

IBM MQ Resource Adapter

**IBM MQ Java EE Connector Architecture
Verification Test Program (mqfvt)**

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Tested versions of this program

- WebSphere Application Server 9.0.0.3(MQ RA 9.0.0.0) / IBM MQ 9.0.0.0 / IBM Java 8.0.4.6 / Windows 10 Pro
- WebSphere Application Server 9.0.0.8(MQ RA 9.0.0.3) / IBM MQ 9.0.3.0 / IBM Java 8.0.5.17 / Windows 10 Enterprise

* This program may be executable in other WebSphere Application Server versions following Java EE 7.0 compliance.

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About this Program

This program is created to verify / confirm the outbound function / usage of WebSphere MQ / IBM MQ and its provided MQ resource adapter(For inbound function using MDB, please use mdbvft MDB verification program). This program is possible to run tests with many variations below.

Two kinds of API IBM MQ classes for JMS and IBM MQ classes for Java provided by the MQ resource adapter, JTA User Transaction, EJB3.1(local), Web Container, JMS Session transacted/non-transacted and EJB Container managed transaction is selected from 'default (Required)', 'NotSupported', 'Supports', 'Required', 'RequiresNew', 'Mandatory', 'Never'.

This document does not describe the details of IBM MQ itself. Please refer to the product manual as necessary.

Product manuals of all versions can be found at the following URL:

IBM MQ and WebSphere MQ

<http://www-01.ibm.com/software/integration/wmq/library/index.html>

The MQI test program (mqpgf) command and the MQAI program (mqpcf) command are also used to check the execution result of this program. Please refer to the document "MQI test program (mqpgf)" and "MQAI program (mqpcf)" for details on them.

1. Set Up the Environment for This Program

As a prerequisite to using mqfvt, it is necessary that the MQ server of IBM MQ 7.0.1 or higher is installed locally or remotely, and the version of WebSphere Application Server conforming to Java EE 7.0 is available. When using IBM MQ classes for Java in a bind mode connection, it is necessary that the same version of the queue manager as the MQ resource adapter installed or bundled on your application server is installed. For IBM MQ classes for Java, the IBM MQ resource adapter does not support connection in bind mode with a different version of the queue manager. IBM MQ classes for JMS does not have such restriction.

Deploying mqfvt

By installing MQFVTEJBEAR.ear on your WebSphere Application Server, you can use mqfvt.

Here is an example for IBM WebSphere Application Server 9.0 (Traditional).

In the Admin Console, select "Applications" - "New Application" - "New Enterprise Application", then open the "Preparing for Application Installation" screen and specify the location of the MQFVTEJBEAR.ear file. In the rest of the procedure, the installation will be completed with all default parameters.

Set JNI Libraries Location

When binding mode is used for connection to the queue manager, it may be necessary to explicitly specify the location of the JNI library (mqjbnd.dll, libmqjbnd.so, etc.) depending on the environment. In WebSphere Application Server 9.0 (Traditional), select "Resource" - "JMS" - "JMS provider", then select "WebSphere MQ messaging provider" within the appropriate scope and set the JNI library path according to your MQ environment to "Native library Path" of "General properties".

e.g.
C:\Program Files\IBM\MQ\java\lib64
/opt/mqm/java/lib
/usr/mqm/java/lib

User for This Program

The execution user of the application server may require appropriate access

authority to be set in the queue manager. See the IBM MQ documentation for details.

Other Considerations

* On some WAS MQ administration screen, it may be necessary to set the path to the JNI library in LIBPATH (AIX) or LD_LIBRARY_PATH. It can be set in the following file.

```
<WAS Install Directory>\bin\setupCmdLine.bat(Windows)  
<WAS Install Directory>/bin/setupCmdLine.sh(Unix)
```

* In some Windows environments, you may need to set <MQ Install Directory>\bin64 in the PATH environment variable. It can be set with setupCmdLine.bat(sh).

2. Preparation for Testing

To run the program, define the connection factory and queue on the application server.

The following is an example for IBM WebSphere Application Server 9.0 (Traditional).

Creating a Connection Factory

In the management console, select "Resource" - "JMS" - "Connection Factory" to open the "Connection Factory" screen and then click the "Create New" button. Then select "WebSphere MQ Messaging Provider" and specify "name" and "JNDI name" on the "Create IBM MQ JMS Resource" screen. A connection factory name specified in an application is "JNDI name" to be entered here. (Since JNDI ENC name can not be used as this program does not define resource reference. So, it is necessary to specify JNDI simple name or JNDI fully qualified name.) After that specify the appropriate parameters and complete this procedure.

Creating a Queue

In the management console, select "Resource" - "JMS" - "Queue" to open the "Queue" screen and then click the "Create New" button. Select "WebSphere MQ messaging provider" and specify "name", "JNDI name", "queue name" (real queue name). (If you do not specify "queue manager or queue share group name", you can use it generically.) The queue name you specify from an application is "JNDI name" you enter here. After that, specify the appropriate parameters and complete this procedure.

Starting the Program

In the Admin Console, select Applications - Application Type - WebSphere Enterprise Application to open "Enterprise Application", and then select (check) "MQFVTEJBEAR" and click "Start".

Select "Server" - "Server type" - "WebSphere Application Server" and click the target server and check the "Configuration" tab - "Communication" - "Port". (WC_defaulthost default is 9080)

The Context Root of the program is "/MQFVTWeb", and the default URL of an application when connecting directly to WAS without going through a Web server is as follows.

<http://localhost:9080/MQFVTWeb/>

3. Basic Operation

This section will describe the basic usage.

3.1 WebSphere MQ classes for JMS

Putting a Message to a Queue

Set as follows and click "Submit".

IBM MQ Java EE Connector Architecture Verification

☒ : IBM MQ classes for JMS
☐ : IBM MQ classes for Java

☒ : EJB3.1 (Container Managed Transaction) ☐ : Web Container

EJB Transaction Attribute:

☐ : JMS Session transacted ☐ : JTA UserTransaction
☐ : Commit ☐ : Rollback

Sleep (before session close): sec

Connection Factory:

Destination:

☒ : put message
☐ : get message

Number of messages:

JMS Message Type:

String:

Integer:

(Specified parameters)

IBM MQ Classes for JMS : check

EJB3.1(Container Managed Transaction) : check

Connection Factory : jms/mq90BindCF *JNDI Simple Name for Connection Factory.

Destination : jms/TQ *JNDI Name for Queue.

put message : check

JMS Message Type: TextMessage

String : test message *message string for PUT

After clicking “submit”, the following will be displayed.

