

## Session : 17895

# Using and Abusing New Hardware and the New V8 Features

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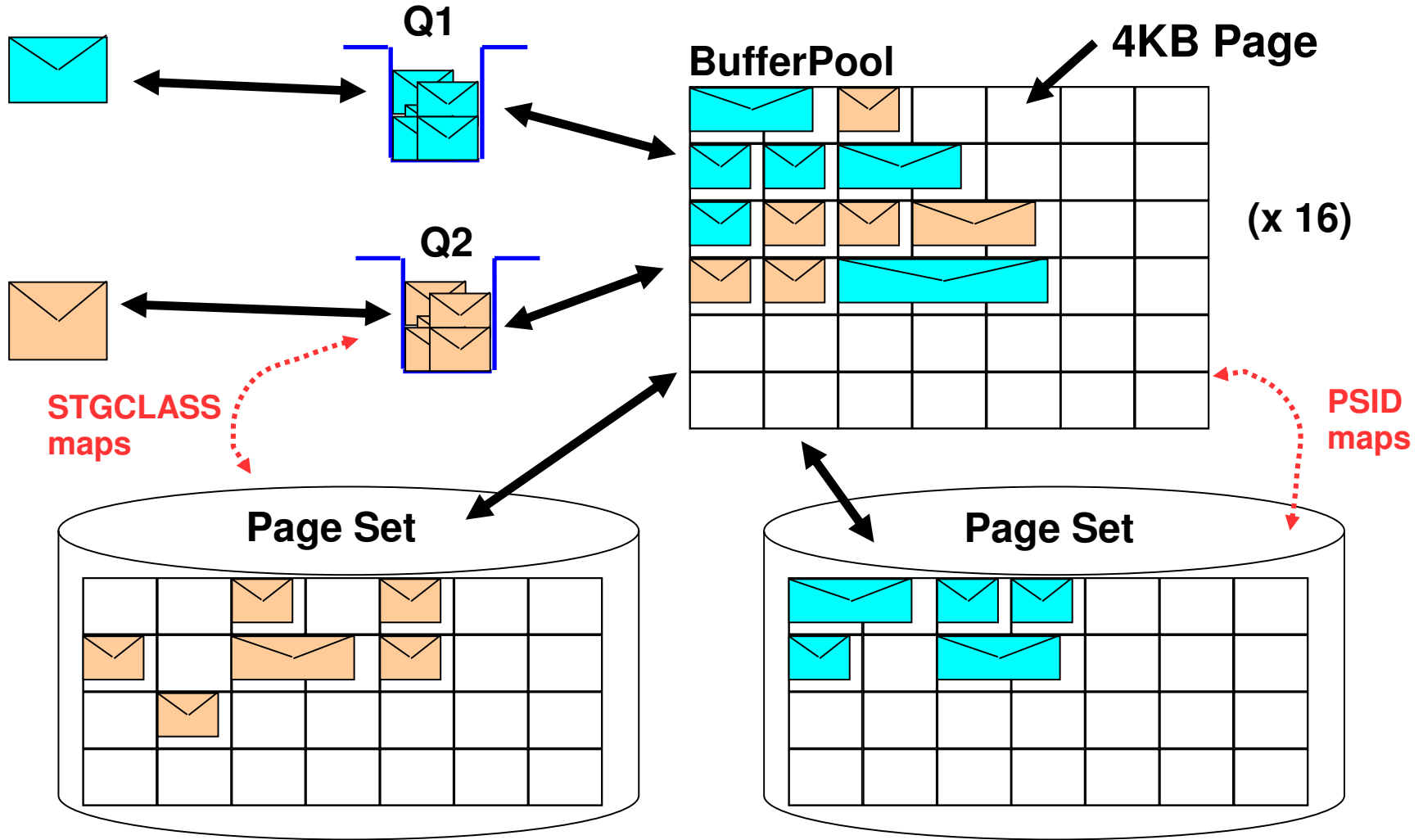
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# Agenda

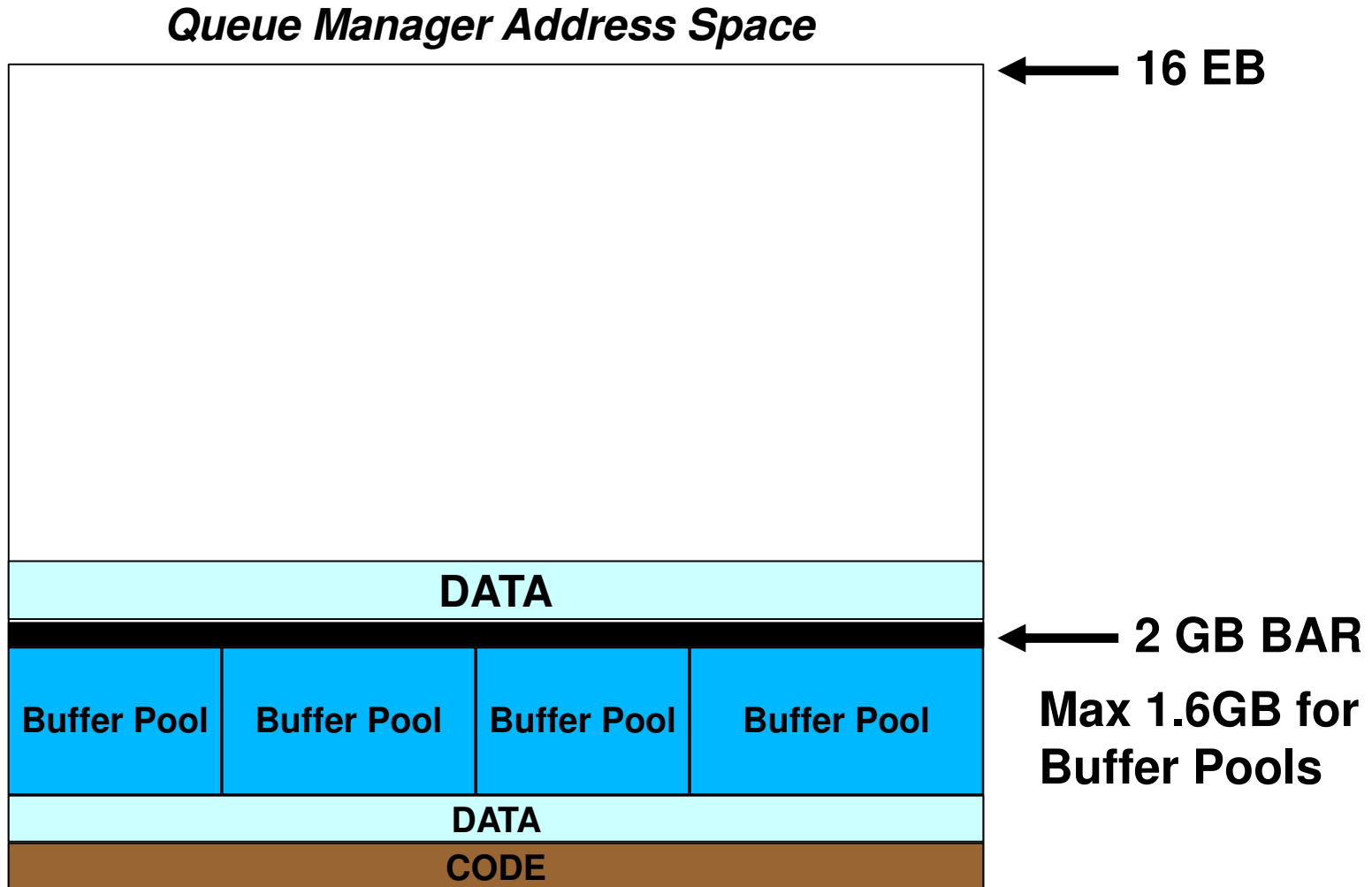
- **64 Bit Buffer Pools**
- **8 Byte Log Relative Byte Address (RBA)**
- **Channel Initiator (CHINIT) Statistics and Channel Accounting Data**
- **Storage Class Memory (SCM) (Flash Memory)**
- **Other Enhancements**

