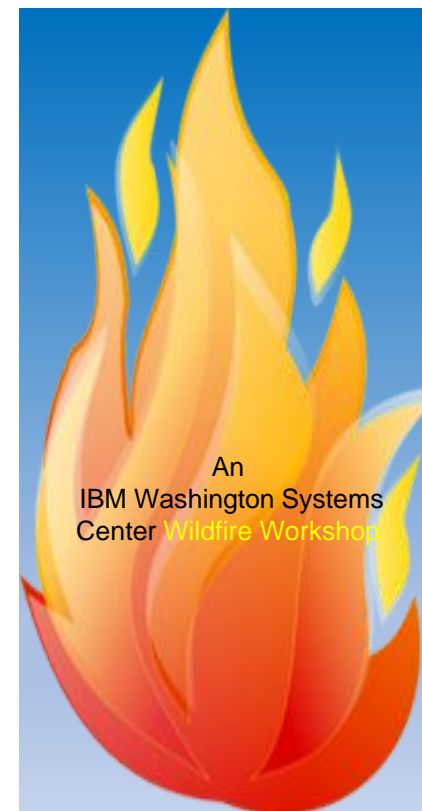




MQPERF1

**Introduction to MQ SMF-
Task and Channel
Accounting Records**



Agenda

- The Trident of record Types
 - No Aquaman jokes
- The Task report
 - It's a detailed baby





MQ Accounting – The home of the devil

- The SMF 116 data is the task related data produced by an IBM MQ for z/OS queue manager.
 - Very detailed
 - Often necessary to track down performance problems
 - Costs vary by:
 - Application Style
 - SMF production type (MAN datasets or Logstreams)
 - Recently seen some examples of there being little to no overhead for collection and production of the data
 - Standard estimates are between 3-7% overhead



MQ Task Accounting

- These detailed records are actually made up of three components:
 - WTID – the Task Identifying Information
 - Macro – CSQDWTID
 - WTAS – The Task Statistics
 - Macro – CSQDWTAS
 - WQ – the Queue Use data (aka Queue Statistics)
 - Macro – CSQDWQ
- All defined in the in the CSQDSMFC C header



WTID – What's in it

- The connection type:
 - CICS
 - Batch
 - IMS
 - CHIN
- Connection Name
 - The job name, can be the CICS region name, etc.
- Operator ID – User ID used by the task
- Correlator
 - For CICS transactions, this includes the Transaction ID and the Task identifier



WTAS – What's in it?

- This contains information that is task related, but not specific to a queue accessed by the task
- Latches: 0-31
 - MQ must serialize requests to some resources and uses latches to maintain that serialization
 - Extremely long latches can indicate problems with underlying resources or internal contention
 - Some latching is normal
 - But if they start becoming too long, time to look closer
 - (and we've seen some interesting things)
- Longest latch elapsed time, latch type of the longest latch
- Other Requests – Number, CPU Time, Elapsed Time
 - These fields cover the requests that are not reflected in the queue level accounting data
 - This includes the costs associated with queues that are set to not collect the queue level data



WTAS – What's in it? - continued

- Commits – Number, CPU Time, Elapsed Time
- Backouts – Number, CPU Time, Elapsed Time
- Unforced Log Writes – Number, CPU Time, Elapsed Time
- Forced Log Writes – Number, CPU Time, Elapsed Time
-and many more – a lot having to do with CF, SMDS, and Db2



Queue accounting – known as the Queue Statistics

- Lots of very interesting info in this one
- Open Name – the name used for the MQOPEN
- Base Name – the resolved queue name
 - Might be an XMITQ, etc.
- Queue Type – Local, Model, etc.
- Index Type – Message ID, correlation ID, etc.
- QSG Disposition – Shared, etc.



