IBM – Dallas System Center

New MQ CHINIT Monitoring via SMF (z/OS)

Lyn Elkins – elkinsc@us.ibm.com
Mitch Johnson – mitchj@us.ibm.com

Agenda

- CHINIT SMF
  - Channel Initiator Statistics
  - Channel Accounting Data

CHINIT SMF: The Problem

- Prior to MQ v8.0, there was limited SMF data for channels
- With CLASS(3) ACCOUNTING trace:

START TRACE(ACCTG) DEST(SMF) CLASS(3)

You get the Task/Thread Identification (WTID) SMF 116 Subtype 1

```
      ====> New task record found     <==========
Thread type.............> MQVER
Connection name.........> QML4CHIN
Operator ID.............> MQUSER
User ID.................> MQUSER
Channel name............> QSGM.OUT
Chl connection..........> 1.2.3.45
Correlator ID...........>             }
Correlator ID.....(HEX)> 243DD000E7E75C5C243DD2C0
Context token...........>
Context token.....(HEX)> 00000000000000000000000000000000
NID                    > QML4CHING  W È¢
```

sage

CHINIT TASK

Channel Name and Connection

CHINIT SMF: The Problem

- So, prior to MQ v8.0, there was no detailed, useful data for:
  - CHINIT address space
  - Channel activity
- Many customers have had to create their own ‘monitoring’ jobs
  - They issues periodic **DISPLAY CHSTATUS** commands
  - Or use the **MQCMD** program from Supportpac MP1B to do this
- Difficult to:
  - Monitor activity in the CHINIT address space
    - Investigate performance issues and tune for better performance
    - Perform capacity planning
    - Manage historical data

CHINIT SMF: The Solution

- Channel Initiator Statistics
  - High level view of activity in the CHINIT address space
    - Data about Dispatcher tasks
      - » Number of channels running, TCB usage
    - Data about Adapter, DNS and SSL tasks
  - Used to:
    - Determine if there is spare capacity
    - More effective tuning of dispatcher and adapter tasks
- **Channel Accounting Data**
  - Detailed view of individual channels
    - What work are the channels doing ?
    - Which channels are heavily utilized ?

Channel Initiator Statistics

- Channel initiator
  - QSG name
  - Number of current channels
  - Maximum current channels
  - Number of active channels
  - Maximum active channels
  - Maximum TCP/IP channels
  - Maximum LU 6.2 channels
  - Storage usage in MB

- Dispatcher task
  - Task number (TCB address)
  - Number of requests for task
  - Busy CPU time of task
  - Sum of elapsed time of requests
  - Wait elapsed time of task

- Adapter task
  - Task number (TCB address)
  - Number of requests for task
  - Busy CPU time of task
  - Sum of elapsed time of requests
  - Wait elapsed time of task

DNS task

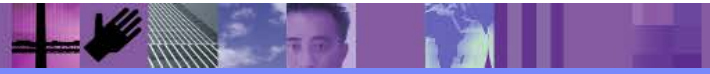
- Task number (TCB address)
- Number of requests for task
- Busy CPU time of task
- Sum of elapsed time of requests
- Wait elapsed time of task
- Time of day of max DNS request
- Duration time of max DNS request

SSL task

- Task number (TCB address)
- Number of requests for task
- Busy CPU time of task
- Sum of elapsed time of requests
- Wait elapsed time of task
- Time of day of max SSL request
- Duration of max SSL request

Channel Accounting Data

- For each channel instance
  - Channel name
  - Channel disposition
  - Channel type
  - Channel state
  - STATCHL setting
  - Connection name
  - Channel stopped date & time
  - Last msg date & time
  - Channel batch size
  - Num of messages
  - Num of persistent messages
  - Num of batches
  - Num of full batches
  - Num of transmission buffers sent
  - Num of transmission buffers received
  - Current shared conversations
  - Num of bytes
- Number of persistent bytes
- Number of bytes sent (both ctrl data & msg data)
- Number of bytes received (both ctrl data & msg data)
- Compression rate
- Exit time average
- Exit time min
- Exit time max
- Exit time max date & time
- Net time average
- Net time min
- Net time max
- Net time max date & time
- Remote qmgr /app name
- Put retry count
- Transmission queue empty count



New SMF record subtypes and DSECTs

- New subtypes

  SMF 115 subtype 231 (0xE7='X') for Channel Initiator Statistics

  SMF 116 subtype 10 for Channel Accounting Data

- New DSECTs shipped

  CSQDQWHS (QWHS): Standard header

  CSQDQWSX (QWSX): Self defining section for **subtype 231**

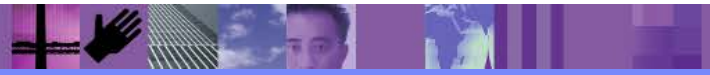
  CSQDQCCT (QCCT): Definition for CHINIT statistics data

  - **CSQDQCT (QCT_DSP/QCT_ADP/QCT_SSL/QCT_DNS)**: Definition for CHINIT tasks

  CSQDQHS (QWHS): Standard header

  CSQDQWS5 (QWS5): Self defining section for **subtype 10**

  CSQDQCST (QCST): Definition for channel accounting data

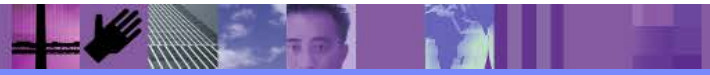


Starting CHINIT SMF

- Before starting the statistics trace, the DISPLAY TRACE output may look something like this:

```
RESPONSE=MPX1
 CSQW127I QML1 CURRENT TRACE ACTIVITY IS -
 TNO TYPE   CLASS        DEST     USERID   RMID
 01  GLOBAL 01           RES      *        *
 02  STAT   01,02        SMF      *        *
 04  ACCTG  03           SMF      *        *
 00  CHINIT *            RES      *        *
 END OF TRACE REPORT
 CSQ9022I QML1 CSQWVCM1 ' DISPLAY TRACE' NORMAL COMPLETION
```

