

IMQ09 - IBM MQ V9 for z/OS Wildfire Workshop



L11 – z/OS Queue Manager Customization

Version V6.0

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Table of Contents

Table of Contents	1
Lab Objectives	3
General Exercise Information and Guidelines	3
Part 1 - Queue Manager Customization	4
Part 2 - Starting the new queue manager	10

Lab Objectives

The objective of this lab is to familiarize users with the steps needed to customize the JCL to build a z/OS queue manager. Users will set up a customization REXX EXEC and run it against the standard JCL.

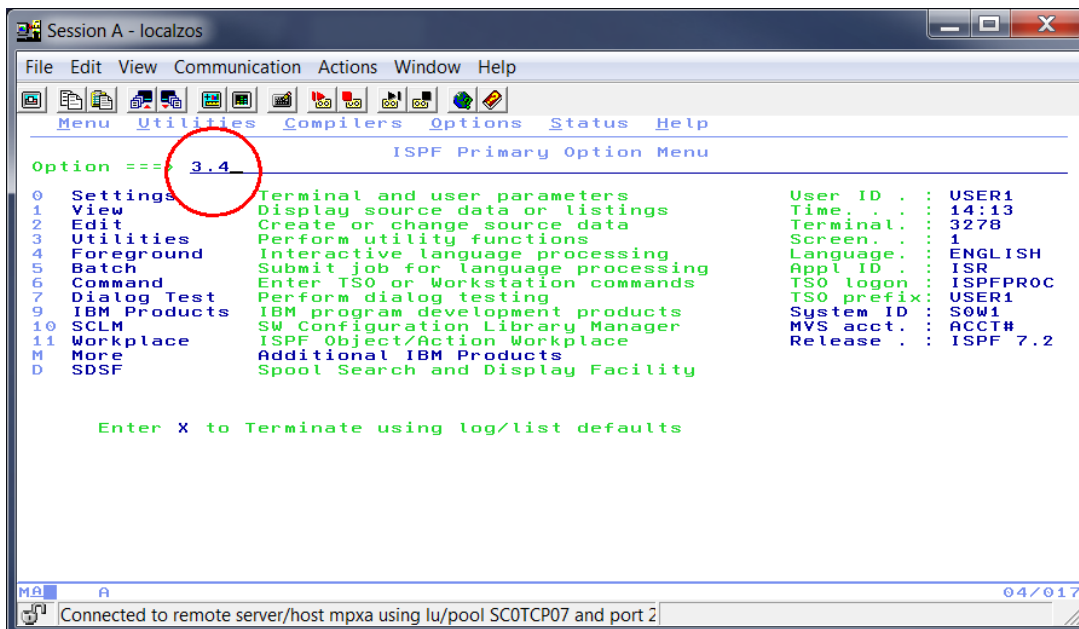
General Exercise Information and Guidelines

- ✓ This exercise should be executed on the local zos system using TSO user identity USER1.
- ✓ The TSO password for this exercise will be provided by the lab instructor.
- ✓ This exercise uses data set *USER1.QMGR.JCL*.
- ✓ Text in **bold** and highlighted in **yellow** in this document should be available for copying and pasting in a file named *MQ Exercises Cut Paste* file on the desktop.