# 64 Bit Buffer Pools

# Buffer Pools: What we have today - 1



# Buffer Pools: What we have today - 2



# Buffer Pools: The Problems

- **Not much space below the bar for buffer pools**
  - Maximum 1.6GB, depending on common storage usage
- **Put/Get to/from:**
  - Buffer pool = 'memory' speed (fast)
  - Page set = 'disk' speed (slow)
- **With less/small buffer pools, can spend a lot of time:**
  - Putting pages from buffer pool into page set (to free buffers)
  - Getting pages from page set into buffer pool (to satisfy get requests)
  - This is detrimental to performance
- **A maximum of 16 buffer pools**
  - But, up to 100 page sets .. hence page sets must share buffer pools
- **System programmers can spend a lot of time tuning:**
  - Buffer pool sizes
  - Queue, buffer pool, and page set mappings

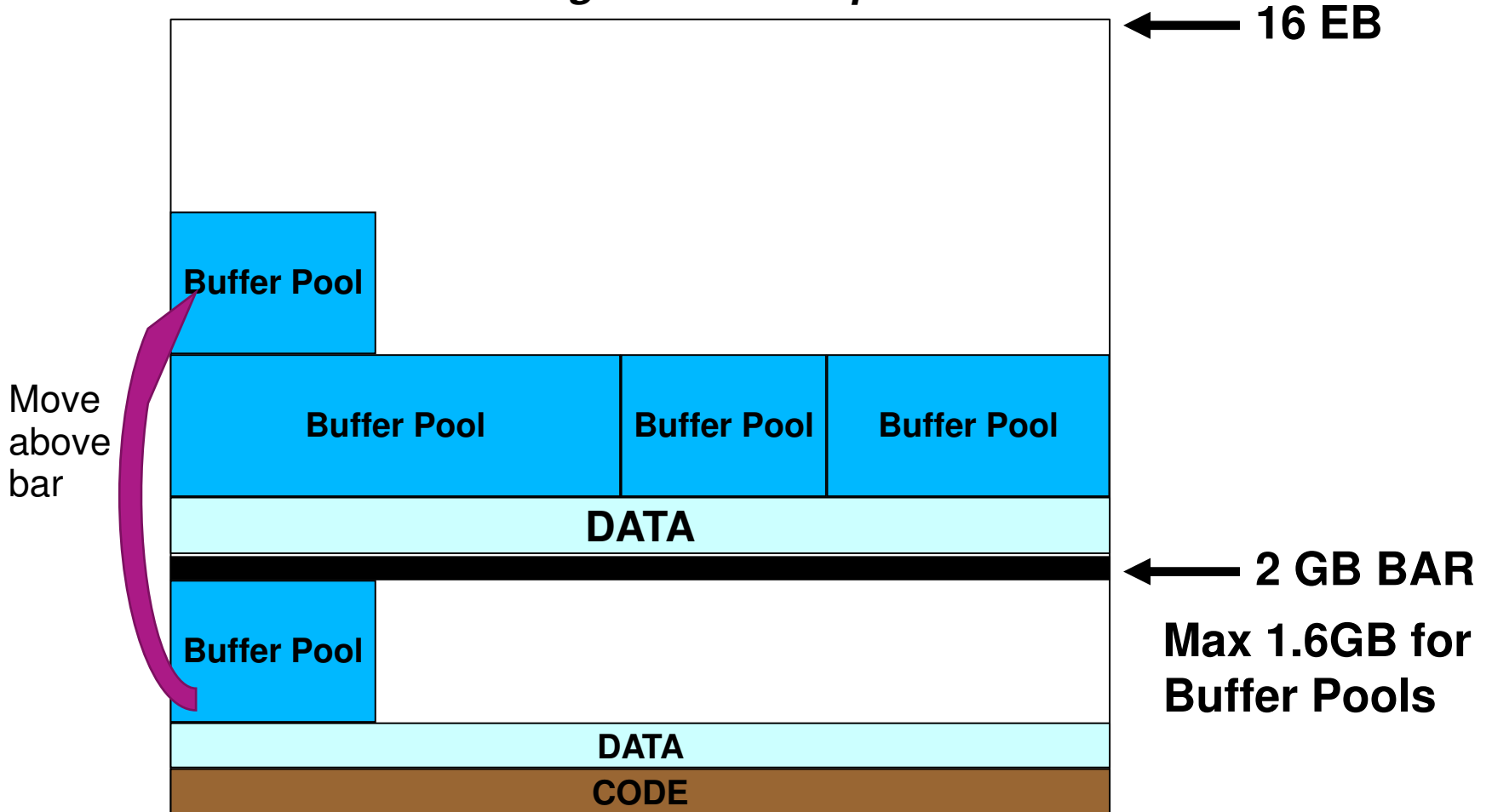
# 64 Bit Buffer Pools: The Solution

- **Buffer pools above the bar.**
  - Buffer pools can (theoretically) make use of up to 16 EB of storage
- **More buffer pools**
  - Up to 100 buffer pools
  - Can have 1-1 mapping between page set and buffer pool
- **More buffers per pool**
  - Above the bar
    - Up to 999,999,999 4K buffers per pool
  - Below the bar
    - Up to 500,000 4K buffers per pool



# Buffer Pools: Using 64 bit storage

*Queue Manager Address Space*



# 64 Bit Buffer Pools: What has changed?

```
DEFINE BUFFPOOL(<id>
    BUFFERS(<integer>
    PAGECLAS(4KB/FIXED4KB)
    LOCATION(BELOW/ABOVE)
```

- BUFFPOOL id
  - 0 to 99
- BUFFERS integer
  - Up to 500,000 if LOCATION(BELOW)
  - Up to 999,999,999 if LOCATION(ABOVE)
- PAGECLAS can be:
  - 4KB, if LOCATION(BELOW)
  - FIXED4KB, if LOCATION(ABOVE)
    - permanent backing by real storage for life of Queue Manager
    - no need to programmatically page fix/unfix when doing I/O
    - better performance
    - ensure you have enough real storage available
- LOCATION
  - BELOW – buffer pool is below the bar (default)
  - ABOVE – buffer pool is above the bar

# 64 Bit Buffer Pools: Migration

- To use this function `OPMODE(NEWFUNC,800)` must be set
  - Otherwise behaviour is same as in version 7
  - Though, `LOCATION(BELOW)` is valid regardless of `OPMODE`

# 64 Bit Buffer Pools: Configuration

- **CSQINP1**
  - DEFINE BUFFPOOL(22) LOCATION(ABOVE) BUFFERS(1024000) REPLACE
  - DEFINE BUFFPOOL(88) BUFFERS(12000) REPLACE
- **CSQINP1 or dynamically**
  - DEFINE PSID(22) BUFFPOOL(22)
- **CSQINP2 or dynamically**
  - ALTER BUFFPOOL(88) LOC(ABOVE)

```
CSQP024I !MQ21 Request initiated for buffer pool 88
CSQ9022I !MQ21 CSQPALTB ' ALTER BUFFPOOL' NORMAL COMPLETION
CSQP023I !MQ21 Request completed for buffer pool 88, now has 12000 buffers
CSQP054I !MQ21 Buffer pool 88 is now located above the bar
```