Send message count: 1 * Destinations:1

Message Number: 1 Destination: jms/SampleQ

JMSMessage class: jms_text
JMSType: null
JMSDeliveryMode: 1
JMSDeliveryDelay: 0
JMSDeliveryTime: 1535940047537
JMSExpiration: 0
JMSPriority: 0
JMSMessageID:
ID:414d512053616d706c65514d202020208c958c5b25468d02
JMSTimestamp: 1535940047537
JMSCorrelationID: null
JMSDestination: queue:///SampleQ
JMSReplyTo: null
JMSRedelivered: false
JMSXAppID: Server\java\8.0\bin\java.exe
JMSXDeliveryCount: 0
JMSXUserID: SYSTEM
JMS_IBM_PutApplType: 11
JMS_IBM_PutDate: 20180903
JMS_IBM_PutTime: 02004755
test message
SUCCESS

Getting a Message to a Queue

Set as follows and click "Submit".

IBM MQ Java EE Connector Architecture Verification

☒ : IBM MQ classes for JMS
☐ : IBM MQ classes for Java

☒ : EJB3.1 (Container Managed Transaction) ☐ : Web Container

EJB Transaction Attribute:

☐ : JMS Session transacted ☐ : JTA UserTransaction
☐ : Commit ☐ : Rollback

Sleep (before session close): sec

Connection Factory:
Destination:
☐ : put message
☒ : get message

Number of messages:

(Specified parameters)

IBM MQ Classes for JMS : check

EJB3.1(Container Managed Transaction) : check

Connection Factory : jms/mq90BindCF *JNDI Simple Name for Connection Factory.

Destination : jms/TQ *JNDI Name for Queue.

get message : check

After clicking “submit”, the following will be displayed.

Receive message count: 1

Message Number: 1

JMSMessage class: jms_text
JMSType: null
JMSDeliveryMode: 1
JMSDeliveryDelay: 0
JMSDeliveryTime: 0
JMSExpiration: 0
JMSPriority: 0

JMSMessageID:
ID:414d512053616d706c65514d202020208c958c5b25468d02
JMSTimestamp: 1535940047537
JMSCorrelationID: null
JMSDestination: queue:///SampleQ
JMSReplyTo: null
JMSRedelivered: false
JMSXAppID: Server\java\8.0\bin\java.exe
JMSXDeliveryCount: 1
JMSXUserID: SYSTEM
JMS_IBM_Character_Set: UTF-8
JMS_IBM_Encoding: 273
JMS_IBM_Format: MQSTR
JMS_IBM_MsgType: 8
JMS_IBM_PutApplType: 11
JMS_IBM_PutDate: 20180903
JMS_IBM_PutTime: 02004755
test message
SUCCESS

3.2 WebSphere MQ classes for Java

Putting a Message to a Queue

Set as follows and click "Submit".

IBM MQ Java EE Connector Architecture Verification

☐ : IBM MQ classes for JMS

☒ : IBM MQ classes for Java

☒ : binding
☐ : client

Queue Manager:

Queue: >

Object Queue Manager:

☐ : Commit ☐ : Backout

Sleep (before session close): sec

☒ : put message
☐ : get message

Number of messages:

message:

(Specified parameters)

IBM MQ Classes for Java : check

binding : check *Binding Mode Connection

Queue Manager : mq90

Queue : TQ

put message : check *message string for PUT

After clicking “submit”, the following will be displayed.

Send message count: 1 * Queues:1

Message Number: 1 Queue: SampleQ

MQMD (com.ibm.mq.headers.internal.store.ByteStore [encoding: 0x00000111, ccsid: 1208, size: 364] @281077044)

MQCHAR4 StrucId: "MD "

MLONG Version: 2 (0x00000002)

MLONG Report: 0 (0x00000000)

MLONG MsgType: 8 (0x00000008)

MLONG Expiry: -1 (0xffffffff)

MLONG Feedback: 0 (0x00000000)

MLONG Encoding: 273 (0x00000111)

MLONG CodedCharSetId: 819 (0x00000333)

MQCHAR8 Format: " "

```

MQLONG Priority: -1 (0xffffffff)
MQLONG Persistence: 2 (0x00000002)
MQBYTE24 MsgId: 0x414d512053616d706c65514d202020208c958c5b25468e02
MQBYTE24 CorrelId: 0x000000000000000000000000000000000000000000000000
MQLONG BackoutCount: 0 (0x00000000)
MQCHAR48 ReplyToQ: "
MQCHAR48 ReplyToQMgr: "
"
MQCHAR12 UserIdentifier: "SYSTEM"
MQBYTE32 AccountingToken:
0x060101120000000000000000000000000000000000000000000000000000000b
MQCHAR32 ApplIdentityData: "
MQLONG PutApplType: 11 (0x0000000b)
MQCHAR28 PutApplName: "Server\java\8.0\bin\java.exe"
MQCHAR8 PutDate: "20180903"
MQCHAR8 PutTime: "02062108"
MQCHAR4 ApplOriginData: " "
MQBYTE24 GroupId: 0x000000000000000000000000000000000000000000000000
MQLONG MsgSeqNumber: 1 (0x00000001)
MQLONG Offset: 0 (0x00000000)
MQLONG MsgFlags: 0 (0x00000000)
MQLONG OriginalLength: -1 (0xffffffff)
[body: 0x (0 bytes)]
test message
SUCCESS

```

Getting a Messag to a Queue

Set as follows and click "Submit".

IBM MQ Java EE Connector Architecture Verification

☐ : IBM MQ classes for JMS

☒ : IBM MQ classes for Java

☒ : binding
☐ : client

Queue Manager:

Queue:

Object Queue Manager:

☐ : Commit ☐ : Backout

Sleep (before session close): sec

☐ : put message
☒ : get message

Number of messages:

(Specified parameters)

IBM MQ Classes for Java : check

binding : check *Binding Mode Connection

Queue Manager : mq90

Queue : TQ

get message : check

After clicking “submit”, the following will be displayed.

