Installing WebSphere MQ 7.5 to coexist with MQ 7.0.1 and MQ 7.1 in Windows

IBM Techdoc: 7036780

http://www.ibm.com/support/docview.wss?rs=171&uid=swg27036780

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Angel Rivera – rivera@us.ibm.com
IBM WebSphere MQ Support

+++ Objective

This techdoc shows all the steps to install WebSphere MQ 7.5 in Windows, while co-existing ("side-by-side") with MQ 7.0.1 and MQ 7.1.

This technote builds on top of the following document:
http://www.ibm.com/support/docview.wss?rs=171&uid=swg27023935
Installing WebSphere MQ 7.1 to coexist with MQ 7.0.1.7 in Windows + applying fix pack 7.1.0.1
IBM Techdoc: 7023935

MQ 7.5 includes also Advanced Messaging Security (AMS) and Managed File Transfer. This document does NOT cover their installation. The scope is only for the MQ Server, MQ Explorer, JMS, Development toolkit and GSKit.

The minimum version of MQ 7.0 that allows coexistence is 7.0.1.6. Because at the time of writing this techdoc the latest Fix Pack was 7.0.1.9, then 7.0.1.9 is used in this document.

The "primary" installation will be MQ 7.0.1.9 and this techdoc shows you how to setup the environment in order to use MQ 7.0, MQ 7.1 and MQ 7.5.

Note: The original scenario for this techdoc ran under Windows XP and the location of the MQ code was: C:\Program Files\IBM\WebSphere MQ
When using Windows 7 with a more recent hardware, the location of the MQ code is:
C:\Program Files (x86)\IBM\WebSphere MQ
Thus, depending on your system, you need to keep the actual location in mind.

The chapters are:

Chapter 1: Installing MQ 7.5 side-by-side to MQ 7.0.1.9
Chapter 2: Need to run setmqenv to use MQ 7.5 commands
Chapter 3: Creating a queue manager under 7.5
Chapter 4: Remote access to the new MQ 7.5 queue manager
Chapter 5: Using MQ Explorer 7.5
Chapter 6: Migrating an MQ 7.0 queue manager to MQ 7.5

The equivalent document for Linux is:

http://www.ibm.com/support/docview.wss?rs=171&uid=swg27036779
Installing WebSphere MQ 7.5 to coexist with MQ 7.0.1 and MQ 7.1 in Linux
IBM Techdoc: 7036779

+++ Hardware and software

Windows XP running with WebSphere MQ 7.0.1.9

Queue Managers:
QM_701 => Created with MQ 7.0.1.9. To remain at 7.0.1.9
QM_MIG => Created with MQ 7.0.1.9. To be migrated to 7.5.0.0
QM_71 => Created with MQ 7.1.0.2. To remain at 7.1.0.2
QM_75 => Created with MQ 7.5.0.0

+ UnxUtils package

The UNIX "which" command is not native to Windows, but it is used in this techdoc to show the directory where an executable file is located.

The UnxUtils.zip and UnxUpdates.zip packages contain the "which" utility.
These zip files can be downloaded from:

http://sourceforge.net/projects/unxutils/files/
Download file: UnxUtils.zip

http://unxutils.sourceforge.net/UnxUpdates.zip
Download file: UnxUpdates.zip

For details on the utilities that are provided in these packages, see:
http://unxutils.sourceforge.net/
GNU utilities for Win32

++
+++ Chapter 1: Installing MQ 7.5 side-by-side to MQ 7.0.1.9
++

++ Downloading the MQ 7.5 code

Download the code from IBM Passport Advantage. Consult the following technote for the Part Numbers that you can use to quickly identify the MQ 7.5 downloadable components for installation:

http://www.ibm.com/support/docview.wss?uid=swg24032734
Downloading WebSphere MQ Version 7.5 from the Passport Advantage Web site

For this techdoc, the following files were downloaded:

CI79CML WebSphere MQ V7.5 for Windows Multilingual
Downloaded file renamed to: MQ V7.5 for Windows CI79CML.zip

++ Current setup of MQ 7.0.1.9

MQ 7.0.1.9 already installed in the default location:
C:\Program Files\IBM\WebSphere MQ

Note: In Windows 7 using 64-bit hardware, the location is actually:
C:\Program Files (x86)\IBM\WebSphere MQ

Note: For completeness, here is the default location for the "data" for the queue managers is:
C:\Program Files\IBM\WebSphere MQ

However, in order to keep the MQ maintenance in Windows and UNIX, the "data" location in this techdoc is based on the location used in UNIX, /var/mqm:
C:\var\mqm
This is the value that was used when MQ 7.0 was installed in the test box.

++ Current setup of MQ 7.1.0.2

MQ 7.1.0.2 already installed in the default location:
C:\Program Files\IBM\WebSphere MQ_1

Note: In Windows 7 using 64-bit hardware, the location is actually:
C:\Program Files (x86)\IBM\WebSphere MQ_1

++ Installing MQ 7.5

To be installed in:
C:\Program Files\IBM\WebSphere MQ_2

Note: In Windows 7 using 64-bit hardware, the location is actually:
C:\Program Files (x86)\IBM\WebSphere MQ_2

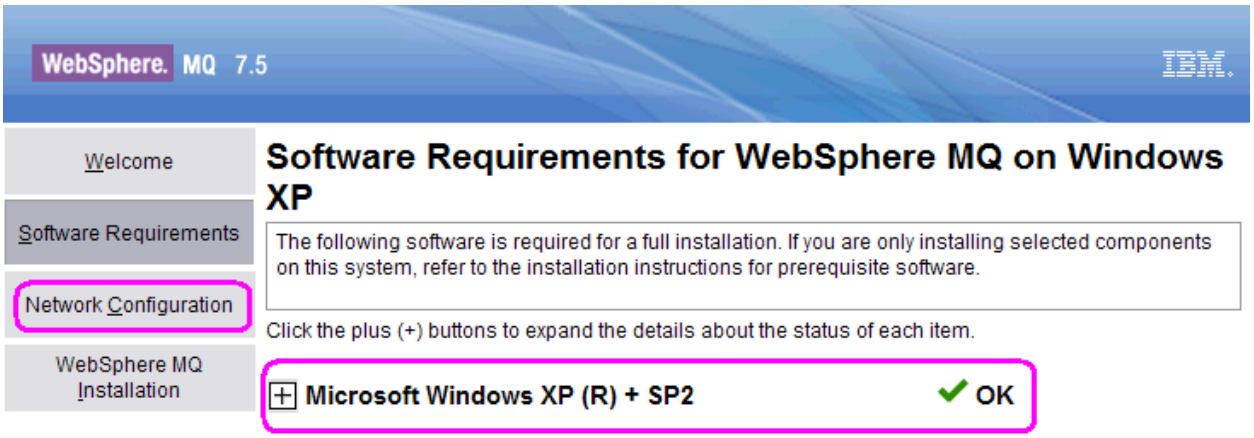
The downloaded code from Passport Advantage into a temporary directory, such as:
C:\downloads\mq\7.5

Unzip the downloaded file:
cd C:\downloads\mq\7.5
unzip " MQ V7.5 for Windows CI79CML.zip"

Start the installer:
setup.exe

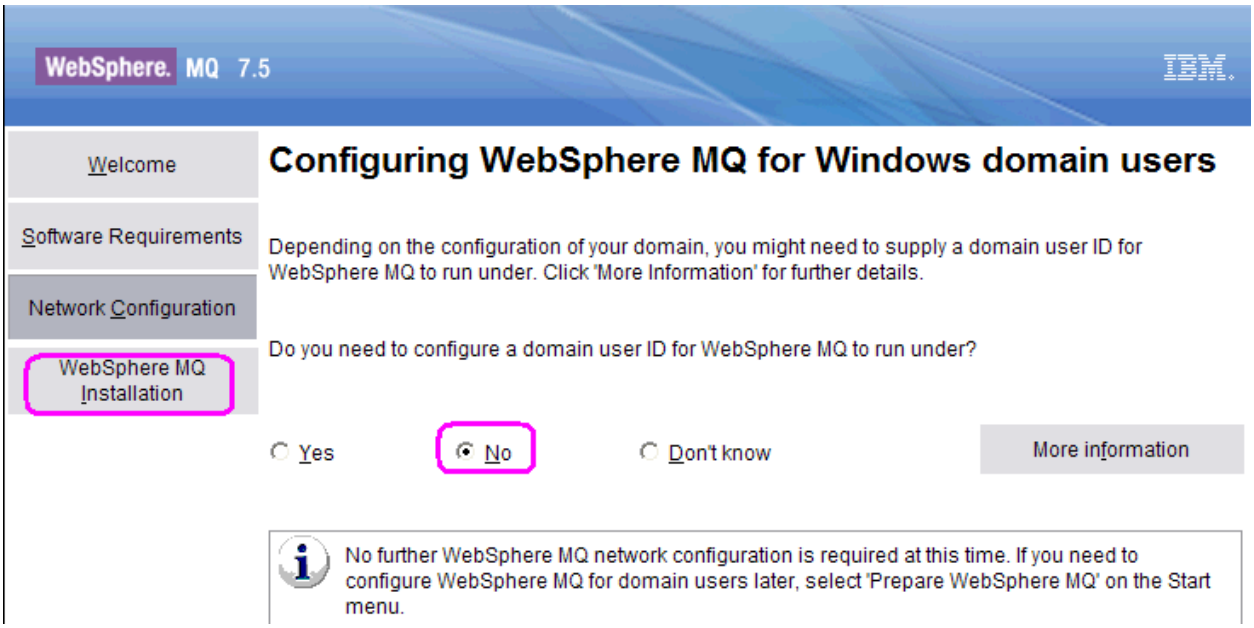
Click on "Software Requirements", in this case the requirements were met:

Click on "Software Requirements"

