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Migrating from IBM MQ 8.0 to a later version (Windows, Linux, AIX, Solaris, HP-UX)

https://www.ibm.com/support/pages/node/6143967

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IBM MQ Distributed Level 2 Support
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Objective

To present procedures, considerations and guidelines for migrating from:　　IBM MQ 8.0
… or earlier versions such as:　　7.0, 7.1 or 7.5
… on distributed platforms:
　AIX®, HP-UX®, Linux®, Solaris™ and Windows®
… to a later release such as: 9.0 or 9.1

*** Updated on 04-May-2020:
- Updated URL for the EOS of MQ 8.0
- EOS for MQ 9.0 is: 30-Sep-2021
- See separate Addendum for more information

OS's that are NOT covered here

Operating Systems that are NOT COVERED in this presentation are:

- HPe NSS (Non Stop Server, NSK, Tandem)
- IBMi (iSeries, OS/400)
- z/OS (390)
- OpenVMS (oVMS)

Agenda

- Overview
- Migration paths for unsupported versions:
  - MQ 5.3, 6.0, 7.0, 7.1 or 7.5
- End of Support of MQ 8.0: 30-Apr-2020
- To which version to upgrade (9.0 or 9.1)?
- Which "release type" to use (LTS or CD)?
- 2 options to install new version:
  - Keeping only one installation (replace 8.0)
  - Coexisting 8.0 with 9.0 or later
- Tutorials

The data is NOT altered by install activities

- The data and the recovery logs of the queue manager are NOT altered by the uninstallation and installation of the MQ code.

- For example, if MQ 8.0 in Linux is <u>uninstalled</u> in /opt/mqm, then the data and the recovery logs of the queue manager in /var/mqm are left untouched.

- Similarly, if MQ 9.1 in Linux is <u>installed</u> in
- /opt/mqm, then the contents in /var/mqm will remain untouched.

The data is altered by 1st strmqm

- However, the data and the recovery logs of the queue manager ARE ALTERED by the first time that "strmqm" is used to start the queue manager under the new version.

- This upgrade is NOT reversible!

- Therefore you need to take a backup of the data and recovery files for the queue manager BEFORE the upgrade.

Backup queue managers before migration

- After the data of the queue manager is upgraded to a higher version, it is not possible to revert back. There are no utilities to revert back the data of the queue manager to a lower version.

- **It is very important that you do a backup of the queue manager before you upgrade it.**

- If you need to revert back, then you will need to delete the upgraded queue manager and restore from the backup taken at the old version.

Use "setmqenv" when initiating a session

- Starting with MQ 7.1, when you initiate a session with the operating system (command prompt), you will need to issue the following MQ command:
- Windows: **setmqenv -n Installation1**
- Unix: **. /opt/mqm/bin/setmqenv -n Installation1**

- In order to setup the MQ environment variables, such as:
- MQ_FILE_PATH=C:\Program Files\IBM\WebSphere MQ
- MQ_INSTALLATION_NAME=Installation1
- MQ_INSTALLATION_PATH=C:\Program Files\IBM\WebSphere MQ
- MQ_JAVA_INSTALL_PATH=C:\Program Files\IBM\WebSphere MQ\java
- MQ_JAVA_LIB_PATH=C:\Program Files\IBM\WebSphere MQ\java\lib64
- MQ_JRE_PATH=C:\Program Files\IBM\WebSphere MQ\java\jre

MQ 5.3 and 6.0

- MQ 5.3 and MQ 6.0 are out of support.

- From **<u>MQ 5.3</u>** you can migrate to **<u>6.0 and 7.0.0</u>**
- **<u>You cannot migrate directly</u>** to 7.0.1, 7.1, 7.5, 8.0, 9.0 or 9.1

- From **<u>MQ 6.0</u>** you can migrate to **<u>7.0.x, 7.1, and 7.5</u>**
- **<u>You cannot migrate directly</u>** to 8.0, 9.0 or 9.1

- Thus, to migrate queue managers from MQ 5.3 or MQ 6.0, to MQ 8.0 or later you must do it in 2 or 3 stages.

Example migration steps from 6.0 to 9.1

To go from MQ 6.0 to MQ 9.1 need to perform multiple steps.

- The Uninstall/Install process does NOT affect the data of the queue manager.
- The 1st time that strmqm is ran under the new code, the upgrade process will take place.

