L08 – Channel Initiator Statistics Lab

Version V6.0

October 2018

WSC Wildfire Team
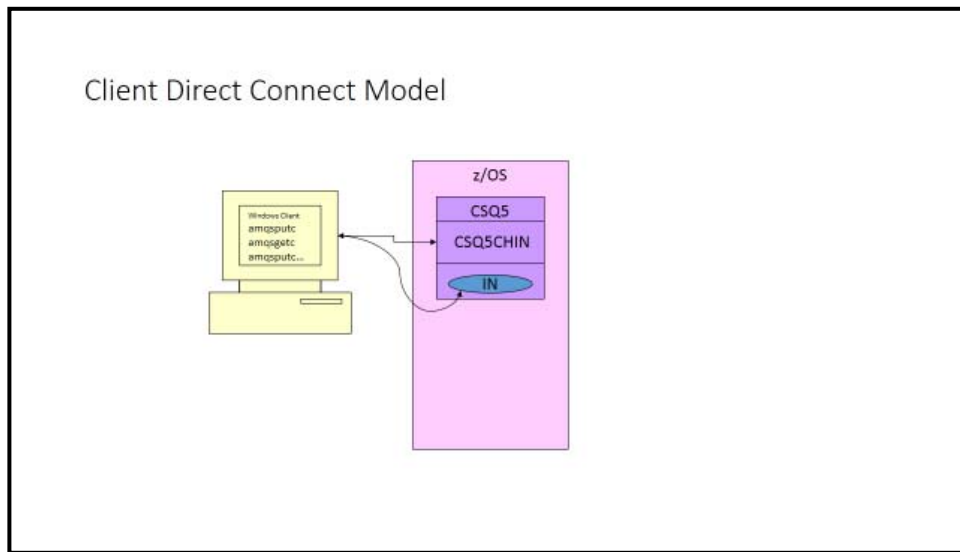IBM z Systems

Table of Contents

Lab Objectives

This lab is to introduce the new channel initiator statistics System Management Facility (SMF) data. This data is captured in the SMF 115 subtype 231 records.

Prior to MQ V8 the tuning the number of internal channel initiator tasks was done by 'best guesstimate.' Adding the SMF data allows MQ administrators and capacity planners to see what resources are being used, when more might be required and when an individual cannel initiator may be running out of reserve capacity.

This lab does not include gathering the data. The data has been gathered in another environment.

The tests were using direct client connections to queue manager. Each test included multiple executions of MQ samples *amqsputc* and *amqsgetc* to queues that are defined in below and above the bar buffer pools.

An example of the test bat files look as follows:

```
set MQSERVER=SHARE.SVRCON01/TCP/wtsc61.itso.ibm.com(1521)
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5 >c:\SHARE_TEST_PS02_MSg_OUT.txt
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
amqsputc SHARE.TEST.PS02 CSQ5 <c:\TEST_MSg_IN.txt
amqsgetc SHARE.TEST.PS02 CSQ5
```

General Lab Information and Guidelines

- Information required to complete this exercise will be provided on a 'worksheet' prior to the start of this exercise. Refer to this worksheet for which user identity and password are to be used and for other values, for example:

    ✓ This exercise requires using TSO user *USER1* on the *wg31.washington.ibm.com* system

    ✓ As a reminder, if a value from your worksheet should be used, the values in the instructions will be in red rather than black.

    ✓ ***Bold italicized*** text indicates values that need to be entered on a screen.

    ✓ *Italicized* text indicates values that are constants or names that appear on a screen.

    ✓ **Bold** text indicates the name of buttons or keyboard keys that need to be pressed.

    ✓ Please note that you should use the JCL data set *USER1.SHARE.JCL* for this exercise.

The MQ Trace Settings

To gather the channel initiator statistical data the MQ trace has to be started. This is done via the MQ command START TRACE command as shown:

+cpf START TRACE(STAT) CLASS(04)

> **Tech-Tip:** *+cpf* is the *command prefix* string of this queue manager. A command prefix string is used to direct commands to a queue manager.

