



Exploring our new queue-sharing group

Audience level: knowledge of MQ or z/OS

Skillset: z/OS Systems Programming, MQ Administration

Background:

In this lab, you will go through the process of exploring a queue sharing group's configuration. Queue sharing groups are the gold-standard of high availability for IBM MQ. Queue sharing groups enable for all queue managers in a queue sharing group to access one another's messages. This is made possible by connections to a DB2 data-sharing group and to the coupling facility, a hardware/software device unique to z/OS.

Overview of exercise:

In this lab, you will see how a MQ admin setting up a new queue-sharing group would:

- 1.) Modify the CFRM policy to include the MQ CF structures
- 2.) Customize the necessary SCSQPROC members
- 3.) Run the necessary configuration JCL to set up DB2 prerequisites
- 4.) Update your CSQZPRM's for each queue manager in your QSG
- 5.) APF authorize any necessary data sets

SCSQPROCs sample members necessary for queue sharing group configuration:

CSQ4CFRM	Template for CFRM policy modifications
CSQ4XCSG	Create the storage group
CSQ4XCDB	Create the DB2 database used by IBM MQ
CSQ4XCTS	Create the table spaces used by IBM MQ
CSQ4XCTB	Create the tables and indices used by IBM MQ

CSQ45BPL	Bind the DB2 plans used by IBM MQ using DB2 TSO batch interface
CSQ45AQS	Add a QSG record into the DB2 admin table CSQ.ADMIN_B_QSG
CSQ45AQM	Add a queue manager record into the DB2 admin table CSQ.ADMIN_B_QSG

- 1.) Navigate to within the SCSQPROC members. From the ISPF menu, enter =3.4 in the command line.
- 2.) Specify you would like to view 'ZQS1.SCSQPROC' and hit enter
- 3.) Place a 'b' for browse to the left of data set ZQS1.SCSQPROC.
- 4.) Once inside the list of ZQS1.SCSQPROC's members, use the command 'l csq4cfrm' to bring the member we are looking for to the top.
- 5.) Place a 'b' for browse to the left of CSQ4CFRM and hit enter
- 6.) Once inside, you will see that we specified 4 CF structures. CSQSYSAPPL and CSQ_ADMIN will be standard in any environment, but we also have 2 structures here called TEST1 and TEST2. These will be where the data from shared queues is stored.
- 7.) Back out of CSQ4CFRM using the command F3.
- 8.) Enter the command 'l CSQ4XCSG' to view the next relevant member
- 9.) Place a 'b' for browse to the left of CSQ4XCSG and hit enter
- 10.) Once inside this member, you can see we are creating the relevant DB2 storage group for our queue sharing group. We do this by specifying the environment's DB2 variables.
- 11.) Here we have specified that we are creating a new storage group called MQSTGG.

```
CREATE STOGROUP MQSTGG VOLUMES('*) VCAT DB3AD;
```

- 12.) Make note of the variables and back out of the member using F3
- 13.) Curious where we found those variables? Hit F3 until you return to the ISPF main menu
- 14.) Once you are at the ISPF main menu, enter the command 'SDSF' into the command line and hit enter.
- 15.) A new menu will pop up. Enter 'DA' on the command line here and press enter.
- 16.) DA will show us the active subsystems running on our z/OS image. We want to find the active DB2 database running. To do that, enter the command 'prefix db*'
- 17.) Put a 's' for select next to the DB2 database and hit enter.
- 18.) Now you are seeing the configuration information for the DB2 instance. Use the command 'f group attach' to find the words group attach in the configuration
- 19.) You will see D3AG next to the group attach name. You should remember that variable from the CSQ4XCSG configuration.

20.) If you explore the configuration information more using the F7 and F8 buttons for up and down, you will notice that we are using DB2 version 13.

21.) Once we have learned about our DB2 installation, you can F3 back to the main menu and proceed to return to the CSQ4PROC.

22.) Next we will look at CSQ4CDB. This job creates the DB2 database the QSG will use.

CREATE DATABASE "MQDB"

STOGROUP MQSTGG

BUFFERPOOL BP32K

INDEXBP BP4

CCSID EBCDIC;

23.) Notice the variables that need to be specified here.

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Replace  DB2V13          with the high level qualifier of the
                        DB2 target library data sets.

