z/OS V1.12 JES3
Latest Status and New Features

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Active Releases

Release	FMID	Available	End of Service
z/OS V1.12	HJS7770	September 29, 2010	
z/OS V1.11	HJS7760	September 25, 2009	September 2012[1]
z/OS V1.10	HJS7750	September 26, 2008	September 2011[1]

Notes:

1. Indicates projected date. Actual end of service date has not been announced yet.

2. Lifecycle Extensions exist for z/OS V1.8, V1.9, and V1.10.

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 V1.10 JES3 HJS7750	z/OS V1.11 JES3 HJS7760	z/OS V1.12 JES3 HJS7770
z/OS V1.10	🟩		
z/OS V1.11	🟩	🟩	
z/OS V1.12	🟩	🟩	🟩

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

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JES3 Highlights
z/OS V1.10

- APF Alternative
- Request Subsystem Version Information Call SSI54 enhanced
  - "Who-Am-I" SSI
- Extended Status SSI80 enhanced
  - New function STATDLST (Data set list)
- Spool Data Set Browse (SDSB)
  - APAR OA24556

See Austin 2009 SHARE Session 2721

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One of the biggest inhibitors to using the Subsystem Interface has been the fact that SSI calls require running in supervisor state, which in turn requires APF authorization. This means an application coder must go to a system programmer to install the application in an APF library. User written APF programs are a security risk. They could accidentally or maliciously compromise system integrity or step on something that is protected from a normal programs, possibly causing an outage. Even if a user program is risk free, the system programmer must still ascertain that fact when installing an initial version or later versions of that program. An application therefore cannot "code and go". Having to go through the system programmer makes it take longer to test and debug that application.

Starting in z/OS V1.10 JES3 will support SSIs 11, 75, 79, and 80 in an unauthorized environment – i.e. APF authorization no longer required. In addition, the Subsystem Interface text unit used on dynamic allocation for a SYSOUT data set, DALSSREQ, requires APF authorization. A new text unit, DALUASSR, has been provided for the unauthorized environment.

The Request Subsystem Version Information Call (SSI function code 54) – also known as the "Who-AM-I SSI" - provides a requesting program the ability to obtain version-specific information about a particular subsystem. JES3 updates were made to add the JES3 release running on the JES3 Global, the system name of the JES3 Global, and to indicate if Spool Data Set Browse is supported with the running release of JES3. Additionally, before z/OS V1.10, information strings returned by SSI 54 were built during JES3 initialization. Beginning with z/OS V1.10, the information strings are also built during CONNECT processing. This allows information to be updated when information about the global changes without the local having been restarted. The global information can change in two ways: (1) the global is IPLed and the JES3 release is changed during this IPL, and (2) a Dynamic System Interchange (DSI) is performed, which changes the name of the global and possibly the release. IATUX63, the exit that builds the installation-defined SSI 54 string, is likewise called during CONNECT processing.

A new extended status function STATDLST was added. STATDLST is used to request a data set list for a job. This request obtains verbose type information for all data sets associated with a job. It includes information on SYSIN and other internal data sets.

The need for Spool Data Set Browse (SDSB) is to avoid the single user lock that the SYSOUT Application Programming Interface (SAPI) imposes on applications. Under SAPI, when an application makes a PUT/GET call to access a data set, it causes JES3 to schedule that data set to the requesting application until the application releases the data set. As a result, no other application can access this data set during this time. In addition, SAPI is limited to either output belonging to jobs that have finished running, or output that has been spun off and closed by a job that is still running. SAPI cannot access any other output for an active job, even in completed steps.

SDSB does not have these limitations. Using the SDSB interface an application can use SVC 99 to allocate a SYSOUT data set without going through SAPI to obtain access to it. The benefits are the ability to access output for a job while it is still running and more transparency between the JES3 and JES2.

JES3 Highlights
z/OS V1.11

- Enhancements to SPOOL Data Set Browse (SDSB).
- 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.
- Enhancements to include a dump of the JES3 global and data spaces for an SVC dump taken while an SSI request (to JES3) is active.

See Seattle 2010 SHARE Session 2350

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SDSB Enhancement

Active buffers of SYSOUT data sets can now be browsed regardless of which system the data set owner resides on.

SYSLOG Browse

The SYSLOG data sets on a system are logically concatenated into a single logical SYSLOG data set for browse requests.

Additional filtering has been added to SAPI (SSI 79) to select data sets using the job name or job ID associated with a transaction.

The SAPI job ID filter, SSS2JBIL, can now contain generic characters '?' and '*' for use with job ID and transaction job ID filtering.

Additional filtering has been added to Extended Status (SSI 80) to obtain data for terse requests using the job name, job ID, or SYSOUT owner associated with a transaction.

The Extended Status job ID filter, STATJBIL, can now contain generic characters '?' and '*' for use with job ID and transaction job ID filtering.

SSI 70 can be used to retrieve and modify SYSOUT data set characteristics.

SSI 82 provides a common interface for both JES2 and JES3 to return information about multiple JES managed structures. Instead of coding programs that traverse internal structures to retrieve this information, the SSI has packaged the information into a single call.

