

#### Customizing a new queue manager on IBM MQ for z/OS

Audience level: Some knowledge of MQ or z/OS

Skillset: z/OS Systems Programming, MQ Administration

# **Background:**

Every time a new release of IBM MQ for z/OS is installed, you have the opportunity to create or migrate a new queue manager with the latest capabilities of the IBM MQ release. We will go through the process of creating a new queue manager with IBM MQ for z/OS 9.3.3. IBM MQ for z/OS has been installed on the environment before the lab, so that will installation process will not be in scope of today's lab.

To start a new queue manager, JCL procedures need to be copied to a system JCL procedure library and the new queue manager subsystem needs to be defined to MVS.

#### **Overview of exercise:**

What needs to be done here:

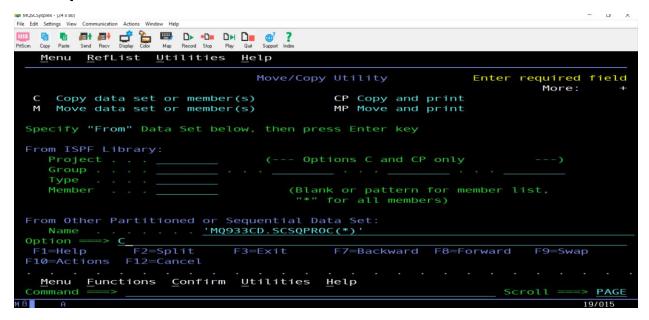
- 1) Copy and tailor the sample JCL. Each of these members comes pre-canned in the IBM MQ installation. What your task is as an administrator is to customize these for your specific need.
- 2) Dynamically add MQ subsystem to MVS
- 3) Define subsystem security
- 4) Start the queue manager and channel initiator

# What we're using:



# Lab begin:

We will start with copying the members from the IBM MQ code installation. All the IBM MQ installation will be under the high level qualifier MQ933CD. We are only interested in the sample code here, under SCSQPROC. (\*) specifies we want all the members in the SCSQPROC dataset.



• We are making a new queue manager called ZQS3, so we want the new dataset to be referenceable by the high-level qualifier ZQS3. Hit enter.

<u>M</u> enu <u>R</u> efList <u>U</u> tilities <u>H</u> elp	
COPY From MQ933CD.SCSQPROC(*) Specify "To" Data Set Below	More: +
Group Re	"/" to select option place like-named members ocess member aliases
To Other Partitioned or Sequential Data So Name <u>'ZQS3.SCSQPROC'</u> Volume Serial (If not o	
Data Set Password (If password Data Set Options:	word protected)
Command ===> F1=Help F2=Split F3=Exit F3 F10=Actions F12=Cancel	7=Backward F8=Forward F9=Swap
Menu <u>Functions Confirm Utilities He</u> Command ===>	

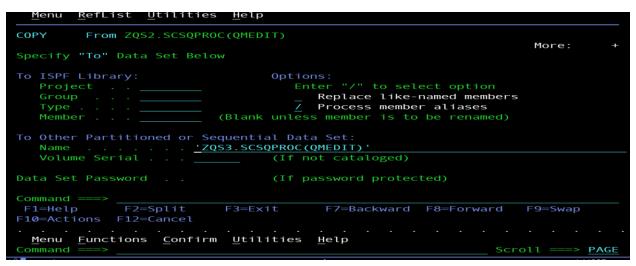
 Type a '1' next to option 1. We want the new dataset to have the attribute of MQ933CD.SCSQPROC. Hit enter.