Queue accounting – known as the Queue Statistics

- MQ API information
 - Collected for all the API types for the queue
 - Number of requests
 - CPU total
 - Elapsed Time total
 - Special for MQGET (not every field – but highlights):
 - Counts for the varieties of MQGETs
 - Invalid GET count
 - Number of pageset reads to fulfill an MQGET
 - Skipped messages
 - Expired messages
 - Valid MQGETs (returned data)
 - Number of bytes put
 - Max & Min Message sizes
 - Longest & shortest time on queue for retrieved message
 - Number of persistent messages retrieved
 - Maximum Queue depth



Queue accounting – known as the Queue Statistics

- MQ API information
 - Special for MQPUT & MQPUT1 (not every field – but highlights):
 - Put to waiting getter count
 - Pageset activity
 - Number of bytes PUT
 - Valid puts
 - Generated Message count
 - Max & Min message Sizes
 - Number of persistent messages put (or put1)
 - Maximum queue depth
 - Number of messages published to a topic
 - Count of messages to a shared queue
 - Count of messages to the IGQ
 - Location information
 - CF Structure, pageset and bufferpool data

Sample Task Output

```
8 MPX1,QML3,2013/06/17,06:21:15,VRM:710,  
8 QML3 CICS CTSTOR01 opid:STCRACF userid:CICSUSER Tran:QPU2 task:0057090c  
8 Start time Jun 17 06:20:46 2013 Started this interval  
8 Interval Jun 17 06:20:46 2013 - Jun 17 06:20:51 2013 : 4.856374 seconds  
8 == SRB CPU time used 0.017487 Seconds  
8 Other reqs : Count 1  
8 Other reqs : Avg elapsed time 24 uS  
8 Other reqs : Avg CPU 9 uS  
8 Other reqs : Total ET 0.000024 Seconds  
8 Other reqs : Total CPU 0.000009 Seconds  
8 > Latch 30, Total wait 60 uS, Waits 3, Name ASMSAGT |TECTRACE|DDFDTM  
8 Commit count 0  
8 Commit avg elapsed time 0 uS  
8 Commit avg CPU time 0 uS  
8 Pages old 7  
8 Pages new 1
```

Sample Task Output – Queue Section

8 Open name		SMFEVAL.QPU2.STATUS.QUEUE
8 Queue type:QLocal		SMFEVAL.QPU2.STATUS.QUEUE
8 Queue indexed by NONE		SMFEVAL.QPU2.STATUS.QUEUE
8 First Opened	Jun 17 06:20:51 2013	SMFEVAL.QPU2.STATUS.QUEUE
8 Last Closed	Nov 19 00:18:26 2020	SMFEVAL.QPU2.STATUS.QUEUE
8 Page set ID	0	SMFEVAL.QPU2.STATUS.QUEUE
8 Buffer pool	0	SMFEVAL.QPU2.STATUS.QUEUE
8 Current opens	0	SMFEVAL.QPU2.STATUS.QUEUE
8 Total requests	3	SMFEVAL.QPU2.STATUS.QUEUE
8 Open Count	1	SMFEVAL.QPU2.STATUS.QUEUE
8 Open Avg elapsed time	21 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Open Avg CPU time	21 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Close Count	1	SMFEVAL.QPU2.STATUS.QUEUE
8 Close avg elapsed time	2 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Close avg CPU time	2 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Put count	1	SMFEVAL.QPU2.STATUS.QUEUE
8 Put avg elapsed time	19 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Put avg CPU time	18 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Put + put1 valid count	1	SMFEVAL.QPU2.STATUS.QUEUE
8 Put waiting getter	1	SMFEVAL.QPU2.STATUS.QUEUE
8 Put size maximum	513	SMFEVAL.QPU2.STATUS.QUEUE
8 Put size minimum	513	SMFEVAL.QPU2.STATUS.QUEUE
8 Put size average	513	SMFEVAL.QPU2.STATUS.QUEUE
8 Put num not peristent	1	SMFEVAL.QPU2.STATUS.QUEUE
8 Curdepth maximum	0	SMFEVAL.QPU2.STATUS.QUEUE
8 Total Queue elapsed time	43 uS	SMFEVAL.QPU2.STATUS.QUEUE
8 Total Queue CPU used	42 uS	SMFEVAL.QPU2.STATUS.QUEUE