Part 1 - Queue Manager Customization

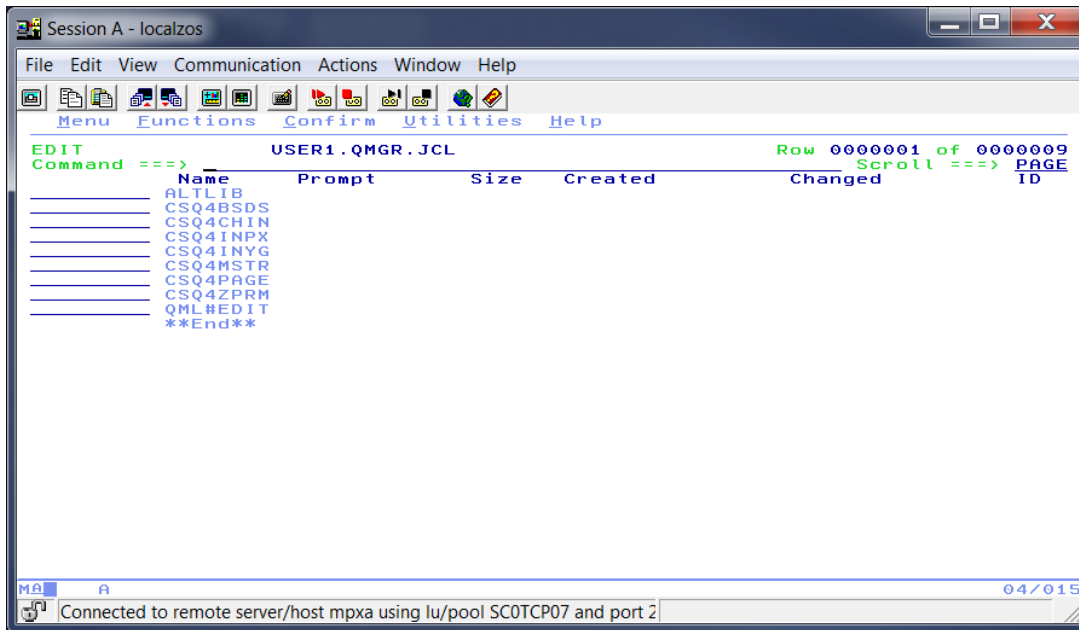
In this step you will customize the jobs that define and initialize the boot strap data sets, logs, and page data sets that are required by a new queue manager. Also key queue names and the TCP/IP port will be customized in the initialization inputs members to reflect the queue manager name and the assigned TCP/IP port information

1. Log on to TSO using user USER1 and the password you have been assigned using the *PComm-3270* icon on the desktop.
2. On the *ISPF Primary Option Menu* screen, enter **3.4** after the *Option* prompt and press the **Enter** key.



Tech-Tip: The copyright message can be dismissed by pressing the **Enter** key. In this and subsequent labs the instructions refer to the IBM 3270 Keyboard names or labels. So, if the instructions say press the enter key this means that the IBM 3270 Keyboard Enter key should be pressed. For this 3270 emulator, the IBM 3270 Keyboard Enter key is mapped to the right Ctrl key. This was done so the 3270 new line key could be mapped to the key labeled *Enter*.

3. On the *Data Set List Utility* screen enter **USER1.QMGR** in the *Dsname level* field. Press the **Enter** key to continue.
4. Edit the data set **USER1.QMGR.JCL** PDS by placing an **E** in the *Command* field beside the data set name. Press the **Enter** key to continue. The partitioned data set member list will be displayed as shown below.



Tech-Tip: The warning message about the UNDO command can be addressed by entering the **RECOVERY ON** command at the command prompt and pressing **Enter**. This will enable the saving of a recovery copy of a member in case a change needs to be reversed or in other recovery situations.

5. Select member **QML#EDIT**. **QML#EDIT** is a REXX exec. This exec will be invoked as a command and will change the variables in the JCL, etc. that will be subsequently used to customize a queue manager. It is not part of the base product, but something we use to make creating queue managers relatively quickly and hopefully reducing typos.

Tech-Tip: Any warning message about CAPS OFF command can be dismissed by entering command **RESET** on the command line.

Tech-Tip: Any warning message about STATS ON can be ignored.