Note that we expect the base statistic trace to always be on.

Once started the output of the display trace looks as follows:

```
CSQW127I -CSQ5 CURRENT TRACE ACTIVITY IS -  513
TNO TYPE   CLASS         DEST     USERID   RMID
01  GLOBAL 01            RES      *        *
02  STAT   01,02         SMF      *        *
03  STAT   04            SMF      *        *
00  CHINIT *             RES      *        *
END OF TRACE REPORT
CSQ9022I -CSQ5 CSQWVCM1 ' DISPLAY TRACE' NORMAL COMPLETION
```

SMF 115 – printing the raw data

_____1. On the workshop's Desktop double click the **PComm-3270** icon to start a 3270-terminal session.

_____2. Enter *TSO USER1*. You should then see the TSO/E logon screen, where you will enter your password.

_____3. Once logged onto TSO and on the *ISPF Primary Options Menu* window, enter *3.4* on the command line and press the **ENTER** key.

_____4. On the *Data Set List Utility* panel, enter *USER1.SHARE*, in the *Dsname Level* fields and press the **ENTER** key.

_____5. From the *DSLIST* panel, select the data set *USER1.SHARE.JCL* for editing by entering an *E* in the *Command* field by the data set name and press the **ENTER** key.

_____6. There are three members that will be used for this lab.

____7. Select the member *CSQ4SMFJ* as shown and press the **ENTER** key. Note that one some keyboards the enter key is the key labeled *Enter* and on some it is the right *Ctrl* key.

```
Session A - wg31                                              _  □  X

File  Edit  View  Communication  Actions  Window  Help

 ▣  ▣▣  ▣▣  ▣▣  ▣  ▣▣  ▣▣  ▣▣
    File    Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help

EDIT       USER1.SHARE.JCL(CSQ4SMFJ) - 01.02           Columns 00001 00072
Command ===> _                                           Scroll ===> PAGE
****** *************************** Top of Data ******************************
000001 //USER1J  JOB NOTIFY=&SYSUID
000002 //SAMPSTEP EXEC PGM=CSQ4SMFD,REGION=0M
000003 //STEPLIB  DD   DSN=MQ900.SCSQLOAD,DISP=SHR
000004 //SYSPRINT DD SYSOUT=*,DCB=(LRECL=132,RECFM=F)
000005 //SMFIN    DD DISP=SHR,DSN=SHARE.MQV8.SMFDATA
000006 //QMAC     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000007 //WTID     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000008 //WTAS     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000009 //WQ       DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000010 //QSST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000011 //QEST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000012 //QESD     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000013 //QIST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000014 //QJST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000015 //QLST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000016 //QMST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000017 //QPST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000018 //QSST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000019 //QTST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000020 //QCCT     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000021 //QCTDSP   DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000022 //QCTADP   DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000023 //QCTSSL   DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000024 //QCTDNS   DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000025 //QCST     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
000026 //QIS1     DD SYSOUT=*,DCB=(LRECL=233,RECFM=F,BLKSIZE=233)
****** *************************** Bottom of Data ***************************
MA▣   A                                                          04/015
 Connected to remote server/host localzos using lu/pool SC0TC
```
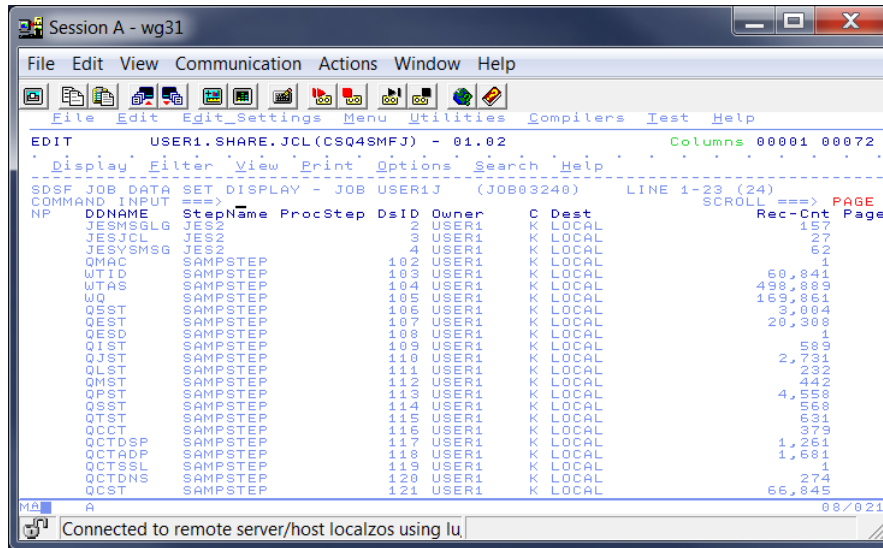
____8. Submit the job for execution.

