WebSphere® MQ V7.0

Performing publish/subscribe migration from MQ V6

This units explain how to migrate publish/subscribe data from the MQ Pub/Sub Broker in V6 to the new publish/subscribe engine included in WebSphere MQ V7.0

This unit assumes a reasonable understanding of how publish/subscribe applications worked with WebSphere MQ V6

Unit objectives

After you complete this unit, you should be able to:

- Understand how the queued publish / subscribe mechanism is migrated to MQ version 7.

- Know some of the issues that need to be considered before migration.

After you complete this unit you should have some understanding of how existing applications using the queued publish / subscribe mechanism is migrated to MQ version 7.

You will also be aware of some of the issues that need to be considered before migration.

This unit does not attempt to cover the full range of syntax and options available, for which you should refer to the product information center.

A simple Pub/Sub Scenario with WebSphere MQ V6
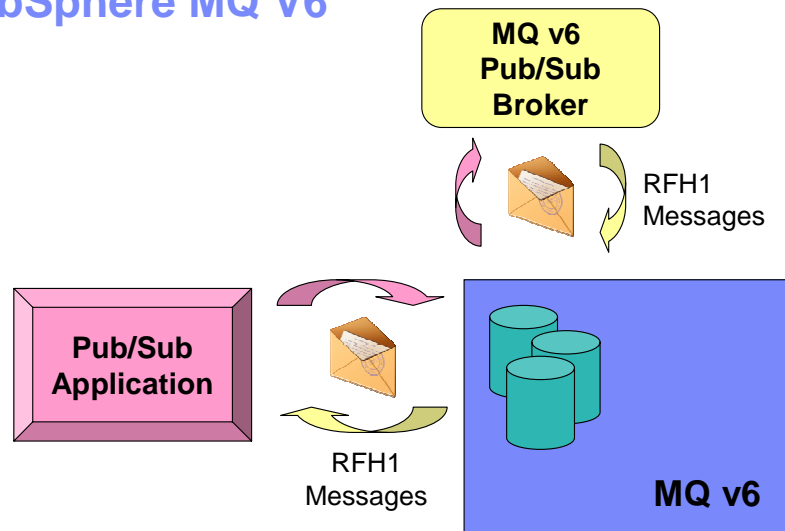
In WebSphere MQ V6, applications perform publish and subscribe operations by placing special request messages on special queues. The messages are in RFH1 format messages onto queues such as SYSTEM.BROKER.CONTROL.QUEUE or SYSTEM.BROKER.DEFAULT.STREAM. The MQ V6 Publish/Subscribe Broker then reads and acts on these messages (for example by publishing messages to subscribing applications) and replies with messages in RFH1 format.

State information such as who is subscribing to which publications is owned and maintained by the publish / subscribe broker component.

WebSphere MQ server is providing transport for messages which are "understood" and interpreted by the publish / subscribe broker component.

This publish / subscribe component is started and stopped independently from the MQ server.

A simple JMS Pub/Sub Scenario with WebSphere MQ V6
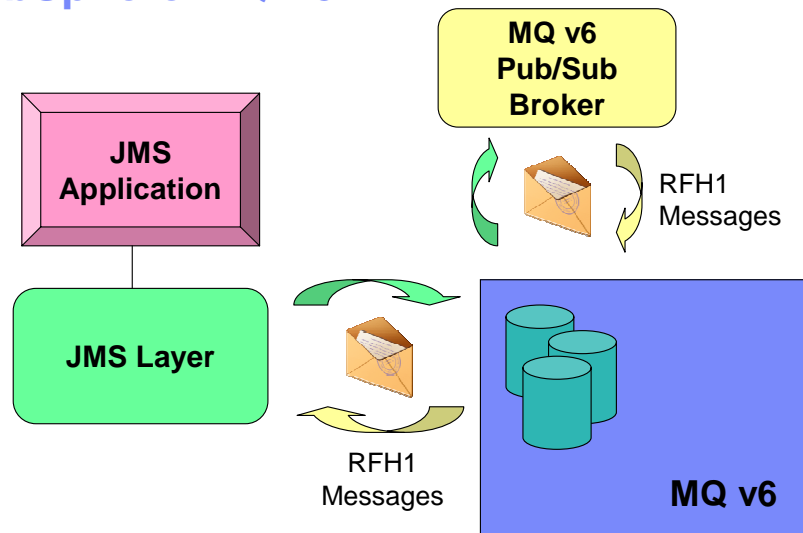
In WebSphere MQ V6, JMS applications performing publish and subscribe do not directly interact with these queues but the MQ JMS layer performs analogous actions on their behalf.

JMS applications publishing to topics still result in RFH1 messages being put onto specialized queues. These messages are still acted on and replied to by the MQ V6 Pub/Sub Broker to publish messages to subscribers.

