



IBM Software Group

Installation and Migration of WebSphere MQ V7 for Unix and Windows

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Agenda

- Compatibility and Platforms
- Installation
- MQ Explorer
- Migration of Queue Managers
- JMS Considerations
- Migration of Pub/Sub V6 to Queue Pub/Sub V7



Compatibility

- From Announcement Letter:
 - ▶ WebSphere MQ V7.0 queue managers and clients interoperate with queue managers and clients from any previous level of WebSphere MQ or MQSeries products.
 - ▶ For more details, see the manual “Migration”: Chapter 2. Migrating WebSphere MQ applications

- The MQ Explorer can connect to all supported queue managers with the following exceptions:
 - ▶ WebSphere MQ for z/OS queue managers prior to V6.0.
 - ▶ Currently supported MQSeries(R) V2 queue managers.



Platforms

- Essentially the same platforms as V6
 - ▶ AIX, HP-UX (PA-RISC and Itanium), Solaris (SPARC and x86-64), Linux® (x86 32-bit, x86 64-bit, Power, zSeries), i5/OS, z/OS, Windows®
 - ▶ Updates to base OS levels
- Only one product for Linux/zSeries
 - ▶ 31-bit version is removed; 64-bit edition continues
- Drop Windows 2000
 - ▶ Windows XP is base level
 - ▶ Vista supported
- Windows x64
 - ▶ Adds 64-bit application support to single Windows package
 - ▶ Supporting existing 32-bit applications
 - ▶ Some exits will require recompiling to support both 32 and 64-bit modes
- Java™ 1.4.2 and later



Platforms - notes

notes

- The set of supported platforms is essentially the same as in the previous version of WMQ V6. There are changes to the base levels of operating system that are supported, driven by the current status of each OS.
- V7 ships 12 different versions, to handle the different operating system and hardware combinations.
- In V6 there were two versions of WMQ for Linux/zSeries, one supporting only 31-bit applications and a second that incorporated 64-bit support. For V7 the first of these has been dropped, but the 64-bit version is fully compatible with 31-bit applications.
- One of the changes to Windows support is that Windows 2000 is no longer a supported platform. Windows XP is the oldest level that can be used.
- With this release we include support for Vista.
- There is only one version of WMQ for Windows; it incorporates support for all the variations of the operating system: 64-bit and 32-bit
 - ▶ There is also support for the x64 versions of the operating system. When running on a 64-bit platform, the queue manager itself is still a 32-bit process, but support is now included for 64-bit applications to use this queue manager.
 - ▶ Exits that run inside application code, API Exits and Data Conversion Exits, will need to have both 32-bit and 64-bit versions available. 64-bit clients would need 64-bit channel exits as well.
- Java 1.4.2 is the lowest level of runtime supported; later levels are also supported
- For most recent information on the SOE (Supported Operating Environments), see: List of Supported Software for WebSphere MQ V7.0
<http://www-1.ibm.com/support/docview.wss?rs=171&uid=swg27012075>

Installation

- No visible changes compared to MQ V6 install
- Includes Eclipse 3.3 (bundled with V7 images for Windows and Linux Intel 32-bit and 64-bit) to be used with MQ Explorer.
 - ▶ You **MUST** use the Eclipse packaging provided by MQ. There is **NO** support for other packaging of Eclipse, such as from RAD, etc.
- For Windows Vista users with UAC enabled, need to accept the Window Prompt to allow Launchpad in elevated state.

Installation - Notes

notes

- Eclipse 3.3 is required for WebSphere MQ Explorer V7
- MQ Explorer V6 used Eclipse V3.2. MQ Explorer is a set of plug-ins that are installed on top of the WebSphere Eclipse install.
- You **MUST** use the Eclipse packaging provided by MQ.
There is **NO** support for other packaging of Eclipse, such as from RAD, etc.
- For Windows Vista users with User Account Control (UAC) enabled, accept the Window Prompt to allow Launchpad in elevated state.
- The main goal of User Account Control is to reduce the exposure and attack surface of the operating system by requiring that all users run in standard user mode. This limitation minimizes the ability for users to make changes that could destabilize their computers or inadvertently expose the network to viruses through undetected malware that has infected their computer.
- IT administrators can run most applications, components and processes with a limited privilege, but have "elevation potential" for specific administrative tasks and application functions.
- Conversely, when users encounter a system task that requires administrator privileges, such as attempting to install an application, Windows Vista will notify the user and require administrator authorization. This type of prompting helps ensure that users do not accidentally make modifications to their desktops.

Installation - Components/Part Numbers

- **To help you with the searching of the MQ V7 downloadable install files from the IBM® Passport Advantage web site, it is best to search for “Part Numbers”.**
- The following technote shows these “Part Numbers” in the 3rd column (“Images”) in a table:
- <http://www-1.ibm.com/support/docview.wss?rs=171&uid=swg24019472>
- **Downloading WebSphere MQ Version 7.0 from Passport Advantage Web site**

- **The MQ code from Passport Advantage is at 7.0.0.1 level.**

- MQ 7.0.0.1 is a special situation: normally a fix pack such as 7.0.0.1 is just a delta that is installed on top of 7.0.0.0, but in this case, besides being a delta installable on top of 7.0.0.0, those customers who order the product after 30-Jan-2009 or download the images from Passport Advantage, are going to receive the full combined code of 7.0.0.0 + 7.0.0.1, and after they have installed the code, their setting will be a FULL 7.0.0.1.

