

JES2 Project Opening & JES2 Latest Status



- ▶ Current JES2 Releases
- ▶ Migration & Implementation Tips
- ▶ Recent Service, Publications, etc.



Session# 2652

SHARE 95 Technical Conference - Summer 2000 - Boston

John Hutchinson - hutchjm@us.ibm.com

IBM Washington Systems Center, Gaithersburg, Maryland



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Other JES2 Sessions at SHARE 95

Mon	1:30	2655	JES2 Product Update
	3:00	2670	SDSF Future Directions
	4:30	2654	Intro for New JES2 System Programmers
Tues	4:30	2705	Infoprint User Experience
	8:00	2681	RMDS Trends and Directions
	9:30	2708	PSF for OS/390 Exits & Resource Management
	11:00	2663	Making Friends with \$BERT
	1:30	2660	JES2 \$ACTIVATE
	3:00	2665	JES2 - Meet the Developers
Wed	4:30	2704	Infoprint Server for OS/390
	9:30	2702	VPS & DRS Update for JES System Programmers
	11:00	2661	JES2 Coding Hints & Tips
	1:30	2665	JES2 Level 2 Common Problems
	3:00	2662	JES2 Job-Related Exits
Thur	6:00	2653	JES2/SDSF/RMDS Requirements Working Session
	9:30	2703	VPS TCP/IP Printing Alternatives
	11:00	2658	Improve JES2 Performance using \$TRACE Records
	1:30	2657	JES2 Performance Topics
	3:00	2664	JES2 Checkpoint Reconfiguration Dialog
	4:30	2659	JES2 Q & A

Current JES2 Releases



FMIDs, Birthdays & Obituaries

JES2 Rel.#	FMID	First Available	No Longer Available	End of Service	Y2K Ready
MVS/SP 4.2	HJE4420	3/91	3/93	6/1999	No
MVS/SP 4.3	HJE4430	3/93	6/97	6/1999	No
MVS/SP 5.1	HJE5510	6/94	6/95	1/2001	Yes
MVS/SP 5.2	HJE5520	6/95	3/00	3/2001	Yes
OS/390 R.1/2	HJE6601	3/96	3/97	1/2001	Yes
OS/390 R.3	HJE6603	3/97	9/97	3/2001	Yes
OS/390 R.4	HJE6604	9/97	3/98	3/2001	Yes
OS/390 R.5/6	HJE6605	3/98	3/99	9/2001	Yes
OS/390 R.7	HJE6607	3/99	9/99	3/2002	Yes
OS/390 R.8/9	HJE6608	9/99	9/00	9/2002	Yes
OS/390 R.10	HJE7703	9/00			Yes

Recent OS/390 JES2 Releases



JES2 OS/390 Release 8

- ★ System-managed rebuild support for CKPT on CF
- ★ Checkpoint performance
- ★ Serviceability enhancements

JES2 OS/390 Release 10 (GA 9/2000)

- ★ `$/GET/$/POST` performance
- ★ Spool management and performance
- ★ Serviceability enhancements
 - ★ Multi-member dumps
 - ★ Tailored SVC dumps
 - ★ ZAPJOB service
 - ★ and more ...

See 2655 "JES2 Product Update", Mon @ 1:30

JES2 Migration APARs (coexistence)



Minimum APAR levels for these releases of JES2...

To share spool with these levels of JES2

	MVS/SP 5.1	MVS/SP 5.2	OS/390 Rel.1/2	OS/390 Rel.3	OS/390 Rel.4	OS/390 Rel.5/6	OS/390 Rel.7	OS/390 Rel.8/9
MVS/SP 5.2	OW09285	=						
OS/390 Rel.1/2	OW20011	OW20011	=					
OS/390 Rel.3	OW20491	OW20491	OW20491	=				
OS/390 Rel.4	OW26100	OW26100	OW26100	OW26100	=			
OS/390 Rel.5/6	OW29209	OW29209	OW29209	OW29209	OW29209	=		
OS/390 Rel.7	OW34853	OW34853	OW34853	OW34853	OW34853	OW34853	=	
OS/390 Rel.8/9	OW37454	OW37454	** Not Supt'd	** Not Supt'd	OW37454	OW37454	OW37454	=
OS/390 Rel.10	** Not Supt'd	** Not Supt'd	** Not Supt'd	** Not Supt'd	** Not Supt'd	OW42299	OW42299	OW42299

Caution: These APARs are for short-term migration, not long-term coexistence.