- Stop queue manager at MQ 6.0 (and take a backup)
- Uninstall MQ 6.0 and install MQ 7.5
- Start queue manager to upgrade from 6.0 to 7.5

- Stop queue manager at MQ 7.5 (and take a backup)
- Uninstall MQ 7.5 and install MQ 9.0
- Start queue manager to upgrade from 7.5 to 9.0

- Stop queue manager at MQ 9.0 (and take a backup)
- Uninstall MQ 9.0 and install MQ 9.1
- Start queue manager to upgrade from 9.0 to 9.1

MQ 7.0, 7.1 and 7.5

- MQ 7.0, 7.1 and 7.5 are out of support.

- From **MQ 7.0.1** you can migrate to **7.1, 7.5, 8.0**
- **You cannot migrate directly** to 9.0 or 9.1

- From **MQ 7.1** you can migrate to **7.5, 8.0 and 9.0**
- **You cannot migrate directly** to 9.1

- From **MQ 7.5** you can migrate to **8.0 and 9.0**
- **You cannot migrate directly** to 9.1

MQ 7.0, 7.1 and 7.5 (cont)

- To migrate queue managers from MQ 7.x to MQ 9.1 you must do it in 2 or 3 stages.

To go from MQ 7.5 to MQ 9.1 need to perform multiple steps:

- Stop queue manager at MQ 7.5 (and take a backup)
- Uninstall MQ 7.5 and install MQ 9.0
- Start queue manager to upgrade from 7.5 to 9.0

- Stop queue manager at MQ 9.0 (and take a backup)
- Uninstall MQ 9.0 and install MQ 9.1
- Start queue manager to upgrade from 9.0 to 9.1

Moving files from one host to another

- The following tutorials can be helpful when moving data and recovery log files from one host to another host, provided that both hosts have the same architecture (such as Intel x86) and OS

- https://www.ibm.com/support/pages/node/6114082
- Moving files of an MQ queue manager from one Linux host to another Linux host

- https://www.ibm.com/support/pages/node/6114094
- Moving files of an MQ queue manager from one Windows host to another Windows host

Using saveqmgr / dmpmqcfg

- To "move" a queue manager between hosts that have different architectures or OS, you could "export" the object definitions from host-1 with an old MQ version,
- And then you could "import" these object definitions into host-2 with a newer MQ version.
- For more details see:
- https://www-01.ibm.com/support/docview.wss?uid=ibm10738087
- Steps to export the object definitions and messages from one MQ queue manager in host-1 and import them in another queue manager in host-2?
- Use "saveqmgr" for MQ 7.0 or Earlier.
- Use "dmpmqcfg" for MQ 7.1 or Later.

End of Support (EOS) of MQ 8.0

- https://www.ibm.com/support/pages/node/711837
- Announcement: End of Support for IBM MQ 8.0, IBM MQ 8.0 for HPE NonStop, and the IBM MQ Appliance M2000

- IBM MQ 8.0.x will reach End of Support on:
- 30-Apr-2020
- All components (server, client) and platforms (except HPe NSS)

Notes: 5+3 Support Policy

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- The following link has the IBM lifecycle support policy (published in February 2008).
- It describes the "5 Plus 3" policy for support (5 years of normal support + 3 years of paid extended contract)
- .
- http://www-01.ibm.com/cgi-bin/common/ssi/ssialias?infotype=an&subtype=ca&htmlfid=897/ENUS208-035&appname=usn&language=enus
- IBM International Program License Agreement Software Support Lifecycle Policy is enhanced to support your middleware software solutions
- IBM United States Software Announcement 208-035
- February 19, 2008
- + begin Excerpt:
- Make support extensions available, for an additional fee, for a minimum period of three (3) years following the product's effective support discontinuance date.
- Support extensions are designed to allow migration to the current release to be successfully completed. For additional information on product technical support extensions beyond the five-year minimum period, contact your IBM representative.
- + end

Notes: Extended Support Contracts

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- If your version of MQ has reached its EOS, you can purchase an extended support contract, provided that it is purchased within the first 3 years after the EOS (in accordance to the "5 Plus 3" policy mentioned in previous page)

- Please contact your IBM Marketing Representative regarding this purchase.

- If you do not know who is your IBM marketing representative, you can find out by calling ...

- - Customer Support Operations at 877-426-6006, option 2. If you give them the customer number they can find the account rep for you.

- - IBM Customer Service Center:
-    1-800-IBM-4YOU (1-800-426-4968)
- Listen to the initial message and wait for a live IBM customer representative.

Consideration based on EOS

- The End of Support (EOS) dates for MQ 9.0 and 9.1 have not been announced yet.