A user supplied program can call SSI 82 to obtain information about NJE (Network Job Entry) Nodes, SPOOL Volumes, Initiators, JESplex characteristics and Job Classes. The caller specifies a different sub-function value to choose which of the five kinds of information they want the SSI to return.

FIN/SUG APARs
Why?

- Motivation for a FIN (Fixed In Next)
  - Savings in maintenance volume
  - PE reduction due to more regression testing in a release
- Used for
  - Nits
  - Error or unusual paths
  - (Incompatible) functional changes
  - Rarely used for large fixes - SUG is used for these
- Can be rolled back if necessary – FINREVERSAL
  - Rare: Most recent is OA30944. Previous two were done in 2007
- We work with you to make this decision.
- Please consider them whenever possible!

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An APAR is closed FIN or SUG with concurrence from the submitting customer. Closing with FIN means that a fix to this APAR is expected to be delivered from IBM in a release (if any) to be available within the next 24 months. For example, if a customer has a problem in z/OS V1.10 and agrees to a FIN, it does not mean that the problem is or will be fixed in z/OS V1.11 or z/OS V1.12 which are already available.

FIN/SUG APARs

- Included in z/OS V1.10

OA20493	ABEND0C9 in IATMFR5 while processing the 'Job queue length by JES3 function' JMF report
OA20527	Data overlay for a large Sysout file after a re-open
OA21435	Zero line and byte count for DUMPCORE data sets
OA22574	After a warm start with analysis is rejected, JES3 forces analysis on the next start
OA22886	ABEND0C4 in IATDMIT following abend recovery in non-JES3 code

- Included in z/OS V1.11

OA22741	ABEND0C4 in module IATSICA following a configuration change.
OA24930	After termination of JES3 a task fails with ABEND0C4 in module IATSICA.
OA27454	Inquiry issued for a DSN for a job does not complete.
OA26303	ABEND0C4 in module IATDMGR following an ABEND8FB RC25 which was preceded by ABEND8FB RC21.

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FIN/SUG APARs

- Included in z/OS V1.12

OA26143	ABEND0C4 in IATUTD2.
OA28818	The text intended for MSGID MSGIAT3828 is issued with MSGID MSGIAT3728 instead.
OA29654	After *S JSS, JES3 does not start all initiators as defined.
OA30005	Removal of CONSTD statement from a JES3 INISH deck has no effect.

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Service Highlights
Information APARs

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APAR	Problem description	Updated
II07968	JES3 Maintenance Philosophy.	11/10/2006
II11768	JES3 Toleration APARs.	7/10/2009
II11784	Recommended JES3 SAPI and Extended Status (SSI 80) maintenance.	11/4/2011
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.	12/9/2010
II14572	Recommended JES3 SPOOL Browse and SYSLOG Browse maintenance.	11/4/2011

- II14572 is new!

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Service Highlights
Extended Status & SAPI APARs

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APAR	Problem description	
II11784	Recommended SAPI and Extended Status (SSI 80) maintenance.	**INFO**
OA30764	Selecting an active NJE job in SDSF results in ISF111E dynamic allocation failure.	
OA31199	ABEND9C7 RC04 issued for a request from module IATGRES, FCT ENSTDRV	
OA31512	Extended Status (SSI 80) hang after applying OA27646	**PE**
OA32853	JES3 stops working : New jobs remain in CI and ended jobs remain in the purge phase.	**HIPER**
OA33772	JES3 does not provide class values from SDSF JDS panel for an active job.	
OA33970	Extended Status SSI 80 not returning data in HJS7760 when STATJBIH contains blanks.	
OA34846	ABEND0C4 in IATGRES attempting to address OSSJDSJN.	
OA34913	ABEND0C4 in IATSIES after ABEND0C4 in IATGRES.	

PE = Fixes PTF in Error

APARs closed since 1/1/2010

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Service Highlights
NJE over TCP/IP APARs

S H A R E
Technology · Connections · Results

APAR	Problem description	
II14434	Recommended JES3 TCP/IP/NJE maintenance.	INFO
OA30781	NETSERV ABENDSEC8 RCB.	
OA31583	TCP FCTs not terminated after DSI with IPL after OA26487.	HIPER, PE
OA32109	The *C TCP,SOCKET= ,I command does not work.	HIPER, PE
OA33150	APAR OA31583 did not pre-req PE APAR OA26487.	PE
OA33245	Additional diagnostics required for IAT9380 ABENDEC8 RCB.	
OA33262	Provide a means to delete orphaned JES3 NETSERV TCP jobs.	HIPER
OA33337	0 byte count spool data sets for data transmitted via NETSERV.	
OA33453	Mark OA30781 PE due to ++HOLD instructions.	PE
OA33850	APAR OA33150 did not pre-req PE APAR OA26487.	PE
OA33980	ABEND0C4 in JES3 module IATINSOC.	HIPER
OA34423	ABEND0C4 in JES3 module IATNTTXR following a MSGIAT9380.	PE
OA35519	ABENDDFB abends under Netserv ASIDs may not be properly taken. → Opened 2/4/2011 with target date yet TBD.	PE

PE = Fixes PTF in Error

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OA33245
Added message for diagnostics

- NJE/TCP transmission stops after MSGIAT9380 and ABENDEC8 RCB.
- Difficulty in diagnosing the problem as register values at the point of the error are not saved prior to the abend in common code.
- APAR adds message IAT9385 and an X'DFB' abend with reason codes that identify the data stream exits.
  - Will be followed by an X'EC8' abend dump when the subtask terminates.
- ALL PEs have minimal impact – desired diagnostic information is not obtained for a task which fails with ABENDEC8.
  - OA34423 – ABEND0C4 occurs after MSGIAT9380 instead of ABENDDFB.
  - OA35519 – SDUMP for ABENDDFB does not finish before ABENDEC8.
- We recommend not applying OA33245 until OA35519 PTFs are available.
- We recommend leaving OA33245 if already applied.