# 64 Bit Buffer Pools: Migration

- **Some messages have changed regardless of the value of OPMODE**
  - Space has been added to allow for a larger number for buffers
  - PAGE CLASS and LOCATION can be seen on DISPLAY USAGE

```
CSQI010I !MQ21 Page set usage ...
<REMOVED>
End of page set report
CSQI065I !MQ21 Buffer pool attributes ...
  Buffer    Available    Stealable    Stealable    Page    Location
  pool     buffers     buffers     percentage   class
  -
    0       1024       1000
  -
    22     1024000  234561
  -
    88     12000    1200
  -
  End of buffer pool attributes
```

Single Requester per Queue:

Test	Transaction Rate ( per second )	Transaction Cost (cpu microseconds)	LPAR %Busy	Channel Path %Busy
31-bit	232762	35.92	54%	56%
64-bit	235217	37.48	57%	57.4%
64-bit (enough buffers)	324213	38.12	83%	0.07%
64-bit (4GB per buffer pool)	341412	38.23	83%	0.08%

2 Requesters per Queue:

Test	Transaction Rate ( per second )	Transaction Cost (cpu microseconds)	LPAR %Busy	Channel Path %Busy
31-bit	149140	42.3	42%	75.4%
64-bit	145623	44.84	43.5%	75.9%
64-bit (enough buffers)	384062	40.65	99.59%	0.08%
64-bit (4GB per buffer pool)	370546	52.15	99.69%	0.07%

- 16 Central Processor LPAR
- Each transaction puts and gets a random message from a pre loaded queue.
- Second test requires a doubling in buffer pool size

# 8 Byte Log RBA

# 6 byte log RBA: The Problem

- **MQ for z/OS V7.1 (or earlier):**
  - Implements 6 byte Log RBA (Relative Byte Address)
  - Gives an RBA range of **0 to x'FFFFFFFFFFFF'** (= **255TB**)
  - Some customers reach this limit in 12 to 18 months
  - At 100MB/sec, log would be full in 1 month



# Warning Messages and abend

- **V7.1 Queue Managers do issue warning messages as log RBA gets high:**

**CSQI045I** when log RBA is x'700000000000', x'7100..', x'7200..' and x'7300..'  
**CSQI046E** when log RBA is x'740000000000', x'7500..', x'7600..' and x'7700..'  
**CSQI047E** when log RBA is x'780000000000', x'7900..', x'nn00..' and x'FF00..'

- **APAR PM48299** (WebSphere MQ V7.0.1 and above) added messages:

**CSQJ032E** when log RBA is higher than x'F80000000000'  
**CSQJ031D** to confirm restart even though log RBA has passed x'FF8000000000'

- To prevent loss of data, Queue Managers with **APAR PM48299** applied:

Terminate with abend 00D10257 when log RBA reaches x'FFF800000000'

# 6 byte log RBA: The Problem

- **If end of the Log RBA range is reached:**
  - You get an unplanned outage
    - Queue Manager terminates
    - Requires a “cold” start – a disruptive outage !
    - Potential for loss of persistent data
  
- **To avoid an unplanned outage, at regular planned intervals:**
  - Quiesce the Queue Manager
  - Recreate all QMGR logs and BSDS
  - Run CSQUTIL RESETPAGE
    - RESETs the LOG RBA in header of each page
  - Restart the Queue Manager
  - Some customers are happy to do this, but others are not !

# 8 byte log RBA: The Solution

- **Implement an 8 byte (64-bit) log RBA**

- Gives an RBA range of **0 to x'FFFFFFFFFFFFFFFF'**
  - Upper limit on logical log is now 64K times bigger
  - At 100MB/sec, log would be full in 5000+ years!!
  
- Format of BSDS and log records has changed to accommodate 8 byte RBAs
- URIDs are now 8 bytes long
- Utilities or applications that read the BSDS and Logs have been updated
- Console messages that contain the log RBA or URID have been updated
- Queue Manager uses 6 byte log RBAs until 8 byte log RBAs are enabled

# Enabling 8 byte log RBAs

## ▪ Procedure to enable 8 byte log RBAs:

- Stop the QMgr cleanly
- Enable OPMODE(NEWFUNC,800)
  - In a QSG, new function mode is entered once all QMgrs have been started at NEWFUNC
- Define new BSDSs in V1 format (these will be used to create the V2 format BSDSs)
  - V2 format BSDS contains more data than V1 format BSDS
  - Recommended space allocation is now RECORDS(850 60)
  - CSQ4BSDS sample job has been updated with this value
- Run BSDS conversion utility (CSQJUCNV) to convert the V1 BSDS to V2
  - Creates a copy of a V1 format BSDS in V2 format
  - Checks all QSG QMgrs are running OPMODE(NEWFUNC,800)
- Rename BSDSs so that V2 BSDSs are used during next restart of QMgr
- Restart the QMgr

# BSDS conversion utility (CSQJUCNV)

## ▪ Parameters

- **NOQSG** (specify for a stand alone queue manager)
  - No OPMODE checks performed
- **INQSG, *qsgname, dsgrname, db2ssid*** (specify for a queue manager in a QSG)
  - Utility checks that all QMgrs in the QSG have been started at OPMODE(NEWFUNC,800) before allowing conversion to proceed

## ▪ Example JCL:

```
//CSQ4BCNV JOB
//CONVERT EXEC PGM=CSQJUCNV,REGION=32M,PARM=(' INQSG ,SQ13 ,DB2 ,DB4A ' )
//STEPLIB DD DSN=ANTZ.MQ.V000.CUR.SCSQAUTH,DISP=SHR
// DD DSN=ANTZ.MQ.V000.CUR.SCSQANLE,DISP=SHR
// DD DSN=SYS2.DB2.V10.SDSNLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DSN=VICY.MQ10.BSDS01,DISP=SHR
//SYSUT2 DD DSN=VICY.MQ10.BSDS02,DISP=SHR
//SYSUT3 DD DSN=VICY.MQ10.NEW.BSDS01,DISP=OLD
//SYSUT4 DD DSN=VICY.MQ10.NEW.BSDS02,DISP=OLD
```

# Externals – BSDS conversion utility (CSQJUCNV)

- Typical output

```
CSQJ445I CSQJUCNV BSDS CONVERSION UTILITY - 2014-06-04  
15:02:48  
CSQU526I CSQJUCNV Connected to DB2 DB4A  
CSQU528I CSQJUCNV Disconnected from DB2 DB4A  
CSQJ200I CSQJUCNV UTILITY PROCESSING COMPLETED SUCCESSFULLY
```

# New message CSQJ034I at QMgr start

- Issued during QMgr startup
- Indicates whether QMgr is running in 6 or 8 byte RBA mode

– **0000FFFFFFFFFFFF** – 6 byte RBA mode

```
11.25.05 STC05120 CSQJ127I !MQ4E SYSTEM TIME STAMP FOR BSDS=2014-04-02 11:19:18.70
11.25.05 STC05120 CSQJ001I !MQ4E CURRENT COPY 1 ACTIVE LOG DATA SET IS 280
      280          DSNNAME=VICY.MQ4E.LOGCOPY1.DS04, STARTRBA=0000000038F4000
      280          ENDRBA=0000000003B0FFFF
11.25.05 STC05120 CSQJ099I !MQ4E LOG RECORDING TO COMMENCE WITH 281
      281          STARTRBA=00000000039AF000
11.25.05 STC05120 CSQJ034I !MQ4E CSQJW007 END OF LOG RBA RANGE IS 0000FFFFFFFFFFFF
```