- Based on the IBM support model of 5 years of normal support after the General Availability (GA) of the product, you can do the math:

- MQ 9.0 => GA June 2016 => EOS ?
- MQ 9.1 => GA July 2018 => EOS ?

Which next version to use?

- Because the GA of MQ 9.0 was 2 years before the GA of MQ 9.1, it is likely that the EOS for MQ 9.0 might occur before the EOS for MQ 9.1

- Ideally you do not want to perform 2 upgrades within a short period of time, thus, it might be best for you to upgrade now to MQ 9.1

- For more information on the EOS for MQ see:
  - https://www.ibm.com/support/lifecycle/#/search?q=IBM%20MQ
  - IBM Software Product Support Lifecycle: MQ

Which release type to use? LTS? CD?

- Starting with MQ 9.0, there are 2 release types for delivering the runtime code:

- Long Term Support (LTS)
- Continuous Delivery (CD)

- The GA release is the starting point for both streams:
  - MQ 9.0.0.0 LTS = MQ 9.0.0 CD
  - MQ 9.1.0.0 LTS = MQ 9.1.0 CD

Long Term Support (LTS)

- Use LTS if you want **<u>STABILITY</u>** and you are willing to sacrifice new features that may come with CD.
- Use LTS if you are not willing to tolerate possible bugs that may come with new features in CD.

- Collections of fixes for MQ LTS versions are delivered in Fix Packs.

- In our experience, customers want LTS for their **<u>PRODUCTION</u>** queue managers.

Continuous Delivery (CD) 1

- Use CD if you want **<u>NEW FEATURES</u>** and you are willing to tolerate possible bugs that may come with the new features.

- There are NO fix packs that can be applied on top of a CD release (but there might be interim fixes).

Continuous Delivery (CD) 2

- If you are using 9.1.3 CD and you want to go to 9.1.4 CD then you need to:
- Take a backup,
- UNINSTALL 9.1.3, and
- Install the new 9.1.4 CD

- In our experience, customers want CD for their **DEVELOPMENT and TEST** queue managers.

- http://www-01.ibm.com/support/docview.wss?uid=swg27047919
- IBM MQ FAQ for LTS and CD releases

Is MQ 9.1 just a fix pack for 9.0?

- Just by the version.release number, MQ 9.0 is a different version than 8.0.
- This means that 9.0 requires a separate license than the one for 8.0

- But how about MQ 9.1: is it just a fix pack for 9.0?
- Answer: **NO! MQ 9.1 is NOT a fix pack for 9.0.**
- They are separate versions and each requires a separate license.

Notes: What is new in MQ 9.0

- https://www.ibm.com/support/knowledgecenter/en/SSFKSJ_9.0.0/com.ibm.mq.pro.doc/q113110_.htm
- IBM MQ > IBM MQ 9.0.x > IBM MQ > Product overview
- What's new and changed in IBM MQ Version 9.0
- .
- + Introduces a new continuous delivery and support model.

- + New and enhanced capabilities for IBM MQ Version 9.0.0
- Additional quality of protection for IBM MQ AMS
- Web addressable access to the client channel definition table (CCDT)
- IBM MQ AMS supported in non-IBM JREs in Java clients
- Updated Resource Adapter for traditional WebSphere Application Server
- Enhanced Unicode data conversion support
- IBM MQ Managed File Transfer Protocol Bridge Agent logging enhancements
- Performance monitoring API and enhanced activity trace available through publish/subscribe
- [Windows] LDAP authorization on Windows platforms
- [UNIX]   runmqsc command line editor for UNIX platforms

Notes: What is new in MQ 9.0 (cont)

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- + Functions that are removed in IBM MQ V9.0
- **Stabilization of IBM MQ classes for Java !!**
- Compatibility mode for RPG applications on IBM i
- MD5 in IBM MQ Advanced Message Security
- The IBM MQ transport for SOAP is deprecated.
- The IBM MQ bridge for HTTP (deprecation was announced in IBM MQ V8.0)
- IBM MQ V9.0 removes support for Linux on POWER(R) (big endian), 32-bit client libraries on Windows and Linux x86-64, and
- IBM MQ Managed File Transfer Agent on 4690.
- IBM MQ support for Microsoft ActiveX and VB6

- **Note that MQ 9.0 is the LAST version.release that provides support for HP-UX.**
- (This does not affect HPe NSS which is a totally different OS and architecture)