**** Note:** Starting with OS/390 Release 10, only four consecutive levels of JES2 are supported for coexistence in the same MAS complex.

JES2/MVS Compatibility



		JES2 Release:								
OS/390 Release	5.1.0 HJE5510	5.2.0 HJE5520	R.1/2 HJE6601	R.3 HJE6603	R.4 HJE6604	R.5/6 HJE6605	R.7 HJE6607	R.8/9 HJE6608	R.10 HJE7703	
R.1	X	X	X							
R.2	X	X	X							
R.3	X	X	X	X						
R.4	X	X	X	X	X					
R.5	X	X	X	X	X	X				
R.6	X	X	X	X	X	X				
R.7	X	X	X	X	X	X	X			
R.8	X	X	X	X	X	X	X	X		
R.9	X	X	X	X	X	X	X	X		
R.10						X	X	X	X	

From Rel. 10 on, JES levels supported by a given OS/390 release will be the same as the JES levels that can coexist in a MAS.

JES2 Migration Highlights



General:

- ▶ Install PSP maintenance, Warmstart
- ▶ Share spool with different releases only for short-term
- ▶ OS/390 BCP Release or higher (see prev. tables)

JES2 V2R4 Installation

- ▶ Storage & CPU Requirements
- ▶ External changes - Job List & other Commands
- ▶ Internal changes - Job Queue Services
- ▶ \$ACTIVATE for new functions (WLM inits & many more)
 - See session 2660 on JES2 \$ACTIVATE

JES2 V2R10 Installation

- ▶ Must be \$ACTIVATED prior to Warm-start Migration
- ▶ Cold-start required if coming from JES2 OS/390 Rel. 3 or before

\$D PERFDATA Enhancements



- Summary Statistics for each PCE type (Rel.7)
 - ▶ **\$d perfdata (cpustat)**

```

$HASP660 CPU PERFORMANCE STATISTICS -
$HASP660 INTERVAL=132:59:15.354714,CPU=18:22.275106,
$HASP660 PCENAME=NET.ST,CPU%=14.38,CPU=2:38.600190,TIME=2:53.806383,
$HASP660 QSUSE_TIME=1.674947,IOCOUNT=131892,CKPT_COUNT=16871,

```
- Messages no longer terminated by CONDEF DISPMAX (R.7)
 - ▶ No more ",L=Z" or \$HASP003 RC=57
- Checkpoint info. for PCE types (OS/390 JES2 Rel.7 & 8)
 - ▶ **\$d perfdata (pce*) , pcname=cnvt**

```

$HASP660 PCE PERFORMANCE STATISTICS -
$HASP660 INTERVAL=335:49:11.242144,CPU=11:16.980764, <== Rel. 7
$HASP660 PCENAME=CNVT,TIME=0.137927,CPU=0.131061,CPU%=0.01,
$HASP660 QSUSE_TIME=0.088308,IOCOUNT=824,CKPT_COUNT=4711, <== Rel. 7
$HASP660 WAIT=CKPT,MOD=HASPNUC,SEQ=28410000,COUNT=28,
$HASP660 . . . ,CMOD=HASPJQS,CSEQ=46496600, <== Rel. 8
$HASP660 POST=RESOURCE,COUNT=28,AVGWAIT=1.019279,

```
- JES2 Main Task "Events" - Errors & Long Run Times (R.10)
 - ▶ **\$d perfdata (event)**