Receive message cont: 1

Message Number: 0

```
MQMD (com.ibm.mq.headers.internal.store.ByteStore [encoding: 0x00000111,
ccsid: 1208, size: 364] @1960283598)
MQCHAR4 StrucId: "MD  "
MQLONG Version: 2 (0x00000002)
MQLONG Report: 0 (0x00000000)
MQLONG MsgType: 8 (0x00000008)
MQLONG Expiry: -1 (0xffffffff)
MQLONG Feedback: 0 (0x00000000)
MQLONG Encoding: 273 (0x00000111)
MQLONG CodedCharSetId: 819 (0x00000333)
MQCHAR8 Format: "      "
MQLONG Priority: 0 (0x00000000)
```

```

MQLONG Persistence: 0 (0x00000000)
MQBYTE24 MsgId: 0x414d512053616d706c65514d202020208c958c5b25468e02
MQBYTE24 CorrelId: 0x000000000000000000000000000000000000000000000000
MQLONG BackoutCount: 0 (0x00000000)
MQCHAR48 ReplyToQ: "
"
MQCHAR48 ReplyToQMgr: "SampleQM
"
MQCHAR12 UserIdentifier: "SYSTEM      "
MQBYTE32 AccountingToken:
0x060101120000000000000000000000000000000000000000000000000000000b
MQCHAR32 ApplIdentityData: "          "
MQLONG PutApplType: 11 (0x0000000b)
MQCHAR28 PutApplName: "Server\java\8.0\bin\java.exe"
MQCHAR8 PutDate: "20180903"
MQCHAR8 PutTime: "02062108"
MQCHAR4 ApplOriginData: "      "
MQBYTE24 GroupId: 0x000000000000000000000000000000000000000000000000
MQLONG MsgSeqNumber: 1 (0x00000001)
MQLONG Offset: 0 (0x00000000)
MQLONG MsgFlags: 0 (0x00000000)
MQLONG OriginalLength: -1 (0xffffffff)
[body: 0x (0 bytes)]
test message

SUCCESS

```

4. Parameters for WebSphere MQ classes for JMS

This is a reference to parameters that can be specified when selecting IBM MQ classes for JMS in this program.

*Depending on combination of parameters, exceptions may occur, but for the purpose of verification, this program does not check consistency between parameters.

4.1 Common Parameters for WebSphere MQ classes for JMS

These are parameters common to PUT/GET of messages.

EJB3.1 (Container Managed Transaction) / Web Container

EJB 3.1 (CMT) or Web container (Servlet) can be used for testing.

When "EJB 3.1 (Container Managed Transaction)" is selected:

When EJB 3.1 is selected, the following transaction attributes can be selected.

default(Required), NotSupported, Supports, Required, RequiresNew, Mandatory, Never

By checking "JTA UserTransaction" you can verify the execution of EJB within JTA UserTransaction. In addition, "Commit / Rollback" of that transaction can also be specified.

If you specify "Mandatory" as the transaction attribute of the EJB, `javax.ejb.EJBTransactionRequiredException` occurs as shown below if the EJB is not called in the transaction scope (JTA). This is the spec behavior of EJB 3.1.

IBM MQ Java EE Connector Architecture Verification

☒ : IBM MQ classes for JMS
☐ : IBM MQ classes for Java

☒ : EJB3.1 (Container Managed Transaction) ☐ : Web Container

EJB Transaction Attribute:

☐ : JMS Session transacted ☐ : JTA UserTransaction
☐ : Commit ☐ : Rollback

The following will be displayed :

```
javax.ejb.EJBTransactionRequiredException: global tx required at  
com.ibm.ejs.csi.Mandatory.preInvoke(Mandatory.java:48) at  
com.ibm.ejs.csi.TransactionControlImpl.preInvoke(TransactionControlImpl.java:22  
2) at com.ibm.ejs.container.EJSContainer.preInvokeActivate
```

If "Never" is specified, `javax.ejb.EJBException` occurs when calling in transaction scope (JTA). This is also the spec behavior of EJB 3.1.

IBM MQ Java EE Connector Architecture Verification

☒ : IBM MQ classes for JMS

☐ : IBM MQ classes for Java

☒ : EJB3.1 (Container Managed Transaction) ☐ : Web Container

EJB Transaction Attribute:

☐ : JMS Session transacted

☒ : JTA UserTransaction

☒ : Commit

☐ : Rollback

The following will be displayed :

```
javax.ejb.EJBException: TX_NEVER method called within a global tx at
com.ibm.ejs.csi.Never.preInvoke(Never.java:48) at
com.ibm.ejs.csi.TransactionControlImpl.preInvoke(TransactionControlImpl.java:22
2) at com.ibm.ejs.container.EJSContainer.preInvokeActivate
```

When Web Container (Servlet) is selected:

You can choose to use "JMS Session (transacted)" or "JTA User Transaction" for the transaction.

This default is "JMS Session (non-transacted)".

In both "JMS Session (transacted)" or "JTA User Transaction", its "Commit / Rollback" can be specified.

EJB Transaction Attribute

When "EJB 3.1 (Container Managed Transaction)" is selected, the following transaction attribute can be selected from this drop down.

default(Required), NotSupported, Supports, Required, RequiresNew, Mandatory, Never

JMS Session transacted

If you select Web Container, you can specify JMS local transaction with this option. Usually also specify "Commit" or "Rollback".

JTA UserTransaction

If you specify "EJB 3.1 (Container Managed Transaction)" at the same time, EJB will be executed within JTA UserTransaction. Usually also specify "Commit" or "Rollback".

Commit/Rollback

If "JMS Session transacted" or "JTA User Transaction" is selected, you can specify that "Commit" or "Rollback".

Sleep (before session close)

Specify the time in seconds to sleep just before closing the JMS session.

For example, this can be used for checking the connection pool. (If you activate multiple screens with sleep and execute PUT / GET, connection pools will be created.)

MQJMS create a total of two MQ connections when creating a Connection object and when creating a Session object.

Below is an example of executing PUT on three screens for which sleep parameter was specified and checking the connections pooled by WAS on the MQ side.

```
>mqpcf con -qm mq90 conn -ap Server\java\8.0\bin\java.exe APPLTAG
1: CONN(414D51436D7139302020202020202020CC155E59207BF401)
TYPE(CONN) APPLTAG(Server\java\8.0\bin\java.exe)
2: CONN(414D51436D7139302020202020202020CC155E59207BF301)
TYPE(CONN) APPLTAG(Server\java\8.0\bin\java.exe)
3: CONN(414D51436D7139302020202020202020CC155E59207BF101)
TYPE(CONN) APPLTAG(Server\java\8.0\bin\java.exe)
4: CONN(414D51436D7139302020202020202020CC155E59207BF001)
TYPE(CONN) APPLTAG(Server\java\8.0\bin\java.exe)
5: CONN(414D51436D7139302020202020202020CC155E59207BED01)
TYPE(CONN) APPLTAG(Server\java\8.0\bin\java.exe)
6: CONN(414D51436D7139302020202020202020CC155E59207BEC01)
TYPE(CONN) APPLTAG(Server\java\8.0\bin\java.exe)
```

Connection Factory

Specify the JNDI name of the connection factory to use for testing defined on the application server.

Since this program does not define resource references, JNDI ENC names beginning with "java:comp/env/jms/" can not be used. This must be specified as a JNDI simple name or JNDI fully qualified name.

Destination

Specify the JNDI name of the queue to use for the tests defined on the application server.

For writing message, it is also possible to specify multiple queues.

put message/get message

Select whether to write message or read.

If "put message" is specified, also specify either "JMS Message Type", "String" or "Integer".