- Start the Channel Initiator Statistics via the ‘START TRACE’ command:
  - +cpf START TRACE(STAT) CLASS(4)



Starting CHINIT SMF - continued

- The START TRACE response should look as shown:

```
CSQW130I QML1 'STAT' TRACE STARTED, ASSIGNED TRACE NUMBER 03
CSQ9022I QML1 CSQWVCM1 ' START TRACE' NORMAL COMPLETION
```

- The DISPLAY TRACE output should look something like this:

```
RESPONSE=MPX1
 CSQW127I QML1 CURRENT TRACE ACTIVITY IS -
 TNO TYPE   CLASS        DEST     USERID   RMID
 01  GLOBAL 01           RES      *        *
 02  STAT   01,02        SMF      *        *
 03  STAT   04           SMF      *        *
 04  ACCTG  03           SMF      *        *
 00  CHINIT *            RES      *        *
 END OF TRACE REPORT
```

Starting Channel Accounting SMF

- Start the Channel Accounting SMF via the ‘START TRACE’ command:
  - +cpf START TRACE(ACCTG) CLASS(4)
  - The result from the start command should look something like this:

```
CSQW130I QML1 'ACCTG' TRACE STARTED, ASSIGNED TRACE NUMBER 05
CSQ9022I QML1 CSQWVCM1 ' START TRACE' NORMAL COMPLETION
```

Starting Channel Accounting SMF - continued

- The DISPLAY TRACE output should look something like this:

```
RESPONSE=MPX1
 CSQW127I QML1 CURRENT TRACE ACTIVITY IS -
 TNO TYPE   CLASS        DEST     USERID   RMID
 01  GLOBAL 01           RES      *        *
 02  STAT   01,02        SMF      *        *
 03  STAT   04           SMF      *        *
 04  ACCTG  03           SMF      *        *
 05  ACCTG  04           SMF      *        *
 00  CHINIT *            RES      *        *
 END OF TRACE REPORT
```

Starting CHINIT SMF automatically

- The CSQ6SYSP macro parameters SMFSTAT and SMFACCT have been extended:
  - **SMFSTAT – now accepts a ‘4’ to automatically start the CHINIT statistics**
  - **SMFACCT – now accepts a ‘4’ to automatically start the channel accounting**
  - **SMF is started when the channel initiator is started**
- Can be disabled/re-enabled by STOP/START TRACE while CHINIT started

Starting CHINIT SMF automatically - continued

- Setting SMFSTAT and SMFACCT to ‘4’ results in the following:

```
CSQW127I QML1 CURRENT TRACE ACTIVITY IS -  089
TNO TYPE   CLASS        DEST     USERID   RMID
01  GLOBAL 01           RES      *        *
02  STAT   04           SMF      *        *
03  ACCTG  04           SMF      *        *
00  CHINIT *            RES      *        *
END OF TRACE REPORT
CSQ9022I QML1 CSQWVCM1 ' DISPLAY TRACE' NORMAL COMPLETION
```

- The SMF data only includes the new SMF 115 and 116 Subtypes:

```
Summary of MQ SMF records and subtypes found
============================================
SMF type 115 subtype 231, record count       3 Chinit
SMF type 116 subtype  10, record count       3 Channel data
```

- Which is probably not what was intended.

Starting CHINIT SMF automatically – getting more than just the CHINIT data

- The CSQ6SYSP macro parameters SMFSTAT and SMFACCT have been extended:
  - **SMFSTAT & SMFACCT – the traces can be 'stacked' in the macro as shown:**

```
SMFACCT=(01,03,04),   GATHER SMF ACCOUNTING          X
SMFSTAT=(01,04),      GATHER SMF STATS               X
```

  - **Note that using the (01:04) value is not allow in the SYSP macro. It is on the START TRACE command.**

Starting CHINIT SMF automatically - continued

- Setting SMFSTAT to (01,04) and SMFACCT to (01,03,04) results in the following:

```
RESPONSE=MPX1
 CSQW127I QML1 CURRENT TRACE ACTIVITY IS -
 TNO TYPE   CLASS        DEST     USERID   RMID
 01  GLOBAL 01           RES      *        *
 02  STAT   01,04        SMF      *        *
 03  ACCTG  01,03,04     SMF      *        *
 00  CHINIT *            RES      *        *
 END OF TRACE REPORT
```

- The SMF data now includes all the SMF 115 and 116 data:

```
Summary of MQ SMF records and subtypes found
============================================
SMF type 115 subtype   1, record count      14 System statistics(1)
SMF type 115 subtype   2, record count      14 System statistics(2)
SMF type 115 subtype 215, record count      14 Buffer manager extension
SMF type 115 subtype 231, record count      27 Chinit
SMF type 116 subtype   0, record count      13 Accounting class(1)
SMF type 116 subtype   1, record count     140 Accounting class(3)
SMF type 116 subtype  10, record count      27 Channel data
```

New console messages for CHINIT SMF

- For START/STOP TRACE(STAT)

