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z/OS JES3 Product Update and Review of Newer Features (and V2.1 sneak peak)


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Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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Active Releases



Release	FMID	Available	End of Service
z/OS V1.13.0	HJS7780	September 30, 2011	September 30, 2016
z/OS V1.12.0	HJS7770	September 29, 2010	September 30, 2014

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

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Lifecycle Extensions are a fee-based offering that provides corrective service (a fix, bypass, or restriction to a problem) for up to two years beyond the withdrawal of service date for a z/OS release.

BCP Compatibility



	z/OS V1.12	z/OS V1.13
z/OS V1.12 JES3 (HJS7770)		
z/OS V1.13 JES3 (HJS7780)		

JES3 code can be compiled and executed on the same or a higher level of the BCP, but never a lower level.

New Statement Of Direction – z/OS V1.13 Announce Letter

“z/OS V1.13 is planned to be the last release to support a staged migration for JES2 and JES3. Future releases will require you to migrate to all elements of z/OS at the same time, including JES2, JES3, or both.”

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Service Highlights Information APARs



APAR	Problem description	Updated
II07968	JES3 Maintenance Philosophy.	2/1/2012
II11768	JES3 Toleration APARs.	7/25/2011
II11784	Recommended JES3 SAPI and Extended Status (SSI 80) maintenance.	1/11/2013
II12051	Known causes of ATL or VTS problems in a JES3 environment.	12/20/2004
II14347	Jobs hung in GMS SELECT state when initiators are defined as JES3 managed.	12/05/2007
II14434	Recommended JES3 TCP/IP/NJE maintenance.	1/28/2013
II14572	Recommended JES3 SPOOL Browse and SYSLOG Browse maintenance.	11/1/2011
II14635	SDSFINFO : REC-CNT on SDSF JDS for JES3 datasets incorrect	4/18/2012

- II14635 is new! Details on a later slide.

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Service Highlights



Extended Status & SAPI APARs

APAR	Problem description	
II11784	Recommended SAPI and Extended Status (SSI 80) maintenance.	INFO
OA38659	ABENDS0C4 in IATGRES	

SPOOL and SYSLOG Browse APARs

APAR	Problem description	
II14572	Recommended JES3 SPOOL Browse and SYSLOG Browse maintenance.	INFO

APARs closed since 1/1/2012

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Service Highlights NJE over TCP/IP APARs



APAR	Problem description	
II14434	Recommended JES3 TCP/IP/NJE maintenance.	INFO
OA38037	ABENDS0C4 in IATMSGCX	
OA38289	Insufficient DOC for defining NETSERV USERID to OMVS	DOC
OA38333	ABEND0C4 in IATNTTDR when issuing *CANCEL,NETSERV,NODE=NODE,I	PE
OA38538	ABEND0C4 or ABEND0C6 in IATGRQM while dequeuing an NSST	
OA38539	Slow JES3 processing	HIPER
OA40340	*FAIL command with DUMP option for TCP DSP does not dump NETSERV	
OA40491	Information needed to *FAIL a TCP FCT is not available	
OA40496	ABEND0C4 in IATNTTDR when issuing *FAIL against a TCP FCT	PE,HIPER
OA40581	JES3 CPU spike	HIPER
OA40740	NETSERV starts on wrong system	DOC

PE = Fixes PTF in Error
DOC = Documentation

APARs closed since 1/1/2012

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Service Highlights JES3 APARs (1 of 3)



APAR	Problem description	
OA37705	Suppression of NETVIEW messages using SLOGCMDR parameter does not work in JES3	
OA37760	Intermittent connect issues after DSI	HIPER
OA37888	JES3 not varying on SMS tape drives	
OA37982	SMF type 84 JES3 JMF subtype 2 incorrect length	
OA38157	ABEND0C4 in IATSIJS during ESTAE processing	
OA38232	ABEND0C4 in module IATSIBS	
OA38261	ABENDS7C6 in IATLVVR	
OA38268	ABEND0C4 in IATGRSP - IATDMEB(DMEBARR)	
OA38382	ABEND0C4 in IATSIAD after recovery from another abend in IATDMUB	
OA38393	ABEND0C4 in IATSIAD	
OA38421	Loop in JES3 module IATMOOI	HIPER
OA38531	ABENDDM747 from IATDMJA	
OA38603	Task hung in JES3 system	HIPER
OA38645	ABEND0C4 in IATDMDM	HIPER

APARs closed since 1/1/2012

PE = Fixes PTF in Error

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Service Highlights JES3 APARs (2 of 3)



APAR	Problem description	
OA38774	Task hung in a JES3 environment	
OA38883	No displayable data when using SDSF in JES3	
OA38929	GRSPDUMP followed by ABENDDM747 followed by ABEND1FB when doing SDSF browse	
OA38936	PSODSP ABENDS0C4 in IATOSGP	HIPER
OA39247	JSAM buffer issues	HIPER
OA39311	SDSF REC-CNT field invalid for JES3 customers examining executing job datasets	DOC
OA39398	Job hung after JES3 hotstart	HIPER
OA39435	ABEND0D3 RC13 using REUSEASID in a JES3 system	HIPER
OA39550	Missing NETSERV dump after JESXCF abend	
OA39556	MSGIAT6946 GETREC FSI error no buffers available condition followed by ABEND024	
OA39575	MSGIAT8562 documentation missing some explanations for keywords	DOC
OA39753	ABEND0C4 in IATINRN during JES3 start at Z/OS 1.13 with SDI=OFF	HIPER

DOC = Documentation

APARs closed since 1/1/2012

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Service Highlights JES3 APARs (3 of 3)



APAR	Problem description	
OA39857	ABEND6FB RSN10 issued by IATSSRN during DSI processing	HIPER
OA39861	SDSF shows no displayable data for jobs in JES3 setup	PE
OA39895	Provide a means to delete orphaned CIFSS	
OA39916	ABEND0C4 in module IATSIBS	
OA40077	ABEND0C8 PIC8 in IATDMEB	
OA40144	Secondary affinity ignored on dynamic GDGALL allocation with JES3	
OA40405	JES3 local messages not written to JES3DLOG after applying OA37705	PE,HIPER
OA40462	ABEND0C4 in IATGRMVD	
OA40545	ABENDDM672 under OUTSERV FCT issued by IATOSDO	PE,HIPER
OA40861	ABEND0C4 RC3B after PUT processing	
OA40882	ABEND0C1 in IATSI83	

PE = Fixes PTF in Error
DOC = Documentation


APARs closed since 1/1/2012

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OA39311 –SDSF REC-CNT FIELD invalid for JES3 customers examining executing job datasets



- User obtained a zero record count for an active SYSOUT data set though the contents can be browsed.
- Counts are obtained via SDSF interfaces which uses Extended Status SSI80 to obtain the counts from JES3.
- JES3 global does not update line, page, byte, and record counts for an active SYSOUT data set until the data set is unallocated.
- SSI80 documentation in *z/OS MVS Using the Subsystem Interface* updated.
- User's affected:
 - All HJS7770 and HJS7780

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OA39311 – SDSF REC-CNT FIELD invalid for JES3 customers examining executing job datasets

PROBLEM SUMMARY:

A user asked SDSF (the System Display and Search Facility) to return information about a running job's SYSOUT data sets. SDSF, via SSI80, asked the JES3 global for this information, which includes each data set's record count. The returned data indicated a record count of zero for a data set, but browsing it revealed that it was not empty. Module IATGRES obtains the record count from the JET (IATYJET), an internal JES3 control block that represents the data set. The record count is updated by module IATDMJA when the data set is unallocated. Since the data set is typically unallocated at the end of the job or job step, the value returned for an active SYSOUT data set will not be current.

PROBLEM CONCLUSION:

The information in the following manuals should appear as indicated below. Updates will only be made to the manuals in future releases.

SA22-7642-xx Z/OS MVS Using the Subsystem Interface


Chapter 3. SSI Function Codes Your Program Can Request

Extended Status Function Call SSI Function Code 80 – SYSOUT Element Verbose Section:

```
STVSFLG1 Section flag byte
          Bit value Description
          STVS1ERR Error obtaining verbose
          data (terse section returned)
          |
          | STVSDSCL Line count, page count, and record count (STVSLMCT,
          | STVSPGCT, STVSBUCT, and STVSRCT) are valid. This bit will not be on
          | if there was an abnormal termination or the data was created on a
          | different node.
          |
          | STVS1SPN SPIN data set
          | STVS1JSL Spun JESLOG data set
          | STVS1SYS System data set
          | STVS1SIN Instream data set (SYSIN)
          | STVS1DUM Dummy data set (SYSOUT data set WHICH will not print)
          |
          | NOTE: For JES3, the line, page, byte, and record counts (STVSLMCT, STVSPGCT, STVSBUCT, STVSRCT)
          | are updated when the data set is unallocated. Prior to then, the returned values,
          | though valid, are not current.
          |
          | STVSLMCT Line count (valid only if STVSDSCL is ON in STVSFLG1)
          | STVSPGCT Page count (valid only if STVSDSCL is ON in STVSFLG1)
          | STVSBUCT Byte count after blank truncation, 63 bit right justified (valid only if STVSDSCL is
          | ON in STVSFLG1)
          |
          | STVSRCT Record count (JES3 only) (valid only if STVSDSCL is ON in STVSFLG1)
          |
          | STVSDSN SYSOUT data set name (valid only if STVSDSCL is ON in STVSFLG1)
```

II14635– REC-CNT on SDSF JDS for JES3 datasets incorrect


- SDSF issues an SSI 80 (extended status SSI) for dataset related information on the JDS panel. For JES3, the value returned and displayed in the REC-CNT field can be 0, or be partial. System datasets (such as JESMSG LG and JESYSMSG) will have a count of records written during converter/interpreter and main device scheduling, up to the point of execution. The datasets are closed at that point, providing a count value; the datasets are then reopened during execution, the counts are not updated until the datasets are closed again. For non-system datasets, the counts will be zero while in an open state.
- A design marketing request was created to request the function in a future release. The marketing request is MR041112218. There also is a DOC apar OA39311, that documents for SSI 80 the behavior in the Using the Subsystem Interface manual.
- This behavior applies to z/OS 1.10, 1.11, 1.12 and 1.13.



