JES2 Product Update and Latest Status

Monday 4:30 PM – Session 11719

SHARE 119 Technical Conference - Anaheim, 2012

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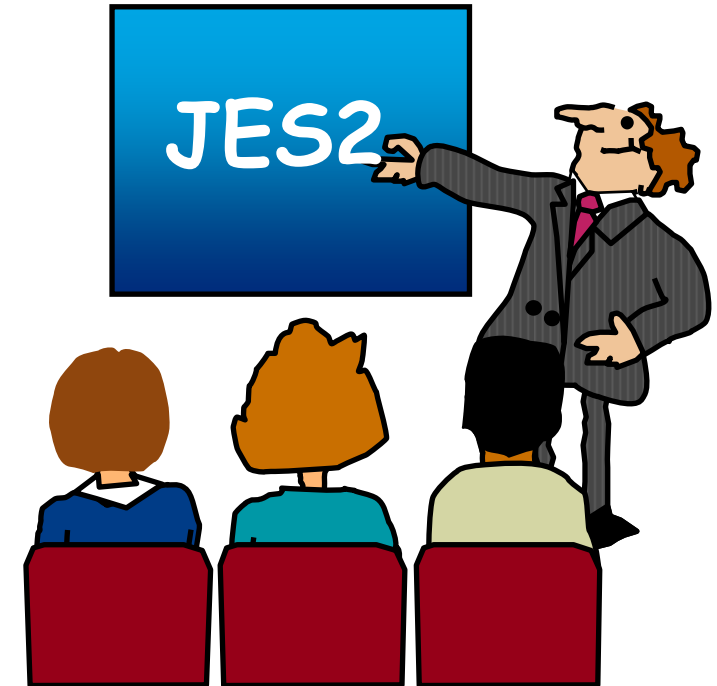JES2 Development, Rochester, Minnesota

Agenda . . .

- JES2
  - ► Current JES2 Releases
  - ► Migration & Implementation Tips
  - ► Recent Service

- References
  - ► Documentation & Web Sites

- ► Other Presentation
  - ► **11756: JES2 Performance Considerations**
    - ► Tuesday 11:00 AM
  - ► **11757: What are All These JES2 NJE Options? (The A-Zs of NJE)**
    - ► Thursday 9:30AM
  - ► **11710: JES2/JES3 JCL/JECL Differences**
    - ► Friday 9:30AM

Current JES2 Releases

FMIDs, Birthdays & Obituaries

JES2 Rel.#	FMID	First Available	No Longer Available	End of Service
z/OS 1.4	HJE7707	9/02	9/04	3/07
z/OS 1.5	HJE7708	3/04	9/04	9/07
z/OS 1.6	**HJE7708**	9/04	10/05	9/07
z/OS 1.7	HJE7720	9/05	10/06	9/08
z/OS 1.8	HJE7730	9/06	10/07	9/09
z/OS 1.9	HJE7740	9/07	10/08	9/10
z/OS 1.10	HJE7750	9/08	10/09	9/11
z/OS 1.11	HJE7760	9/09	10/10	**9/12***
z/OS 1.12	HJE7770	9/10	10/11	**9/14***
z/OS 1.13	HJE7780	9/11		**9/16***

See http://www-03.ibm.com/systems/z/os/zos/support/zos_eos_dates.html

* = projected...

JES2/MVS Compatibility

JES2 Release:

z/OS Release	JES2 z/OS R.7 HJE7720	JES2 z/OS R.8 HJE7730	JES2 z/OS R.9 HJE7740	JES2 z/OS R.10 HJE7750	JES2 z/OS R.11 HJE7760	JES2 z/OS R.12 HJE7770	JES2 z/OS R.13 HJE7780
z/OS R7	X						
z/OS R8	X	X					
z/OS R9	X	X	X				
z/OS R10		X	X	X			
z/OS R11			X	X	X		
z/OS R12				X	X	X	
z/OS R13					X	X	X

IBM recommends the same level of z/OS & JES2 thoughout your plex.

►JES levels supported by a given z/OS release are same as the JES levels that can coexist in a MAS, See "**z/OS V1R13.0 Planning for Installation**" Ch. 4 (GA22-7504) at http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/e0z2b1c0/4.5.1

JES2/MVS Compatibility

Statement of Direction

- **z/OS 1.13 will be the last z/OS release that supports running a down level JES.**

- **As of z/OS 2.1, IBM only supports running the 2.1 JES on the 2.1 MVS**
  - z/OS 1.13 and earlier will not be **supported** running on a z/OS 2.1 z/OS

- **This does NOT affect what members can co-exist in a MAS**
  - Just the mixing and matching of JES and MVS levels.

- **New messages during initialization (proposed)**

  WTO   - JES2 *level* (*HJExxxx*) is not supported running on *mvs_level*

  WTOR   - Reply "CONTINUE" to initialize JES2 in this unsupported environment, "TERM" to shut down JES2

z2 Checkpoint Mode

Statement of Direction

- **z/OS 2.1 is planned to be the last release to support z2 checkpoint mode**
  - ► $ACTIVATE LEVEL=Z2
- **z11 checkpoint mode was introduced in z/OS 1.11**
  - ► $ACTIVATE LEVEL=Z11
- **Migrate to z11 mode if you have not already done so**
  - ► See z/OS 1.11 presentation for information on impacts of z11 mode

Survey Questions

What is your JES2 Release level (are you $ACTIVATEd) ?