Notes: What is new in MQ 9.1

- https://www.ibm.com/support/knowledgecenter/SSFKSJ_9.1.0/com.ibm.mq.pro.doc/q113110_.htm
- IBM MQ 9.1.x / IBM MQ / About IBM MQ /
- What's new and changed in IBM MQ Version 9.1.0

- In Multiplatforms (except z/OS):
- The IBM MQ Console
- The administrative REST API
- The messaging REST API
- Improvements to error logging
- Improvements to recovery logging
- [Linux]Connectivity to Salesforce with the IBM MQ Bridge to Salesforce

- New IBM MQ for Multiplatforms features - Advanced entitlement only
- [Linux] High availability and disaster recovery options with replicated data queue managers (RDQM) – it is NOT based on multi-instance queue managers.
- [Linux] Connectivity to Blockchain
- Managed File Transfer enhancements

Notes: What is new in MQ 9.1 (cont)

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- + Deprecations on all platforms
- IBM MQ classes for Java™ package com.ibm.mq.pcf
- IBM Cloud Product Insights
- **MQ 9.1 is the last version.release that supports Solaris SPARC and x86**

- + Removed features
- **Support for HP-UX was removed in MQ 9.1!!**
- Note: This does not impact HPe NSS which is a different OS.
- Support for installing IBM MQ on Linux Ubuntu systems using rpm
- Note: MQ in Ubuntu must be installed using the supplied Debian-style packages
- [Windows]Support for Microsoft Internet Explorer 11 browser
- Note: Microsoft Edge browser is now supported by the IBM MQ Console.
- IBM MQ transport for SOAP and HTTP bridge
- Support for the MQ Service Provider in z/OS® Connect V1

Notes: Changes to queues, attributes

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- The following technotes contain the list of new objects, new SYSTEM queues and new attributes in newer versions.

- http://www.ibm.com/support/docview.wss?uid=swg21620936
- New objects and new attributes for objects in WebSphere MQ 7.1, 7.5, 8.0, 9.0 and 9.1

- http://www.ibm.com/support/docview.wss?uid=swg21608033
- New SYSTEM queues added in WebSphere MQ 7.1, 7.5, 8.0, 9.0 and 9.1

- http://www.ibm.com/support/docview.wss?uid=swg21578742
- New MQ 7.1, 7.5, 8.0, 9.0 and 9.1 attributes in DISPLAY QMGR for new or migrated queue managers

- https://www.ibm.com/support/pages/node/3448647
- Upgrading to MQ 9.0 or MQ 9.1: what things could affect the queue manager or its administration

Download sites

- **IBM Passport Advantage**
- https://www.ibm.com/software/passportadvantage/pao_customer.html
- To download the FULL server code which can be used for a new installation.
- Hint: search using a **Part Number** (which are mentioned in the web pages in the next 2 slides)

- **IBM Fix Central**
- To download the DELTA fix packs that can be applied on top of a full install.
- https://www.ibm.com/support/pages/node/712857
- Recommended Fixes for IBM MQ

Downloading full installation code for MQ 9.0

- http://www-01.ibm.com/support/docview.wss?uid=swg24042009

- Downloading IBM MQ Version 9.0

- Latest rebased (as of 19-Mar-2020)
  - Windows: The latest rebased is 9.0.0.3
  - Linux: The latest rebased is 9.0.0.9
  - AIX: 9.0.0.1
  - Solaris: 9.0.0.1
  - HP-UX: 9.0.0.1

- "Rebased" is a "manufacturing refresh". For example:
  - MQ 9.0.0.9 = 9.0.0.0 + 9.0.0.1 + …. + 9.0.0.9

Downloading full installation code for MQ 9.1

- https://www-01.ibm.com/support/docview.wss?uid=swg24044776
- Downloading IBM MQ Version 9.1

- Latest rebased (as of 19-Mar-2020):
- Windows: 9.1.0.4
- Linux: 9.1.0.4
- Solaris: 9.1.0.1
- AIX: 9.1.0.0

- "Rebased" is a "manufacturing refresh". For example:
- MQ 9.1.0.4 = 9.1.0.0 + 9.1.0.1 + …. + 9.1.0.4

Notes: Compatibility

- The newer version of the code (queue manager / client) knows how to interact with previous versions and it will pretend to be at the same version of the other party.
- The older party thinks that it is interacting with a component at the same version.

- The MQ 9.1 client (for example), when communicating with a queue manager at 8.0, will pretend to be a 8.0 client and thus, the 8.0 queue manager thinks that it is interacting with a 8.0 client.