  CSQX128I csect-name Channel initiator statistics collection started

  CSQX129I csect-name Channel initiator statistics collection stopped

- For START/STOP TRACE(ACCTG)

  CSQX126I csect-name Channel accounting collection started

  CSQX127I csect-name Channel accounting collection stopped

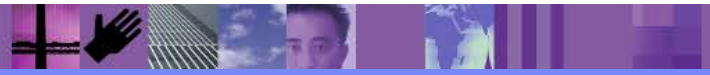
Controlling the CHINIT SMF interval

- The STATIME parameter controls the interval for everything
  - Controls the SMF interval for both Queue Manager and CHINIT
  - Keeps both Queue Manager and CHINIT statistics synchronized in time
- Valid values for STATIME
  - **Default from the CSQ4SYSP macro - 30 (minutes)**
  - **Zero -** use the global SMF interval
  - **Non-zero -** SMF data will be collected when the specified interval expires. The value is in minutes
- To set a different interval dynamically
  - Use **SET SYSTEM STATIME** command
    - Takes effect immediately

+cpf SET SYSTEM STATIME(10)

Additional Controls for Channel Accounting

- Queue Manager attribute: STATCHL
  - **OFF (default value)**
    - Disables channel accounting for channels with STATCHL(QMGR)
  - **LOW/MEDIUM/HIGH**
    - All have the same effect
    - Enables channel accounting for channels with STATCHL(QMGR)
  - **NONE**
    - Disables channel accounting for all channels



Additional Controls for Channel Accounting

- Channel attribute: STATCHL
  - **QMGR (default value)**
    - Channel accounting is controlled by the setting of the Queue Manager STATCHL attribute
  - **LOW/MEDIUM/HIGH**
    - All have the same effect
    - Enables channel accounting for this channel
  - **OFF**
    - Disables channel accounting for this channel

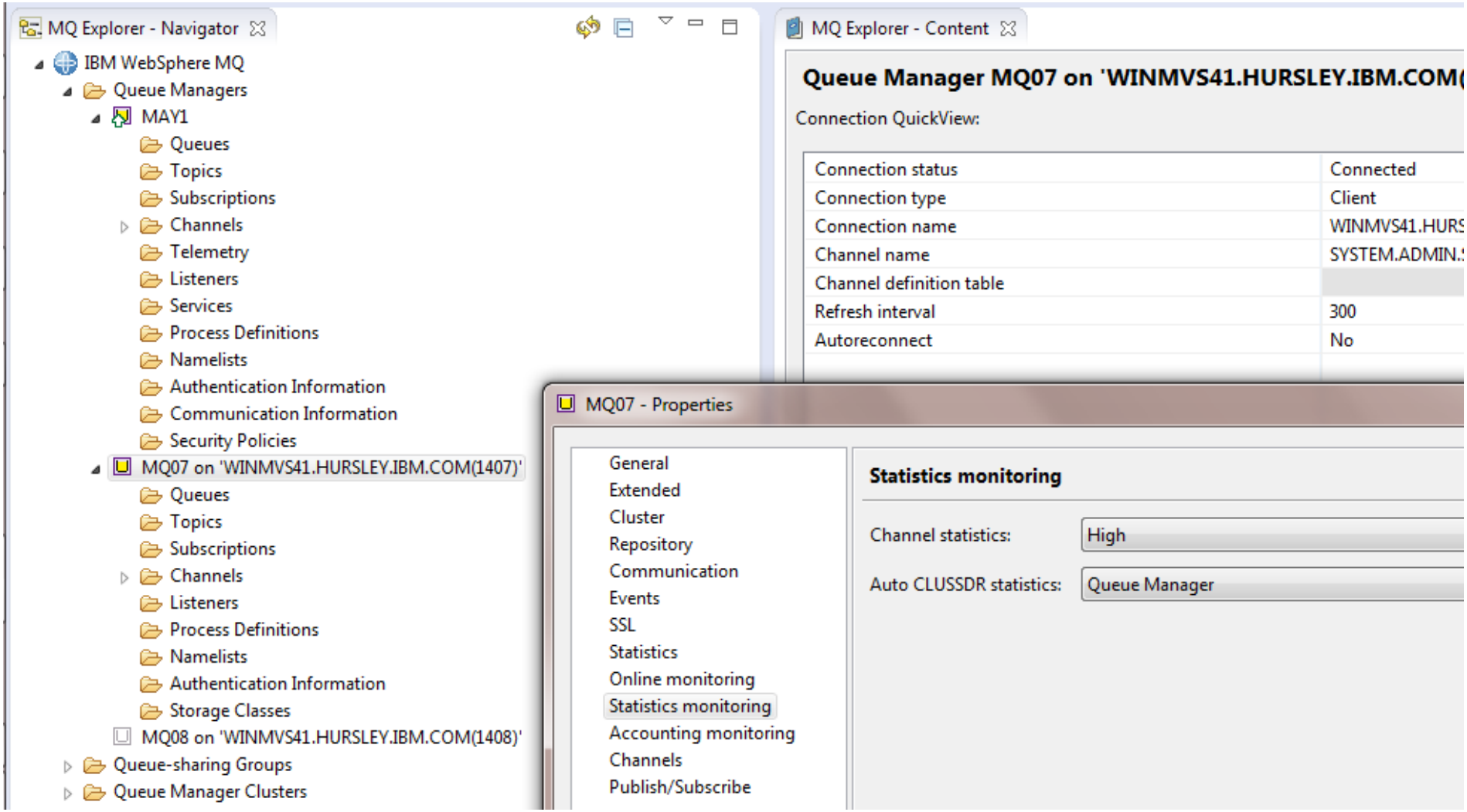
Channel Accounting for auto-defined cluster channels