- ___6. Change all occurrences of string *QMZ#* to *QMZ2* (e.g. *C QMZ# QMZ2 ALL*) as shown below.

```

Session A - localzos
File Edit View Communication Actions Window Help
File Edit Edit_Settings Menu Utilities Compilers Test Help

EDIT USER1.QMGR.JCL(QML#EDIT) - 01.00 CHARS 'QMZ#' changed
Command ==> Scroll ==> PAGE
***** ***** Top of Data *****
==MSG> -Warning- The UNDO command is not available until you change
==MSG> your edit profile using the command RECOVERY ON.

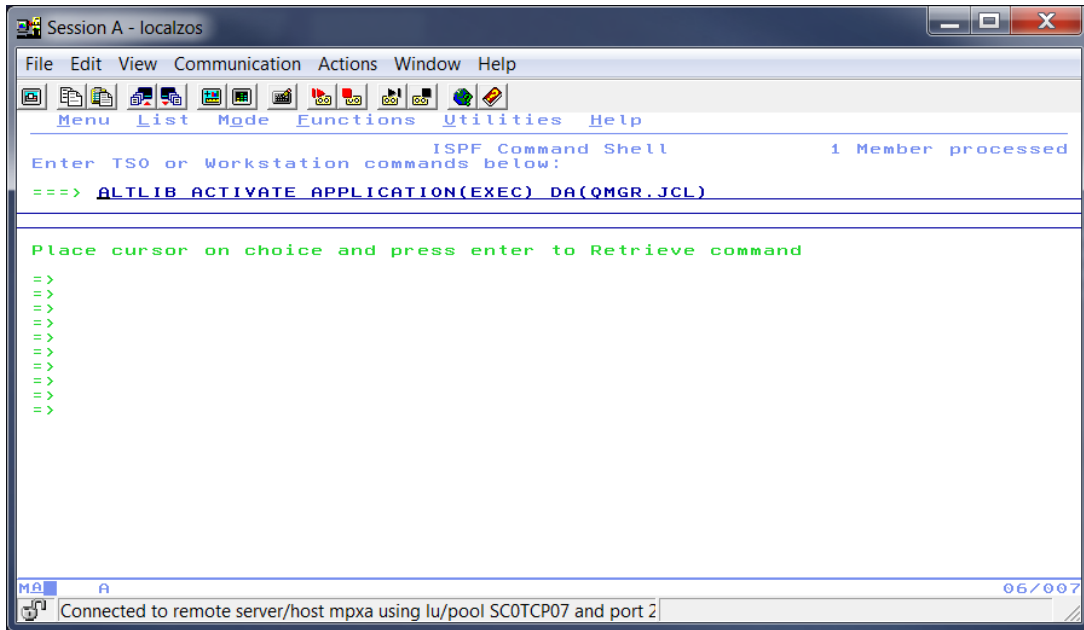
000001 /* REXX */
000002 ISREDIT MACRO NOPROCESS
000003 ADDRESS ISREDIT
000004 "change '++THLQUAL++' 'WMQ900.QMZ2' all"
==CHG> "change '++HLQ++' 'WMQ900.QMZ2' all"
000006 "change '++LANGLETTER++' 'E' all"
000007 /* *** BSDS CHANGES *** */
000008 "change '++VOLBDS1++' 'STOR01' all"
000009 "change '++VOLLOG1A++' 'STOR01' all"
000010 "change '++VOLLOG1B++' 'STOR01' all"
000011 "change '++VOLBDS2++' 'STOR01' all"
000012 "change '++VOLLOG2A++' 'STOR01' all"
000013 "change '++VOLLOG2B++' 'STOR01' all"
000014 /* *** PAGE CHANGES *** */
000015 "change '++VOL0++' 'STOR01' all"
000016 "change '++VOL1++' 'STOR01' all"
000017 "change '++VOL2++' 'STOR01' all"
000018 "change '++VOL3++' 'STOR01' all"
000019 "change '++VOL4++' 'STOR01' all"
000020 "change '++VOL5++' 'STOR01' all"
000021 "change '++VOL6++' 'STOR01' all"
000022 "change '++VOL7++' 'STOR01' all"
000023 "change '++VOL8++' 'STOR01' all"
000024 /* *** ZPRM CHANGES *** */
==CHG> "change '++HLQ.USERAUTH++' 'WMQ900.QMZ2.AUTHLIB' all"

12/039
Connected to remote server/host mpxa using lu/pool SCOTCP07 and port 2

```

- ___7. Save and exit the member by using the **F3** key.
- ___8. The next task is to activate or add this data set to the execution environment so the REXX exec *QML#EDIT* can be used as an edit command to make global changes to the other members.
- ___9. Navigate to the ISPF Command Shell panel by entering **=6** in the command line and pressing the **Enter** key.