OS/390 Release 8 JES2 Enhancements



System-Managed Structure Rebuild

- **Moving JES2 Checkpoint to another CF Structure with System Managed Rebuild**
 - ▶ Requires OS/390 JES2 V.2 Rel. 8 on all members
 - ▶ Requires CFCC level 8
 - ▶ Requires CFRM CDS to be upgraded to Rel. 8
 - ▶ Target CFs must be available in the CFRM Preference List
 - ▶ Structure must be on different Coupling Facility
 - ▶ Not used for recovery from failures (Reconfiguration Dialog used)

- **SETXCF START,RB,STRNAME=J2CKPT1,LOC=OTHER**
 - or
- **SETXCF START,RB,CFNAME=CF001**
 - ▶ Rebuild by Structure to manage the time Ckpt is unavailable.

Ckpt Structure Rebuild Experiences



- **SETXCF START,RB,STRNAME=J2CKPT1,LOC=OTHER**
 - ▶ IXC570I S-M REBUILD STARTED FOR STR. xxxxxxxx
 - ▶ IXC367I SETXCF START REBUILD REQUEST ACCEPTED
 - ▶ IXC571I S-M REBUILD FOR STR. xxxxxxxx COMPLETED STARTUP PHASE
 - ▶ IXC571I ... QUIESCE PHASE ...
 - ▶ IXC578I S-M REBUILD ALLOCATED STR. xxxxxxxx
 - ▶ IXC574I ALLOCATION INFORMATION ...
 - ▶ IXC571I ... ALLOCATION PHASE ...
 - ▶ IXC571I ... ATTACH PHASE ...
 - ▶ IXC572I ... xxxx SUBPHASE OF THE COPY PHASE..
 - ▶ IXC571I ... COPY PHASE ...
 - ▶ IXC579I NORMAL DEALLOCATION FOR xxxxxxxx ...
 - ▶ IXC577I S-M REBUILD COMPLETED ...
- **Elapsed time took 5-6 sec. for lightly loaded/small ckpt.**
 - ▶ Will be longer to release the Ckpt Lock & copy Larger Structures.
- **If longer than LOCKOUT, you may see ...**
 - ▶ \$HASP292 ... WAITING FOR RESPONSE FROM CF .. DURING REBUILD
 - ▶ \$HASP263 WAITING FOR ACCESS TO CKPT - STRUCTURE REBUILD IN PROCESS

JES2 Service Information

- **HiPer APARs** (Hi Impact, or Pervasive)
 - ▶ See PSP buckets for an up to date list
- **Performance APARs**
- **Functional Enhancement APARs**
- ☞ See session 2665 "JES2 Common Challenges"

Y2k HiPer APARs



Date-2000/	APAR #	Description	Applicable Releases
1/03	OW40371	System delays with Purge commands	R4 - R8
1/05	OW41100	JES2 hangs waiting for I/O to quiesce after ABEND E00	ALL
1/14	OW42524	0C4 after CBIMPL12 remote msgs after OW41429	R4 - R8
1/28	OW42747	0C4 in HASPSXDV after \$TR2.RD1,S=xxx command	R4 - R8
1/28	OW42545	After OW35104,\$J12 if Printer fails SAF WRITER check	R3 - R8
1/28	OW41064	JES2 Member dominates Checkpt after Jobs Quiesced	R3 - R8
2/17	OW41729	Loop in HASCHAM near HCEP30 after OW34249	5.2 - R8
3/08	OW42126	PSF may skip input buffers w/trackcell interrupts	R7 - R8
3/08	OW38491	\$Q04 in HASPJQS after call to \$DOGJQE using PSO	R4 - R8
3/10	OW42711	OUTDEF OUTTIME=UPDATE doesn't update timestamp	R4 - R8
3/13	OW43233	SAPI disp=keep ignored after OW35104	R3 - R8
3/31	OW43571	CONDEF DISPMAX not honored for \$DN command	R4 - R8
3/31	OW43564	Spin data sets not spun after OW39035 & > 1000 spin ds	R4 - R8
4/10	OW43327	Jobs changed to WLM class not immediately selected	R4 - R8
5/12	OW43864	Jobs hung Awaiting Output or Purge after OW39449	R4 - R10
5/19	OW44309	0C4 in HASPNSR after OW35565 w/ Spanned records	R4 - R10
5/26	OW44149	Abend \$M03 \$HASP208 NSXIT (SNA RJE)	ALL
5/31	OW44266	\$HASP096 in HASPNUC at CBIMPL12 > 196 spool vols	R4 - R10