– **FFFFFFFFFFFFFFFF** – 8 byte RBA mode

```
22.57.53 STC13100 CSQJ001I !MQ08 CURRENT COPY 2 ACTIVE LOG DATA SET IS 810
      810          DSNNAME=VICY.MQ08.LOGCOPY2.DS01, STARTRBA=000000002760000
      810          ENDRBA=0000000003B0FFFF
22.57.53 STC13100 CSQJ099I !MQ08 LOG RECORDING TO COMMENCE WITH 811
      811          STARTRBA=0000000002AA8000
22.57.53 STC13100 CSQJ034I !MQ08 CSQJW007 END OF LOG RBA RANGE IS FFFFFFFFFFFFFFFF
```

# Warning message thresholds in V8

- The messages issued remain the same:

CSQI045I, CSQI046E, CSQI047E, CSQJ031D and CSQJ032E

- The thresholds at which the qmgr starts to issue warning messages are:

– With 8 byte RBAs disabled:

```
HIGH RBA ADVICE      '0000F00000000000'x
HIGH RBA WARNING     '0000F80000000000'x
HIGH RBA CRITICAL    '0000FF8000000000'x
HIGH RBA ABEND       '0000FFF800000000'x
```

- The thresholds for issuing the CSQI messages have been increased to match those for the CSQJ messages:

– With 8 byte RBAs enabled:

```
HIGH RBA8 ADVICE     'FFFF800000000000'x
HIGH RBA8 WARNING    'FFFFC00000000000'x
HIGH RBA8 CRITICAL   'FFFFFC0000000000'x
HIGH RBA8 ABEND      'FFFFF80000000000'x
```

- Once the threshold is exceeded, the frequency at which messages are issued remain the same



# Updates to existing messages

- **URIDs and RBAs in command outputs and console messages are 8 bytes:**

- Output of the DISPLAY CONN command looks like:

```
CSQM201I !MQ1P CSQMDRTC DIS CONN DETAILS
CONN(CC15CF64B98D0001) EXTCONN(C3E2D8C3D4D8F1D740404040404040)
TYPE(CONN)
QMURID(0000000000078599)
END CONN DETAILS
```

- Console Message **CSQE130I** (for CF structure recovery) looks like:

```
CSQE130I !MQ1P CSQERCF2 Recovery of structure
APPLICATION1 started, using MQ1P log range from RBA=00000000007B663 to
RBA=00000000007B6AB
```

# Print log map (BSDS) utility (CSQJU004)

- Changed to always print 8 byte log RBA values
- Now displays BSDS version

```
LOG MAP OF BSDS DATA SET COPY 1, DSN=VICY.MQ1P.BSDS01
  BSDS VERSION           - 1
  SYSTEM TIMESTAMP      - 2014-05-23  17:47:14.85
  UTILITY TIMESTAMP    - 2014-05-23  13:40:09.56
  HIGHEST RBA WRITTEN   0000000000090120  2014-05-23  17:47:14.5
  HIGHEST RBA OFFLOADED 0000000000000000
```

# Change log inventory utility (CSQJU003)

- Now accepts RBA values up to 16 characters long in parameters...

```
//CSQJU003 EXEC PGM=CSQJU003,REGION=0M
//SYSUT1 DD DISP=SHR,DSN=VICY.MQ10.BSDS01
//SYSUT2 DD DISP=SHR,DSN=VICY.MQ10.BSDS02
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
CHECKPT STARTRBA=00ABCD0000040000,ENDRBA=00ABCD0000045000,
TIME=20140201650000
```

- But, a value greater than 0000FFFFFFFFFFFF results in error for V1 BSDS:

```
CSQJ443I CSQJU003 CHANGE LOG INVENTORY UTILITY - 2014-06-03 17:20:16
CHECKPT STARTRBA=00ABCD0000040000,ENDRBA=00ABCD0000045000,
TIME=20140201650000
CSQJ456E STARTRBA PARAMETER ARGUMENT EXCEEDS MAXIMUM VALUE FOR BSDS VERSION
1
CSQJ456E ENDRBA PARAMETER ARGUMENT EXCEEDS MAXIMUM VALUE FOR BSDS VERSION 1
CSQJ221I PREVIOUS ERROR CAUSED CHECKPT OPERATION TO BE BYPASSED
CSQJ201I CSQJU003 UTILITY PROCESSING WAS UNSUCCESSFUL
```

# Changes to log print utility (CSQ1LOGP)

- CSQ1LOGP has been updated to handle 8 byte RBAs and URIDs
  - RBA of log records, and URIDs in log records, displayed in 8 byte format
- LRSN value now formatted as timestamp in log record header information

8 byte Log RBA

```
000000000276469D URID(0000000002764000) RM(DATA) LRID(00000000.00003001) TYPE( COMPENSATING LOG RECORD UNDO REDO )
SUBTYPE( DECREMENT BY )
LRSN(CCE1B6A55ECE) 16:07:43.982816 20140320
**** 00400034 0601000F C9880000 00000276 40000000 00000276 46698024 CCE1B6A5 * Ih v
**** 5ECE0002 00000000 027644C4 *; D
0000 00000000 00003001 00040416 00000001 00000001 *
```

```
00000000027646DD URID(0000000002764000) RM(DATA) TYPE( COMPENSATING LOG RECORD UNDO REDO )
SUBTYPE( NULL )
LRSN(CCE1B6A55ECF) 16:07:43.982832 20140320
**** 00640040 06010001 C9880000 00000276 40000000 00000276 469D8024 CCE1B6A5 * Ih v
**** 5ECF0002 00000000 02764468 *;
0000 00000000 00003001 E2F8E2E3 C5D44BC3 D3E4E2E3 C5D94BC3 D6D4D4C1 D5C44BD8 * SYSTEM.CLUSTER.COMMAND.Q
0020 E4C5E4C5 40404040 40404040 40404040 40404040 40404040 *UEUE
```

8 byte URID

Formatted LRSN

# Changes to log print utility (CSQ1LOGP)

- **New message CSQ1219I issued at the start of the output and whenever the format of the log record changes to indicate:**
  - Whether the log records are in 6 or 8 byte RBA format
  - Whether the qmgr is in a QSG

```
CSQ1219I LOG RECORDS CONTAIN 6 BYTE RBA - QSG(NO)  
CSQ1219I LOG RECORDS CONTAIN 6 BYTE RBA - QSG(YES)  
CSQ1219I LOG RECORDS CONTAIN 8 BYTE RBA - QSG(NO)  
CSQ1219I LOG RECORDS CONTAIN 8 BYTE RBA - QSG(YES)
```

# Backwards Migration

- Backwards migration is NOT possible once NEWFUNC is enabled
- Cannot start a QMgr previously run in 8 byte RBA mode, in 6 byte RBA mode

00D92023 – 8 byte RBA log record read during restart in 6 byte log RBA mode

# Channel Initiator (CHINIT) SMF Data

# Chinit SMF: The Problem

- **Prior to MQ V8 no SMF data for:**
  - CHINIT address space
  - Channel activity
- **Many customers have had to create their own ‘monitoring’ jobs**
  - With periodic **DISPLAY CHSTATUS** commands
- **Difficult to:**
  - Manage historical data
  - Investigate performance issues
  - Perform capacity planning