JES2 Rel.#	SHARE 119 8/2012	SHARE 118 3/2012	SHARE 117 8/2011	SHARE 116 2/2011	SHARE 115 8/2010	SHARE 114 3/2010	SHARE 113 8/2009	SHARE 112 3/2009	SHARE 111 8/2008	SHARE 110 2/2008	SHARE 109 8/2007	SHARE 108 3/2007	SHARE 107 8/2006	SHARE 105 8/2005
z/OS R2														1
z/OS R4				1						1	4(4)	4(4)	6(4)	22(17
z/OS R5	1					1					6(6)	5(5)	14(10)	13
z/OS R7	1						2	1	2	12	19	10	6	-
z/OS R8	1			1			3	4	14	13	18	6		
z/OS R9	2	1	1	5	5	19	31	14	16	5				
z/OS R10	1		3	8	9	12	20	5						
z/OS R11	6(5)	21(19)	20(9)	26(7)	12(5)	9(2)	3(0)							
z/OS R12	10(10)	15(15)	14(7)	13										
z/OS R13	11(11)	8(8)												

z/OS 1.13 Overview

- **Batch Modernization**
  - ► Instream data in PROCs (cataloged and instream)
  - ► Controlling job return code
  - ► Spin and SPIN data set
  - ► Requeue job by command on a step boundary
- **SPOOL Enhancements**
  - ► Extend SPOOL data set
  - ► Greater flexibility on names and volumes
  - ► SPOOL Migration
- **Enhanced SSIs**
  - ► Completion of device SSI

z/OS 1.13 Instream Data in PROCs

- **Instream data in PROCs and INCLUDEs**
  - ► Simplifies writing JCL PROCs
    - – No need for separate control data set
  - ► Support DD * and DD DATA in full in PROCs and INCLUDEs
    - – Works with instream PROCs
    - – No automatic generation of SYSIN DD * like JCL
  - ► Works for all users of PROC (batch and started tasks)
    - – Job must run under JES2 (no MSTR subsystem)
  - ► Must convert on a z/OS 1.13 member
    - – Can run on any level member

z/OS 1.13 Instream Data in PROCs

- **Instream data in PROC example**

```
//HELLO    PROC
//STEP1    EXEC ASMHCLG
//C.SYSIN DD *
TEST       CSECT ,
           STM   14,12,12(13)
           BALR  12,0
           USING *,12
           ST    13,SAVAREA+4
           LA    13,SAVAREA
           SPACE 1
           WTO   'Hello world!'
           SPACE 1
           L     13,SAVAREA+4
           LM    14,12,12(13)
           SR    15,15
           BR    14
           SPACE 1
SAVAREA    DC    18F'0'
           END
//L.TEST  DD DUMMY
//L.SYSXX DD *
//        PEND
```

z/OS 1.13 Job Return Code

- **New job card operand to control job RC**
  - JOBRC= MAXRC | LASTRC | (STEP,*name.name*)
    - MAXRC is existing processing (default)
    - LASTRC is return code of last step
    - (STEP,*name.name*) is return code of identified step
      - If step not executed, defaults to MAXRC
- **Affects return code seen in**
  - Extended status (eg SDSF)
  - ENF 70
  - HASP165 message
  - $DJ,CC= command
- **JOBCLASS JOBRC= MAXRC|LASTRC to affect processing for all jobs in the job class**
- **Two additional error case return codes defined**
  - CONVERTER ERROR – Conversion processing ABENDed processing the job
  - SYSTEM FAILURE – System crashed while job was running and job could not be restarted.

z/OS 1.13 Spin Any SPIN

- **Added function to spin any spin data set**
  - ► Similar to what was done for JESLOG
  - ► Applies to any data set allocated as SPIN
    - – No application code/JCL change needed
  - ► Spin based on size, time, operator command
- **Update to SPIN= DD operand**
  - ► SPIN=(UNALLOC,*option*)
    - – '*hh:mm*' - Spin at specific time
    - – '+*hh:mm*' - Spin every hh:mm interval
    - – *nnn*, *nnn*K, *nnn*M - Spin every nnn lines
    - – NOCMND - Cannot be spun by command
    - – CMNDONLY - Can be spun via operator command (default if no interval)
- **$TJ*n*,SPIN,DDNAME=*name* command added**

- **Remove job on step boundary**
  - ►New STEP operand on $EJ command
    - –Causes job to exit execution at end of current step
    - –Optional HOLD operand makes job held
    - –Job is requeued for execution
  - ►Job must be journaling (JOURNAL=YES on JOBCLASS)
  - ►Uses existing continue restart function of z/OS
    - –Previously used to restart jobs after an IPL
  - ►Full syntax $EJxxx,STEP [,HOLD]
    - –Full cross member support

z/OS 1.13 Extend SPOOL

- **Command to extend SPOOL to adjacent free space**
  - ► $TSPOOL(*xxxxxx*),SPACE=
    - – SPACE= same as $S SPOOL
- **SPACE is total size after expand is complete (NOT increment)**
- **Total size limited to architecture**
  - ► JES2 limit is based on LARGEDS on SPOOLDEF
    - – Allowed/Always limit is 1M tracks
    - – Fail limit is 64K
  - ► DSCB format limits expansion into EAS storage
    - – Should migrate to CYL_MANAGED=ALLOWED
    - – Allocate SPOOL using DD EATTR = OPT to build format 8/9 DSCB