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II14635 – SDSFINFO : REC-CNT ON SDSF JDS FOR JES3 DATASETS INCORRECT

SDSF issues an SSI 80 (extended status SSI) for dataset related information on the JDS panel. For JES3, the value returned and displayed in the REC-CNT field can be 0, or be partial. System datasets (such as JESMSG LG and JESYSMSG) will have a count of records written during converter/interpreter and main device scheduling, up to the point of execution. The datasets are closed at that point, providing a count value; the datasets are then reopened during execution, the counts are not updated until the datasets are closed again. For non-system datasets, the counts will be zero while in an open state.

A design marketing request was created to request the function in a future release. The marketing request is MR041112218. There also is a DOC apar OA39311, that documents for SSI 80 the behavior in the Using the Subsystem Interface manual.


This behavior applies to z/OS 1.10, 1.11, 1.12 and 1.13

OA39435 – ABEND0D3 RC13 using REUSEASID in a JES3 system



- REUSEASID=YES parameter used on the START command for an address space and REUSEASID(YES) set in DIAGxx parmlib member.
 - REUSEASID(YES) in DIAGxx parmlib member became the default with z/OS V1R12.
- JES3 configured with PBUFs allocated in JES3AUX which will require cross-memory moving of data between PBUFs and UBUFs.
 - MAINPROC ... PRTPAGE=(*csapages, auxpages*) ...
- ABENDS0D3 RC13 with PASID set to JES3AUX.
- ABEND1FB RC17 may occur from IATDMEB(DMEBARR).

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PROBLEM SUMMARY:

A user configured JES3 to use protected buffers (PBUFs) in the JES3AUX address space and specified REUSASID(YES) in the DIAGxx parmlib member. This means if an address space is started with the REUSASID=YES parameter on the START command, routines in cross memory mode in that address space can no longer use the conventional Basic Program Call (PC) linkage. In this case, module IATDMDK issued a Basic PC instruction to call module IATDMXM in the JES3AUX address space. When IATDMXM issued a PT instruction to return, the result was an ABEND0D3.

PROBLEM CONCLUSION:

Module IATINXM was changed to define a stacking PC rather than a basic PC for cross-memory services. Module IATDMXM, the cross-memory services PC routine, was changed to accommodate the new stacking PC.

OA39435 – ABEND0D3 RC13 using REUSEASID in a JES3 system



- Originally reported APAR OA36365 – closed UR1.
- Fix implemented for the next release.
 - JES3 code changed to utilize a stacking Program Call (PC) rather than a basic PC for cross memory services.
- Fix rolled back with OA39435 for releases where REUSEASID(YES) in DIAGxx is now the default.
- User's affected:
 - All HJS7770 and HJS7780


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OA38647 – Mis-matched maintenance can cause SWA create failures in a JES3 environment


- **Scheduler Services APAR.**
 - PE for toleration APAR OA33896.
- OA33896 provided the intended new function but introduced a problem in JES3 environments if the PTF is not applied across all systems in the sysplex.
 - If a job that uses the SPIN JCL keyword goes through a CI where the PTF for OA33896 is applied, and then runs where it is not applied, an ABEND8FB RC5 will occur in JES3 interpreter/initiator code.
- Make sure the PTFs for OA33896 are applied to ALL systems in the JES3 sysplex.
- User's affected:
 - All HJS7750, HJS7760, HJS7770 with the PTFs for APAR OA33896.



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OA33896 - NEW FUNCTION - Z/OS 1.13 TOLERATION SUPPORT

New support for JCL keywords in a future release needs to be recognized and ignored in z/OS V1R10 and above.

OA38647 - MIS-MATCHED MAINTENANCE CAN CAUSE SWA CREATE FAILURES IN A JES3 ENVIRONMENT.

ERROR DESCRIPTION:

Customers in a JES3 complex with mismatched maintenance could encounter SWA Create Failures.

USER IMPACT:

OA33896 provided the intended new function but introduced a problem in JES3 environments if the PTF is not applied across all systems in the sysplex. This is true regardless of whether z/OS 1.13 is included in the sysplex. Specifically, if a job that uses the SPIN JCL keyword goes through a CI where the PTF for OA33896 is applied, and then runs where it is not applied, an ABEND8FB RC5 will occur in JES3 interpreter/initiator code. This is because enhanced parameter text unit information for the SPIN keyword is passed to the JES3 system without the PTF applied, but the keyword table on the receiving system does not contain the enhanced parameter information for proper processing.

ADDITIONAL NOTES:

The following messages will be seen in conjunction with the abend:

```
IAT6810 JOB jobname (jobid) FAILED DUE TO SWA
CREATE ERROR
IAT4902 INVALID SCHEDULER CONTROL BLOCK ENCOUNTERED
```

ADDITIONAL KEYWORDS:

msgIAT6810 msgIAT4902



LOCAL FIX:

Apply the PTFs for APAR OA33896 to ALL systems in your JES3 sysplex.

JES3 tailored SVC dump exit Adds to an SVC dump

- In R11 JES3 added an SVC dump exit.
 - Created during JES3 initialization and deleted if JES3 ends.
 - The exit was updated with APAR OA29940.
- The exit is designed to conditionally add the JES3, JES3AUX, and JESXCF address spaces to the dump.
 - Added when at least one ASID included in the SVC dump may have a hung subsystem call.
 - JES3 looks for an outstanding SSI request.
- Does not apply to stand-alone dumps.

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Beginning with z/OS V1.11, JES3 establishes an SVC dump exit. The SVC dump exit is created during JES3 initialization. The dump exit is new JES3 module IATABTDX which is a dynamic LPA module. The MVS service CSVDYNEX is used to establish the dump exit when JES3 is started. If JES3 is ended, then MVS service CSVDYNEX is used to delete the dump. The delete allows for the dump exit module to be updated when JES3 is started. During initialization, if the call to the MVS service fails and the dump exit cannot be established, initialization will continue and message IAT3207 is written.

Whenever an SVC dump is taken in a user address space, either because it fails, because the operator requests a dump, or because a dump is triggered by a SLIP trap, the JES3 dump exit is called. The dump exit conditionally adds the address spaces for JES3, JES3AUX, and JESXCF to the SVC dump. This occurs if the exit determines that least one ASID, included in the SVC dump, has an outstanding SSI request. Identification of the address spaces with outstanding SSI requests is based upon the same internal activity table counters used to control the setting and resetting of the IAZJSAB activity flags.

Additional JES3 dumps

Why the additional dump?



- An outstanding SSI request may be hung if there is a problem on the JES3 global.
 - Service may need the JES3 global to determine if and why an SSI request is hung.
 - Past problems have gone unresolved without a dump from the JES3 global.
- May not even be related to the cause of SVC dump on the local.
 - There just may have been an outstanding SSI request at the time of the SVC dump.
 - Let service make that determination.

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Additional JES3 dumps

When can this occur?



- Occurs whenever an SVC dump is taken in a user address space on a JES3 local.
 - Due to a failure in the address space.
 - Operator requested a dump of the address space.
 - The address space dump is triggered by a SLIP trap.
- An SVC dump on the JES3 global already includes the JES3, JES3AUX, and JESXCF address spaces.
- Does not apply to stand-alone dumps.
 - If you are forced to obtain a stand-alone dump on a local, and you suspect a JES3 issue, please get a dump of the JES3 global using the JES3 *DUMP command.

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Additional JES3 dumps

What will you see?



- Along with the SVC dump on the local, a separate dump of the JES3 global will be created.
- JES3 global dump will be created with ABEND DM137:
 - Either the operator issued the *DUMP command or the command was automatically issued from the JES3 tailored dump exit to supplement a user address space dump. In that case, the dump title will contain the following text: 'COMPON= JES3 DYN DUMP,COMPID=SC1BA,ISSUER=IATABTDX'.
- Operators will need to respond to more IAT3714 messages if WANTDUMP=ASK is defined.
 - IAT3714 SPECIFY DUMP OPTION FOR JES3 GLOBAL ,main

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Use WANTDUMP=YES

IBM Recommendation


- Provides for more immediate capture of data in the event of a JES3 failure.
- Waiting for an operator to respond to message IAT3714 can result in lost data.
 - System continues processing while the JES3 address space is stopped.
 - System trace records related to the failure may be lost.
- LIMIT and INTERVAL values can be set which force WANTDUMP=ASK should a JES3 failure occur frequently.
 - IAT3714 will occur when the LIMIT is reached within the INTERVAL.
 - *DUMP command generated by dump exit counts against the LIMIT.



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Specifies that a dump should be taken immediately when a JES3 failure occurs.

WANTDUMP is a parameter of the OPTIONS initialization statement.

Default is WANTDUMP=YES,LIMIT=3,INTERVAL=10 (INTERVAL is in minutes)

Commands allow the WANTDUMP option to be changed including the LIMIT and INTERVAL specifications.

IBM suggests that you allow the WANTDUMP option on the STANDARDS initialization parameter to default to "YES" instead of setting it to "ASK". Using the default of "YES" allows the system to determine what action to take when a JES3 failure condition occurs. In today's sysplex environment setting this parameter to "ASK" can cause delays in operations because the JES3 address space essentially stops functioning until you respond to the IAT3714 message. Also, certain portions of the dump, such as the system trace, are invalid because the system continues processing until you response to message IAT3714.

Avoid Tape Library definition problems



- Customers have reported problems after adding new Tape Library devices.
- Often the problem has been an error in defining the device to HCD or JES3, or with changes to ACS routines.
- Another cause of the problem can be as a result of not restarting JES3 C/I FSS's.

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Avoid Tape Library definition problems

Use correct device related names



- The *Device-specific Library Unitname Table* in the *JES3 Initialization and Tuning Guide* contains device related names that are used for the SETNAME, HWSNAME, and DEVICE initialization statements.
 - With the addition of new devices, this table is not always current!
 - Refer to the DFSMS publication for the specific device to get proper LD and LDG names.
 - *z/OS DFSMS Software Support for IBM System Storage TS1140, TS1130, and TS1120 Tape Drives (3592)*
- An example is TS1140 (3592 Model E07):
 - LDG359N and LDNnnnnn should be used.
 - Not LDG359J and LDJnnnnn which are for 3592 Model J.