# CHINIT SMF: The Solution

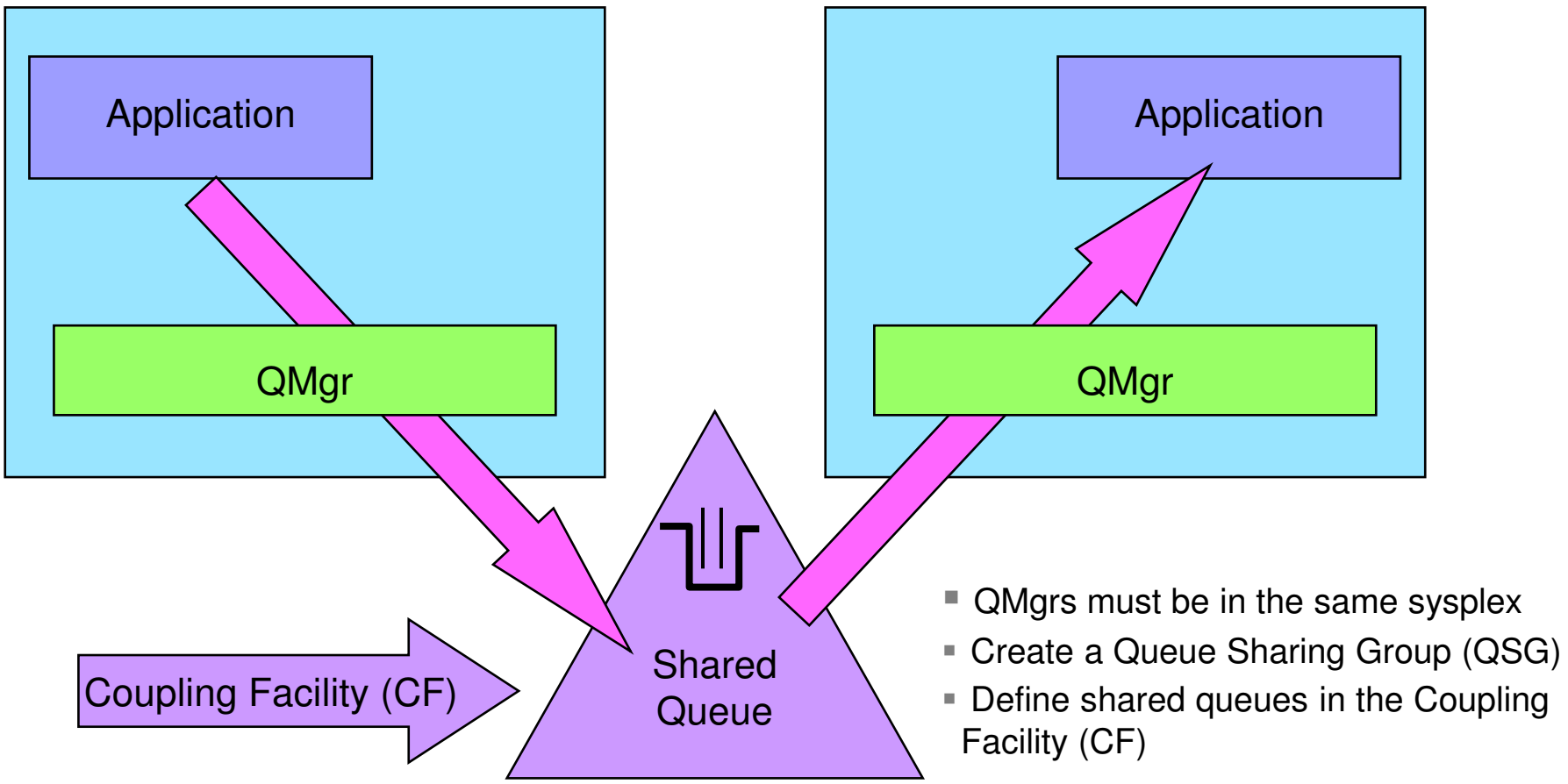
- **New SMF data for CHINIT address space:**
  - **Channel Initiator Statistics** (SMF 115, SubType 231)
    - High level view of activity in CHINIT
      - Number of channels and TCB usage
      - Dispatchers, Adapters, DNS, SSL
      - Do I have spare capacity ?
      - Do I need more or less dispatchers/adapters ?
  - **Channel Accounting Data** (SMF 116, SubType 10)
    - Detailed view of individual channels
      - What work have channels been doing ?
      - Which channels are being heavily utilised ?
    - Controlled by STATCHL attribute on QMgr and Channel definition

# Chinit SMF: The Solution

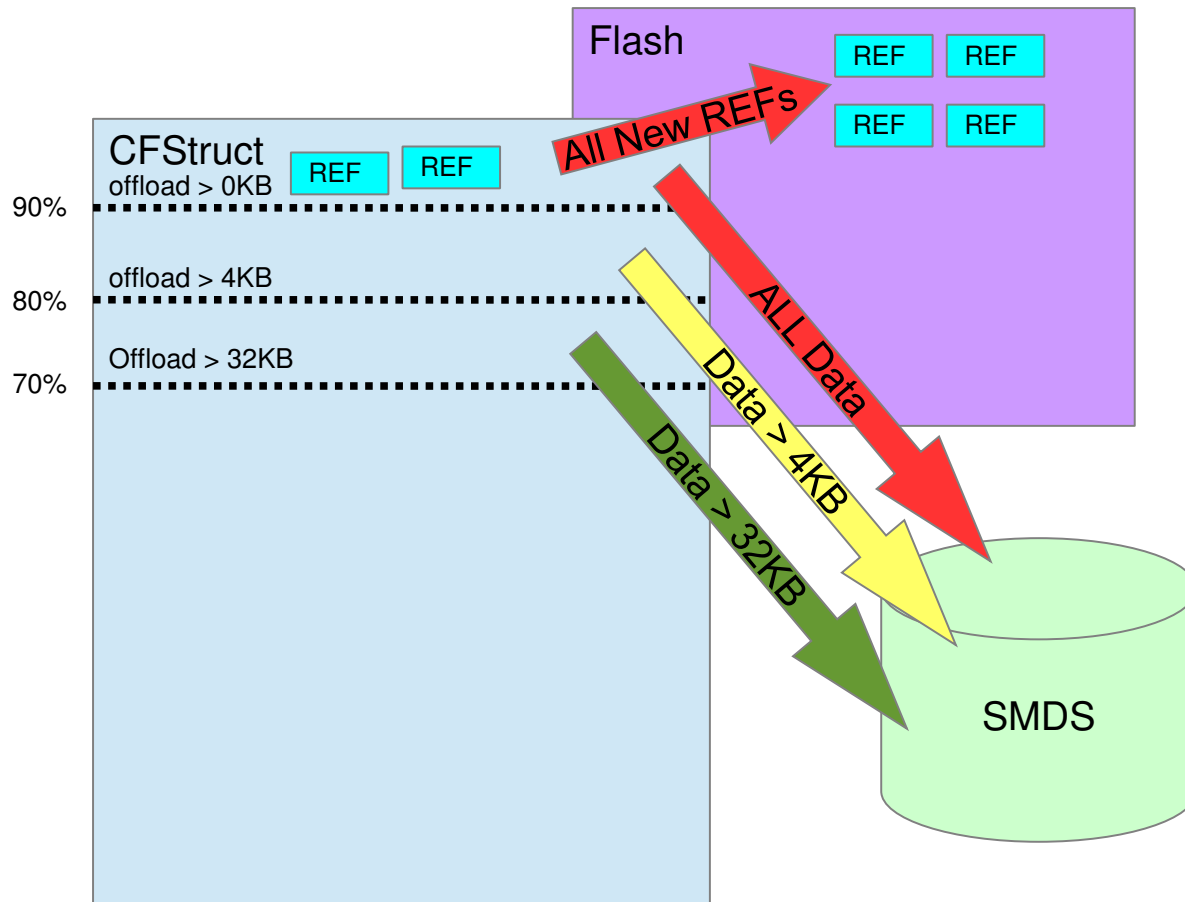
- **Useful for**
  - Monitoring
  - Capacity planning
  - Tuning
- **Separate controls from queue manager SMF allows 'opt in'**
- **Supportpac MP1B updated to:**
  - Format new data

