the text box.

---

```
#
connectionQMGrChannel=MQMFT.MFTS.SVRCONN
connectionQMGrPort=1657
connectionQMGrAuthenticationCredentialsFile=C:\\LabFiles\\Unit5\\MQMFTCredentials.xml
connectionQMGrHost=127.0.0.1
connectionQMGr=MFTS
```

---

\_\_ 195. If the `command.properties` file does not look like the text box, do not continue. Check your work, correct, and repeat the `fteSetupCommands` command with the `-f` parameter.

---



### Stop

Observing the correct escape character sequence is of paramount importance when you configure any part of IBM MQ Managed File Transfer. Your credentials file path must look as shown in the last text box. Failure to correctly escape special characters can lead to errors that might be time consuming to resolve. Always check all property files, agent, command, coordination, and logger to ensure that the escape sequence is adequate for the operating system you work with.

While you can use the `-mquserid` and `-mqpassword` parameters instead of the credentials file, not all commands accept the credentials parameters.

The potential for error increases without the credentials file.

---

## Section 25: Create redistributable agent RDSTAGTS to use the MFTS queue manager for all roles

- \_\_\_ 196. Create agent RDSTAGTS to use the MFTS queue manager for all roles by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the Lab5\_copyAndPaste.txt at the C:\LabFiles\Unit5 directory.

---

```
fteCreateAgent -agentName RDSTAGTS -agentQMgr MFTS -agentQMgrHost 127.0.0.1
-agentQMgrPort 1657 -agentQMgrChannel MQMFT.MFTS.SVRCONN -p MFTS -credentialsFile
C:\LabFiles\Unit5\MQMFTCredentials.xml -f
```

Expected results:

BFGCM0238I: Direct the following MQSC definitions for agent 'RDSTAGTS' to queue manager 'MFTS'.

... ..  
... ..

BFGCM0239I: A file has been created containing the MQSC definitions to define the agent RDSTAGTS. The file can be found here: 'C:\LabFiles\RedistClient\mfdata\mqft\config\MFTS\agents\RDSTAGTS\RDSTAGTS\_create.mqsc'.

BFGCM0241I: A file has been created containing the MQSC definitions to delete the agent RDSTAGTS. The file can be found here: 'C:\LabFiles\RedistClient\mfdata\mqft\config\MFTS\agents\RDSTAGTS\RDSTAGTS\_delete.mqsc'.

BFGPR0127W: No credentials file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM MQ authentication has been disabled.

BFGMQ1041E: An attempt to connect to queue manager 'MFTS' with user ID 'fteadmin' has been rejected because of invalid authentication details. Valid user ID and password details must be supplied in the credentials file.

BFGCL0254I: Agent configured successfully. **The agent has not been registered with the coordination queue manager.**

---

- \_\_\_ 197. Review the results. The agent did not register.
- \_\_\_ 198. Navigate to the MFTS queue manager log by using Windows Explorer and locating C:\ProgramData\IBM\MQ\qmgrs\MFTS\errors.
- \_\_\_ 199. Double-click file **AMQSERR01.LOG** and scroll to the end of the file.
- \_\_\_ 200. Since redistributable clients must use the client type channel, look for messages that refer to channel MQMFT.MFTS.SVRCONN for possible problems. Expected results are shown in the text box.

2/3/2017 07:45:46 - Process(2484.13) User(MUSR\_MQADMIN) Program(amqrmppa.exe)  
 Host(WS2008R2X64) Installation(IBM MQV9)  
 VRMF(9.0.0.0) QMgr(MFTS)

AMQ9777: Channel was blocked

EXPLANATION:

The inbound channel 'MQMFT.MFTS.SVRCONN' was blocked from address 'ws2008r2x64 (127.0.0.1)' because the active values of the channel matched a record configured with USERSRC(NOACCESS). The active values of the channel were 'CLNTUSER(ftadmin) ADDRESS(ws2008r2x64)'.

ACTION:

Contact the systems administrator, who should examine the channel authentication records to ensure that the correct settings have been configured. The ALTER QMGR CHLAUTH switch is used to control whether channel authentication records are used. The command DISPLAY CHLAUTH can be used to query the channel authentication records.



#### Note

After you hardened security for queue manager MFTS, you created an ADDRESSMAP type rule to allow channel USR1.MFTS to connect to queue manager MFTS without being blocked.

You create a similar ADDRESSMAP type rule for channel MQMFT.MFTS.SVRCONN.

## Section 26: Create a type ADDRESSMAP channel authentication rule to allow the ftadmin user to connect to MQMFT.MFTS.SVRCONN

- \_\_\_ 201. Open a `runmqsc` session by typing `runmqsc -u ftadmin MFTS` and pressing the Enter key.
- \_\_\_ 202. When prompted, type password `webSphere` and press the Enter key.
- \_\_\_ 203. Type the rule as shown on the display, taking care to include any special characters exactly as shown. Optionally, you can copy and paste the command from the `Lab5_copyAndPaste.txt` in the `C:\LabFiles\Unit5` directory. **Leave the `runmqsc` session open.**

```
SET CHLAUTH('MQMFT.MFTS.SVRCONN') TYPE(ADDRESSMAP) ADDRESS('127.0.0.1')
MCAUSER('ftadmin') ACTION(REPLACE) DESCR('Allow redist client ftadmin to
connect')
```

Expected results:

```
1 : SET CHLAUTH('MQMFT.MFTS.SVRCONN') TYPE(ADDRESSMAP) ADDRESS('127.0.0.1')
MCAUSER('ftadmin') ACTION(REPLACE) DESCR('Allow redist client ftadmin to
connect')
```

AMQ8877: IBM MQ channel authentication record set.

- \_\_\_ 204.If your results are not as displayed in the text box, make any corrections, possibly for typographical errors or syntax distortions, before you proceed. You cannot make further progress until this channel authentication record is correct.
- \_\_\_ 205.From the `runmqsc` session, confirm the number of channel authentication rules by typing the command as shown in the text box and pressing the Enter key.

**dis chlauth(\*) descr**

#### Expected results

```

1 : dis chlauth(*) descr
AMQ8878: Display channel authentication record details.
      CHLAUTH(MQMFT.MFTS.SVRCONN)          TYPE(ADDRESSMAP)
      DESCR(Allow redist client fteadmin to connect)
      ADDRESS(127.0.0.1)                    MCAUSER(fteadmin)
AMQ8878: Display channel authentication record details.
      CHLAUTH(MQMFT.MFTS.SVRCONN)          TYPE(BLOCKUSER)
      DESCR(Allow fteadmin user to connect)  USERLIST(BOGSUSER)
AMQ8878: Display channel authentication record details.
      CHLAUTH(SYSTEM.ADMIN.SVRCONN)        TYPE(ADDRESSMAP)
      DESCR(Default rule to allow MQ Explorer access)
      ADDRESS(*)                           USERSRC(CHANNEL)
AMQ8878: Display channel authentication record details.
      CHLAUTH(USR1.MFTS)                   TYPE(ADDRESSMAP)
      DESCR(Allow USR1 user fteadmin to connect)
      ADDRESS(127.0.0.1)                    MCAUSER(fteadmin)
AMQ8878: Display channel authentication record details.
      CHLAUTH(SYSTEM.*)                   TYPE(ADDRESSMAP)
      DESCR(Default rule to disable all SYSTEM channels)
      ADDRESS(*)                           USERSRC(NOACCESS)
AMQ8878: Display channel authentication record details.
      CHLAUTH(*)                           TYPE(ADDRESSMAP)
      DESCR(Back-stop rule)                 ADDRESS(*)
      USERSRC(NOACCESS)
AMQ8878: Display channel authentication record details.
      CHLAUTH(*)                           TYPE(BLOCKUSER)
      DESCR(Default rule to disallow privileged users)
      USERLIST(*MQADMIN)

```

- \_\_\_ 206.Review the results:
- \_\_\_ a. You see the new rule first in the listing.
  - \_\_\_ b. Count how many rules are created in the MFTS queue manager. Your count is expected to be 7, the same as in the display.
  - \_\_\_ c. If you have more than seven rules, if the new `MQMFT.MFTS.SVRCONN` type `ADDRESSMAP` rule looks like the display, you can proceed. However, make a mental note of the situation if any odd security problems occur later, which might be the result of the extra rule. Optimally you have seven rules exactly.