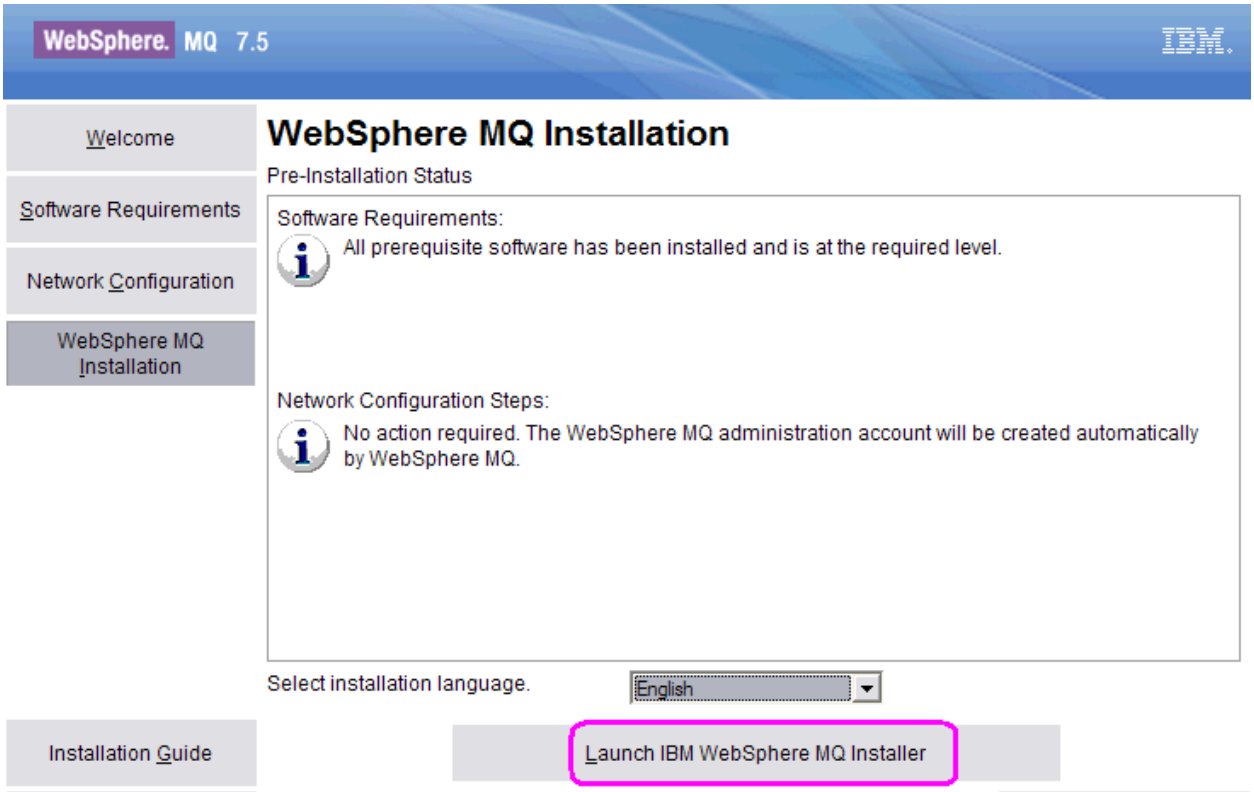


Confirm that the verification of the requirements is successful.
Then click on "Network Configuration"

In this case, the machine is not part of a Domain; thus, there is no need to indicate a domain user and the answer to the question is "No"

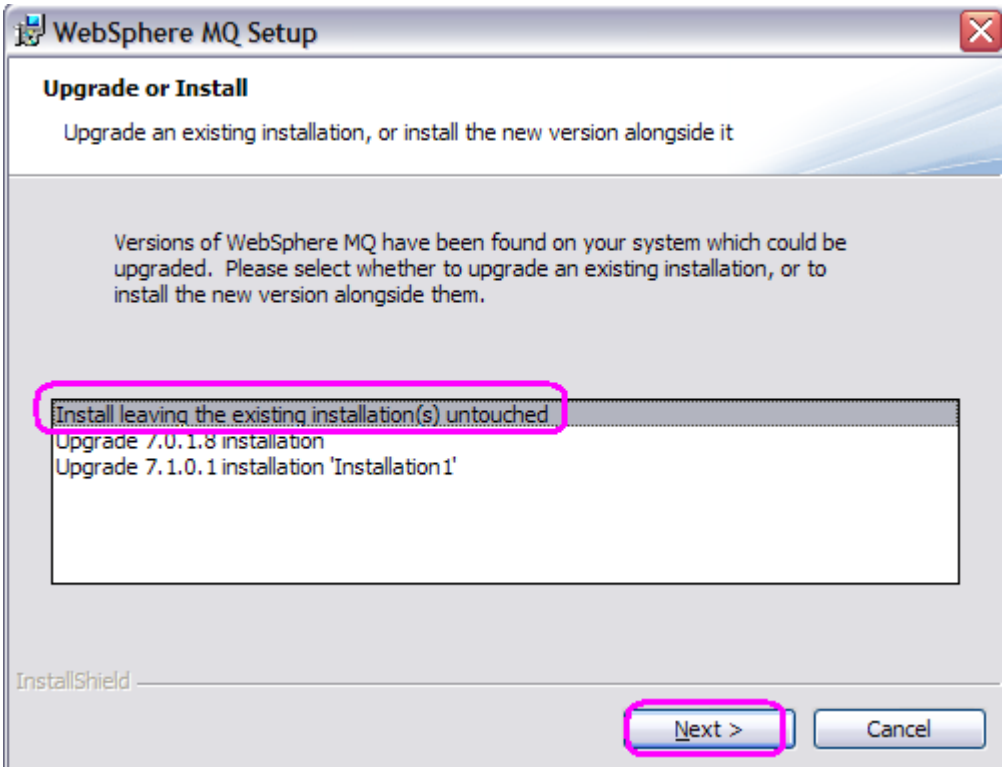


Click on "WebSphere MQ Installation"



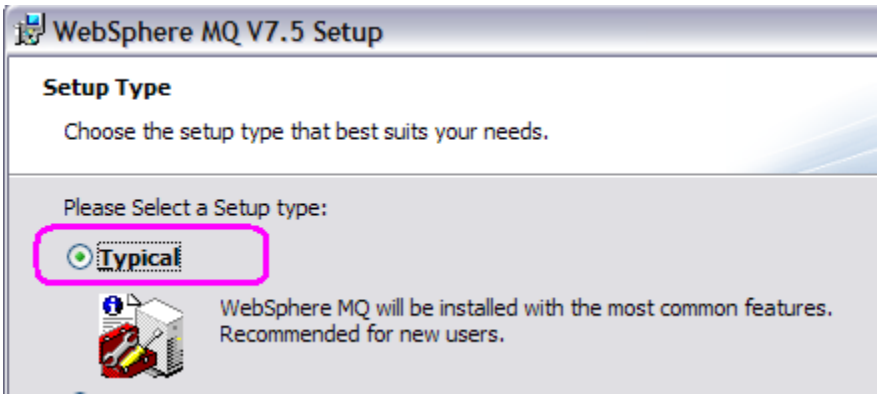
Click on "Launch IBM WebSphere MQ Installer"

The installer detects that there are other installations in the box.
For this technote, we want to leave the other installations intact. Thus, select the first entry:
Install leaving the existing installation(s) untouched



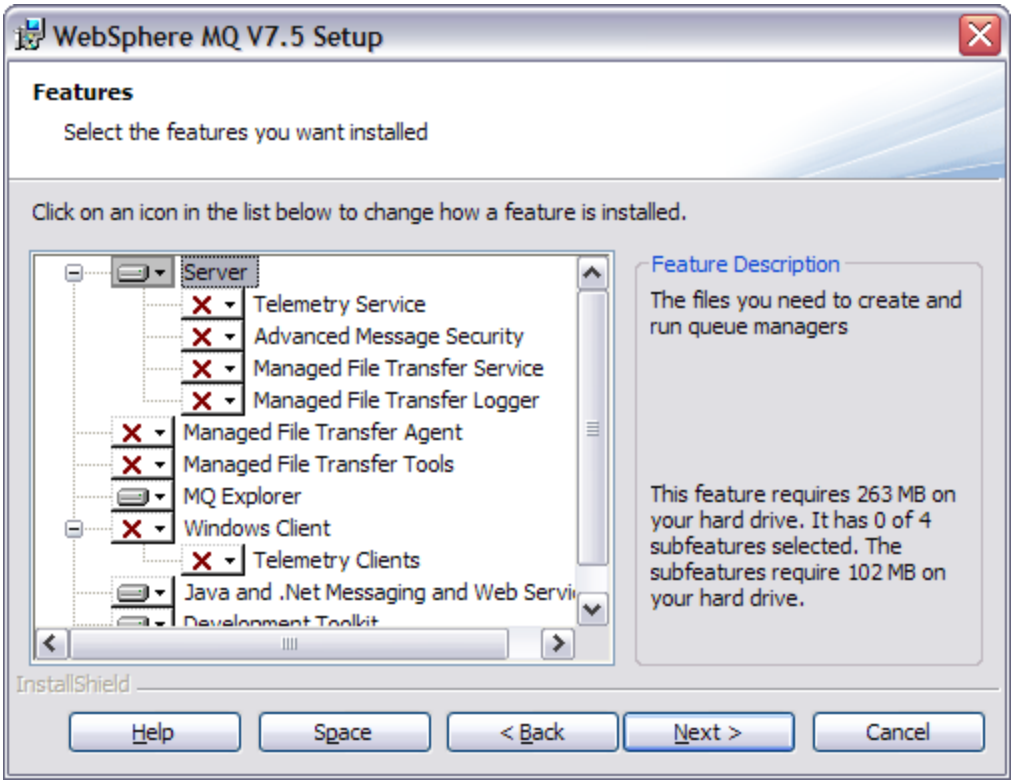
Click Next.