- The MQ 9.1 queue manager (for example), when communicating with a client at 8.0, will pretend to be a 8.0 queue manager, and thus, the 8.0 client thinks that it is interacting with a 8.0 queue manager.

- https://www.ibm.com/support/pages/node/100971
- MQ 7.x, MQ 8.0, MQ 9.0 and MQ 9.1 compatibility with previous versions - including usage of CCDT files, JMS .bindings, SSL/TLS

Notes: Downloading standalone MQ Explorer

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- If you want to download the standalone MQ Explorer, notice that you can only download the latest fix pack for MQ version 9.1.4 CD:

- http://www.ibm.com/support/docview.wss?uid=swg24021041
- MS0T: WebSphere MQ Explorer

- Because MQ Explorer 9.1.4 CD is backward compatible with 7.0, 7.1, 7.5, 8.0 and 9.0, and thus only Version 9.1.4 is provided in this SupportPac.

- The latest version of the Support Pac can be used to connect to remote queue managers from any currently supported version of IBM WebSphere MQ.

- Linux: There are no rpm filesets, instead there is an executable file called "setup.bin". Follow the instructions from the Readme.txt file.

- Note (05-Dec-2019):
- Please note that from MQ 9.1.4, IBM MQ Explorer will no longer be known as the MS0T SupportPac but will still be downloadable from Fix Central.

Notes: System Requirements

- It is important that you check for the system requirements for the newer versions of MQ.

- http://www.ibm.com/support/docview.wss?uid=swg27006467
- System Requirements for WebSphere MQ

- This check could avoid delays in your migration.
- An example for Linux;
- You might be using Red Hat Enterprise Linux (RHEL) V6 in MQ 8.0 and you want to upgrade to MQ 9.1.

- MQ 9.1 does not support RHEL V6. The minimum is RHEL V7.3

- If upgrading to MQ 9.1 is more important than remaining at RHEL V6, then you will need to upgrade RHEL from V6 to V7.2 before you upgrade to MQ 9.1.

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Upgrade or exploit multi-version

- OK, now that all the preliminaries have been presented, let's discuss the 2 options:

  - Upgrade in place (only 1 installation)
    - Or
  - Exploit multi-version (multiple installations)

- The DATA and RECOVERY LOGS for the queue managers are NOT affected by either of these methods.

Upgrade or exploit multi-version (cont)

- Starting with MQ 7.1, it is possible to have multiple versions of MQ installed in the same machine.
- Thus, there are 2 main choices to proceed:

- 1: Upgrade in place (1 installation)
- Uninstall MQ 8.0, and install new version 9.1

- 2: Exploit multi-version (multiple installations)
- Keep MQ 8.0 and install new version 9.1 in another directory structure

Upgrade (only one version in the box)

- The simplest option is just to upgrade to a newer version.

- It is necessary to uninstall the currently installed version of MQ, and then install the new version.

- You MUST upgrade ALL of the queue managers at the same time.
- That is, you cannot have QMGR1 upgraded to MQ 9.1 and try to keep running QMGR2 still at MQ 8.0.

Upgrade (only one version in the box)

- In Linux, HP-UX and Solaris, you must uninstall MQ 8.0 and then install the new version.

- In AIX and in Windows, you have the option to not uninstall MQ 8.0, and when the new version of MQ is installed, then a backup copy of the old code will be made, and the new version will overwrite the old one (this takes time and disk space).
- Many customers uninstall MQ 8.0 and then install the new version.

Upgrade (only one version in the box)

- AIX: (no change in location)
- Before: MQ 8.0 on /usr/mqm
- After: MQ 9.x on /usr/mqm

- Linux, HP-UX, Solaris: (no change in location)
- Before: MQ 8.0 on /opt/mqm
- After: MQ 9.x on /opt/mqm

- Windows: Note change in location
- Before: MQ 8.0 on C:\Program Files\IBM\WebSphere MQ
- After: MQ 9.x on C:\Program Files\IBM\MQ

Upgrade tutorial for Windows

The principles in the tutorial apply also for upgrading:

From MQ 7.x to MQ 8.0

From MQ 7.5 to MQ 9.0

From MQ 8.0 to MQ 9.1 LTS

From MQ 8.0 to MQ 9.0

From MQ 9.0 to MQ 9.1

https://www.ibm.com/support/pages/node/1172248

Upgrading from MQ 8.0 to MQ 9.1.4 CD in Windows

Notes: Tutorial for upgrade in Windows

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Notice: You need to be prepared to reboot 2 times the computer:

- After uninstalling MQ 8.
- After installing MQ 9.1.

