

IBM MQ Manager stops responding to JMS requests, RC 2009, error AMQ9513

<https://www.ibm.com/support/pages/node/78025>

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IBM MQ Support

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+++ Problem +++

You are using server-connection channels with SHARECNV=0 and you are seeing a build up of "orphaned channel instances", resulting with connectivity problems with the MQ Manager and it stops responding to JMS requests with Reason Code 2009 and AMQ9513.

The following error is seen in the file:
SystemOut.log

```
FreePool E J2CA0046E: Method createManagedConnctionWithMCWrapper caught an
exception during creation of the ManagedConnection for resource
JMS$cftestcf$JMSManagedConnection@1373738090, throwing ResourceAllocationException.
Original exception: javax.resource.spi.ResourceAdapterInternalException: Failed to create
session
at com.ibm.ejs.jms.JMSCMUtils.mapToResourceException(JMSCMUtils.java:125)
at com.ibm.ejs.jms.JMSManagedSession.<init>(JMSManagedSession.java:213)
. . .
javax.jms.JMSException: MQJMS2005: failed to create MQQueueManager for
'xldn0384abc:XYZ123'
at com.ibm.mq.jms.services.ConfigEnvironment.newException
(ConfigEnvironment.java:546)
at com.ibm.mq.jms.MQConnection.createQM
(MQConnection.java:1450)
at com.ibm.mq.jms.MQConnection.createQMNonXA
(MQConnection.java:960)
at
. . .
com.ibm.mq.MQException: MQJE001: Completion Code 2, Reason 2009
at com.ibm.mq.MQManagedConnectionJ11.<init>
(MQManagedConnectionJ11.java:172)
at com.ibm.mq.MQClientManagedConnectionFactoryJ11._createManagedConnection
(MQClientManagedConnectionFactoryJ11.java:270)
at com.ibm.mq.MQClientManagedConnectionFactoryJ11.createManagedConnection
(MQClientManagedConnectionFactoryJ11.java:290)
```

And the following error is seen in the error log of the queue manager file:
AMQERRO1.log

AMQ9513: Maximum number of channels reached.

++ Cause ++

The maximum number of channels that can be in use simultaneously has been reached. The number of permitted channels is a configurable parameter in the queue manager configuration file.

When an application tries to connect to an MQ queue manager, a channel is started on the MQ side.

The MQ queue manager only allows a certain number of channels. If you build up enough channels you will get the MaxChannels error AMQ9513.

Channels may also be getting disconnected due to TCP/IP interruptions rather than an application disconnecting improperly from MQ.

By default, when using a server-connection channel, a value of SHARECNV=10 is used. If the value is 1 or greater, this means that a "full-duplex" channel is used and that both ends of the channel (MQ client and MQ queue manager) can try to recover from a network interruption.

BUT, if you are using server-connection channels with a value of SHARECNV=0 or if you have specified PROVIDEVERSION=6, then MQ will use "half-duplex" channels and the recovery from the network interruption is extremely limited, and usually this results in "orphaned channel instances" that consume resources and cannot be easily removed.

++ Resolving The Problem of "Orphaned Channel Instances" ++

1. Set up the operating system TCP/IP KeepAlive parameter.

You must enable KeepAlive at operating system (TCP/IP) level. How this is done depends entirely on the operating system you are using. The TCP/IP keep alive setting is an operating system parameter. It determines how long to keep a TCP/IP connection alive.

KeepAlive has a timeout option that is usually set to 2 hours. Recommend setting this to a much shorter interval, such as 10 minutes. Once this change has been made the OS will need to be rebooted for this to take effect.

2. In addition to enabling KeepAlive at the OS level, MQ must also be configured to use **KeepAlive**. This is done by adding the following stanza to the file qm.ini for the queue manager, as follows:

TCP:
KeepAlive=yes

See references:

<https://www.ibm.com/docs/en/ibm-mq/9.3?topic=run-troubleshooting-network-problems>

IBM MQ / 9.3

Troubleshooting network problems

<https://www.ibm.com/docs/en/ibm-mq/9.3?topic=ccf-checking-that-other-end-channel-is-still-available>

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Checking that the other end of the channel is still available

See section: Keep Alive

<https://www.ibm.com/docs/en/ibm-mq/9.3?topic=information-tcp-stanza-qmini-file>

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TCP stanza of the qm.ini file

See attribute: KeepAlive

Once this stanza has been added the queue manager must be restarted for this to take effect.

3. It is also recommended to change the **MaxChannels** value (also in the qm.ini file) to 2 or 3 times what you think may be needed.

For example, from 100 to 300 MaxChannel.

This will ensure that you have some flexibility in the event a contingency occurs.

<https://www.ibm.com/docs/en/ibm-mq/9.3?topic=information-channels-stanza-qmini-file>

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Channels stanza of the qm.ini file

To determine the number of channels WebSphere Application Server requires, see this technote:

<https://www.ibm.com/support/pages/node/338641>

Explanation of connection pool and session pool settings for JMS connection factories

+++ end +++