- Queue Manager attribute: STATACLS
  - **QMGR (default)**
    - Channel accounting for auto-defined cluster sender channels is controlled by the setting of the Queue Manager **STATCHL** attribute
  - **LOW/MEDIUM/HIGH**
    - Have the same effect
    - Enables channel accounting for auto-defined cluster sender channels
  - **OFF**
    - Disables channel accounting for auto-defined cluster sender channels

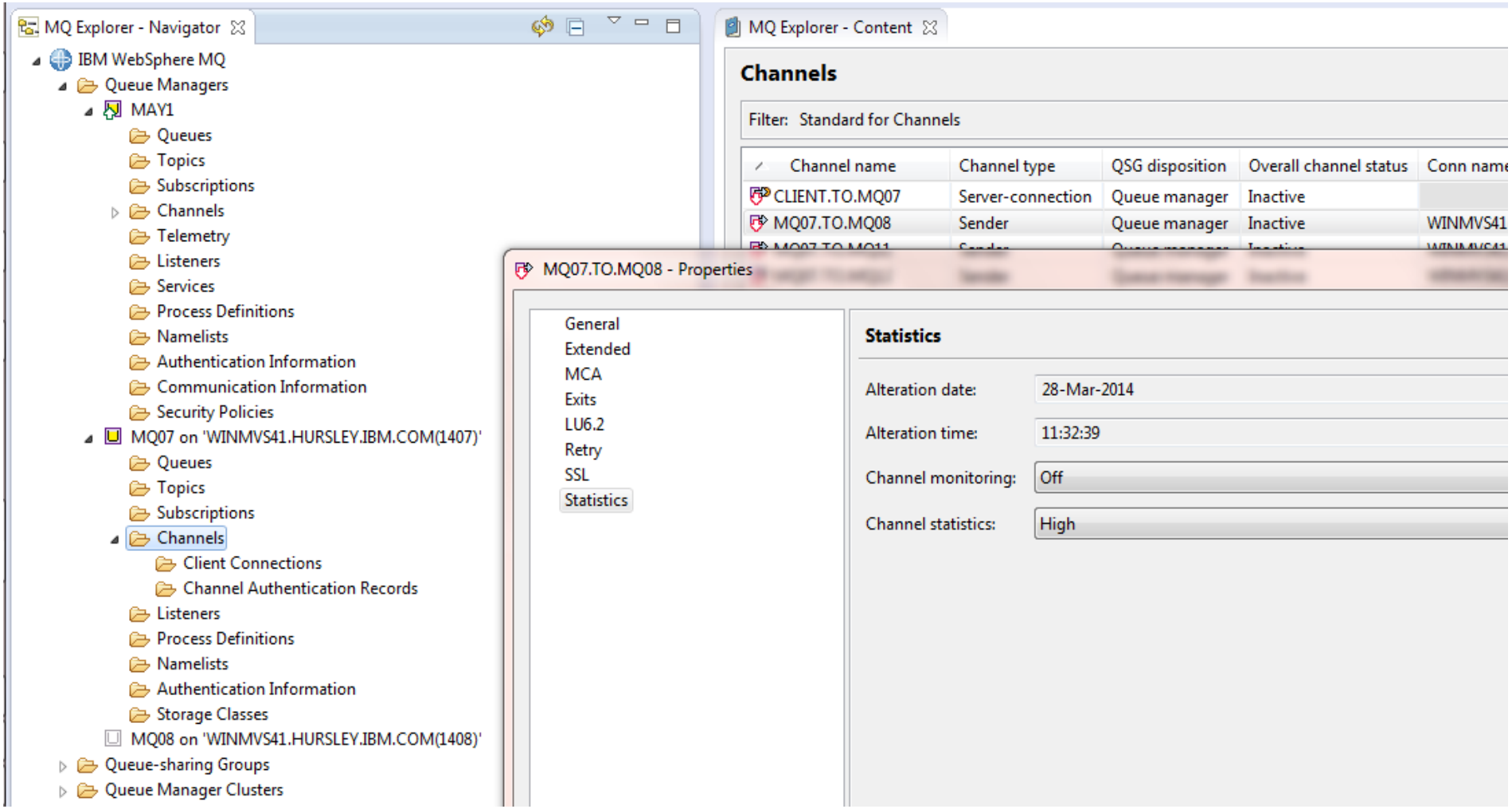
Channel Accounting for SVRCONN channels

- For SVRCONN channels
  - Set **STATCHL** at the QMGR level
- Enables it for all client connections
- But, be careful as channel accounting data is captured at:
  - Each SMF statistics interval (STATIME), and
  - When a channel ends data is captured and held until next interval
  - Hence, frequent client connects/disconnects can result in a lot of data!

