

# JES2 Project Opening & JES2 Latest Status



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



## Session# 2652

SHARE 96 Technical Conference - Spring 2001 - Long Beach, CA

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## Other JES2 Sessions at SHARE 96

Mon	1:30	2655	JES2 Product Update
	4:30	2670	SDSF R10 Enhancements
Tues	8:00	2658	Improve JES2 Performance using Trace Records
	9:30	2660	OS/390 R10 JES2 & SDSF User Experiences
	11:00	2661	Intro for New JES2 System Programmers
	1:30	2662	Intro to JES2 for System Operators
	4:30	2704	InfoPrint Server for OS/390
	6:00	2699	InfoPrint Server Lab
	7:15	2679	JES2 Project Dinner
Wed	8:00	2712	Questions & Answers about Printing
	9:30	2702	VPS & DRS Update for JES System Programmers
	11:00	2698	Printing from Windows Apps & Unix on OS/390 Printers
	1:30	2666	JES2 & WLM Initiators
	3:00	2667	JES2 & WLM Initiators - User Experiences
	6:00	2668	JES2 & WLM Initiators - BOF
Thur	8:00	2665	Making Friends with \$BERT
	9:30	2703	VPS & JES/SAPI User Experiences
	11:00	2681	Transitioning to OnDemand/390 from RMDS
	1:30	2664	Intro to JES2 Exit Writing
	1:30	2705	Advanced Record Formatting for Printing
	3:00	2659	JES2 Q & A
	4:30	2653	JES2/SDSF/EDM Requirements Working

# Current JES2 Releases



## FMIDs, Birthdays & Obituaries

JES2 Rel.#	FMID	First Available	No Longer Available	End of Service
MVS/SP 5.1	HJE5510	6/94	6/95	1/2001
MVS/SP 5.2	HJE5520	6/95	3/00	3/2001
OS/390 R.1/2	HJE6601	3/96	3/97	1/2001
OS/390 R.3	HJE6603	3/97	9/97	3/2001
OS/390 R.4	HJE6604	9/97	3/98	3/2001
OS/390 R.5/6	HJE6605	3/98	3/99	9/2001
OS/390 R.7	HJE6607	3/99	9/99	3/2002
OS/390 R.8/9	HJE6608	9/99	9/00	9/2002
OS/390 R.10	HJE7703	9/00	?	3/2004
z/OS R. 1	HJE7703	3/01	?	3/2004

# 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

# z/JES2



## **z/OS Rel. 1 JES2 - same as OS/390 Rel. 10**

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

## **future z/JES2 releases:**

- ★ **may require JobID format changes:**
  - **'JOB65534' format won't handle 999,999 job IDs .**

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

# 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 & z/OSr1 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
z/OS R1						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:

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

## JES2 V2R10 Installation

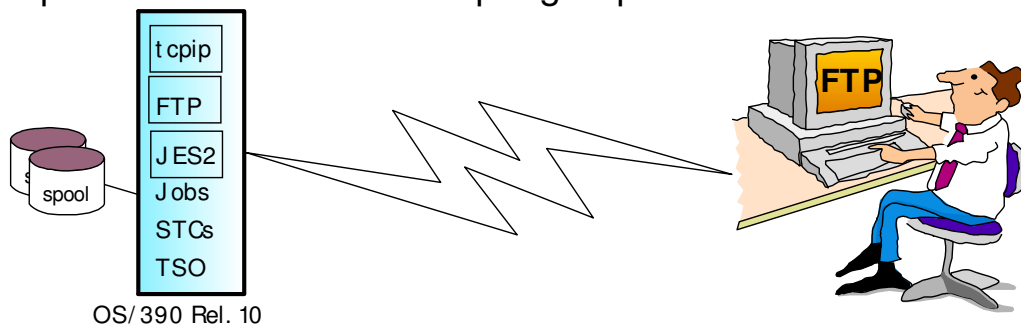
- ▶ Checkpoint must be in "Release 4" mode
  - Prior JES2 must be \$ACTIVATED prior to Warm-start Migration
- ▶ Cold-start required coming from JES2 OS/390 Rel. 3 or before
- ▶ HASX05C still supported
  - Included by default if no other Exit 5 routines specified.
  - Will only be provided as a Sample in future (no default)
- ▶ Test & Exploit the new R10 functions

# Comm. Server for OS/390 Rel. 10

JES2



- **Enhanced FTP support to JES2 Jobs & Output**
  - ▶ Access to output from any job, STC, TSO in JES2
  - ▶ More detailed status information returned to FTP client.
  - ▶ Access to individual spool files
  - ▶ SAF definitions control which output can be accessed
- **Prior FTP - JES support:**
  - ▶ Jobs limited to userid + 1 character in JES2 held queue
  - ▶ Spool files bundled into output groups.