Number of messages

This parameter is the number of times to repeat PUT or GET.

4.2 Parameters available for “put message” with WebSphere MQ classes for JMS

These are parameters that can be specified at the time of message PUT by JMS.

JMS Message Type

You can select from TextMessage / MapMessage / ObjectMessage / StreamMessage / ByteMessage.

TextMessage:

The character string specified in "String" field is sent as TextMessage.

MapMessage:

Depending on whether you specify "String" or "Integer", the following MapMessage will be sent.

String name="First"(fixed) value=String specified in "String:" field.
String name="Second"(fixed) value=Numeric string specified in "Integer:" field.

ObjectMessage:

Creates and sends a String object from the string specified in "String" field.

StreamMessage:

Create a StreamMessage with the string specified in "String" field as String type and the value specified in "Integer" field as Int type and send it.

ByteMessage:

Create ByteMessage from the character string specified in "String" field and send it.

String

Specify the character string of the message to be sent.

Integer

Specify "integer" of the message to be sent.

4.3 Parameters available for “get message” with WebSphere MQ classes for JMS

These are parameters that can be specified when "JMS" and "get message" are selected.

Receive Timeout

If Receive Timeout is not specified, it calls the receiveNoWait() method of the MessageConsumer class and does not wait for a message.

If Receive Timeout is specified, invoke receive(long timeout) function and wait for the arrival of the message for the specified time (ms)

Message Selector

When Message Selector is specified, only messages matching the specified selector are read.

In the following example, only messages with "select" specified as JMSType will be read.

e.g.) JMSType = 'select'

Pass the selector as an argument to the createConsumer() method of the Session class.

```
----  
MessageConsumer consumer;  
....  
consumer = session.createConsumer(destination, "JMSType = 'select'");  
----
```

4.4 Options available for WebSphere MQ classes for JMS

These parameters can be specified only at the time of "put message" in the current version.

4.4.1 JMS header fields

These are the fields of the JMS header.

JMSDeliveryMode

Specify message persistence / non-persistence.

Selectable options	Description
PERSISTENT	equivalent to MQPER_PERSISTENT
NON_PERSISTENT	equivalent to MQPER_NOT_PERSISTENT

JMSExpiration

Save the time (total of current time and lifetime) at which the expiration date expires in milliseconds.

JMSPriority

Set priority value (0 to 9).

JMSCorrelationID

Specify a hexadecimal notation character string (24 * 2 characters) within ID: 24 bytes or a character string up to 24 characters.

JMSReplyTo

Set the response queue and queue manager name. The Queue name of JMSReplyTo specifies the JNDI name of the Queue defined on WAS.

e.g.) jms/JMSQueue

4.4.2 JMS property fields

These are the fields of the JMS property.

JMSXGroupID

Set the response queue and queue manager name. The Queue name of JMSReplyTo specifies the JNDI name of the Queue defined on WAS.

JMSXGroupSeq

The sequence number of the logical message within the group.

4.4.3 JMS provider-specific fields

JMS_IBM_Report_Exception

Specify report message of exception type. When specifying this option, it is also necessary to set Queue name in JMSReplyTo.

Selectable options	Description
MQRO_EXCEPTION	The original message data is not included.
MQRO_EXCEPTION_WITH_DATA	100 bytes of application data is included.
MQRO_EXCEPTION_WITH_FULL_DATA	All message data is included.

JMS_IBM_Report_Expiration

Specify an expiration type report message. When specifying this option, it is also necessary to set Queue name in JMSReplyTo.

Selectable options	Description
MQRO_EXPIRATION	The original message data is not included.
MQRO_EXPIRATION_WITH_DATA	100 bytes of application data is included.
MQRO_EXPIRATION_WITH_FULL_DATA	All message data is included.

JMS_IBM_Report_COA

Specify the report message of “Confirm on arrival” type. When specifying this option, it is also necessary to set Queue name in JMSReplyTo.

Selectable options	Description
MQRO_COA	The original message data is not included.
MQRO_COA_WITH_DATA	100 bytes of application data is included.
MQRO_COA_WITH_FULL_DATA	All message data is included.

JMS_IBM_Report_COD

Specify report message of “Confirm on delivery” type. When specifying this option, it is also necessary to set Queue name in JMSReplyTo.

Selectable options	Description
MQRO_COD	The original message data is not included.
MQRO_COD_WITH_DATA	100 bytes of application data is included.
MQRO_COD_WITH_FULL_DATA	All message data is included.

JMS_IBM_Report_PAN

Specify report message of “Positive action notification” type. When specifying this option, it is also necessary to set Queue name in JMSReplyTo.

Selectable options	Description
MQRO_PAN	Positive Action Notification Request

JMS_IBM_Report_NAN

Specify report message of “Negative action notification” type. When specifying this option, it is also necessary to set Queue name in JMSReplyTo.

Selectable options	Description
MQRO_NAN	Negative action notification request

JMS_IBM_Report_Pass_Msg_ID

Specify the message ID setting method of the report message.

Selectable options	Description
MQRO_PASS_MSG_ID	The <code>MsgId</code> is copied to the report message.

JMS_IBM_Report_Pass_Correl_ID

Specify the correlation ID setting method of the report message.

Selectable options	Description
MQRO_PASS_CORREL_ID	The CorrelId is copied to the report message.

JMS_IBM_Report_Discard_Msg

Specify the processing method when it can not be delivered to the target queue.

Selectable options	Description
MQRO_DISCARD_MSG	This discards the message if it cannot be delivered to the destination queue.

JMS_IBM_MsgType

Specify the type of message.

Selectable options	Description
MQMT_APPL_FIRST	Lowest value for application-defined message types.
MQMT_APPL_LAST	Highest value for application-defined message types.
MQMT_DATAGRAM	The message is one that does not require a reply.
MQMT_MQE_FIELDS	
MQMT_MQE_FIELDS_FROM_MQE	
MQMT_REPLY	The message is the reply to an earlier request message (MQMT_REQUEST).
MQMT_REPORT	The message is a report message.
MQMT_REQUEST	The message is one that requires a reply.
MQMT_SYSTEM_FIRST	Lowest value for system-defined message

	types.
MQMT_SYSTEM_LAST	Highest value for system-defined message types.