• In the top right corner, you should see z/OS confirm that 113 members have been copied to the new dataset you created ZQS3.SCSQPROC. Great! We just need one more thing before we can customize. We are going to steal it from already-existing queue manager ZQS2 in this instance.

menu kertist otililles he	: LP	
	Move/Copy Utility	113 member(s) copied More: +
C Copy data set or member(s)	<b>CP</b> Copy and pr	int
<pre>M Move data set or member(s)</pre>	MP Move and pr	int
Specify "From" Data Set below,	then press Enter key	
From ISPF Library:		
Project	( Options C and CP o	only)
Group		
Type Member	(Blank or pattern fo	or member list,
From Other Partitioned or Sequ Name 'ZQS2.S		
Option ===> c		
F1=Help F2=Split F3=	Exit F7=Backward F	8=Forward F9=Swap
F10=Actions F12=Cancel		

 QMEDIT is a REXX EXEC that will help us customize our sample code efficiently. We want to name it QMEDIT under our ZQS3 dataset as well. Hit enter and you should see in the top right corner, 'QMEDIT copied'.



 Now, from the ISPF main screen, if we enter '=3.4' into the command line and hit enter. We should be able to navigate to our newly created dataset. Copy the below screen and hit enter.

• Browse the dataset by entering a 'b' to the left of the dataset name and hit enter.



• We will need to customize the following members of the dataset to effectively create a new queue manager:

CSQ4ZPRM	Creates the queue manager initiation attributes
CSQ4INYG	Commands to define objects that are normally required
CSQ4INPX	Sample commands related to the channel initiator
CSQ4CHIN	Sample Channel Initiator JCL procedure
CSQ4MSTR	Sample Queue Manager JCL procedure
CSQ4BSDS	Creates bootstrap data sets
CSQ4PAGE	Creates page sets for QM storage

• Instead of manually customizing each of these, we will use our QMEDIT to help us customize quickly. Use 'F8' to navigate down to QMEDIT from the list of members in ZQS3.SCSQPROC. Place a 'e' to the left of QMEDIT and hit enter.



- Once inside QMEDIT, look through the code and see what the code is customizing. Since this was last used for ZQS2, you will see ZQS2 mentioned a lot. We need to change that.
- Enter the command 'C 'ZQS2' 'ZQS3' ALL' on the command line and hit enter.

```
ZQS3.SCSQPROC(QMEDIT)
                                                                                                                                                           Columns 00001 00072
 000073 "change
 000074 "change
                                       '++V0LBSDS2++' 'V2BSDS'
000074 "change '++V0LBSDS2++' V2BSDS'
000075 "change '++V0LL0G1A++' 'V1L0GA'
000076 "change '++V0LL0G1B++' 'V1L0GB'
000077 "change '++V0LL0G2A++' 'V1L0GC'
000078 "change '++V0LL0G2B++' 'V1L0GD'
                          **** CSQ4BVAR CHANGES ****
 000079 /*
000079 /* **** CSQ4BVAR CHANGES **** */
000080 "change '++QMGR++' 'ZQS2' all"
000081 "change '++QUEUE++' 'TEST.QUEUE.LOCAL' all"
000082 "change '++USERLIB++' 'MY.LOADLIB' all" /*
000083 /* **** CSQ4BVAR CHANGES **** */
000084 "change '++QMGR++' 'ZQS2' all"
000085 "change '++QUEUE++' 'TEST.QUEUE.LOCAL' all"
000085 "change '++QUEUE++' 'TEST.QUEU
000086 "change '++PSS++' '100' all"
000087 "change '++PAD++' '&' all"
Command ===> <u>C 'ZQS2' 'ZQS3' ALL</u>
F1=Help F2=Split F3=Exit
                                                                                                              /* Padding character
                                                                                                                                                                 Scroll ===> PAGE
                                                                                                                                          F5=Rfind
                                                                                                        F4=Expand
                                                                                                                                                                           F6=Rchange
                                                                                                                                        F11=Right
   F7=Up
                                     F8=Down
```

- Now, our REXX exec should be ready to use because it has the correct version of MQ specified, our desired queue manager name, our desired storage areas, and English.
   Each of those things need to be specified from the original sample code.
- We need to activate the QMEDIT code to be able to go through our relevant members and customize them quickly. Return to the ISPF main menu and enter option 6. Enter this command:

```
Menu List Mode Functions Utilities Help

ISPF Command Shell

Enter TSO commands below:

---> ALTLIB ACTIVATE APPLICATION(EXEC) DA('ZQS3.SCSQPROC')
```