Check [IBMLink](#), or [IBM Service](#) for the latest information

Y2k HiPer APARs cont.



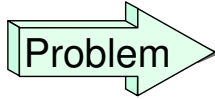
Date-2000/	APAR #	Description	Applicable Releases
06/13	OW39586	\$HASP185 RC06 "Obsolete Output Element" w/ valid ckpt on FSS printer	R7 - R8
06/16	OW44166	Misc. errors w/ Ckpt on CF & R.8 - pages zeroed out	R8 - R10
06/29	OW44351	Abend068/\$K15 or \$CF1 starting Ckpt Reconfig. Dialog	R3 - R10
06/30	OW42138	TSO Cancel Job on NJE JobTrans. hangs STAC PCEs	R4 - R8
07/04	OW44400	BERTWARN not updated w/ \$ACTIVATE & all-member Warm start	R4 - R10

Check IBMLink, or IBM Service for the latest information

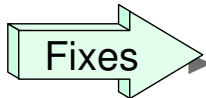
Danger - Don't run out of BERTs!



- ▶ BERTs (Block Extension Reuse Tables) provide extensions to the JES2 Checkpoint for dynamic JQE extensions, CATs & other control blocks
 - CKPTSPACE BERTNUM defaults to 2X JOBNUM

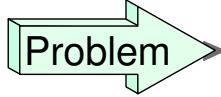


Terrible things can happen if you run out!
Re-IPL, Cold start, etc.



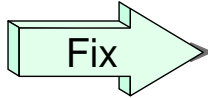
- ▶ **Increase your supply of BERTs**
\$T CKPTSPACE,BERTNUM=nnn,BERTWARN=80
- ▶ **Apply fixes for the following APARs:**
 - **OW44400** - BERTWARN not updated (F006)
 - **OW41547** - HASPHOPE not assembled
 - **OW35410** - Shortage w/All-mem. WS (open)

OW44166 - Ckpt on CF data overlaid



Ckpt pages (4k) read from Coupling Facility not completed if synch suspend read timed out
– X'00's replaced valid data causing different symptoms (Abends, TG shortages)

▶ **Red Alert!**



CF synch suspend read timeouts correctly handled.

▶ OS/390 R8, R10 (PUT 0006)

OW35565 - Consistent Page Counting



- Problem** ▶ Page counts, from NJE not filled in correctly
- PSF skip-to-0
 - SYSOUT from VM nodes
- Fix** ▶ JES2 counts Pages, Records, Bytes in NJE SYSOUT Receiver
- Does not rely on NJE DSHeader fields
 - (set to zero by some other NJE systems)
 - **SMF 6/24/26 records affected.**
- Note**
- ▶ OS/390 R4 - R8 (PUT 0003)
 - ▶ See OW44309 (F005) & OW44584 (F006)

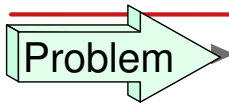
JES2 Performance APARs



Since PUT/RSU 9906:

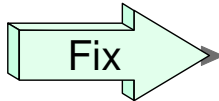
- OW38493 - WLM initiators selection delays (9906)
- OW38768 - High CPU Utilz. w/ \$DM or formatted Cmds (9906)
- OW39179 - RJE output selection w/large Queues (9908)
- OW39201 - High CPU Utilz. w/ NJE Job Receiver (9907)
- OW39449 - \$DJQ,SPOOL displays excessive spool % (9906)
- OW39672 - \$QGET excessive overhead & slow (9908)
- OW40371 - System delays with Purge Queue cmds (9906)
- OW41064 - High Checkpoint writes after jobs quiesced (0001)
- OW42769 - Storage Leaks with SDSF SWB modify (0003)
- OW43327 - Jobs in WLM managed class not selected (0004)