____9. Split your TSO session screen, using the **F2** key and navigate to the System Display and Search Facility (SDSF) held output queue by entering *=D.H* on the command line and pressing the **Enter** key. Use the *PREFIX* to set the job filter to *USER1**, e.g. *PREFIX USER1**.

____10. The list of jobs should include job *USER1J* as below:

```
Session A - wg31                                              _  □  X

File  Edit  View  Communication  Actions  Window  Help

 ▣  ▣▣  ▣▣  ▣▣  ▣  ▣▣  ▣▣  ▣▣
    File    Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help
EDIT       USER1.SHARE.JCL(CSQ4SMFJ) - 01.02           Columns 00001 00072
    Display  Filter  View  Print  Options  Search  Help
-------------------------------------------------------------------
SDSF HELD OUTPUT DISPLAY ALL CLASSES LINES 833,344    LINE 1-1 (1)
COMMAND INPUT ===>                                      SCROLL ===>  PAGE
NP   JOBNAME  JobID    Owner    Prty C ODisp Dest         REC-Cnt  PAGE
?_   USER1J   JOB03240 USER1      96 K HOLD  LOCAL        833,344




MA▣   A                                                          10/003
 Connected to remote server/host localzos using lu
```

____11. Place a question mark (**?**), as shown above, to the left of the job name to display all the output files, like what is shown below:

```
Session A - wg31

File  Edit  View  Communication  Actions  Window  Help

   File    Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help
 EDIT       USER1.SHARE.JCL(CSQ4SMFJ) - 01.02              Columns 00001 00072
   Display  Filter  View  Print  Options  Search  Help
 SDSF JOB DATA SET DISPLAY - JOB USER1J   (JOB03240)     LINE 1-23 (24)
 COMMAND INPUT ===>                                        SCROLL ===> PAGE
 NP    DDNAME    StepName ProcStep DsID Owner    C Dest          Rec-Cnt Page
       JESMSGLG  JES2                2  USER1    K LOCAL             157
       JESJCL    JES2                3  USER1    K LOCAL              27
       JESYSMSG  JES2                4  USER1    K LOCAL              62
       QMAC      SAMPSTEP          102  USER1    K LOCAL               1
       WTID      SAMPSTEP          103  USER1    K LOCAL          60,841
       WTAS      SAMPSTEP          104  USER1    K LOCAL         498,889
       WQ        SAMPSTEP          105  USER1    K LOCAL         169,861
       QSST      SAMPSTEP          106  USER1    K LOCAL           3,004
       QEST      SAMPSTEP          107  USER1    K LOCAL          20,308
       QESD      SAMPSTEP          108  USER1    K LOCAL               1
       QIST      SAMPSTEP          109  USER1    K LOCAL             589
       QJST      SAMPSTEP          110  USER1    K LOCAL           2,731
       QLST      SAMPSTEP          111  USER1    K LOCAL             232
       QMST      SAMPSTEP          112  USER1    K LOCAL             442
       QPST      SAMPSTEP          113  USER1    K LOCAL           4,558
       QSST      SAMPSTEP          114  USER1    K LOCAL             568
       QTST      SAMPSTEP          115  USER1    K LOCAL             631
       QCCT      SAMPSTEP          116  USER1    K LOCAL             379
       QCTDSP    SAMPSTEP          117  USER1    K LOCAL           1,261
       QCTADP    SAMPSTEP          118  USER1    K LOCAL           1,681
       QCTSSL    SAMPSTEP          119  USER1    K LOCAL               1
       QCTDNS    SAMPSTEP          120  USER1    K LOCAL             274
       QCST      SAMPSTEP          121  USER1    K LOCAL          66,845
 MA    A                                                           08/021
  Connected to remote server/host localzos using lu
```