JMS_IBM_Feedback

It is mapped to MQMD Feedback

Selectable options	Description
MQFB_NONE	No feedback provided.
MQFB_SYSTEM_FIRST	Lowest value for system-generated feedback.
MQFB_QUIT	End application.
MQFB_EXPIRATION	Message was discarded because its expiry time had elapsed.
MQFB_COA	Confirmation of arrival.
MQFB_COD	Confirmation of delivery.
MQFB_ACTIVITY	Allow the option of user data following activity reports.
MQFB_PAN	Positive action notification.
MQFB_NAN	Negative action notification.
MQFB_MAX_ACTIVITIES	The trace-route message was discarded because the number of activities the message has been involved in exceeds the maximum activities limit.
MQFB_NOT_FORWARDED	The trace-route message was discarded because it is about to be sent to a remote queue manager that does not support trace-route messages.
MQFB_NOT_DELIVERED	The trace-route message was discarded because it is about to be put on a local queue.
MQFB_UNSUPPORTED_FORWARDING	The trace-route message was discarded because a value in the forwarding parameter is unrecognized, and is in the

	rejected bit mask.
MQFB_UNSUPPORTED_DELIVERY	The trace-route message was discarded because a value in the delivery parameter is unrecognized, and is in the rejected bit mask.
MQFB_DATA_LENGTH_ZERO	A segment length was zero in the application data of the message.
MQFB_DATA_LENGTH_NEGATIVE	A segment length was negative in the application data of the message.
MQFB_DATA_LENGTH_TOO_BIG	A segment length was too large in the application data of the message.
MQFB_BUFFER_OVERFLOW	The value of one of the length fields would cause the data to overflow the message buffer.
MQFB_LENGTH_OFF_BY_ONE	The value of one of the length fields was 1 byte too short.
MQFB_IIH_ERROR	The Format field in MQMD specifies MQFMT_IMS, but the message does not begin with a valid MQIIH structure.
MQFB_NOT_AUTHORIZED_FOR_IMS	The user ID contained in the message descriptor MQMD, or the password contained in the Authenticator field in the MQIIH structure, failed the validation performed by the IMS bridge.
MQFB_IMS_ERROR	An unexpected error was returned by IMS.
MQFB_IMS_FIRST	When the IMS-OTMA sense code is not 0x1A, IMS-generated feedback codes are in the range MQFB_IMS_FIRST (300) through MQFB_IMS_LAST (399).
MQFB_IMS_LAST	Highest value for IMS-generated feedback when the sense code is not 0x1A.
MQFB_CICS_INTERNAL_ERROR	CICS bridge encountered an unexpected error.
MQFB_CICS_NOT_AUTHORIZED	User identifier not authorized or password not valid.
MQFB_CICS_BRIDGE_FAILURE	CICS bridge terminated abnormally without completing normal error processing.

MQFB_CICS_CORREL_ID_ERROR	Correlation identifier not valid.
MQFB_CICS_CCSID_ERROR	Character set identifier not valid.
MQFB_CICS_ENCODING_ERROR	Encoding not valid.
MQFB_CICS_CIH_ERROR	CICS information header structure missing or not valid.
MQFB_CICS_UOW_ERROR	Unit-of-work control field UOWControl not valid.
MQFB_CICS_COMMAREA_ERROR	Length of CICS COMMAREA not valid.
MQFB_CICS_APPL_NOT_STARTED	The EXEC CICS LINK for the application program specified in the message failed.
MQFB_CICS_APPL_ABENDED	The application program specified in the message abnormally ended.
MQFB_CICS_DLQ_ERROR	The CICS bridge task was unable to copy a reply to this request to the dead-letter queue.
MQFB_CICS_UOW_BACKED_OUT	The unit of work was backed out.
MQFB_PUBLICATIONS_ON_REQUEST	
MQFB_SUBSCRIBER_IS_PUBLISHER	
MQFB_MSG_SCOPE_MISMATCH	
MQFB_SELECTOR_MISMATCH	
MQFB_NOT_A_GROUPUR_MSG	
MQFB_IMS_NACK_1A_REASON_FIRST	When the sense code is 0x1A, IMS-generated feedback codes are in the range MQFB_IMS_NACK_1A_REASON_FIRST (600) through MQFB_IMS_NACK_1A_REASON_LAST (855).
MQFB_IMS_NACK_1A_REASON_LAST	Highest value for IMS-generated feedback when the sense code is 0x1A.
MQFB_SYSTEM_LAST	Highest value for system-generated feedback.
MQFB_APPL_FIRST	Lowest value for application-generated feedback.
MQFB_APPL_LAST	Highest value for application-generated feedback.

JMS_IBM_Format

It is mapped to MQMD Format. This is the format name of the subsequent data.

Selectable options	Description
MQFMT_ADMIN	
MQFMT_CICS	
MQFMT_COMMAND_1	
MQFMT_COMMAND_2	
MQFMT_DEAD_LETTER_HEADER	
MQFMT_DIST_HEADER	
MQFMT_EMBEDDED_PCF	
MQFMT_EVENT	
MQFMT_IMS	
MQFMT_IMS_VAR_STRING	
MQFMT_MD_EXTENSION	
MQFMT_NONE	
MQFMT_PCF	
MQFMT_REF_MSG_HEADER	
MQFMT_RF_HEADER	
MQFMT_RF_HEADER_1	
MQFMT_RF_HEADER_2	
MQFMT_STRING	
MQFMT_TRIGGER	
MQFMT_WORK_INFO_HEADER	
MQFMT_XMIT_Q_HEADER	

JMS_IBM_PutApplType

It is mapped to MQMD PutApplType.

Selectable options	Description
MQAT_AIX	AIX application (same value as MQAT_UNIX).
MQAT_BATCH	
MQAT_BROKER	Broker.
MQAT_CHANNEL_INITIATOR	
MQAT_CICS	CICS transaction.
MQAT_CICS_BRIDGE	CICS bridge.
MQAT_CICS_VSE	CICS/VSE transaction.
MQAT_DEFAULT	Default application type.
MQAT_DOS	IBM MQ MQI client application on PC DOS.
MQAT_DQM	Distributed queue manager agent.
MQAT_GUARDIAN	Tandem Guardian application (same value as MQAT_NSK).
MQAT_IMS	IMS application.
MQAT_IMS_BRIDGE	IMS bridge.
MQAT_JAVA	Java
MQAT_MCAST_PUBLISH	
MQAT_MVS	MVS or TSO application (same value as MQAT_ZOS).
MQAT_NO_CONTEXT	This value is set by the queue manager when a message is put with no context.
MQAT_NOTES_AGENT	Lotus Notes Agent application.
MQAT_NSK	HP Integrity NonStop Server application.
MQAT_OPEN_TP1	
MQAT_OS2	
MQAT_OS390	
MQAT_OS400	IBM i application.
MQAT_QMGR	Queue manager.
MQAT_QMGR_PUBLISH	
MQAT_RRS_BATCH	
MQAT_SIB	

MQAT_SYSTEM_EXTENSION	
MQAT_TPF	
MQAT_UNIX	UNIX application.
MQAT_UNKNOWN	The application type is unknown.
MQAT_USER	
MQAT_USER_FIRST	Lowest value for user-defined application type.
MQAT_USER_LAST	Highest value for user-defined application type.
MQAT_VM	
MQAT_VMS	
MQAT_VOS	Stratus VOS application.
MQAT_WINDOWS	16-bit Windows application.
MQAT_WINDOWS_NT	32-bit Windows application.
MQAT_WLM	z/OS workload manager application.
MQAT_XCF	XCF
MQAT_ZOS	z/OS application.