A simple Pub/Sub Scenario with WebSphere MQ V7
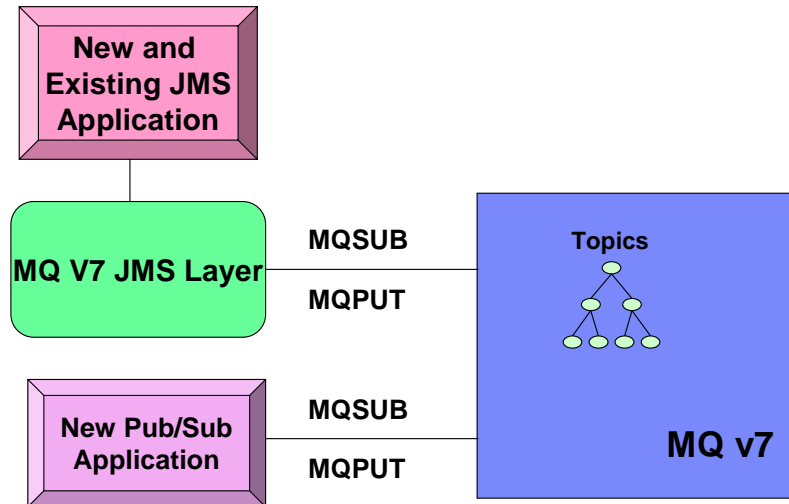
New and Existing JMS Application

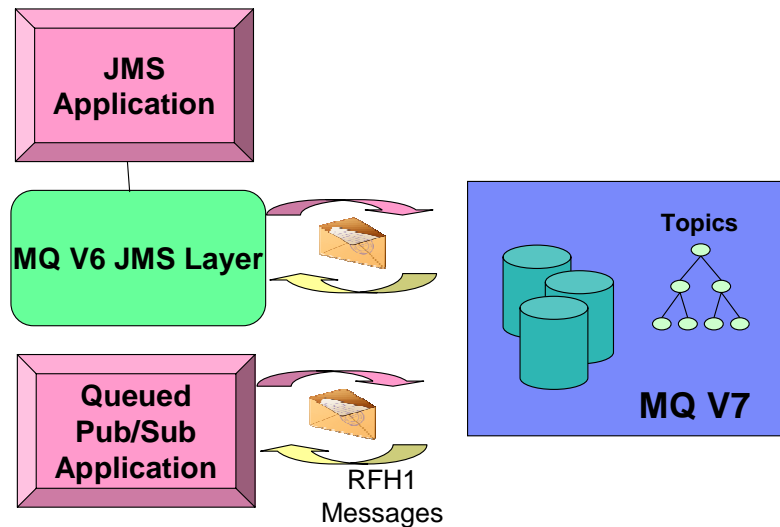MQ V7 JMS Layer

New Pub/Sub Application

MQSUB
MQPUT

MQSUB
MQPUT

Topics

MQ v7

In WebSphere MQ V7, newly written publish / subscribe applications do not need to communicate with the Pub/Sub Broker in order to publish or subscribe; they can use the new API directly. MQSUB for subscribe and MQPUT can be used to publish messages to a topic. The MQ server itself performs the publish / subscribe function, no separate publish / subscribe broker is required.

The topic structure and status can be managed by the new commands in MQ explorer and in RUNMQSC.

Only new MQI applications will be able to use the new publish / subscribe functions directly. However existing JMS applications will make use of this new functionality as soon as the new MQ JMS layer is connected to a version 7.0 MQ server.

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Using queued pub/sub with WebSphere MQ V7

Existing pub/sub applications, which used the queued (RFH1 message) interface (including MQ V6 JMS clients) are supported in MQv7. The queue manager has a task which acts on RFH1 messages in the same way that the WebSphere MQ V6 Pub/Sub broker did. In version 7 no separate broker task need be run.

This includes JMS applications which use the version 6 JMS layer, they will continue to use the queued interface until the MQ JMS layer is updated to version 7.

In addition, MQv7 on z/OS now supports the queued pub/sub interface which was previously only available on distributed platforms.

Subscriptions, publications and so on made through the queued pub/sub interface are intercepted at the boundary of the MQ version 7 server and are interpreted as MQ version 7 publish / subscribe commands. So the subscriptions and publications made by using the older queued interface can interoperate with new version 7 applications.

For example an application using RFH1 publications can publish to a topic and a version 7 application can subscriber using MQSUB. The publication would also appear in the MQ explorer views of the version 7 topic status.