## JES-FTP (CS R10): externals



- **Controlled by new CS/390 configuration parms:**
  - ▶ **JESINTERFACELEVEL=2** (default is 1 - works as before)
  - ▶ **JESENTRYLIMIT=** <max # of jobs returned>
- **New Site Commands:**
  - ▶ **JESJOBNAME=** <jobname\_filter\*>
  - ▶ **JESOWNER=** <job\_owner\_userid>
  - ▶ **JESSTATUS=** <input | active | output>
- **Security Controls (SAF profiles similar to SDSF)**
  - ▶ **JOBNAME:** ISFCMD.FILTER.PREFIX
  - ▶ **JESJOBOWNER:** ISFCMD.FILTER.OWNER
  - ▶ **JESSTATUS:** ISFCMD.DSP.INPUT.<jesx>  
ISFCMD.DSP.ACTIVE.<jesx>  
ISFCMD.DSP.OUTPUT.<jesx>
- **Pre-OS/390 Rel. 10 JES2 & JES3 require PTFs**
  - ▶ JES2: OW35104 & OW41734
- See **OS/390 Comm. Server: IP User's Guide, GC31-8514**

# JES-FTP (CS R10) LIST example


 JES2

## JESINTERFACELEVEL 1

```
>>> LIST
125 List started OK
USER1A   JOB00033  OUTPUT   3 Spool Files
USER1J   JOB00072  OUTPUT   2 Spool Files
USER1W   JOB00113  INPUT
```

## JESINTERFACELEVEL 2

```
>>> LIST
125 List started OK for JESJOBNAME=USER1*, JESSTATUS=ALL and JESOWNER=USER1
JOBNAME  JOBID    OWNER    STATUS CLASS
USER1J   JOB00072 USER1    OUTPUT A      (JCL error) 3 spool files
USER1A   JOB00033 USER1    OUTPUT A      RC=000 5 spool files
USER1    TSU00024 USER1    ACTIVE TSU
USER1W   JOB00113 USER1    INPUT  A      -DUP-
250 List completed successfully.
```

```
>>> LIST j33
125 List started OK for JESJOBNAME=USER1*, JESSTATUS=ALL and JESOWNER=USER1
JOBNAME  JOBID    OWNER    STATUS CLASS
USER1A   JOB00033 USER1    OUTPUT A      RC=000
          ID  STEPNAME PROCSTEP C DDNAME  BYTE-COUNT
          001 JESE                H JESMSG LG 1235
          002 JESE                H JESJCL   526
          003 JESE                H JESYSMSG 1256
          004 STEP1                H SYSUT2   741
5 spool files
```

# JES2 Service Information

- **HiPer APARs** (Hi Impact, or Pervasive)
  - ▶ See PSP buckets for an up to date list
    - OS390Rxx / JES2
    - ZOSV1Rx / JES2
  
- **Other service of interest:**
  - ▶ Performance Improvements
  - ▶ Service Aids
  - ▶ New Function

# JES2 HiPer APARs - 2000



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

## JES2 HiPer APARs - Cont'd



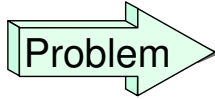
Date- 2000/ 2001/	APAR #	Description	Applicable Releases
06/13	OW39586	\$HASP185 RC06 "Obsolete Output Element" w/ valid ckpt on FSS printer	R7 - R8
06/16	OW44166	Misc. errors w/ Ckpt on CF & R.8 - pages zeroed out	R8 - R10
06/29	OW44351	Abend068/\$K15 or \$CF1 starting Ckpt Reconfig. Dialog	R3 - R10
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
8/25	OW45721	Spools used mask set to all spools after All-member WS	R10
11/20	OW46298	ABEND 08D RC5 & TGS shortage after Init ASID terminates converting INIT JCL	R4 - R10
11/20	OW45940	\$HASP275 - K13 when CKPT2 reconfigured to use CF	R5 - R10
12/01	OW43512	Job Hung in MEMTERM in HASCSRJB	R4 - R10
12/16	OW45879	JES2 counts total pages inconsistently	R4 - R10
12/18	OW46772	\$BR3 after Checkpoint reconfiguration	All
12/25	OW46883	CBIMPL4 disastrous error	All
1/30	OW46645	Spin PCE looping - Hot start req'd to recover	R4 - R10

Check IBMLink or IBM Service for the latest information

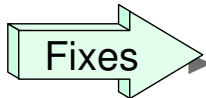
## Danger - Don't run out of BERTs!