# **Storage Class Memory (SCM) (Flash)**

# Shared Queues



# CF Flash: Scenarios Planned Emergency Storage



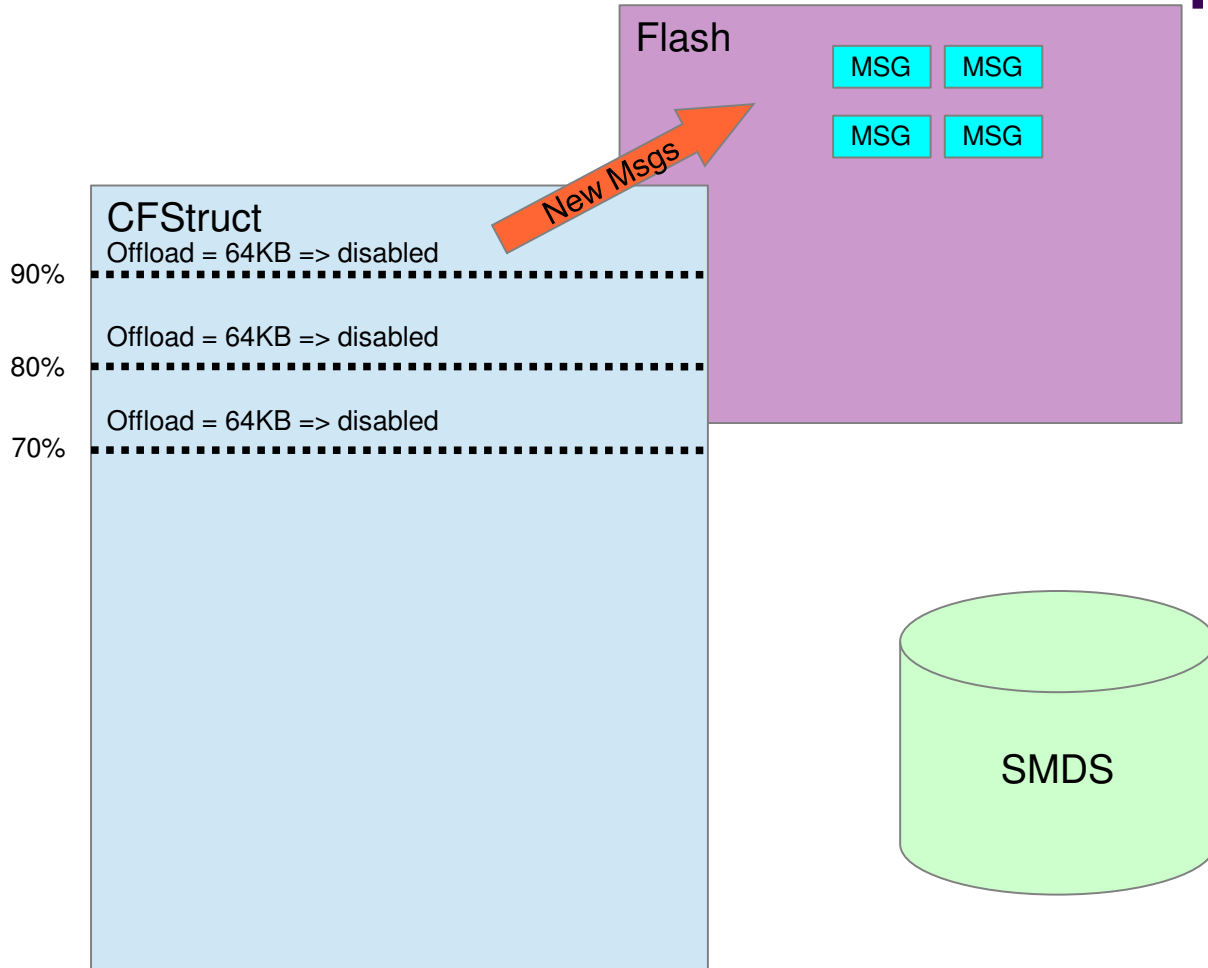
CFSTRUCT OFFLOAD rules cause progressively smaller messages to be written to SMDS as the structure starts to fill.

Once 90% threshold is reached, the queue manager stores the minimum data per message (reference message) to squeeze as many message references as possible into the remaining CF storage.

Once at 90% threshold, CF Flash pre-staging algorithm also starts to move reference messages for new messages arriving into the CF structure into SCM (assume msgs are off the same priority). Older messages, which are likely to be got first are kept in the faster CF storage.

**Note:** Assume all msgs < 63KB

# CF Flash: Scenarios Maximum Speed



We want to keep high performance messages in the CF for most rapid access.

CFSTRUCT OFFLOAD are configured with special value '64k' to turn them off.

Once 90% threshold is reached, the CF Flash algorithm starts moving new messages to flash storage, keeping the faster 'real' storage for messages most likely to be gotten next.

As messages are got and deleted, the CF flash algorithm attempts to pre-stage the next messages from flash into the CFSTRUCT so they are rapidly available for MQGET.

In this scenario the flash storage acts like an extension to 'real' CFSTRUCT storage. However it will be consumed more rapidly since all message data is stored in it. Though, you could define a threshold to offload >16KB messages to SMDS if the CF structure is say 40% full. This would mean that only messages <=16KB ever get moved to flash storage.

**Note:** Assume all msgs < 63KB

Scenario	Offload reason (Rule)	Msg Size	Total Msgs	# in 'real'	SMDS space	# in 200 GB flash	Augmented (limit 30GB)
No SMDS No Flash	n/a	1kB	3M	3M			
	n/a	4kB	900,000	900,000			
	n/a	16kB	250,000	250,000			
SMDS No Flash	MQ 90%	1kB	3.2M	3.2M	800MB		
	MQ 80%	4kB	1.8M	1.8M	5GB		
	MQ 80%	16kB	1.3M	1.3M	20GB		
"Emergency" Scenario	MQ 90%	1kB	190M	2M	270GB	190M	30GB
	MQ 80%	4kB	190M	600,000	850GB	190M	30GB
	MQ 80%	16kB	190M	150,000	3TB	190M	30GB
"Speed" Scenario	CF 90%	1kB	150M	2M		150M	26GB
	CF 90%	4kB	48M	600,000		48M	8GB
	CF 90%	16kB	12M	150,000		12M	2GB

# Other Enhancements



# 64 bit application support

- **64 bit application support for C language**
  - LP64 compile option
  - supported by cmqc.h
- **Restricted environments**
  - Batch, TSO, USS
  - CICS® and IMS® do not support 64 bit apps
  - WebSphere Application Server is already 64 bit
- **Must use sidedeck & DLL, not stubs:**
  - csqbm2x (uncoordinated batch & USS)
  - csqbrr2x (RRS coordinated, srrcmit())
  - csqbri2x (RRS coordinated, MQCMIT)

