Why is the channel status not RUNNING after issuing START CHANNEL command on an IBM MQ receiver or server-connection channel?

https://www.ibm.com/support/pages/node/241881

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+++ QUESTION +++

You START an IBM MQ receiver (RCVR) or a server-connection (SVRCONN) channel.
So far, there channel is not being used yet.
You expect that the STATUS of the channel to be RUNNING, however you notice:
- In MQ Explorer, the server-connection or receiver channel is shown as "Inactive"
- In runmqsc, the command DISPLAY CHSTATUS indicates that the channel cannot be found,
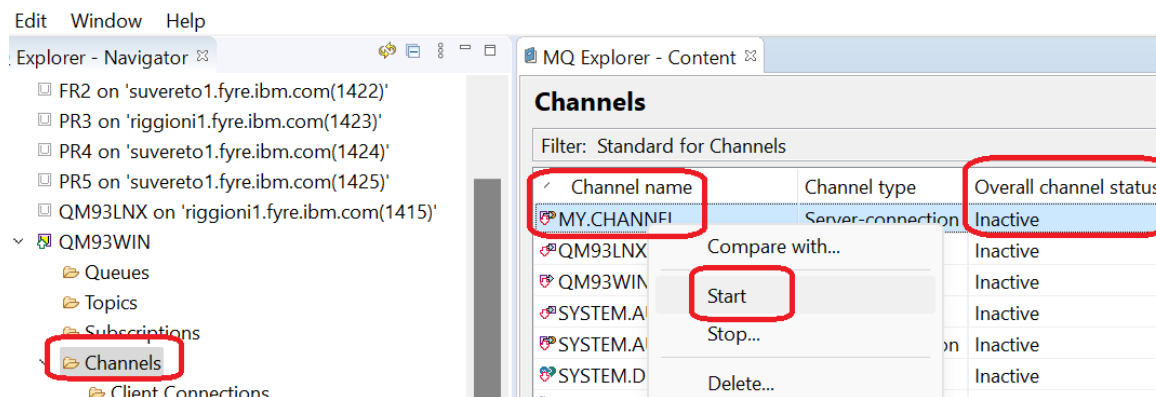that is, the channel is not active nor is stopped.

You look at the error logs for the queue manager and you do not see any errors.

++ Details

The desired channel, such as a server-connection channel MY.CHANNEL does not have yet an
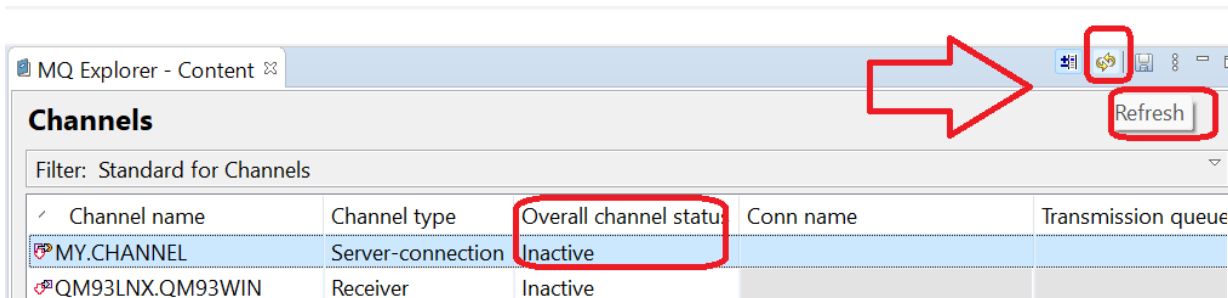MQ Client application that is using it.

+ In MQ Explorer

You start MQ Explorer, expand the section for "Channels", select a Server-connection
channel and you see the "Overall channel status" of "Inactive".
Then you do right-click on "Start"

You wait for few seconds and the status remains as "Inactive".

You then click on the icon "Refresh" (upper right corner) and the status does not change, it remains as "Inactive".