- \_\_\_ d. **Leave the `runmqsc` session open.**
- \_\_\_ e. A CHLAUTH refresh for the new rule **was not** required. However, if you make an error and need to delete, then re-create the rule, you might need to refresh CHLAUTH as instructed in an earlier section.

## **Section 27: Create the required agent `RDSTAGTS` objects while you have the `MFTS runmqsc` session open**

- \_\_\_ 207. Use Windows Explorer to navigate to the new redistributable agent directory at `C:\LabFiles\RedistClient\mftdata\mqft\config\MFTS\agents\RDSTAGTS`.
- \_\_\_ 208. Right-click file `RDSTAGTS_create.mqsc` and select **Open**.
- \_\_\_ 209. In the window that appears, select the button for **“Select a program from the list of installed programs”**.
- \_\_\_ 210. When the list of programs surfaces, you might need to expand the “Other programs” menu by clicking the “+” to the right to locate Notepad.
- \_\_\_ 211. Select **Notepad** to open file `RDSTAGTS_create.mqsc`.
- \_\_\_ 212. After you open the file, from the Edit menu select **Select all**, then **Copy**.
- \_\_\_ 213. Close Notepad.
- \_\_\_ 214. Return to the `runmqsc` session.
- \_\_\_ 215. Right-click and select **Paste** to create the object definitions for agent `RDSTAGTS`. You see definitions quickly roll by the display. Results are at the end of the object display.
- \_\_\_ 216. Type `end` and press the Enter key to exit `runmqsc`.
- \_\_\_ 217. Review the results.

---

12 : end

```

11 MQSC commands read.
No commands have a syntax error.
All valid MQSC commands were processed.
```

---

- \_\_\_ 218. If your results show that 11 commands were read and you see **“No commands have a syntax error”**, as highlighted, then proceed to the next step.
- \_\_\_ 219. If your results are not exactly as shown and any part of the command failed, scroll backwards through the screen to review any error messages, and make any necessary corrections before you continue.

## **Section 28: Re-create and start agent `RDSTAGTS`**

- \_\_\_ 220. Go to the command prompt screen where the redistributable client environment is set. **If you closed the screen:** (you can skip to the next step if you **did not** close the screen).
  - \_\_\_ a. Open a new screen and return to the redistributable bin directory by typing `cd C:\LabFiles\RedistClient\bin` and pressing the Enter key.



- \_\_\_ b. Reestablish the redistributable client environment by typing `fteCreateEnvironment` and pressing the Enter key.
- \_\_\_ 221.Re-create the agent by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from the `Lab5_copyAndPaste.txt` in the `C:\LabFiles\Unit5` directory.

```
fteCreateAgent -agentName RDSTAGTS -agentQMGr MFTS-agentQMGrHost 127.0.0.1
-agentQMGrPort 1657 -agentQMGrChannel MQMFT.MFTS.SVRCONN -p MFTS -credentialsFile
C:\LabFiles\Unit5\MQMFTCredentials.xml -f
```

#### Expected results:

5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCM0238I: Direct the following MQSC definitions for agent 'RDSTAGTS' to queue manager 'MFTS'.

... ..

BFGCM0239I: A file has been created containing the MQSC definitions to define the agent RDSTAGTS. The file can be found here: 'C:\LabFiles\RedistClient\mfdata\mqft\config\MFTS\agents\RDSTAGTS\RDSTAGTS\_create.mqsc'.

BFGCM0241I: A file has been created containing the MQSC definitions to delete the agent RDSTAGTS. The file can be found here: 'C:\LabFiles\RedistClient\mfdata\mqft\config\MFTS\agents\RDSTAGTS\RDSTAGTS\_delete.mqsc'.

BFGCL0053I: **Agent configured and registered successfully.**



#### Note

The `-f` or “force” parameter is used instead of deleting the agent.

The required `RDSTAGTS_create.mqsc` agent objects are already created; the `-f` parameter does not impact the objects that you defined in an earlier step.

- \_\_\_ 222.Leave your redistributable client command prompt window open.

- \_\_\_ 223.Check the results. If you see message “BFGCL0053I: Agent configured and registered successfully”, proceed to the step to list the agents.

- \_\_\_ 224.If the agent is not registered successfully, use the instructions that were provided earlier to resolve the problem. Do not proceed until the agent is registered successfully.

- \_\_\_ 225.List the registered agents for configuration MFTS by typing the command as shown and pressing the Enter key.



**fteListAgents -p MFTS**

## Expected results:

```

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
Agent Name:      Queue Manager Name:      Status:
MFTSAGT1         MFTS                                     READY
RDSTAGTS        MFTS                                STOPPED
USR1AGTS         USR1                                     READY

```

- \_\_\_ 226. Check the results. Agent **RDSTAGTS** should be listed in **STOPPED** status. If agent **RDSTAGTS** is **not** listed, check the logs, examine previous commands for typographical errors, and use earlier troubleshooting instructions to resolve the problem.
- \_\_\_ 227. From the redistributable client command prompt window, start agent **RDSTAGTS** by typing the command as shown in the text box and pressing the Enter key.

**fteStartAgent -p MFTS RDSTAGTS**

## Expected results:

```

5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0030I: The request to start agent 'RDSTAGTS' on this machine has been
submitted.
BFGCL0031I: Agent log files located at:
C:\LabFiles\RedistClient\mftdata\mqft\logs\MFTS\agents\RDSTAGTS\logs

```

**Reminder**

When you work with the redistributable client:

- The agent `output0.log` files are at the redistributable client configuration directory. For agent **RDSTAGTS**, the `output0.log` file is at  
`C:\LabFiles\RedistClient\mftdata\mqft\logs\MFTS\agents\RDSTAGTS\logs`.
- All commands applicable to the redistributable agent must be made from the redistributable agent command prompt with the `BFG_DATA` variable initialized. Any attempt to manage a redistributable agent from the standard `mqft` configuration command prompt results in a message that the queue manager to use is unknown.
- To check the results of a transfer, you check the base configuration files, that is, where the coordination queue manager works with the logger, at  
`C:\ProgramData\IBM\MQ\mqft\config\MFTS\loggers\MFTSLGR1`.

