

MQSeries for MVS/ESA - Printing statistics and accounting records

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Colin Paice
Mail Point 179
Hursley Park
England

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Summary of Changes

Date	Changes
1.0 - 16th December 1997	Initial version
1.0.2 - 29th January 1998	Fix a problem in the reporting of buffer statistics. In previous version the value for DMC was the same for DWT, and the DWT value was reported in the STL field etc.

Preface

This SupportPac provides a utility to enable the printing of SMF (Systems Management Facility) records that contain statistics and accounting information from MQSeries for MVS/ESA.

It is intended to help the customer or IBM systems engineer display the information available in the MQSeries statistics and accounting records.

Printing statistics and accounting records for MQSeries for MVS/ESA

You can use SMF to collect statistics and accounting data about MQSeries for MVS/ESA. MQSeries for MVS/ESA uses the following two types of SMF record:

- 115 Statistics records
- 116 Accounting records

CSQWFSMF is program that can be used to format and print the SMF records produced.

Installing CSQWFSMF

Take the following actions to install the SupportPac from the **mp15.zip** file :

1. Use **InfoZip's** Unzip utility to unpack the **mp15.zip** file.

This produces

- **csqwfsmf.txt** (object deck)
- **mp15.ps** (This User Guide in Postscript format)

2. **csqwfsmf.txt** must be transferred to the destination TSO system as a sequential binary file with a record format of FB 80. Use one of the following methods to accomplish this:

- Use the Communications Manager/2 **SEND** command below to send the file to TSO as a binary file called **csqwfsmf.text**

```
send csqwfsmf.txt A:csqwfsmf.text
```

where **A** is the TSO session ID.

- To send it via ftp ensure the **binary** option is set then use the following commands:

```
site fixrecfm 80 (this command may not be supported by your site)
```

```
put csqwfsmf.txt csqwfsmf.text
```

- With Personal Communications, use the “Send Files to Host” option under the Transfer menu item to transmit to TSO

PC File	csqwfsmf.txt
Host File	csqwfsmf.text
Transfer Type	object

The Transfer type of **object** will need to be correctly setup. To do this, use the “Setup.Define Transfer Types” option under the Transfer menu item and create the **object** type with the ASCII, CRLF and Append checkboxes all unselected, the **Fixed** radio button selected and the **LRECL** set to **80**

3. **csqwfsmf.text** is an object deck that must be link-edited to create a load module. Figure 1 on page 2 shows some sample JCL to do this:

```
//LINKJOB JOB 1,CLASS=A
//LKED EXEC PGM=IEWL,REGION=1024K,
// PARM=('SIZE=(900K,124K),LIST=ALL,MAP,XREF,RENT,NCAL,AMODE=24,',
// 'RMODE=24')
//SYSLIN DD DATA,DLM=¢¢

    object deck goes here

¢¢
//SYSLMOD DD DSN=output.library,DISP=SHR
//SYSUT1 DD DSN=&&SYSUT1,UNIT=SYSDA,
//          SPACE=(1024,(200,20))
//SYSPRINT DD SYSOUT=*
```

Figure 1. Example JCL for link-editing CSQWFSMF

Running CSQWFSMF

CSQWFSMF does not execute with the SYS1.SMF data sets directly, but with a copied subset of the records. In order to do this, use a job similar to the sample shown in Figure 2. By specifying types 115 and 116 on the OUTDD(DUMPOUT,TYPE(115,116)) statement, you can copy both statistics and accounting records.

```
//RUNPROG JOB 1,CLASS=A
//*
/* Extract the records from the SMF database
/*
//SMFDUMP EXEC PGM=IFASMFDP,REGION=0M
//DUMPOUT DD DSN=PAICE.SMF.DATA,DISP=OLD
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
    INDD(DUMPIN,OPTIONS(DUMP))
    OUTDD(DUMPOUT,TYPE(115,116))
/*
//DUMPIN DD DSN=SYS1.MAN1,DISP=SHR,AMP=('BUFSP=65536')
/*
/* Now display the MQSeries records
/*
//S1 EXEC PGM=CSQWFSMF
//STEPLIB DD DSN=Library.....,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SMFIN DD DSN=PAICE.SMF.DATA,DISP=SHR
```