- For those customers who have already 7.0.0.0 and just want to install the delta for 7.0.0.1, they can visit the following to download the delta:
- <http://www-01.ibm.com/support/docview.wss?rs=171&uid=swg27006037#1>
- Recommended Fixes for WebSphere MQ, IBM WebSphere MQ Version 7.0, 7.0.0.1

Installation - Components/PartNumbers Notes

notes

- WebSphere MQ V7.0 eAssembly Multiplatform Multilingual (CR6RIML) – includes all the ones below:
 - WebSphere MQ V7.0 Documentation for Linux x86 (C19LKML) Size 398mb
 - WebSphere MQ V7.0 Documentation for Windows (C19LJML) Size 473mb
 - WebSphere MQ V7.0 Quick Start Guide (C19LIML) Size 220mb
 - WebSphere MQ V7.0 client for AIX Multilingual (CZ0EKML) Size 147mb
 - WebSphere MQ V7.0 client for HP-UX on Itanium Multilingual (CZ0EVML) Size 248mb
 - WebSphere MQ V7.0 client for HP-UX on PA-RISC Multilingual (CZ0ETML) Size 212mb
 - WebSphere MQ V7.0 client for Linux on POWER Multilingual (CZ0F1ML) Size 126mb
 - WebSphere MQ V7.0 client for Linux on System z Multilingual (CZ0F3ML) Size 118mb
 - WebSphere MQ V7.0 client for Linux on x86 32-bit Multilingual (CZ0EXML) Size 111mb
 - WebSphere MQ V7.0 client for Linux on x86-64 Multilingual (CZ0EZML) Size 118mb
 - WebSphere MQ V7.0 client for Solaris on SPARC Multilingual (CZ0EPML) Size 210mb
 - WebSphere MQ V7.0 client for Solaris on x86-64 Multilingual (CZ0ERML) Size 274mb
 - WebSphere MQ V7.0 client for Windows Multilingual (CZ0EIML) Size 91mb
 - WebSphere MQ V7.0 client for i5/OS Multilingual (C19LZML) Size 22mb
 - WebSphere MQ V7.0 for AIX Multilingual (CZ0EJML) Size 305mb
 - WebSphere MQ V7.0 for HP-UX on Itanium Multilingual (CZ0EUML) Size 390mb
 - WebSphere MQ V7.0 for HP-UX on PA-RISC Multilingual (CZ0ESML) Size 313mb
 - WebSphere MQ V7.0 for Linux on POWER Multilingual (CZ0F0ML) Size 201mb
 - WebSphere MQ V7.0 for Linux on System z Multilingual (CZ0F2ML) Size 181mb
 - WebSphere MQ V7.0 for Linux on x86 32-bit Multilingual (CZ0EWML) Size 441mb
 - WebSphere MQ V7.0 for Linux on x86-64 Multilingual (CZ0EYML) Size 452mb
 - WebSphere MQ V7.0 for Solaris on SPARC Multilingual (CZ0ENML) Size 365mb
 - WebSphere MQ V7.0 for Solaris on x86-64 Multilingual (CZ0EQML) Size 394mb
 - WebSphere MQ V7.0 for Windows Multilingual (CZ0EHML) Size 446mb
 - WebSphere MQ V7.0 for i5/OS Multilingual (C19LNML) Size 178mb

Positioning of MQ Explorer

- MQ Explorer is positioned as the administration GUI tool for all platforms, including z/OS.
- In z/OS, IBM is providing with MQ V7, FREE 5 (five) client connections to the `SYSTEM.ADMIN.SVRCONN` channel to be used by the MQ Explorer. In that way, those who do not use the Client Attach Feature (CAF) can still use the MQ Explorer.
- The native ISFP panels for MQ administration in z/OS were NOT updated with the new functions added in MQ V7.
- The equivalent native panels used in MQ V6 remain the same in MQ V7. For MQ V7 z/OS users, they can use the command line to run the new functions.

Licensing of MQ Explorer

- <http://www-01.ibm.com/software/integration/wmq/explorer/>
- WebSphere MQ - MQ Explorer V7.0 - Technical detail
- Licensing MQ Explorer:
- MQ Explorer is provided with WebSphere MQ on distributed platforms. MQ Explorer does not require a local server or client, and it can be installed on workstations without charge.
- Remote Configuration
- “... WebSphere MQ Explorer runs on Microsoft® Windows and Linux x86 machines. It does not need to be deployed with a WebSphere MQ client or server, and you can install as many copies as required.”

Packaging of MQ Explorer

- A) The MQ Explorer V7 is part of the MQ V7 Server (not the MQ client).
- That is, if you have a license for the MQ V7 Server for Windows and Linux for x86 (32-bit or 64-bit), then you have already the MQ Explorer.
- The MQ Explorer is NOT provided with AIX, HP-UX, Solaris and other platforms.

- B) You can download the following standalone SupportPac:
 - <http://www-01.ibm.com/support/docview.wss?rs=171&uid=swg24021041>
 - MS0T: WebSphere MQ Explorer
 - It provides the MQ Explorer for Windows and Linux Intel (a single image that works in both 32-bit and 64-bit).