____12. Select the *QCTDSP* output file, this is the 'dump' display of the Channel Initiator dispatcher task statistics. This is shown below:

```
CHINIT dispatcher task statistics
--Q-C-T-D-S-P---H-E-X---P-R-I-N-T----
Address  = 1282AC20
00000000 : 007CF5B0 00000AD1 00000000 1015091A <.@5....J........>
00000010 : 00000000 0EC33C52 00000070 00645E66 <.....C.........;.>
00000020 : 00000003                             <....          >
--Q-C-T-D-S-P---F-O-R-M-A-T-T-E-D----
qcttskn = 7cf5b0
qctreqn =        2769
qctcptm =           65872 microseconds
qcteltm =           60467 microseconds
qctwttm =        117442117 microseconds
qctchln =           3
--Q-C-T-D-S-P---H-E-X---P-R-I-N-T----
Address  = 1282AC44
00000000 : 007CF320 00000C8B 00000000 1176F9FE <.@3...........9.>
00000010 : 00000000 0E2EC456 00000071 E5D0F6EE <......D.....V}6.>
00000020 : 00000002                             <....          >
--Q-C-T-D-S-P---F-O-R-M-A-T-T-E-D----
```

____13. You can also review the data in the *QCTADP*, *QCTSSL* and *QCTDNS* files. Note that SSL and DNS were not active in the environment at the time the test was run.

SMF115 data – printing the formatted data

SupportPac MP1B will soon be updated to include the V9data. For this lab we are using a 'beta' copy of the print program, which should closely reflect the reports that will be produced by the GA version.

____1.   Return to the *USER1.SHARE.JCL* file (**F9**). You can do this since you are in split screen mode and have not navigated from that PDS). Select the MQSMFV8 member and submit for execution.

____2.   Return to the SDSF output, **F9** if still in split screen mode. Note that this job can take a few minutes to complete, so you may see it in the execution queue for a while. Keep pressing Enter until you receive the message that the job has completed.

____3.   Once complete, use question mark (*?*) command to display the different output files as shown below:

_____4.   Selecting the *CHINIT* output file, you can see the basic channel initiator use statistics for the test run. This includes the number of channels defined and the number active during the SMF interval.

```
SC61,CSQ5,2014/08/01,15:26:40,VRM:800,
From 2014/08/01,15:24:40.843040 to 2014/08/01,15:26:40.331550 duration
119.48850
Number of current channels.....................  13
Number of active channels .... ................  12
MAXCHL. Max allowed current channels........... 200
ACTCHL. Max allowed active channels............ 200
TCPCHL. Max allowed TCP/IP channels............ 200
LU62CHL. Max allowed LU62 channels............. 200
Storage used by Chinit.........................  22MB

SC61,CSQ5,2014/08/01,15:28:39,VRM:800,
From 2014/08/01,15:26:40.331550 to 2014/08/01,15:28:39.918489 duration
119.58693
Number of current channels.....................  21
Number of active channels .... ................  20
MAXCHL. Max allowed current channels........... 200
ACTCHL. Max allowed active channels............ 200
TCPCHL. Max allowed TCP/IP channels............ 200
LU62CHL. Max allowed LU62 channels............. 200
Storage used by Chinit.........................  22MB
```