The chapters are:

Chapter 1: Uninstalling MQ 8.0

Chapter 2: Installing MQ 9.1.4 CD

Chapter 3: Running setmqinst to designate the Primary installation

Chapter 4: Running setmqenv to use MQ 9.1 commands

Chapter 5: Upgrading an existing queue manager to MQ 9.1

Chapter 6: Creating a queue manager under 9.1

Chapter 7: Remotely accessing the new MQ 9.1 queue manager

Upgrade tutorial for Linux

The principles in the tutorial apply also for upgrading:
From MQ 7.x to MQ 8.0
From MQ 7.5 to MQ 9.0
From MQ 8.0 to MQ 9.0
From MQ 8.0 to MQ 9.1 CD
From MQ 9.0 to MQ 9.1

http://www.ibm.com/support/docview.wss?uid=ibm10875570
Upgrading MQ 8.0.0.11 to MQ 9.1.0.1 LTS in Linux

Notes: Tutorial for upgrade in Linux

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- Only the chapters for uninstallation and installation are exclusively for Linux.
- But the rest of the chapters apply also to other UNIXes: AIX, HP-UX and Solaris.

- The chapters are:
- Chapter 1: Uninstalling MQ 8.0
- Chapter 2: Installing MQ 9.1.0.0 LTS
- Chapter 3: Applying Fix Pack MQ 9.1.0.1 LTS
- Chapter 4: Running setmqinst to designate the Primary installation
- Chapter 5: Running setmqenv to use MQ 9.1 commands
- Chapter 6: Creating a queue manager under 9.1
- Chapter 7: Remote access to the new MQ 9.1 queue manager
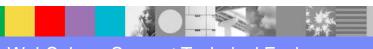- Chapter 8: Migrating an MQ 8.0 queue manager to MQ 9.1

As root, set primary installation: setmqinst

- After you have installed MQ 9.0 or 9.1, and
- if you are planning to have ONLY ONE installation of MQ, then you will need to take an extra step:
- You need to set the current installation as the primary installation.
- In Unix, the userid 'root' must issue the command.

- For example, in Linux:
/opt/mqm/bin/setmqinst -i -p /opt/mqm

Effects of setmqinst in Unix:

- Symbolic links:

- The installer of MQ 7.1 or later, does NOT add symbolic links to system directories.
- But the new utility 'setmqinst' will create those symbolic links

- The Installation configuration file will be updated to reflect which installation is the primary one.
- Location: /etc/opt/mqm/mqinst.ini

Notes: symbolic links

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- OK, you have installed MQ 7.1 or later, and you proceed to issue MQ commands.
- You login as an MQ Administrator and try to run an MQ command, such as:
- $ dspmq
- You expect the list of queue managers, but instead, you get an error message!
- If 'dspmq' is not a typo you can run the following command to lookup the package that contains the binary:

command-not-found dspmq

-bash: dspmq: command not found

- You try another command:
- $ dspmqver
- And instead of getting the version of MQ, you get another error message:
- AMQ8594: WebSphere MQ commands are no longer available in /usr/bin.

- You issue the following to check for the symbolic link:
- $ ls -l /usr/bin/dspmq

ls: cannot access /usr/bin/dspmq No such file or directory

- What is going on?

Notes: symbolic links

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- At this point, you have only 1 installation of MQ in the box.
- If you have only 1 installation of MQ in the system, why the MQ installation utilities do not assign it to be the Primary? Why do you have to be bothered to take one more step in order to manually designate it as Primary?

- One reason is that the installation utilities do not know if your intention is to install in the same day 2 different versions of MQ in the same machine. A Primary installation is not chosen (even if it is the only installation) just in case that you want to exploit the multi-version feature later on and this early decision of not designating a Primary will save you confusion and frustration later on.

- On UNIX and Linux systems, if you set an installation as the Primary installation, symbolic links to the external libraries and control commands of that installation are added into /usr/lib, and /usr/bin.
- If you do not have a primary installation, the symbolic links are not created.

- You issue the following to confirm that there are now symbolic links:
$ ls -l /usr/bin/dspmq
lrwxrwxrwx 1 root root 18 Nov 15 16:02 /usr/bin/dspmq -> /opt/mqm/bin/dspmq

Notes: installation configuration file

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- In Unix, the installation configuration file has the list of the MQ installations in the box (only for version MQ 7.1 or later).