10. Enter the TSO command **ALTLIB ACTIVATE APPLICATION(EXEC) DA(QMGR.JCL)** in the command area, see below. This command temporarily adds the data set USER1.QMGR.JCL to the search sequence when invoking a REXX exec or TSO CLIST.



11. Press the **Enter** key to activate the library. There will be no message indicating whether this was successful.

Tech-Tip: Please note that this activation is temporary and only for the currently active ISPF session. If you exit ISPF, the activation will no longer be available or you are using a split screen, it will not be valid for the other ISPF session.

12. Return to the JCL PDS by entering **=3.4** in the command line and pressing **Enter**. You should see the USER1.QMGR in the *Dsname level* field. If you do not, enter it. Press the **Enter** key to get the list of MVS data sets where USER1.QMGR is the high-level qualifier.
13. Select the USER1.QMGR.JCL PDS for edit by putting an **E** in the line command area beside the data set name and press the **Enter** key.

14. Select member *CSQ4PAGE* member and press the **Enter** key. Enter the command *QML#EDIT* in the command line field and then press the **Enter** key to execute this REXX Exec.

```

Session A - localzos
File Edit View Communication Actions Window Help
File Edit Edit Settings Menu Utilities Compilers Test Help
EDIT Command ==> USER1.QMGR.JCL(CSQ4PAGE) - 01.00 Columns 00001 00072
***** QML#EDIT ***** Scroll ==> PAGE
***** Top of Data *****
000001 //CSQ4PAGE JOB
000002 //
000003 //
000004 // * <copyright
000005 // * notice="lm-source"
000006 // * pids="5655-MQ9"
000007 // * years="1993,2016"
000008 // * crc="16337361" >
000009 // * Licensed Materials - Property of IBM
000010 // *
000011 // * 5655-MQ9
000012 // *
000013 // * (C) Copyright IBM Corp. 1993, 2016 All Rights Reserved.
000014 // * </copyright>
000015 // *
000016 // *****
000017 // *
000018 // * IBM MQ for z/OS
000019 // *
000020 // * This sample defines and formats five page sets,
000021 // * using one page set for each class of message.
000022 // *
000023 // * You must define page set 00, where object definitions are kept.
000024 // * You are recommended to define at least one other page set
000025 // * so that messages and object definitions can be kept separate.
000026 // * This sample defines 4 other page sets, one for each class of
000027 // * message:

```

15. You will see many changes made, each line that was altered will be noted with a red **==CHG>** in the sequence number on the edit panel as shown below.

```

Session A - localzos
File Edit View Communication Actions Window Help
File Edit Edit Settings Menu Utilities Compilers Test Help
EDIT Command ==> USER1.QMGR.JCL(CSQ4PAGE) - 01.00 Columns 00001 00072
***** QML#EDIT ***** Scroll ==> PAGE
***** Top of Data *****
000084 // * It is recommended that this high level
000085 // * qualifier contains the queue manager name.
000086 // *
000087 // * Replace E
000088 // * with the letter for the language that
000089 // * you want messages shown in.
000090 // *
000091 // * Replace STOR01
000092 // * STOR01 STOR01 STOR01 STOR01
000093 // * with the names of the volume or the list
000094 // * of volumes on which to define the page sets.
000095 // * You do NOT have to put all your page sets on
000096 // * the same volume or volumes.
000097 // * It is recommended that you should distribute
000098 // * your page sets amongst several volumes.
000099 // *****
000100 // *
000101 // * JES3 ONLY
000102 // * If you are a JES3 user, you must uncomment this
000103 // * jobstep before running the job a second time.
000104 // *
000105 // * JES3DEL EXEC PGM=IKJEFT01,REGION=2M,DYNAMNBR=120
000106 // * SYSTSPRT DD SYSOUT=*
000107 // * SYSTSIN DD *
000108 // *
000109 // * DELETE 'WMQ900.QMZZ.PSID00' PURGE
000110 // * DELETE 'WMQ900.QMZZ.PSID01' PURGE
000111 // * DELETE 'WMQ900.QMZZ.PSID02' PURGE
000112 // * DELETE 'WMQ900.QMZZ.PSID03' PURGE

```

16. Submit this job for execution. This job will define and initialized the page set data sets required for a new queue manager.

