WebSphere MQ for z/OS V7.0.1 - Installation, Migration, New Functions and Common Problems

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Agenda

- This presentation is based on technotes:
  - 1406779 - WebSphere MQ for z/OS V7.0.1 migration and installation--important information including highlights of new function
  - 1408135 - Problems and solutions when migrating to WebSphere MQ for z/OS V7.0.1

- Information Sources
- Maintenance
- Installation
- Migration
- Configuration
- New Function
- Common problems
Information Sources

- **WebSphere MQ Support Portal**
  http://www.ibm.com/support/entry/portal/Overview/Software/WebSphere/WebSphere_MQ

- **WebSphere MQ on-line Information Center**

- PDF versions of documentation are no longer being maintained, except for the Program Directory. They were last updated for WebSphere MQ (WMQ) Version 7.0.0.1. WMQ manuals are not available in BookManager format.
Maintenance

- Techdoc 7006519 lists migration-related maintenance for fallback and coexistence

- Technote 1409243 contains a list of closed APARs for WMQ for z/OS 7.0.1

- II14556 lists JMS and RRS related fixes important to WebSphere Application Server users

- The **PSP bucket** includes cross-product dependencies
Installation

- Use the WebSphere MQ for z/OS Version 7.0.1 Program Directory (GI13-0529-01)

- Perform tasks in the WebSphere MQ for z/OS Version 7.0.1 System Setup Guide

- New optional LINK job, CSQ8SLDQ, enables automatic relinking after service is applied to Language Environment, TCP/IP, or OS/390 callable services (APPC and RRS). See PM06599.
Migration

- See the Migration topic in the Information Center
  - Coexistence
  - Migrating clusters and Queue Sharing Groups
  - OPMODE and backward migration (see next slides)
- Considerations when using the WebSphere MQ Explorer to manage WebSphere MQ for z/OS queue managers – clearing cached information
Migration

- **OPMODE**
  - Controls availability of new functions, such as log compression and group unit of recovery
  - OPMODE=(COMPAT,701) is default
  - Can not migrate back to a previous version after using OPMODE=(NEWFUNC,701), although you can return to COMPAT mode
  - **PM03381** clarifies the OPMODE value displayed under different circumstances
Migration

- Backward migration
  - Apply the coexistence and backward migration PTFs to the Version 6.0.0 or 7.0.0 code
  - Restart queue managers with this updated code
  - Install Version 7.0.1 early code
  - Start the queue manager with Version 7 code
  - Can fall back to Version 6.0.0 or 7.0.0 if OPMODE=NEWFUNC was not used
Migration

- Backward migration
  - Can not backward migrate a queue manager newly created at Version 7.0.1 to a prior version
  - After a forwards migration path from V7.0.0 to V7.0.1, it will not be possible to backwards migrate to V6 directly
  - An alternate fallback method is to restore backups of page sets, BSDSs, and logs taken while the V6 queue manager was down.
Migration

- Backward migration
  - Some connection types (IMS, batch and RRSBATCH) allow an application to connect to multiple queue managers concurrently. These queue managers can be running different levels of WMQ code. The adapter code must be running from the highest level. In a backward migration scenario, it is possible to just restart the queue manager with the back level code and not change the connecting jobs.
Migration

- Batch application programs compiled and linked with WebSphere MQ 7.0.0 and using z/OS Language Environment must be compiled and linked to use the WebSphere MQ DLL interface.
- More granular MULC recording, provided in V6 by PK73461 as a service parm, is provided in V7.0.1 by the MULCCAPT=REFINED system parameter.
- White paper: Migration to WebSphere MQ V7.0.1 and WebSphere Message Broker V7.0 on z/OS.
Configuration

- Review customization tasks in the System Setup Guide
- Order the CSQINP2 data sets as shown in CSQ4MSTR of SCSQPROC. CSQ4INYS and CSQ4INSG moved, and CSQ4INSR is new
- Set MEMLIMIT to exploit 64-bit storage
- Review the PROVIDERVERSION setting. '6' is not required like it was at V7.0.0
Configuration

- Review the **PSMODE** setting, which controls the publish/subscribe interface. While PSMODE (ENABLED) is the default initial value, PSMODE (COMPAT) is used if the QMGR object is migrated from an earlier version.
New Function – 7.0.0 recap