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OA33245

External symptoms: Customer encountered a transmission error, error message:

  IAT9380 SEVERE ERROR OCCURRED IN SYSOUT RECEIVER, RECEIVER AREA CORRUPTED

This was followed by:

  IAZ0011I JES3S001 S5F01NJE Receiver issued a Terminate and Abend command
  IAZ0546I JES3S001   ABEND CODE=SEC8 RC=0000000B

Impact to customer: Netserv failure

Analysis: This problem is undiagnosable with the documentation available. The registers at the point of the error recognized in IATNTTXR are not saved prior to the common code IAZNJSTK issuing its abend. This apar is being taken to add RAS for this failure

IAT9385 SERVER server_name ABEND CODE=Sxxx RC=rsn

Explanation: An abend occurred in the Netserv address space during JES TCP/IP NJE processing. In the message text:

- server_name = The TCP/IP NJE server name.
- Sxxx = The system completion code in hexadecimal format.
- rsn = The reason code:
    - 65 The Netserv exit subtask detected data stream corruption in the inbound SYSIN record. The subtask is terminated.
    - 66 The Netserv exit subtask detected data stream corruption in the inbound SYSOUT record. The subtask is terminated.
    - 67 The Netserv exit subtask detected data stream corruption in the outbound SYSIN record. The subtask is terminated.
    - 68 The Netserv exit subtask detected data stream corruption in the outbound SYSOUT record. The subtask is terminated.

OA34423

External symptoms: Abend0c4 in JES3 module IATNTTXR following a msgIAT9380. We are attempting to access the TPRM, issuing the following OI TPRMTDFG,TPRMTDFA and abending because we don't have addressability

Users affected: All users of HJS7750, HJS7760 and HJS7770 with APAR OA33245 installed.

User impact: APAR OA33245 fixed the problem it reported but introduced a new problem, the abend0c4. Data stream corruption has already been detected, the task will abend.

OA35519

External symptoms: Customer encountered ABENDDFB from the JES3 exit code in the Netserv address space, but the dump contents are an ABENDEC8 from the common code in the Netserv address space

Users affected: All users of HJS7750, HJS7760 and HJS7770 with APAR OA33245 installed.

User impact: APAR OA33245 added diagnostics for Netserv errors, but depending on SDUMP timing the subsequent dumps may still prove to be undiagnosable.

Service Highlights
SPOOL and SYSLOG Browse APARs

APAR	Problem description	
II14572	Recommended JES3 SPOOL Browse and SYSLOG Browse maintenance.	**INFO**
OA30764	Selecting an active NJE job in SDSF results in ISF111E dynamic allocation failure.	
OA30845	ABEND1FB RC80	**PE**
OA31068	ABEND0C4 in IATDMEB in EBNQ000	**HIPER, PE**
OA31441	ABEND1FB-10 in IATDMEB reported in SDSF after applying OA24556	**PE**
OA31517	SDSF with JES3 - SJ results incomplete	
OA31971	SDSF LOG S command incomplete	
OA32269	SDSF loop or hang issuing SDSF LOCATE command by time with JES3	**HIPER**
OA32438	Unable to browse JES3 local's SYSLOG using SDSF LOG command	**HIPER**
OA32516	ABEND1FB in IATDMEB RC=20 / RC=C4 during SPOOL Browse	**PE**
OA32781	SDSF JES3: Data access error	**PE**
OA32946	ABEND1FB RC=20 issued by IATDMFR	**PE**
OA33040	SDSF browse of a SYSOUT file is missing the last lines.	**PE**
OA33274	ABEND0C4 in module IATDMEB near label EBT00495	**PE**
OA33525	ABEND0C4 in module IATDMJA while processing a SYSLOG CLST.	
OA33601	ABEND878 due to subpool 229 key 9 is filled up.	**HIPER,PE**

PE = Fixes PTF in Error

APARs closed since 1/1/2010

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OA24556 & PEs
SPOOL Browse

- OA24556 is a significant PTF which corrects various SPOOL Browse problems in HJS7750.
  - Delivered in HJS7750 PTF & in HJS7760 Base and a PTF.
- ALL PEs have minimal impact:
  - OA30845 – Nuisance abend during job termination
  - OA31068 – Nuisance task abend
  - OA31441 – Nuisance task abend
  - OA32516 – SPOOL browse task abend
  - OA32781 – Data access error
  - OA32946 – User exited from SDSF
  - OA33040 – Last lines of an JOBs SYSOUT file is not displayed.
  - OA33601 – SP229 fills with internal reader trace areas.
- We recommend applying OA24556!