# Client Attachment Feature (CAF)

- **Now shipped as part of the base MQ for z/OS product**
- **No longer chargeable on earlier releases of MQ**
  - APAR available to enable functionality without installing CAF
- **This means that client capability is available by default**
  - Use CHLAUTH rules if you don't want Clients to connect to your QMgr

# Other z/OS Items

- **Message suppression**

- CSQ6SYSP / SET SYSTEM property **EXCLMSG**
- Formalizes service parm to suppress Client channel start/stop messages
- Extended to be generalized
  - Applicable for most MSTR and CHIN messages

- **DNS reverse (ip address → host name) lookup**

- Queue Manager attribute **REVDNS(DISABLED/ENABLED)**
- If DISABLED, prevents channel hangs if DNS infrastructure impacted
  - But CHLAUTH rules that use hostnames are not matched

- **zEnterprise Data Compression ( zEDC) hardware exploitation**

- Channel attribute **COMPMSG(ZLIBFAST)**
- Need zEC12 GA2 + zEDC card
- Can yield higher throughput & reduced CPU for SSL channels

# MQ platform and product updates

- **Split Cluster Transmit Queue availability in MQ for z/OS**
- **Advanced Message Security (AMS)**
  - Better integrated into the base MQ for z/OS product
  - Offers improved performance and usability
- **MFT has been updated to reduce reliance on USS**

# MQ V8.0 migration

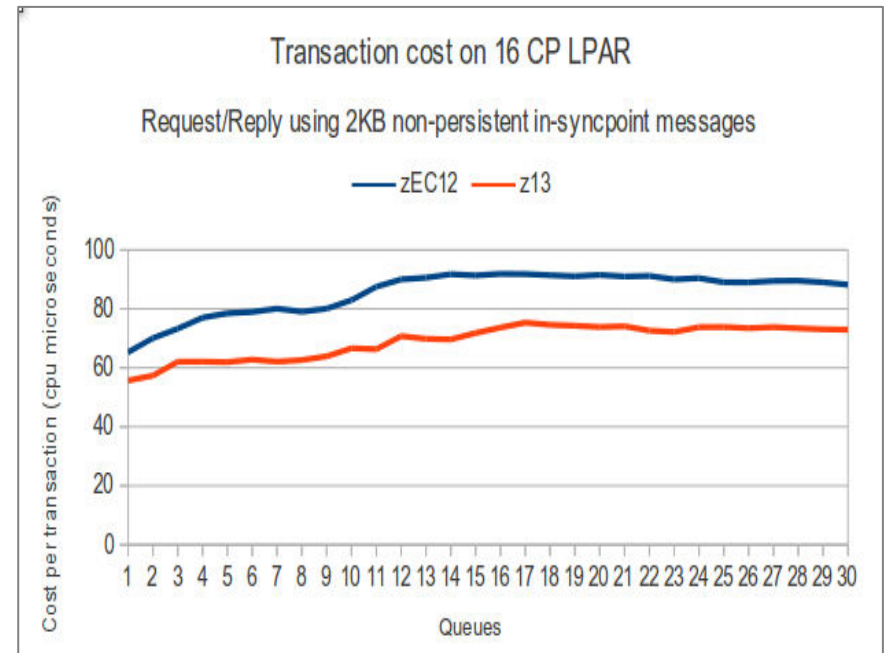
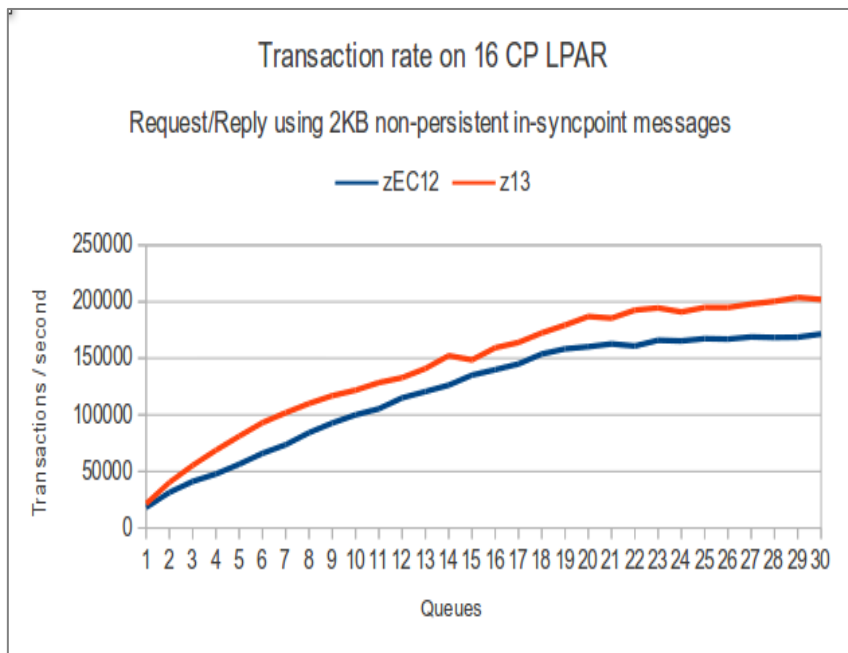
- **First class migration support from V7.0.1 and V7.1 (mixed QSG and fall-back capability)**
- **Install migration and compatibility PTFs**
  - PI19721 has PTFs for either release
- **Install QTYPE APAR for V8.0 for late breaking fixes**
  - PI19991

# Other bits and bytes .....

- **JMS support in CICS**
  - CICS V5.2 APAR PI32151
  - MQ APARs
    - for V71: JMS PI29770 (supercedes 7.1.0.6) or later CSD
    - for V8: JMS 8.0.0.2 PI33038 or later CSD + MQ base PI28482
  
- **z13 Performance Expectations**
  - Next chart
  
- **Looking Forward .....**
  - Ease of Deployment of MQ
  - Increasing Size of Active Logs

# Scalability on z13 with 16 processors

- On a 16-way LPAR, we saw an above LSPR improvement to a non-persistent workload.



This workload is seeing an **18%** improvement in rate and transaction cost.