- Technote 1312983
- Publish/Subscribe (Pub/Sub)
- WebSphere MQ client enhancements
  - full duplex
  - share a conversation socket (SHARECNV)
  - Asynchronous Put and Read-ahead
  - instance limits on SVRCONN channels (MAXINST, MAXINSTC)
  - weighted CLNTCONNS (CLNTWGHGT)
New Function – 7.0.0 recap

- Message Queue Interface (MQI) extensions with 13 new verbs (pub/sub, message properties, asynchronous consume)

- JMS enhancements
  - new architecture
  - resource adapter
  - exploitation of client enhancements
  - more efficient message selection
  - tracing
New Function – 7.0.0 recap

- RACF mixed case support
- Client attachment feature: 5 free client connections for administration (MQ Explorer) or a broker
- MQ Explorer enhancements for administration of z/OS queue managers

The Explorer can be installed stand-alone from SupportPac MS0T
New Function – 7.0.1

- Use of 64-bit storage for locks and queue indexes
  - Set MEMLIMIT
- Log compression
  - Can reduce the amount of data written to the log for persistent messages on private queues
- OPMODE property
  - Controls availability of new functions, such as log compression and group unit of recovery, and whether backward migration can be done
New Function – 7.0.1

- Admin structure recovery
  - The first queue manager started can rebuild the CSQ_ADMIN structure
- Generic Application Structure Backup
  - The BACKUP CFSTRUCT command will now allow a generic structure name
- Transaction recovery within a queue-sharing group
  - UOW can be owned by the QSG
  - CSQSYSAPPL structure, GROUPUR parm, SYSTEM.QSG.UR.RESOLUTION.QUEUE
New Function – 7.0.1

- The option for batch and USS applications to use the z/OS XPLINK, which is a high performance calling interface
- The option for automatic client reconnection after a queue manager or network failure
  - See the Automatic Client Reconnection section of the WebCast WebSphere MQ V7.0 Client Enhancements
- Support for IMS applications to use the WMQ message property APIs so that IMS applications can communicate with JMS applications
New Function – 7.0.1

- Support for message selectors on MQOPEN
  - Use the SelectionString field in the MQOD structure
  - Removes the need for PROVIDERVERSION=6
- The CSQUMGMB utility (in PK97972)
  - migrates the publish/subscribe configuration data from WebSphere Event Broker
- Java™ virtual machine (JVM)
  - PM01980 says that on z/OS, you can use either a 31-bit or 64-bit JVM
Common problems

- An ABEND5C6 with reason code 0C90D01 means
  - The queue manager is being backward migrated and backward migration PTFs are not installed
  - or
  - The queue manager is being backward migrated, but has previously been run in NEWFUNC mode at Version 7.0.1
Common problems

- HIPER PM01403 caused “signaling sympathy sickness” in the coupling facility. An IPL was required.
  - A stalled member can cause the system to run out of XCF buffers and affect all users of the coupling facility.
  - See technote 1431556 regarding the MEMSTALLTIME parameter. It allows Sysplex Failure Management (SFM) to take automatic action to alleviate signaling sympathy sickness.
Common problems

- **HIPER PM18473**
  - Browse of a queue containing a mix of high priority nonpersistent and low priority persistent messages can return messages out of priority order
  - The CurDepth of the queue can become incorrect
  - Abends 5C6-00C90600,00C93100,00C91D00 may occur sporadically
  - Infrequently, queue damage may occur
Common problems

- **PM05474** - multiple symptoms occur in the chin job every 63 minutes in a large clustering environment
  - High CPU
  - Elongated MQOPEN or MQPUT1 calls
  - Application timeouts waiting for a reply
  - Channel failures

- **PM09326** and **PM15576** - other instances of a CPU increase in the CHIN every 63 minutes
Common problems

- **PM16841** (APAR open) PE of UK57031

  Two scenarios for ABEN0C4 in CSQMFMH1:
  - A dump occurs for ABEND0C4-00000011 in CSQMFMH1+x'432'
  - Logrec entries occur for ABEND0C4 in CSQMFMH1+x'3EA', REGISTER/PSW DIFFERENCE FOR R0C:-02F6
Common problems