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Avoid Tape Library definition problems JES3 restarts



- Before doing any restarts, use the JES3 initialization stream checker to validate the updates between the HCD and the JES3 inish deck.
- Restart JES3 and C/I FSSes.
 - For FSSDEF,TYPE=CI initialization statements, consider using TERM=YES,START=YES.
 - With an orderly restart of JES3, this will incorporate and establish the changes made to HWSNAME.

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JES3 initialization stream checker



- IBM recommends you use the JES3 initialization stream checker utility to test your JES3 initialization statements.
 - Check any new or modified inish deck before you perform a hot start with refresh, warm, or cold start of JES3.
- The checker detects most syntax errors and some logical errors in the initialization stream.
 - Checks for errors between the HCD and DEVICE, HWSNAME, RJPLINE, and SETNAME initialization statements.
- Recent customer service calls could have been avoided.
 - Most have been syntax errors!

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JSAM buffers Shortages



- There is a finite number of JSAM buffers available to a system based on customer definitions.
- The buffer pool does expand and contract when required, but that can be insufficient under certain circumstances.
- JES3 processing may stop due to a shortage of available buffers.
- Possible messages:
 - IAT1101 MINIMAL JSAM BUFFER CONDITION FOR ...
 - IAT1102 NO AVAILABLE JSAM BUFFERS FOR ...
 - IAT1103 MINIMAL JSAM BUFFER CONDITION FOR JES3 ...

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JSAM buffers

Example shortage scenarios

- A user cancelled a job with an extraordinarily large number of SYSOUT data sets. During purge processing, all the job's JDS (IATYJDS) single record files are read from spool prior to releasing them. However, there were not enough JSAM buffers to contain them all, even after the JSAM buffer pool expanded to its maximum size.
- A job with an exceptionally large number of SYSIN data sets was submitted. During input service, a JDS entry is created for each of these data sets, and the buffers containing these entries are retained. However, there were not enough JSAM buffers to contain them all.



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JSAM buffers

The buffers

- JSAM (JES Spool Access Method) buffers are used by JES3 and C/I FSSes to read/write data from/to spool.
- The size of the JSAM buffer pool is measured in terms of pages of storage.
 - Defined using the BUFFER initialization statement.
 - 2 buffers per page when buffer size \leq 2036 bytes.
 - 1 buffer per page when buffer size $>$ 2036 bytes (4084 bytes max)
- JES3 can allocate space for up to 32,767 JSAM buffer units.
 - Up to 32,767 pages (1 buffer per page)
 - Up to 16,383 pages (2 buffers per page)



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JSAM buffers

Buffer allocations



- PAGES= specifies the size of the initial allocation of pages for the buffers.
- JES3 would make up to 4 secondary allocations.
 - Secondary allocations were half the PAGES= value.
 - JES3 frees up secondary allocations if the buffers are not needed.
 - May not create the maximum number of buffers possible.
- BUFFER,BUFSIZE=4084,PAGES=(1024,128,512),...
 - JES3 default BUFFER values.
 - Initial allocation will be 1,024 pages or 1,024 buffer units.
 - Up to 4 more allocations of 512 pages/buffers for a total of 3,072 pages/buffers – well short of the 32,767 maximum.

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JSAM buffers

Buffer allocation changes



- JES3 will make up to **16** secondary allocations.
- Secondary allocations are **2x** the PAGES= value.
- BUFFER, BUFSIZE=4084, PAGES=(1024,128,512),...
 - Same JES3 default BUFFER values.
 - Initial allocation will be 1,024 pages or 1,024 buffer units.
 - Up to 15 more allocations of 2,048 pages/buffers for a total of 31,744 pages/buffers.
 - A 16th secondary allocation would exceed the 32,767 maximum.
- This provides quicker relief when buffers are briefly needed without requiring changes to the BUFFER statement.

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JSAM buffers

Maximum buffers still not allocated

- What if the BUFFER statement is still limiting the number of buffers allocated?
- BUFFER,BUFSIZE=2036,PAGES=(256,128,128),...
 - Example with 2nd recommended buffer size of 2,036 bytes & smaller initial allocations.
 - Initial allocation will be 256 pages or 512 buffer units.
 - Up to 16 more allocations of 512 pages (1,024 buffers) for a total of 8,448 pages (16,896 buffers) – well short of the 32,767 maximum.



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JSAM buffers

Increase buffer pool size



- Changing PAGES= to increase the buffer pool size, to allow for more buffers, required an IPL and JES3 warm start.
 - Not a good solution when you suddenly have a shortage.
- Can now increase the buffer pool size using JES3 hot start with refresh.
- BUFFER,BUFSIZE=2036,PAGES=(**496**,128,128),...
 - Changed initial allocation to 496 pages or 992 buffer units.
 - Up to 16 more allocations of 992 pages (1,984 buffers) for a total of 16,368 pages (32,736 buffers) – near the 32,767 maximum.

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JSAM buffers

Some final numbers



- Using BUFSIZE=4084 and PAGES=992 maximizes total buffer allocation while minimizing secondary allocations.
 - 1,984 pages/buffers per secondary allocation (up to 16).
 - 32,736 total pages/buffers can be allocated.
- Using BUFSIZE=4084 and PAGES=4681 maximizes total buffer allocation with larger secondary allocations.
 - 9,362 pages/buffers per secondary allocation (up to 6).
 - 32,767 total pages/buffers can be allocated.
- Applies to all 3 PAGES= allocations: global, local, C/I FSS.
- Now available via APAR OA39247.
 - HJS7760, HJS7770 and HJS7780 PTFs.

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Eliminated use of SVC 111



- SVC 111 (routine IGC111) was used in IATDMDM which processes user access method requests.
 - GET, PUT, CHECK, POINT, ENDREQ, GET-UPDATE, and PUT-UPDATE
- Requirement MR0428086352 requested that IGC111 be modified to handle ACBs and RPLs above the line.
- IATDMDM has been changed to replace SVC 111 usage with Program Call (PC).
 - This eliminates the use of DEBCHK which is expensive.

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Eliminated use of SVC 111 DEBIRBB redefined



- DSBs are now obtained in 31-bit storage.
- The content of DEBIRBB has been redefined.
 - Now contains a 24-bit DSB token rather than a DSB address.
- Obtaining access to the DSB using DEBIRBB (or DEBIRBAD) must be changed.
- JES3 macro IATXDSBL must be used to convert the DSB token to a DSB address.

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Eliminated use of SVC 111 IATXDSBL example



- The value of DEBIRBB or DEBIRBAD must be converted to the DSB address.
 - Just needed to add the IATXDSBL macro usage.

```

-----*
*   R12 contains 24-bit ACB address                               *
-----*
      USING IFGACB,R12      Establish ACB addressability          00010000
      XR      R9,R9         Clear R9                               00020000
      ICM     R9,B'0111',ACBDEB  Get DEB address                 00030000
      USING  DEBBASIC,R9      Establish DEB addressability       00040000
      XR      R1,R1         Clear R1                               00050000
      ICM     R1,B'0111',DEBIRBB  Get the DSB token              00060000
      IATXDSBL DSBTKN=R1,      Convert to a DSB address          +00070000
      ERROR=DSBERROR          Error exit                          00080000
      USING  DSBSTART,R1      Establish DCB addressability       00090000
      ICM     R1,B'0111',DEBIRBB  Get the DSB token              00100000
      ERROR=DSBERROR          Error exit                          00110000
      USING  DSBSTART,R1      Establish DCB addressability       00120000

```

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SYSOUT ENFs



- JES issues ENFs to notify SYSOUT events
 - Used by applications to track SYSOUT progress
 - ENF 58 – SYSOUT processing tracking
- Events creating ENFs include
 - Object create and delete
 - Selection and deselection
 - Print progress via checkpoints for SYSOUT (upon request)
- Number of ENFs has increased in recent releases
 - High level ENFs for SYSOUT
 - SAPI application can enable ENFs for SYSOUT

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SYSOUT ENFs




- Intent of ENFs is to reduce “polling” for status
 - Push or event driven v. 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 SYSOUT will be processed
 - Allows single application instance to monitor entire SYSPLEX
- Multiple JESPLEXes in SYSPLEX can increase total ENFs
 - Especially when 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

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JES3 automatic FLUSH of a main



- A z/OS JES3 V1.13 global main will automatically perform the FLUSH operation when a local main leaves the JESplex.
- This does not vary the main offline like the *S,main,FLUSH command.
- Eliminates the need for operator intervention and allows JES3 to immediately clean up jobs and FSSes that were active on the affected local.
 - JES3 knows sooner that the local main is not available for processing jobs, accessing spool, etc. rather than later at reconnect time.
 - Affected jobs can be restarted sooner.
 - Restarted system will connect without further operator intervention.

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The automatic flush is related to XCF message IXC102A. When XCF partitions the system out of the Sysplex, JESXCF notifies JES3. JES3 will then perform the flush **operation**.


The flush operation is similar to the *S main,FLUSH command but the difference is that the main's online status is unchanged. That allows it to reconnect as soon as the system is re-IPLed and ready to connect again.

If you have automation that issues the flush command based on the message, you should consider removing it. If you are used to having the system be varied offline, you can replace the flush command by a *V,main,OFFLINE command.

Documented in z/OS Migration V1.13 (GA22-7499-19)

Automatic FLUSH of a main Before V1.13...

- After operator responds DOWN to XCF message IXC102A, the local is DOWN, but still CONNECTED and ONLINE.
 - JES3 global cannot proceed with any cleanup/restarts.




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```

*SY1          *29 IXC102A XCF IS WAITING FOR SYSTEM SY2 DEACTIVATION. REPLY
DOWN WHEN MVS ON SY1 HAS BEEN SYSTEM RESET
29,down
SY1          IEE600I REPLY TO 29 IS:DOWN
SY1          IXC808I ELEMENTS FROM TERMINATED SYSTEM SY1 WERE NOT PROCESSED
BY THIS SYSTEM.  ARM COUPLE DATA SET IS NOT AVAILABLE TO THIS SYSTEM.
SY1          IXC105I SYSPLEX PARTITIONING HAS COMPLETED FOR SY1
- PRIMARY REASON: LOSS OF CONNECTIVITY
- REASON FLAGS: 000002
SY1          ISG011I SYSTEM SY1 - BEING PURGED FROM GRS COMPLEX
SY1          ISG013I SYSTEM SY1 - PURGED FROM GRS COMPLEX
SY1          IEA258I CONSOLE PARTITION CLEANUP COMPLETE FOR SYSTEM SY1.
*i main=all
IAT8643 MAIN INQUIRY RESPONSE
INFORMATION FOR MAINPROC SY1
  FMID=HJS7770, STATUS=(ONLINE,CONNECTED,ATTACHED,GLOBAL)
INFORMATION FOR MAINPROC SY2
  FMID=HJS7770, STATUS=(ONLINE,CONNECTED,DOWN,LOCAL)
MAINPROC INQUIRY RESPONSE COMPLETE

```


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After SY2 is deactivated by responding DOWN to XCF message IXC102A, JES3 knows SY2 is down, but it is still connected and active.

Automatic FLUSH of a main Before V1.13...



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- A *S SY2,FLUSH is required to tell JES3 that SY2 is no longer connected.
 - This will also take the system offline.