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OA30845

External symptoms: ABEND1FB RC=80 issued from IATDMFR

Users affected: All users of HJS7750 and HJS7760 using SDSF

User Impact: This abend is of no impact to the user or system. We are in the process of terminating the address space and doing clean up, attempting to clean up storage that has already been freed.

OA31068

External symptoms: Various externals can be seen for this issue (example in APAR).

Users affected: All users of HJS7750 and HJS7760

User impact: Abending task continues to run. Task is attempting to write to JESMSGLG or JESYSMSG, the control block associated with the locking isn't available, so we are going to branch from IATDMDM to IATDMEB to wait for its availability. As part of the processing a trace entry is going to be written, using the DSBTRACE field; the field is currently zero, we recognize that but then attempt to use its contents. The field is zero because we had just completed spinoff processing. No data is lost. JESMSGLG processing will revert to the JES3 global and cause a significant impact should the application affected be one that does significant message processing. If you don't use spinoff we would recommend applying OA24556.

OA31441

External symptoms: ABEND1FB RC10 under SDSF using spool browse

Users affected: All users of HJS7750 and HJS7760 using SDSF

User Impact: This abend is of minimal impact to the user. The task will abend. We have a timing window where a transient PBUFF shortage can require a redrive of an I/O request using an invalid value.

OA32516

External Symptoms: ABEND1FB in IATDMEB RC=20 / RC-C4 during Spool Browse

Users affected: All users of HJS7750

User Impact: This abend is of minimal impact to the user. The task will abend.

OA32781

External symptoms: Customer attempted to half page scroll through a job's JESJCLIN data set. The JCL for the job contained in-stream SYSIN data sets. A data access error was indicated by SDSF.

Users affected: All users of HJS7750

User Impact: This error is of minimal impact to the user.

OA32946

External symptoms: Under SDSF abend issued (details in APAR).

Users affected: All users of HJS7750, HJS7760 and HJS7770.

User Impact: This abend is of minimal impact to the user. The task will abend.

OA33040

External Symptoms: The last lines of an JOBs SYSOUT file is not displayed.

Users affected: All users of HJS7750, HJS7760 and HJS7770.

User Impact: This error is of minimal impact to the user. The complete SYSOUT file of a JOB is not displayed. If the JOB is copied with XDC, all lines are displayed

OA33601

External Symptoms: ABEND878 due to Subpool 229 key 9 is filled up with DSBTRACE.

Users affected: All users of HJS7750.

User Impact: INTRDR datasets may cause LSQA to fill with trace areas. The task ends with ABEND878.

Service Highlights
Additional JES3 APARs (1 of 3)

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APAR	Problem description	
OA30665	Various DM ABENDs in JES3 during initialization after IOS000I error message	
OA30685	SYSIN data not returned for JESJCLIN SDSB allocated dataset	**DOC**
OA30913	ABENDS052 RC=101 during JES3 DC command with OPTION=DMP	
OA30936	MSGIAT7008 SPLT ERROR DM731 received for SYSOUT file	
OA30944	ABEND0C4 IATSIAU-SIAUARR IATSICA SVTTVT	
OA31268	Excessive UCBLOOK processing during dynamic allocation.	
OA31776	JES3 monitor issues IAT6397 IAT6398 IAT6415 IAT6410 invalidly.	
OA31807	ABENDDM137 documentation in JES3 Diagnosis Reference.	**DOC**
OA31855	MSGARC0381A allocation request failed for XXXXX for recall.	**HIPER**
OA31896	IATGRSP dump followed by ABENDDM747.	
OA31962	ABEND0C4 in JES3 module IATMDSB during job termination.	
OA32190	ABENDDM672 from IATOSDO for spinoff dataset.	
OA32297	MSGIAT8121 issued for MODIFY CANCEL when OSE exists.	
OA32301	IAT4133/IAT4174 a reason-text 'SPOOL RECORD ERROR(S)' missing in message manual.	**DOC**

DOC = Documentation

APARs closed since 1/1/2010

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Service Highlights
JES3 APARs (2 of 3)

S H A R E
Technology · Connections · Results

APAR	Problem description	
OA32426	JES3 I/O trace needs to be documented.	DOC
OA32572	Correct various problems in JES3 HJS7770.	
OA32603	ABEND0C4 in IATSICA when AWA addressability attempted.	
OA32870	Loop in JES3 module IATSIAF during SSI processing.	HIPER
OA32918	ABEND0C4 in IOSVDEVN issued by SICASTAE.	
OA32952	Correct various problems in JES3 HJS7770.	
OA33203	Missing documentation for FSI field FSIEGFID.	DOC
OA33279	Correct various problems in JES3 HJS7770.	
OA33519	JES3 Notify User (SSI 75) receives MSGICH408I when binary zeros specified as destination.	
OA33660	IATSIAI ABEND0C4, MEMALLOC is zero even after applying OA32603.	PE
OA33722	ABEND0C4 in IATSICA when AWA addressability attempted.	
OA33787	DYNALLOC failure RSN484 for non-SMS managed dataset for a job	PE
OA33916	Loop in IATGRQM.	
OA34117	ABEND9C7 RC10 during SSI80 processing in JES3.	HIPER
OA34192	ABENDS001-04 MSGIAT6712 during checkpoint processing.	HIPER