- Hit enter. With ALTLIB, a user or ISPF application can easily activate and deactivate CLIST and REXX exec libraries as the need arises. We are activating the REXX exec library of QMEDIT here to enable customization.
- From the ISPF main menu, navigate back to the ZQS3.SCSQPROC members via option 3.4.
- Starting with CSQ4BSDS, we will customize:
  - o CSQ4BSDS
  - o CSQ4CHIN
  - o CSQ4MSTR
  - o CSQ4INPX
  - o CSQ4INYG
  - o CSQ4ZPRM
- Enter an 'e' next to CSQ4BSDS and hit enter from the member list. Once inside CSQ4BSDS, enter QMEDIT on the command input line and hit enter.

```
Edit Edit_Settings Menu Utilities Compilers Test
             ZQS3.SCSQPROC(CSQ4BSDS) -
        -Warning- The UNDO command is not available until you change
        your edit profile using the command RECOVERY ON.
-CAUTION- Profile is set to STATS ON. Statistics did not exist for
                    this member, but will be generated if data is saved.
000001
000002
000003 //*
000004 //* <copyright
000005 //* notice=
<mark>00000</mark>6 //* pids="5655-MQ9"
000007 //* years="1993,2016"
000008 //* crc="663346475" >
000009 //* Licensed Materials - Property of IBM
000010 //*
Command ==
            > qmedit
                                                                                    => PAGE
                F2=Split
                                               F4=Expand
                                                              F5=Rfind
                                                                             F6=Rchange
  1=Help
                                F3=Exit
 F7=Up
                F8=Down
                                F9=Swap
                                              F10=Left
                                                             F11=Right
                                                                             F12=Cancel
```

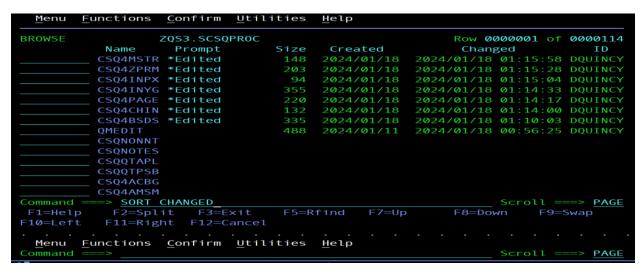
- You should notice the changes by looking through CSQ4BSDS, using F7 and F8 to navigate up and down the JCL code. Enter F3 to return to the member list and save your changes to CSQ4BSDS.
- Now, navigate back to the ZQS3.SCSQPROC list. Repeat this process for:
  - CSQ4CHIN
  - o CSO4MSTR
  - o CSQ4INPX
  - o CSQ4INYG
  - CSQ4ZPRM
- We are going to make an additional customization on CSQ4PAGE. Navigate to the member using 'e' to the left of the member. Once inside, enter the following commands on the command line at the bottom and hit enter.
  - o c'VOLUMES' 'STORCLAS' all
  - o c'VOL=SER' 'STORCLAS' all
- F3 to save the changes. We have to customize the storage here to be appropriate for this z/OS image.

