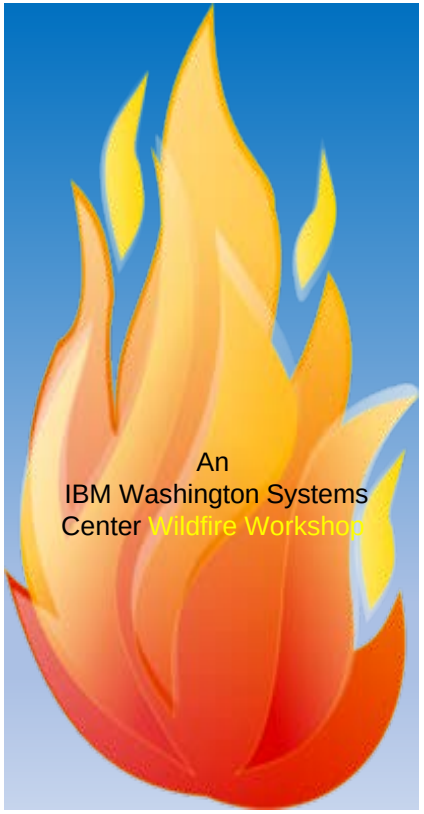
MQPERF1

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 log 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 |IFCTRACE|DBFDTM
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.';....        .:.^....
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	XXXXXXXXXXXXXX		
TO.QML3	9.82.31.252	Serial number	00000000 000000000		
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 and very nice formatted view of the individual tasks, which can be helpful when looking problems.
- Learning to look at this data is not fun.