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Migrating to WebSphere MQ V7

- When a queue manager is upgraded from WebSphere MQ V6 to WebSphere MQv7, state must be migrated from the MQ Pub/Sub broker into the queue manager itself

- Data that is migrated includes:
  - ▸ Subscriptions
  - ▸ Retained Publications
  - ▸ Hierarchy Relations
  - ▸ Pub/Sub Authorities

- In WebSphere MQ V7, migration is performed by the "strmqbrk" command which previously started the MQ Pub/Sub Broker

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Performing publish/subscribe migration from MQ V6 © 2008 IBM Corporation

When a queue manager is upgraded to version 7 all the MQ artifacts are migrated in place to version 7.
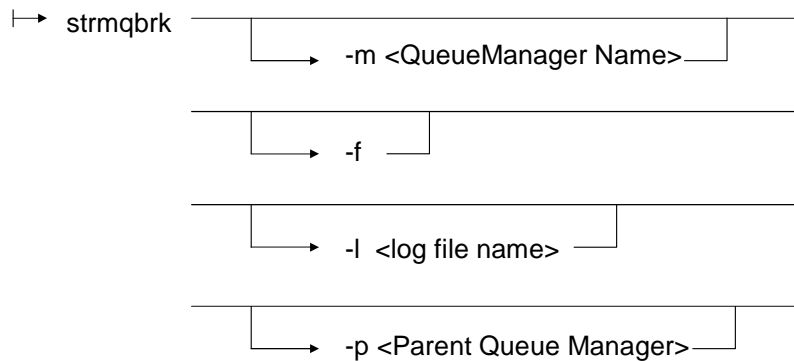
In version 6 the broker is a separate component and it is NOT upgraded with the queue manager.

The publish / subscribe broker has state data that relates to subscriptions, publications authorities and so on. This all needs migrating before the queued interface to MQ version 7 publish / subscribe can be used.

In MQ version 6 the publish / subscribe broker had to be started before queued publish / subscribe could function. This was started with the "strmqbrk" command. In MQ version 7 the same "strmqbrk" command is used NOT to start the publish / subscribe broker, but to migrate all the artifacts from the broker into the integrated version 7 publish / subscribe engine.

strmqbrk usage

To perform the migration, strmqbrk is used as follows:

strmqbrk

-m <QueueManager Name>

-f

-l <log file name>

-p <Parent Queue Manager>

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The strmqbrk takes several options. The "-m" flag sets the queue manager to be migrated.

The "-f" (force) flag causes the migration to be performed from the start (rather than continuing from part way through) and it causes data (for example, retained publications) that have already been created to be overwritten with the migrated data. This might be used after a previous migration had failed.

The "-l" flag sets where the migration command logs its progress to, by default it logs it to a file called psmigr.log in the queue manager directory (for example. /var/mqm/qmgrs/<QMgrName> on UNIX or C:\Program Files\IBM\WebSphereMQ\qmgrs\<QMgrName> on Windows)

The "-p" flag exists for compatibility with the V6 command that started the Pub/Sub broker. If specified it must be set to the current parent of the queue manager and it has no effect

The command need only be run once for each queue manager.

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Multi queue manager pub/sub

- After migrating (using strmqbrk) publish / subscribe hierarchies will continue to function in MQ V7.

- Publish / Subscribe clusters are new in WebSphere MQ V7.
  - ▶ Clusters mean that no queue manager will provide a single point of failure to the flow of publications or subscriptions.

- To migrate to a pub/sub cluster, first migrate to an MQ V7 hierarchy using strmqbrk and then convert it to a cluster by manually creating cluster topics and altering parent/child relations.
  - ▶ For more information (including step-by-step instructions) see the "Migration to distributed publish/subscribe" section in the MQ V7 information center

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WebSphere MQ V6 Pub/Sub Brokers could be connected into hierarchies so that publications and subscriptions could flow between them.

After migrating (using strmqbrk) these hierarchies will continue to function in MQV7.

WebSphere MQ V7 also contains a new method of allowing publications and subscriptions flow between queue managers; pub/sub clusters.

Pub/sub clusters mean that no queue manager will provide a single point of failure to the flow of publications or subscriptions.

To migrate to a pub/sub cluster, first migrate to an MQv7 hierarchy using strmqbrk and then convert it to a cluster by creating cluster topics and altering parent/child relations.

For more information (including step-by-step instructions) see the "Migration to distributed publish/subscribe" section in the MQ V7 information centre

Other considerations

- Metatopics

- Dynamic streams

- Routing exits

- Registering / deregistering publishers

Existing queued publish / subscribe applications which use these features will need special consideration before migration.

In MQ V6, information about the state of the Pub/Sub broker (for example, subscribers) was available by subscribing to "metatopics" on the administration stream. In MQ V7 this information is now available using MQSC/PCF and the metatopics are no longer updated.

In MQV6, streams could be dynamically created by placing messages on the control queue. MQV7 uses a different system for changing the list of streams queues monitored; a namelist called SYSTEM.QPUBSUB.QUEUE.NAMELIST.

Routing exits are not supported in MQ V7.0.

In MQ V7 there is no reason to register or deregister publishers in order to publish with the queued pub/sub interface. In order to retain compatibility with MQV6 any register or deregister command messages are now parsed and replied to but no longer acted on by the queue manager.

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