- ▶ 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.



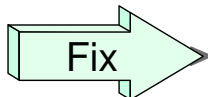
- ▶ **Increase your supply of BERTs**  
\$T CKPTSPACE,BERTNUM=nnn,BERTWARN=80
- ▶ **Apply fixes for the following APARs:**
  - **OW44400** - BERTWARN not updated (F006)
  - **OW41547** - HASPHOPE not assembled
  - **OW35410** - Shortage w/All-mem. WS (open)

## 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)



## OW45879 - Consistent Page Counting



- 
- Problem** ▶ Page counts incorrect w/ mixed line & page records
- OW35565 fixed it
  - OW45583 removed it to fix RJE WS
- Fix** ▶ OW45879 puts the fix back
- Counts all skips-to-channel-one
- Note** ▶ If in a MAS, apply OW45583 to all members before OW45879 (read the APAR cover letter).
- ▶ OS/390 R4 - R10 (PUT 0009)
  - ▶ See OW45583(), OW35565 (F003), OW44309 (F005) & OW44584 (F006)



## Other interesting APARs



Since PUT/RSU 0001:

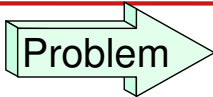
### Performance

- 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)
- OW47238** - High CPU cancelling Job with lots of Output (open)
- OW46645** - JES2 Spin PCE looping while moving jobs to theOutput Queue (DLL)

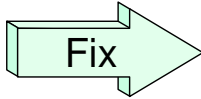
### Service Aids

- OW41855** - \$D MODULE Enhancements (0002)
- OW33073** - IPCS Mega-Enhancements (0005)

## OW41855 - \$D MODULE Enhancements



- ▶ \$D MODULE & \$D FSS missing information
  - Level of JES2 (FMID, Version)
  - Routines & Tables within Modules
  - Address for setting SLIPs



- ▶ \$D MODULE, LONG shows additional info:
  - FMID, VERSION, UVERSION, LASTPTF
  - ROUTINES, TABLES (& Addresses)

```
$dmodule(hascscisc),long
$HASP468 MODULE(HASCSCISC)
ADDRESS=05DAC000,ASSEMBLY=(11/17/99,16.04),ENVIRON=USER,EXITPTS=(),
FMID=HJE6607,IBMJES2=BASE, LASTAPAR=OW35104, LASTPTF=UW63920,
LENGTH=004130,LOADMOD=HASCSCISC,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

## OW38962 - WLM Job Control Enhancements



Problem

### 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

Fix

### 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 (9908)
- + APAR OW41547 - HASPHOPE not assembled

## IBM JES2 Education

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- **JES2 for OS/390 Facilities & Implementation (ES710) - 4.5 days**
  - ▶ JES2 Facilities & Initialization
  - ▶ SDSF & Operations
  - ▶ Security Issues
  - ▶ Controlling JES2 Processes
  - ▶ Spool & Checkpoint Configurations
  - ▶ NJE & RJE (& SNA) Concepts & Implementation
  - ▶ JES2 Exits and Problem Determination
- **JES2 for OS/390 Operations (ES280) 2.5 days**

# Survey Questions



## 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

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**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 V2R10 JES2 LIBRARY

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- GC28-1794 JES2 Introduction \*
- GC28-1797 JES2 Migration
- 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
- SY28-1086 JES2 Diagnosis
- SY28-1096 JES2 Data Areas, V.1 \$A - \$E \*
- SY28-1097 JES2 Data Areas, V.2 \$F - \$O \*
- SY28-1098 JES2 Data Areas, V.3 \$P - \$X \*

★ SoftCopy only (CD-ROM)

## 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 (WSC)

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

## Redbooks

- ▶ <http://www.redbooks.ibm.com>