• We are going to make one more additional customization on CSQ4CHIN. Navigate to the member using 'e' to the left of the member. Once inside CSQ4CHIN, enter the command 'f user exit library'. This will find the appropriate JCL.

```
EDIT
           ZQS3.SCSQPROC(CSQ4CHIN) -
                                      01.00
                                                        CHARS 'USER EXIT LIBRARY
000116
           USER EXIT LIBRARY
000118 //
000119 //CSQXLIB
000120 //*
000122 //* USER EXIT DATA SETS
000123 //* Add here DD statements for any data sets used by user exits
000124 //**
000125 //*
000127 //* SNAP DUMP DATA SET FOR FFST ABENDS
000129 //CSQSNAP
000130 //
                                                                          > PAGE
              F2=Split
                                         F4=Expand
                                                       F5=Rfind
                                                                    F6=Rchange
                                        F10=Left
                                                      F11=Right
                                                                   F12=Cancel
```

• We want to comment the line 119 out. Insert a "\*" in front of CSQXLIB so that the asterisk lines up with the asterisk on the line below. It should look like this:

- F3 out of CSQ4CHIN to save your changes and return to the member list.
- You can enter the command 'SORT CHANGED' from the member list panel to ensure you customized all the essential members

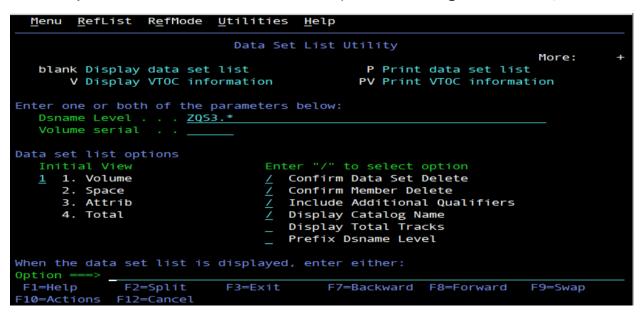


• Now, your customization is complete. Enter 'e' next to CSQ4BSDS and input 'SUBMIT' on the command line. This will create our bootstrap data sets for the new queue manager.

Repeat this for CSQ4PAGE to set up the page sets for the new queue manager.

```
Edit_Settings Menu Utilities Compilers
EDIT
            ZQS3.SCSQPROC(CSQ4BSDS) -
                                                               Columns 00001 00072
                                       01.00
        Warning- The UNDO command is not available until you change
                  your edit profile using the command RECOVERY ON.
000001
       //CSQ4BSDS JOB
മമമമാ
000003 //*
000004 //* <copyright
000005 //* notice="lm-source"
000006 //* pids="5655-MQ9
000007 //* years="1993,2016"
000008 //* crc="663346475" >
000009 //* Licensed Materials - Property of IBM
000010 //*
000011 //* 5655-MQ9
000012 //*
Command ===>
             submit
                                                                            => PAGE
              F2=Split
                                           F4=Expand
                                                                      F6=Rchange
                                                         F5=Rfind
                             F3=Exit
              F8=Down
                             F9=Swap
                                          F10=Left
                                                        F11=Right
```

When you return to the main ISPF menu, use option 3.4 to navigate to all the ZQS3 libraries



- Once you hit enter, you should now see boot strap data set and page set files set up along with our original ZQS3.SCSQPROC data set. If you do not see the new data sets, something has failed in your JCL and you will need to debug. We recommend comparing the BSDS and PAGE JCL to the JCL of a working queue manager, for example, ZQS1.
- Now, we have to edit SYS1.PROCLIB. Navigate to SYS1.PROCLIB using 3.4 on the ISPF menu. SYS1.PROCLIB needs to contain two members for ZQS3, ZQS3MSTR and ZQS3CHIN. We can add these two members by copying our CSQ4MSTR and CSQ4CHIN and renaming them.
- From the ISPF main menu, go to 3.3. Here, specify that you would like to copy from 'ZQS3.SCSQPROC(CSQ4MSTR)' to SYS1.PROCLIB(ZQS3MSTR). This will create a copy of your edited member for SYS1.PROCLIB and it will also rename the member to ZQS3MSTR.