$ cd /etc/opt/mqm

$ cat mqinst.ini
Installation:
   Name=Installation1
   Description=
   Identifier=1
   FilePath=/opt/mqm
Primary:
   Name=Installation1

This installation has a name: Installation1
- If you install another version of MQ, then it will be called: Installation2

Notes: setmqenv in Windows

- In Windows, the installer will update some environment variables related to MQ.
- But in order to setup the full environment variables for MQ, it is recommended to always use "setmqenv" when you start a session with a command prompt.

- One way to do it by is creating a batch file, such as "set-mq-91.bat" which will point to the installation directory of MQ 9.1 and then set the environment for the corresponding installation, such as Installation1.
- Store this file in a directory that is in your PATH.

```
+ begin file
REM Setup the environment to run MQ 9.1
CALL "C:\Program Files\IBM\MQ\bin\setmqenv" -n Installation1
REM Adding Samples to the path
SET
   PATH=%PATH%;%MQ_FILE_PATH%\Tools\c\Samples\Bin;%MQ_FILE_PATH%\Tools\c\Samples\Bin64;
   %MQ_FILE_PATH%\Tools\jms\samples;%MQ_JAVA_INSTALL_PATH%\bin\
dspmqver -f 2
+ end file

Example:
C:\> set-mq-91
C:\>CALL "C:\Program Files\IBM\MQ\bin\setmqenv" -n Installation1
Version:      9.1.0.3
```

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Notes: setmqenv in Unix

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- In Unix, you need to always use "setmqenv" when you start a session with a command prompt. You could add setmqenv in your .profile or .bashrc

- You need to "source" (run "inline") the utility setmqenv by specifying a leading . (dot) and a blank, otherwise, the MQ environment variables will NOT be set.

```
.   /opt/mqm/bin/setmqenv -n Installation1
| |
| +--- blank
+--- dot
```

- Instead of typing the whole command every time, you could save time by creating a shell script file, such as "set-mq-91" which will point to the installation directory of MQ 9.1 and then set the environment for the corresponding installation, such as Installation1.
- Store this file in a directory that is in your PATH.

Notes: setmqenv in Unix

- Keep in mind that you will need to use the dot and the space also!

```
.    set-mq-91
| |
| +--- blank
+--- dot
```

Example of the script:
============ begin script
Name: set-mq-91
Purpose: to setup the environment to run MQ 9.1
. /opt/mqm/bin/setmqenv -n Installation1
Additional MQ directories for the PATH
export
   PATH=$PATH:$MQ_INSTALLATION_PATH/java/bin:$MQ_INSTALLATION_PATH/samp/bin:$MQ_I
   NSTALLATION_PATH/samp/jms/samples:
Add local directory for running Java/JMS programs
export CLASSPATH=$CLASSPATH:.
Display the full fix pack level
dspmqver -f 2
end
============ end of script

Exploiting multi-version (coexisting)

- Starting with MQ 7.1, you can have multiple installations of MQ in the same box.

- One of the reasons for adding this feature is to facilitate a staged upgrade of the queue managers in a box from an older version to a newer version.

- This means that some queue managers in the box could be running at MQ 8.0 while others have been upgraded and running at MQ 9.1 (for example).

Coexisting - example of 8.0 and 9.1 in Linux

- Example for Linux

- Before:
- Installation1: MQ 8.0 on /opt/mqm

- After:
- Installation1: MQ 8.0 on /opt/mqm
- Installation2: MQ 9.1 on /opt/mqm91

Coexisting - example in Windows

- Example for Windows:

- Before:
- Installation1: 8.0 C:\Program Files\IBM\WebSphere MQ

- After:
- Installation1: 8.0 C:\Program Files\IBM\WebSphere MQ
- Installation2: 9.0 C:\Program Files\IBM\MQ
- Installation3: 9.1 C:\Program Files\IBM\MQ_1

Tutorials

https://www.ibm.com/support/pages/node/2800929
Installing MQ 9.1.0.0 LTS to coexist with MQ 8.0.0.9 in Windows, including applying Fix Packs 8.0.0.14 and 9.1.0.4

https://www.ibm.com/support/pages/node/2800923
Installing MQ 9.1.0.3 LTS to coexist with MQ 8.0.0.9 in Linux x86 64-bit, including applying Fix Packs 8.0.0.14 and 9.1.0.4

Notes: tutorial for Windows

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- The chapters are:
- Chapter 1: Installing MQ 9.1 side-by-side to MQ 8.0
- Chapter 2: Need to run setmqenv to use MQ 9.1 or MQ 8.0 commands
- Chapter 3: Creating a queue manager under MQ 9.1
- Chapter 4: Remote access to the new MQ 9.1 queue manager
- Chapter 5: Migrating an MQ 8.0 queue manager to MQ 9.1
- Chapter 6: Installing fix pack MQ 8.0.0.14
- Chapter 7: Installing Fix Pack 9.1.0.4
- Chapter 8: Uninstallation

Notes: tutorial for Linux

n o t e s

Except for the installation chapters that use the Linux rpm command, the rest of the chapters apply to other UNIX distributions: AIX and Solaris

Keep in mind that:

MQ 9.0 is the LAST version that provides support for HP-UX.