Note that the default "Typical" installation for coexisting



Click Next

Note: The following dialog is NOT shown under Typical. But it is shown under Custom



The features to be installed are:

- Server
- MQ Explorer
- Java and .Net Messaging and Web Services
- Development Toolkit

Just for completeness, here is the list of the features NOT to be installed at this moment:

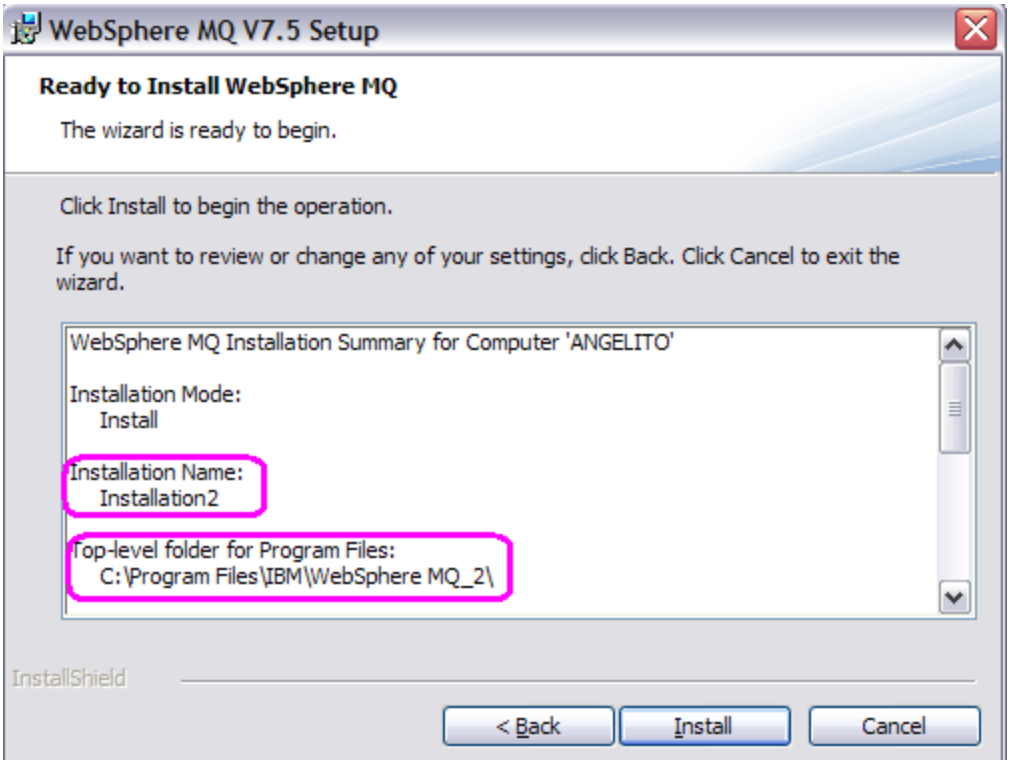
- Server:
  - Telemetry Service
  - Advanced Message Security
  - Managed File Transfer Service
  - Managed File Transfer Logger
- Managed File Transfer Agent
- Managed File Transfer Tools
- Windows Client:
  - Telemetry Clients

Notice the following values in the dialog "Ready to Install WebSphere MQ".

Notice that the same non-default location (as in MQ 7.0.x) for the queue managers is used. As mentioned earlier in this techdoc, the location for the queue managers is not the default, it is:

C:\var\mqm

This is the dialog window:



The complete contents are shown below:

+ begin
WebSphere MQ Installation Summary for Computer "X"

Installation Mode:
Install

Installation Name:
Installation2

Top-level folder for Program Files:
C:\Program Files\IBM\WebSphere MQ_2\

Top-level folder for Data Files:
C:\var\mqm\

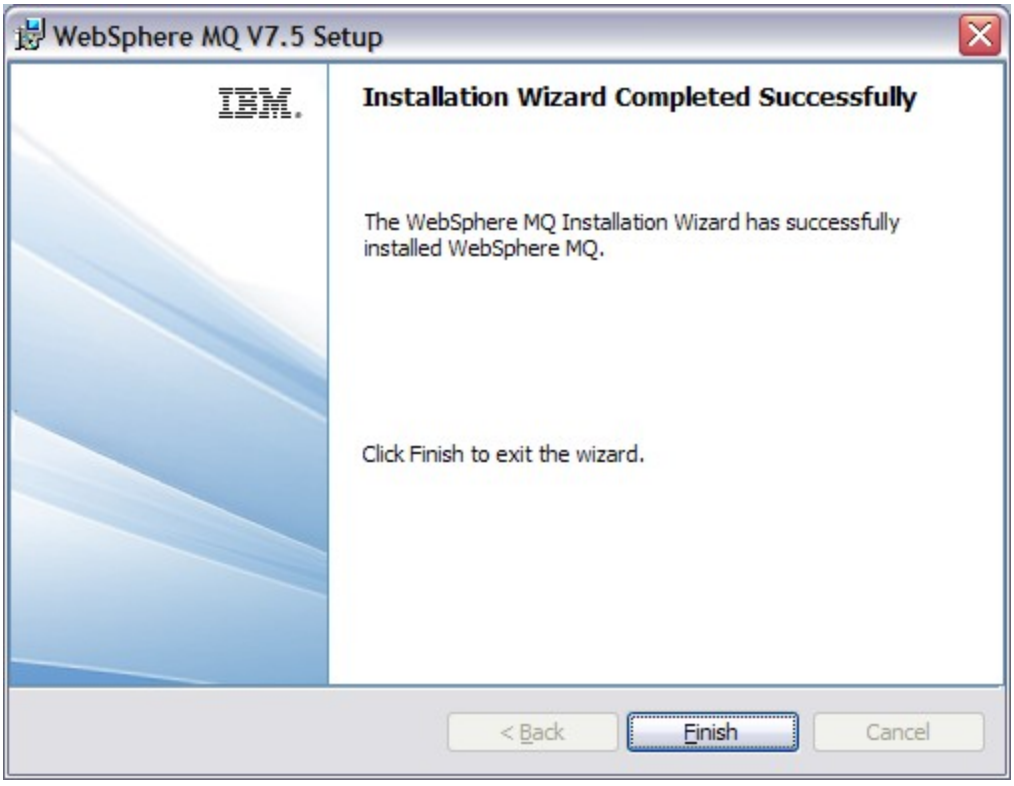
Folder for Log Files:
C:\var\mqm\log\

Program Folder:
IBM WebSphere MQ

Features to Install:
Server
MQ Explorer
Java and .NET Messaging and Web Services
Development Toolkit

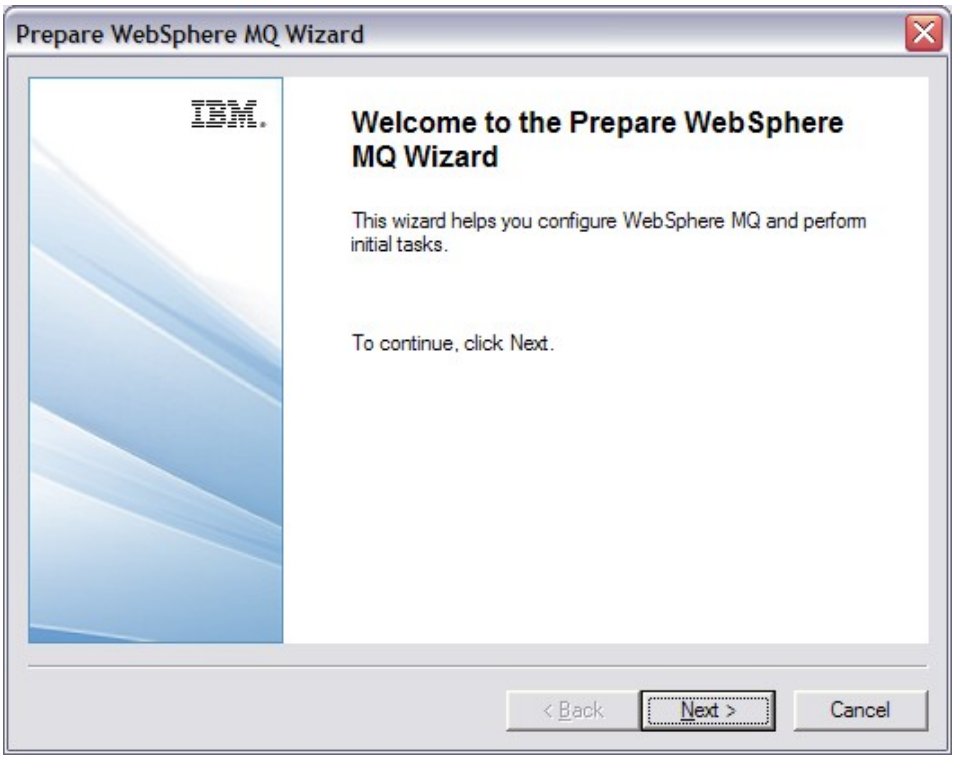
+ end

At this point the copying of the files into the installation directory structure begins.