# Summary

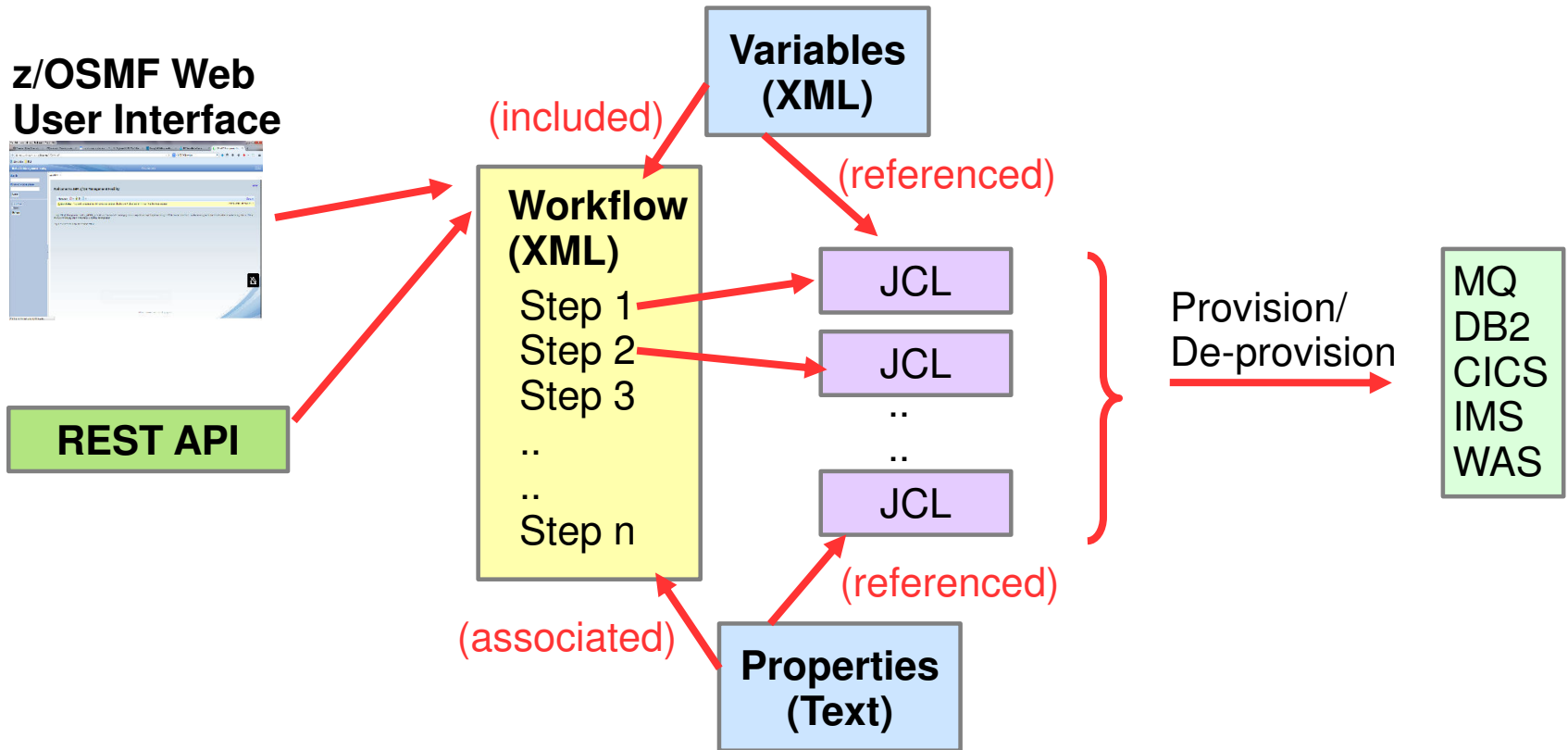
- **LSPR predicts 11% improvement between zEC12 to z13**
- **Typically we have seen MQ performance measurements match or exceed this expectation for cost per transaction.**
- **Above 16-way we are seeing variable results which we are still investigating.**



# zCloud Proof Of Concept (POC)

- **Objectives**
  - Rapid Provision/De-provision (create/destroy) of z/OS subsystems
    - For a Development or Test Environment
      - Automated
      - Reduced complexity
        - Preset properties
        - Minimum input parameters
    - MQ and others
  - Little/no need for z/OS skills
    - Service consumers should not need to know JCL
  - Workflow based
    - Invoke via REST APIs
    - Host in a Service Portal

# IBM z/OS Management Facility (z/OSMF)



- Build XML workflow files in your favourite editor and export to USS
- Workflows we will look at:
  - provisionQMgr.xml
  - deprovisionQMgr.xml
  - Others

# Steps to provision a z/OS Queue Manager

Step	Description	JCL
1	Specify Queue Manager Criteria	-
2	Define APF Load Library	CSQ4ZAPF.jcl
3	APF authorise the Load Library	CSQ4ZNAP.jcl
4	Generate MQ Initialization Params (ZPARms)	CSQ4ZZPM.jcl
5	Define BSDS and Logs	CSQ4ZNBL.jcl
6	Define Pagesets	CSQ4ZNPG.jcl
7	Construct QMGR startup JCL	CSQ4ZMST.jcl
8	Use SETSSI to define subsystem to z/OS	CSQ4ZSSI.jcl
9	Construct CHINIT Startup JCL	CSQ4ZCHN.jcl
10	Construct DISX (CHINIT startup command)	CSQ4ZDSX.jcl
11	Disable subsystem security	CSQ4ZNSE.jcl
12	Start QMGR	CSQ4ZSQM.jcl



Further potential to merge and reduce steps

# Steps to de-provision a z/OS Queue Manager

Step	Description	JCL
1	Stop Chinit	CSQ4ZTCN.jcl
2	Stop Queue Manager	CSQ4ZTQM.jcl
3	Delete any RACF security profile/settings	CSQ4ZDSE.jcl
4	Delete MQ specific Datasets	CSQ4ZZPM.jcl



De-provision everything that was provisioned

# Workflow based provisioning/De-provisioning

- **Useful in a cloud**
  - Rapidly provision subsystems to deploy applications to
  - Can introduce charging based on usage
- **Useful in Development/Test (beta) environments**
  - Can pool and share subsystem resources
  - Stand-up when needed
    - Define resources required by applications
  - Stand-down when finished
    - Delete all resources that were created
- **Useful for Automation**
  - Can automate subsystem configuration tasks
    - Enforce resource naming conventions
    - Reduces skill level required

# Increasing Capacity of Active Logs

- **Active Logs today**
  - Max Size of an active log dataset is 4GB
  - Max Number of Active logs is 31 datasets
  - If there is site problem with archiving media
    - Active logs can fill a small number of hours
- **Increasing Active log capacity**
  - Increase size of active logs datasets above 4GB
  - Increase number of active logs from 31
  - Or do both .....
- **Initial solution**
  - Delivered as part of continuous delivery POC
    - Increase number of active logs to max of 310 datasets
    - Each dataset still limited to 4GB





Draft Document for Review June 22, 2014 6:28 pm

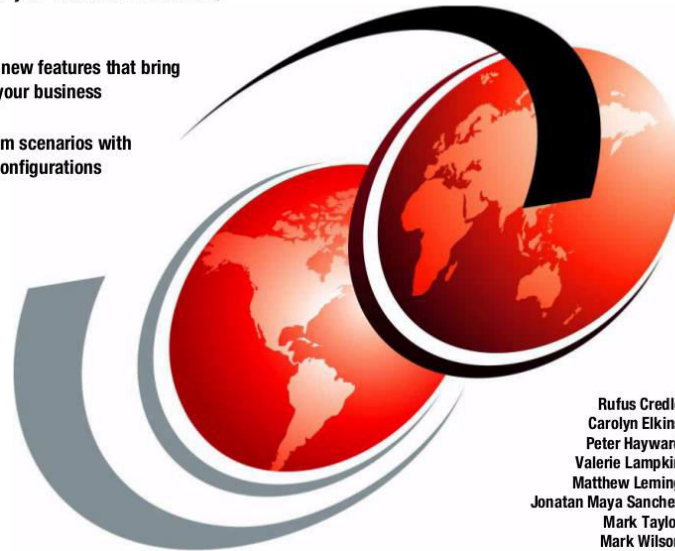
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# IBM MQ V8 Features and Enhancements

Maximize your investment in IBM MQ

Discover new features that bring value to your business

Learn from scenarios with sample configurations



Rufus Credle  
Carolyn Elkins  
Peter Hayward  
Valerie Lampkin  
Matthew Leming  
Jonatan Maya Sanchez  
Mark Taylor  
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# Questions ?



## Session : 17895

# Using and Abusing New Hardware and the New V8 Features

*Paul Kettley*

*PLM for Messaging on z/OS*

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SHARE is an independent volunteer-run information technology association  
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