	<u>H</u> elp	
	Move/Copy Utility	
C Copy data set or member M Move data set or member		
Specify "From" Data Set be	clow, then press Enter key	
From ISPF Library: Project Group Type Member		
	"*" for all members)	
	Sequential Data Set: S3.SCSQPROC(CSQ4MSTR)' (If not cataloged)	
Option ===> C	(If password protected)  F3=Exit F7=Backward F8=Forward F9=Swap	
F10=Actions F12=Cancel		
м <u>А</u> А	<u>û</u> 22/0	1!
<u>M</u> enu <u>R</u> efList <u>U</u> tilities	<u>H</u> elp	
COPY From ZQS3.SCSQPRO	More:	+
COPY From ZQS3.SCSQPROSpecify "To" Data Set Belo	More:	+
Specify "To" Data Set Belo To ISPF Library: Project Group Type	More:  Options: Enter "/" to select option	+
Specify "To" Data Set Belo To ISPF Library:     Project	Options:     Enter "/" to select option     _ Replace like-named members     _/ Process member aliases  (Blank unless member is to be renamed)  equential Data Set: 61.PROCLIB(ZQS3MSTR)	+
Specify "To" Data Set Belo To ISPF Library:     Project	Options:     Enter "/" to select option     _ Replace like-named members     _/ Process member aliases  (Blank unless member is to be renamed)	+
Specify "To" Data Set Belo  To ISPF Library:     Project	Options:     Enter "/" to select option     _ Replace like-named members     _/ Process member aliases  (Blank unless member is to be renamed)  equential Data Set: 61.PROCLIB(ZQS3MSTR)	+
Specify "To" Data Set Belo To ISPF Library:     Project	Options:     Enter "/" to select option     Replace like-named members     / Process member aliases  (Blank unless member is to be renamed)  equential Data Set: 01.PROCLIB(ZQS3MSTR)     (If not cataloged)  (If password protected)	+
Specify "To" Data Set Below To ISPF Library:     Project	Options:	+
Specify "To" Data Set Below To ISPF Library:     Project	Options:     Enter "/" to select option     Replace like-named members     / Process member aliases  (Blank unless member is to be renamed)  equential Data Set: 01.PROCLIB(ZQS3MSTR)     (If not cataloged)  (If password protected)	+

```
Allocate Target Data Set
                                                             More:
Specified data set DQUINCY.SYS1.PROCLIB
If you wish to allocate this data set, select one of the options
below.
Allocation Options:
  \underline{\mathbf{1}}. Allocate using the attributes of:
      ZQS3.SCSQPROC
   2. Specify allocation attributes
   Use existing SMS attributes for option 1
Instructions:
Command =
                                              F7=Backward
               F2=Split
                               F3=Exit
 F1=Help
                                                             F8=Forward
               F12=Cancel
 F9=Swap
```

- Repeat this copying process for CSQ4CHIN.
- Now, if you navigate to SYS1.PROCLIB using option 3.4, you should see the members ZQS3MSTR and ZQS3CHIN listed as members.

#### Starting your new queue manager

Now, all the setup is complete, so we just have to start up the queue manager!

• The next few commands will all be entered in the MVS command area. Navigate there by entering 'D' in the ISPF menu command line to navigate to SDSF. Once in SDSF, enter a slash in your command input and hit enter like so:

```
SDSF MENU V2R5M0 ADCDPL S0W1
COMMAND INPUT ===> /
```

- Now, you need to dynamically APF authorize your MQ load libraries:
  - SETPROG APF,ADD,DSNAME=MO933CD.SCSOANLE,SMS
  - SETPROG APF,ADD,DSNAME=MQ933CD.SCSQSNLE,SMS
- Now, you need to dynamically add some modules to the LPA (link pack area) of z/OS
  - SETPROG LPA,ADD,MODNAME=(CSQ3EPX,CSQ3INI),DSNAME=MQ933CD.SCSQLINK, SMS
  - SETPROG LPA,ADD,MODNAME=(CSQ3ECMX),DSNAME=MQ933CD.SCSQSNLE, SMS
- Execute command to dynamically define MQ subsystem:
  - SETSSI ADD,S=ZQS3,I=CSQ3INI,P='CSQ3EPX,ZQS3,S'

NOTE! None of these dynamic commands will last through an IPL of the system. To make these changes concrete, you will need to modify the LPALST##, IEFSSN## and PROG## members of the LPAR's SYS1.PARMLIB data set.