- \_\_\_ 228. Use Windows Explorer to navigate to the `output0.log` file for agent **RDSTAGTS** at  
`C:\LabFiles\RedistClient\mftdata\mqft\logs\MFTS\agents\RDSTAGTS\logs`.
- \_\_\_ 229. Double-click file `output0.log` to check the agent status. The results are expected to resemble the display in the text box:

---

```
[03/02/2017 13:03:04:534 PST] 00000001 Agent          I    BFGAG0115I: Relative path
transfer root directory: C:\Users\fteadmin
[03/02/2017 13:03:04:659 PST] 00000001 Agent          W    BFGAG0125W: The maximum
size to which the java heap can grow is '512'MB, which is the default value. This
value may be too low dependent on the agent's work load.
[03/02/2017 13:03:04:659 PST] 00000001 AgentRuntime I    BFGAG0058I: The agent has
successfully initialized.
[03/02/2017 13:03:04:768 PST] 00000001 AgentRuntime I    BFGAG0059I: The agent has
been successfully started.
```

---

- \_\_\_ 230.If the agent did not start, check other messages in the `output0.log` file and resolve the problem before you continue.
- \_\_\_ 231.List the agents in the MFTS configuration from the redistributable agent command prompt by typing `fteListAgents -p MFTS` and pressing the Enter key. The results are expected to resemble the results that are shown in the text box.
- 

Agent Name:	Queue Manager Name:	Status:
MFTSAGT1	MFTS	READY
RDSTAGTS	MFTS	READY
USR1AGTS	USR1	READY

---

## Section 29: Transfer a file from agent RDSTAGTS to agent MFTSAGT1

- \_\_\_ 232.Complete the test of the redistributed agent to agent MFTSAGT1 by typing the command as shown and pressing the Enter key. Optionally, you can copy the command from the `Lab5_copyAndPaste.txt` file.
- 

```
fteCreateTransfer -sa RDSTAGTS -sm MFTS -da MFTSAGT1 -dm MFTS -p MFTS -de overwrite
-df C:\LabFiles\to\RDST_to_mfts.txt C:\LabFiles\from\xferAndRenameMe.txt
```

### Expected results

```
5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654532020202
020202020c39ca15820be1503
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_\_ 233.If your results do not show “BFGCL0182I: The request is now waiting to be processed by the agent”, refer to the next troubleshooting section before you proceed.
- \_\_\_ 234.Use Windows Explorer to navigate to the first logger file with a name that has the prefix `MFTSLGR10-` at directory `C:\ProgramData\IBM\MQ\mqft\logs\MFTS\loggers\MFTSLGR1`.  
**You might need to refresh the Windows Explorer view to see the loggers directory.**
- \_\_\_ 235.Double-click the file with a name that has the prefix `MFTSLGR10-` to open it and review the results. The results are expected to resemble the **partial** display in the text box:

```
2017-02-13T18:09:26;414d51204d4654532020202020202aa020c39ca15820be1503;[TSSTR];
;RDSTAGTS;MFTS;STANDARD;MFTSAGT1;MFTS;fteadmin;;;com.ibm.wmqfte.SourceAgent=RDSTAG
TS, ... ..
2017-02-13T18:09:27;414d51204d4654532020202020202020c39ca15820be1503;[TPRO];0
;C:\LabFiles\from\xferAndRenameMe.txt;261;file;leave
;;;;;C:\LabFiles\to\RDST_to_mfts.txt;261;file;overwrite;;;;;;;;
2017-02-13T18:09:27;414d51204d4654532020202020202020c39ca15820be1503;[TCOM];0
;RDSTAGTS;MFTS;STANDARD;MFTSAGT1;MFTS;STANDARD;fteadmin;;BFGRP0032I: The file
transfer request has successfully completed.
... ..
```

\_\_\_ 236. If your results resemble the results that are shown in the text box, you completed part 5.2 of this lab exercise. **Proceed to part 5.3 of this exercise.**

**237.If the transfer experienced a problem, check:**

- \_\_\_ a. The output of the `fteCreateTransfer` command for any details, if available
- \_\_\_ b. The logger records that match your transfer ID, expected to be the last entries.
- \_\_\_ c. The troubleshooting notes that follow.



## Troubleshooting

The `fteCreateTransfer` command as provided in the `Lab5_copyAndPaste.txt` file worked correctly during the test of this exercise. However, whether you copied or typed the command, carefully check the results of the `fteCreateTransfer` output for these possible errors.

**Incorrectly typed agent name, or forgot to define the agent queues.**

In this error, the originating agent name was typed incorrectly as `RDSTMF11`. When the transfer process tried to file the x agent command queue, it was not present. This error can also surface when you overlook the new agent IBM MQ definitions.

**Solution:** Correct the agent name, or in the case that you overlooked the definitions, use the `.mqsc` file that is provided in the agent directory to create the required definitions.

```
fteCreateTransfer -sa RDSTMFT1 -sm MFTS -da MFTSAGT1 -dm MFTS -p MFTS -de overwrite  
-mquserid fteadmin -mqpassword weblsphere -df C:\LabFiles\to\RDST_to_mfts.txt  
C:\LabFiles\from\xferAndRenameMe.txt
```

5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCL0003E: **A messaging problem** prevented the command from completing successfully, for queue **SYSTEM.FTE.COMMAND.RDSTMFT1** on queue manager MFTS. The IBM MQ completion code was 2, and the reason code was **2085**.

## 5.3. Work with basic object authorizations

In this part of the lab exercise, you use control commands `dspmqaaut` and `setmqaut` to review and set basic object authorizations. You also use MQSC commands `DISPLAY AUTHREC` and `SET AUTHREC` to accomplish the same objectives as with the control commands.

### **Section 1: Display the authorizations of the `fteadmin` user for `USR1` queue `SYSTEM.FTE.COMMAND.USR1AGT1`**

- \_\_\_ 238. Close any open command prompt windows.
- \_\_\_ 239. Open a new command prompt window.
- \_\_\_ 240. Use the `dspmqaaut` control command to display the authorizations of the `fteadmin` user for queue `SYSTEM.FTE.COMMAND.USR1AGTS`. Type the command as shown in the text box. Do not copy the command from the user guide as it might contain extraneous characters.

---

```
dspmqaaut -m USR1 -n SYSTEM.FTE.COMMAND.USR1AGTS -t q -p fteadmin
```

Expected results:

Entity `fteadmin` has the following authorizations for object `SYSTEM.FTE.COMMAND.USR1AGTS`:

```
get
browse
put
inq
set
crt
dlt
chg
dsp
passid
passall
setid
setall
clr
```

---

### **Section 2: Display the authorizations of the `fileusr1` user for `USR1` queue manager queue `MFTS`**

- \_\_\_ 241. Open a `runmqsc` session for queue manager `USR1` by typing `runmqsc USR1` and pressing the Enter key.
- \_\_\_ 242. Use the `DISPLAY AUTHREC` MQSC command to display the authorizations of the `fileusr1` user for transmission queue `MFTS`. Type the command as shown in the text box. Do not copy the command from the user guide as it might contain extraneous characters. You must spell out `queue` for the `objtype` parameter. **Leave the `runmqsc` session open.**

---

```
dis authrec profile(MFTS) objtype(queue) principal(fileusr1)
```

Expected results:

```
1 : dis authrec profile(MFTS) objtype(queue) principal(fileusr1)
AMQ8459: Not found.
```

---



### Note

When you use the `DIS AUTHREC` command, a “not found” indicates that a profile for user `fileusr1` was not found. The “not found” message is not referring to the existence of queue `MFTS`.

After you grant `put` authorization to queue `MFTS` for user `fileusr1`, the profile is displayed.

---

- \_\_\_ 243. Grant user `fileusr1` `put` authority to queue `MFTS` by typing the command as shown in the text box. Do not copy the command from the user guide as it might contain extraneous characters. You must spell out `queue` for the `objtype` parameter. **Leave the `runmqsc` session open.**
- 

```
set authrec profile(MFTS) objtype(queue) principal(fileusr1) authadd(put)
```

Expected results:

```
2 : set authrec profile(MFTS) objtype(queue) principal(fileusr1) authadd(put)
AMQ8862: IBM MQ authority record set.
```

---

- \_\_\_ 244. Repeat the `DIS AUTHREC MQSC` command by typing the command as shown in the text box. Do not copy the command from the user guide as it might contain extraneous characters. You must spell out `queue` for the `objtype` parameter. **Leave the `runmqsc` session open.**
- 