_____5.   Return to the output file list and select the *CHINCSV* file. The files that have the 'CSV' in the names are comma separated values and are quite useful for downloading and importing into a spreadsheet for long term tracking and trend analysis.

```
mvs,qm,qsg,date,time,QSG,CurCHL,MaxCHL,ActCHL,MaxAct,MaxTCP,MaxLU,StgMB
SC61,CSQ5,2014/08/01,15:26:40,'    ',13,200,12,200,200,200,22
SC61,CSQ5,2014/08/01,15:28:39,'    ',21,200,20,200,200,200,22
SC61,CSQ5,2014/08/01,15:30:39,'    ',22,200,21,200,200,200,22
SC61,CSQ5,2014/08/01,15:32:38,'    ',16,200,15,200,200,200,22
SC61,CSQ5,2014/08/01,15:34:38,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:36:38,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:38:37,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:40:37,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:42:36,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:44:36,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:46:35,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:48:35,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:50:34,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:52:34,'    ',5,200,4,200,200,200,22
SC61,CSQ5,2014/08/01,15:54:33,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:56:33,'    ',7,200,6,200,200,200,22
SC61,CSQ5,2014/08/01,15:58:32,'    ',6,200,5,200,200,200,22
SC61,CSQ5,2014/08/01,16:00:32,'    ',7,200,6,200,200,200,22
```

_____6.   As an example, the CHINCSV file was downloaded and loaded into a spreadsheet and then sorted in descending order by the number of channels that are active during the SMF intervals and find that the peak number was 21 of a maximum of 200, and that occurred at 15:30:39. Knowing the peaks can be very helpful in capacity planning, and when trying to track down performance problems.

mvs	qm	qsg	date	time	QSG	CurCHL	MaxCHL	ActCHL	MaxAct	MaxTCP	MaxLU	StgMB
SC61	CSQ5	2014/08/01	15:30:39			22	200	21	200	200	200	22
SC61	CSQ5	2014/08/01	15:28:39			21	200	20	200	200	200	22
SC61	CSQ5	2014/08/01	15:32:38			16	200	15	200	200	200	22
SC61	CSQ5	2014/08/01	15:26:40			13	200	12	200	200	200	22
SC61	CSQ5	2014/08/01	15:34:38			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:36:38			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:38:37			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:40:37			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:42:36			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:44:36			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:46:35			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:48:35			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:50:34			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:54:33			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:56:33			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	16:00:32			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	16:02:32			7	200	6	200	200	200	22
SC61	CSQ5	2014/08/01	15:58:32			6	200	5	200	200	200	22
SC61	CSQ5	2014/08/01	16:04:31			6	200	5	200	200	200	22
SC61	CSQ5	2014/08/01	15:52:34			5	200	4	200	200	200	22
SC61	CSQ5	2014/08/01	16:06:31			3	200	2	200	200	200	22

____7.	Returning to the output list, page forward (F**8**) and select the *DISP* file. This contains the activity of the dispatcher tasks within the channel initiator address space during the intervals. Dispatcher tasks work with the network to send and receive messages.