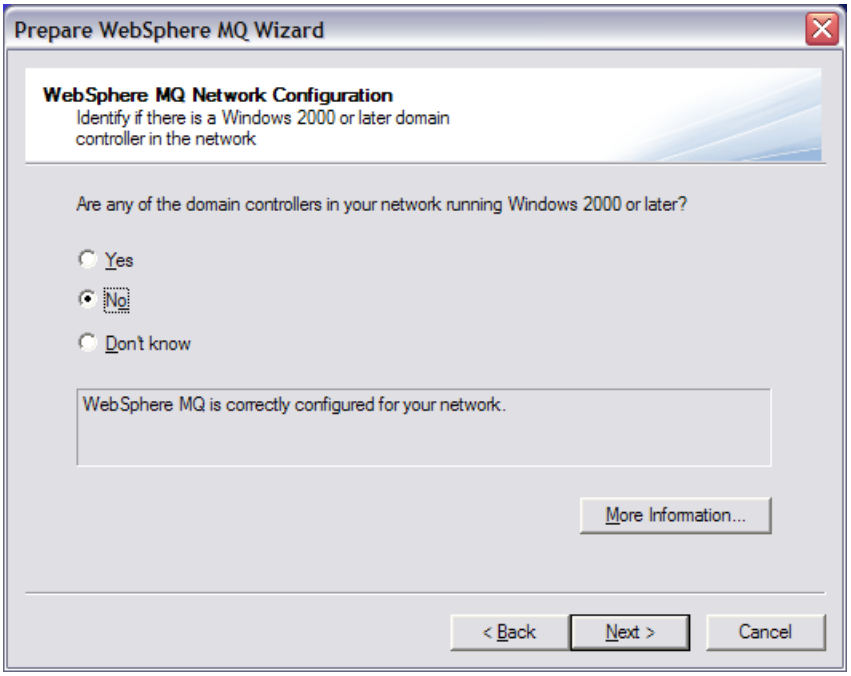


Click Finish

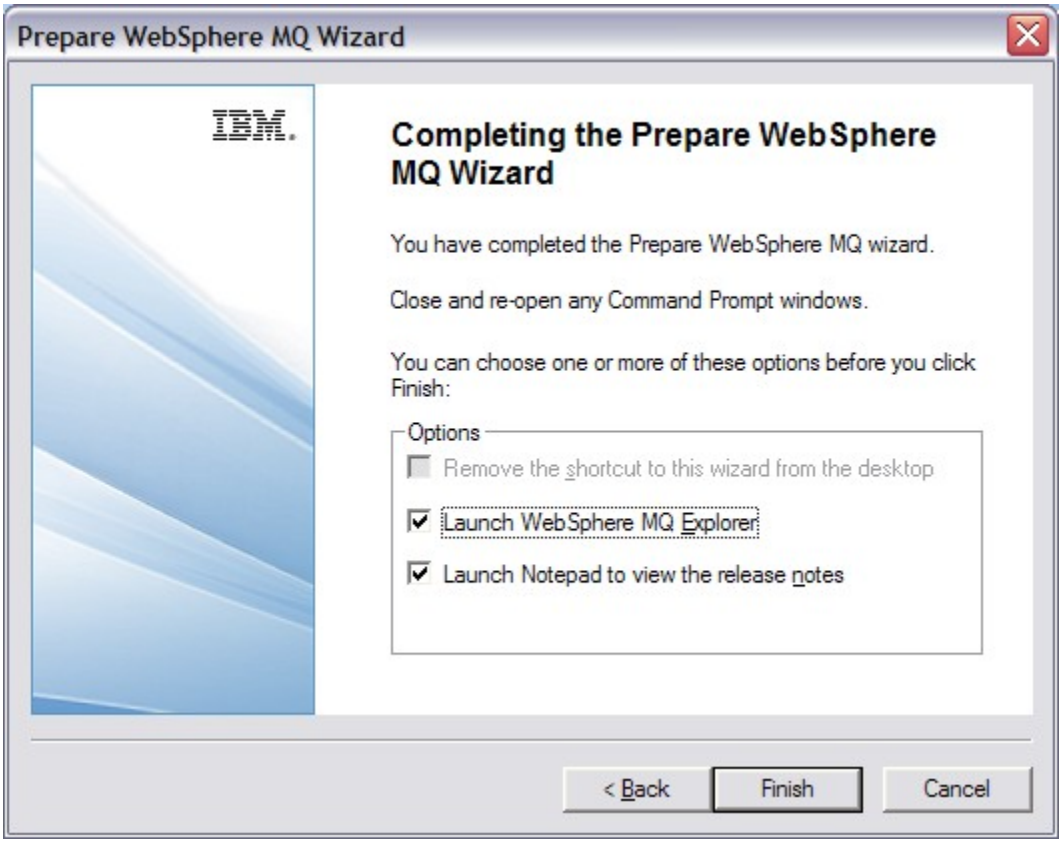
+ After the installation, you will see the following dialog:
Welcome to the Prepare WebSphere MQ Wizard



Because this scenario is not using a Windows Domain, accept the default of "No"



Accept to launch the MQ Explorer 7.5:



The following chapter will discuss the MQ Explorer 7.5 in more detail:

Chapter 5: Using MQ Explorer 7.5

++
+++ Chapter 2: Need to run setmqenv to use MQ 7.5 commands
++

Now that we finished with the installation activities, let's verify that there are several directories with the MQ code:

Start a Windows command prompt, such as in Windows XP:

Start > All Programs > Accessories > Command prompt

Change to the directory of the IBM code. Then query for the MQ code:

C:\> **cd "C:\Program Files\IBM"**
C:\Program Files\IBM> **dir "WebSphere MQ*"**

11/30/2011	05:46 AM	<DIR>	WebSphere MQ	➔ For 7.0.1.9
12/06/2011	04:19 AM	<DIR>	WebSphere MQ_1	➔ For 7.1.0.2
06/21/2012	11:02 AM	<DIR>	WebSphere MQ_2	➔ For 7.5.0.0

Note: In Windows 7 using 64-bit hardware, the location is actually under:
C:\Program Files (x86)\IBM

There is a new MQ command, **dspmqinst**, that will display the different versions installed in the system without the need to take a look at the directories.

However, in Windows, there is no mqinst.ini file, but instead, this information is kept in the registry. The installation configuration information is held in the following key on Windows systems:
HKLM\SOFTWARE\IBM\WebSphere MQ\Installation\<InstallationName>

This key must not be edited or referenced directly since its format is not fixed, and could change. Instead, use the following command to query the values in the registry:
dspmqinst

Let's display the entries:

C:\Program Files\IBM> **cd c:**
C:\> **"C:\Program Files\IBM\WebSphere MQ_2\bin\dspmqinst.exe"**
InstName: Installation0
InstDesc: IBM WebSphere MQ Installation
Identifier: 0
InstPath: C:\Program Files\IBM\WebSphere MQ

```
Version:       7.0.1.9
Primary:       Yes
State:         Available

InstName:      Installation1
InstDesc:
Identifier:    1
InstPath:      C:\Program Files\IBM\WebSphere MQ_1
Version:       7.1.0.2
Primary:       No
State:         Available
MSIProdCode:   {0730749B-080D-4A2E-B63D-85CF09AE0EF0}
MSIMedia:      7.1 Server
MSIInstanceId: 1

InstName:      Installation2
InstDesc:
Identifier:    2
InstPath:      C:\Program Files\IBM\WebSphere MQ_2
Version:       7.5.0.0
Primary:       No
State:         Available
MSIProdCode:   {38E913AA-0F10-434C-BEEC-7473D6C196E8}
MSIMedia:      7.5 Server
MSIInstanceId: 1
```

Notice that the values for InstName are very important!
"Installation0" refers to MQ 7.0.1.9 in this example.
"Installation1" refers to MQ 7.1.0.2
"Installation2" refers to MQ 7.5.0.0

Note: In UNIX, there is a global file in /etc (new for MQ 7.1) which provides information on the additional installations of MQ in the machine:
/etc/opt/mqm/mqinst.ini

+ Now, let's display the version of MQ using the default (or primary) installation:

```
C:\> dspmqver
Name:       WebSphere MQ
Version:    7.0.1.9
```

Notice that it is the older version (7.0.1.9), which is located in the primary installation.

See the note at the beginning of this techdoc about the "which" utility from UnxUtils.

C:\> **which dspmqver**
  42 rwx 1 bin 42560 Nov 17 2011 00:00:00
                    C:\Program Files\IBM\WebSphere MQ\bin\dspmqver.exe

++ **Question:** How can we display the version of the new one?
Answer: You need to run the new MQ 7.5 "setmqenv" command and specify the proper installation. In this case it is Installation2.

Attempt 1: INCORRECT (the full path was not provided)
Notice that setmqenv it is not in the PATH, because it did not exist in MQ 7.0 and the default PATH points to MQ 7.0.

C:\> setmqenv -n Installation2
'setmqenv' is not recognized as an internal or external command,
operable program or batch file.

Attempt 2: CORRECT (the full path for MQ 7.5 is provided)
C:\> **"C:\Program Files\IBM\WebSphere MQ_2\bin\setmqenv" -n Installation2**

Now let's try again to display the version:
C:\> **dspmqver**

Name: WebSphere MQ
Version: 7.5.0.0
Level: p000-L120604
BuildType: IKAP - (Production)
Platform: WebSphere MQ for Windows
Mode: 32-bit
O/S: Windows XP, Build 2600: SP3
InstName: Installation2
InstDesc:
InstPath: C:\Program Files\IBM\WebSphere MQ_2
DataPath: C:\var\mqm
Primary: No
MaxCmdLevel: 750
Note there are a number (2) of other installations, use the '-i' parameter to display them.

Before running setmqenv, the following environment variables point to the MQ 7.0 installation: C:\Program Files\IBM\WebSphere MQ\

CLASSPATH=.;C:\Program Files\IBM\WebSphere MQ\Java\lib\com.ibm.mqjms.jar;C:\Program Files\IBM\WebSphere MQ\Java\lib\com.ibm.mq.jar;
include=C:\Program Files\IBM\WebSphere MQ\tools\c\include;C:\Program Files\IBM\WebSphere MQ\tools\cplus\include
lib=C:\Program Files\IBM\WebSphere MQ\tools\lib
MQFT_JAVA_LIB_PATH=C:\Program Files\IBM\WebSphere MQ\java\lib
MQFT_JRE_BIN_PATH=C:\Program Files\IBM\WebSphere MQ\java\jre\bin
MQ_FILE_PATH=C:\Program Files\IBM\WebSphere MQ
MQ_JAVA_DATA_PATH=C:\var\mqm
MQ_JAVA_INSTALL_PATH=C:\Program Files\IBM\WebSphere MQ\Java
MQ_JAVA_LIB_PATH=C:\Program Files\IBM\WebSphere MQ\Java\lib
MQ_JRE_PATH=C:\Program Files\IBM\WebSphere MQ\java\jre
Path=C:\Program Files\IBM\WebSphere MQ\Java\lib…
C:\Program Files\IBM\WebSphere MQ\bin

After setmqenv the MQ related variables point to the MQ 7.5 installation:
C:\Program Files\IBM\WebSphere MQ_2

Notice also the new environment variables shown in bold.

CLASSPATH=.;…;C:\Program Files\IBM\WebSphere MQ_2\java\lib\com.ibm.mq.jar;
C:\Program Files\IBM\WebSphere MQ_2\java\lib\com.ibm.mqjms.jar
include=C:\Program Files\IBM\WebSphere MQ_2\tools\c\include;C:\Program Files\IBM\WebSphere MQ_2\tools\cplus\include
lib=C:\Program Files\IBM\WebSphere MQ_2\tools\lib
MQFT_JAVA_LIB_PATH=C:\Program Files\IBM\WebSphere MQ\java\lib
MQFT_JRE_BIN_PATH=C:\Program Files\IBM\WebSphere MQ\java\jre\bin
MQ_DATA_PATH=C:\var\mqm
MQ_ENV_MODE=32
MQ_FILE_PATH=C:\Program Files\IBM\WebSphere MQ_2
MQ_INSTALLATION_NAME=Installation2
MQ_INSTALLATION_PATH=C:\Program Files\IBM\WebSphere MQ_2
MQ_JAVA_DATA_PATH=C:\var\mqm
MQ_JAVA_INSTALL_PATH=C:\Program Files\IBM\WebSphere MQ_2\java
MQ_JAVA_LIB_PATH=C:\Program Files\IBM\WebSphere MQ_2\java\lib
MQ_JRE_PATH=C:\Program Files\IBM\WebSphere MQ_2\java\jre
Path=C:\Program Files\IBM\WebSphere MQ_2\bin;C:\Program Files\IBM\WebSphere MQ_2\java\lib;…

+++ Hint:

You can create a batch file that will run the setmqenv command with the specified syntax. Ensure to have this batch file in a directory in your PATH.
For example, the batch file set-mq-75.bat can be created with the contents:

Note: In Windows 7 using 64-bit hardware, the location is actually:
C:\Program Files (x86)\IBM\WebSphere MQ_2

========== begin batch file (do NOT include this line!)
REM Setup the environment to run MQ 7.5
CALL "C:\Program Files\IBM\WebSphere MQ_2\bin\setmqenv" -n Installation2
REM Adding Samples to the path
SET PATH=%PATH%;%MQ_FILE_PATH%\tools\c\Samples\Bin
========== end batch file (do NOT include this line!)