Figure 2. Example JCL to process the SMF records

Interpreting statistics records

Figure 3 shows an example of the output produced by CSQWFSMF for a type 115 SMF record.

```

MVS:MVSY MQ_Subsys:VICA Date 1997318 Time 12:20:08.49
log Write_wait      0 Write_Nowait    5458 Write_Force      3 WTB      0
log Read_stor      0 Read_Active      0 Read_archive      0
log WTL           0 BSDS          30 BFFL          206 BFWR          803 ALR          0 ALW          0 CIOF          0
MVS:MVSY MQ_Subsys:VICA Date 1997318 Time 12:20:08.49
mm #MQOPEN        1514 #MQCLOSE      1511 #MQGET          8895 #MQPUT          6025 #MQPUT1        0 #MQINQ          0 #MQSET          0
dm #Create         698 #Put           560 #Delete         105 #Get           14133 #Locate       3043 #stgclass     1
bp 00 #buff        10000 #low          9221 #now          9221 #getp         32483 #getn         796
bp 00 Rio          15 STW          28939 TPW          15 WIO            2 IMW            1
bp 00 DMC          0 STL           792 STLA          0 SOS             0
bp 01 #buff        10000 #low          9996 #now          10000 #getp         8 #getn           0
bp 01 Rio          6 STW           7 TPW             6 WIO            2 IMW            1 DWT            1"
bp 01 DMC          0 STL           6 STLA           0 SOS             0
    
```

Figure 3. Example output for a type 115 SMF record

Each line begins with an identifier; the content of each field is explained in the following sections:

- | Identifier | Explained in |
|------------|--|
| MVS | “The SMF header” |
| log | “Log manager statistics” |
| mm | “Message manager statistics” on page 5 |
| dm | “Data manager statistics” on page 6 |
| bp | “Buffer manager statistics” on page 6 |

The SMF header

The first entry in the record is the standard SMF header, for example:

```

MVS:MVSY MQ_Subsys:VICA Date 1997318 Time 12:20:08.49
    
```

Field in report	Example content	Meaning of the field
MVS	MVSY	The name of the MVS system on which the data was collected
MQ_Subsys	VICA	The name of the MQSeries subsystem
Date	1997318	The date, in the form yyyyddd
Time	12:20:08.49	The time that the record was produced, in the form hh:mm:ss.dd (where dd is in hundredths of a second)

Log manager statistics

The log manager portion of the statistics record looks like this:

```

log Write_wait      0 Write_Nowait    5458 Write_Force      3 WTB      0
log Read_stor      0 Read_Active      0 Read_archive      0
log WTL           0 BSDS          30 BFFL          206 BFWR          803 ALR          0 ALW          0 CIOF          0
    
```

The following table describes the fields in the report. The Field name column gives the name of the field as described in the *MQSeries for MVS/ESA System Management Guide*.

Figure 4. Definition of the fields for the log manager statistics

Field in report	Example from report	Field name	Field description
Write_wait	0	QJSTWRW	Write_request count - Wait. Tasks are suspended until the write to active log is complete.
Write_Nowait	5458	QJSTWRNW	Write_request count - No wait. Asynchronous writes to the active log. Tasks are not suspended.
Write_Force	3	QJSTWRF	Write_request count - Force. Tasks are suspended until all the log records for this unit of recovery are written to the active log data set.
WTB	0	QJSTWTB	Wait count for unavailable buffers. Number of times a task was suspended because all the buffers were waiting to be written to the active log data set.
Read_stor	0	QJSTRBUF	Number of read log requests satisfied from in-storage buffers.
Read_Active	0	QJSTRACT	Number of read log requests satisfied from the active log data set.
Read_archive	0	QJSTRARH	Number of read log requests satisfied from an archive log data set.
WTL	0	QJSTWTL	Number of read log requests delayed because the MAXALLC parameter in CSQ6LOGP limited the number of archive log data sets that could be used.
BSDS	30	QJSTBSDS	Total number of bootstrap data set (BSDS) access requests.
BFFL	206	QJSTBFFL	The number of active log control intervals (CIs) created.
BFWR	803	QJSTBFWR	Number of calls made that wrote to active log buffers.
ALR	0	QJSTALR	Number of times an archive log data set was allocated for a read request.
ALW	0	QJSTALW	Number of times an archive log data set was allocated for a write request.
CIOF	0	QJSTCIOF	Count of CIs off-loaded to the archive log data set.