MQ 9.1 is the LAST version that provides support for Solaris.

The chapters are:

Chapter 1: Summary of rpm commands: install, uninstall, querying

Chapter 2: Installing MQ 9.1 LTS side-by-side to MQ 8.0

Chapter 3: Need to run setmqenv to use MQ 9.1 or MQ 8.0 commands

Chapter 4: Creating a queue manager under MQ 9.1

Chapter 5: Remote access to the new MQ 9.1 queue manager

Chapter 6: Migrating an MQ 8.0 queue manager to MQ 9.1

Chapter 7: Installing Fix Pack 8.0.0.14

Chapter 8: Installing Fix Pack 9.1.0.4

Chapter 9: Uninstallation

Notes: customizing the environment

- ++ To facilitate the handling of multiple versions during routine operations, you could create 2 batch files for Windows:

"set-mq-80.bat"
CALL "C:\Program Files\IBM\WebSphere MQ\bin\setmqenv" -n Installation1

"set-mq-91.bat"
CALL "C:\Program Files\IBM\MQ\bin\setmqenv" -n Installation2

- ++ Similarly for Unix:

"set-mq-80"
  . /opt/mqm/bin/setmqenv -n Installation1

"set-mq-91"
  . /opt/mqm91/bin/setmqenv -n Installation2

Upgrading multi-instance queue managers

https://www.ibm.com/support/pages/node/1284952

Staged migration of MQ multi-instance queue managers

You have an MQ multi-instance queue manager at MQ 8.0 in both hosts.

Now you want to perform a staged upgrade of each host to MQ 9.1 and you want to minimize the downtime of the queue manager and MQ client applications connected to the queue manager.

Notes: complex migration scenarios

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+++ Contact "IBM Cloud Professional Services" for complex migration scenarios +++

The role of the IBM MQ Support team is to provide assistance on problem determination and to answer basic how-to questions.

We recommend for you to contact directly the following fee-based resource "IBM Cloud Professional Services" team for matters related to complex migration scenarios, application design, performance tuning, and related consulting services.

For example, if you have MQ 6.0 or if you want to migrate from HP-UX and/or Solaris to another platform.

https://www.ibm.com/us-en/marketplace/ibm-cloud-professional-services

IBM Cloud Professional Services

Worldwide services and support for IBM Cloud solutions

(also known as: IBM Services Organization, IBM Software Services for WebSphere or IBM Cloud Technical Engagement)

References

https://www.ibm.com/support/pages/node/2404089

MQ Distributed: collection of articles regarding
installation, upgrade and migration

https://www.ibm.com/support/knowledgecenter/SSFKSJ_9.1.0

MQ 9.1 KnowledgeCenter

http://www.ibm.com/support/knowledgecenter/SSFKSJ_9.0.0

MQ 9.0 KnowledgeCenter

http://www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0

MQ 8.0 KnowledgeCenter

Notes: Downloading the MQ Client 9.1

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You can download the MQ Client code, which is a free download.
It includes both the base code plus the latest fix pack:

https://www-01.ibm.com/support/docview.wss?uid=swg24044791
MQC91: MQ V9.1 Clients
http://www.ibm.com/support/docview.wss?uid=swg24042176
MQC9: MQ 9.0 Clients

You will see a table at the lower part of the web page, which will have the links for the desired version to download.
The MQ Client includes code related to the client applications (C-base, Java/JMS, GSKit, etc) but does not include code for the server, AMS, MFT and Telemetry.
.
Example of file names:
File name for Linux x86-64 bit, MQ 9.1.0.0:   9.1.0.0-IBM-MQC-LinuxX64.tar.gz
File name for Windows 64-bit, MQ 9.1.0.0:   9.1.0.0-IBM-MQC-LinuxX64.tar.gz
Note that in the file names, the "C" in MQC means "Client" and not "C-language".
That is, the MQ Client includes the interfaces for C-language and Java/JMS.

The End

THANKS!!