```
dis authrec profile(MFTS) objtype(queue) principal(fileusr1)
```

Expected response:

```
3 : dis authrec profile(MFTS) objtype(queue) principal(fileusr1)
AMQ8864: Display authority record details.
    PROFILE(MFTS)                                ENTITY(fileusr1@WS2008R2X64)
    ENTTYPE(PRINCIPAL)                            OBJTYPE(Queue)
    AUTHLIST(put)
```

---

- \_\_ 245. While you are in the `runmqsc` session, refresh the object authority cache by typing the command as shown in the text box. Do not copy the command from the user guide as it might contain extraneous characters.

---

```
refresh security type(authserv)
```

Expected response:

```
4 : refresh security type(authserv)
AMQ8560: IBM MQ security cache refreshed.
```

---

- \_\_ 246. Exit the `runmqsc` session by typing `end` and pressing the Enter key.

### **Section 3: Display the authorization to connect to queue manager MFTS for user fileusr1**

- \_\_ 247. Use the `dspmqaut` control command to display the authorizations of the `fileusr1` user to connect to queue manager MFTS. Type the command as shown in the text box. Do not copy the command from the user guide as it might contain extraneous characters.

---

```
dspmqaut -m MFTS -t qmgr -p fileusr1
```

Expected results:

```
AMQ7077: You are not authorized to perform the requested operation.
```

---

- \_\_ 248. Use Windows Explorer to navigate to the MFTS queue manager logs at  
`C:\ProgramData\IBM\MQ\qmgsr\MFTS\errors.`
- \_\_ 249. Double-click file `AMQERR01.LOG` to open it.
- \_\_ 250. Scroll to the end of the file and then look for an entry that mentions use of the `dspmqaut` command. The expected entry is displayed in the text box.

---

```
2/7/2017 13:06:07 - Process(3936.27) User(MUSR_MQADMIN) Program(amqzlaa0.exe)
                    Host(WS2008R2X64) Installation(IBMMQV9)
                    VRMF(9.0.0.0) QMgr(MFTS)
```

```
AMQ5540: Application 'es\IBM\MQ\bin64\dspmqaut.exe' did not supply a user ID and password
```

EXPLANATION:

The queue manager is configured to require a user ID and password, but none was supplied.

ACTION:

Ensure that the application provides a valid user ID and password, or change the queue manager configuration to OPTIONAL to allow applications to connect which have not supplied a user ID and password.

---

**Note**

The actions suggested in the error message are misleading when connection authentication is required in a queue manager. **This text box is exclusively informational. Numbered steps follow.**

When connection authentication is required, object authorizations can be displayed and set by either:

- Restarting the queue manager with the `-ns` parameter
- Using the MQSC commands `DIS AUTHREC` or `SET AUTHREC`

**First, you use the queue manager, which is restarted with the `-ns` parameter. However, before that you must stop the processes that are active in the queue manager.**

- 
- \_\_\_ 251. List the agents for configuration MFTS by typing `fteListAgents -p MFTS` and pressing the Enter key.
  - \_\_\_ 252. Stop the agent that is not in STOPPED status by typing the `fteStopAgent -p MFTS (agtname)` command for the identified agent or agents and substituting the agent name for the `(agtname)` placeholder.
- 

**Do not worry about stopping the redistributable agent, `RDSTAGTS`. It is not used again in this course, and the extra instructions do not add value to the rest of the exercise.**

---

- \_\_\_ 253. Stop the logger by typing: `fteStopLogger -p MFTSLGR1`
  - \_\_\_ 254. Stop queue manager MFTS by typing `endmqm -i MFTS` and pressing the Enter key.
  - \_\_\_ 255. Restart queue manager MFTS with the `-ns` parameter by typing `strmqm -ns MFTS` and pressing the Enter key.
  - \_\_\_ 256. After you restart the queue manager, repeat the `dspmqaaut` control command to display the authorizations of the `fileusr1` user to connect to queue manager MFTS. Type the command as shown in the text box. Do not copy the command from the lab exercise guide as it might contain extraneous characters.
- 

```
dspmqaaut -m MFTS -t qmgr -p fileusr1
```

Expected response:

Entity `fileusr1` has the following authorizations for object MFTS:

```
connect
```

---

**Note**

As you might observe, it is more labor intensive to use the control commands when connection authentication is required. You might prefer to use the MQSC commands, via `runmqsc`. Use of the MQSC commands is also best when you need to refresh the object authorities cache, as `REFRESH SECURITY` is available as an MQSC command, and via IBM MQ Explorer, but not as a control command.

- 
- \_\_ 257. Stop queue manager MFTS by typing `endmqm -i MFTS` and pressing the Enter key.
  - \_\_ 258. Restart queue manager MFTS as a service by typing `strmqm -ss MFTS` and pressing the Enter key.
  - \_\_ 259. Open a `runmqsc` session by typing `runmqsc -u fteadmin MFTS` and pressing the Enter key.
  - \_\_ 260. When prompted, provide the password as `weblsphere` and press the Enter key.
- 

```
dis authrec objtype(qmgr) principal(fileusr1)
```

Expected response:

```
1 : dis authrec objtype(qmgr) principal(fileusr1)
AMQ8864: Display authority record details.
  PROFILE(SELF)                                ENTITY(fileusr1@WS2008R2X64)
  ENTTYPE(PRINCIPAL)                           OBJTYPE(QMGR)
  AUTHLIST(CONNECT)
AMQ8864: Display authority record details.
  PROFILE(@CLASS)                              ENTITY(fileusr1@WS2008R2X64)
  ENTTYPE(PRINCIPAL)                           OBJTYPE(QMGR)
  AUTHLIST(NONE)
```

---

- \_\_ 261. Stop logger MFTSLGR1 by typing `fteStopLogger -p MFTS MFTSLGR1` and pressing the Enter key.
- \_\_ 262. Stop agent USR1AGTS by typing `fteStopAgent -p MFTS USR1AGTS` and pressing the Enter key.
- \_\_ 263. Stop agent MFTSAGT1 by typing `fteStopAgent -p MFTS MFTSAGT1` and pressing the Enter key.
- \_\_ 264. Do not be concerned with the redistributable agent `RDSTAGTS`.
- \_\_ 265. Stop queue manager MFTS by typing `endmqm MFTS` and pressing the Enter key.

***You completed Exercise 5.***

## End of exercise



## Exercise review and wrap-up

In this lab exercise you:

- Reviewed the queue manager default connection authentication and channel authentication settings
- Identified and resolved a connection challenge caused by the default queue manager connection authentication settings
- Identified and resolved a channel blocked by the queue manager default channel authentication rule for administrative users by creating a BLOCKUSER type rule for the channel
- Increased connection authentication security settings for the queue manager to require credentials for local and client connections
- Increased channel authentication security settings for a queue manager by implementing the back-stop rule
- Used IBM Managed File Transfer commands by including the `mquser` and `mqpassword` parameters after IBM MQ connection authentication is required by the queue manager
- Configured the environment to use an `MQMFTCredentials.xml` file to provide credentials when connection authentication is required by the queue manager
- Updated the coordination, commands, agent, and logger properties file to locate the `MQMFTCredentials.xml` file
- Set the path to the `MQMFTCredentials.xml` file by using the `-credentialsFile` parameter
- Created type ADDRESSMAP channel authentication rules to allow expected channels to connect
- Displayed existing object authorizations by using the `dspmqaut` control command
- Granted object authorizations by using the `setmqaut` control command
- Displayed existing object authorizations by using the `DISPLAY AUTHREC MQSC` command.
- Granted object authorizations by using the `SET AUTHREC MQSC` command
- Gained exposure to the type of expected responses to the control and MQSC authorities commands

---

# Exercise 6. Working with administrative tasks

## Estimated time

00:45

## Overview

This exercise includes work with relative file paths, selected administrative commands, and creation of a trace at the command level.

## 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

## Requirements

Queue managers MFTU and USR1

IBM MQ Managed File Transfer configuration MFTU

## Exercise instructions

- \_\_\_ 1. Close any open command prompt windows.
- \_\_\_ 2. Open a new command prompt window.
- \_\_\_ 3. Check the active queue managers by typing `dspsmq` and pressing the Enter key.
- \_\_\_ 4. If queue manager MFTS is in running status, return to Exercise 5 and follow the instructions at the end of the lab exercise to stop the agents and logger, and then stop queue manager MFTS.
- \_\_\_ 5. If queue manager MFTU is stopped, start it as a service by typing `strmqm -ss MFTU` and pressing the Enter key.



### Reminder

In a previous exercise, you stopped channel USR1.MFTU. This channel is now in STOPPED status and must be manually restarted before it can resume automatic start by triggering. You now manually start the channel again.

- \_\_\_ 6. Open a runmqsc session for queue manager MFTU by typing `runmqsc MFTU` and pressing the Enter key.
- \_\_\_ 7. Start channel USR1.MFTU by typing `start chl(USR1.MFTU)` and pressing the Enter key.
- \_\_\_ 8. Ensure that the channel started by typing `dis chs(*)` and pressing the Enter key. Your results must resemble the text box with **STATUS(RUNNING)**. Ensure that you are looking at channel USR1.MFTU. You can disregard results for channels other than USR1.MFTU.

