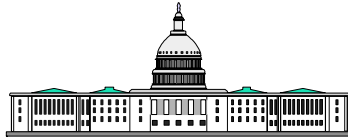


# JES2 Project Opening

## JES2 & SDSF Latest Status



Session# **2652**

SHARE 103 Technical Conference - Summer 2004 - New York City

John Hutchinson - hutchjm@us.ibm.com

IBM Washington Systems Center, Gaithersburg, Maryland

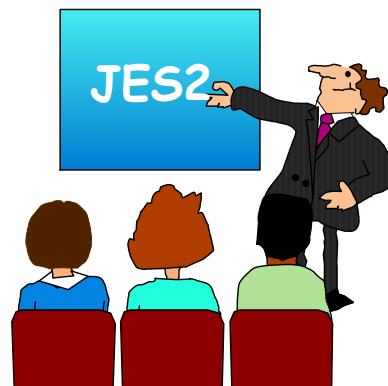
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## Agenda . . .



- JES2
  - ▶ Highlighted sessions at SHARE 103
  - ▶ Current JES2 Releases
  - ▶ Migration & Implementation Tips
  - ▶ Recent Service
- SDSF
  - ▶ Recent Releases of SDSF
  - ▶ Hint/Tip @ DA panel & zAAPs
- References
  - ▶ Documentation & Web Sites



# JES2 & SDSF sessions . . .

(Most sessions are in Lincoln Suite)



**Monday:**

- 03:00pm 2652 JES2 Project Opening and Latest Status
- 04:30pm 2655 JES2 z/OS 1.5 Product Update

**Tuesday:**

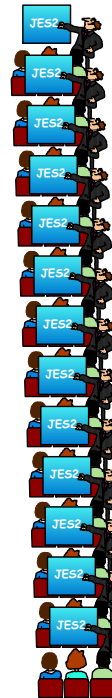
- 08:00am 2661 Introduction to JES2 for New Systems Programmers
- 04:30pm 2663 JES2 Top 10 User Errors
- 06:00pm 2657 Meet the JES2 Team and JES2 Q&A
- 07:15pm 2679 JES2 Project Dinner [Meet in Hilton Lobby]

**Wednesday:**

- 01:30pm 2671 SDSF For New Users
- 03:00pm 2712 Becoming Bi-JESual
- 04:30pm 2662 The JES2 Reconfiguration Dialog

**Thursday:**

- 08:00am 2668 Using ThruPut Manager to Mitigate 10 Problems w/ WLM Initiators
- 09:30am 2672 SDSF Security Changes in z/OS 1.5
- 03:00pm 2664 Exploiting New JES2 Interfaces
- 04:30pm 2665 Using the SAPI Interface
- 05:45pm 2651 JES2 Project Planning for Anaheim
- 10:00pm 2680 JES2: Esprit de Corps



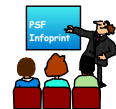
# Printing sessions . . .

(Most sessions are in Lincoln Suite)



**Tuesday:**

- 09:30am 2702 VPS and DRS Printing Update
- 11:00am 2708 Print Management on the Web Using Infoprint Central
- 01:30pm 2707 IP Printway Extended Mode



**Wednesday:**

- 08:00am 2669 Report Post Processing and Delivery with JES2Mail & JES2FTP
- 09:30am 2703 Little know facts about VPS and DRS



**Thursday:**

- 11:00am 2709 Migration to Infoprint Server for z/OS 1.5
- 01:30pm 2704 VPSX - UNIX Based Printing Support
- 04:30pm 2665 Using the SAPI Interface



**Friday:**

- 09:30am 2701 Unicode - True Type and Opentype for Printing



# Current JES2 Releases



## FMIDs, Birthdays & Obituaries

JES2 Rel.#	FMID	First Available	No Longer Available	End of Service
OS/390 R.10	HJE7703	9/00	3/02	9/04
z/OS R. 1	HJE7703	3/01	10/01	3/04
z/OS R. 2/3	HJE7705	10/01	9/02	10/04
z/OS R. 4	HJE7707	9/02	1Q04	<b>3/07</b>
<b>z/OS R. 5/6</b>	<b>HJE7708</b>	<b>3/04</b>	<b>9/04</b>	<b>3/07</b>

See [www.ibm.com/services/sl/products/java.html](http://www.ibm.com/services/sl/products/java.html) (requires JVM 1.3)

See 'JES2 Migration Notebook' &

'Migration from OS/390 V2R10 to z/OS V1R4'

[www.ibm.com/servers/eserver/zseries/zos/installation/zos\\_migration.html](http://www.ibm.com/servers/eserver/zseries/zos/installation/zos_migration.html)

# JES2/MVS Compatibility



OS/390 z/OS Release	JES2 Release:			
	Rel.10 & z/OS R.1 HJE7703	z/OS R.2 HJE7705	z/OS R.4 HJE7707	z/OS R.5 HJE7708
R.10	X			
z/OS R1	X			
z/OS R2	X	X		
z/OS R3	X	X		
z/OS R4	X	X	X	
z/OS R5	X	X	X	X
z/OS R6	X	X	X	X

JES levels supported by a given z/OS release will be the same as the JES levels that can coexist in a MAS.