PE = Fixes PTF in Error
DOC = Documentation

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Service Highlights
JES3 APARs (3 of 3)

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APAR	Problem description	
OA34221	ABEND8FB RC24 during WLM processing along with message IAT2010 WLM subtask has failed.	**HIPER**
OA34234	Multivolume existing dataset DYNALLOC fails with RC4 reason CODE0214.	
OA34254	TSO user hung after SPOOL shortage.	
OA34409	MSGIEA602I address space create failed.	**HIPER**
OA34584	IAT3155 has conflicting usage.	
OA34642	Applications using IATYDAT as programming interface do not correctly display JESJCLIN after OA33040.	**PE**
OA34656	ABEND0C4 in IATIQNJ.	
OA34733	ABEND0C1 issued by IATDMXM, possible JES3 high CPU utilization.	**HIPER**
OA34746	Repetitive ABEND0C4 in IATGRPR under IOERR FCT.	**HIPER**
OA34953	ABEND0C4 in IATOSFP when attempting to address OSEOTSWB for DJ'd job.	
OA35160	IATGRPT sequence numbers do not allow user DSP entries after the last IBM entry.	

PE = Fixes PTF in Error

APARs closed since 1/1/2010

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Service Highlights
JESXCF APARs

APAR	Problem description	
OA30415	ABEND37B during PURGEDQ – Original ABENDA78	**HIPER, PE**
OA31944	ABEND0C4 in IXZIXIA when an SRB is being built to respond to an ASID which has been terminated previously.	**PE**
OA34164	TSO user hangs waiting in JESXCF after log browse.	**HIPER**

PE = Fixes PTF in Error

APARs closed since 12/1/2009

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OA31944
ABEND0C4 in IXZIXIA.

- Fixes APAR OA30415 PTFs
- OA30415 PTFs supplied a fix for OA26664 PTFs
  - OA26664 was in support of JES3 OA26568.
  - Applying OA30415 PTFs regressed the fix in OA28128 PTFs.
  - Complicated by JES3 OA27904 fixing defective JES3 OA26568.
  - Recommended OA30415 with JES3 OA27904
    - Fix supplied was of greater impact than the fix lost from OA28128.

- Recommend applying OA31944 and JES3 OA27904.
- User's affected:
  - All HJS7730, HJS7740, HJS7750 and HJS7760

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OA26664

We would not recommend applying OA26664 and JES3 APAR OA26568.

See OA30415 and JES3 APAR OA27904.

OA30415

External symptoms: Customer reported ABEND37B in LOGREC, slip showed original abend was ABENDA78 that was changed to ABEND37B by PURGEDQ.

The PTFs for OA30415 are marked as defective as they regress the fix provided in OA28128.

We recommend applying OA31944 as it provides a fix for a problem introduced by OA26664 and restores the fix supplied by OA28128.

OA31944

External symptoms: ABEND0C4 from module IXZIXIA in JESXCF.

Corrects defective OA30415 PTFs which regressed the fix supplied by OA28128 PTFs.

Affects all users of HJS7730, HJS7740, HJS7750, HJS7760.

We recommend applying OA31944.

We also recommend applying JES3 APAR OA27904 which fixes defective OA26568 PTFs.

OA34164
TSO user hangs waiting in JESXCF…

- Applies to JES2 users!
- A hang can be experienced on an HJE7770 member while browsing the SYSLOG of a down level member, or browsing an open data set of an executing job on a down level member.

- User's affected:
  - All HJE7770

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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.

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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.

JES3 tailored SVC dump exit
May create a second dump

- For an SVC dump on the local with a hung subsystem call, the exit will also generate the JES3 *DUMP command.
  - Creates a separate dump of the JES3 global.
  - Will result in ABEND DM137 for the global.
- Due to the dump exit, operators will need to respond to more IAT3714 messages if WANTDUMP=ASK is defined.

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If the SVC dump originates on a JES3 local, then the JES3 *DUMP command is also generated and a separate dump of the JES3 global is created with ABEND DM137. ABEND DM137 currently indicates that he operator issued the *DUMP command – JES3 Diagnosis Reference. Documentation APAR OA31807 has been created to update the documentation to include that the *DUMP command can be issued for an SVC dump.

Updated JES3 Diagnosis Reference explanation for 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'.

Updated z/OS JES3 Messages description for IAT3833:

Either the operator issued the *DUMP command which caused the CONCMD FCT to be terminated with abend DM137 or the command may have been entered automatically by module IATABTDX to complement a user address space dump. In that case, the dump title will contain the following text: 'COMPON=JES3 DYN DUMP,COMPID=SC1BA,ISSUER=IATABTDX'.

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.

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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.

Service Recommendation
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 used 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.