Notice a couple of points:

1) Need to use the "CALL" argument when invoking setmqenv. Without this argument, the execution of setmqenv will terminate the batch and will not allow following statements to execute. That is, with the CALL, you allow other statements in the batch file to be executed.

2) If you add an MQ directory into your PATH, such as the location for the C-samples:
PATH=…;C:\Program Files\IBM\WebSphere MQ\tools\c\Samples\Bin;…
Then this directory will be REMOVED by setmqenv. If you want to be able to run the C-samples from MQ 7.5, then the last line in the above batch file is needed, in order to place back into the PATH the directory for the samples. Notice also that MQ_FILE_PATH is used in order to use the proper directory structure for MQ 7.5:
SET PATH=%PATH%;%MQ_FILE_PATH%\tools\c\Samples\Bin

++ Let's explore the use of the batch file when the original PATH has the MQ V7.0 directory for the C-samples.

+ First, let's not use the batch file, to illustrate the problem.

1) Open a new command prompt.

2) Verify that the Samples\Bin directory for MQ 7.0 is on the PATH:

C:\> **path**
PATH=…;C:\Program Files\IBM\WebSphere MQ\bin;C:\Program Files\IBM\WebSphere MQ\tools\c\Samples\Bin;…

3) Locate the directory for the MQ C-sample "amqsbcg" (to browse a queue) by using the UnxUtil tool "which". Notice that the location is the Samples\Bin directory for MQ 7.0:

C:\> **which amqsbcg**
  41 rwx 1 bin 41536 Nov 17 2011 00:00:00
      C:\Program Files\IBM\WebSphere MQ\tools\c\Samples\Bin\amqsbcg.exe

4) Run the sample without parameters (we just want to ensure that the executable can be found and it can run)
C:\> **amqsbcg**
AMQSBCG0 - starts here
****
 Required parameter missing - queue name
  Usage: amqsbcg QName [QMgrName] [PropOption]

5) Execute the setmqenv command by itself (not from the batch file)
C:\> **"C:\Program Files\IBM\WebSphere MQ_2\bin\setmqenv" -n Installation2**

6) Issue the PATH again, and notice that the Samples\Bin directory was removed along with the other MQ 7.0 directories and that the MQ 7.5 directories were added at the beginning of the PATH:

C:\> **path**
PATH=C:\Program Files\IBM\WebSphere MQ_2\bin;C:\Program Files\IBM\WebSphere MQ_2\java\lib;...

7) Try again to locate and run the sample. Notice that it cannot be found anymore!

C:\> **which amqsbcg**
(blank line - that is, sample program was not found in the path)

C:\> **amqsbcg**
'amqsbcg' is not recognized as an internal or external command,
operable program or batch file.

+ Secondly, now let's use the batch file.

1) Open a new command prompt in order to start with a fresh environment.

2) Perform steps 2, 3 and 4 from the previous section in order to show that the amqsbcg sample is found at the MQ 7.0 Samples\Bin directory.

3) Run the batch command file:
C:\> **set-mq-75**

4) Display the PATH and notice that the Samples\Bin directory was added at the end:

C:\> **path**
PATH=C:\Program Files\IBM\WebSphere MQ_2\bin;C:\Program Files\IBM\WebSphere MQ_2\java\lib;…;C:\Program Files\IBM\WebSphere MQ_2\tools\c\Samples\Bin

5) Locate and run the sample. Notice that the location is the Samples\Bin directory from MQ 7.5, as we wanted it to be:

C:\> **which amqsbcg**
41 rwx 1 bin 41576 Jun 04 2012 01:00:00
C:\Program Files\IBM\WebSphere MQ_2\tools\c\Samples\Bin\amqsbcg.exe

C:\> **amqsbcg**
AMQSBCG0 - starts here
****
Required parameter missing - queue name
Usage: amqsbcg QName [QMgrName] [PropOption]

+++ HINT: Create a corresponding script for MQ 7.1 and 7.0

Note: In Windows 7 using 64-bit hardware, the location is actually under:
C:\Program Files (x86)\IBM

To facilitate the usage of MQ 7.0, you can create the corresponding batch file to setup the environment for MQ 7.0:

set-mq-70.bat

Notice that the installation name is: installation0

Also notice that setmqenv is NOT provided with MQ 7.0, thus, you need to use the full path for 7.1 or 7.5:

```
============= begin batch file  (do NOT include this line!)
REM Setup the environment to run MQ 7.0
CALL "C:\Program Files\IBM\WebSphere MQ_2\bin\setmqenv" -n Installation0
REM Adding Samples to the path
SET PATH=%PATH%;%MQ_FILE_PATH%\tools\c\Samples\Bin
============= end batch file  (do NOT include this line!)
```

Similarly for MQ 7.1:

set-mq-71.bat

Notes:
- The installation name is: installation1
- It is best to use the full path for the setmqenv utility in MQ 7.1 and not for 7.5, because if you delete 7.5, then the batch file will not run properly.

```
============= begin batch file  (do NOT include this line!)
REM Setup the environment to run MQ 7.1
CALL "C:\Program Files\IBM\WebSphere MQ_1\bin\setmqenv" -n Installation1
REM Adding Samples to the path
SET PATH=%PATH%;%MQ_FILE_PATH%\tools\c\Samples\Bin
============= end batch file  (do NOT include this line!)
```

++
+++ Chapter 3: Creating a queue manager under 7.5
++

Before we create a queue manager under 7.5, let's show the current queue managers created under MQ 7.0 and 7.1

Ensure to use the MQ 7.5.0.0 code because we are going to exploit a new feature for "dspmq" introduced with MQ 7.5:
C:\> **set-mq-75**

Display the status of the queue managers:

C:\> **dspmq**
QMNAME(QM_701) STATUS(Running)
QMNAME(QM_MIG) STATUS(Running)
QMNAME(QM_71) STATUS(Ended immediately)

There is an additional parameter to dspmq in MQ 7.5, which will show the queue managers with the following information:
- the installation name: INSTNAME(Installation0)
- the path of the MQ 7.0 code: INSTPATH(C:\Program Files\IBM\WebSphere MQ)
- and the version: INSTVER(7.0.1.9)

C:\> **dspmq -o installation**
QMNAME(QM_701) **INSTNAME(Installation0)**
INSTPATH(C:\Program Files\IBM\WebSphere MQ) INSTVER(7.0.1.9)
QMNAME(QM_MIG) INSTNAME(Installation0)
INSTPATH(C:\Program Files\IBM\WebSphere MQ) INSTVER(7.0.1.9)
QMNAME(QM_71) INSTNAME(Installation1)
INSTPATH(C:\Program Files\IBM\WebSphere MQ_1) INSTVER(7.1.0.2)

+ Let's create a new queue manager under MQ 7.5:

You could use also the MQ Explorer 7.5 to create the queue manager.
The crtmqm is used here to illustrate the new informational text that is displayed to indicate that Installation2 is used.
Notice that when MQ 7.0 was first installed in this test system, the data directory was specified as C:\var\mqm in order to be similar to the data path in Unix.

C:\> **crtmqm -u SYSTEM.DEAD.LETTER.QUEUE QM_75**
WebSphere MQ queue manager created.
Directory 'C:\var\mqm\qmgrs\QM_75' created.
The queue manager is associated with installation 'Installation2'.
Creating or replacing default objects for queue manager 'QM_75'.
Default objects statistics : 77 created. 0 replaced. 0 failed.
Then start the queue manager. Notice the lines that indicate the installation and the version under which the queue manager is running:

C:\> **strmqm QM_75**
WebSphere MQ queue manager 'QM_75' starting.
The queue manager is associated with installation 'Installation2'.
5 log records accessed on queue manager 'QM_75' during the log replay phase.
Log replay for queue manager 'QM_75' complete.
Transaction manager state recovered for queue manager 'QM_75'.
WebSphere MQ queue manager 'QM_75' started using V7.5.0.0.

Let's display again the installed queue managers and showing the installation, code path and version. Notice the values for the new queue manager, which reflect the association with the MQ 7.5 installation.

C:\> **dspmq -o installation**
QMNAME(QM_701) INSTNAME(Installation0)
INSTPATH(C:\Program Files\IBM\WebSphere MQ) INSTVER(7.0.1.9)
QMNAME(QM_MIG) INSTNAME(Installation0)
INSTPATH(C:\Program Files\IBM\WebSphere MQ) INSTVER(7.0.1.9)
QMNAME(QM_75) **INSTNAME(Installation2)**
INSTPATH(C:\Program Files\IBM\WebSphere MQ_2) INSTVER(7.5.0.0)

++ You cannot use MQ 7.5 administrative commands to run an MQ 7.0 queue manager

You cannot use MQ 7.5 administrative commands to run an MQ 7.0 queue manager

Corollary: And vice versa, you cannot use MQ 7.0 administrative commands to run an MQ 7.5 queue manager.

Just for the sake of illustrating that each queue manager needs to be run with the proper level of the code, the following shows the error message when trying to use the MQ 7.5 endmqm command on a queue manager that was started with MQ 7.0:
Right now, the environment has been set to use MQ 7.5 commands.

C:\> **endmqm QM_701**
AMQ5691: Queue manager 'QM_701' is associated with a different installation ('Installation0').

Similarly, if we enable now the MQ 7.0 commands …

C:\> **set-mq-70**

… and then try to use the MQ 7.0 endmqm command to stop the queue manager recently created with MQ 7.5, we get the following error:

C:\> **endmqm QM_75**
AMQ5691: Queue manager 'QM_75' is associated with a different installation.