JMS_IBM_Encoding

It overrides the numeric encoding of Destination Queue or Topic. If this parameter is specified, Encoding of MQRFH 2 (Encoding of the data part following NameValueData) is set, not MQMD Encoding

JMS_IBM_Character_Set

It overrides the numeric encoding of Destination Queue or Topic. When this parameter is specified, the CodedCharSetId (CCSID of the data part following NameValueData) of MQRFH2 is set. CodedCharSetId of MQMD and NameValueCCSID of MQRFH2 are not changed.

JMS_IBM_Last_Msg_In_Group

This maps to the MQMF_LAST_MSG_IN_GROUP flag in the MQMD MsgFlags field. MQMF_LAST_MSG_IN_GROUP is set in MQMD.MsgFlags only when JMSXGroupID or JMSXGroupSeq is set.

Selectable options	Description
TRUE	Set MQMF_LAST_MSG_IN_GROUP.
FALSE	Do not set MQMF_LAST_MSG_IN_GROUP.

5. Parameteres for IBM MQ classes for Java

This chapter will descride the parameter reference that can be specified when selecting IBM MQ classes for Java in this program.

*Depending on combination of parameters, exceptions may occur, but for the purpose of verification, this program does not check consistency between parameters.

5.1 Common Parameters for IBM MQ classes for Java

These are parameters common to write or read of messages.

binding/client

For connection, choose whether to use bind mode or client mode.

Queue Manager

Specify the queue manager name to be connected.

Queue

Specify the target queue name.

Object Queue Manager

Specify the object queue manager name.

Commit/Backout

Commit or rollback can be selected. It is specified together with MQPMO_SYNCPOINT for PUT and MQGMO_SYNCPOINT for GET.

Sleep (before session close)

This parameter is the sleep time just before closing the queue after commit.

put message/get message

Specify whether to perform PUT or GET operation.

If "put message" is specified, also specify "message".

Number of messages

This parameter is the number of times to repeat PUT or GET.

5.2 Parameters available for “put message” with WebSphere MQ classes for Java

This section will describe parameters available for “put message” with WebSphere MQ classes for Java.

message

Specify the character string of the message to be sent.

5.3 Detail options for IBM MQ classes for Java

These parameters can be specified on the screen both "put message" and "get message", but some parameters are valid only for "put message" or "get message".

5.3.1 MQMD fields

This section will describe fields of the MQ message descriptor.

Version

The following parameters available in this field.

Selectable options	Description
MQMD_VERSION_1	Version-1 message descriptor structure.
MQMD_VERSION_2	Version-2 message descriptor structure.
MQMD_CURRENT_VERSION	Current version of message descriptor structure.

Report

Multiple designation is possible for this option. If more than one is set, the OR value of them is set.

Selectable options	Description
MQRO_EXCEPTION	
MQRO_EXCEPTION_WITH_DATA	
MQRO_EXCEPTION_WITH_FULL_DATA	
MQRO_EXPIRATION	
MQRO_EXPIRATION_WITH_DATA	
MQRO_EXPIRATION_WITH_FULL_DATA	
MQRO_COA	
MQRO_COA_WITH_DATA	

MQRO_COA_WITH_FULL_DATA	
MQRO_COD	
MQRO_COD_WITH_DATA	
MQRO_COD_WITH_FULL_DATA	
MQRO_PAN	
MQRO_NAN	
MQRO_ACTIVITY	
MQRO_NEW_MSG_ID	
MQRO_PASS_MSG_ID	
MQRO_COPY_MSG_ID_TO_CORREL_ID	
MQRO_PASS_CORREL_ID	
MQRO_DEAD_LETTER_Q	
MQRO_DISCARD_MSG	
MQRO_PASS_DISCARD_AND_EXPIRY	
MQRO_NONE	

MsgType

The following parameters available in this field.

Selectable options	Description
MQMT_SYSTEM_FIRST	
MQMT_REQUEST	
MQMT_REPLY	
MQMT_DATAGRAM	
MQMT_REPORT	
MQMT_MQE_FIELDS_FROM_MQE	
MQMT_MQE_FIELDS	
MQMT_SYSTEM_LAST	
MQMT_APPL_FIRST	
MQMT_APPL_LAST	

Expiry

Set the duration of the message in 100 ms increments.

Feedback

The following parameters available in this field.

Selectable options	Description
MQFB_NONE	
MQFB_SYSTEM_FIRST	
MQFB_QUIT	
MQFB_EXPIRATION	
MQFB_COA	
MQFB_COD	
MQFB_CHANNEL_COMPLETED	
MQFB_CHANNEL_FAIL_RETRY	
MQFB_CHANNEL_FAIL	
MQFB_APPL_CANNOT_BE_STARTED	
MQFB_TM_ERROR	
MQFB_APPL_TYPE_ERROR	
MQFB_STOPPED_BY_MSG_EXIT	
MQFB_ACTIVITY	
MQFB_XMIT_Q_MSG_ERROR	
MQFB_PAN	
MQFB_NAN	
MQFB_STOPPED_BY_CHAD_EXIT	
MQFB_STOPPED_BY_PUBSUB_EXIT	
MQFB_NOT_A_REPOSITORY_MSG	
MQFB_BIND_OPEN_CLUSRCVR_DEL	
MQFB_MAX_ACTIVITIES	
MQFB_NOT_FORWARDED	
MQFB_NOT_DELIVERED	

MQFB_UNSUPPORTED_FORWARDING	
MQFB_UNSUPPORTED_DELIVERY	
MQFB_DATA_LENGTH_ZERO	
MQFB_DATA_LENGTH_NEGATIVE	
MQFB_DATA_LENGTH_TOO_BIG	
MQFB_BUFFER_OVERFLOW	
MQFB_LENGTH_OFF_BY_ONE	
MQFB_IH_ERROR	
MQFB_NOT_AUTHORIZED_FOR_IMS	
MQFB_IMS_ERROR	
MQFB_IMS_FIRST	
MQFB_IMS_LAST	
MQFB_CICS_INTERNAL_ERROR	
MQFB_CICS_NOT_AUTHORIZED	
MQFB_CICS_BRIDGE_FAILURE	
MQFB_CICS_CORREL_ID_ERROR	
MQFB_CICS_CCSID_ERROR	
MQFB_CICS_ENCODING_ERROR	
MQFB_CICS_CIH_ERROR	
MQFB_CICS_UOW_ERROR	
MQFB_CICS_COMMAREA_ERROR	
MQFB_CICS_APPL_NOT_STARTED	
MQFB_CICS_APPL_ABENDED	
MQFB_CICS_DLQ_ERROR	
MQFB_CICS_UOW_BACKED_OUT	
MQFB_PUBLICATIONS_ON_REQUEST	
MQFB_SUBSCRIBER_IS_PUBLISHER	
MQFB_MSG_SCOPE_MISMATCH	
MQFB_SELECTOR_MISMATCH	
MQFB_NOT_A_GROUPUR_MSG	
MQFB_IMS_NACK_1A_REASON_FIRST	
MQFB_IMS_NACK_1A_REASON_LAST	

MQFB_SYSTEM_LAST	
MQFB_APPL_FIRST	
MQFB_APPL_LAST	

Encoding

Specify encoding by numeric value.