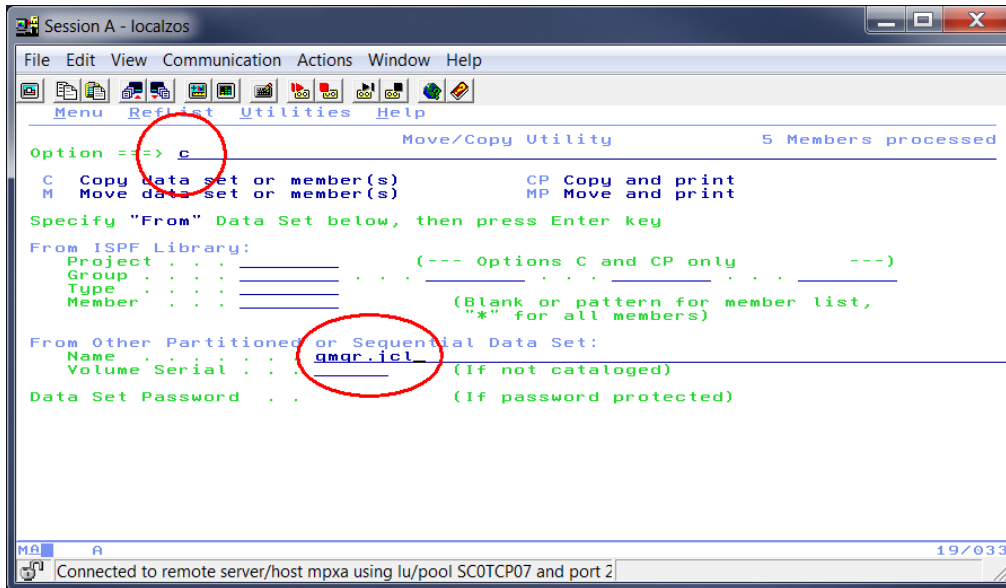
- ____ 17. Next select member *CSQ4BSDS* and use the ***QML#EDIT*** command to make changes to this job. Submit this job for execution after making the changes. This job will define and initialize the new queue manager's boot strap and log data sets.

The changes will be done to queue manager's JCL procedures and customization input members. These are not jobs that need to be submitted for execution.
- ____ 18. Edit member *CSQ4CHIN* and use the ***QML#EDIT*** command to customize the JCL procedure for the queue manager's channel initiator started task.
- ____ 19. Edit member *CSQ4MSTR* and use the ***QML#EDIT*** command to customize the JCL procedure for the queue manager's started task.
- ____ 20. Edit member *CSQ4INPX* and use the ***QML#EDIT*** command to customize the START LISTENER command to use TCPIP port 1418.
- ____ 21. Edit member *CSQ4INYG* and use the ***QML#EDIT*** command to customize transmission queue names with the queue manager name.