z/OS 1.13 SPOOL DSN/VOLSER

- **Data set name for SPOOL can now be specified on $S SPOOL**
  - ► SPOOLDEF DSNMASK limits values
    - – Can have generics
  - ► Default is only SPOOLDEF DSNAME value allowed
  - ► Must be in z11 $ACTIVATE mode
- **SPOOL volume prefix can now have generics**
  - ► SPOOLDEF VOLUME= still 5 characters
  - ► If no generics, then prefix
  - ► If generics, then volume must match pattern
- **New SPOOL initialization statement**
  - ► Used on COLD start to locate SPOOL volumes
  - ► If present, only SPOOLs with initialization statements used
  - ► If SPOOL volume has generics, then SCAN is not done
  - ► UCB scan for SPOOL volumes only done if no SPOOL init stmts and no generics in VOLUME=
- **Should not use until all members migrated to z/OS 1.13**

z/OS 1.13 SPOOL Migration

- **$M SPOOL command to move data off volume**
  - ► Faster than $P SPOOL (Minutes not days)
  - ► Function enabled with OA36158 (PTF UA64366)
- **Command works with active address spaces using volume**
  - ► Less activity is better/faster but no need to IPL to stop active jobs
- **Goal of SPOOL migration is to stop using SPOOL data set**
  - ► It is NOT to eliminate the internal representation of the volume
  - ► Old data set can be deleted and SPOOL volume taken offline
- **After a successful SPOOL migration**
  - ► $DSPOOL still shows volume
  - ► $DJQ,SPOOL= still displays volume
  - ► New status is MAPPED

z/OS 1.13 SPOOL Migration

- **Two forms of SPOOL migration, MOVE and MERGE**
  - ► Move takes all data on an existing volume and moves it to a new one
    - – Source must be INACTIVE ($Z SPOOL done)
      - ▪ No active jobs on the volume
    - – Target cannot be currently an active SPOOL volume
    - – Can specify space to create data set on target
    - – At the end of move, old (source) volume does not exist
    - – Target after a move is active
  - ► Merge takes all data on one volume and merges it onto free space on another volume
    - – Most flexible migration option
    - – Source can be in any state with active jobs/address spaces
      - ▪ Less activity is good
    - – Results is a mapped volume that goes away when all jobs using it are deleted
      - ▪ Similar to $P SPOOL but device is no longer in use

z/OS 1.13 SPOOL Migration

- **MERGE Migration :**
  - ► Copies an existing *Source Volume* to free space on a *Target Volume* :

  Pre-merge configuration   Merged configuration

Free space		Free space
SPOOL2 used space		SPOOL1 used space
Free space		SPOOL2 used space
SPOOL1 used space		
SPOOL1	SPOOL2	SPOOL2
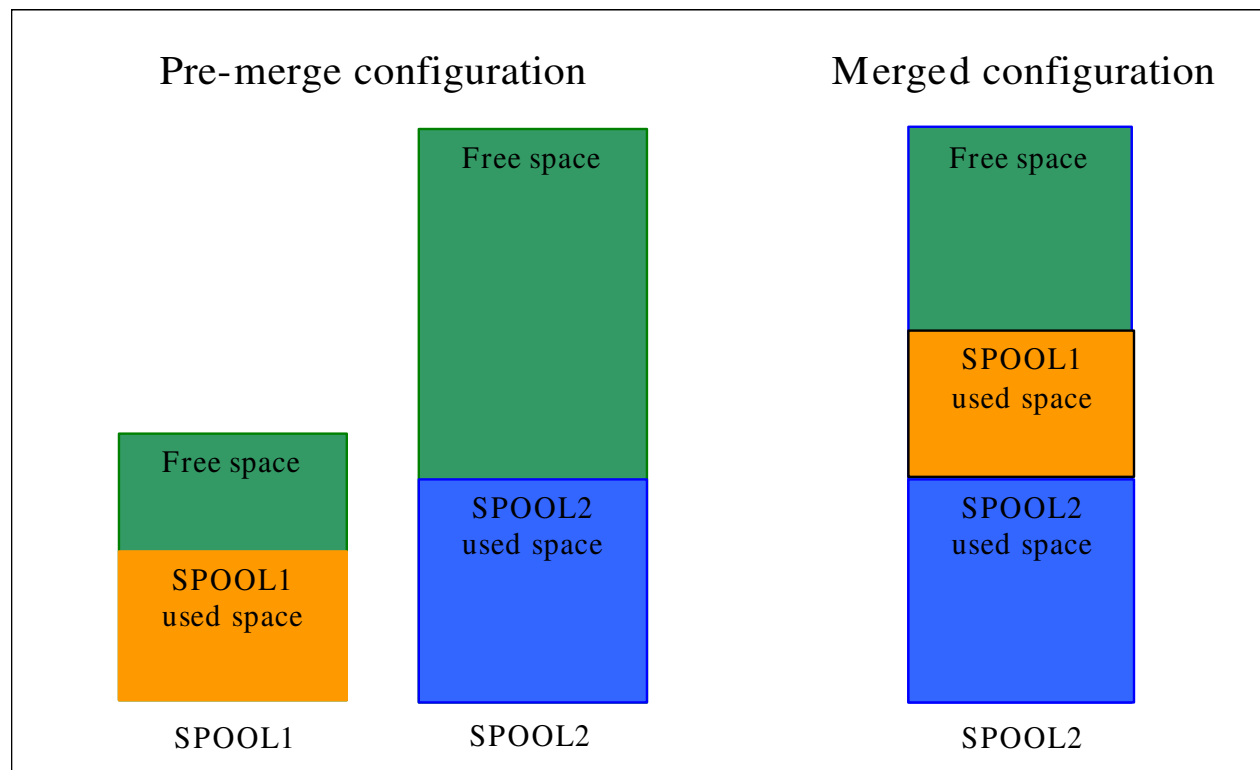
- **Upon completion, the *Source Volume* becomes a *Mapped Volume.***
  - ► Remains *MAPPED* until all jobs and SYSOUT that have space on the *Source Volume* are purged. It then goes away (no longer exists).