CodedCharSetId

Specify CCSID as a numerical value.

Format

The following parameters available in this field.

Selectable options	Description
MQFMT_NONE	" "
MQFMT_ADMIN	"MQADMIN "
MQFMT_CHANNEL_COMPLETED	"MQCHCOM "
MQFMT_CICS	"MQCICS "
MQFMT_COMMAND_1	"MQCMD1 "
MQFMT_COMMAND_2	"MQCMD2 "
MQFMT_DEAD_LETTER_HEADER	"MQDEAD "
MQFMT_DIST_HEADER	"MQHDIST "
MQFMT_EMBEDDED_PCF	"MQHEPCF "
MQFMT_EVENT	"MQEVENT "
MQFMT_IMS	"MQIMS "
MQFMT_IMS_VAR_STRING	"MQIMSVS "
MQFMT_MD_EXTENSION	"MQHMDE "
MQFMT_PCF	"MQPCF "
MQFMT_REF_MSG_HEADER	"MQHREF "
MQFMT_RF_HEADER	"MQHRF "

MQFMT_RF_HEADER_1	"MQHRF "
MQFMT_RF_HEADER_2	"MQHRF2 "
MQFMT_STRING	"MQSTR "
MQFMT_TRIGGER	"MQTRIG "
MQFMT_WORK_INFO_HEADER	"MQHWIH "
MQFMT_XMIT_Q_HEADER	"MQXMIT "

Priority

The following parameters available in this field.

Selectable options	Description
MQPRI_PRIORITY_AS_Q_DEF	
MQPRI_PRIORITY_AS_PARENT	
MQPRI_PRIORITY_AS_PUBLISHED	
MQPRI_PRIORITY_AS_TOPIC_DEF	

Persistence

The following parameters available in this field.

Selectable options	Description
MQPER_PERSISTENCE_AS_PARENT	
MQPER_NOT_PERSISTENT	
MQPER_PERSISTENT	
MQPER_PERSISTENCE_AS_Q_DEF	
MQPER_PERSISTENCE_AS_TOPIC_DEF	

MsgId

Specify a hexadecimal notation character string (24 * 2 characters) within 24 bytes starting with "0x" or a character string of 24 or less characters.

CorrelId

Specify a hexadecimal notation character string (24 * 2 characters) within 24 bytes starting with "0x" or a character string of 24 or less characters.

ReplyToQ

Specify "Reply to Queue Name".

ReplyToQMgr

Specify "Reply to Queue Manager Name".

UserIdentifier

Specify "User ID". It is part of the identity context. It is also necessary to specify MQPMO_SET_IDENTITY_CONTEXT or MQPMO_SET_ALL_CONTEXT. In addition, you need to specify the open option MQOO_SET_IDENTITY_CONTEXT when specifying MQPMO_SET_IDENTITY_CONTEXT and open option MQOO_SET_ALL_CONTEXT when specifying MQPMO_SET_ALL_CONTEXT.

AccountingToken

Specify "Accounting Token". It is part of the identity context. It is also necessary to specify MQPMO_SET_IDENTITY_CONTEXT or MQPMO_SET_ALL_CONTEXT. In addition, you need to specify the open option MQOO_SET_IDENTITY_CONTEXT when specifying MQPMO_SET_IDENTITY_CONTEXT and open option MQOO_SET_ALL_CONTEXT when specifying MQPMO_SET_ALL_CONTEXT.

ApplIdentityData

Specify "Application Identity Data". It is part of the identity context. It is also necessary to specify MQPMO_SET_IDENTITY_CONTEXT or MQPMO_SET_ALL_CONTEXT. In addition, you need to specify the open option MQOO_SET_IDENTITY_CONTEXT when specifying MQPMO_SET_IDENTITY_CONTEXT and open option MQOO_SET_ALL_CONTEXT when specifying MQPMO_SET_ALL_CONTEXT.

PutApplType

The following parameters available in this field.

Selectable options	Description
MQAT_UNKNOWN	
MQAT_NO_CONTEXT	
MQAT_CICS	
MQAT_MVS	
MQAT_OS390	
MQAT_ZOS	
MQAT_IMS	
MQAT_OS2	
MQAT_DOS	
MQAT_AIX	
MQAT_UNIX	
MQAT_QMGR	
MQAT_OS400	
MQAT_WINDOWS	
MQAT_CICS_VSE	
MQAT_WINDOWS_NT	
MQAT_VMS	
MQAT_GUARDIAN	
MQAT_NSK	
MQAT_VOS	
MQAT_OPEN_TP1	
MQAT_VM	
MQAT_IMS_BRIDGE	
MQAT_XCF	
MQAT_CICS_BRIDGE	
MQAT_NOTES_AGENT	
MQAT_TPF	
MQAT_USER	
MQAT_BROKER	
MQAT_QMGR_PUBLISH	

MQAT_JAVA	
MQAT_DQM	
MQAT_CHANNEL_INITIATOR	
MQAT_WLM	
MQAT_BATCH	
MQAT_RRS_BATCH	
MQAT_SIB	
MQAT_SYSTEM_EXTENSION	
MQAT_MCAST_PUBLISH	
MQAT_DEFAULT	
MQAT_USER_FIRST	
MQAT_USER_LAST	

PutApplName

Specify “Put Application Name”. It is part of the origin context. It is necessary to specify MQPMO_SET_ALL_CONTEXT in MQPMO. When specifying MQPMO_SET_ALL_CONTEXT, it is necessary to specify the open option MQOO_SET_ALL_CONTEXT.

PutDate

Specify “Put Date”. It is part of the origin context. It is necessary to specify MQPMO_SET_ALL_CONTEXT in MQPMO. When specifying MQPMO_SET_ALL_CONTEXT, it is necessary to specify the open option MQOO_SET_ALL_CONTEXT.