In the queue manager used for this test, the default number of tasks, 5, were used. They are numbered from 0-4. Note that in this test, only the first 4 dispatcher tasks show any activity. The 5th task, dispatcher # 4 is idle during this period. Most of the activity has taken place on tasks 0 and 1, with little work flowing beyond that. The MQ V8 redbook (http://www.redbooks.ibm.com/redpieces/abstracts/sg248218.html?Open) discusses the distribution of work amongst the dispatcher tasks.

```
******************************* TOP OF DATA
*******************************
SC61,CSQ5,2014/08/01,15:26:40,VRM:800,
From 2014/08/01,15:24:40.843040 to 2014/08/01,15:26:40.331550
duration 119.48850
Task,Type,Requests,Busy %,     CPU used, CPU %,"avg CPU","avg ET"
    ,    ,        ,        ,      Seconds,      , uSeconds,uSeconds
   0,DISP,    2769,   0.1,     0.065873,  0.1,       24,       22
   1,DISP,    3211,   0.0,     0.071536,  0.1,       22,       18
   2,DISP,    1763,   0.0,     0.041455,  0.0,       24,       18
   3,DISP,     235,   0.0,     0.006181,  0.0,       26,       21
   4,DISP,       0,   0.0,     0.000000,  0.0,        0,        0
Summ,DISP,    7978,   0.0,     0.185044,  0.0,       23,       20
   0,DISP, number of channels on this TCB,    3
   1,DISP, number of channels on this TCB,    2
   2,DISP, number of channels on this TCB,    5
   3,DISP, number of channels on this TCB,    3
   4,DISP, number of channels on this TCB,    0
Summ,DISP, number of channels on all TCBs,   13
SC61,CSQ5,2014/08/01,15:28:39,VRM:800,
From 2014/08/01,15:26:40.331550 to 2014/08/01,15:28:39.918489
duration 119.58693
Task,Type,Requests,Busy %,     CPU used, CPU %,"avg CPU","avg ET"
```

_____8.   Returning to the output file list (**F3**) and selecting the *DISPCSV* file shows the following. This is the summary of the dispatcher activity during the SMF interval, not an entry for each dispatcher. Charting this information over time will give a picture of how busy the dispatcher tasks are overall, and give feedback on when additional tasks may be needed to process the workload.

```
mvs,qm,qsg,date,time,Type,Requests,Busy%,"Total CPU" ,CPU%,"avg CPU","avg ET"
SC61,CSQ5,   ,2014/08/01,15:26:40,DISP,  7978,  0.0, 0.000000, 0.0,23.2,   20
SC61,CSQ5,   ,2014/08/01,15:28:39,DISP,104514,  0.3, 0.358341, 0.3,16.8,   15
SC61,CSQ5,   ,2014/08/01,15:30:39,DISP, 97035,  0.3, 0.320285, 0.3,16.6,   15
SC61,CSQ5,   ,2014/08/01,15:32:38,DISP, 81305,  0.2, 0.240910, 0.2,16.4,   15
SC61,CSQ5,   ,2014/08/01,15:34:38,DISP, 38962,  0.1, 0.004738, 0.1,14.0,   13
SC61,CSQ5,   ,2014/08/01,15:36:38,DISP, 31944,  0.1, 0.000000, 0.1,11.9,   11
SC61,CSQ5,   ,2014/08/01,15:38:37,DISP, 32302,  0.1, 0.000000, 0.1,11.9,   11
SC61,CSQ5,   ,2014/08/01,15:40:37,DISP, 31821,  0.1, 0.000000, 0.1,11.9,   11
SC61,CSQ5,   ,2014/08/01,15:42:36,DISP, 30646,  0.1, 0.000000, 0.1,12.2,   12
SC61,CSQ5,   ,2014/08/01,15:44:36,DISP, 40060,  0.1, 0.000000, 0.1,11.6,   11
SC61,CSQ5,   ,2014/08/01,15:46:35,DISP, 27744,  0.1, 0.000000, 0.1,13.4,   13
SC61,CSQ5,   ,2014/08/01,15:48:35,DISP, 17563,  0.0, 0.000000, 0.0,16.3,   15
SC61,CSQ5,   ,2014/08/01,15:50:34,DISP, 16226,  0.0, 0.000000, 0.0,15.0,   14
SC61,CSQ5,   ,2014/08/01,15:52:34,DISP, 17074,  0.0, 0.000000, 0.0,15.0,   14
SC61,CSQ5,   ,2014/08/01,15:54:33,DISP, 16475,  0.0, 0.000000, 0.0,15.0,   14
SC61,CSQ5,   ,2014/08/01,15:56:33,DISP, 16483,  0.0, 0.000000, 0.0,15.4,   14
SC61,CSQ5,   ,2014/08/01,15:58:32,DISP, 16499,  0.0, 0.141455, 0.0,15.7,   15
SC61,CSQ5,   ,2014/08/01,16:00:32,DISP, 15782,  0.0, 0.257752, 0.0,16.5,   16
```