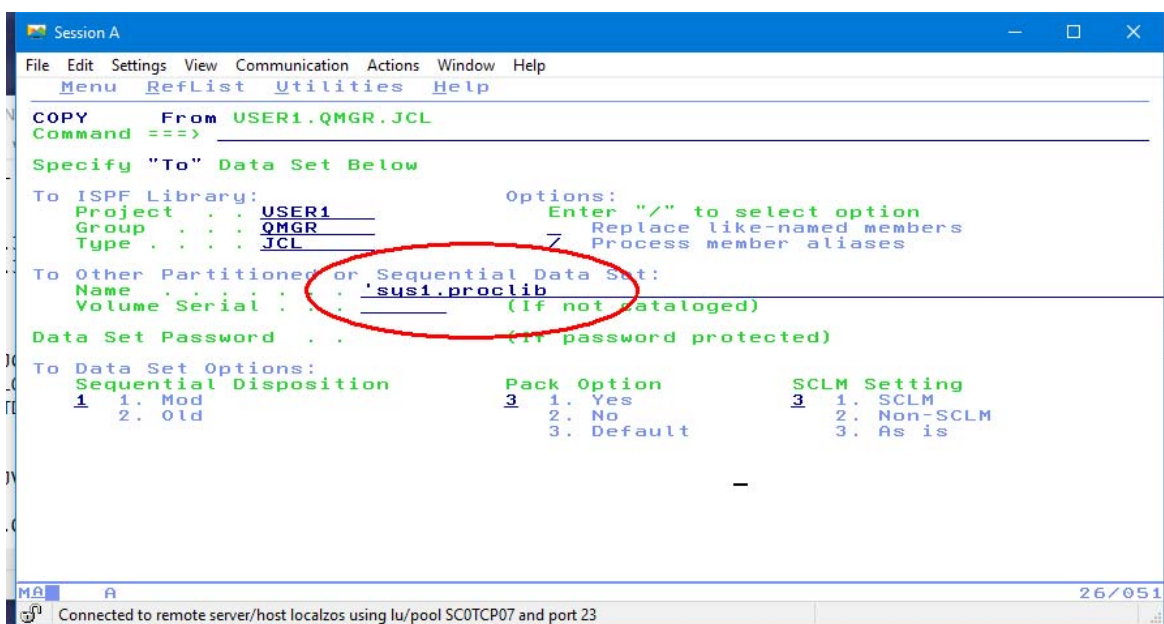
Part 2 - Starting the new queue manager

Before a new queue manager can be started the JCL procedures need to be copied to a system JCL procedure library and the new queue manager subsystem needs to be defined to MVS.

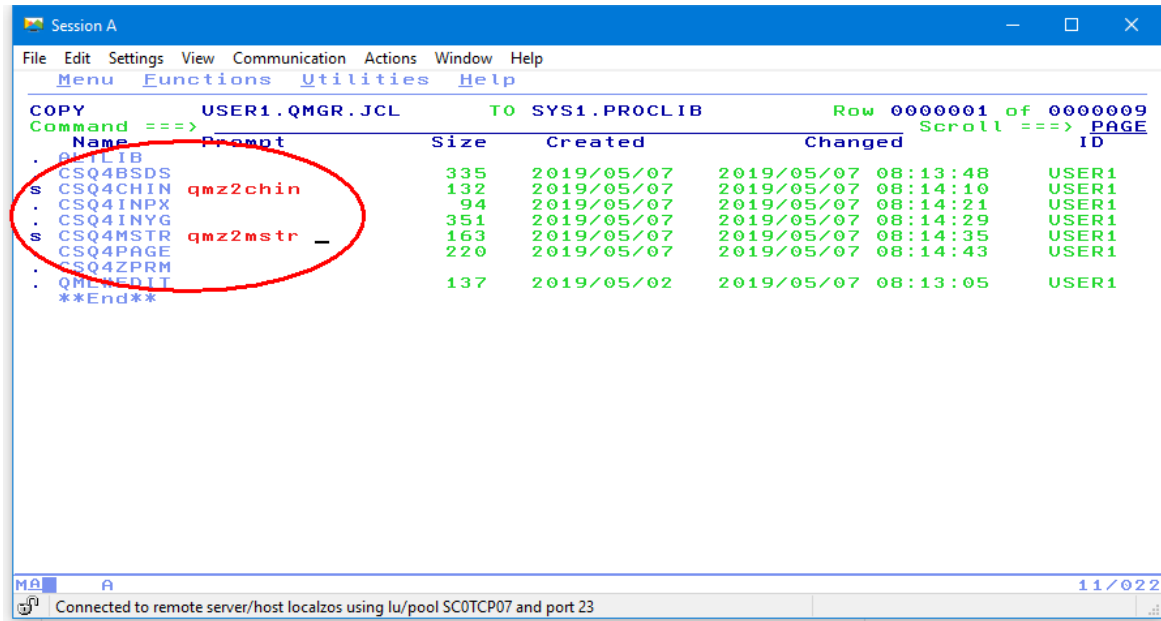
1. Use ISPF command **=3.3** to go to the *Move/Copy Utility* panel. On this panel enter option **C** (*Copy data set or member(s)*) and data set name **QMGR.JCL** in the area beside *Name* under *From ISPF Library:* (see below). Press **Enter** to continue.