OW39179 - Output Work Selection



Output Delays & Extra Overhead

- Large output queues
- Many (Remote) Printers
- Unnecessary Calls to services when output doesn't match



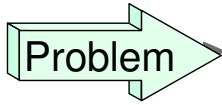
GTSCREEN - WSSETUP updated

- Skip inelligable JOEs (routejde)
- Skip \$#POST if no eligible devices
- More efficient linkage
- New \$TRACE(30) added to trace \$#POST performance

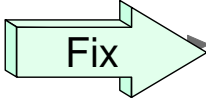
✓ JES2 R4-R8 - PUT 9908 (HiPer)

OW39672 - \$QGET Performance

JES2

**Problem****Delays & High overhead with \$QGET**

- Many Inits (7300) & Large Job Queues
- Unnecessary \$DOGJQE calls for busy JQEs

**Fix****\$DOGJQE call deferred**

- until "real" JQE attributes examined
- New \$TRACE(31) added to trace \$QGET performance

✓ **JES2 R4-R8 - PUT 9908 (HiPer)**

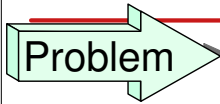
JES2 Function Enhancements



Since PUT/RSU 9906:

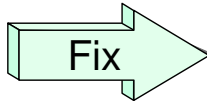
- OW35104 - SAPI PUTGET data set with KEEP (9910)
- OW38962 - WLM Job Control Enhancements (9907)
- OW41855 - \$D MODULE Enhancements (0002)
- OW33073 - IPCS Mega-Enhancements (0005)

OW35104 - SAPI Enhancements



SAPI PUTGET request with KEEP returns the same JOE

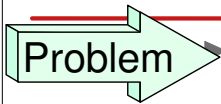
- Causes a loop in the application



SAPI updated to support:

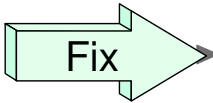
- SSS2RNPT indicates not to show this JOE again to the current thread
- SSS2DSTR returns token for the data set so it can be re-fetched
- ▶ **\$#TJEV to manage Thread JOE Exclusion Vector added**
 - Search & Manipulate indicators for showing a JOE to this thread and other threads
- ✓ **JES2 R3-R8 - PUT 9910**
 - + Apply fix OW36019 to update IAZSSS2 macro

OW38962 - WLM Job Control Enhancements



Scheduling Environments & WLM Managed Initiators missing function:

- Can't change SchEnv after job submission
- No Default SchEnv by JOBCLASS
- Cannot run 'special jobs' when \$PXEQ



More control over SCHENV & \$SJ:

- \$TJob,SCHENV=nnnn (SCHENV =, to nullify)
- JOBCLASS(x) SCHENV=nnnn
- \$SJob eligible on local system even if \$PXEQ

✓ JES2 R4-R8 - PUT 9907

- + Apply fix OW40440 for 0C4 in \$DOGWSC
- + APAR OW41547 - HASPHOPE not assembled

OW41855 - \$D MODULE Enhancements



Problem

\$D MODULE & \$D FSS missing information

- Level of JES2 (FMID, Version)
- Routines & Tables within Modules
- Address for setting SLIPs

Fix

\$D MODULE, LONG shows additional info:

- FMID, VERSION, UVERSION, LASTPTF
- ROUTINES, TABLES (& Addresses)

```
$dmodule (hascsisc), long
$HASP468 MODULE (HASCISIC)
ADDRESS=05DAC000, ASSEMBLY=(11/17/99, 16.04), ENVIRON=USER, EXITPTS=(),
FMID=HJE6607, IBMJES2=BASE, LASTAPAR=OW35104, LASTPTF=UW63920,
LENGTH=004130, LOADMOD=HASCISIC, MACLEVEL=6,
ROUTINES=(SSICSCAN=05DAC050, SSICSTAT=05DAC2E0, SSISTAT=05DAC760, ..
SPLEVEL=CHECK, TABLES=(), VERSION=OS 2.7.0, UVERSION=
```