z/OS 1.13 SSI Enhancements

- **SSI 82 – JES Property SSI**

- **Node information SSI – sub-function of JES properties SSI (SSI 82)**

  - ► Enhanced to provide information from all active members of JES2 MAS
  - ► Available from MAS members starting from z/OS 1.11
    - – Requires APAR OA35942 (760 – UA90569, 770 – UA90570)

- **New function is exploited by SDSF**

- **For more information, see publication MVS Using the Subsystem Interface**

z/OS 1.13 SSI Enhancements

- **SSI 83 – Device information SSI**
  - ► Enhanced to support all types of devices managed by JES2 (readers, punches, transmitters, receivers, lines, offload etc.)
  - ► Provides extensive filtering capabilities – e.g. by device state, device name, a variety of device attributes
  - ► Provides information about all devices managed by all active members of JES2 MAS
  - ► Device information is available from JES2 MAS members starting from z/OS 1.11 (requires coexistence APAR on z/OS 1.11 and 1.12)
- **New function is exploited by SDSF**
- **For more information, see publication MVS Using the Subsystem Interface**

z/OS 1.13 SSI Enhancements

- **JES subsystem data set allocation support for XTIOT**
  - ► Option on DYNALLOC request
    - – S99TIOEX bit for authorized callers
    - – S99DXACU bit supports all callers (unauthorized)
  - ► Moves allocations control blocks from 24 to 31 bit storage
- **Relieves pressure on 24 bit storage**
- **Increases number of concurrent allocations**
  - ► Reduces pressure on 24 bit TIOT
- **Implications include not being able to find DD in TIOT**
  - ► Could break applications looking into TIOT
  - ► Very unlikely
- **Controlled by parmlib option**
  - ► NON_VSAM_XTIOT=NO|YES in DEVSUPxx
- **Good ideas for use include**
  - ► SPOOL data set browse, SPIN data set allocation

z/OS 1.13 Migration/Coexistance

- **From JES2 z/OS 1.9 or 1.10**
  - ► Can all member warm to z/OS 1.13
  - ► No coexistence support
  - ► Fall back implications
    - Some new data structures created by z/OS 1.13 JES2 may result in problems in z/OS 1.10 and prior
    - Prior to z/OS 1.10 may not be able to use SPOOL volumes with non-standard data set names

- **From JES2 z/OS 1.11 or z/OS 1.12**
  - ► COMPAT APAR OA31806 is needed on a z/OS 1.11, or z/OS 1.12 member to coexist in a MAS with z/OS 1.13
    - HJE7760 UA59434
    - HJE7770 UA59435
  - ► APAR also highly recommended for fall back as well
    - Some new data structures created by z/OS 1.13 JES2 may result in problems if OA31806 is not installed.

z/OS 1.13 JES2 SPOOL Migration Enabled

- **z/OS 1.13 SPOOL migration function has been enabled**
  - ► APAR OA36158 (PTF UA64366) closed February 24, 2012
- **SPOOL migration page on the web**
  - ► JES2 SPOOL Migration
- **SHARE session**
  - ► **10844: JES2 SPOOL: Defining, Managing, and Updating**
    - – Atlanta 2012 proceedings

JES2 spool migration

A JES2 spool migration moves an existing JES2 spool volume (an extent or data set) to a new spool volume, or merges an existing volume with another existing spool volume.

The following resources provide information to help you migrate spool volumes:

Spool migration FAQ
  Spool migration frequently asked questions [PDF-0.23 MB]
z/OS V1R13 JES2 Migrating spool volumes documentation
  JES2 Infocenter [HTML]

SHARE presentations on JES2 spool migration

- **JES2 Product Update - SHARE, August 2011:**
  - o Overview of JES2 function added in z/OS V1.13 [PDF-0.93MB]
- **z/OS 1.13 JES2 New Functions, Features, and Migration Actions - SHARE, August 2011**
  - o Technical details of the changes made in z/OS 1.13 JES2 [PDF - 0.73MB]
- **SHARE conference (Scheduled March 15, 2012)**
  - o JES2 SPOOL: Defining, Managing, and Updating [HTML]

>10M Data Sets SPE

- **JES2 currently supports up to 9,999,999 JES data sets per job**
  - ► Data set name format limits number of characters

    userid.jobname.jobid.D*nnnnnnn*.dsname
- **Limit can be reached with long running job creating SPIN DSs**
- **Dynamic allocation fails when limit is reached**

- **Solution is to allow *nnnnnnn* to include characters**
  - ► Does NOT impact values 1-9999999
  - ► New limit is 4,294,967,295
  - ► 10000000 and above will be alpha numeric (0-9 and A-Z)
  - ► 1-9999999 and BDPLQBB-999999E sort within each range
    - – Cannot sort numeric and character
- **New keyword to enable**
  - ► OUTDEF DSLIMIT=10M|4B
- **Shipped in OA38944**