2. On the next panel enter **'SYS1.PROCLIB'** in the area beside *Name* under *To Other Partitioned or Sequential Data Set* (see below). Be sure to include the quotes around SYS1.PROCLIB.



3. The names of the JCL procedures for the queue manager master and channel initiator started tasks should be changed to reflect the queue manager's name, i.e. QMZ2MSTR and QMZ2CHIN respectively. The member names can be changed during the copy from the source data set to the system JCL procedure library by entering a member's new name in the *Prompt* column beside the source member. Select members *CSQ4CHIN* and *CSQ4MSTR* and enter their new names under the *Prompt* column as below. Press **Enter** to continue.



4. Both members should be successfully copied to SYS1.PROCLIB.
5. By default, security will be enabled for this queue manager. To turn security off go to ISPF option 6 (e.g. =6) and enter the RACF command below:

RDEFINE MQADMIN QMZ2.NO.SUBSYS.SECURITY

A queue manager checks for the existence of *queuemanagername.NO.SUBSYS.RESOURCE* at queue manager startup. If this resource exists, then no external security using RACF will be enabled.

6. This resource is not active until the RACF instorage profiles are refreshed. Enter the RACF command below to refresh these profiles:

SETROPTS RACLIST(MQADMIN) REFRESH

7. Next identify the queue manager to the MVS as a new sub system. This is done by entering a SETSSI MVS command using SDSF. Using ISPF command **=D.LOG** to go to the SDSF log panel and enter the MVS command below:

SETSSI ADD,S=QMZ2,I=CSQ3INI,P='CSQ3EXP,QMZ2,S'

Tech-Tip: The above command has registered QMZ2 as the command prefix string (CPF) string for this new queue manager. So any MVS commands that use this CPF will be directed to this queue manager.

8. You should see the messages below in the system log
- ```
CSQ3111I QMZ2 CSQ3UR00 - EARLY PROCESSING PROGRAM IS V9.0.5 LEVEL 008-000
CSQ3110I QMZ2 CSQ3UR00 - SUBSYSTEM QMZ2 INITIALIZATION COMPLETE
```

**Tech-Tip:** To make the definition of the new subsystem available after the next IPL, the active subsystem definition member in SYS1.PARMLIB, e.g. IEFSSNxx, needs to be updated with the information shown below.

```
SUBSYS SUBNAME(QMZ2) /* MQ V9 SUBSYSTEM */
 INITRTN(CSQ3INI) INITPARM('CSQ3EPX,QMZ2,M') this means that the IBM 3270
```

9. Start the new queue manager with MVS command **QMZ2 START QMGR**
10. Use the SDSF log (**=D.LOG**) to monitor the startup of the QMZ2 queue manager. When the message below appears the queue manager is active.

*CSQ9022I QMZ2 CSQYASCP 'START QMGR' NORMAL COMPLETION*

11. The channel initiator task now needs to be started, enter MVS command

**QMZ2 START CHINIT**

Monitor the messages in the console log until the message below appears.

*CSQ9022I QMZ2 CSQXCRPS 'START CHINIT' NORMAL COMPLETION*

12. Use TSO command **NETSTAT CONN (CLIENT QMZ\*)** to confirm the new CHINIT address space is listening port 1418.

```
EZZ2350I MVS TCP/IP NETSTAT CS V2R1 TCPIP Name: TCPIP 15:42:17
EZZ2585I User Id Conn Local Socket Foreign Socket State
EZZ2586I -----
EZZ2587I QMZ1CHIN 00000026 0.0.0.0..1421 0.0.0.0..0 Listen
EZZ2587I QMZ2CHIN 00000057 0.0.0.0..1422 0.0.0.0..0 Listen
EZZ2587I QMZ5CHIN 00000057 0.0.0.0..1425 0.0.0.0..0 Listen
```

13. Finally use MQ Explorer on the Desktop to connect to this queue manager using hostname **wg31.washington.ibm.com** queue manager name **QMZ2** and port **1422**.

**CONGRATULATIONS!!! You have completed the MQ customization lab exercise**