Message manager statistics

The message manager portion of the statistics record looks like this:

mm #MQOPEN	1514	#MQCLOSE	1511	#MQGET	8895	#MQPUT	6025	#MQPUT1	0	#MQINQ	0	#MQSET	0
------------	------	----------	------	--------	------	--------	------	---------	---	--------	---	--------	---

The following table describes the fields in the report. The Field name column gives the name of the field as described in the *MQSeries for MVS/ESA System Management Guide*.

Figure 5 (Page 1 of 2). Definition of the fields for the message manager statistics

Field in report	Example from report	Field name	Field description
#MQOPEN	1514	QMSTOPEN	Number of MQOPEN requests
#MQCLOSE	1511	QMSTCLOS	Number of MQCLOSE requests
#MQGET	8895	QMSTGET	Number of MQGET requests

Figure 5 (Page 2 of 2). Definition of the fields for the message manager statistics

Field in report	Example from report	Field name	Field description
#MQPUT	6025	QMSTPUT	Number of MQPUT requests
#MQPUT1	0	QMSTPUT1	Number of MQPUT1 requests
#MQINQ	0	QMSTINQ	Number of MQINQ requests
#MQSET	0	QMSTSET	Number of MQSET requests

Data manager statistics

The data manager portion of the statistics record looks like this:

dm #Create	698 #Put	560 #Delete	105 #Get	14133 #Locate	3043 #stgclass	1
------------	----------	-------------	----------	---------------	----------------	---

The following table describes the fields in the report. The Field name column gives the name of the field as described in the *MQSeries for MVS/ESA System Management Guide*.

Figure 6. Definition of the fields for the data manager statistics

Field in report	Example from report	Field name	Field description
#Create	698	QISTDCRE	Number of Object_Create requests
#Put	560	QISTDPUT	Number of Object_Put requests
#Delete	105	QISTDDEL	Number of Object_Delete requests
#Get	14133	QISTDGET	Number of Object_Get requests
#Locate	3043	QISTDLOC	Number of Object_Locate requests
#stgclass	1	QISTALST	Number of Stgclass change requests

Buffer manager statistics

The buffer manager portion of the statistics record looks like this:

bp 00 #buff	10000 #low	9221 #now	9221 #getp	32483 #getn	796
bp 00 Rio	15 STW	28939 TPW	15 WIO	2 IMW	1
bp 00 DMC	0 STL	792 STLA	0 SOS	0	
bp 01 #buff	10000 #low	9996 #now	10000 #getp	8 #getn	0
bp 01 Rio	6 STW	7 TPW	6 WIO	2 IMW	1
bp 01 DMC	0 STL	6 STLA	0 SOS	0	

The second column shows the buffer pool number. There can be up to four buffer pools, so there can be up to four sets of repeated data. The data for buffer pool 0 is explained below

The following table describes the fields in the report. The Field name column gives the name of the field as described in the *MQSeries for MVS/ESA System Management Guide*.

Figure 7. Definition of the fields for the buffer manager statistics

Field in report	Example from report	Field name	Field description
	00	QPSTPOOL	Buffer pool identifier (00-03).
#buff	10000	QPSTNBUF	Number of buffers in this buffer pool.
#low	9221	QPSTCBSL	Lowest number of available buffers.
#now	9221	QPSTCBS	Number of available buffers.
#getp	32483	QPSTGETP	The number of page get requests where the current page contents are required. This might involve a read DASD operation if the page is not currently in the buffer pool.
#getn	796	QPSTGETN	The number of get requests for a new - or empty - page (that is, no read operation is necessary).
Rio	15	QPSTRIO	The number of page read DASD operations.
STW	28939	QPSTSTW	The number of page updates.
TPW	15	QPSTTPW	Number of pages written to DASD.
WIO	2	QPSTWIO	The number of page write operations.
IMW	1	QPSTIMW	The number of synchronous page write operations.
DWT	0	QPSTDWT	The number of times the asynchronous write processor was started.
DMC	0	QPSTDMC	The number of times the synchronous page processor was started because the synchronous write threshold was reached.
STL	0	QPSTSTL	The number of times a page get request did not find the page already in the buffer pool.
STLA	792	QPSTSTLA	Number of times the hash chain has been changed during a buffer steal.
SOS	0	QPSTSOS	The number of times NO available buffers were found.