MQ Explorer - Enabling Channel Statistics on QMGR



MQ Explorer - Enabling Channel Statistics on channel



New console messages for CHINIT SMF

- CSQX076I
  - Issued during CHINIT startup
  - Reports values of Queue Manager attributes STATCHL and STATACLS

```
...
22.59.05 STC13103  +CSQX074I !MQ07 CSQXGIP MONCHL=OFF, MONACLS=QMGR
22.59.05 STC13103  +CSQX075I !MQ07 CSQXGIP ADOPTMCA=ALL, ADOPTCHK=ALL
22.59.05 STC13103  +CSQX076I !MQ07 CSQXGIP STATCHL=OFF, STATACLS=QMGR
22.59.05 STC13103  +CSQX078I !MQ07 CSQXGIP IGQ=DISABLED, CHADEXIT=
22.59.05 STC13103  +CSQX079I !MQ07 CSQXGIP TRAXSTR=YES, TRAXTBL=2
...
```

New console messages for CHINIT SMF

- A new task, CSQXSMFT, is attached for CHINIT SMF
- If this task encounters an error, the following message is issued:

  CSQX124E csect-name SMF task ended abnormally, RC=retcode, reason=reason

  - An abend (with a dump) is issued

- If other errors are encountered while processing CHINIT SMF:

  CSQX122E csect-name Failed to process channel accounting, RC=retcode

  CSQX123E csect-name Failed to process channel initiator statistics, RC=retcode

  CSQX125I csect-name SMF data incomplete

Interpreting SMF data

- Details of new SMF records are documented in the InfoCenter
  - Copybooks that map the records are shipped
- SupportPac MP1B has been updated to:
  - Format new SMF data
  - **MQSMF** displays formatted records
    - Outputs information to various files (DDs)
    - Highlights potential out-of-line conditions
    - Can output comma-separated values (CSV) to import in spreadsheets
  - Expected to be made available soon
- Sample program CSQ4SMFD.C (run by CSQ4SMFJ.JCL) has also been updated
  - Formats CHINIT SMF data in a dump like fashion

MQSMF - Example JCL

```
//S1 EXEC PGM=MQSMF,REGION=0M
//STEPLIB DD DISP=SHR,DSN=user.MP1B.LOAD
//SMFIN  DD DISP=SHR,DSN=user.SMF.OUT
//SYSIN DD *
*  comments
SMF_Interval_time 30 * new value
Detail 20
QM MQ07
//MESSAGE      DD SYSOUT=*
//BUFF         DD SYSOUT=*
//BUFFCSV      DD SYSOUT=*
//CF           DD SYSOUT=*
//CFCSV        DD SYSOUT=*
//DATA         DD SYSOUT=*
//DB2          DD SYSOUT=*
//EOJ          DD SYSOUT=*
//LOCK         DD SYSOUT=*
//LOG          DD SYSOUT=*
//LOGCSV       DD SYSOUT=*
//MSGM         DD SYSOUT=*
//MSGMCSV      DD SYSOUT=*
//QCPU         DD SYSOUT=*
//SMDS         DD SYSOUT=*
//TASKSUM      DD SYSOUT=*
//TASK         DD SYSOUT=*
//TASKCSV      DD SYSOUT=*
//TOPIC        DD SYSOUT=*
//STG          DD SYSOUT=*
//QSUML        DD SYSOUT=*,DCB=(LRECL=200)
//QSUMS        DD SYSOUT=*,DCB=(LRECL=200)
//STGSUM       DD SYSOUT=*,DCB=(LRECL=200)
//SYSPRINT     DD SYSOUT=*,DCB=(LRECL=200)
//SYSOUT       DD SYSOUT=*,DCB=(RECFM=VB,LRECL=200,BLKSIZE=27998)
//SYSERR       DD SYSOUT=*
```

NEW DD cards

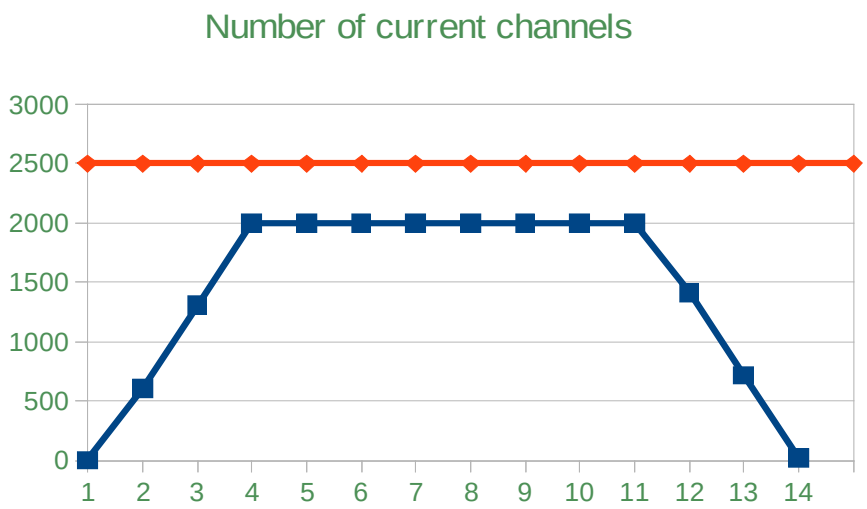
```
//CHINIT       DD SYSOUT=*
//CHINCSV      DD SYSOUT=*
//CMESSAGE     DD SYSOUT=*
//ADAP       DD SYSOUT=*
//ADAPCSV      DD SYSOUT=*
//DISP         DD SYSOUT=*
//DISPCSV      DD SYSOUT=*
//DNS          DD SYSOUT=*
//DNSCSV       DD SYSOUT=*
//SSL          DD SYSOUT=*
//SSLCSV       DD SYSOUT=*
//DCHS         DD SYSOUT=*
//DCHSCSV      DD SYSOUT=*
//DCHSSUM      DD SYSOUT=*
```