```
4 : dis chs(*)
AMQ8417: Display Channel Status details.
CHANNEL(USR1.MFTS)           CHLTYPE(SDR)
CONNNAME(localhost(1657))    CURRENT
RQMNAME(MFTS)                STATUS(STOPPED)
SUBSTATE(RESYNCH)            XMITQ(MFTS)
AMQ8417: Display Channel Status details.
CHANNEL(USR1.MFTU)           CHLTYPE(SDR)
CONNNAME(127.0.0.1(1656))    CURRENT
RQMNAME(MFTU)                STATUS(RUNNING)
SUBSTATE(MQGET)              XMITQ(MFTU)
end
```

- \_\_\_ 9. Type `end` and press the Enter key to exit runmqsc.
- \_\_\_ 10. If the status is any other than **STATUS(RUNNING)**, look at the queue manager logs for USR1 and MFTU and resolve the problem before you continue. The rest of the steps do not work unless the channel is running.
- \_\_\_ 11. Start agent MFTUAGT1 by typing `fteStartAgent MFTUAGT1` and pressing the Enter key.

- \_\_\_ 12. Start agent USR1AGT1 by typing **fteStartAgent USR1AGT1** and pressing the Enter key.
- \_\_\_ 13. Start the MFTU configuration logger by typing **fteStartLogger MFTULGR1** and pressing the Enter key.
- \_\_\_ 14. List the agents by typing **fteListAgents** and pressing the Enter key.
- \_\_\_ 15. If agent MFTUAGT1 or agent USR1AGT1 is in UNKNOWN status, before you continue with the exercise, do the following steps:
  - \_\_\_ a. Refer to section ***How to investigate and resolve an agent in UNKNOWN status*** at the end of this lab exercise.
  - \_\_\_ b. Resolve the UNKNOWN status before you continue.

## 6.1. Use other IBM MQ Managed File Transfer commands

### ***Section 1: Create the definitions that are required for an agent by using the `fteDefine` command***

For this scenario, assume that an agent in a remote server is using your local base configuration and queue manager as the agent queue manager. The administrator at the remote server created the configuration structure and the agent, and has the agent `.mqsc` files at the remote server. You need to create these definitions in your queue manager. Rather than waiting to receive the definitions, if you know the name of the agent, you can create the definitions to create or delete the required objects. Assume that the agent name is `PARTAGT1`.

- \_\_ 16. Create the definitions by using `fteDefine` command as shown in the text box.
  - \_\_ a. The `-t agent`, or type agent parameter is required.
  - \_\_ b. To capture the definitions, you must provide the `-d` parameter with the directory name.

---

```
fteDefine -t agent -d C:\LabFiles\Unit6 PARTAGT1
```

Expected response:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGCM0239I: A file has been created containing the MQSC definitions to define
the agent PARTAGT1. The file can be found here:
'C:\LabFiles\Unit6\PARTAGT1_create.mqsc'.
```

---

- \_\_ 17. Proceed to directory `C:\LabFiles\Unit6` and use your favorite editor to open file `PARTAGT1_create.mqsc`.
- \_\_ 18. Review the contents. You see that the definitions are the same as created by the `fteCreateAgent` command.

### ***Section 2: Use `fteShowAgentDetails` to display information about an agent***

- \_\_ 19. Show details about an agent by typing the command as shown in the text box and pressing the Enter key.

---

```
fteShowAgentDetails -v MFTUAGT1
```

### Expected results

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGPR0127W: No credentials file has been specified to connect to IBM MQ. Therefore, the assumption is that IBM MQ authentication has been disabled.

#### Agent Information:

```

Name:                MFTUAGT1
Type:                Standard
Description:
Operating System:    Windows Server 2008 R2
Host Name:           WS2008R2X64
Time Zone:           Pacific Standard Time
Product Version:     9.0.0.0
Build Level:         p900-L160512.4
Trace Level:         No trace specified
Trace FFDC:          No FFDC specified

```

#### Agent Controller Information:

```

Controller Type:      MQMFT Process Controller
Status:              STARTED
Status Details:       The agent process controller has started
                      the agent process.

Agent Restarts within Interval: 0
Total Agent Restart Count:      0

```

#### Agent Availability Information:

```

Status:              READY
Status Details:       The agent is running and is publishing
                      its status at regular intervals. The last
                      update was received within the expected
                      time period. The agent is ready to
                      process transfers, but none are currently
                      in progress.

```

#### Queue Manager Information:

```

Name:                MFTU
Transport:           Bindings
Last Status Reported: AVAILABLE
Status Details:       The queue manager is available.

```

Maximum Number of Running Source Transfers: 25

Maximum Number of Queued Source Transfers: 1000

#### Source Transfer States:

**No current transfers**

Maximum Number of Running Destination Transfers: 25

#### Destination Transfer States:

**No current transfers**

---

- \_\_\_ 20. Review the results in the display.
- \_\_\_ a. Note the information about the agent, which is expected to be similar to the information in the `output0.log` file.
  - \_\_\_ b. In addition, you see information about the agent state.
  - \_\_\_ c. You also see, if present, a list of current transfers and their state. Two headings are available for the current transfer information. One heading applies to when the agent acts as the source of the transfer. The other heading applies when the agent acts as the destination of the transfer.

### **Section 3: Obfuscate passwords by using the `fteObfuscate` command**

- \_\_\_ 21. From the command prompt window, ensure that you are in directory `C:\LabFiles\Unit5`.
- \_\_\_ 22. Open the credentials file with Notepad by typing `notepad MQMFTCredentials.xml` and pressing the Enter key.
- \_\_\_ 23. Scroll to the end of the file and locate the clear-case password. Your review is expected to resemble the display in the text box.

---

```
<tns:qmgr name="MFTS" mqUserId="fteadmin" mqPassword="webSphere"
```

---

- \_\_\_ 24. Close the `MQMFTCredentials.xml` file.
- \_\_\_ 25. Type the obfuscate command for the credentials file as shown in the text box and press the Enter key.