SHARE JES3 Requirements

SHARE #	IBM FITS #	Title	State
SSJES3032645	MR0203033521	JES3 Dynamic Spool enhancement – Accepted for SPOOL Add function	Accepted
SSJES3032645	MR0615106131	JES3 Dynamic Spool enhancement – Created for SPOOL Remove/Delete function	Recognized
SOJES393353	MR1020084625	JES3 - Dataset Integrity for JES3's Datasets	Recognized
SSJES399351	MR041400724	Provide access to SPOOL utilization data	Recognized
SSJES397305	MR1020084630	JES3 - OUTDISP support of OUTPUT JCL statement	Recognized
SSSHARE011776	MR1020084632	Perform DFHSM 'RECALL' for Batch Jobs Before They Are Active	Recognized
SSJES3032649	MR0210035755	Provide a Way to Know Which JES3 Jobs Use a Spool Extent	Recognized
SSSHARE01633	MR1020084712	JES3 Dump Job (DJ) support for dumping jobs by spool dataset	Recognized
SBJES383304	MR1020084616	JES3 Job Scheduling With HSM.	Recognized
SBJES379323	MR1020084614	JES3 - Inquiry for Job Reserving a Device	Recognized

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Survey questions

- What release level?
    - z/OS V1.12 **= 0 (attendance was 17)**
    - z/OS V1.11 **= 3**
    - z/OS V1.10 **= 4**
    - z/OS V1.9 **= 2**
    - z/OS V1.8 **= 0**

- Using EAV for SPOOL? **No**

- Using SDSF for JES3 ? **No**

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Survey questions

- NJE users? **= 4**
  - Using BSC? **= 1 (CTC)**
  - Using SNA? **= 11**
  - Using TCP/IP? **= 4**

- Anyone using RJP? **= 1**
  - Using BSC? **= 0**
  - Using SNA? **= 1**

- Anyone using BDT for file-to-file transfer? **= 2**

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z/OS V1.12 JES3

z/OS V1.12 JES3
Agenda

- Enable ENF58 signaling with SAPI SSI79.
- New JES Device Information Services SSI83.
- JES3 Extended Address Volume (EAV) support.

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ENF58 signaling
Overview

- Event Notification signal 58 (ENF58) is issued by JES3 for various SYSOUT data set changes.
  - Listeners of ENF58 are informed of changes such as data set being selected or deleted or changes to the job containing the data set.
  - Limited to the signal being issued only for data sets that have been allocated using the DALRTCTK text unit.

- JES3 extends ENF58 support so SAPI users can request the broadcast of signals for any SYSOUT data sets.
  - This allows users to monitor status changes during the lifetime of any SYSOUT data set.

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ENF58 signaling
Usage notes

- New SAPI SSI79 disposition flag SSS2RENF (IAZSSS2) to request ENF58 signals using PUTGET (SSS2PUGE).

- New Extended Status SSI80 output field STVS1ENF (IAZSSST) indicates when ENF58 signaling is enabled for a SYSOUT data set.

- Listeners should monitor and take appropriate action based on the ENF58 subtype.

  - See *z/OS JES Application Programming* for ENF58 details.

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See *z/OS MVS Programming: Authorized Assembler Services Guide* for information about how to use the ENFREQ macro to listen to these events.

See *z/OS JES Application Programming* for additional ENF58 details.

SSI83 –
JES Device Information Services

- Allow an application program to obtain information on devices managed by JES such as printers, readers, etc.
- Implementation will be staged over several releases due to the large number of device types supported by JES.
- With V1.12:
  - JES3 returns information for local printer devices.
  - JES2 returns information for both local and remote printer devices.

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SSI83
Information returned

- Local printer attributes:
  - JDCXPREF = Common prefix section
  - JDPHPRPU = Printer data header
  - JDPCPRPU = Printer common section
  - JDPWRKSL = Printer work selection section
  - JDPFPRT = Non-impact printer section (FSS printers)
  - JDP3PRPU = Printer JES3 section (JES3 specific attributes)
- Jobs that are currently active on the devices:
  - JDJBINFO = Current job information section
  - JDUTINFO = Current output information section
  - JDU3INFO = Current output information JES3 section
- System in the JESplex on which each device is located:
  - JDSIHDR = System information header

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SSI83
Usage notes

- SSI83 Calls made using IEFSSREQ with SSOBFUNC = 83.
- SSOBINDV points to the parameter lists mapped by IAZSSJD.
- SSJDFREQ is set to obtain the data or release the storage.
- Returned information is returned in storage buffers chained to the parameter list.
- The storage buffers are accumulated across multiple calls and must be explicitly released via a storage release request.
- Not available in V1.12 JES3:
  - Extensive filtering capabilities that allow application program to subset device information.
  - Support to return device data in 64-bit addressable virtual storage.
  - Plan to make available in a future release.

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JES3 EAV support

- DFSMS has added basic and large format sequential data sets to the list of Extended Address Space (EAS) eligible data sets.
- JES3 EAV support allows SPOOL, checkpoint, and Job Control Table (JCT) data sets to be anywhere on an EAV.
- Provides customers the ability to have SPOOL data sets larger than 65,520 cylinders (982,800 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
Usage notes

- To make a data set EAS eligible, specify the EATTR=OPT keyword on the JCL DD statement used to create the data set.
  - See speaker notes for sample JCL.
- 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.