- F3 back to the main menu, out of SDSF, enter option 6 from the main menu. Here, you will find a TSO command input window:
  - o Turn off security by entering this command:

```
Menu List Mode Functions Utilities Help

ISPF Command Shell
Enter TSO commands below:

---> RDEFINE MQADMIN ZQS3.NO.SUBSYS.SECURITY
```

- Return to the SDSF command window and input the commands into the MVS command line:
  - Start up our queue manager ZQS3 with the command ZQS3 START QMGR
  - Start up the channel initiator with the command ZQS3 START CHINIT
- To verify that your queue manager has been set up, you can navigate to MQ Explorer and test the connection. You will use the port number you specified in the REXX exec.

# Appendix:

- Make an error when executing your SETSSI command? Use SETSSI DELETE,S=ZQS3,FORCE to roll back your command.
- Check APF authorized libraries by entering the command /DISPLAY PROG,APF from the SDSF command input then going to the log. APF authorized libraries must be:
  - MQ933CD.SCSQANLE
  - o MO933CD.SCSOAUTH
  - o MQ933CD.SCSQMVR1
- You may see several LPALST## PROG##, and IEFSSN## members. You want to use the
  ones specified in the SYS1.PARMLIB(IEASYS##). You can find the IEASYS## member by
  entering the command /D IPLINFO from the SDSF command input. It will show a screen
  like this:

```
SDSF MENU 3.1
                 MQPLEX1
                           MQS2
                                                        LINE 1-17 (94)
RESPONSE=MQS2
IEE254I 18.41.02 IPLINFO DISPLAY 172
 SYSTEM IPLED AT 13.14.57 ON 01/19/2024
 RELEASE z/0S 03.01.00
                           LICENSE = z/0S
 USED LOADMQ IN SYSØ.IPLPARM ON ØAØ4C
               MTLSHARE = N
 ARCHLVL = 2
 VALIDATED BOOT: NO
 IEASYM LIST = XX
 IEASYS LIST = (00) (0P)
 IODF DEVICE: ORIGINAL(0A04C) CURRENT(0A04C)
 IPL DEVICE: ORIGINAL(0A073) CURRENT(0A073) VOLUME(Z31RD1)
 VM CPID = z/VM
                    7.3.0
 VM UUID IS NOT PROVIDED
 VM NAME = MQS2
 VM EXT NAME IS NOT PROVIDED
    PS
                                       OMVS
              Processes
    SYS
                                       System
              System information
    ENQ
              Enqueues
                                       System
COMMAND INPUT ===>
                                                               SCROLL ===> C
```

- Looking to permanently make updates to your LPALST## member?
  - Add code like this:

```
EDIT SYS1.PARMLIB(LPALST1A) - 01.10
000016 CYG.SCYGLPA,
000017 HB0.SHB0LPA,
000018 IQI.SIQILPA,
000019 SYS1.BPN.SBPNLPA,
000020 CICS610.CICS.SDFHLPA(MQ1PR1),
000021 EJES.V630Z31.SEJELPA
'''' ZQS3.SCSQLINK(MQ933CD),
ZQS3.SCSQSNLE(MQ933CD)
```

- Looking to permanently make updates to your IEFSSN## member?
  - Add code like this:

- Looking to permanently make updates to your PROG## member?
  - o Add code like this:

```
Menu Utilities Compilers Help

BROWSE SYS1.PARMLIB(PROGAØ) - 01.99 Line 00000000095 Col 001 08

APF ADD DSNAME(MQ933CD.SCSQANLE) SMS

APF ADD DSNAME(MQ933CD.SCSQAUTH) SMS

APF ADD DSNAME(MQ933CD.SCSQMVR1) SMS
```