Packaging of MQ Explorer - notes

notes

- In the MQ Server image or CD, the MQ Explorer is provided in the following 2 file sets in Windows and in Linux x86:
 - a) WebSphere Eclipse Platform: File set name: MQSeriesEclipseSDK33
 - b) WebSphere MQ Explorer: File set name: MQSeriesConfig
- Follow these instructions to install the MQ Explorer in Windows:
 - Launch the WebSphere MQ setup.exe.
 - Select "Software Requirements" and verify your OS is OK.
 - Select Install "WebSphere Eclipse Platform Version 3"
 - Select "WebSphere MQ Installation", press "Launch IBM WebSphere MQ Installer."
 - Accept the license agreement, press "Next."
 - Choose Setup Type "Custom.", press "Next."
 - You are ask about where to put Program files, Data-files, GSK files, Log files. Accept the defaults or identify the desired file paths. Press "Next."
 - In the Features dialog you must install "MQ Explorer".
 - After selecting all desired features press "Next".
 - Review your installation options and if you are in agreement press "Install."

Migration - References

- <http://publib.boulder.ibm.com/infocenter/wmqv7/v7r0/index.jsp>
- WebSphere MQ 7.0 Information Center

- <http://www-01.ibm.com/software/integration/wmq/library/>
- WebSphere MQ 7.0 Library – Download of PDF files.
- **Manual: Migration => HIGHLY RECOMMENDED !!**
- Manual: Quick Beginnings for <Operating System>
 - ▶ Chapter: Migrating to MQ for <Operating System> Version 7.0
- Manual: Publish/Subscribe User's Guide
 - ▶ Chapter: Migrating to WebSphere Version 7.0 Pub/Sub
- <http://www.redbooks.ibm.com/abstracts/SG247583.html?Open>
- WebSphere MQ V7.0 Features and Enhancements (SG24-7583)
 - ▶ Chapter 12. Installation and migration

Migration considerations (1)

- Coexistence: 2 or more different versions of MQ CANNOT coexist on the same computer
 - ▶ Except for MQ for z/OS where multiple different versions can coexist in limited scenarios.
- Migration is supported from previous versions:
 - ▶ MQ V6.0 to MQ V7
 - ▶ MQ V5.3 to MQ V7 (no explicit migration to MQ 6.0)
 - ▶ Even in Windows and AIX where is possible to install MQ V7 on top of V5.3 or V6 code, it is recommended to uninstall the old code and install the new code, to have a faster installation.



Migration considerations (1) - notes

notes

- Prior to migration
 - ▶ Ensure no queue managers are running and WebSphere MQ Service is stopped before installing.
 - ▶ Back up your system before install. This enables you to back off the upgrade.
 - ▶ The upgrade of queue managers performs changes that are NOT reversible.
 - ▶ If you back off the upgrade, you cannot recover any work performed by WebSphere MQ V7.
- During upgrade:
 - ▶ All the objects are migrated.
- None of the distributed platforms allow multiple MQ versions to run on the same machine.
 - ▶ User will be prompted to upgrade if MQ V5.3 or V6.0 is detected.
- When migrating queue managers in a cluster, migrate the full repositories first
- For Linux platforms that support 32-bit and 64-bit versions of WebSphere MQ v6.0 or of WebSphere MQ v7.0, there is no migration path between the 32-bit version and the 64-bit version

Migration considerations (2)

- Migrating from 5.3:
 - ▶ When migration from Windows MQ 5.3, the same limitations for the migration to MQ V6 apply here: SSL certificates are different.
- When migrating from MQ 5.3 in Unix®
- - Queue managers are now 64-bit and will require 64-bit hardware and Operating System
- - General rules regarding 32-bit applications:
 - ▶ - 32-bit applications will not need to be modified
 - ▶ - 32-bit switches and exits will need to be rebuilt
- Databases
 - - Upgrade to a 64-bit version
 - - Must rebuild switch load files for these databases to support 64-bit processing



Backup before install

- Once upgrade is complete, you cannot revert to previous level.
- Back up your system before install.
- This enables you to back out the upgrade.

- Use SupportPac MS03 - Saves all of the objects (queues, channels, etc) defined in a either local or remote queue manager to a file, which allows you to recreate the queue manager
- <http://ibm.com/support/docview.wss?rs=171&uid=swg24000673>
- MS03: WebSphere MQ - Save Queue Manager object definitions using PCFs (saveqmgr)

- If you back out the upgrade, you cannot recover any work performed by MQ V7

Upgrade happens during strmqm

- The installation of the code (in /opt/mqm) does NOT upgrade the queue managers (in /var/mqm)
- The upgrade takes place during the first start of the queue manager after the V7 code is installed:
 - `strmqm QueueManagerName`
- The following output line will indicate the migration:
`Migrating objects for QMgrName`