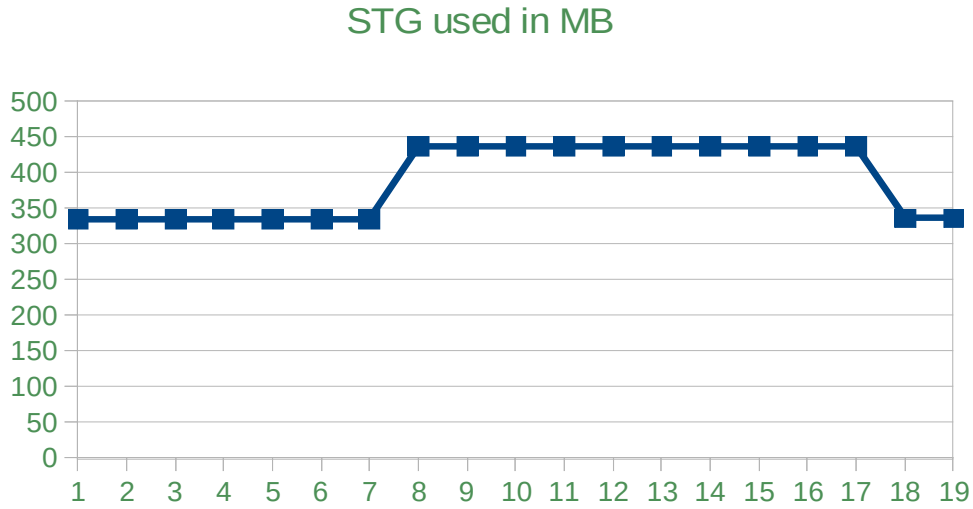
CHINIT Statistics Summary (//CHINIT)

MVCA,MQPV,2014/03/18,13:00:00,VRM:800,
From 2014/03/18,12:45:00.015222 to 2014/03/18,13:00:00.083630 duration 900.068408 seconds
Peak number used of current channels..... 4
Peak number used of active channels 0
MAXCHL. Max allowed current channels.....9999
ACTCHL. Max allowed active channels.....9999
TCPCHL. Max allowed TCP/IP channels.....9999
LU62CHL. Max allowed LU62 channels..... 200
Storage used by Chinit..... 436MB

CHINIT Statistics Summary (//CHINITCSV)

- Number of current and active channels
  - How close are you getting to the maximums?
- Channel initiator storage usage
  - 31-bit usage – currently not much in 64-bit for the channel initiator





Dispatcher Task Statistics

- Dispatcher Task Statistics are reported in the DISP and DISPCSV output of the MQSMF program
  - The DISP file is the formatted report
  - The DISPCSV is the comma separated values version of the file
- Note that on the display (next foil) some fields have been removed to save space.

Dispatcher Task Statistics

Task,	Type,	Requests,	Busy %,	CPU used, Seconds,	CPU %,	"avg CPU", uSeconds,
0,	DISP,	26587,	0.4,	0.592463,	0.1,	22,
1,	DISP,	26963,	0.3,	0.588092,	0.1,	22,
2,	DISP,	864329,	2.7,	2.545668,	0.3,	38,

Dispatcher task number

Dispatcher 2 is busy, other tasks are less busy as some channels against them have stopped

Dispatchers have ample capacity

4.9 secs of CPU time used by Dispatcher tasks

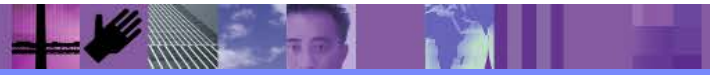
Average CPU for Dispatcher requests

Dispatcher Task Statistics - Continued

- The next section in the report shows the number of channels per dispatcher.

```
   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,   15
   3,DISP, number of channels on this TCB,    0
   4,DISP, number of channels on this TCB,    0
Summ,DISP, number of channels on all TCBs,   20
```

- As expected, dispatcher 2 shows more channels on the TCB during this interval.



Adapter Task Statistics

```
MV45,MQ20,2014/04/08,20:43:57,VRM:800,
From 2014/04/08,20:41:54.984681 to 2014/04/08,20:43:57.237939
duration 122.253258 seconds
Task,Type,Requests,Busy %,      CPU used, CPU %,"avg CPU","avg ET"
    ,    ,        ,      ,       Seconds,      , uSeconds,uSeconds
   0,ADAP,  127599,  16.5,      0.953615,  0.8,          7,       158
   1,ADAP,   46790,   7.6,      0.309678,  0.3,          7,       199
   2,ADAP,   13702,   3.2,      0.065380,  0.1,          5,       284
   3,ADAP,    2909,   0.7,      0.029541,  0.0,         10,       279
   4,ADAP,     395,   0.1,      0.003179,  0.0,          8,       392
   5,ADAP,      37,   0.0,      0.000241,  0.0,          7,       149
   6,ADAP,      10,   0.0,      0.000175,  0.0,         17,       111
   7,ADAP,       0,   0.0,      0.000000,  0.0,          0,         0
Summ,ADAP, 191442,   3.5,      1.361809,  0.1,          7,       179
```

MQI requests are processed by first free adapter so adapters lower in the list process fewer requests

Difference could indicate wait for I/O due to commit or disk read

DNS Task Statistics

```
MV45,MQ20,2014/04/08,20:41:54,VRM:800,
From 2014/04/08,20:40:07.101220 to 2014/04/08,20:41:54.984681 duration
107.883460 seconds
Task,Type,Requests,Busy %,      CPU used, CPU %,
    ,    ,        ,      ,       Seconds,      ,
   0,DNS ,       24,   0.0,     0.007980,  0.0,
Summ,DNS ,       24,   0.0,     0.007980,  0.0,



"avg CPU","avg ET",longest ,date      ,time
 uSeconds,uSeconds,uSeconds,           ,
      332,     1031,    24284,2014/04/08,20:41:49.573730
 Summ,332,     1031,    24284,2014/04/08,20:41:49.573730
```