JES2 Service Information

- ## HiPer APARs (Hi Impact, or Pervasive)

```
yy/mm/dd APAR      COMMENTS
12/06/08 OA39737   After OA36256, JES2 fails to completely clean up a spool volume
12/04/11 OA39337   AFTER OA37764, POSSIBLE MSGHASP401 WHEN STARTING JES2
12/03/26 OA39223   JES2 ENF PROCESSING MAY PREVENT $ZAPJOB SUCCESS
12/03/01 OA38951   JES2 UNABLE TO OBTAIN CHECKPOINT AFTER CF SYSTEM-MANAGED REBUILD
12/02/28 OA38935   Improvements to JES2 ENF70 and ENF58 processing
12/02/03 OA38683   $BR3 RC8 DATA ERROR DETECTED BY $DOGBERT SERVICE
12/02/03 OA38671   High CPU utilization after $CJ or ABEND in converter
11/12/02 OA38254   $HASP9202 JES2 MAIN TASK LOOP DETECTED NEAR HASPSASR+000987
11/11/10 OA38016   $S SPOOL allocation problems
11/11/08 OA37992   JES2 errors following termination
11/10/04 OA37835   Improvements to SPOOL track group recovery
11/09/27 OA37654   $DJ2 error after $DOGJQE WAIT=(NO,DEFER) is issued
11/08/04 OA37233   SP230 KEY1 storage leak in initiators
11/07/29 OA37147   ABEND02A RC28 in HASCPHAM after restart
11/07/26 OA37104   I/O error writing JCT during conversion causes loop
11/06/08 OA36674   Duplicate jobs not executing or invalidly marked as such
11/07/21 OA37018   Specifying JESLOG=(SPIN,criterion) can result in creating unnecessary spin data
                   sets (z/OS 1.13)
11/06/30 OA36873   JOE (Job Output Element) chain corrupted resulting in CPU loop
11/05/04 OA36328   $TO commands to change DEST= can take a long time
11/04/28 OA36168   After OA32333, age filters may incorrectly affect output that appears 110+ years
                   old
11/04/20 OA35483   ABEND0F7 RCD4 in HASCPOOL due to TRE cell pool exhaustion
11/03/22 OA35871   After OA34412, $SA1 in HASPSASR in z2 checkpoint mode
11/03/04 OA35081   SYSLOG task hung waiting for PBUFs after a hot start of JES2
```

The Perfect Storm

- **JES2 RED ALERT – Draining and halting SPOOL volumes**
- **OA36256 – Fixed a problem with JESXCF messaging**
  - Messages went to wrong member name due to down level QSE
  - Changed tests so a $QSUSE was done to wait for latest QSEs
  - Delayed XCF member status information
  - Initializing member appears MVS-GONE for one JES2 dispatcher cycle
  - Exposes bug in HASPSPOL that messes up DASALOCS flags
    - Only for starting, draining and halting volumes
    - Members allocated to a CKPT volume
  - Causes HASPSPOL to make incorrect decisions
    - Thinks volume can be halted/drained prematurely
  - Real problems if/when a halting/draining volume is started ($S)
    - DYNALLLOC fails if a members DASALOCS bit is wrong

The Perfect Storm

- **OA38016 – Fixes obscure problem when $S command fails**
  - ► Only happens if $S command and some members need to allocate
  - ► "Should" never happen for draining volume
  - ► Rare for halting volume
  - ► If allocate fails, volume is REMOVED from the configuration
    - – All data on the volume is lost
  - ► Problem was fixed in z/OS 1.13, APAR was rolling down fix
- **Second problem with DEB for SPOOL volumes**
  - ► If volume incorrectly drained or halted (due to OA36256 and $S problem) the DEB is not cleared
  - ► New volume starting on member will use OLD DEB and OLD VOLUME
    - – Only on members affected by OA36256
  - ► Member using different physical volumes for same SPOOL
  - ► Also addressed by OA38016

The Perfect Storm

- **OA39737 – Corrects XCF status problems**
  - ► Removes $QSUSE for status updated
  - ► Member status is now blend of XCF status and $QSE status
  - ► Corrects problems causing DASALOCS to be bad
  - ► Adds DEBUG option to track member status changes via WTO

- **What to do?**
  - ► Back off OA36256 if possible
  - ► Apply OA38016 as soon as possible (fixes data loss problem)
  - ► Avoid Halting ($Z) or draining ($P) SPOOL volumes
    - – If you want to drain, set SYSAFF=(-ANY) and wait for jobs to purge
    - – Do $P when all jobs are off volume
  - ► If a $S fails with

    IKJ56246I DATA SET SYS1.HASPACE NOT ALLOCATED, FILE IN USE

    then hot start the member to correct the DASALOCS bits
  - ► Warning, JES2 can halt volumes at any time due to loss of connectivity

OA39337 – JES2 start fails with $HASP401

- **In z/OS 1.13, the IHADVA size unintentionally increased from x'18' to x'20' bytes**
- **OA37764 restored the original x'18' size of the IHADVA**
- **JES2 is sensitive to the size of the IHADVA**
  - ► Used in data areas shared across modules
- **JES2 PTF all used larger size**
- **Local re-assemblies could use smaller size if OA37764 applied**
  - ► Caused inconsistent mappings resulting in errors and failed starts
- **Overabundance of caution resulted in all PTFs shipping parts using IHADVA to be PEd.**
  - ► Fix reworks code to not have dependency across modules
- **Not a problem if you do not assemble JES2 locally or if you always assemble everything when anything changes**

Performance APARs

- **OA38935 – Reduce number of ENF70s and ENF58s**
  - ► Also corrected problems with payload in ENFs
  - ► Added $TRACE points to trace ENFs sent and received
    - – Useful if developing applications to use ENFs
- **OA36382 – Eliminate extraneous job lock to improve SAPI performance**
  - ► Major improvements if you have many SPIN data sets and multiple SAPI threads