Channel Accounting records – Part 1

```

Jobname: MPX1,QML3,2018/11/14,02:43:44,VRM:900,Last or only record
SMF interval start local time 2018/11/14,02:28:46
SMF interval end local time 2018/11/14,02:43:44
SMF interval start GMT 2018/11/14,07:29:10
SMF interval end GMT 2018/11/14,07:44:08
SMF interval duration 897.580941 seconds
TO.QML3 9.82.31.252 Connection name 9.82.31.252
TO.QML3 9.82.31.252 Channel disp PRIVATE
TO.QML3 9.82.31.252 Channel type CLUSRCVR
TO.QML3 9.82.31.252 Channel status RUNNING
TO.QML3 9.82.31.252 Channel STATCHL HIGH
00000000 : D53AB55E 00000000 N.1;.... :..^....
TO.QML3 9.82.31.252 Remote qmgr/app QML2
TO.QML3 9.82.31.252 Channel started date & time 2018/11/14,07:40:42
TO.QML3 9.82.31.252 Channel status collect time 2018/11/14,07:44:08
TO.QML3 9.82.31.252 Active for 205 seconds
TO.QML3 9.82.31.252 Last msg time 2018/11/14,07:40:42
TO.QML3 9.82.31.252 Last msg time delta 205.530946 seconds
TO.QML3 9.82.31.252 Batch size 50
TO.QML3 9.82.31.252 Dispatcher number 0
TO.QML3 9.82.31.252 Messages/batch 2.0
TO.QML3 9.82.31.252 Number of messages 2
TO.QML3 9.82.31.252 Number of persistent messages 2
TO.QML3 9.82.31.252 Number of batches 1
TO.QML3 9.82.31.252 Number of full batches 0
TO.QML3 9.82.31.252 Number of partial batches 1
TO.QML3 9.82.31.252 Buffers sent 2
TO.QML3 9.82.31.252 Buffers received 3
TO.QML3 9.82.31.252 Message data 2,376 2376 B
TO.QML3 9.82.31.252 Persistent message data 2,376 2376 B
TO.QML3 9.82.31.252 Non persistent message data 0 0 B
    
```


Channel Accounting records – Part 2

TO.QML3	9.82.31.252	Total bytes sent	296	296	B
TO.QML3	9.82.31.252	Total bytes received	2,644	2644	B
TO.QML3	9.82.31.252	Bytes received/Batch	2,644	2644	B
TO.QML3	9.82.31.252	Bytes sent/Batch	296	296	B
TO.QML3	9.82.31.252	Batches/Second	0		
TO.QML3	9.82.31.252	Bytes received/message	1,322	1322	B
TO.QML3	9.82.31.252	Bytes sent/message	148	148	B
TO.QML3	9.82.31.252	Bytes received/second	12	12	B/sec
TO.QML3	9.82.31.252	Bytes sent/second	1	1	B/sec
TO.QML3	9.82.31.252	Compression rate	0		
TO.QML3	9.82.31.252	Exit time average	0		uSec
TO.QML3	9.82.31.252	DNS resolution time	0		uSec
TO.QML3	9.82.31.252	CN from SSLCERT	XXXXXXXXXXXXXXXXXX		
TO.QML3	9.82.31.252	Serial number	00000000	00000000	
TO.QML3	9.82.31.252	CipherSpec	00020035	TLS_RSA_WITH_AES_256_CBC_SHA	
TO.QML3	9.82.31.252	Put retry count	0		



Summary

- The tasks records contain a great deal of detailed information about the use of queue managers and queues.
- MP1B gives a very nice formatted view of the individual tasks, which can be helpful when looking problems.
- Learning to look at this data is not fun.