- Filter on Routines: **\$d module,routines=\$post**

► **\$D FSS, LONG & \$D PRT** show additional info:

- FSSMADDR, FSSMLENG, FSSMAPAR, FSSMPTF

✓ **JES2 R4-R8 - PUT 0002**

OW33073 - JES2 IPCS Enhancements



- **Extensive Analysis & Displays**
 - ▶ JES2 base display (opt.1) shows much more info
 - Over 100 checks added for abnormal & error conditions
 - ▶ Many more Control Blocks and Variations formatted
 - ▶ Table-driven code provides basis for more analysis
 - Easily expand diagnostic knowledge base for IBM service
- **Don't wait for an emergency to install this service**
 - ▶ Make sure you have the correct libraries concatenated

- ✓ **JES2 R4-R8 - SUF 0005**
 - + APAR OW42528 - PUT 0004



Survey Questions

1. How long do you run with mixed JES & BCP levels?

0 (migrate together): ____, 1-2 Months: ____, 3+ Months: ____

2. How long do you run with mixed JES2 levels in MAS?

0 (migrate together): ____, 1-2 Months: ____, 3+ Months: ____

3. What is your JES2 Release level?

JES2 Rel.#	Count	\$ACTIVE ?
MVS/SP 4		X
MVS/SP 5		X
OS/390 R.1/2		X
OS/390 R.3		X
OS/390 R.4		
OS/390 R.5/6		
OS/390 R.7		
OS/390 R.8/9		
OS/390 R.10		

Appendix

JES2 Documentation

- ▶ [OS/390 JES2 Library](#)
- ▶ [Softcopy Books \(BookManager\)](#)
- ▶ [OS/390 Web Sites](#)
- ▶ [JES-related Books](#)

OS/390 JES2 Releases



OS/390 Release 1 - Spool Offload Enhancements

OS/390 Release 3 - SYSOUT API (SAPI)

OS/390 Release 4 - WLM Inits, SCHENV & Constraint Relief
▶ \$ACTIVATE required for new functions

OS/390 Release 5 - Open Print Server Support

OS/390 Release 7 - FiCon & New DASD Support

OS/390 Release 8 - CF Auto Rebuild for Checkpoint Structure

OS/390 Release 10 Spool Mgmt, Browse, ZAPJOB,...
▶ \$ACTIVATE required.

See 2655 "JES2 Product Update", Mon @ 1:30

OS/390 V2R5 JES2 LIBRARY



GC28-1794	JES2 Introduction *
GC28-1797	JES2 Migration Notebook
SC28-1791	JES2 Initialization & Tuning Guide
SC28-1792	JES2 Initialization & Tuning Reference
GC28-1796	JES2 Messages
GC28-1790	JES2 Commands
GX22-0041	JES2 Commands Summary
SC28-1793	JES2 Installation Exits
SC28-1795	JES2 Macros
LY28-1086	JES2 Diagnosis
LY28-1096	JES2 Data Areas, V.1 \$A - \$E *
LY28-1097	JES2 Data Areas, V.2 \$F - \$O *
LY28-1098	JES2 Data Areas, V.3 \$P - \$X *

- ★ SoftCopy only (CD-ROM)
- ▶ All JES2 books are unlicensed
- ▶ JES2 Command Syntax in RR-track format