- **OA36328 – $TO commands to change DEST= can take a long time due to unnecessary subtask processing**
- **OA34987 – Problems with many idle NJE SYSOUT or job transmitters (z/OS 1.11, 1.12)**
- **OA33407 – Excessive $#POSTing for SYSOUT processors (SAPI), POST even if dest does not match (z/OS 1.11, 1.12)**

Job and SYSOUT ENFs

- **JES issues ENFs to notify JOB or SYSOUT events**
  - ► Used by applications to track job or SYSOUT progress
    - – ENF 58 – SYSOUT processing tracking
    - – ENF 70 – JOB processing tracking
- **Events creating ENFs include**
  - ► Object create and delete
  - ► Selection and deselection
  - ► Phase or queue changes for jobs
  - ► Print progress via checkpoints for SYSOUT (upon request)
- **Number of ENFs has increased in recent releases**
  - ► Job level ENFs
  - ► High level ENFs for SYSOUT
 - ► SAPI application can request details for SYSOUT

Job and SYSOUT ENFs

- **Intent of ENFs is to reduce "polling" for status**
  - ► Push or event driven vs regular queries
  - ► Goal is to reduce overall system CPU needs
- **Vendors are aware of capability**
  - ► Not sure which have implemented listening to the ENFs
- **ENFs are sent to all members of SYSPLEX (multi-system)**
  - ► Cannot always predict where JOB/SYSOUT will be processed
  - ► Allows single application instance to monitor entire SYSPLEX
- **Multiple JESPLEXes in SYSPLEX can increase total ENFs**
  - ► Especially when jobs/SYSOUT sent to other JESPLEX for processing
    - – ENFs for original instance and again for destination node
- **May notice increased XCF traffic for ENF processing**
 - ► Group associated with messaging is SYSENF

OA38935 – ENF 58 and 70 Fixes
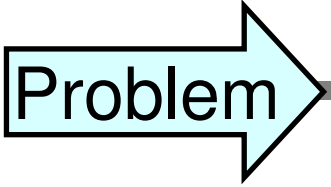
Problem ▸ **Excessive multi system ENFs some with no useful data**

- ► PSO issued ENF 58 when not requested
- ► JQS issued ENF 70 in cases where not needed
- ► Missing data in various ENF 58 and 70
- ► See APAR for list of issues fixed

▪ **Added ENF 58 (43 & 44) and 70 (45 & 46) JES2 $TRACE ids**

- ► Send and receive ENFs respectively

Fix ▸ **JES2 z/OS 1.11, 1.12, 1.13**

DOC APAR OA38750
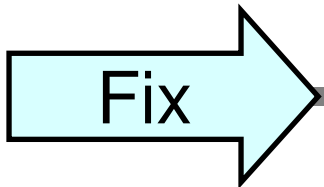
- **$HASP492 message indicates start process status**
  - $HASP492 JES2 MEMBER-N1M1 QUICK START HAS COMPLETED
- **APAR OA24118 dealt with ABENDs during $E MEMBER**
  - ► ABENDs caused the $E MEMBER processing to fail
  - ► New variant of $HASP492 was issued in this case
  - $HASP492 JES2 MEMBER-N1M1 RESTART HAS FAILED
  - ► Variant is ONLY for RESTART ($E MEMBER) processing
    - – Other starts just fail to complete and JES2 terminates
- **Message update appeared in recent manuals**
  - ► Not clear when HAS FAILED came out
  - ► Was a concern for automation
- **DOC APAR clarified the message and variants**
- **Ironically, automation was part of the reason for using the same message ID**
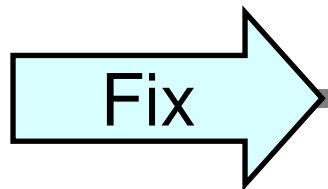 - ► It indicated that the process completed

OA39223 – JQE Overlay Prevents $ZAPJOB
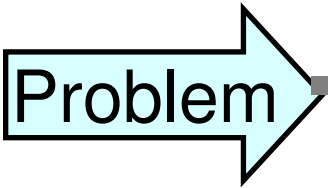
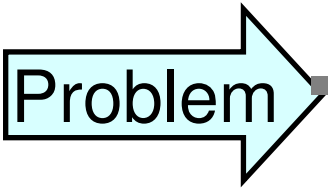**Problem** ➤ **Unknown problem (exit?) overlays JQE node number**

  ➤ Input (JQEINPND) or Execution (JQEXEQND) node

- **Various ABENDs trying to access job**

- **Attempt to $ZAPJOB fails with similar ABEND**

- **$ZAPJOB should not fail**

- **Code added to validate binary NJE node before using**

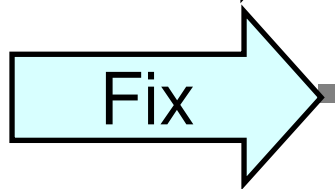**Fix** ➤ **JES2 z/OS 1.11, 1.12, 1.13**

Problem ▸ **The JES2 CKPT process (PCE) can hang**

- ► CKPT must be on CF
- ► A system managed process has just completed
  - – Such as a rebuild
- ► The post of the CKPT on CF subtask is lost
- ► CKPT PCE waiting for subtask, subtask waiting for PCE
- ► Very small timing window

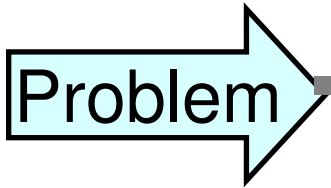**No CKPT work will happen (Start, logon, etc)**