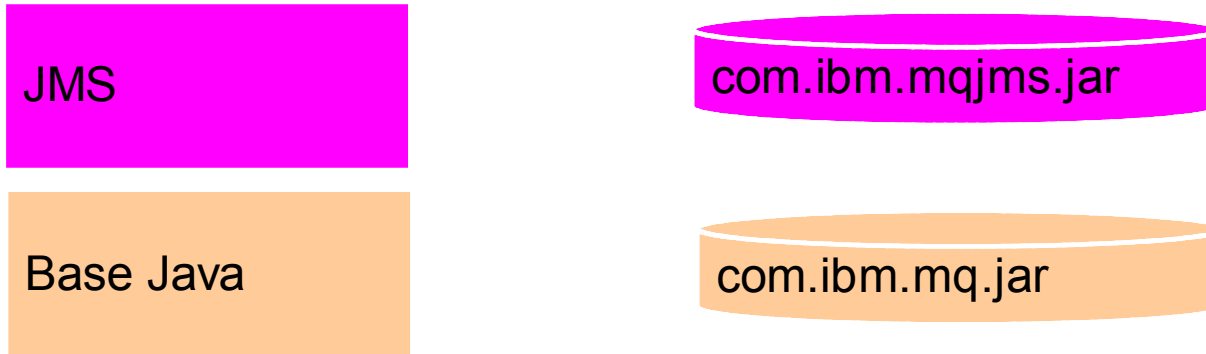
Java / JMS considerations

- The WebSphere MQ classes for Java and MQ classes for Java Message Service (JMS) have two modes of operation:
- Normal mode is optimized to use the new features of WebSphere MQ V7.0.
- Migration mode is based on WebSphere MQ V6.0 function and only those features which were available at this level can be used.
 - ▶ This is called “the MQ V6 leg”.