OS/390 Softcopy Books



- <http://www.s390.ibm.com/products/softcopy>
 - **OS/390 Online Collection**
 - ◆ CD-ROMs: SK2T-6700 (Unlicensed only)
 - ◆ Available on Tape (Optional, No-Charge)
 - **Licensed OS/390 Books**
 - ◆ OS/390 V.1 CD-ROM: LK2T-6702
 - ◆ OS/390 V.2 CD-ROM: LK2T-2499
 - **S/390 Rainbow Books Collection**
 - ◆ CD-ROM: SK2T-2177
 - ◆ 300+ Systems Center Technical Bulletins in BookManager and PDF formats
 - ◆ RedBooks (ITSC), Orange (WSC), Yellow (NS)
- ▶ All Updated Quarterly

Other JES2-Related Documents



- ▶ NJE Formats & Protocols, SC23-0070-3
- ▶ VSE to OS/390 Migration Notebook, SG24-2043
- ▶ DFW & Dual Copy - JES2 Spool & Checkpoint, GG66-3230
- ▶ NJE with JES2 and Other Systems, GG22-9339-1
- ▶ SDSF/RACF 1.9.2 Conversion, GG24-4085 (softcopy only)
- ▶ MVS/ESA JES2 Exit Coding, GG24-4127 (softcopy only)
- **Deleted (obsolete) - save your old copies**
 - ▶ ~~OS/390 R.4 Implementation, SG24-2089~~
 - ▶ ~~OS/390 R.5 Implementation, SG24-5151~~
 - ▶ ~~JES2 MAS in Sysplex Environment, GG66-3263~~
 - ▶ ~~MVS Parallel Sysplex Config. Cookbk, SG24-4706~~
 - ▶ ~~MVS/ESA JES2 V.5 Implementation, GG24-4583~~

OS/390 Web Sites



OS/390 Coexistence, Migration, & Year 2000 info

- ▶ <http://www.s390.ibm.com/stories/year2000/coexist.html>

OS/390 Planning for Installation

- ▶ <http://www.s390.ibm.com/os390/installation>

OS/390 Publications (view, print, order books)

- ▶ <http://www.s390.ibm.com/os390/bkserv>

SDSF home page

- ▶ <http://www.s390.ibm.com/products/sdsf>

Advanced Tech. Support (Washington System Center)

- ▶ <http://www.ibm.com/support/techdocs> (Flashes, etc.)

Redbooks

- ▶ <http://www.redbooks.ibm.com>

2H99 HiPer APARs



Date-1999/	APAR #	Description	Applicable Releases
7/30	OW39283	ABEND0F7 RCB0 from HASC SRJB during rebuild	ALL
8/02	OW39201	Loop in HASPRDR when NJE line restarted & JR active	ALL
8/26	OW40440	0C4 in \$DOGWSCQ (HASPXEQ) after OW38962 & \$SJ command	R4 - R8
8/26	OW39672	Performance degradation in \$DOGJQE (\$QGET)	R4 - R8
8/26	OW39179	RJE WS Performance with very large Queues in a single class	R4 - R8
9/10	OW39679	0C4 in HASPNST sending output to remote with 5-digit remote #	R4 - R8
9/10	OW39195	SAPI Bulk Modify, JOE's not selectable by eligible devices	R4 - R8
9/13	OW40910	\$Q07 JES2 CATASTROPHIC after OW31480	R4 - R8
10/07	OW40837	\$Z03 JES2 CATASTROPHIC during Spool Offload	R7
10/29	OW40224	\$BR3 ABEND after Successful Checkpoint Reconfiguration dialog	ALL
11/26	OW40758	ABENDs15F & 922 Initiator ABENDs after \$H & \$A & TYPRUN=HOLD	R4 - R8
11/26	OW40213	ABEND378 RC24 Processing \$PJES2 command	R3 - R8
11/26	OW38136	SYSZJES2 ENQ Awaiting SPOOL Space after ABEND 0E0 RC24	ALL
12/10	OW41734	ABEND \$J12 after OW35104 with \$#GET from BSC or SNA	R3 - R8
12/31	OW42078	0C4 in HASPJQS during warmstart after \$HASP483 JOBQ error	ALL

Check IBMLink, or IBM Service for the latest information