- ► Hot start clears problem

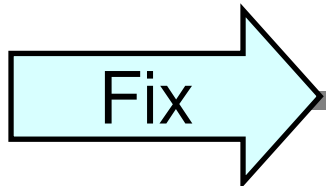**Avoid!** ▸ **System managed rebuild of CKPT CF structure**

Fix ▸ **JES2 z/OS 1.11, 1.12, 1.13 - OPEN**

OA38043 – Allow Null JOBCLASS QAFF=

Problem ➤ **Can remove members from QAFF but list cannot be null**

    ► Wanted to shut down last member in QAFF but had to hold the jobclass instead of removing member

- **No good reason to disallow null list**
- **Code that ensures list not null removed**

Fix ➤ **JES2 z/OS 1.11, 1.12, 1.13**

# OA38683 – $JOA Cleanup Problem

Problem ▶

- **PCE ABENDs owning BERT lock for a $JOA**
- **Code in MISC PCE attempts clean up BERT lock**
  - ► Uses wrong offset (offset from JQE) for BERT token
- **Result is various errors including $BR3**
  - ► Errors could result in corruption of some existing BERTs
- **Problem in z11 mode only**

- **If you encountered the problem, expect to see errors on warm start (even with APAR on)**
  - ► $DISterr at Label BERTERR
  - ► $HASP483 JES2 JOB QUEUE ERROR, RC=51
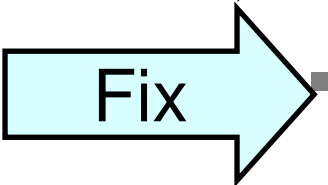
Fix ▶ **JES2 z/OS 1.11, 1.12, 1.13**

OA38671 – CPU Loop after $CJ
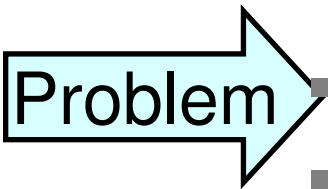
Loop in JES2 converter processing

- **Caused when job is $CJed while in converter**
  - ► $CJ has to occur at an inopportune moment
    - – Middle of JES2 chaining an SDB for a data set
- **Loops occurs due to additional validation during free**

$CJ of jobs in conversion (unless truly hung)
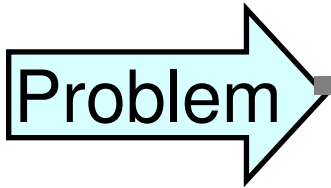
JES2 z/OS 1.13

OA38135 – SYSLOG Browse Hang (SDSF)

Problem ► **Loop can occur if browsing SYSLOG as it is SPUN**

  ► Easy to re-create if writelog done from SDSF browse panel

  ▪ **TSO user in a never ending loop with an I/O in it**

Avoid! ► **WRITELOG from SDSF SPOOL Browse panel**

Fix ► **JES2 z/OS 1.11, 1.12, 1.13**

OA37992 – Errors after JES2 ABENDs

Problem ➤ **Processing of a JES2 ABEND has two issues**

- ➤ Cross member requests could be denied
  - SPOOL Browse from other members cannot get in storage buffers
- ➤ A failed HOT start can result in member appearing to be in MVS-GONE state
  - Other members could $E MEMBER the hot startable member
    - Would force an IPL of member
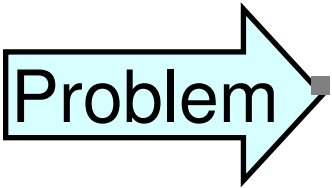   - Could have same job running on multiple members

Avoid! ➤ **Failing a hot start due to parameter errors**
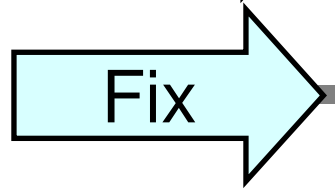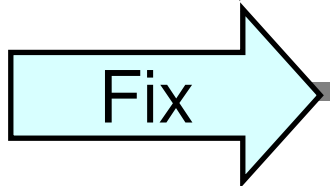
Fix ➤ **JES2 z/OS 1.11, 1.12**

OA37835 – Track Group Recovery Improvements

Problem ▸ **Unusual undiagnosed problem in disaster recovery**

- ► Seems to be related to PPRC and Flash Copy of SPOOL
- ► Signature records (SPOOL ownership records) corrupted
- ► Causes double allocation of SPOOL at target (recovery) site

▪ **APAR makes SPOOL garbage collector more conservative**

- ► Examines data and signature record before reclaiming space
- ► Could delay SPOOL recovery

▪ **DOES NOT FIX UNDIAGNOSED PROBLEM**
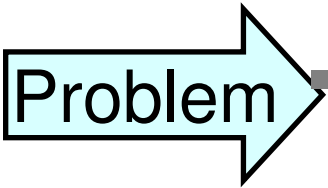
- ► Reduces impact if you hit the problem

Avoid! ▸ **Flash Copy and PPRC of SPOOL**

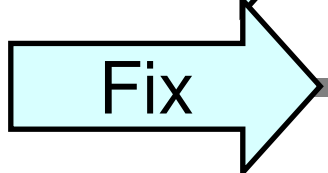**Fix** ▸ **JES2 z/OS 1.11, 1.12, 1.13**

OA36865 – $MASCOMM Job's SPOOL Used Mask Wrong

Problem

- **$MASCOMM's SPOOLs used mask can be wrong**
  - ► Code that manages the mask does not work
  - ► $MASCOMM may be using less or more SPOOLs than indicated
- **SPOOL volume halt/drain errors can occur**
  - ► If more bits on, then volume may not drain/halt
  - ► If less bits on, then volume may drain/halt prematurely
    - – This can cause I/O errors, etc
- **APAR (when on all members) fixes the bad mask**
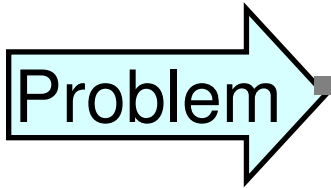- **May be reason for customer request to delete $MASCOMM job**

Avoid!