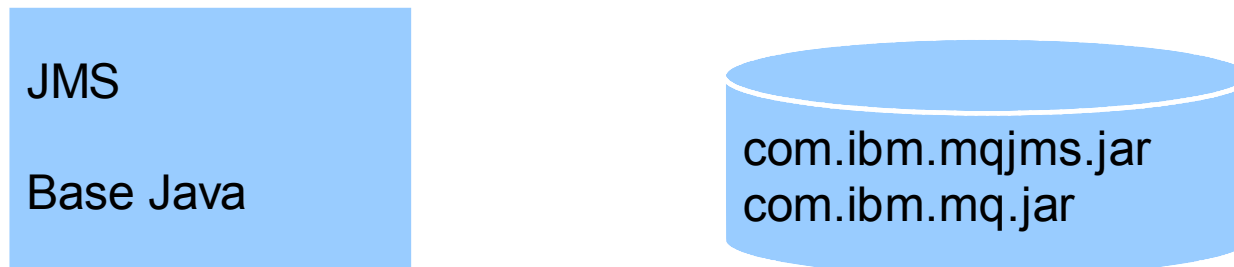


MQ V6 Java / JMS architecture

Initial idea: separate functions, separate jars



Actual implementation: cross-dependencies in the jar files



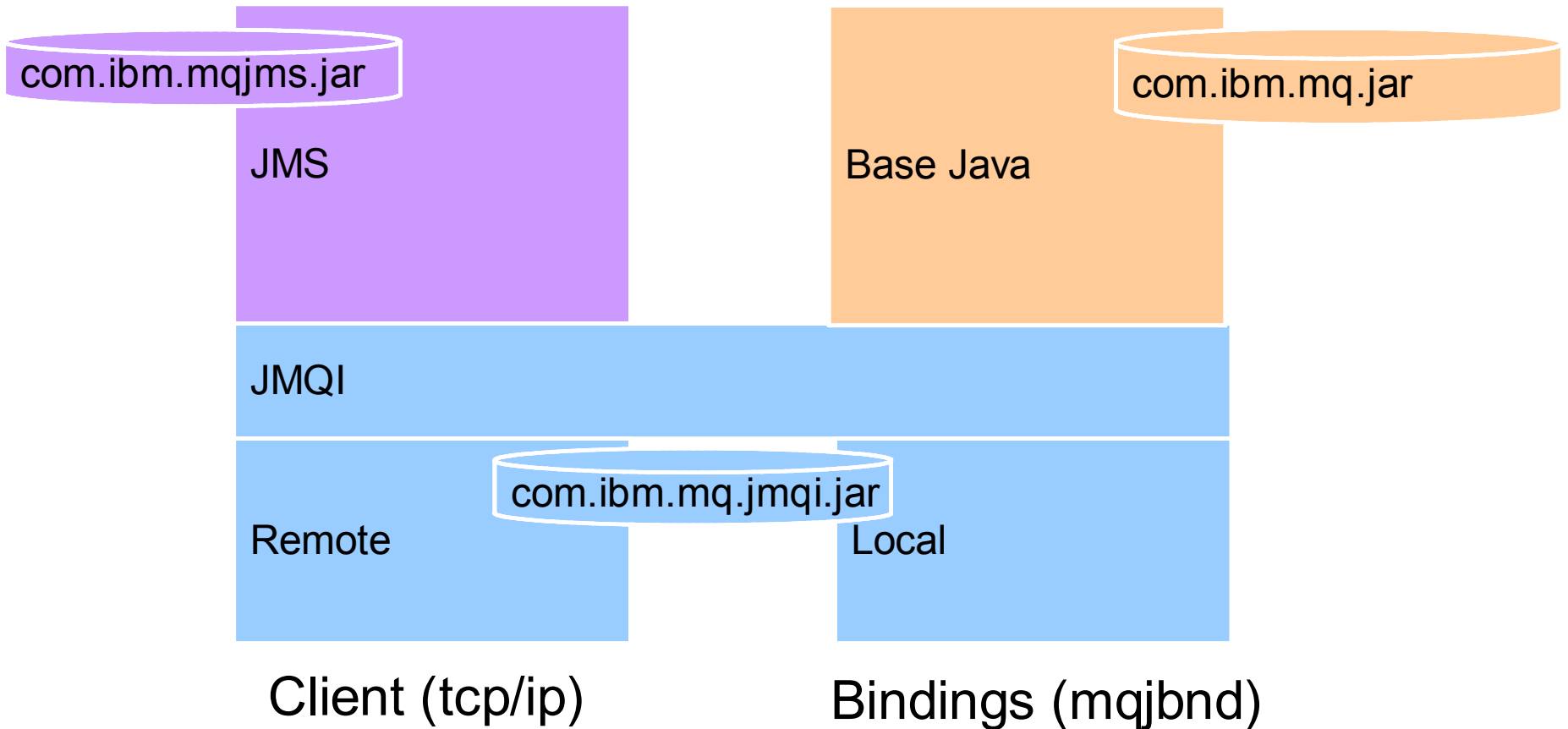
V6 Java/JMS - notes

notes

- The major release of WMQ v7 has allowed the opportunity to do a number of things with the JMS and Java Clients.
- One was to address the relationship in architecture terms of the JMS and Base Java Clients - the changes that were going to be required to support the new Premier JMS features was
 - Original Java language client is the WebSphere MQ classes for Java – or ‘Base Java’.
 - JMS was built on top of that client
 - Mapping of JMS primitives to JMS primitives unclear – first map to Base Java then map to MQI
 - Some special APIs in Base Java for JMS that were used as though true Base Java APIs
 - Parts of the Base Java API were “exposed” and therefore the APIs were not clearly delineated
 - Clients often treated as one thing – often not clear what people are using “the Java MQ Client”

MQ v7 Architecture

JMS and Base Java are now peers



V7 Java/JMS - notes

notes

- Base Java is now a peer of JMS – the two code bases are independent – and function standalone. One is not dependent on the other.
- The JMQL is a re-interpretation of the remote and local code to connect to the queue manager. These follow the model of the C client more closely than ever before. (Java MQI)
- The packaging therefore has an additional jar file – com.ibm.mq.jmqi.jar.
- One oddity in that MQException ins the JMQL.jar – this is to maintain compatibility of the exception 'cause hierarchy' JMSEException > MQException > JMQLException

JMS Migration

- No major changes to installation
- JAR file set is now different, but has no effects
 - ▶ MQException has moved JAR file
 - ▶ Java 1.4.2 compilation CLASSPATH affected
- JMSAdmin.config will be overwritten
- New client configuration files:
 - ▶ jms.config
 - ▶ mqclient.ini

JMS Configuration Files - notes

notes

- Existing jmsadmin.config for JNDI objects remains the same.
- Client configuration file - jms.config file (mostly for getting the Traces)
 - Can be overridden by Java System Properties
- MQ Client ini file – will be read for jmqi.remote properties
 - Unless overridden by the jms.config above

```
# JMS Common Client Configuration File
#
# This file allows client wide configuration properties to be specified
# The properties below include properties for the Java SE environment
# and for use with WMQ
# To use this file invoke the JVM as follows
# java -Dcom.ibm.msg.client.config.location=file://f:/jms.config
my.java.applicationClass
#
# Supported URL types are file:// http:// ftp:// jar://
#
# Note: that 'Start-Up Trace' can not be specified via this file and must be
specified on
# JVM system property as follows
#
# java -Dcom.ibm.msg.client.commonservices.trace.startup=true
my.java.applicationClass
#
```

Java API Migration

- MQ Java and JMS clients are designed to automatically take advantage of new facilities when they exist:
 - ▶ So installing new JMS jar is all that is needed
- Public-non-published APIs
 - ▶ Have been removed from v7
 - ▶ Migration JAR provided that can be shipped to customers if required
- Deprecated APIs
 - ▶ All the APIs in the Migration JAR
 - ▶ JMSC Constants – replaced with the new constants package
- ‘Mix-and-match’ Base Java and JMS applications will not work
- New IBM specific JMS API – not portable to other JMS implementations

JMS Error Codes

- JMSEException has been subclassed to provide detailed JMSEExceptions
- Text has been improved giving
 - ▶ Exception Message, Explanation, User Action
 - ▶ Programmatic access to inserts
- Linked Exceptions
 - ▶ also now the Exception.cause
 - ▶ Cascaded causes also included down to the root exception
- Error codes have changed

New format for JMS errors – notes

notes

- Caught exception Message : **JMSWMQ0018**: Failed to connect to queue manager
- 'QM_ANGELILLO' with connection mode 'Client' and host name 'localhost'.
- Class : class com.ibm.msg.client.jms.DetailedIllegalStateException
- Error Code : JMSWMQ0018
- Explanation : null
- User Action : Check the queue manager is started and if running in client mode, check there is a listener running. Please see the linked exception for more information.
- XMSC_WMQ_CONNECTION_MODE : Client
- XMSC_INSERT_QUEUE_MANAGER : QM_ANGELILLO
- XMSC_WMQ_HOST_NAME : localhost
- Stack : com.ibm.msg.client.wmq.common.internal.Reason.reasonToException(Reason.java:489)
- ...
- **Caused by [1] --> Message : JMSCMQ0001: WebSphere MQ call failed with compcode '2' ('MQCC_FAILED') reason '2059' ('MQRC_Q_MGR_NOT_AVAILABLE').**
- Class : class com.ibm.mq.MQException
- Completion Code : 2
- Reason Code : 2059

Changes to queue manager during migration

- When upgrading to MQ V7 the existing SVRCONN channels will have this new variable :
 - ▶ SHARECNV(10)
- It allows for shared connections on TCP/IP channels, which enables new features such as Read Ahead, Asynchronous Put
- In case of problems, it MIGHT be necessary to disable the Shared Conversations by specifying a value of 0 (zero). This means, to force the channel to work as MQ V6.
- Also, you may want to set it to 1 (only one conversation, to allow the new features in MQ V7, without serialization)

MQ Client V6 / V7 compatibility

- The new features which are available for a version 7.0 client connected to a version 6.0 queue manager are:
 - ▶ Weighted selection on CLNTCONN channels.
 - ▶ Reconnecting via a previously used channel.
 - ▶ Maximum message length increased on MQSERVER environment variable.