Replace  D3AG            with the DB2 subsystem ID or
                        batch group attach name through which access
                        is gained to the DB2 data-sharing group.

Replace  DB2V13          with the version number of DB2 you
                        are currently using, for example
                        51 = DB2 for OS/390 V5.1

Replace  MQDB            with the name of the DB2 database used for
                        the WebSphere MQ tables.
```

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Replace  SYSPROC         with the name of the user id with sufficient
                        authority to define the MQ DB2 resources.

Replace  MQSTGG          with the name of the DB2 storage group
                        associated with the database.

Replace  BP32K           with the name of a DB2 32K buffer pool
                        associated with the database.

Replace  BP4             with the name of a DB2 4K buffer pool
                        to be used for all indexes on IBM MQ tables
```

24.) F3 out and next browse CSQ4XCTS by finding the member in the list and placing a 'b' next to the member and hitting enter.

25.) Repeat the process of browsing members:

- CSQ4XCTB to create DB2 table and their associated indexes
- CSQ4GEX to view grant permissions
- CSQ45AQM to define the queue managers to the DB2 data sharing group tables
- CSQ45AQS to add the queue-sharing group record into the DB2 administration table
CSQ.ADMIN_B_QSG

26.) Now, we will utilize the ZPRM member we used when defining our original standalone queue manager. Once in the CSQ4ZPRM member, use the command 'f QSGDATA' and hit enter

27.) The QSGDATA variable ties the individual queue manager, in this case ZQS1, to the queue sharing group.

- QSGA is QSG name
- DB3AG is the Db2 data sharing group
- D3AG is the DB2 connection name
- 4 is the number of server tasks used for accessing DB2
- 4 is the number of tasks used for accessing the BLOBS

28.) Now, from the =3.4 main menu option, navigate to ZQS1.USERAUTH. We created this data set to fulfill one of the parameters of CSQZPRM necessary for queue-sharing

- 29.) What does ZQS1.USERAUTH do? It is the data set of the authorized load library in which to store your system parameter module (CSQ4ZPRM). You'll notice that CSQ4ZPRM is a member of ZQS1.USERAUTH
- 30.) In order for the dependent libraries (for example, ZQS1.USERAUTH) of all of these jobs to be recognized, they must be what is called APF-authorized
- 31.) Now we can see which libraries are APF-authorized by navigating back to SDSF, from the main ISPF menu.
- 32.) Enter SDSF on the command line from the main menu
- 33.) Once in the SDSF menu, enter a slash in the command line like so

COMMAND INPUT ==> / _

- 34.) From here, enter the command

```

Edit  Options  Help
-----
                        System Command Extension
==> display prog.apf
==>
                                           STORELIMIT
Comment

```

- 35.) Hit enter. You will see a preview of the list of APF-authorized libraries pop up. Hit enter again
- 36.) From the SDSF menu, enter LOG. You will now see the full list of APF-authorized libraries. If you cannot see the full list on the right side of your screen, use the keys F10 and F11 to navigate horizontally on the screen
- 37.) Notice we have had to APF-authorize ZQS1.USERAUTH for the queue-sharing group configuration

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Display Filter View Print Options Search H
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SDSF OPERLOG  MQS1      02/26/2024    0W
000090      62  Z31RE1 SYS1.SASFPLIB
000090      63  Z31RE1 SYS1.SCBDHENU
000090      64  MQ1SY0 SYS1.MQS1.LINKLIB
000090      65  Z31RE1 SYS1.SGRBLINK
000090      66  Z31RE1 SYS1.SIEALNKE
000090      67  Z31RE1 SYS1.SIEAMIGE
000090      68  Z31RE1 SYS1.SISTCLIB
000090      69  Z31RE1 SYS1.SHASLNKE
000090      70  Z31RE1 SYS1.SHASMIG
000090      71  Z31RE1 SYS1.VTAMLIB
000090      72  Z31RE1 TCPIP.SEZADSIL
000090      73  Z31RE1 TCPIP.SEZALNK2
000090      74  Z31RE1 TCPIP.SEZALPA
000090      75  Z31RE1 TCPIP.SEZALOAD
000090      76  Z31RE1 TCPIP.SEZATCP
000090      77  *SMS*  ZQS1.USERAUTH
000090      78  Z31RE1 ZWE.SZWEAUTH

```

After viewing all those steps, you now know what the process is like for creating a queue-sharing group on z/OS!