- **PM04374**
  - SMF116 records for client connections do not contain the queue OBJNAME being used. OBJNAME has "SYSTEM.CHANNEL.SYNCQ"

- **PM15119**
  - After migration to V701, the SMF116 TYPE 1 entries for GETN for JMS programs are 0

- **PM22549** (PTF open)
  - Increase in WMQ usage charges in MULC when using CICS TS 3.2 and later, even with PK82806 applied
Common problems

- WebSphere Application Server
  - **II14556** lists key APARs for WebSphere MQ for z/OS V7.0.1 and WebSphere Application Server for z/OS V6.x and V7
  - Fix Pack 7.0.1.1 (**PM03843** on z/OS or **IC64098** on distributed platforms): An MDB listener does not reconnect to a WebSphere MQ queue manager that has been recycled when the WebSphere MQ V7 Resource Adapter (RA) is connecting to a WebSphere MQ V6 queue manager.
Common problems

- WebSphere Application Server
  - The System.out JVM log has:
    WMSG1703I: RAR implementation version
    7.0.0.0-k700-L080820

Follow the procedure to adjust the WebSphere MQ resource adapter configuration when migrating profiles between maintenance level 7.0.0.0 and later levels

Directory conventions for z/OS (profile_root)
Common problems

- WebSphere Application Server
  - **PM11411**
    - MDB listeners fail with reason '2500'( MQRC_HCONN_ASYNC_ACTIVE) after migration to WMQ V701

Fixed in **PM09662** Fix Pack 7.0.1.3
Common problems – Data Conversion

- PM09629, PM14021, PM15536
  - CSQX541E invalid CCSIDs for data conversion
- PM17296
  - After you upgrade to WMQ 7.0.1, WebSphere MQ Workflow messages can fail with MQRC_WIH_ERROR
Common problems – Data Conversion

- **PM18429** (PTF open)
  - An extra two bytes of data are appended to the message passed by the MDB listener to the JMS application

- **PM20443** (PTF open)
  - When a publish is done to a topic with MQPMO_RETAIN, a CSQSNAP is produced for "Data conversion failed"
Common problems – Data Conversion

- **PM21113** (APAR open)
  - Different handling of CCSIDs in WMQ V6 and WMQ V7 on Z/OS. MQMD CCSID differences with RFH2.

- **PM22655** (APAR open)
  - CSQX053E and a CSQSNAPE dump for XFFSRRICONVERTVALIDATE for a channel after migration from V6 to V7.0.1
Common problems – Data Conversion

- CICS data conversion:
  - **PK58227** is needed on CICS TS 3.2. The WMQ converter is presenting messages to the application which contain binary zeroes.
  - MQ RC2018 running a user-written conversion program with CICS TS V3.2 or later – see technote **1392764**. Define the conversion program in CICS with API(OPENAPI).
Common problems – Data Conversion

- CICS data conversion:
  - RC2111 MQRC_SOURCE_CCSID_ERROR if there is code mismatch

PM10011/PM12034 say:
If you have WebSphere MQ Version 7 installed and you have applied the PTF for CICS APAR PK66866/PK89844, then ensure that your CICS STEPLIB concatenation only includes the WebSphere MQ Version 7 SCSQAUTH. The code is downwardly compatible.
Common problems

- IMS Adaptor MQCONN failed with RC2129, MQRC_ADAPTER_CONN_LOAD_ERROR.
  - A application was built with the V7.0.1 CSQQSTUB and run in an IMS region configured to use the V6 or V7.0.0 IMS adapter.
  - Either rebind the application with the V7.0.0 stub (this may not be possible if message property APIs are used by the application), or configure the IMS region to use the V7.0.1 adaptor code.
Common problems

- Review technote 1408135 for other tips
Summary

- Technotes **1406779** and **1408135** are a great place to start with WebSphere MQ for z/OS 7.0.1:
  - Information Sources
  - Maintenance
  - Installation
  - Migration
  - Configuration
  - New Function
- Avoid common problems that we covered
Additional WebSphere Product Resources

- Learn about upcoming WebSphere Support Technical Exchange webcasts, and access previously recorded presentations at: http://www.ibm.com/software/websphere/support/supp_tech.html

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