- The new features which are available for a version 6.0 client connected to a version 7.0 queue manager are:
 - ▶ Instance limits on SVRCONN channels.

Max msg length MQSERVER env var

- Maximum message length (MAXMSGL) increased on MQSERVER environment variable.
- It is now 100MB (104,857,600 bytes).
- This has been increased from 4MB (4,194,304 bytes).
- To take advantage of the increased maximum length the identically named SVRCONN type channel must also have its MAXMSGL altered to an appropriate value on the queue manager.



Applications Migration (1)

- For applications which do not use Publish/Subscribe, there are no migration processes or changes required for migration or installation of WebSphere MQ
- V7.0. Existing applications will continue to function in their current state.
- Windows: New MQI operations are not available for old VB and ActiveX programs
 - ▶ Use .Net classes instead

Applications Migration (2)

- New verbs remove need for some of the older interfaces which will be deprecated – though not removed immediately
 - ▶ PCF and RFH facilities for publish/subscribe applications: Identity, Streams
- A single application cannot mix new verbs with old options
 - ▶ Cannot use RFH(Register Publisher) and MQPUT(topic)
- Option available to translate old-style pub/sub commands
 - ▶ Both RFH and RFH2 interfaces for WMQ and WMB pub/sub applications
 - ▶ Not needed when all pub/sub apps have been converted



Application migration - notes

notes

- Having Publish/Subscribe natively in the MQI with the new verbs and options described previously removes the need for the older interface, MA0C RFH-style publish/subscribe commands. This interface is deprecated – although it is not being removed immediately.
- The PCF and MQRFH queued facilities for WebSphere MQ publish/subscribe and the MQRFH2 queued facilities for WebSphere Message Broker publish/subscribe are supported by means of a daemon task which translates these queued publish/subscribe commands into the new verbs. This path will clearly have a performance cost.
- A single application cannot mix new verbs with old options however a subscriber made through the MQRFH queued commands can interact with a publisher doing an MQPUT to a topic. This allows existing applications to be migrated one at a time.
- The most common "application" which uses these queued facilities is the IBM-supplied JMS layer. The new version of these layers will use the new verbs. So installing a new JMS jar will be all that's needed to upgrade these applications to the new interfaces. Any applications which have been written to directly put command messages to do publish/subscribe should be re-written to use the new verbs. This does not have to be done immediately since the daemon task translates the commands into the verbs.
- The VB and ActiveX interfaces are not being enhanced for WMQ V7. Existing applications will continue to work, but if they wish to exploit facilities such as message properties or the new pub/sub interfaces, then they will need to be rewritten to use a different API – probably the .Net classes. This follows Microsoft's directions with support for these older languages.

Client channels

- It is not possible to define a client channel in a Client Channel Definition Table (CCDT) using MQ V7.0 and have it read by a MQ V6.0 client or an earlier version client.
- CCDT files are not migrated when upgrading to MQ V7.0.
- Nor is the entire file updated when updating just one channel within the CCDT.

Client channels - notes

notes

- Client channel definitions that are written to a Client Channel Definition Table (CCDT) file contain an inherent structure version for each channel. The version of the structure dictates which versions of WebSphere MQ can read the definition. It is not possible to define a client channel in a CCDT using WebSphere MQ V7.0 and have it read by a WebSphere MQ V6.0 client or an earlier version client.
- Client Channel Definition Table (CCDT) files are not migrated when upgrading to WebSphere MQ V7.0. Nor is the entire file updated when updating just one channel within the CCDT.
- Client channels in CCDT files should be defined and maintained on a queue manager that is at the same version or earlier than the versions of all the clients that use the file.

Publish/Subscribe Migration

- See manual/chapter: MQ: Publish/Subscribe User's Guide
- Chapter 4. Migrating to WebSphere Version 7.0 publish/subscribe

- Existing options on administration objects ignored.
- WebSphere MQ V6 Publish Subscribe (aka 'Fuji'):
 - ▶ Bulk of migration done on QMgr side when 'broker started' via: strmqbrk
 - ▶ If non-default stream is used with durable subscriptions, still needs to be specified on Connection Factory
- Pub/Sub Migration from WebSphere Message Broker:
 - ▶ Migration of collectives is not supported.

Migrating Pub/Sub V6 to Queue Pub/Sub V7

- In WebSphere MQ V6 and V5, Pub/Sub data was stored by the **Queued Pub/Sub Broker**.
 - Hierarchy Relationships
 - Streams (become Topic Objects and Namelist Entries)
 - Authorities
 - Subscriptions
 - Retained Publications
 - some ini file parameters become properties of the Queue Manager
- In WebSphere MQ V7, Pub/Sub data is stored in a new format.