```
*s sy2,flush
IAT2061 SYSTEM SY2      IS ACTIVE IN JESXCF GROUP NODE1
*i main=all
IAT8643 MAIN INQUIRY RESPONSE
INFORMATION FOR MAINPROC SY1
  FMID=HJS7770, STATUS=(ONLINE,CONNECTED,ATTACHED,GLOBAL)
INFORMATION FOR MAINPROC SY2
  FMID=HJS7770, STATUS=(OFFLINE,FLUSHED,DOWN)LOCAL)
MAINPROC INQUIRY RESPONSE COMPLETE
```


- *VARY SYS2,ONLINE is needed to for the system to reconnect when it is restarted.

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Doing *S SY2,FLUSH will tell JES3 that SY2 is no longer connected. The flush operation will be done but the system will also be taken offline. The operator will need to do *V SY2,ONLINE in order for the system to reconnect.

Automatic FLUSH of a main With V1R13 JES3 global...



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- JES3 is notified when a local main leaves the JESplex after the DOWN response to XCF message IXC102A.
- JES3 global will automatically FLUSH the down system.
 - This does not vary the down system offline!

```
*i main=all
IAT8643 MAIN INQUIRY RESPONSE
INFORMATION FOR MAINPROC SY1
  FMID=HJS7780, STATUS=(ONLINE,CONNECTED,ATTACHED,GLOBAL)
INFORMATION FOR MAINPROC SY2
  FMID=HJS7770, STATUS=(ONLINE,FLUSHED,DOWN,LOCAL)
MAINPROC INQUIRY RESPONSE COMPLETE
```


- Note the global is JES3 V1.13 (HJS7780) and the locals can be any supported level.

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With a global at V1.13 (HJS7780) the automatic flush will do the flush operation but not vary the system offline. When JES3 is started on SY2, it will reconnect without further operator intervention.

Automatic FLUSH of a main With V1.13 JES3 global...



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- After restart of JES3 on the local main, the system will be reconnected and attached without further operator intervention.

```
*i main=all
IAT8643 MAIN INQUIRY RESPONSE
INFORMATION FOR MAINPROC SY1
  FMID=HJS7780, STATUS=(ONLINE,CONNECTED,ATTACHED,GLOBAL)
INFORMATION FOR MAINPROC SY2
  FMID=HJS7770, STATUS=(ONLINE,CONNECTED,ATTACHED,LOCAL)
MAINPROC INQUIRY RESPONSE COMPLETE
```

- You should consider removing any automation for doing a *S,main,FLUSH command.
- If you are used to having the system be varied offline, you can replace the flush command by a *VARY,main,OFFLINE command.

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With a global at V1.13 (HJS7780) the automatic flush will do the flush operation but not vary the system offline. When JES3 is started on SY2, it will reconnect without further operator intervention.

JES3 Dynamic Spool Add



- Adding a JES3 spool extent (or removing) is disruptive to the JESplex.
 - Requires an IPL and warm start of the JES3 global main followed by an IPL and restart of all the JES3 local mains.
- z/OS JES3 V1.13 provides the capability to add a spool extent without an IPL.
 - No IPL required for mains at z/OS JES3 V1.13.
 - Removing a spool extent without an IPL is being considered for a future release.
- Extents can be added with *MODIFY CONFIG command or using JES3 hot start with refresh.

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JES3 Dynamic Spool Add

Create a JSAM initialization stream member




- Recommend that customers create a new initialization stream member for the JES3 Spool Access Method (JSAM) related statements.
- This will allow customers to use the same JSAM member for dynamic spool add and for subsequent JES3 starts which read the INISH deck.
- Include the JSAM related statements:
 - Start with the DYNALLOC statements...
 - ...end with the ENDJSAM statement.
 - **ALL** DYNALLOC statements must be contained within a single INCLUDE member.
 - Cannot contain additional INCLUDE statements (no nesting).

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JES3 Dynamic Spool Add JSAM member example (simplified with 1 spool)





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```

DYNALLOC,DDN=IATPLBI1,DSN=SYS1.PROCLIB
*
DYNALLOC,DDN=SPLX30,DSN=SYS1.JESPACE,VOLSER=SPLX30,UNIT=3390
*-----*
SPART,NAME=PART1,DEF=YES,INIT=YES
*-----*
*IF PARM.(1,1)=T TRACKM
*IF PARM.(1,1)^=F TRACKM
FORMAT,DDNAME=SPLX30,SPART=PART1
*IF PARM.(1,1)=F ENDDYNAL
*LBL TRACKM
TRACK,DDNAME=SPLX30,SPART=PART1
*LBL ENDDYNAL
*-----*
OPTIONS,WANTDUMP=YES,JOBNO=(65500,999999,10000),
XCFCGRPNM=JESXCFX3,DUMP=MVS,MT=ON
*-----*
BUFFER,BUFSIZE=4084,GRPSZ=20,PAGES=(1024,64,256),MINBUF=32,
SPLIM=(10,20)
*-----*
ENDJSAM

```

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*IF and *LBL statements are normally treated as comments.

Shipped user exit 15 to examine the inish deck statements is just a BR 14.

Sample user exit 15 provides support for *IF and *LBL.

JES3 Dynamic Spool Add INCLUDE new JSAM member




- Setup a new INISH deck with an INCLUDE statement for the new JSAM member.
 - NOTE: The new INISH deck cannot be used for JES3 levels earlier than V1.13.
- The new INISH deck & JSAM member can be used for any hot start with refresh, warm, or cold start of JES3.
 - You should use the JES3 initialization stream checker utility to test your new JES3 INISH deck and JSAM member.

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JES3 Dynamic Spool Add INISH deck including a JSAM member


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```
*-----*
* AN INISH DECK                                     *
*-----*
INCLUDE, MEMBER=JSAM
*-----*
INCLUDE, MEMBER=STANDRDS
*-----*
OUTSERV, CARRIAGE=6, WS=(C, F, FL, U, CL, D, P), NPRO=75,
      CHARS=GS15, OUTSVFCT=5, SNAGROUP=YES
*-----*
INCLUDE, MEMBER=MAINS
*-----*
. <additional statements>
.
*-----*
INCLUDE, MEMBER=TAPE
*-----*
INCLUDE, MEMBER=DASD
*-----*
ENDINISH
```

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JES3 Dynamic Spool Add

Adding a new extent



- Create and format a new spool extent as normal.
- Update the JSAM member with the DYNALLOC and TRACK/FORMAT statements required for a new spool extent.
- To dynamically add the new extent, issue *MODIFY CONFIG specifying the updated JSAM member:
`*F CONFIG,ADD=JSAM`
- Alternatively, restart the JES3 global using hot start with refresh.

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JES3 Dynamic Spool Add JSAM member example (2nd spool added)