+ Runmqsc

You start runmqsc and display the channel status for MY.CHANNEL.
There is no running or stopped status on the channel.
Then you START the channel and repeat the display for the channel status.
You still do not see an explicit entry that it is running.

```
C:\temp\mq> runmqsc QM93WIN
Starting MQSC for queue manager QM93WIN.

display chstatus(MY.CHANNEL)
     1 : display chstatus(MY.CHANNEL)
AMQ8420I: Channel Status not found.

start channel(MY.CHANNEL)
     2 : start channel(MY.CHANNEL)
AMQ8018I: Start IBM MQ channel accepted.

display chstatus(MY.CHANNEL)
     3 : display chstatus(MY.CHANNEL)
AMQ8420I: Channel Status not found.
```

Conclusion:
Because there is NO EXPLICIT status of "Inactive" in runmqsc, then the proper way to interpret the informational message:
    AMQ8420I: Channel Status not found.
... is that it is an IMPLICIT indicator that the channel is not running, and therefore "Inactive".

+++ ANSWER +++

When the START CHANNEL command is issued via runmqsc or via the MQ Explorer, a receiver (RCVR) or a server-connection (SVRCONN) channel is just enabled to process incoming requests, however it is not actually running.

The channel is really started (activated) only when there is an incoming request for that channel, then it remains active during the duration of the connection, and when the application disconnects, the channel returns to the status of inactive.

Because the MQ Explorer says explicitly that the status is "Inactive" when the channel is not running, there is an expectation that runmqsc will also report the status as "Inactive".
Instead, in runmqsc, the command:
` DISPLAY CHSTATUS(*)`
… only displays entries for channels that are:
      - RUNNING (there is an active MQ client application using it)
      - STOPPED

These channels will be active only when these channels are actually being used by an active connection, that is, there is an application currently connected and using the channel.
As soon as the application disconnects, then the channel will become inactive.

+ Online manual

Please see the following section of the MQ documentation:

https://www.ibm.com/docs/en/ibm-mq/9.3?topic=reference-start-channel-start-channel
IBM MQ / 9.3
START CHANNEL

+ begin excerpt

The START command can be issued to a channel of any type except CLNTCONN channels (including those that have been defined automatically).

If, however, it is issued to a receiver (RCVR), server-connection (SVRCONN) or cluster-receiver (CLUSRCVR) channel, the only action is to enable the channel, not to start it.

+ end excerpt

++ Detailed example

In order for a remote MQ client application, or a remote MQ queue manager that is going to use a SENDER channel, to access the target queue manager, it is necessary to have 2 things available at the target queue manager:
- A listener, who is waiting for inbound requests. The default port is 1414.
- Either a SERVER-CONNECTION channel (in the case of an MQ client application), or a RECEIVER channel (in the case of an MQ queue manager).

If there are NO actual inbound requests that arrive at port (such as 1414) that the Listener is using, then that server-connection channel has nothing to do, and thus, the channel is NOT started.
This means that in MQ Explorer the channel will be shown as "Inactive", and if you issue DISPLAY CHSTATUS for that channel, you will get a rather confusing message, which really means that no active instances were found.
 AMQ8420: Channel Status not found.

However, if there is an incoming request for that channel, such as when the MQSERVER environment is set and the MQ client application "amqsputc" is used...

```
C:\> set MQSERVER=MY.CHANNEL/TCP/arturito(1414)
C:\> amqsputc Q1 QM93WIN
Sample AMQSPUT0 start
target queue is Q1
```

... then the channel actually starts and has something useful to do.

In this case the MQ Explorer will show the channel with a status of "Running" (that is, the channel is "active"):

In runmqsc, the DISPLAY CHSTATUS will show an entry for that channel, such as:

```
display chstatus(MY.CHANNEL)
     4 : display chstatus(MY.CHANNEL)
AMQ8417I: Display Channel Status details.
   CHANNEL(MY.CHANNEL)                         CHLTYPE(SVRCONN)
   CONNAME(127.0.0.1)                          CURRENT
   STATUS(RUNNING)                             SUBSTATE(RECEIVE)
```

If the MQ client gracefully disconnects, then the server-connection channel does not have anything useful to do, and it will terminate, and it will be shown again as inactive in MQ Explorer.
In runmqsc you will get the following if you display the status:
```
 AMQ8420: Channel Status not found.
```

This explains why sometimes you may see the server-connection or receiver channels as active ("running") or as inactive, and that messages are being put/get from a queue.
These channels will be active only when these channels are actually being used by an active connection.