- **Put fix on ASAP**

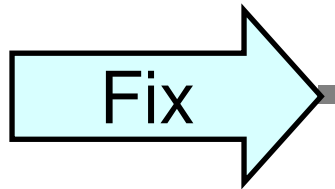**Fix**

JES2 z/OS 1.11, 1.12, 1.13

OA36142 – Offload Job Reload Problems

Problem → **OFFLOAD job receiver can improperly handle jobs being reloaded**

- **Job with JCL error may reload but not be accessible**
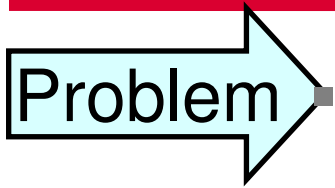- **Other odd things may happen**

**Avoid!** → **Selective reloads of pre-execution jobs**

Fix → **JES2 z/OS 1.10, 1.11, 1.12, 1.13 - F107**

OA37104 – Loop in Converter

Problem
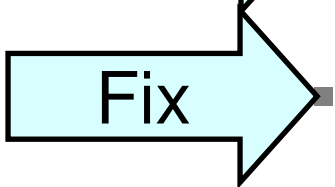- If converter encounters I/O errors writing the JCT

  or
- If there is a JCT overlay that damages JCT eycatcher

  then
- Converter error recovery can loop trying to write the JCT to a new place on SPOOL until all SPOOL space has been tried (and SPOOL is at 100%)
- z/OS 1.12 aggravated problem (CYL_MANAGE=FAIL)
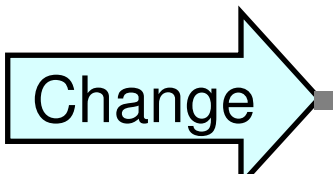
Change
- Corrected I/O error recovery and retry logic

Fix
- JES2 z/OS 1.12, 1.13

OA36674 - Duplicate Job Errors

Problem ▸ **Lots of duplicate job error with z/OS 1.12 member active**

- ▪ **Extra CPU overhead processing duplicate jobs**
- ▪ **Long dead pre-z/OS 1.8 member still active (was $PJES2,TERMed years ago but never reset)**

Change ▪ **Automatically reset ancient members even if AUTOEMEM is not set**

Avoid ▸ **Ensure old/dead members are reset (use AUTOEMEM)**

Fix ▸ **JES2 z/OS 1.10, 1.11, 1.12, 1.13**

OA37147 – ABEND 02A Accessing SPOOL

Problem ▸ **SPOOL volume incorrectly marked as unavailable during initialization**
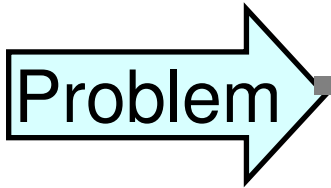
- **Old members are being deleted or redefined**

Change ▸ **Corrected member status processing during restart**

Avoid ▸ **Ensure old/dead members are reset (use AUTOEMEM)**

Fix ▸ **JES2 z/OS 1.10, 1.11, 1.12, 1.13**

OA37233 - Memory Leak in Initiator Address Space

Problem ➤ **Slow memory leak of SP230 key 1 31 bit storage**
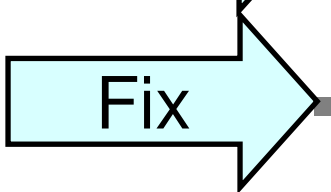
- ➤ ~750 bytes per job

- **Occurs in batch address spaces**

- **Can slow down batch job**

  - ➤ extra CPU spent in GETMAIN, local lock contention, etc

Avoid! ➤ **Occasionally recycle initiators**

Fix ➤ **JES2 z/OS 1.12, 1.13**

OA35770 - NJE Multi-line Messages Truncated

Problem

- **Multi-line messages from TCP/IP NJE node truncated**
  - ► Requires NJE over TCP/IP and SNA or BSC
  - ► Connection can be to different nodes
- **Messages from TCP/IP ignored while processing SNA/BSC messages**
- **TCP/IP message will time out**

Change

- **Message processing logic was corrected**

Fix

- **JES2 z/OS 1.10, 1.11, 1.12, 1.13 - F106**

■ **Don't run out of BERTs**

System z Social Media

IBM

- **System z official Twitter handle:**
  - ► **@ibm_system_z**

- **Top Facebook pages related to System z:**
  - ► **Systemz Mainframe**
  - ► **IBM System z on Campus**
  - ► **IBM Mainframe Professionals**
  - ► **Millennial Mainframer**

- **Top LinkedIn Groups related to System z:**
  - ► **Mainframe Experts Network**
  - ► **Mainframe**
  - ► **IBM Mainframe**
  - ► **System z Advocates**
  - ► **Cloud Mainframe Computing**

- **YouTube**
  - ► **IBM System z**

- **Leading Blogs related to System z:**
  - ► **Evangelizing Mainframe (Destination z blog)**
  - ► **Mainframe Performance Topics**
  - ► **Common Sense**
  - ► **Enterprise Class Innovation: System z perspectives**
  - ► **Mainframe**
  - ► **MainframeZone**
  - ► **Smarter Computing Blog**
  - ► **Millennial Mainframer**

Questions?

Session 11719