Pub/Sub migration (1) - notes

notes

- WebSphere MQ V7.0 provides a new Pub/Sub engine that is integrated into the queue manager. Pub/Sub was previously available with WebSphere MQ V6.0 (and WebSphere MQ V5.3 with at least fix pack 8) on distributed platforms using a separate broker process that was associated with each queue manager. This Pub/Sub broker is now deprecated, however applications written for it can work with WebSphere MQ V7.0 without modification.
- To allow compatibility with the older Pub/Sub broker a queued Pub/Sub interface is provided in WebSphere MQ V7.0. The operation of this interface is controlled via a new queue manager attribute called PSMODE. The older MQ Pub/Sub applications can continue running without modification until such time that the PSMODE is set to permanently disable the queued Pub/Sub interface. There are also control commands to manage the migration of the old broker and its associated state.

Pub/Sub Migration (2) - notes

notes

- Hierarchy Relationships:
- Just store the existing data on parent/child relations in a new queue (SYSTEM.HIERARCHY.STATE)
- No proxy subs etc. need to be sent to these relations
- Streams (become Topic Objects and Namelist Entries)
- A topic object is created for each existing stream. The topic object has the same name and topic string as the stream (aside from the default stream which has a blank topic string)
- Authorities are migrated from the Stream Queue to the Topic object
 - MQZAO_OUTPUT -> MQZAO_PUBLISH
 - MQZAO_BROWSE -> MQZAO_SUBSCRIBE
- Subscriptions by default will not override an existing subscription (-f command line flag to override).
- If a subscription (or retained pub) cannot be migrated (e.g. over length topic string), we issue a warning and continue. At the end of migration we do not automatically start the daemon if some data was not migrated.

Pub/Sub Migration (3) - notes

notes

- Retained Publications are stored but not republished.
- Migration – QM Parameters and Namelist
- After all the streams have been migrated then the following ini file parameters are migrated into Queue Manager attributes:

▪ MaxMsgRetryCount	PSRTYCNT
▪ DiscardNonPersistentInputMsg	PSNPMSG
▪ DLQNonPersistentResponse &	PSNPRES
▪ DiscardNonPresistentResponse	
▪ SyncPointIfPersistent	PSSYNCP
- Once we have migrated all the data, we add the names of migrated streams to the following queue which will cause the daemon to monitor them:
 - SYSTEM.QPUBSUB.QUEUE.NAMELIST
- Migration – Starting the Queued Pub/Sub Daemon
- If everything has gone smoothly we start the Queued Pub/Sub Daemon (i.e. change PSMODE to ENABLED).
- If some data could not be migrated we issue an error to the screen and error log. The user can then decide whether to re-run or manually start the daemon etc...

Pub/Sub Migration Restart/Recovery

After each “type” of data is successfully migrated (e.g. all the hierarchy relations or all the retained publication for a stream) a record is written to the primary state queue.

If migration is restarted, by default it looks for these records and does not re-migrate the data.

To cause the migration to re-migrate everything, use the force flag “-f”.



Pub/Sub Migration – Overlapping Streams

Each MQ v6 stream becomes a topic object.
Because the default stream has a blank topic string, each V6 stream now overlaps with any other streams:
SYSTEM.BROKER.DEFAULT.STREAM

For example:

A publication on the default stream for:
NEWS/SPORT/FOOTBALL/DALLAS

... will be received by a subscriber on the NEWS stream using the topic string:
SPORT/FOOTBALL/DALLAS

Problem Diagnosis: Migration Log

- Main sources of information are the Migration Log and trace. The migration step **always** creates a migration log.
- By default it is called psmigr.log and is stored in the queue manager directory.
- For example, in Unix:
 - ▶ `/var/mqm/qmgrs/<QM Name>/psmigr.log`