_____9.   Loading the file into a spreadsheet, you get the following. Please note that the column headers had to be adjusted because the QSG column is blank for this test. It is also important to note that the total CPU time is in seconds, but the average CPU and elapsed times are in microseconds.

mvs	qm	qsg	date	time	Type	Requests	Busy%	Total CPU	CPU%	avg CPU	avg ET
SC61	CSQ5		2014/08/01	15:26:40	DISP	7978	0	0	0	23.2	20
SC61	CSQ5		2014/08/01	15:28:39	DISP	104514	0.3	0.358341	0.3	16.8	15
SC61	CSQ5		2014/08/01	15:30:39	DISP	97035	0.3	0.320285	0.3	16.6	15
SC61	CSQ5		2014/08/01	15:32:38	DISP	81305	0.2	0.24091	0.2	16.4	15
SC61	CSQ5		2014/08/01	15:34:38	DISP	38962	0.1	0.004738	0.1	14	13
SC61	CSQ5		2014/08/01	15:36:38	DISP	31944	0.1	0	0.1	11.9	11
SC61	CSQ5		2014/08/01	15:38:37	DISP	32302	0.1	0	0.1	11.9	11
SC61	CSQ5		2014/08/01	15:40:37	DISP	31821	0.1	0	0.1	11.9	11
SC61	CSQ5		2014/08/01	15:42:36	DISP	30646	0.1	0	0.1	12.2	12
SC61	CSQ5		2014/08/01	15:44:36	DISP	40060	0.1	0	0.1	11.6	11
SC61	CSQ5		2014/08/01	15:46:35	DISP	27744	0.1	0	0.1	13.4	13
SC61	CSQ5		2014/08/01	15:48:35	DISP	17563	0	0	0	16.3	15
SC61	CSQ5		2014/08/01	15:50:34	DISP	16226	0	0	0	15	14
SC61	CSQ5		2014/08/01	15:52:34	DISP	17074	0	0	0	15	14
SC61	CSQ5		2014/08/01	15:54:33	DISP	16475	0	0	0	15	14
SC61	CSQ5		2014/08/01	15:56:33	DISP	16483	0	0	0	15.4	14
SC61	CSQ5		2014/08/01	15:58:32	DISP	16499	0	0.141455	0	15.7	15
SC61	CSQ5		2014/08/01	16:00:32	DISP	15782	0	0.257752	0	16.5	16
SC61	CSQ5		2014/08/01	16:02:32	DISP	16666	0	0.233758	0	15.9	15
SC61	CSQ5		2014/08/01	16:04:31	DISP	14149	0	0.000826	0	15.2	14
SC61	CSQ5		2014/08/01	16:06:31	DISP	11589	0	0	0	15.5	15