```

DYNALLOC,DDN=IATPLBI1,DSN=SYS1.PROCLIB
*
DYNALLOC,DDN=SPLX30,DSN=SYS1.JESPACE,VOLSER=SPLX30,UNIT=3390
DYNALLOC,DDN=SPLX31,DSN=SYS1.JESPACE,VOLSER=SPLX31,UNIT=3390
*-----*
SPART,NAME=PART1,DEF=YES,INIT=YES
*-----*
* IF PARM.(1,1)=T TRACKM
* IF PARM.(1,1)^=F TRACKM
FORMAT,DDNAME=SPLX30,SPART=PART1
FORMAT,DDNAME=SPLX31,SPART=PART1
* IF PARM.(1,1)=F ENDDYNAL
*LBL TRACKM
TRACK,DDNAME=SPLX30,SPART=PART1
TRACK,DDNAME=SPLX31,SPART=PART1
*LBL ENDDYNAL
*-----*
OPTIONS,WANTDUMP=YES,JOBNO=(65500,999999,10000),
XCFGRPNM=JESXCFX3,DUMP=MVS,MT=ON
*-----*
BUFFER,BUFSIZE=4084,GRPSZ=20,PAGES=(1024,64,256),MINBUF=32,
SPLIM=(10,20)
*-----*
ENDJSAM

```

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JES3 Dynamic Spool Add JES3 processing



- JES3 parses the initialization statements in the JSAM member for parameters that qualify for dynamic modification:
 - **FORMAT/TRACK:** All parameters qualify.
 - **BADTRACK:** All parameters qualify.
 - **BUFFER:** MINBUF and TRUNC parameters qualify. All other parameters are syntax checked only.
 - **SPART:** All parameters except GRPSZ qualify.
 - **OPTIONS:** DUMP, WANTDUMP, INTERVAL, MT, DUMPLINS, INTRDR, and DUPJOB parameters qualify. SDI qualifies, but will be applied at the next hot start. All other parameters are syntax checked only.

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JES3 Dynamic Spool Add JES3 processing (*continued*)



- New spool extents and partitions are identified to be added.
 - Removed extents or partitions are treated as an INISH error at this time.
- Changes are committed if no INISH errors are found.
 - Errors during *F CONFIG end the command with no changes committed.
 - Errors during hot start with refresh require restarting JES3 with hot start to restore the original configuration.
 - Errors can then be fixed and the spool add attempted again.

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JES3 Dynamic Spool Add JES3 processing (*continued*)




- Locals at z/OS JES3 V1.13 or later levels are automatically restarted by the JES3 global.
 - No operator intervention or IPL is required.
- Locals at earlier levels require an IPL and restart.
 - Same requirement as adding a spool extent with a warm start.
 - WTOR messages are issued for the local mains that must be reset.
 - CANCEL will abort the configuration changes.
- Added spool extents and partitions are available and used after all restarted local mains connect or have been flushed.
 - Automatic FLUSH occurs for local mains which leave the JESplex thereby allowing the updates to be used without further intervention.

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JES3 EAV support



- DFSMS added basic and large format sequential data sets to the list of Extended Address Space (EAS) eligible data sets with z/OS V1.12.
 - JES3 data sets can be basic or large sequential data sets.
- JES3 V1.12 supports SPOOL, checkpoint, and Job Control Table (JCT) data sets to be anywhere on an EAV.
- Provides customers the ability to have much larger SPOOL data sets.
 - Previously limited to volume limit of 65,520 cylinders (982,800 tracks).
 - LARGE limit is 16,777,215 tracks per volume.
 - JES3 does not support Extended Format (> 16,777,215 tracks).

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With z/OS V1.10 and higher releases, z/OS has added support for DASD volumes having more than 65,520 cylinders. To expand the capacity of DASD storage volumes beyond 65,520 cylinders, z/OS had to extend the track address format. Hence the name **Extended Address Volume (EAV)** for a volume of more than 65,520 cylinders.

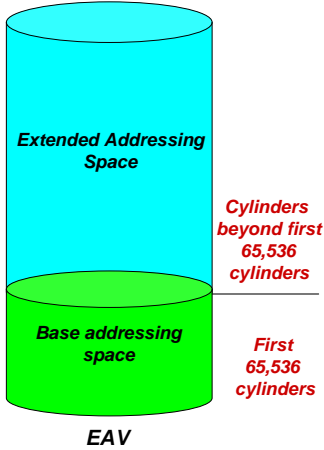
EAVs provide increased z/OS addressable disk storage. EAVs help to relieve storage constraints as well as simplify storage management by providing the ability to manage fewer, large volumes as opposed to many small volumes.

With z/OS V1.12, DFSMS added support for base and large format sequential data sets that now can be exploited for JES3 data sets.

An added benefit is that large sequential data sets, DSNTYPE=LARGE, when EAS eligible on an EAV, are no longer limited to the volume size of 65,520 cylinders. This allows JES3 customers to have much larger SPOOL data sets.

- Each SPOOL data set must be contained in a single extent. (A single extent is one adjoining group of tracks or cylinders.)
- You cannot allocate any secondary extents.
- You cannot allocate more than 1024 spool data sets.

JES3 EAV support Overview – EAV Summary



The diagram shows a cylinder representing an EAV. The bottom portion is green and labeled 'Base addressing space' with a red label 'First 65,536 cylinders'. The top portion is cyan and labeled 'Extended Addressing Space' with a red label 'Cylinders beyond first 65,536 cylinders'. The entire cylinder is labeled 'EAV' at the bottom.

- **Extended Addressing Space (EAS):** The area on an EAV located above the first 65,536 cylinders.
- **Base addressing space:** The area on an EAV located within the first 65,536 cylinders.
- **EAS eligible:** A data set which can reside anywhere on an EAV.

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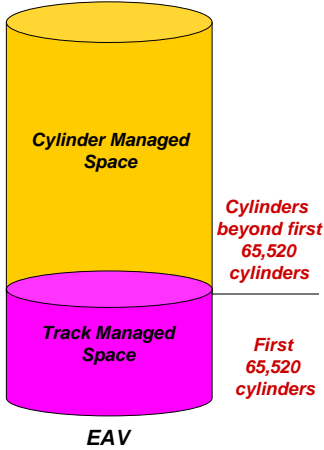
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An Extended Address Volume (EAV) is defined to be a volume with more than 65,520 cylinders.

The Extended Addressing Space (EAS) of an EAV refers to the cylinders of a volume beyond the first 65,535.

In this diagram of an EAV, cylinders up to but not including cylinder 65,536 are in the base addressing space of the EAV. Cylinders starting with cylinder 65,536 are in the EAS of the EAV.

JES3 EAV support Overview – EAV Summary



The diagram illustrates the structure of an Extended Address Volume (EAV). It is represented as a cylinder divided into two sections. The bottom section is colored pink and labeled 'Track Managed Space', with a red label to its right indicating 'First 65,520 cylinders'. The top section is colored yellow and labeled 'Cylinder Managed Space', with a red label to its right indicating 'Cylinders beyond first 65,520 cylinders'. The entire cylinder is labeled 'EAV' at the bottom.

- **Cylinder Managed Space (CMS):** Area beyond the first 65,520 cylinders (not starting at the EAS) where data set extents occupy multicylinder units (BPV default is 21 cylinders).
- **Track Managed Space:** The first 65,520 cylinders where data set extents occupy multiple tracks or cylinders.

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EAS is sometimes referred to as cylinder-managed space. Below EAS is sometimes referred to as track-managed space. But they are not exactly the same.

cylinder-managed space The space on the volume that is managed only in multicylinder units. Cylinder-managed space begins at cylinder address 65,520. Each data set extent occupies an integral multiple of multicylinder unit. Space requests targeted for the cylinder-managed space will be rounded up to the next multicylinder unit. The cylinder-managed space is unique to Extended Address Volumes.


track-managed space The space on a volume that is managed in tracks and cylinders. Track-managed space ends at cylinder address 65,519. Each data set extent occupies an integral of multiple of tracks or cylinders. Track-managed space applies to Extended Address Volumes and non-Extended Address Volumes.

BPV Breakpoint value. The BPV is expressed in cylinders. When the size of a disk space request is equal to or greater than the BPV, the system prefers to use the cylinder-managed space for that extent. This applies to each request for primary or secondary space for data sets that are eligible for the cylinder-managed space. If not enough cylinder-managed space is available, then the system will use the track-managed space or will use both areas. When the size of a disk space request is less than the BPV, the system prefers to use the track-managed area and if enough space is not available there, then the system will use the cylinder-managed space or will use both areas.

JES3 EAV support

Usage notes

- Must specify OPT for Extended Attributes when creating the data set to make it EAS eligible.
 - Example JCL using the EATTR=OPT keyword on DD statement:




```

//ALLOC EXEC PGM=IEFBR14
//SPXTNT DD DSN=SYS1.JESPACE,DISP=(NEW,KEEP,KEEP),
// UNIT=3390,VOL=SER=J3SPLX,
// DCB=(RECFM=U,BLKSIZE=4084),
// SPACE=(CYL,80000),EATTR=OPT,
// DSNTYPE=LARGE
//SPLFRMT EXEC PGM=IEBDG
//SPXTNT DD DSN=SYS1.JESPACE,DISP=SHR,
// UNIT=3390,VOL=SER=J3SPLX,
// DCB=(RECFM=U,BLKSIZE=4084,BUFNO=255),
// DSNTYPE=LARGE
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
DSD OUTPUT=(SPXTNT)
FD NAME=SPOOL,FILL=X'FF',LENGTH=4084
CREATE NAME=(SPOOL),QUANTITY=2000000000
END

```

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EATTR is used to control whether a data set can have extended attribute DSCBs and thus control whether it can be allocated in EAS.

- EATTR of NO indicates that the data set can not have extended attributes or reside in EAS. This is the default for non-VSAM data sets such as basic and large format sequential data sets.
- EATTR of OPT indicates that the data set can have extended attributes and can optionally reside in EAS.

In order to allow a JCT data set to be copied without a cold start, JES3 provides a program called the JCT utility, or IATUTJCT. This utility can be used to migrate existing JCT and checkpoint data sets to EAS eligible data sets.

Managing the JES3 SPOOL space does not change with the support added to exploit EAVs. See chapter 6 of the *z/OS JES3 Initialization and Tuning Guide* for details on adding and replacing SPOOL data sets.

Example JCL to allocate then format a JES3 spool extent in EAS on an EAV:

```

//ALLOC EXEC PGM=IEFBR14
//SPXTNT DD DSN=SYS1.JESPACE,DISP=(NEW,KEEP,KEEP),
// UNIT=3390,VOL=SER=J3SPLX,
// DCB=(RECFM=U,BLKSIZE=4084),
// SPACE=(CYL,80000),EATTR=OPT,
// DSNTYPE=LARGE
//SPLFRMT EXEC PGM=IEBDG
//SPXTNT DD DSN=SYS1.JESPACE,DISP=SHR,
// UNIT=3390,VOL=SER=J3SPLX,
// DCB=(RECFM=U,BLKSIZE=4084,BUFNO=255),
// DSNTYPE=LARGE
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
DSD OUTPUT=(SPXTNT)
FD NAME=SPOOL,FILL=X'FF',LENGTH=4084
CREATE NAME=(SPOOL),QUANTITY=2000000000
END



```


JES3 EAV support

Usage notes

- The JES3 JCT Utility (IATUTJCT) can be used to migrate the existing JCT and checkpoint data sets to EAS eligible data sets.
- Existing facilities and procedures for managing SPOOL data sets can be used to add an EAS eligible data set or replace an existing SPOOL data set with an EAS-eligible data set.
 - Including dynamic SPOOL add!

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In order to allow a JCT data set to be copied without a cold start, JES3 provides a program called the JCT utility, or IATUTJCT. This utility can be used to migrate existing JCT and checkpoint data sets to EAS eligible data sets.



Managing the JES3 SPOOL space does not change with the support added to exploit EAVs. See chapter 6 of the *z/OS JES3 Initialization and Tuning Guide* for details on adding and replacing SPOOL data sets.

JES3 EAV support

Other data sets

- Any physical sequential data sets accessed by JES3 may also reside anywhere on an EAV.
 - Accessed by JES3 using standard DFSMS access methods.
 - Data sets include, but are not limited to:
 - JES3IN
 - JES3ABEND
 - JES3DRDS
 - JES3SNAP
 - SYSABEND
 - SYSUDUMP
 - PROCLIBs
 - User data sets

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Other data sets accessed by JES3 are accessed using standard DFSMS access methods – versus EXCP for SPOOL, checkpoint, and JCT data sets. Based upon DFSMS support for the data set type, these data sets may also reside anywhere on an EAV.

JES3 EAV support 28-bit cylinder values

- Support for data sets in the EAS requires using 28-bit cylinder addresses rather than 16-bit addresses.
- JES3 facilities affected:
 - BADTRACK initialization statement
 - *MODIFY,Q command for BADTRACK address
 - Job Validation SNAP Output.
 - JES3 Monitoring Facility (JMF) reports updated for SPOOL information:
 - SPOOL DATA SET DESCRIPTION
 - SINGLE TRACK TABLE SPACE ALLOCATION SNAPSHOT
 - JES Properties (SSI 82) SPOOL Volume Information
 - SDSF SPOOL (SP) panel

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The BADTRACK initialization statement is used to identify defective tracks on a spool volume. The *MODIFY,Q command can be used to add a BADTRACK element for a defective track in a spool data set. Both the initialization statement and command have been updated to allow one- to seven-digit hexadecimal values for the cylinder specification.


Additional externals which include or return cylinder values have been updated for 28-bit values including:

- The Spool Record Validation (SRV) entries for the Job Validation SNAP Output.
- JES3 Monitoring Facility (JMF) reports for SPOOL Information
- JES Properties subsystem interface (SSI 82) for SPOOL Volume Information.
- SDSF SPOOL (SP) panel.

Messages which include a cylinder value have been updated to output seven-digit hexadecimal values.

JES3 EAV support

7-digit cylinder address message updates



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IAT1140: JES3 SPOOL I/O ERROR ON DDNAME= *ddn* ,CYL= *cyl* ,TRK= *trk*

IAT1141: NO RECORD FOUND ON DDNAME= *ddn* ,CYL= *cyl* ,TRK= *trk*
 ,REC= *rec*

IAT1145: ENTRY ADDED TO BADTRACK TABLE: DDNAME= *ddn* ,CYL= *cyl*
 ,TRK= *trk*

IAT1146: CHKPT READ/WRITE ERROR – rc BADTRACK ENTRY LOST:
 DDNAME= *ddn* ,CYL= *cyl* ,TRK= *trk* ,REC= *rec*

IAT4029: INVALID BADTRACK INITIALIZATION STATEMENT --- DDNAME=
 ddn ,CYL= *cyl* ,TRK= *trk*

IAT4034: FORMAT COMPLETED FOR DDNAME= *ddn* ,CYL= *cyl* ,TRK= *trk*

IAT4035: FORMAT FAILED FOR DDNAME= *ddn* ,CYL= *cyl* ,TRK= *trk*



IAT8539: *ddn* BADTRACK ON *vol* CYL= *cyl* TRK= *trk* OCCURRED ...

IAT6363: JES3 CHECKPOINT I/O ERROR, ... *ddn* ,*volser* ,*dev* ,*rcd* ,*cc* ,*op* ,
 stat ,*sense* ,*ccccccchrr*

IAT6364: JES3 CHECKPOINT DATA ERROR - *rcd* ,*ddn* ...

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Messages which include a cylinder value have been updated to output seven-digit hexadecimal values.



JES3 EAV support

Migration & Coexistence considerations

- SPOOL extent, checkpoint, or JCT data sets residing in the EAS cannot be opened with levels earlier than z/OS V1.12 or z/OS V1.12 JES3.
 - JES3 initialization fails with system message IEC144I or IEC142I.
- Pre z/OS V1.12:
 - IEC144I with system completion code 313 and return code 0C.
IEC144I 313-0C,IFG0194D,JES3,JES3,CHKPNT,0340,DJEAV ,SYS1.CMSCKPT1
- Pre z/OS JES3 V1.12
 - IEC142I with system completion code 113 and return code 44.
IEC142I 113-44,IFG0194D,JES3,JES3,SPOOL1,0340,DJEAV ,SYS1.CMSPOOL1

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The JES3 global and all locals must be at z/OS V1.12 with z/OS V1.12 JES3 or later levels.

Care must be taken when specifying EATTR=OPT for data sets that are not EAS-eligible in z/OS VR10 or z/OS V1.11 – basic and large format sequential data sets. These will not be allowed to be opened from z/OS V1.10 or z/OS V1.11 if they were allocated in z/OS V1.12 with extended attributes.

• Example message:

IEC144I 313-0C,IFG0194D,JES3,JES3,CHKPNT,0340,DJEAV ,SYS1.CMSCKPT1

IEC144I - Explanation: The error occurred during processing of an OPEN macro instruction for a data set on a direct access device.

0C = During an attempt to open a data set, open encountered an extended attribute DSCB (format-8) for a data set that is not eligible to have extents above 65,520 cylinders. This is invalid for this type of data set.

Care must be taken when specifying EATTR=OPT for JES3 data sets that cannot be opened with z/OS V1.10 and z/OS V1.11 JES3 (even if z/OS V1.12 is IPLed). These JES3 releases cannot open data sets if they were allocated in z/OS V1.12 with extended attributes.

• Example message:

IEC142I 113-44,IFG0194D,JES3,JES3,SPOOL1,0340,DJEAV ,SYS1.CMSPOOL1

IEC142I - Explanation: The error occurred during processing of an OPEN macro instruction or an OPEN macro instruction with a TYPE=J operand.

44 = An attempt was made to open an EAS eligible data set on a volume with more than 65,520 cylinders but the DCBE flag, DCBEEADSCBOK, indicating that the caller understands extended attribute (Format 8/9) DSCBs was not set.

SDSF JES3 equivalence with JES2




- More existing SDSF panels now enabled for JES3:
 - O (Output) and H (Held Output).
 - PU (Punch), RD (Reader), LI (Line), INIT (initiator), and NO (Node).
 - PR (Printer) updated to support JES3 RJP printers.
 - Additional columns added to most of these panels in both JES3 and JES2 environments.
- New panels added:
 - NS (Network Server) and NC (Network Connection) panels for both JES2 and JES3.
 - J0 (Job Zero) panel for JES3.

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SDSF primary menu for JES3



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```


Display Filter View Print Options Search Help
-----
HQX7780 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==>                                SCROLL ==> CSR

DA  Active users                                INIT  Initiators
I   Input queue                                 PR    Printers
O   Output queue                                PUN   Punches
H   Held output queue                           RDR   Readers
ST  Status of jobs                              LINE  Lines
J0  Job zero                                    NODE  Nodes
                                         SP    Spool volumes
LOG  System log                                 NS    Network servers
SR  System requests                             NC    Network connections
JP  Members in the JESplex
JC  Job classes                                CK    Health checker
SE  Scheduling environments
RES  WLM resources                             ULOG  User session log
ENC  Enclaves
PS   Processes

END  Exit SDSF

```

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SDSF JES3 SYSLOG



- Default for LOG displays the SYSLOG for the system the user is logged onto.
- May not get desired results when JES3 DLOG is started and using LOG on a local system.
 - May see just the messages for the JES3 local instead of the combined SYSLOG.
 - May get a ISF138E POINT failure viewing the SYSLOG if the local's syslog has been written out.
- SDSF command SYSID specifies which SYSLOG to use:
 - SYSID ? = Displays current setting and valid SYSIDs defined.
 - SYSID without a parameter specifies the SYSLOG for the system the user is logged onto is to be used (default).
 - SYSID *sysid* = Specifies the SYSLOG for *sysid* is to be used.
 - SYSID * = Specifies the global's SYSLOG is to be used.

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Other JES3 enhancements



- z/OS JES3 V1.11
 - A new way to browse the JES3 managed SYSLOG.
 - Additions to SAPI SSI79 and Extended Status SSI80.
 - Support for Scheduler Facilities Call SSI70.
 - New JES Properties SSI82.
- z/OS JES3 V1.12
 - Enable ENF58 signaling with SAPI SSI79.
 - New JES Device Information Services SSI83.
- z/OS JES3 V1.13
 - Updates to Extended Status SSI80.
 - Updates to JES Properties SSI82.
 - Completion of JES Device Information Services SSI83.
 - Spool data set token added to GETDS FSI
 - SMF 57 records added

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GET for JES3 spool files

Short buffer error handling change

- Before V1.13, when an application provided insufficient buffer size in the RPL (RPLBUFL) JES3 put a fraction of the record that fit into the provided buffer and returned with RPLRLEN set to the required size and R15=RPLINBUF. On a subsequent GET, JES3 returned the **next record**.
 - Reported in APAR OA34916 which was closed UR1.
- As of V1.13, JES3 will return no data when R15 is set to RPLINBUF. On a subsequent GET, the application is expected to provide sufficient buffer area (equal to RPLRLEN provided on the previous GET). JES3 will then return the **same, full record**.
 - This behavior is consistent with the JES2 behavior.

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What to look for:

Check applications reading from spool and how they handle R15=RPLINBUF.

What to do:

Re-issue the GET with RPLBUFL equal to or greater than RPLRLEN returned with RPLINBUF from the previous GET.

RPLINBUF - X'2C'


On a GET request, the size of the area (RPLBUFL) passed in RPLAREA was too small to contain the record being returned. The actual record size is set in RPLRLEN. Obtain a larger area and re-issue the GET request.

OA33416
New function - Fallback support, JES3 HJS7780

- Toleration APAR for Fallback support in the event the JES3 global is moved to a pre-V1R13 level.
- The OSE (IATYOSE) Work Selection Identifier fields OSEWSI and OSEWSIMX have been added for the WSI support.
- WSI support depends upon these fields having an initial value of zero when the JES3 global is moved from HJS7750, HJS7760, or HJS7770.
- Sets the fields used for WSI support to zero for pre-V1R13 levels.

- User's affected:
 - All HJS7750, HJS7760, and HJS7770

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PROBLEM SUMMARY:

In release HJS7780, the OSE (IATYOSE) Work Selection Identifier fields OSEWSI and OSEWSIMX have been added. The support added in HJS7780 depends upon these fields having an initial value of zero when the JES3 global is moved from HJS7750, HJS7760, or HJS7770.

This APAR provides the code to set the OSEWSI and OSEWSIMX fields back to zero if the JES3 global is moved from HJS7780 to HJS7750, HJS7760, or HJS7770.

PROBLEM CONCLUSION:

Module IATOSGP has been changed to zero the OSE (IATYOSE) field OSEWSI.

Module IATOSOR has been changed to zero the OSE field OSEWSIMX.

z/OS JES3 V2.1 Preview



- JES3 plans to support 8-character job class names on the JCL JOB statement.
- Support is planned for SAF control over the use of job classes in JES3 environments using new profiles in the JESJOBS class.
 - Helps eliminate the need for JES3 user exits used solely to restrict the use of job classes to authorized users.
- JES3 plans support for new SYSTEM and SYSAFF keywords for the JOB statement which allow you to specify JES3 main system names the job is eligible to run on.
 - Similar to SYSTEM keyword for the JES3 /*MAIN statement.