Notice also that the MQ 7.0 dspmq command does not recognize the status of the MQ 7.1 and MQ 7.5 queue managers:

C:\> **dspmq**
QMNAME(QM_MIG) STATUS(Running)
QMNAME(QM_701) STATUS(Running)
QMNAME(QM_71) STATUS(Status not available)
QMNAME(QM_75) STATUS(Status not available)

++
+++ Chapter 4: Remote access to the new MQ 7.5 queue manager
++

Let's customize the queue manager to allow it to be monitored remotely by the MQ Explorer and to create a local queue Q1 for initial testing:

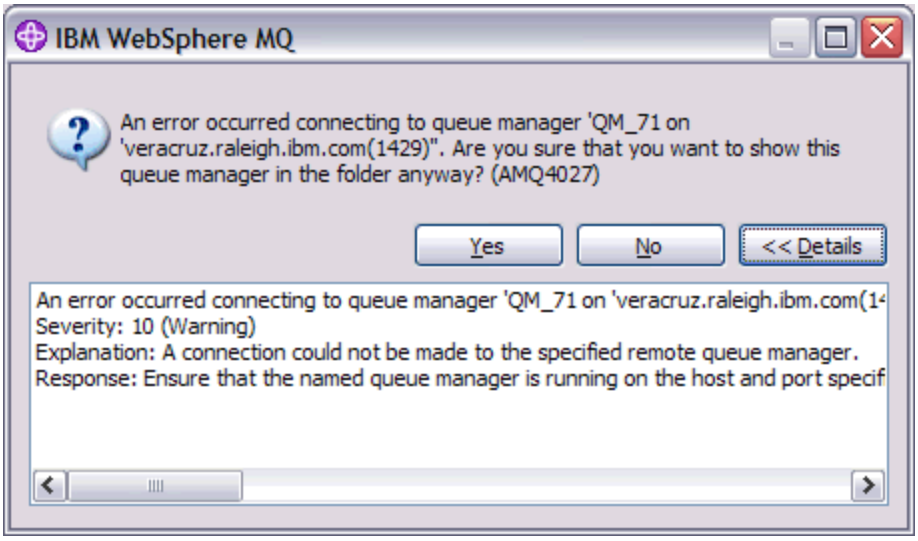
C:\> **runmqsc QM_75**
define listener(TCP.LISTENER) trptype(tcp) control(qmgr) port(1439)
start listener(TCP.LISTENER)
define channel(SYSTEM.ADMIN.SVRCONN) chltype(SVRCONN)
define ql(Q1)
end

Now you start the MQ Explorer 7.5 from a remote host, using a userid that is an MQ Administrator in the host that has the newly created queue manager.

You use the MQ Explorer to remotely access the 7.1 queue manager and get the following errors:

Text inside the dialog box:
Access not permitted. You are not authorized to perform this operation. (AMQ4036)
Severity: 10 (Warning)
Explanation: The queue manager security mechanism has indicated that the userid associated with this request is not authorized to access the object.

After closing the above dialog, the next one appears:



Text inside the dialog box:
An error occurred connecting to queue manager 'QM_75 on 'host.x.com(14xx)". Are you sure that you want to show this queue manager in the folder anyway? (AMQ4027)
Severity: 10 (Warning)
Explanation: A connection could not be made to the specified remote queue manager.
Response: Ensure that the named queue manager is running on the host and port specified, and has a channel corresponding to the specified name. Ensure that you have the authority to connect to the remote queue manager, and ensure that the network is running. Select Yes if you believe that the problem can be resolved later. Select No if you want to correct the problem now and try again.

In the error log for the queue manager you see the errors AMQ9776 and AMQ9999

AMQ9776: Channel was blocked by userid
EXPLANATION:
The inbound channel 'SYSTEM.ADMIN.SVRCONN' was blocked from address '9.49.x.x' because the active values of the channel were mapped to a userid which should be blocked. The active values of the channel were 'MCAUSER(rivera) CLNTUSER(rivera)'.
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.

AMQ9999: Channel 'SYSTEM.ADMIN.SVRCONN' to host 'x (9.49.x.x)'
ended abnormally.

Starting with MQ 7.1, as part of the improved security measures, by default an MQ Administrator CANNOT use the MQ Explorer to remotely access a queue manager. The new feature of "channel authentication records" blocks the remote access via channels for any MQ Administrator. There are 3 such records in a newly created queue manager:

display chlauth(*)

```
    5 : display chlauth(*)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.ADMIN.SVRCONN)         TYPE(ADDRESSMAP)
  ADDRESS(*)                            USERSRC(CHANNEL)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.*)                     TYPE(ADDRESSMAP)
  ADDRESS(*)                            USERSRC(NOACCESS)
AMQ8878: Display channel authentication record details.
  CHLAUTH(*)                            TYPE(BLOCKUSER)
  USERLIST(*MQADMIN)
```

If you want an MQ Administrator to be able to remotely control a queue manager via the MQ Explorer, then refer to the following technote:

http://www.ibm.com/support/docview.wss?uid=swg21577137
MQ 7.1 queue manager - RC 2035 MQRC_NOT_AUTHORIZED when using client connection as an MQ Administrator

This technote refers to Page 10 from the following presentation:

http://www.websphereusergroup.org/go/article/view/251913/whats_new_in_websphere_mq_v7.1_security
What's new in WebSphere MQ v7.1 Security: A deeper dive
T.Rob Wyatt

Here is the summary for the article from T.Rob:
Use runmqsc to implement the following 2 rules for the Channel Access Records (new feature in MQ 7.1).
The first rule blocks administrative users and the MCAUSER "nobody" (which prevents someone from creating a user ID "nobody" and putting it into an authorized group.
The second rule provides a reduced blacklist for SYSTEM.ADMIN channels that allows administrators to use these. It is assumed here that some other CHLAUTH rule such as an SSLPEERMAP has validated the administrator's connection or than an exit has done so.

SET CHLAUTH(*) TYPE(BLOCKUSER) USERLIST('nobody','*MQADMIN')
SET CHLAUTH(SYSTEM.ADMIN.*) TYPE(BLOCKUSER) USERLIST('nobody')

Notice that the new set of expanded records is:

display chlauth(*)
```
     3 : display chlauth(*)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.ADMIN.SVRCONN)          TYPE(ADDRESSMAP)
  ADDRESS(*)                             USERSRC(CHANNEL)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.ADMIN.*)                TYPE(BLOCKUSER)
  USERLIST(nobody)
AMQ8878: Display channel authentication record details.
  CHLAUTH(SYSTEM.*)                      TYPE(ADDRESSMAP)
  ADDRESS(*)                             USERSRC(NOACCESS)
AMQ8878: Display channel authentication record details.
  CHLAUTH(*)                             TYPE(BLOCKUSER)
  USERLIST(nobody
        ,*MQADMIN)
```

Now you can successfully add the newly created queue manager into the remote MQ Explorer.

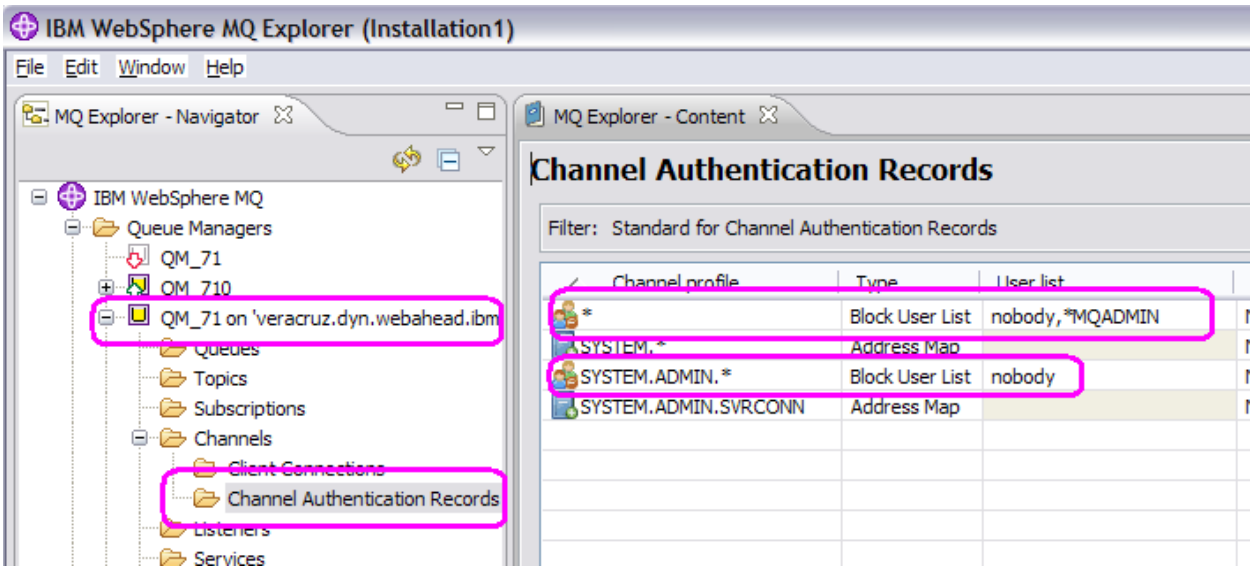
The above rules apply to SYSTEM.ADMIN.SVRCONN which is used by the MQ Explorer.

If you are using another user-defined channel, such as MY.ADMIN.SVRCONN, then you need to add the following two records:

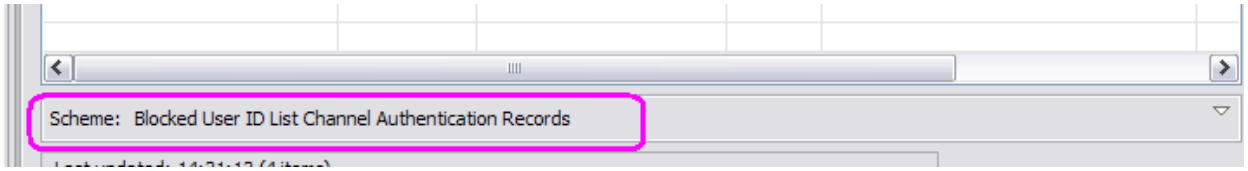
SET CHLAUTH(MY.ADMIN.SVRCONN) TYPE(ADDRESSMAP) ADDRESS(*)
USERSRC(CHANNEL)
SET CHLAUTH(MY.ADMIN.SVRCONN) TYPE(BLOCKUSER) USERLIST('nobody')

Note: it is not advisable to use SYSTEM.DEF.* channels for active connections. The system default channels are the objects from which all user-defined channels inherit properties. The recommended practice is that SYSTEM.DEF.* and SYSTEM.AUTO.* channels should NOT be configured to be usable.

The following shows the new panel for the "Channel Authentication Records" and shows the 2 new records that were created:



You may need to select the following "scheme" in order to show the "User List" column:



+ Authorizing access from a specific host:

This is a variation of the above but allowing the MQ Administrator to only use a particular host.