____10.   Returning to the output file list, select the adapter task file, *ADAP*. The adapter tasks interact
with the queue manager. The default value of 8 was used for this test.

```
SC61,CSQ5,2014/08/01,15:26:40,VRM:800,
From 2014/08/01,15:24:40.843040 to 2014/08/01,15:26:40.331550 duration
119.48850
Task,Type,Requests,Busy %,       CPU used, CPU %,"avg CPU","avg ET"
     ,     ,        ,        ,      Seconds,      , uSeconds,uSeconds
    0,ADAP,    2504,    0.1,     0.073409,   0.1,        29,       32
    1,ADAP,      71,    0.0,     0.002722,   0.0,        38,       43
    2,ADAP,       5,    0.0,     0.000170,   0.0,        34,       32
    3,ADAP,       0,    0.0,     0.000027,   0.0,         0,        0
    4,ADAP,       0,    0.0,     0.000000,   0.0,         0,        0
    5,ADAP,       0,    0.0,     0.000000,   0.0,         0,        0
    6,ADAP,       0,    0.0,     0.000000,   0.0,         0,        0
    7,ADAP,       0,    0.0,     0.000000,   0.0,         0,        0
Summ,ADAP,    2580,    0.0,     0.076328,   0.0,        30,       32
SC61,CSQ5,2014/08/01,15:28:39,VRM:800,
From 2014/08/01,15:26:40.331550 to 2014/08/01,15:28:39.918489 duration
119.58693
Task,Type,Requests,Busy %,       CPU used, CPU %,"avg CPU","avg ET"
     ,     ,        ,        ,      Seconds,      , uSeconds,uSeconds
    0,ADAP,   32937,    0.7,     0.669292,   0.6,        20,       26
    1,ADAP,    1225,    0.1,     0.030226,   0.0,        25,      109
```

____11.   Like the dispatcher tasks, the *CSV* file includes the summary of the adapters per SMF interval.
The data from the *ADAPCSV* file, downloaded and imported into a spread sheet application and
then sorted by the number of requests (descending) is shown below.

mvs	qm	qsg	date	time	Type	Requests	Busy%	Total CPU	CPU%	avg CP	avg ET
SC61	CSQ5		2014/08/01	15:28:39	ADAP	34255	0.1	0.000028	0.1	20.5	29
SC61	CSQ5		2014/08/01	15:30:39	ADAP	31341	0.1	0	0.1	21.1	42
SC61	CSQ5		2014/08/01	15:32:38	ADAP	26393	0.1	0.000001	0.1	20.8	31
SC61	CSQ5		2014/08/01	15:44:36	ADAP	14568	0	0.000001	0	15.3	15
SC61	CSQ5		2014/08/01	15:34:38	ADAP	13706	0	0	0	18.5	18
SC61	CSQ5		2014/08/01	15:38:37	ADAP	11757	0	0	0	15.9	16
SC61	CSQ5		2014/08/01	15:36:38	ADAP	11655	0	0	0	15.9	15
SC61	CSQ5		2014/08/01	15:40:37	ADAP	11572	0	0	0	16	16
SC61	CSQ5		2014/08/01	15:42:36	ADAP	11183	0	0.000001	0	16.4	16
SC61	CSQ5		2014/08/01	15:46:35	ADAP	9903	0	0	0	18.8	18
SC61	CSQ5		2014/08/01	15:48:35	ADAP	6056	0	0	0	23.4	23
SC61	CSQ5		2014/08/01	15:52:34	ADAP	5886	0	0	0	20.2	20
SC61	CSQ5		2014/08/01	16:02:32	ADAP	5715	0	0	0	23	23
SC61	CSQ5		2014/08/01	15:58:32	ADAP	5674	0	0	0	22.2	22
SC61	CSQ5		2014/08/01	15:54:33	ADAP	5618	0	0	0	20.5	20
SC61	CSQ5		2014/08/01	15:56:33	ADAP	5610	0	0	0	21.7	22
SC61	CSQ5		2014/08/01	15:50:34	ADAP	5531	0	0	0	20.6	21
SC61	CSQ5		2014/08/01	16:00:32	ADAP	5368	0	0	0	25.1	25
SC61	CSQ5		2014/08/01	16:04:31	ADAP	4835	0	0	0	21.9	22
SC61	CSQ5		2014/08/01	16:06:31	ADAP	4013	0	0	0	22.5	22
SC61	CSQ5		2014/08/01	15:26:40	ADAP	2580	0	0	0	29.6	32

____12.   In addition to the dispatchers and adapter tasks, the SSL tasks and DNS task may be reported. In
the sample data used for this lab, SSL was not used.