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z/OS JES3 V2.1 Preview



- JES3 is planned to support enhanced capability to obtain SPOOL allocation data for jobs.
 - Existing commands updated to display spool information for individual jobs or display which jobs have data on a particular spool data set.
- JES3 is planned to support the capability to dump jobs from a SPOOL data set.
 - Existing Dump Job command updated to allow a user to identify a SPOOL data set to be used for selecting the jobs to be dumped.
- JES3 plans to provide the capability to delete a spool extent or partition without a complex wide IPL.
 - Like the spool add support in JES3 V1.13, delete can be done dynamically using the *MODIFY CONFIG command or using hot start with refresh.

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z/OS JES3 V2.1 Preview



- JES3 is planned to support in-stream data sets in cataloged procedures and INCLUDE groups.
 - This is intended to allow you to simplify the JCL used in PROCs by using in-stream data sets in place of those pointed to by DD statements that use the DSN keyword.
- JES3 is planned to provide support for returning data in 64-bit storage for SSI 80 (Extended Status) callers.
- JES3 is planned to support ENF 70 events to provide the capability to track jobs, started tasks, and TSO/E users as they are processed by showing that their states have changed.
 - This support is intended to allow programs to monitor job status without using repetitive Subsystem Interface (SSI 80) calls.

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Additional SHARE Sessions



- **What's new in z/OS V2.1**
 - Monday, February 4, 2013: 3:00 PM-4:00 PM
Grand Ballroom B, Grand Ballroom Level
- **SDSF for New Users Hands-on Lab**
 - Tuesday, February 5, 2013: 9:30 AM- 10:30 AM
Union Square 23-24, Fourth Floor
- **JES3 SYSOUT: How It Works and How to Manage It**
 - Wednesday, February 6, 2013: 4:30 PM-5:30 PM
Franciscan B, Ballroom Level
- **The What and How of JES3 NJE**
 - Friday, February 8, 2013: 8:00 AM-9:00 AM
Franciscan B, Ballroom Level

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References

Redbooks

- ABCs of z/OS System Programming Volume 13 ([SG24-7717-01](#))
 - JES3 internals and externals
 - JES3 initialization statements
 - JES3 operator commands
 - Updated in 2012 to include SDSF in a JES3 Environment
 - Formerly published as a Redpaper ([REDP-4531](#))
- All ABCs of z/OS System Programming
 - www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=abcs

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ABCs Volume 13 – SG24-7717 (<http://www.redbooks.ibm.com/abstracts/sg247717.html>)

Using SDSF in a JES3 Environment – REDP-4531 (<http://www.redbooks.ibm.com/abstracts/redp4531.html>)

All ABCs (www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=abcs)



References

Internet Discussion Group

- Subscribe to JES3-L@LISTSERV.UGA.EDU
- To subscribe mail to LISTSERV@LISTSERV.UGA.EDU with no subject and the body containing the command:
 - SUBSCRIBE JES3-L *your name*
- To post, mail to JES3-L@LISTSERV.UGA.EDU

Source: www.lsoft.com/scripts/wl.exe?SL1=JES3-L&H=LISTSERV.UGA.EDU

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<http://www.lsoft.com/scripts/wl.exe?SL1=JES3-L&H=LISTSERV.UGA.EDU>

System z Social Media Channels



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- Top Facebook pages related to System z:
 - [IBM System z](#)
 - [IBM Academic Initiative System z](#)
 - [IBM Master the Mainframe Contest](#)
 - [IBM Destination z](#)
 - [Millennial Mainframer](#)
 - [IBM Smarter Computing](#)
- Top LinkedIn groups related to System z:
 - [System z Advocates](#)
 - [SAP on System z](#)
 - [IBM Mainframe- Unofficial Group](#)
 - [IBM System z Events](#)
 - [Mainframe Experts Network](#)
 - [System z Linux](#)
 - [Enterprise Systems](#)
 - [Mainframe Security Gurus](#)
- Twitter profiles related to System z:
 - [IBM System z](#)
 - [IBM System z Events](#)
 - [IBM DB2 on System z](#)
 - [Millennial Mainframer](#)
 - [Destination z](#)
 - [IBM Smarter Computing](#)
- YouTube accounts related to System z:
 - [IBM System z](#)
 - [Destination z](#)
 - [IBM Smarter Computing](#)
- Top System z blogs to check out:
 - [Mainframe Insights](#)
 - [Smarter Computing](#)
 - [Millennial Mainframer](#)
 - [Mainframe & Hybrid Computing](#)
 - [The Mainframe Blog](#)
 - [Mainframe Watch Belgium](#)
 - [Mainframe Update](#)
 - [Enterprise Systems Media Blog](#)
 - [Dancing Dinosaur](#)
 - [DB2 for z/OS](#)
 - [IBM Destination z](#)
 - [DB2utor](#)



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Wrap up!

Questions?

Discussion?

Thank You!

Session 13030



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Appendix



- SYSPROG Tools
 - Use SMP/E
 - Use MODIFY JES3,CHK
 - Autostart for JSS
 - Display a Spool Record
 - Dynamic LPA Facility
 - JES3 Auto-Restart


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SYSPROG Tools


Use SMP/E



- Important when JES3 and the BCP are installed in different zones.
 - Often done to separate product maintenance streams.
 - Consider when using SDSF.
 - See z/OS Planning for Installation.
 - JESXCF, DFSMS, Netserv/TCPIP and allocation services are all part of the BCP!
- Can use REPORT CROSSZONE commands and manually check the information.
- Strongly recommend using SMP/E automatic cross-zone requisite checking.

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The SMP/E REPORT command helps you obtain information about SYSMODs installed on your system. REPORT CROSSZONE is used to list conditional requisites that must be installed in certain zones because of SYSMODs installed in other zones. This information can help you synchronize service for related products that are in different zones like JES3 and JESXCF. You can use separate REPORT CROSSZONE commands and closely review the output -- very manual and prone to mistakes. We strongly recommend using the SMP/E automatic cross-zone requisite checking.

Creating a cross-zone set is documented in the z/OS Program Directory:

7.3.1 Create a Cross-Zone Set

There are different methods that can be used for cross-zone processing. A zone group can be defined and added to the install jobs or the XZGROUP operand can be used. XZGROUP(value) contains a list of ZONESETs or zones that are used to establish the zone group. Each value in the list must be a valid ZONESET or zone name. XZGROUP(value) would be added to the install jobs instead of adding the XZREQCHK operand to one or more ZONESETs.

In OS/390 Release 3, SMP/E introduced the operand, XZREQ, which provides a method for a user to more easily install cross-zone requisites. SMP/E identifies the cross-zone requisites needed in the set-to zone by reading CIFREQ data in the secondary zones of the zone group in effect for the current APPLY/ACCEPT commands. Any CIFREQ data that is for FMIDs installed or being installed in the set-to zone that are not yet in the set-to zone causes the required SYSMODs to become candidates for installation. If the FORFMID operand is also used, the FMID specified on the CIFREQ must match one of the FMIDs specified on the FORFMID operand for the SYSMOD to become a candidate.

By adding the XZREQ operand, the CIFREQ SYSMODs are installed automatically into the set-to zone. However, XZREQ does not install the CIFREQs in the other cross-dependent zones. An APPLY XZREQ needs to be performed against the other zones in order to synchronize service.



Note: If SYSMODs being installed into the set-to zone have requirements against the other cross-zones, that service must be APPLY'd to those zones before installation can be completed into the set-to zone.

SYSPROG Tools

Use MODIFY JES3,CHK

- **MODIFY JES3,CHK**
- Allows the operator to check the “health” of a JES3 address space.
- A summary report issued to the console lists any exception conditions found.
- **CHK may save you an outage!**

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MODIFY JES3,CHK is an exception analysis function. This function is invoked by an operator MVS command while JES3 is running or offline during dump analysis. The function provides a summary report of unusual conditions as defined by JES3. This function will be enhanced and fine-tuned over time as more and more checks are implemented.

The command runs asynchronously to the JES3 address space code. Therefore, it is possible that JES3 is changing the data while the command is executing. This can lead to an occasional program check or a loop while the command is executing. When a loop is detected, message "IAT6417 Command 'CHK' exceeded 1 minute. Reply 'CANCEL' to stop" is issued and a response is required. In either case, enter the command again.

The same function can be invoked in IPCS and Dump Core (DC).



SYSPROG Tools

Use MODIFY JES3,CHK

- Categories of exception conditions checked are:
 - CI and MDS
 - FCTs and DSPs
 - General
 - JSS and Job queue
 - Spool

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There are various types of exception analysis, each of which is called in turn by IATABEA. Each one is contained in its own module. Over time more checks may be added based on your and our experience.

SYSPROG Tools

Use MODIFY JES3,CHK

- Some of the more interesting exception conditions are:
 - PROCLIB update is disabled
 - LOCATE subtask has abended
 - Job queue is held
 - FAILDSP pending for an FCT
 - IATXARQ issued for JESMSG processing
 - There are unprocessed WTDs (i.e. commands) on the Work-to-do queue
 - There are WEVs on one or more WLM queue
 - Main has been flushed
 - WLM reclassification is in progress
 - One or more priorities has been held
 - Threshold percent of job numbers in use
 - Marginal/minimal spool condition
 - Minimal JSAM buffer condition

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There are too many exception conditions to list. The ones listed here are probably among the more interesting or likely to be seen by you, the customer.

SYSPROG Tools

Use MODIFY JES3,CHK (Example 1)

- Customer problem:
 - No jobs being processed by C/I.
- Customer actions:
 - Hot start JES3 – no change
 - IPL and hot start – no change
 - Open SEV 1 call.
- F JES3,CHK showed that job priorities were held.
 - The operator had inadvertently held all job priorities often with *F Q,H.
- Solution:
 - Release job priorities and job processing resumes.