---

```
fteObfuscate -credentialsFile MQMFTCredentials.xml
```

---

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

**BFGCL0500I: The file 'MQMFTCredentials.xml' has been obfuscated successfully.**

---

- \_\_\_ 26. Double-click the `MQMFTCredentials.xml` file and wait for it to open with Internet Explorer.
- \_\_\_ 27. Scroll to the end and check whether the password is obfuscated. Your results are expected to resemble, but not be identical, to the text box.

---

```
<tns:mqmftCredentials xsi:schemaLocation="http://wmqfte.ibm.com/MQMFTCredentials
MQMFTCredentials.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:tns="http://wmqfte.ibm.com/MQMFTCredentials">
<tns:qmgr name="MFTS" mqUserIdCipher="e16c416c9dfb8abd6a6260d7e44dbf24"
mqPasswordCipher="5203a2451c56b983a9202eec011ba2f4"/>
</tns:mqmftCredentials>
```

---

## Section 4: Display component versions by using the `fteDisplayVersion -v` command

---



### Note

The `fteDisplayVersion` command without parameters shows version information about IBM MQ Managed File Transfer exclusively. However, if you include the verbose, or `-v` parameter, you obtain information about all the components. This information is similar to the contents of the agent `output0.log` file.

---

- \_\_\_ 28. Display verbose information by typing **`fteDisplayVersion -v`** in the command prompt window and pressing the Enter key. Results are expected to resemble the display in the text box. Other installations might not include the `IBM MQLight` component information.



---

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

IBM MQ Components:

Name: IBM MQ Managed File Transfer  
 Version: 9.0.0.0  
 Level: p900-L160512.4  
 Platform: Windows Server 2008 R2 (6.1)  
 Architecture: amd64  
 JVM: JRE 1.8.0 Windows Server 2008 R2 amd64-64 Compressed References 2  
 0160427\_301573 (JIT enabled, AOT enabled)  
     J9VM - R28\_Java8\_SR3\_20160427\_1620\_B301573  
     JIT - tr.r14.java.green\_20160329\_114288  
     GC - R28\_Java8\_SR3\_20160427\_1620\_B301573\_CMPRSS  
     J9CL - 20160427\_301573  
 Product: C:\Program Files\IBM\MQ  
 Configuration: C:\ProgramData\IBM\MQ\mqft

Name: IBM MQ JMS Provider  
 Version: 9.0.0.0  
 Level: p900-L160512.4

Name: IBM MQLight Service for Bluemix JMS Provider  
 Version:  
 Level: p900-L160512.4

Name: Common Services for Java Platform, Standard Edition  
 Version: 9.0.0.0  
 Level: p900-L160512.4

Name: Java Message Service Client  
 Version: 9.0.0.0  
 Level: p900-L160512.4

Name: IBM MQ classes for Java Message Service  
 Version: 9.0.0.0  
 Level: p900-L160512.4

Name: IBM MQ classes for Java  
 Version: 9.0.0.0  
 Level: p900-L160512.4

---

## ***Section 5: Cancel a transfer by using the `fteCancelTransfer` command***

- \_\_\_ 29. Create an invalid transfer by using a bogus destination agent with the `fteCreateTransfer` command by typing the command as shown in the text box.

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1UNKN -dm USR1 -dd
C:\LabFiles\to\lost.txt C:\LabFiles\from\xferAndRenameMe.txt
```

**Expected response:**

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
0202020206a1da35823f48103
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_\_ 30. Open a Notepad file to capture the transfer ID by typing **Notepad** and pressing the Enter key.
  - \_\_\_ 31. Leave the file open and return to the command prompt.
  - \_\_\_ 32. Copy the transfer request ID by right-clicking the command prompt upper frame, select **Edit > Mark**, and then mark the entire two lines where the request ID appears. For example:
- 

```
BFGCL0035I: Transfer request issued. The request ID is:
414d51204d4654552020202020202020206a1da35823f48103
```

---

- \_\_\_ 33. Right-click the command prompt upper frame again and select **Edit > Copy**.
  - \_\_\_ 34. Paste the two lines in the open Notepad.
  - \_\_\_ 35. Remove all text except for the request ID, and ensure that it shows as a contiguous line, with no spaces or line feeds in between, as shown:
- 

```
414d51204d4654552020202020202020206a1da35823f48103
```

---

- \_\_\_ 36. Type the `fteCancelTransfer -a MFTUAGT1` part of the command, **but do not press the Enter key**.
- \_\_\_ 37. Copy the transfer request ID from Notepad, and paste it. Ensure that you leave a space between the end of the agent name and the start of the pasted transfer ID, and then press the Enter key. The result is expected to resemble the text box.

---

```
fteCancelTransfer -a MFTUAGT1 414d51204d465455202020202020206a1da35823f48103
```

#### Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0137I: The request to cancel transfer '414D51204D465455202020202020206A1D
A35823F48103' issued to agent 'MFTUAGT1'.
BFGCL0196I: The transfer was successfully cancelled.
```

---

\_\_ 38. Close the Notepad file by discarding the contents. You do not need to save the file.

## Section 6: Use the *fteCleanAgent* command

---



### Note

In this section, an unlikely situation is created for purposes of running the `fteCleanAgent` command. The exclusive purpose is to run the `fteCleanAgent` so you see its results. It does not imply that you should follow this process.

In the next transfer, you use invalid agent name `USR1UNKN`. **This error is intended.**

---

\_\_ 39. Re-create the invalid transfer by typing the command as shown and pressing the Enter key.

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1UNKN -dm USR1 -dd
C:\LabFiles\to\lost.txt C:\LabFiles\from\xferAndRenameMe.txt
```

---

\_\_ 40. Display the agents by typing `fteListAgents` and pressing the Enter key. Look at the status of agent `MFTUAGT1`. It is active, as the agent is trying to process the transfer.

---

MFTUAGT1	MFTU	ACTIVE
----------	------	--------

---

\_\_ 41. Open IBM MQ Explorer by double-clicking the icon in the taskbar.

\_\_ 42. Expand the Managed File Transfer menu.

\_\_ 43. Right-click the MFTU configuration, and select **Connect**.

\_\_ 44. Select the Transfer log. You see the invalid transfer in with a “Starting” status.

\_\_ 45. **Leave IBM MQ Explorer open.**

\_\_ 46. From the command prompt, start a valid transfer by typing the command as shown in the text box and pressing the Enter key. Optionally, you can copy and paste the command from file `Lab6_copyAndPaste.txt` in the `C:\LabFiles\Unit6` directory.

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -dd  
C:\LabFiles\to\lost.txt C:\LabFiles\from\xferAndRenameMe.txt
```

---

- \_\_\_ 47. Return to the IBM MQ Explorer transfer log and review the results. You notice that now both transfers are running.
  - \_\_\_ 48. From the command prompt, stop agent MFTUAGT1. Ensure that you use the `-i` or immediate option by typing the command as shown in the text box and pressing the Enter key.
- 

```
fteStopAgent -i MFTUAGT1
```