The first rule blocks MCAUSER "nobody".
SET CHLAUTH(SYSTEM.ADMIN.SVRCONN) TYPE(BLOCKUSER) USERLIST('nobody')

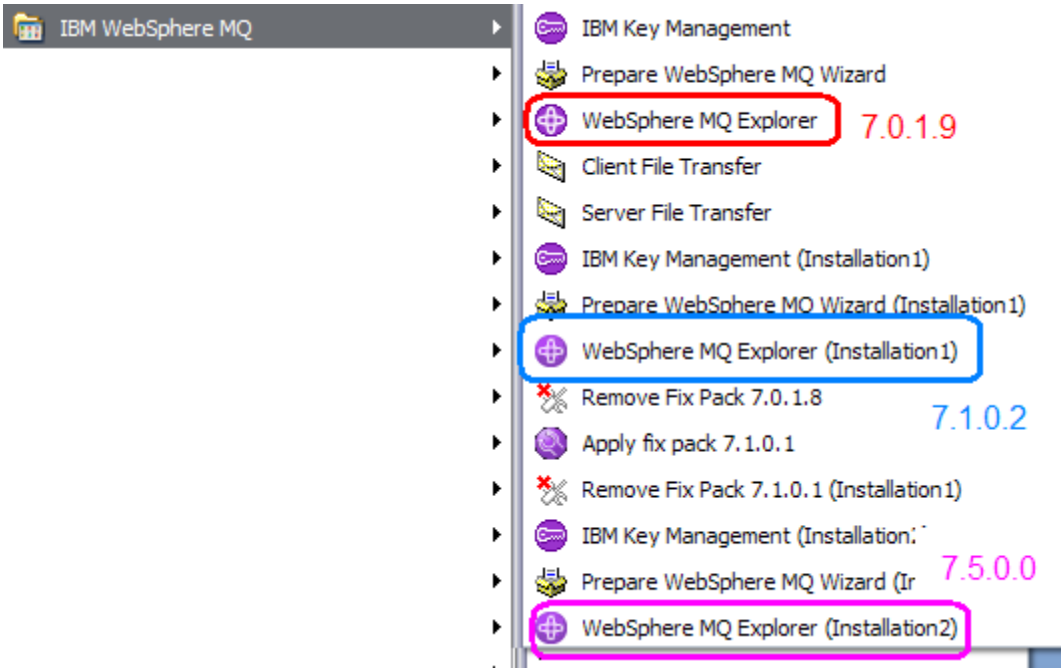
The second rule removes all access to SYSTEM.ADMIN.SVRCONN ...
SET CHLAUTH(SYSTEM.ADMIN.SVRCONN) TYPE(ADDRESSMAP) ADDRESS(*)
ACTION(REMOVE)

... and the third rule adds an entry for the server that needs access.
SET CHLAUTH(SYSTEM.ADMIN.SVRCONN) TYPE(ADDRESSMAP) ADDRESS(9.27.4x.7y)
USERSRC(CHANNEL)

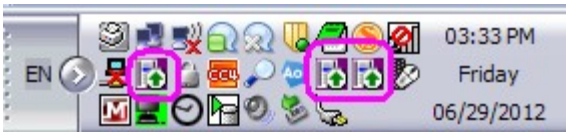
++
+++ Chapter 5: Using MQ Explorer 7.5
++

+ Launching the MQ Explorer 7.5

Click on Start > IBM WebSphere MQ >
  WebSphere MQ Explorer (for 7.0)
  WebSphere MQ Explorer (Installation1) (for 7.1)
  WebSphere MQ Explorer (Installation2) (for 7.5)

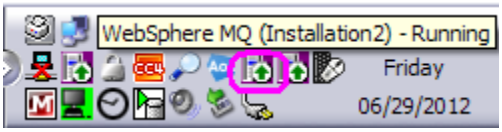


Notice that in the bottom-right corner of the screen, that there are 3 icons for MQ. Which one is which?



You will need to hover each of the icons to find out its short description:

One of the icons shows the newer MQ 7.5: WebSphere MQ (Installation2) - Running

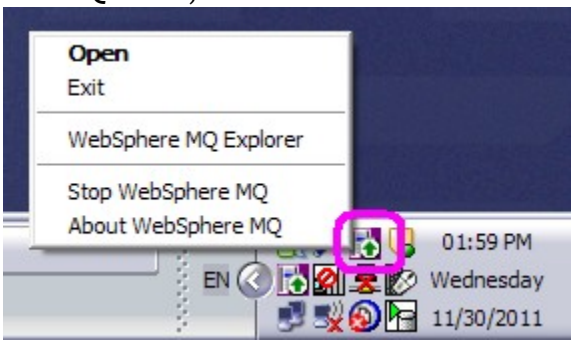


The other icon shows the older MQ 7.0:

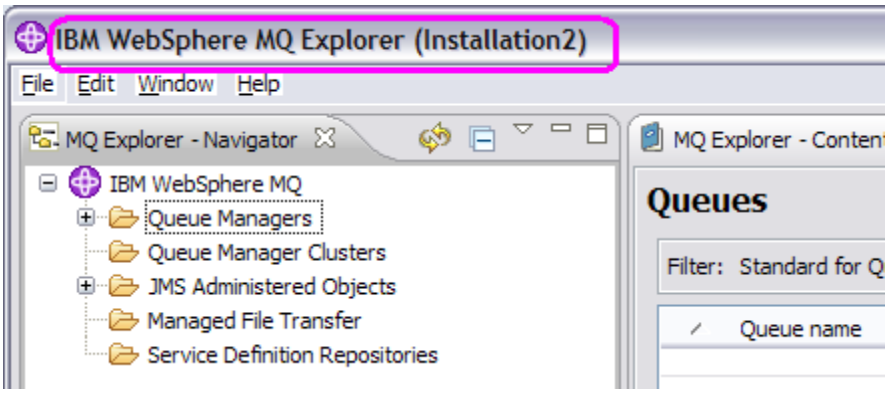
You can also click on the right mouse button for each icon.

For MQ 7.5, notice: "WebSphere MQ (Installation2)"

For MQ 7.0.1, there is no indication of the installation (it is Installation0, actually).



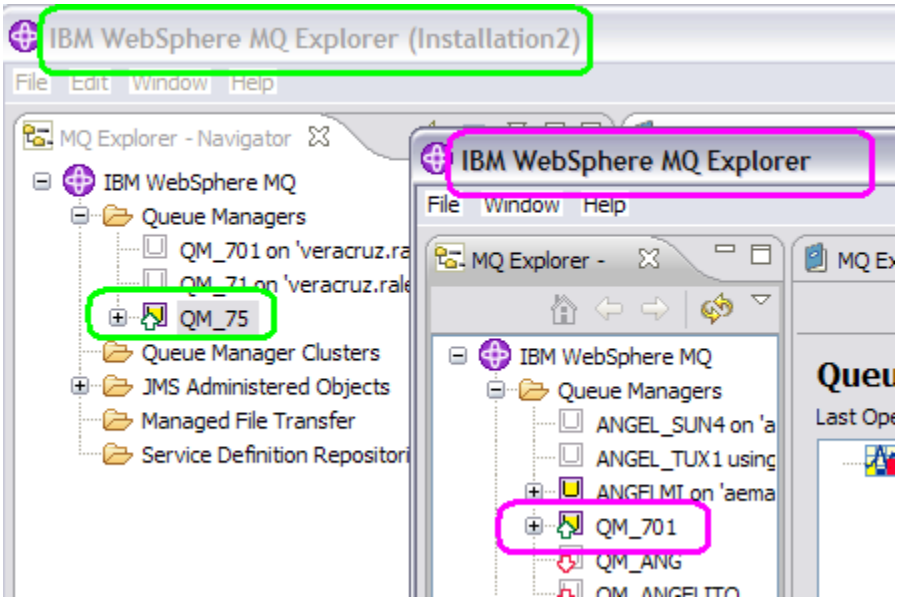
+ Notice that the title for the MQ Explorer 7.5 shows the installation identifier:
  Installation2



You can have both MQ Explorers, 7.0 and 7.5, running side-by-side.
The following shows:

MQ Explorer 7.5: title: IBM WebSphere MQ Explorer (Installation2)
  Queue Managers: QM_75

MQ Explorer 7.0: title: IBM WebSphere MQ Explorer
  Queue Managers: QM_701

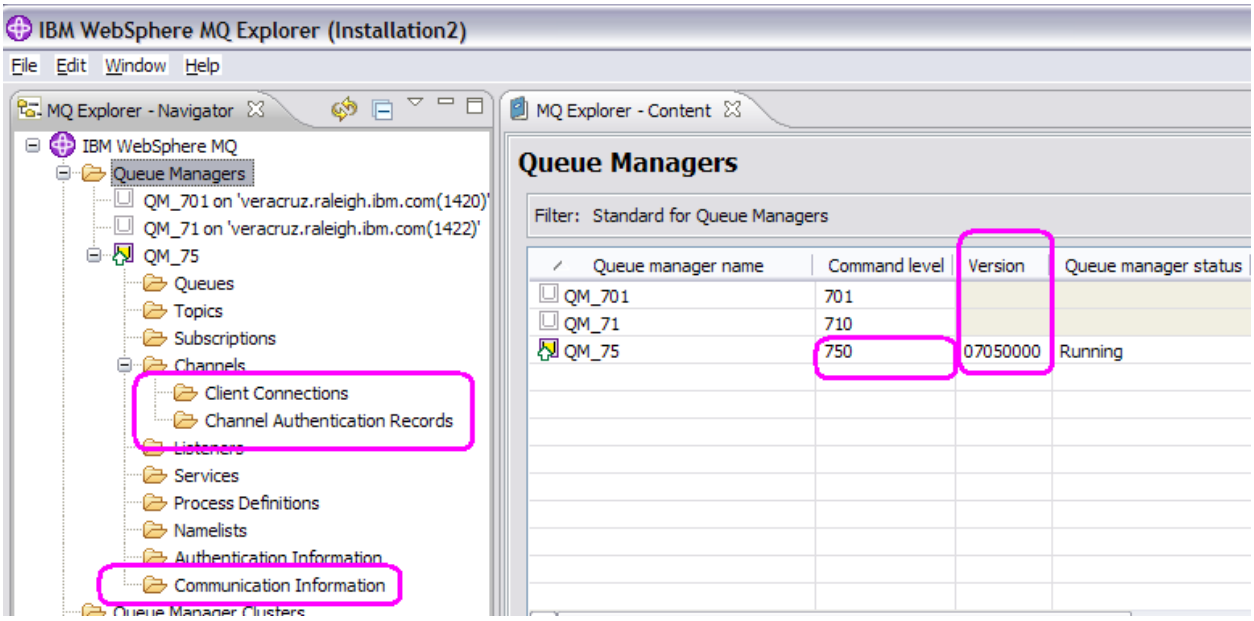


+ How to use the MQ Explorer 7.5 to view details of a queue manager

Create a new queue manager called QM_75.

Select "Queue Managers" then right click and select "New" then "Queue Manager" and follow the prompts, accepting the defaults.