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SYSPROG Tools

Use MODIFY JES3,CHK (Example 2)



- Customer problem:
 - Following a hardware issue, JES3 is not responding to certain commands.
- Customer actions:
 - Opens a SEV 1 call.
- F JES3,CHK shows that the SETUP FCT is stuck waiting for I/O (due to the hardware issue).
- Solution:
 - Use *FAIL for the SETUP FCT which would then recover and resume processing.

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SYSPROG Tools

Use MODIFY JES3,CHK (Example 3)




- Customer problem:
 - Auxiliary storage shortage when starting an initiator.
 - JES3 issues IAT2008 message for maximum inits but may be missed or ignored.
 - Customer later wonders why job processing has slowed or stopped.
- Customer actions:
 - Opens a call.
- F JES3,CHK would show that the start of an initiator failed hence why job processing has been impacted.
- Solution:
 - Customer can check the log for IAT2008 messages they may have missed and take the appropriate action.

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SYSPROG Tools **Autostart for JSS**


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- Autostart can be used to make JES3 functions available after JES3 initialization without requiring the *S,JSS command.
- Add PARM=NOREQ to the start command
 - S JES3,PARM=NOREQ
- Modify the JES3 Cataloged Start Procedure
 - //IEFPROC EXEC PGM=IATINTK,DPRTY=(15,15),PARM=NOREQ
 - Can nullify on the start command: S JES3,PARM=

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PARM=NOREQ specifies that JES3 global will start JES automatically if you want JES3 functions to be available after JES3 initialization without requiring the *S,JSS command. Place this in the JES3 start procedure. This avoids having operators forget to do the *S JSS command when restarting JES3. To nullify the parameter you can specify S JES3,PARM= on the start command.

SYSPROG Tools


Display a Spool Record



- Dump core DSP can be used to display the contents of a spool record that has a spool address of *mmmm.rrrrrrr*
 - ***S DC,SPADDR=mmmm.rrrrrrr**
 - The *mmmm* portion of the spool address is the spool extent number (module) where the record resides.
 - The *rrrrrrr* portion of the spool address is the spool record number within the spool extent.
 - The spool address must be coded exactly as shown; leading zeros in either part of the spool address must be specified.
- When the contents of the spool record are displayed, only the non-zero portion at the end of the record is displayed.

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The dump core DSP is used to display and modify data in main storage, to intercept program flow during execution, and to format control blocks for debugging. This facility can be used only on the global processor.

SPADDR=mmmm.rrrrrrr

Displays the contents of the spool record that has a spool address of *mmmm.rrrrrrr*. The *mmmm* portion of the spool address is the spool extent number (module) where the record resides. The *rrrrrrr* portion of the spool address is the spool record number within the spool extent. The spool address must be coded exactly as shown; leading zeros in either part of the spool address must be specified.

When the contents of the spool record are displayed, only the non-zero portion at the end of the record is displayed. For example, if a particular spool record contains only zeros after the first 100 bytes of the records, only the first 100 bytes of the record will be displayed.

In order to use SPADDR, you must specify KEY=SYSTEM when calling dump core:

```
*CALL DC,OUT=CON,KEY=SYSTEM
```

See the *z/OS JES3 Commands* document for more details on using dump core.

SYSPROG Tools **Display a Spool Record Examples**



```
*CALL,DC,OUT=CON,KEY=SYSTEM
IAT6306 JOB09992 IS DC, CALLED BY CN 01
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

```
*S,DC,SPADDR=0003.00000384
SPOOL RECORD: 0003.00000384
00000000-00030000 03840000 C3E2C240 00000000 *.....D..CSB ....*
00000010-00000000 00000000 5CA2A3A3 0012D6E4 *.....*stt..OU*
00000020-E37EC3D6 D540D2C5 E87EE2E8 E2E3C5D4 *T=CON KEY=SYSTEM*
```


```
*S,DC,SPADDR=0002.000012A8
SPOOL RECORD: 0002.000012A8
00000000-00020000 12A80001 D6E2C540 00000000 *.....y..OSE ....*
00000010-00000000 00000000 5CA2A3A3 00600060 *.....*stt.--*
00000020-00000000 00000000 00000000 00000000 *.....*
00000030-00000000 00000000 00000000 00000000 *.....*
00000040-00000000 00000000 00000000 00000000 *.....*
00000050-00000000 00000000 00000000 00000000 *.....*
00000060-FFFFFFF *.....*
```

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SYSPROG Tools


Dynamic LPA Facility



- APARs with restart type DynLPA can be activated without an IPL.
- New versions of JES3 LPA modules can be dynamically added to LPA by issuing the following commands:
 - **F LLA,REFRESH**
 - **SETPROG LPA,ADD,MODNAME=modname,DSN=LNKLST**
 - Message CSV551I confirms the LPA add.
- Perform a hot start of local start of JES3 to activate the changed module.
 - No IPL required!
 - Message IAT3085 confirms the changed module.

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APARs eligible for refresh with the dynamic LPA facility will be marked in the APAR closure text.

- Type/IPL (Local,DynLPA)
- Type/IPL (Global,DynLPA)
- Type/IPL (Rolling,DynLPA)

See Info APAR II07968 – JES3 Maintenance Philosophy

The SETPROG command can be issued while JES3 is active. The change does not take effect until JES3 is restarted. This allows you to back out the change if necessary.


If the fix must be installed on more than one system, a SETPROG command must be issued for each system. Multiple modules can be added at one time using MODNAME=(*modname*,...,*modname*)

When the required modules have been added to LPA, perform a hot start or local start of JES3 (without an IPL of the system) to activate the change. During initialization, JES3 picks up the new versions of the modules and issues message IAT3085. On the JES3 global processor, the message appears in JES3OUT only. On the JES3 local processors, the message appears on the console.

Monitor CSA usage. Dynamic addition of modules to the LPA reduce the CSA space available as older versions of the module are not removed.

SYSPROG Tools

Dynamic LPA Facility Example




- Build a new copy of all the library directory indexes:
`MODIFY LLA,REFRESH`
- Use SETPROG to add updated module IATSICA to the LPA:
`SETPROG LPA,ADD,MODNAME=IATSICA,DSN=LNKLST`
`CSV551I 10.16.14 LPA ADD 868`
`SUCCESSFUL: 1 UNSUCCESSFUL: 0 NOT PROCESSED: 0`

MODULE	RESULT
IATSICA	SUCCESSFUL
- CSV551I confirms the add was successful.
- Perform a hot or local start to activate the changed module.
- IAT3085 identifies the changed modules:
`IAT3085 LPA MODULES CHANGED: IATSICA ...`

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The APAR ++hold data will contain instructions. An example is:

New versions of JES3 LPA modules can be dynamically added to LPA by issuing the following commands:



```
F LLA,REFRESH          followed by:
SETPROG LPA,ADD,MODNAME=IATSICA,DSN=LNKLST
```


SYSPROG Tools

JES3 Auto-Restart

- JES3 will auto-restart if a critical DSP or FCT terminates.
 - CRITICAL=YES is added to the DSP/FCT definition.
 - DSPs/FCTs defined as critical include:
 - JSAM
 - WTDDRVR (I/O bound Inquiry/Modify)
 - MSGC (JDS access, Started Task init., Main Connect, etc.)
 - JSS
 - MAIN
 - ENSTDRV (Extended Status)
- JES3 will auto-restart for repetitive and consecutive failures.
- IAT3098 identifies the reason for the auto-restart.

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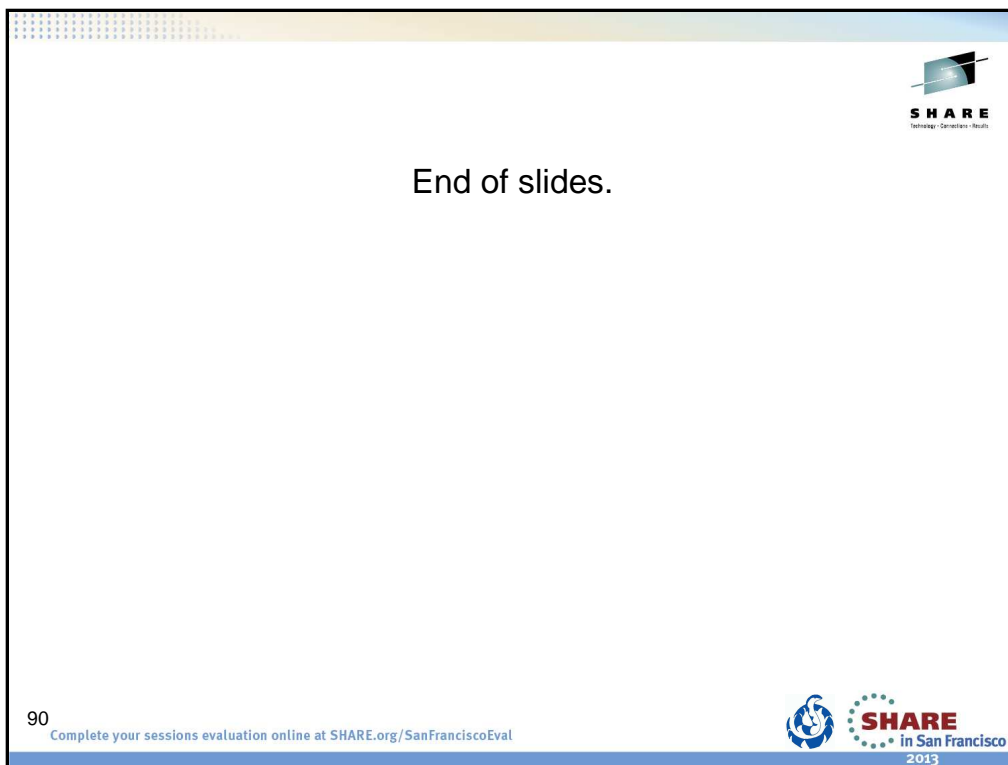
Auto-restart logic previously existed for a configuration change. Auto-restart means detaching the IATNUC task and reattaching it. It's like doing a DSI without changing the global.

The parameter CRITICAL=YES is added to the DSP or FCT definition in the DSP directory.

Refer to the z/OS JES3 Customization document:

- IATYDSD (Generate a DSP Dictionary Entry)
- IATYFCD (Generate Function Control Table)

IAT3098 text identifies if JES3 is restarting due to a CONFIGURATION CHANGE, a CRITICAL FCT ABEND, or REPETITIVE FAILURES.

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