**Expected results:**

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.  
Therefore, the assumption is that IBM MQ authentication has been disabled.  
BFGCL0467I: Issuing immediate stop request to agent 'MFTUAGT1'. The command  
will wait for the agent to stop.  
BFGCL0465I: Agent 'MFTUAGT1' has been stopped.
```

---

- \_\_\_ 49. If the transfers remain active in the IBM MQ Explorer transfer log, do not be concerned.
- \_\_\_ 50. Type the `fteCleanAgent` by typing the command as shown in the text box and pressing the Enter key.

**fteCleanAgent MFTUAGT1**

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED  
 BFGPR0127W: No credentials file has been specified to connect to IBM MQ.  
 Therefore, the assumption is that IBM MQ authentication has been disabled.

All messages will be deleted from all queues

State Queue Entries:

Transfer Identifier: 414d51204d46545520202020202020206a1da35823f48  
 f03

Source Agent Name: MFTUAGT1

Destination Agent Name: USR1UNKN

Transfer Identifier: 414d51204d46545520202020202020206a1da35823f49  
 203

Source Agent Name: MFTUAGT1

Destination Agent Name: USR1AGT1

Command Queue New Transfer Entries:

Scheduler Queue Schedule Entries:

BFGCL0149I: The agent 'MFTUAGT1' has been cleaned.

- 
- \_\_\_ 51. Review the results. The `fteCleanAgent` command removes messages from all agent queues. You can see the two transfers removed. The list includes other queues that the command searches through, such as the scheduled entries.
  - \_\_\_ 52. Restart the agent by typing `fteStartAgent MFTUAGT1` and pressing the Enter key.
  - \_\_\_ 53. List the agents by typing `fteListAgents` and pressing the Enter key. The agent is expected to be back to READY status.
  - \_\_\_ 54. Return to the Transfer Log panel of IBM MQ Explorer.
  - \_\_\_ 55. Right-click each of the two transfers that show up as “Starting” and select **Delete** for each.
  - \_\_\_ 56. If any of the agents you need to work with is in `UNKNOWN` status, refer to section **How to identify and resolve an agent in UNKNOWN status** at the end of this lab exercise.

## 6.2. Work with a relative path

### Section 1: Create a transfer that uses the default relative path for the destination

- \_\_\_ 57. Create the transfer by using the `fteCreateTransfer` command as shown on the text box and pressing the Enter key. **The destination does not specify a directory name.**

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df
relativePath.txt C:\LabFiles\from\xferAndRenameMe.txt
```



Expected results:

```
655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is:
414d51204d465455202020202020206a1da35823f5b503
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_\_ 58. If your results do not resemble the display, review the error message and check the logger if necessary. Resolve any problems before you continue.
- \_\_\_ 59. Determine the directory that the file was “transferred” to by returning to IBM MQ Explorer and selecting the Transfer Log view. Your results are expected to resemble the display.
- Optionally, you can check the file logger records for the results.

---

	MFTUAGT1	USR1AGT1
	C:\LabFiles\from\xferAndRenameMe.txt	C:\Users\fteadmin\relativePath.txt

---



#### Note

The relative path for the operating system in this course is the users directory, in this case `C:\Users\fteadmin`. In the next step, you change the relative path.

---

### Section 2: Change the relative path for agent USR1AGT1

- \_\_\_ 60. From the command prompt, proceed to the `USR1AGT1` directory, in the MFTU configuration by typing `cd C:\ProgramData\IBM\MQ\mqft\config\MFTU\agents\USR1AGT1` and pressing the Enter key.
- \_\_\_ 61. Open the `agent.properties` file with Notepad by typing `notepad agent.properties` and pressing the Enter key.
- \_\_\_ 62. Add the `transferRoot` variable at the end of the `agent.properties` file exactly as shown in bold in the text box.

```
#
#Wed Feb 15 07:48:43 PST 2017
agentQMgr=USR1
agentDesc=
agentName=USR1AGT1
transferRoot=C:\\LabFiles\\Unit6
```

\_\_ 63. Save the changes and close the `agent.properties` file.



### Note

The agent is restarted in the steps that follow so that the relative path change is picked up.

- \_\_ 64. Stop agent USR1AGT1 by typing **fteStopAgent USR1AGT1** and pressing the Enter key.
- \_\_ 65. Start agent USR1AGT1 by typing **fteStartAgent USR1AGT1** and pressing the Enter key.
- \_\_ 66. Repeat the transfer by typing the command as shown in the text box and pressing the Enter key.

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df  
relativePath.txt C:\\LabFiles\\from\\xferAndRenameMe.txt
```

Expected results:

```
655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ. Therefore,
the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is:
414d51204d465455202020202020206a1da35823f5f403
BFGCL0182I: The request is now waiting to be processed by the agent.
```

- \_\_ 67. Use either the TransferLog view of IBM MQ Explorer or the logger records to determine the directory where the file was placed at its destination. The results are expected to show that the file was placed in the `C:\\LabFiles\\Unit6` directory, as shown in the IBM MQ Explorer view.

	<b>MFTUAGT1</b> <b>C:\\LabFiles\\from\\xferAndRenameMe.txt</b>	<b>USR1AGT1</b> <b>C:\\LabFiles\\Unit6\\relativePath.txt</b>
--	---	---

- \_\_ 68. Repeat the transfer, but this time, specify a full path to both the source and destination files as shown in the text box.

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USR1AGT1 -dm USR1 -de overwrite -df  
C:\LabFiles\to\relativePath.txt C:\LabFiles\from\xferAndRenameMe.txt
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGPR0127W: No credentials file has been specified to connect to IBM MQ.

Therefore, the assumption is that IBM MQ authentication has been disabled.

BFGCL0035I: Transfer request issued. The request ID is: 414d51204d465455202020202020206a1da35823f5fb03

BFGCL0182I: The request is now waiting to be processed by the agent.type the command as shown in the text box and press the Enter key.

---

\_\_ 69. Review the results and comments.

- \_\_ a. The first transfer in this series showed the default relative path, C:\Users\fteadmin.
- \_\_ b. You then changed the relative path in the destination agent to C:\LabFiles\Unit6, and the second transfer placed the file to that path after agent USR1AGT1 was updated and restarted.
- \_\_ c. The last transfer is similar to other transfers in this course in that it used the full path for both the source and destination files. The full path specifications took precedence over the relative path.



## 6.3. Change the default configuration

### Section 1: Change the default configuration by using the `fteChangeConfigurationOptions` command

- \_\_\_ 70. From your command prompt, list the agents in the default configuration by using the `fteListAgents` as shown in the text box and press the Enter key.

---

```
fteListAgents
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
```

Agent Name:	Queue Manager Name:	Status:
MFTUAGT1	MFTU	READY
PBRGAGT1 ( bridge )	MFTU	STOPPED
RDSTAGT1	MFTU	STOPPED
USR1AGT1	USR1	READY

---

- \_\_\_ 71. The results are familiar. You see the agents for the MFTU configuration and their status.
- \_\_\_ 72. Go to the installations directory by typing `cd C:\ProgramData\IBM\MQ\mqft\installations\IBMMQV9` and pressing the Enter key.
- \_\_\_ 73. Type `notepad installation.properties` and press Enter to look at the file. You saw this file in Exercise 2. The contents are expected to resemble the text box.

---

```
#
#Sun Jan 01 12:21:43 PST 2017
defaultProperties=MFTU
```

---

- \_\_\_ 74. Close the file.
- \_\_\_ 75. Stay in the same directory.
- 



#### Note

When you work with the MFTU configuration, it is not necessary to qualify the configuration name with the `-p`, or configuration parameter, because it is the default configuration. When you worked with the MFTS configuration, all commands for that configuration, except for the `fteSetupConfiguration` command to create the MFTS configuration, required use of the `-p MFTS`, because you worked with the non-default configuration.

You now use the `fteChangeDefaultConfigurationOptions` command to change the default configuration to MFTS.

---

- \_\_ 76. Change the default configuration to MFTS by typing the command as shown in the text box and pressing the Enter key.