Only 1 DNS task, not busy

Longest DNS resolution request

SSL Task Statistics

```
MV45,SS09,2014/04/10,23:22:24,VRM:800,
From 2014/04/10,22:53:26.883960 to 2014/04/10,23:22:24.204176 duration
1737.320215 seconds
Task,Type,Requests,Busy %,      CPU used, CPU %,"avg CPU","avg ET"
    ,    ,        ,      ,       Seconds,      , uSeconds,uSeconds
   0,SSL ,  109843,   0.3,      0.594580,  0.0,          5,      42,
   1,SSL ,  130180,   0.3,      0.713966,  0.0,          5,      41,
   2,SSL ,  117544,   0.3,      0.703146,  0.0,          6,      42,
   3,SSL ,  145944,   0.4,      0.830535,  0.0,          6,      43,
   4,SSL ,  123825,   0.3,      0.679656,  0.0,          5,      43,

longest ,date      ,time
uSeconds,          ,
  229638,2014/04/10,22:54:34.264949
  255082,2014/04/10,22:54:54.302855
  230501,2014/04/10,22:54:43.958105
  280241,2014/04/10,22:54:53.499979
  361212,2014/04/10,22:54:53.599940
```

Low average CPU time with higher elapsed time may be due to cryptographic off-load to card

Longest busy times due to lots of channels starting together

Channel Accounting Data – Sender Channel Part 1

127.0.0.1	MQ89_1	Connection name	127.0.0.1
127.0.0.1	MQ89_1	Remote qmgr/app	MQ89
127.0.0.1	MQ89_1	Channel disp	PRIVATE
127.0.0.1	MQ89_1	Channel type	SENDER
127.0.0.1	MQ89_1	Channel status	RUNNING
127.0.0.1	MQ89_1	Channel STATCHL	HIGH
127.0.0.1	MQ89_1	Channel started date & time	2014/04/08,19:41:48
127.0.0.1	MQ89_1	Channel stopped time	
127.0.0.1	MQ89_1	Channel status collect time	2014/04/08,19:43:57
127.0.0.1	MQ89_1	Last msg time	2014/04/08,19:43:52
127.0.0.1	MQ89_1	Active for	122 seconds
127.0.0.1	MQ89_1	Batch size	50
127.0.0.1	MQ89_1	Messages/batch	38.9
127.0.0.1	MQ89_1	Number of messages	2,998
127.0.0.1	MQ89_1	Number of persistent messages	1,506
127.0.0.1	MQ89_1	Number of batches	77
127.0.0.1	MQ89_1	Number of full batches	42
127.0.0.1	MQ89_1	Number of partial batches	35
127.0.0.1	MQ89_1	Buffers sent	3,319
127.0.0.1	MQ89_1	Buffers received	109
127.0.0.1	MQ89_1	Xmitq empty count	13

Channel Accounting Data – Sender Channel Part 2

127.0.0.1	MQ89_1	Message data	17,198,653	16 MB
127.0.0.1	MQ89_1	Persistent message data	4,251,780	4 MB
127.0.0.1	MQ89_1	Non persistent message data	12,946,873	12 MB
127.0.0.1	MQ89_1	Total bytes sent	17,200,221	16 MB
127.0.0.1	MQ89_1	Total bytes received	3,052	2 KB
127.0.0.1	MQ89_1	Bytes received/Batch	39	39 B
127.0.0.1	MQ89_1	Bytes sent/Batch	223,379	218 KB
127.0.0.1	MQ89_1	Batches/Second	0	
127.0.0.1	MQ89_1	Bytes received/message	1	1 B
127.0.0.1	MQ89_1	Bytes sent/message	5,737	5 KB
127.0.0.1	MQ89_1	Bytes received/second	25	25 B/sec
127.0.0.1	MQ89_1	Bytes sent/second	140,985	137 KB/sec
127.0.0.1	MQ89_1	Compression rate	0	
127.0.0.1	MQ89_1	Exit time average	0	uSec
127.0.0.1	MQ89_1	DNS resolution time	0	uSec
127.0.0.1	MQ89_1	Net time average	312	uSec
127.0.0.1	MQ89_1	Net time min	43	uSec
127.0.0.1	MQ89_1	Net time max	4,998	uSec
127.0.0.1	MQ89_1	Net time max date&time	2014/04/08,19:43:52	

Channel Accounting Summary

```
MVS,MQ,date,time,VRM,channelType,count,Persistent,NonPersistent,'P/Sec','NP/S
ec'

MVCA,MQPV,2014/06/30,11:30:00,VRM:800,RECEIVER,2,75720,0,3786,0

MVCA,MQPV,2014/06/30,11:30:00,VRM:800,total,2,75720,0,3786,0

MVCA,MQPH,2014/06/30,11:30:00,VRM:800,SENDER,2,75720,0,2611,0

MVCA,MQPH,2014/06/30,11:30:00,VRM:800,total,2,75720,0,2611,0

MVCA,MQPH,2014/06/30,11:34:04,VRM:800,SENDER,23,86237508,0,559983,0

MVCA,MQPH,2014/06/30,11:34:04,VRM:800,total,23,86237508,0,559983,0
```

Sender channel activity
Shown over 2 intervals

These are the number of persistent and nonpersistent messages sent during the intervals. In this example, all were persistent.