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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=J3SPL1,
//             DCB=(RECFM=U,BLKSIZE=2048),
//             SPACE=(CYL,80000),EATTR=OPT,
//             DSNTYPE=LARGE
//SPLFRMT EXEC PGM=IEBDG
//SPXTNT    DD DSN=SYS1.JESPACE,DISP=SHR,
//             UNIT=3390,VOL=SER=J3SPL1,
//             DCB=(RECFM=U,BLKSIZE=2048,BUFNO=255),
//             DSNTYPE=LARGE
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD *
DSD     OUTPUT=(SPXTNT)
FD      NAME=SPOOL,FILL=X'FF',LENGTH=4084
CREATE  NAME=(SPOOL),QUANTITY=2147483647
END
```

JES3 EAV support
Changes for 28-bit cylinder values

- EAV support has extended cylinder values to 28-bits.
- Additional changes made include:
  - BADTRACK support:
    - BADTRACK initialization statement
    - *MODIFY,Q command
  - Messages updated:
    - IAT1140
    - IAT4034
    - IAT1141
    - IAT4035
    - IAT1145
    - IAT6363
    - IAT1146
    - IAT8539

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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.

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

JES3 EAV support
More changes for 28-bit cylinder values

- More updates made for 28-bit cylinder values:
  - 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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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.

JES3 EAV support
Other JES3 data sets

- Other JES3 data sets, which are physical sequential data sets, may also reside anywhere on an EAV.
  - Data sets include, but are not limited to:
    - JES3IN
    - JES3ABEND
    - JES3DRDS
    - JES3SNAP
    - SYSABEND
    - SYSUDUMP
    - PROCLIBs
    - User data sets

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Other JES3 data sets 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
Migration & Coexistence considerations

- A SPOOL extent, checkpoint, or JCT data set with extended attributes in the EAS cannot be opened on earlier-level systems.
  - The JES3 global and all locals must be at z/OS V1.12 with z/OS V1.12 JES3.
  - For earlier-levels of z/OS and JES3, JES3 initialization fails with system completion code 313 accompanied by system message IEC144I and return code 0C.
  - For z/OS V1.12, earlier-level JES3 initialization fails with system completion code 113 accompanied by system message IEC142I and return code 44.
  - Both messages identify the data set that could not be opened.
    - See speaker notes for examples.

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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.

JES3 Education
Use SHARE

- SHARE sessions:
  - **z/OS 1.12 SDSF Update**
    - Wednesday, March 2, 2011: 8:00 AM – 9:00 AM
      Room 201B (Anaheim Convention Center)
  - **SDSF for New Users – Hands-on Lab**
    - Wednesday, March 2, 2011: 9:30 AM – 10:30 AM
      Room 208B (Anaheim Convention Center)
  - **z/OS Basics: JES 201 - Differences Between JES2 and JES3**
    - Wednesday, March 2, 2011: 3:00 PM – 4:00 PM
      Room 201C (Anaheim Convention Center)

- Past proceedings:
  - **z/OS Basics: JES3 for New Users**
    Boston 2010 session 6818 – David Jones
  - **JES3 Basics: Introduction to JES3 Parts 1 & 2**
    Denver 2009 sessions 2351 & 2352 – Greg Thompson

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JES3 Education

- IBM Training: ITSO zSeries JES3 Workshop
  - Search from IBM home page or the Education catalog for 'ITS80'
  - http://www-03.ibm.com/services/learning/ites.wss/us/en?pageType=course_description&courseCode=ITS80

- IBM Education Assistant JES3 modules
  - z/OS V1.8 JES3 Networking TCP/IP NJE
  - z/OS V1.10 JES3 ease of use, application enablement, spool browse

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http://www-03.ibm.com/services/learning/ites.wss/us/en?pageType=course_description&courseCode=ITS80

ITS80 description:

This course covers the design, installation, and management of a JES3 system, both externally and internally. All features and functions of JES3 will be discussed. Coverage includes the functions and features of all releases currently available, including the current release z/OS JES3 V1.9.

References
ABCs of z/OS System Programming

Volume 1   – **SG24-6981** – published April 2008 (JCL/SDSF)
Volume 2   – **SG24-6982** – published September 2008 (Job mgmt)
Volume 3   – **SG24-6983** – published August 2007
Volume 4   – SG24-6984 – not available yet
Volume 5   – **SG24-6985** – published February 2008
Volume 6   – **SG24-6986** – published August 2008
Volume 7   – **SG24-6987** – published October 2008
Volume 8   – **SG24-6988** – published May 2007
Volume 9   – **SG24-6989** – published January 2008
Volume 10 – **SG24-6990** – published September 2008
Volume 11 – **SG24-6327** – published November 2005
Volume 13 – **SG24-7717** – published June 2009 (JES3)

Source: www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=abcs

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Volume 1   – SG24-6981 (http://www.redbooks.ibm.com/abstracts/sg246981.html)
Volume 2   – SG24-6982 (http://www.redbooks.ibm.com/abstracts/sg246982.html)
Volume 3   – SG24-6983 (http://www.redbooks.ibm.com/abstracts/sg246983.html)
Volume 5   – SG24-6985 (http://www.redbooks.ibm.com/abstracts/sg246985.html)
Volume 6   – SG24-6986 (http://www.redbooks.ibm.com/abstracts/sg246986.html)
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Volume 10   – SG24-6990 (http://www.redbooks.ibm.com/abstracts/sg246990.html)
Volume 11   – SG24-6327 (http://www.redbooks.ibm.com/abstracts/sg246327.html)
Volume 13   – SG24-7717 (http://www.redbooks.ibm.com/abstracts/sg247717.html)

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

JES V1.13
A preview – Dynamic Spool Add

- Adding a spool extent requires an IPL with Warm Start which disrupts all systems in the JESplex.
- Dynamic Spool Add allows extents to be added by:
  - *MODIFY CONFIG command
  - JES3 Hot Start with Refresh
  - No IPL required!