Pub/Sub Migration Log example - notes

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```
2009-06-03 14:27:17.890: *****
2009-06-03 14:27:17.890: Migration starting.
2009-06-03 14:27:18.213: -----
2009-06-03 14:27:18.213: Starting migration for stream :
SYSTEM.BROKER.DEFAULT.STREAM
2009-06-03 14:27:18.214: Topic Object
SYSTEM.BROKER.DEFAULT.STREAM already exists
2009-06-03 14:27:18.225: Migration completed with code 0 for
stream : SYSTEM.BROKER.DEFAULT.STREAM
2009-06-03 14:27:18.227: -----
2009-06-03 14:27:18.227: Starting migration for stream :
SAMPLE.BROKER.RESULTS.STREAM
2009-06-03 14:27:18.232: Created Topic Object
SAMPLE.BROKER.RESULTS.STREAM
2009-06-03 14:27:18.233: Migration completed with code 0 for
stream : SAMPLE.BROKER.RESULTS.STREAM
2009-06-03 14:27:18.236: -----
2009-06-03 14:27:18.236: Starting migration for stream :
SYSTEM.BROKER.ADMIN.STREAM
2009-06-03 14:27:18.237: Topic Object SYSTEM.BROKER.ADMIN.STREAM
already exists
```

Summary of PSMODE attribute for QMgr

- **ENABLED:**
 - 1) the new Pub/Sub is used, AND
 - 2) the queued Pub/Sub interface (processes amqfqpub and amqfcxba) is started.
- This is the default for newly created QMgrs and for migrated QMgrs that used the deprecated MQ V6 Pub/Sub.
- **COMPAT:**
 - 1) ONLY the new Pub/Sub is used, AND
 - 2) the queue Pub/Sub interface is NOT started.
- Default for migrated QMgrs that did NOT use the deprecated MQ V6 Pub/Sub.
- This is the option to work with WebSphere Event Broker or WebSphere Message Broker.
- **DISABLED:** No Pub/Sub is possible:
 - 1) no new Pub/Sub, AND
 - 2) no queued Pub/Sub.

After migration – apply latest fix packs

- **WebSphere MQ Recommended Fixes**
- <http://www-1.ibm.com/support/docview.wss?rs=171&uid=swg27006037>
- At the time of writing this presentation, the latest fix pack is:
- 7.0.0.2

Uninstalling V7 - notes

notes

Ensure that there are no MQ programs or processes running.

Windows and Linux:

Uninstall MQ Explorer before uninstalling MQ.

If running WebSphere MQ with Microsoft Cluster Service (MSCS), remove queue managers from the MSCS control before uninstalling MQ

Methods for uninstalling WebSphere MQ in Windows:

Start the installation process, then select the appropriate option.

Use the Add/Remove Programs facility in the Windows Control Panel.

Perform a removal from the command line using Msiexec Windows command using the "IBM WebSphere MQ.msi" in the install image

Example: `Msiexec /i "path\MSI\IBM WebSphere MQ.msi" REMOVE="All"`

See MQ V7, Quick Beginnings:

Chapter "Uninstalling WebSphere MQ"

References (1)

- IBM United States Announcement, 208-068, dated April 1, 2008 for WebSphere MQ V7.0:
 - ▶ <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=an&subtype=ca&appname=GPA&htmlfid=897/ENUS208-068>
- Consult the WebSphere MQ V7 Information Center:
 - ▶ <http://publib.boulder.ibm.com/infocenter/wmqv7/v7r0/index.jsp>
- WSTE: What is new in WebSphere MQ Version 7
 - ▶ <http://www-1.ibm.com/support/docview.wss?uid=swg27012921>
- WSTE: WebSphere MQ: Tips and tricks for avoiding problems during migration
 - ▶ <http://www-1.ibm.com/support/docview.wss?uid=swg27013109>



References (2)

- WSTE: What is new with the WebSphere MQ Explorer V7
 - ▶ <http://www-01.ibm.com/support/docview.wss?uid=swg27014355>
- List of Supported Software for WebSphere MQ V7.0:
 - ▶ <http://www-1.ibm.com/support/docview.wss?rs=171&uid=swg27012075>
- Redbook: WebSphere MQ V7.0 Features and Enhancements (SG24-7583)
 - ▶ <http://www.redbooks.ibm.com/abstracts/SG247583.html?Open>

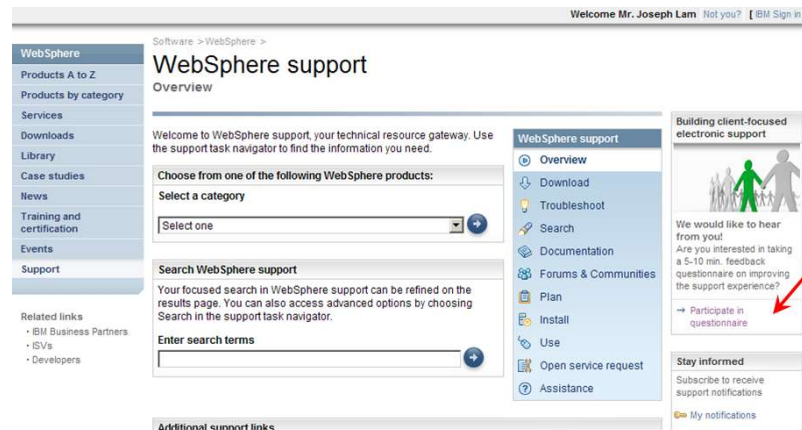
Additional WebSphere Product Resources

- Discover the latest trends in WebSphere Technology and implementation, participate in technically-focused briefings, webcasts and podcasts at: <http://www.ibm.com/developerworks/websphere/community/>
- Learn about other upcoming webcasts, conferences and events: http://www.ibm.com/software/websphere/events_1.html
- Join the Global WebSphere User Group Community: <http://www.websphere.org>
- Access key product show-me demos and tutorials by visiting IBM Education Assistant: <http://www.ibm.com/software/info/education/assistant>
- View a Flash replay with step-by-step instructions for using the Electronic Service Request (ESR) tool for submitting problems electronically: <http://www.ibm.com/software/websphere/support/d2w.html>
- Sign up to receive weekly technical My Notifications emails: <http://www.ibm.com/software/support/einfo.html>

IBM Support Wants to Hear From You!

Tell us about your support needs and wants

1. Visit any product support pages on IBM.com.
2. Click on “Participate in Questionnaire” on top right of page.
3. Takes 5-10 minutes to complete.



The screenshot shows the IBM WebSphere support page. The page title is "WebSphere support" and the sub-page is "Overview". The main content area includes a welcome message, a "Choose from one of the following WebSphere products:" section with a "Select a category" dropdown, and a "Search WebSphere support" section with a search box. On the right side, there is a "Building client-focused electronic support" section with a red arrow pointing to a "Participate in questionnaire" link. Below this is a "Stay informed" section with a "My notifications" link.

Or go to https://www.ibm.com/survey/oid/wsb.dll/s/ag21f?wsb34=swg_user

Questions and Answers