++ Miscellaneous

+ Question:
What happens if the STOP command is issued for a channel that is not running?

Answer:
If you try to stop this server-connection channel that is not active, you will get the following error message in the error log for the queue manager:

```
display chstatus(MY.CHANNEL)
AMQ8420I: Channel Status not found.

stop channel(MY.CHANNEL)
AMQ9533W: Channel 'MY.CHANNEL' is not currently active.
```

In addition, an entry in the error log of the queue manager will be added:

10/16/2023 10:43:01 - Process(19224.1) User(MUSR_MQADMIN) Program(amqrcmla.exe)
        Host(ARTURITO) Installation(Installation1)
        VRMF(9.3.3.0) QMgr(QM93WIN)
        Time(2023-10-16T14:43:01.959Z)
        CommentInsert1(MY.CHANNEL)
AMQ9533W: Channel 'MY.CHANNEL' is not currently active.
EXPLANATION:
The channel was not stopped because it was not currently active. If attempting to stop a specific instance of a channel by connection name or by remote queue manager name this message indicates that the specified instance of the channel is not running.
ACTION:
None.

+ Question:
What is the difference between:
```
  STOP CHANNEL(name) STATUS(INACTIVE)
```
and
```
  STOP CHANNEL(name) STATUS(STOPPED)
```

Answer:

The command:
  STOP CHANNEL(name) STATUS(INACTIVE)
... will ask the channel to try to terminate, and if it terminates, then the channel will be just "taking a nap" and it is still enabled to interact.
The channel can be reawaken when an MQ client application asks to use the channel.

In contrast, the command:
  STOP CHANNEL(name) STATUS(STOPPED)
... will ask the channel to try to terminate, and if it terminates, then the channel will be DISABLED and will NOT be able to be reawaken when an MQ client application asks to use the channel.

The channels with STOPPED status are listed under runmqsc "DISPLAY CHSTATUS".

```
display chstatus(MY.CHANNEL)
AMQ8417I: Display Channel Status details.
   CHANNEL(MY.CHANNEL)                     CHLTYPE(SVRCONN)
   CONNAME(127.0.0.1)                      CURRENT
   STATUS(STOPPED)                         SUBSTATE( )
```

When an MQ Client application is trying to use a STOPPED channel, the reason code 2537 is issued:

```
C:\> amqsputc Q1 QM93WIN
Sample AMQSPUT0 start
MQCONNX ended with reason code 2537

C:\> mqrc 2537
     2537  0x000009e9  MQRC_CHANNEL_NOT_AVAILABLE
```

+ Question:
Is there a scenario when the START command is needed?

Answer:
Yes.

If the MQ Administrator has issued a STOP command on a running channel and specified the status STOPPED, then to re-enable the channel to be able to run, it is necessary to use:

```
display chstatus(MY.CHANNEL)
AMQ8417I: Display Channel Status details.
   CHANNEL(MY.CHANNEL)                       CHLTYPE(SVRCONN)
   CONNAME(127.0.0.1)                        CURRENT
   STATUS(STOPPED)                           SUBSTATE( )

start channel(MY.CHANNEL)
    16 : start channel(MY.CHANNEL)
AMQ8018I: Start IBM MQ channel accepted.

display chstatus(MY.CHANNEL)
AMQ8420I: Channel Status not found.
```

Note: Remember that if "display chstatus" does not show anything for a channel, then it means that the channel is NOT running (and it is NOT in status STOPPED), in order words, it is "Inactive" (waiting to be reawaken by an MQ client application)

++ Related document

https://www.ibm.com/support/pages/node/616249
How to identify MQ client connections and stop them

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