CHINIT Messages

- Some Examples:

MQCHIN001W The high water mark of the number of active channels >50 % of max channels

MQCHIN007I Dispatcher task is nn% busy on average

MQCHIN008I Adapter task is nn% busy on average

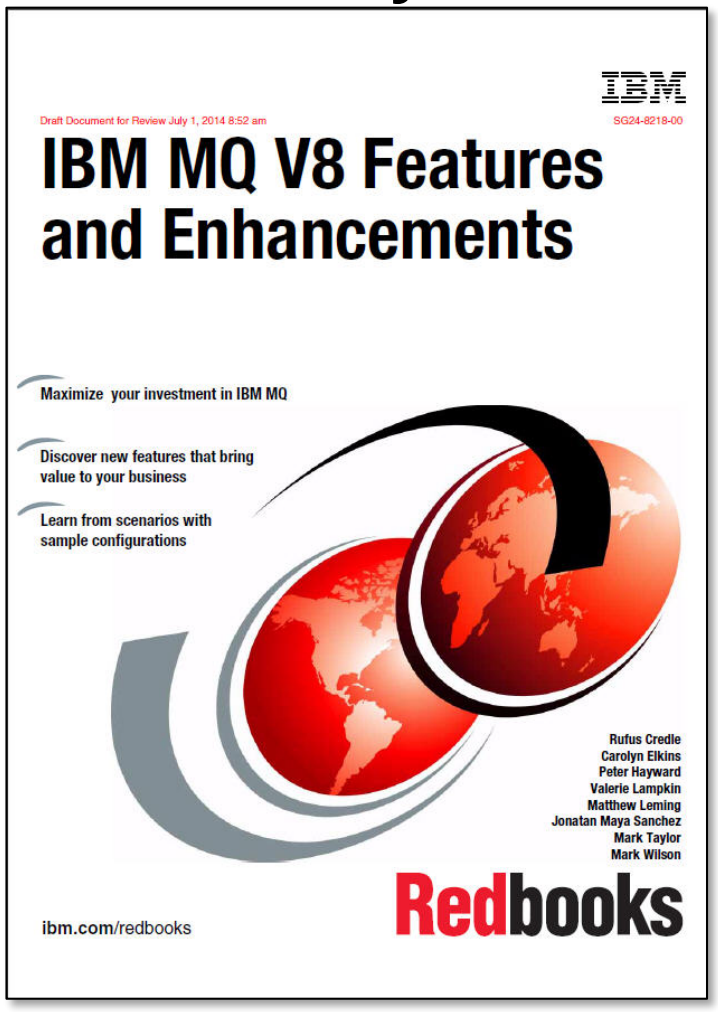
MQCHIN009I SSL task is nn% busy on average

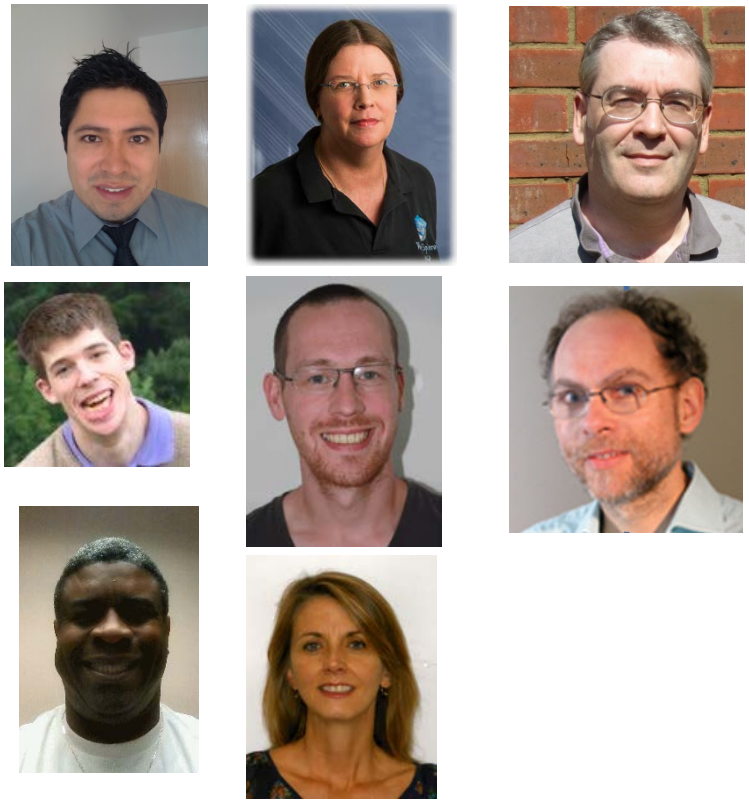
- There are more examples in the documentation for SupportPac MP1B

Overhead for statistics and accounting

- An MQ V8 Channel Initiator allocates approximately 190MB of above the bar virtual storage for Channel Initiator Statistics and Channel Accounting Data, regardless of whether CLASS(4) trace is enabled.
- Recommend Channel Initiator is allowed access to a minimum of 256MB of virtual storage i.e. set MEMLIMIT=256M if CLASS(4) trace is enabled.
- Release specific Performance Support Pack MP1J (due out soon)
  - Indicates **1-2% CPU overhead** for collecting CHINIT statistics and Channel accounting data

And … already available





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