---

```
fteChangeDefaultConfigurationOptions MFTS
```

Expected results:

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCL0074I: **The specified configuration options 'MFTS' are now the default.**

---

- \_\_ 77. Open the `installation.properties` file by typing **Notepad** `installation.properties` and pressing the Enter key.
- \_\_ 78. Check the contents of the `installation.properties` file. Your results are expected to resemble the text box, with MFTS now the default.

---

```
#
```

```
#Fri Feb 17 09:12:35 PST 2017
```

```
defaultProperties=MFTS
```

---

- \_\_ 79. Try listing the agents again by typing `fteListAgents` and pressing the Enter key. You might see different results, which depend on whether the MFTS queue manager is running.
- \_\_ a. If the MFTS queue manager is running, your results resemble the first results text box. You see the agents that belong to the MFTS configuration listed.

---

```
fteListAgents
```

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

Agent Name:	Queue Manager Name:	Status:
-------------	---------------------	---------

MFTSAGT1	MFTS	STOPPED
----------	------	---------

RDSTAGTS	MFTS	STOPPED
----------	------	---------

USRIAGTS	USR1	STOPPED
----------	------	---------

---

- \_\_ b. If the MFTS queue manager is **ended**, your results resemble the second results text box. The connection to the MFTS queue manager is not possible, and a “messaging problem” is reported.

---

```
fteListAgents
```

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGCL0033E: A messaging problem prevented the command from completing successfully. The IBM MQ completion code was 2, and the reason code was 2059. A connection could not be established to queue manager MFTS.

---

- \_\_ 80. Repeat the `fteListAgents` command with the `-p` configuration option as shown in the text box. The results now resemble the use of the `fteListAgents` command without the `-p`, before the default configuration was changed to MFTS.

---

```
fteListAgents -p MFTU
```

#### Expected results.

5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED

BFGPR0127W: No credentials file has been specified to connect to IBM MQ.

Therefore, the assumption is that IBM MQ authentication has been disabled.

Agent Name:	Queue Manager Name:	Status:
MFTUAGT1	MFTU	READY
PBRGAGT1 ( bridge )	MFTU	STOPPED
RDSTAGT1	MFTU	STOPPED
USRLAGT1	USRL	READY

---

- \_\_ 81. Close any open command prompt windows.

## 6.4. Set a trace at the command level

### Section 1: Request a trace in the `fteCreateTransfer` command

- \_\_ 82. Open a new command prompt window.
- \_\_ 83. Navigate to the Unit6 directory by typing `cd C:\LabFiles\Unit6` and pressing the Enter key.
- \_\_ 84. Type the `fteCreateTransfer` command with the trace specification by typing the command as shown in the text box and pressing the Enter key. **Remain in the same directory.**

---

```
fteCreateTransfer -sa MFTUAGT1 -sm MFTU -da USRLAGT1 -dm USRL -de overwrite -p MFTU
-df C:\LabFiles\to\relativePath.txt C:\LabFiles\from\xferAndRenameMe.txt -trace
com.ibm.wmqfte=all
```

Expected results:

```
5655-MFT, 5724-H72 Copyright IBM Corp. 2008, 2016. ALL RIGHTS RESERVED
BFGUT0001I: The trace specification has changed to "com.ibm.wmqfte=all".
BFGPR0127W: No credentials file has been specified to connect to IBM MQ.
Therefore, the assumption is that IBM MQ authentication has been disabled.
BFGCL0035I: Transfer request issued. The request ID is: 414d51204d4654552020202
0202020206alda35823f76303
BFGCL0182I: The request is now waiting to be processed by the agent.
```

---

- \_\_ 85. Review the results. Message BFGUT0001I confirms that the trace was set.
- \_\_ 86. The trace is expected to be created in the working directory. List the contents of the directory by typing `dir` and pressing the Enter key. **The name of your trace is expected to be different.**

---

```
C:\LabFiles\Unit6>dir
```

```
Directory of C:\LabFiles\Unit6
```

```
01/11/2017  01:36 PM                1,109 Lab6_copyAndPaste.txt
02/16/2017  02:03 PM                1,456 MFTX.mqsc
02/14/2017  10:27 AM                2,957 MQMFTCredentials.xml
02/16/2017  01:15 PM            196,562 trace5072.txt.0
02/16/2017  02:01 PM                1,533 USRL.mqsc
```

---

- \_\_ 87. Open the trace with Notepad by typing `notepad yourtracennn.txt.0` and pressing the Enter key. **Replace `yourtracennn` with the name of your generated trace as shown in the directory listing.**



### Information

Although the trace is meant for IBM support, it might be informational to browse.

If you do a search in the file for string `openTemporaryQueue`, one interesting item might be found.

You might recall in an earlier lab exercise you set up a temporary queue name in an XML element to obtain a response from your transfer. You can see how internally, IBM MQ Managed File Transfer is also using a temporary dynamic queue for its own purposes.

- 
- \_\_ 88. When you are done reviewing the trace file, close Notepad.
  - \_\_ 89. Stop any active agents by using the `fteStopAgent` command.
  - \_\_ 90. Stop the logger by using the `fteStopLogger` command.
  - \_\_ 91. Display the active queue managers by typing `dspmq` and pressing the Enter key.
  - \_\_ 92. Stop any queue managers in running status by typing `endmqm -i qmname` for each queue manager that is running and press the Enter key. **You replace the `qmname` place holder by the queue manager name.**
  - \_\_ 93. Close the command prompt window.

**You completed Exercise 6.**

## How to investigate and resolve an agent in UNKNOWN status

Whether a queue manager has hardened security or not, an UNKNOWN status tends to indicate a problem with the connectivity between the queue managers in the coordination, commands, or agent roles. Other than transfers, the different IBM MQ Managed File Transfer queue manager roles exchange other information related to the agents.

The commands that are mentioned in this section are run from a `runmqsc` session. If you need to work with two queue managers, you might need to invoke a `runmqsc` for the first queue manager, then another `runmqsc` for the second queue manager.

The first place to check is the channel status. An example is the channels between MFTU and USR1. This example is from an actual UNKNOWN occurrence. Channel USR1.MFTU in the USR queue manager was stopped in Exercise 5. When a channel is in stopped state, the triggering alone is not able to get the channel out of stopped state. The channel must be manually started in a `runmqsc` session by typing `START CHL(USR1.MFTU)`. After the channel is manually started and taken out of stopped status, the channel will resume trigger-starting.

Ensure that **both sets of channels**, `USR1.MFTU` and `MFTU.USR1`, are working correctly. That means the channels are not STOPPED or RETRYING.

For a stopped channel, issue the `START CHL(USR1.MFTU)` command on the **sender channel side** of the channel that is on queue manager USR1. If the channel is MFTU.USR1, then the sender channel side is the MFTU queue manager.

Under normal circumstances, you do not stop or start a type RCVR channel.

After you issue the `START CHANNEL` command, repeat the `DIS CHS(USR1.MFTU)` command.

If the channel is not back to running status, check the queue manager logs on both sides, that is MFTU and USR1, for the problem.

If you get an IBM MQ 2053 return, also check the transmission queue. If you restart the channel, any messages in the transmission queue are expected to travel to their destination.

## **End of exercise**

## Exercise review and wrap-up

In this lab exercise, you

- Used the `fteDefine` command to generate an agent script definition file
- Used the `fteShowAgentDetails` command to obtain different levels of information about an agent
- Learned how to obfuscate credentials information by using the `fteObfuscate` command
- Used the `fteDisplayVersion` command to obtain information about the IBM MQ Managed File Transfer environment
- Used the `fteCancelTransfer` command
- Used the `fteCleanAgent` command
- Changed the relative path of the IBM MQ Managed File Transfer environment at the configuration and individual transfer levels
- Set an all-inclusive trace for the `fteCreateTransfer` command



IBM Training