Interpreting accounting records

Figure 8 shows an example of the output produced by CSQWFSMF for a type 116 SMF record. The meaning of the fields are explained in the sections following.

```
MVS:MVSY MQ_Subsys:VICA Date 1997319 Time 09:17:32.24
QWHS: Job IYAYECIC Job_Userid PAICE Tran_Userid CICSUSER Connection CICS Thread 0F4D3294 GP15 0000035C
QMAC: CPU 00000001 MQPUT 0-99 0 100-999 0 1000-9999 0 >9999 0
QMAC: MQGET 0-99 0 100-999 0 1000-9999 1 >9999 0
```

Figure 8. Example output for a type 116 SMF record

Each line begins with an identifier; the content of each field is explained in the following sections:

Identifier	Explained in
MVS	“The SMF header”
QWHS	“Message manager accounting record QWHS”
QMAC	“Message manager accounting record QMAC” on page 9

The SMF header

The first entry in the record is the standard SMF header, for example:

```
MVS:MVSY MQ_Subsys:VICA Date 1997319 Time 09:17:32.24
```

Field in report	Example content	Meaning of the field
MVS	MVSY	The name of the MVS system on which the data was collected
MQ_Subsys	VICA	The name of the MQSeries subsystem
Date	1997319	The date, in the form yyyyddd
Time	09:17:32.24	The time the record was produced, in the form hh:mm:ss.dd (where dd is in hundredths of a second).

Message manager accounting record QWHS

```
QWHS: Job IYAYECIC Job_Userid PAICE Tran_Userid CICSUSER Connection CICS Thread 0F4D3294 GP15 0000035C
```

The following table describes the fields in the report. The Field name column gives the name of the field as described in the *MQSeries for MVS/ESA System Management Guide*.

Figure 9 (Page 1 of 2). Definition of the fields for the QWHS accounting record

Field in report	Example from report	Field name	Field description
Job	IYAYECIC	QWHCCON	Connection name.
Job_userid	PAICE	QWHCAID	User ID associated with the MVS job.

Figure 9 (Page 2 of 2). Definition of the fields for the QWHs accounting record

Field in report	Example from report	Field name	Field description
Tran_userid	CICSUSER	QWHCOPID	User ID associated with the transaction.
Connection	CICS	QWHCATYP	Type of connecting system (CICS, MVS/TSO, IMS control region, IMS MPP or BMP, Command server, or channel initiator).
Thread	0F4D3294 GP15 0000035C	QWHCCV	Thread cross reference. The format of this depends on the connection type. CICS The thread number in hexadecimal, the transaction in EBCDIC and the CICS task number in hexadecimal IMS The PST in decimal, the PSB in EBCDIC MVS/TSO The thread in hexadecimal.

Message manager accounting record QMAC

QMAC: CPU	00000001	MQPUT 0-99	0 100-999	0 1000-9999	0 >9999	0
QMAC:		MQGET 0-99	0 100-999	0 1000-9999	1 >9999	0

The following table describes the fields in the report. The Field name column gives the name of the field as described in the *MQSeries for MVS/ESA System Management Guide*.

Figure 10. Definition of the fields for the QMAC accounting record

Field in report	Example from report	Field name	Field description
CPU	00000001	QMACCPUT	CPU time used converted to milliseconds.
MPUT 0-99	0	QMACPUTA	Number of MQPUT requests for messages of length 0 through 99 bytes.
100-999	0	QMACPUTB	Number of MQPUT requests for messages of length 100 through 999 bytes.
1000-9999	0	QMACPUTC	Number of MQPUT requests for messages of length 1000 through 9999 bytes.
>9999	0	QMACPUTD	Number of MQPUT requests for messages of length greater than or equal to 10000 bytes.
MGET 0-99	0	QMACGETA	Number of MQGET requests for messages of length 0 through 99 bytes.
100-999	0	QMACGETB	Number of MQGET requests for messages of length 100 through 999 bytes.
1000-9999	1	QMACGETC	Number of MQGET requests for messages of length 1000 through 9999 bytes.
>9999	0	QMACGETD	Number of MQGET requests for messages of length greater than or equal to 10000 bytes.

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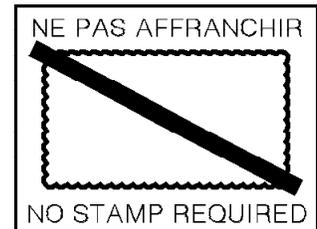
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