A new queue manager called QM_75 is created and is shown in the MQ Explorer:



Notice that in the Navigator Panel, the "Advanced" folder for a queue manager was removed and that the "Channels" has 2 subfolders:
  Client Connections
  Channel Authentication Records

Also, see that there is a new folder at the bottom:
  Communication Information

Notice also that in the right panel, there is a new column:
  Version
The value for 7.5.0.0 is mapped to: 07050000

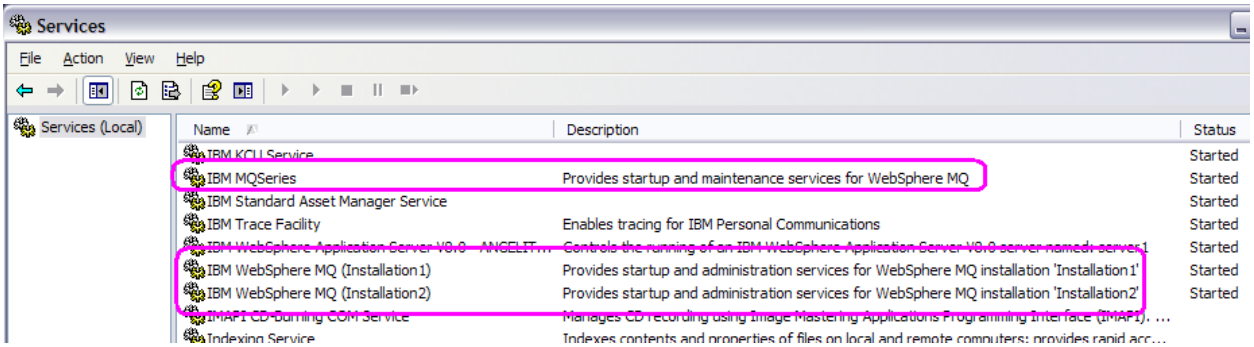
+++ Windows Service

If you look at Start > Control Panel > Administrative Tools > Services you will see 2 entries for MQ:

Older MQ (7.0.x)
Name: IBM MQSeries
Description: Provides startup and maintenance services for WebSphere MQ
Status: Started
Startup: Automatic
Log On As: Local System

Newer MQ (7.1)
Name: IBM WebSphere MQ (Installation1)
Description: Provides startup and maintenance services for WebSphere MQ installation 'Installation1'
Status: Started
Startup: Automatic
Log On As: .\MUSR_MQADMIN1

Newer MQ (7.5)
Name: IBM WebSphere MQ (Installation2)
Description: Provides startup and maintenance services for WebSphere MQ installation 'Installation2'
Status: Started
Startup: Automatic
Log On As: .\MUSR_MQADMIN1



++
+++ Chapter 6: Migrating an MQ 7.0 queue manager to MQ 7.5
++

After installing MQ 7.5, you now want to migrate/upgrade an MQ 7.0 queue manager to be used with MQ 7.5.

+ Take a backup of the queue manager:

Once a queue manager has been migrated to MQ 7.5, it is no longer possible to use it with WebSphere MQ 5.3, MQ 6.0 or MQ 7.0. The migration process changes a number of files and definitions, and it is not possible to go back.

If you are running 7.0 and you want to upgrade to 7.5, then you must do a backup before upgrading to 7.5. When you run the queue manager at version 7.5 it will change the formats of certain MQ object files and this cannot be reversed.

Use the saveqmgr command to capture the object definitions and authorities. This utility is provided with the following supportpac:
http://www-1.ibm.com/support/docview.wss?rs=171&uid=swg24000673
MS03: WebSphere MQ - Save Queue Manager object definitions using PCFs

Example: The following saves both the objects and the authority records (each in one single line):

UNIX:
```
saveqmgr -m QMgr -f /tmp/mq/qm_data.mqs -z /tmp/mq/qm_auth.sh
```

Windows:
```
saveqmgr.exe  -m QMgr -f C:\temp\mq\qm_data.mqs -z C:\temp\mq\qm_auth.bat
```

+ Note on new feature in MQ 7.1: **dmpmqcfg**

The **dmpmqcfg** tool is new in MQ 7.1 and it is an alternative to the SupportPac MS03. Here are the main references from the MQ 7.5 Information Center.

http://publib.boulder.ibm.com/infocenter/wmqv7/v7r1/index.jsp?topic=%2Fcom.ibm.mq.doc%2Ffa22720_.htm
WebSphere MQ > Reference > Administration reference > WebSphere MQ control commands > The control commands
dmpmqcfg

http://publib.boulder.ibm.com/infocenter/wmqv7/v7r1/topic/com.ibm.mq.doc/fa70251_.htm
WebSphere MQ > Configuring > Availability, recovery and restart > Backing up and restoring WebSphere MQ queue manager data
Backing up queue manager configuration

+ Because the queue manager to be migrated is at MQ 7.0.x, you need to run the script that sets the running environment to MQ 7.0:

C:\> **set-mq-70**

C:\> **dspmqver**
Name: WebSphere MQ
Version: 7.0.1.9

+ Notice that the CMDLEVEL for the qmgr is 701:

C:\> **runmqsc QM_MIG**
display qmgr cmdlevel
1 : display qmgr cmdlevel
AMQ8408: Display Queue Manager details.
QMNAME(QM_MIG) CMDLEVEL(701)

+ Stop the queue manager

C:\> **endmqm -i QM_MIG**
WebSphere MQ queue manager 'QM_MIG' ending.
WebSphere MQ queue manager 'QM_MIG' ended.

+ Issue dspmq and notice that the MQ 7.0 is recognizing this queue manager at a 7.0 level. Notice that the queue managers at MQ 7.5 are not recognized:

C:\> **dspmq**
QMNAME(QM_MIG) STATUS(Ended immediately)
QMNAME(QM_701) STATUS(Running)
QMNAME(QM_71) STATUS(Status not available)
QMNAME(QM_75) STATUS(Status not available)

+ Change the environment to run the MQ 7.5 commands

C:\> **set-mq-75**

C:\> **dspmqver**
Name: WebSphere MQ
Version: 7.5.0.0
Level: p000-L120604
BuildType: IKAP - (Production)
Platform: WebSphere MQ for Windows
Mode: 32-bit
O/S: Windows XP, Build 2600: SP3
InstName: Installation2
InstDesc:
InstPath: C:\Program Files\IBM\WebSphere MQ_2
DataPath: C:\var\mqm
Primary: No
MaxCmdLevel: 750

- Display the status of the queue managers. Notice that the MQ 7.5 code is able to determine the status of the MQ 7.0 queue managers:

C:\> **which dspmq**
196 rwx 1 bin 199784 Jun 04 2012 01:00:00 C:\Program Files\IBM\WebSphere MQ_2 \bin\dspmq.exe

C:\> **dspmq**
QMNAME(QM_MIG) STATUS(Ended immediately)
QMNAME(QM_701) STATUS(Running)
QMNAME(QM_71) STATUS(Running)
QMNAME(QM_75) STATUS(Running)

- Try to use the pre-7.5 way to upgrade the queue manager to the most recent version, which is to start the queue manager using the new code. Notice that this action fails with MQ 7.5.

C:\> **strmqm QM_MIG**
AMQ5691: Queue manager 'QM_MIG' is associated with a different installation ('Installation0').

Check with dspmq:

C:\> **dspmq -o installation -m QM_MIG**
QMNAME(QM_MIG) INSTNAME(Installation0)
INSTPATH(C:\Program Files\IBM\WebSphere MQ) INSTVER(7.0.1.9)

+ Question:
What action needs to be done to associate the desired queue manager to the installation for MQ 7.5?

Answer:
Need to specify the new MQ 7.1 command "setmqm".

For more information see:
http://publib.boulder.ibm.com/infocenter/wmqv7/v7r1/index.jsp?topic=%2Fcom.ibm.mq.doc%2Ffa16045_.htm
WebSphere MQ > Reference > Administration reference > WebSphere MQ control commands > The control commands
setmqm
Set the associated installation of a queue manager.

In this case, the command setmqm associates the desired queue manager (created under 7.0.1.9) with the MQ 7.5 installation:

C:\> **setmqm -m QM_MIG -n Installation2**
The setmqm command completed successfully.

Now verify that dspmq shows the new associated installation for this queue manager:

C:\> **dspmq -o installation -m QM_MIG**
QMNAME(QM_MIG) **INSTNAME(Installation2)**
INSTPATH(C:\Program Files\IBM\WebSphere MQ_2) INSTVER(7.5.0.0)

- Start the queue manager. Because this is the first time that the strmqm 7.5 is being issued on a queue manager that a prior use with an older release (7.0.1.9), then it will do a migration:

C:\> **strmqm QM_MIG**
WebSphere MQ queue manager 'QM_MIG' starting.
The queue manager is associated with installation 'Installation2'.
5 log records accessed on queue manager 'QM_MIG' during the log replay phase.
Log replay for queue manager 'QM_MIG' complete.
Transaction manager state recovered for queue manager 'QM_MIG'.
Migrating objects for queue manager 'QM_MIG'.
Default objects statistics: 9 created. 0 replaced. 0 failed.
WebSphere MQ queue manager 'QM_MIG' started using V7.5.0.0.

- Now display the attributes for the queue manager using runmqsc. Notice the CMDLEVEL and the new VERSION fields:

C:\> **runmqsc QM_MIG**

display qmgr cmdlevel version
    1 : display qmgr cmdlevel version
AMQ8408: Display Queue Manager details.
  QMNAME(QM_MIG)   CMDLEVEL(750)
  VERSION(07050000)

- Notice also that a migrated queue manager will have the following new attributes under "DISPLAY QMGR":

ACTVCONO(DISABLED) < - - New in 7.1
ACTVTRC(OFF) < - - New in 7.1
CERTVPOL(ANY) < - - New in 7.1
CHLAUTH(DISABLED) < - - New in 7.1 feature is DISABLED for migrated Queue Mgr
                But it is ENABLED for new Queue Managers
CUSTOM( ) < - - New in 7.1
DEFCLXQ(SCTQ) < - - New in 7.5
PSCLUS(ENABLED) < - - New in 7.1
SPLCAP(DISABLED) < - - New in 7.5
SUITEB(NONE) < - - New in 7.1
VERSION(07050000) < - - New in 7.1
XRCAP(NO) < - - New in 7.1

Note that a <u>new</u> queue manager created under MQ 7.5 will have:
CHLAUTH(ENABLED)

For more information on the new attributes and queues, see the following technotes:

http://www.ibm.com/support/docview.wss?rs=171&uid=swg21578742
New MQ 7.1 and 7.5 attributes in DISPLAY QMGR for new or migrated queue managers

http://www-01.ibm.com/support/docview.wss?uid=swg21608033
New SYSTEM queues added in WebSphere MQ 7.1 and 7.5

+++ end +++