PutTime

Specify “Put Time”. It is part of the origin context. It is necessary to specify MQPMO_SET_ALL_CONTEXT in MQPMO. When specifying MQPMO_SET_ALL_CONTEXT, it is necessary to specify the open option MQOO_SET_ALL_CONTEXT.

ApplOriginData

This field is defined by the application suite and can be used to provide additional information about the source of the message. It is necessary to specify MQPMO_SET_ALL_CONTEXT in MQPMO. When specifying MQPMO_SET_ALL_CONTEXT, it is necessary to specify the open option MQOO_SET_ALL_CONTEXT.

GroupId

At the same time, either MQMF_MSG_IN_GROUP, MQMF_LAST_MSG_IN_GROUP, MQMF_SEGMENT, MQMF_LAST_SEGMENT, or MQMF_SEGMENTATION_ALLOWED must be specified. Even if MQGI_* is specified directly without specifying this option (-gi), it is also set to MQMD.GroupId.

MsgSeqNumber

Specify "sequence number of logical message in group". At the same time, it is necessary to specify MQMF_MSG_IN_GROUP.

Offset

Specify "the relative position of the data of the physical message from the start point of the logical message". It is necessary to specify MQMF_SEGMENT at the same time.

MsgFlags

The following parameters available in this field. If more than one is set, the OR value of them is set.

Selectable options	Description
MQMF_SEGMENTATION_INHIBITED	
MQMF_SEGMENTATION_ALLOWED	
MQMF_MSG_IN_GROUP	
MQMF_LAST_MSG_IN_GROUP	
MQMF_SEGMENT	
MQMF_LAST_SEGMENT	
MQMF_NONE	

OriginalLength

Specify the length of the message segment to which the report message relates. It is necessary to specify MQMT_REPORT at the same time.

5.3.2 MQ Options

This section will describe options for MQ API.

MQPMO Options

The following parameters available in this field. If more than one is set, the OR value of them is set.

Selectable options	Description
MQPMO_SYNCPOINT	
MQPMO_NO_SYNCPOINT	
MQPMO_DEFAULT_CONTEXT	
MQPMO_NEW_MSG_ID	
MQPMO_NEW_CORREL_ID	
MQPMO_PASS_IDENTITY_CONTEXT	
MQPMO_PASS_ALL_CONTEXT	
MQPMO_SET_IDENTITY_CONTEXT	
MQPMO_SET_ALL_CONTEXT	
MQPMO_ALTERNATE_USER_AUTHORITY	
MQPMO_FAIL_IF QUIESCING	
MQPMO_NO_CONTEXT	
MQPMO_LOGICAL_ORDER	
MQPMO_ASYNC_RESPONSE	
MQPMO_SYNC_RESPONSE	
MQPMO_RESOLVE_LOCAL_Q	
MQPMO_WARN_IF_NO_SUBS_MATCHED	
MQPMO_RETAIN	

MQPMO_MD_FOR_OUTPUT_ONLY	
MQPMO_SCOPE_QMGR	
MQPMO_SUPPRESS_REPLYTO	
MQPMO_NOT_OWN_SUBS	
MQPMO_RESPONSE_AS_Q_DEF	
MQPMO_RESPONSE_AS_TOPIC_DEF	
MQPMO_NONE	
MQPMO_PUB_OPTIONS_MASK	

MQGMO Options

The following parameters are available in this field. If more than one is set, the OR value of them is set.

Selectable options	Description
MQGMO_WAIT	
MQGMO_NO_WAIT	
MQGMO_SET_SIGNAL	
MQGMO_FAIL_IF_QUIESCING	
MQGMO_SYNCPOINT	
MQGMO_SYNCPOINT_IF_PERSISTENT	
MQGMO_NO_SYNCPOINT	
MQGMO_MARK_SKIP_BACKOUT	
MQGMO_BROWSE_FIRST	
MQGMO_BROWSE_NEXT	
MQGMO_BROWSE_MSG_UNDER_CURSOR	
MQGMO_MSG_UNDER_CURSOR	
MQGMO_LOCK	
MQGMO_UNLOCK	
MQGMO_ACCEPT_TRUNCATED_MSG	
MQGMO_CONVERT	

MQGMO_LOGICAL_ORDER	
MQGMO_COMPLETE_MSG	
MQGMO_ALL_MSGS_AVAILABLE	
MQGMO_ALL_SEGMENTS_AVAILABLE	
MQGMO_MARK_BROWSE_HANDLE	
MQGMO_MARK_BROWSE_CO_OP	
MQGMO_UNMARK_BROWSE_CO_OP	
MQGMO_UNMARK_BROWSE_HANDLE	
MQGMO_UNMARKED_BROWSE_MSG	
MQGMO_PROPERTIES_FORCE_MQRFH2	
MQGMO_NO_PROPERTIES	
MQGMO_PROPERTIES_IN_HANDLE	
MQGMO_PROPERTIES_COMPATIBILITY	
MQGMO_PROPERTIES_AS_Q_DEF	
MQGMO_NONE	
MQGMO_BROWSE_HANDLE	
MQGMO_BROWSE_CO_OP	

MQGMO matchOptions

The following parameters are available in this field. If more than one is set, the OR value of them is set.

Selectable options	Description
MQMO_MATCH_MSG_ID	
MQMO_MATCH_CORREL_ID	
MQMO_MATCH_GROUP_ID	
MQMO_MATCH_MSG_SEQ_NUMBER	
MQMO_MATCH_OFFSET	
MQMO_MATCH_MSG_TOKEN	

MQMO_NONE	
-----------	--

MQOO openOptions

The following parameters available in this field. If more than one is set, the OR value of them is set.

Selectable options	Description
MQOO_OUTPUT	
MQOO_INQUIRE	
MQOO_SET	
MQOO_SAVE_ALL_CONTEXT	
MQOO_PASS_IDENTITY_CONTEXT	
MQOO_PASS_ALL_CONTEXT	
MQOO_SET_IDENTITY_CONTEXT	
MQOO_SET_ALL_CONTEXT	
MQOO_ALTERNATE_USER_AUTHORITY	
MQOO_FAIL_IF QUIESCING	
MQOO_BIND_ON_OPEN	
MQOO_BIND_ON_GROUP	
MQOO_BIND_NOT_FIXED	
MQOO_CO_OP	
MQOO_NO_READ_AHEAD	
MQOO_READ_AHEAD	
MQOO_NO_MULTICAST	
MQOO_RESOLVE_LOCAL_Q	
MQOO_RESOLVE_LOCAL_TOPIC	
MQOO_RESOLVE_NAMES	

Conclusion

If you find any defects in this program, or if you have any questions and requests about this program, please contact us.

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