- Create a new initialization stream member with all JSAM definitions.
  - INCLUDE new JSAM member in the inish deck.
  - Update the new JSAM member to add a spool extent.
  - JSAM member can be used with *F CONFIG or via Hot Start with Refresh to add spool extents.
- More details at SHARE in Orlando.

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Recommended Implementation:

• Customer sets up a new member with all JSAM definitions

> • Starting with DYNALLOC statements
> • Ending with ENDJSAM

• Customer sets up a new inish deck with an INCLUDE statement pulling in the JSAM member

• Customer performs a Hot Start with Refresh with the new inish deck and JSAM member

• Or issue the *MODIFY CONFIG,ADD= with the new JSAM member

> • New spool extents are made usable only after all locals connect (or are flushed).

Final survey questions

- Do you migrate your JES3 and z/OS at the same time?
  - Yes **= 7 (attendance was 17)**
  - No **= 3**

- If not, can IBM do anything to make it easier to migrate together? **(see next slide for comments)**
  - Yes
  - No

- Please see me this week or send a note to me at davidjon@us.ibm.com with any input/insight/opinions!

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Comments from discussion on migrating JES3 and MVS together:

- One customer indicated that they migrate JES3 and MVS together, but like the capability to back off JES3 to a previous release if problems occur. When I asked how often that has happened, they replied once – V1.8.

- A customer that migrates them separately indicated this was because the MVS migration and the JES3 migration are done by separate teams and not coordinated.

- Another indicated that the time it takes to assure that JES3 mods and customizations work from release to release prevent them from migrating at the same time – i.e. it takes longer to prepare for the JES3 migration. They also do not always move to each new release and sometimes skip a release.

- Finally one indicated that they migrate both at the same time to avoid two outages due to two IPLs. However, they recently discovered that JES3 could be migrated without an IPL – using Hot Start with Refresh – although this is not clearly documented anywhere. The implication was that they could migrate separately if they were assured that another IPL was not required to migrate JES3.

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Wrap up!

Questions?

Discussion?

Thank You!

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Appendix

- SYSPROG Tools
  - JES3 Monitoring
  - Autostart for JSS
  - Display a Spool Record
  - Dynamic LPA Facility
  - JES3 Auto-Restart

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SYSPROG Tools
JES3 Monitoring

- Provides automatic monitoring of JES3 functions on the global and local processors and also in the CI FSS address spaces.
- Pay attention to its messages: IAT6395,IAT6396,IAT6397
  - Operators may not recognize a new message or may react inappropriately causing an outage.
  - Consider them for your Automation to highlight them to your operator.
- JES3 monitoring may save you an outage!

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JES3 provides automatic monitoring of JES3 functions on the global and local processors and also in the CI FSS address spaces. Two types of monitors are used:

JES3 loop and wait monitor

The JES3 loop and wait monitor ensures the two main JES3 tasks, the Nuc and the Aux task, are not suspended or in an infinite loop. When that happens, no other JES3 function (called FCTs) can be dispatched besides the currently active one. JES3 periodically examines the status of those two functions and informs the operator, through WTOR IAT6410, about the condition. MODIFY JES3 commands can be used to change the Monitoring interval and threshold for the loop and wait monitor.

JES3 monitor DSP

The monitor DSP runs as an FCT under the JES3 Nuc task. It monitors unavailable JES3 resource. A JES3 resource is anything that can use an FCT or a job that can become unavailable. The monitor DSP also monitors resources that a job is waiting for (data set allocation requests and tape mounts).

SYSPROG Tools
JES3 Monitoring – Check Please!

- **MODIFY JES3,CHK**
- Allows the operator to check the "health" of the JES3 address space.
  - Local, global, or CI FSS
- A summary report issued to the console lists any exception conditions found.
- CHK may save you an outage!
- Works in IPCS as well for a JES3 dump.
  - ip verbx jes3 'option=chk'
  - Does not work well for a dump from another address space!

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A complement to both monitors 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. Analysis can be requested for the local, global, or CI FSS address spaces. 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).
For z/OS JES V1.8 and earlier, make sure you have OA15913 applied.

SYSPROG Tools
JES3 Monitoring – Check Please!

- 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
JES3 Monitoring – Check Please!

- 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
Autostart for JSS

- 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.rrrrrrrr*
  - ***S DC,SPADDR=*mmmm.rrrrrrrr***
  - The *mmmm* portion of the spool address is the spool extent number (module) where the record resides.
  - The *rrrrrrrr* 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.rrrrrrrr

Displays the contents of the spool record that has a spool address of *mmmm.rrrrrrrr*. The *mmmm* portion of the spool address is the spool extent number (module) where the record resides. The *rrrrrrrr* 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-FFFFFFFF                            *....           *
```

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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 add 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 identifes 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.

End of slides.

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