See "**z/OS and z/OS.e Planning for Installation Guide**" GA22-7504 at [http://www.ibm.com/servers/eserver/zseries/zos/bkserv/find\\_books.html](http://www.ibm.com/servers/eserver/zseries/zos/bkserv/find_books.html)

- Chapters 4 & 5

## z/OS R5 JES2 - HJE7708



### ★ Multilevel Security

- ▶ Optional (by System)
- ▶ SECLABELs affect job selection process
- ▶ SECLABELs carried in JES2 control blocks
- ▶ Extracted for SDSF use



### ★ Miscellaneous Enhancements

- ▶ ENF 58 enhanced to show lines , etc. printed for InfoPrint
- ▶ 1 byte console ID eliminated
- ▶ SSI 54 (whoami) shows ComChar (\$ or ...)
- ▶ \$HASP607 (JES2 termination delays) enhanced
- ▶ \$DSERV macro to access checkpoint data from non-JES2 MT
- ▶ VER/REP for JES2 data spaces
- ▶ \$TRACE IPCS and multi-system Dump enhancements

### ★ Migration and Coexistence - Normal rules apply:

- ▶ APAR OW55708 required on down-level systems

- ▶ See 2655 "JES2 Product Update" Mon @ 4:30

## TSO duplicate logons



### ▶ JES2 doesn't check TSO logons for duplicate IDs in the same sysplex...

- ▶ Same UserID can logon to multiple systems in the MAS
  - ▶ Not prevented by JES2, but "not supported" by z/OS.

### ▶ Caveats:

1. TSO User Notifications are "random". (They go to the first TSO user logged on in the sysplex.)
2. If TSO logon ENQ is 'SYSTEMS' scope in the GRS RNL, then TSO will reject second logon with "already logged on".
3. Use JES2 exits 2, 20 or 44 to reject.
4. ISPF data set names must be unique. Qualify them with the system name with ISPF Exit 16 and Logon Profile EXEC.
5. Be careful not to edit or update the same data set from duplicate TSO UserIDs on different systems, because there is no SYSTEMS level ENQ to guarantee serialization.
6. Extended MCS consoles with the same TSO ID are shared.

## \$D PERFDATA service aid commands

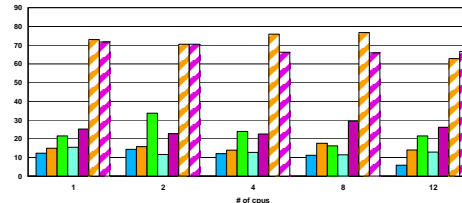


(undocumented - intended for service personnel - subject to change)

- **\$D PERFDATA(INITSTAT)** - JES2 initialization routines
- **\$D PERFDATA(QSUSE)** - Checkpoint delays
- **\$D PERFDATA(PCESTAT)** - PCE detailed statistics
- **\$D PERFDATA(CPUSTAT)** - Summary of PCE stats
- **\$D PERFDATA(SAMPDATA)** - WLM init sampling data
- **\$D PERFDATA(EVENT)** - JES2 internal errors & delays
- **\$D PERFDATA(CKPTSTAT)** - JES2 Checkpoint Performance (z/OS R.2)
- **\$D PERFDATA(SUBTSTAT)** - JES2 Subtask Performance (APAR OW55693)



```
$HASP660 $DPERFDATA(SUBTSTAT)
$HASP660 SUBTASK STATISTICS - INTERVAL=884:10:55.376013,
$HASP660 ROUTINE=$RACROUT,COUNT=105,AVG_QUEUE_TIME=0.000218,
$HASP660 AVG_RUN_TIME=0.000217,AVG_CPU_TIME=0.000199,
$HASP660 ROUTINE=FULLPATH,COUNT=16,AVG_QUEUE_TIME=0.000045,
$HASP660 AVG_RUN_TIME=0.212998,AVG_CPU_TIME=0.203200,
$HASP660 ROUTINE=JOBVALM,COUNT=330,AVG_QUEUE_TIME=0.000021,
$HASP660 AVG_RUN_TIME=0.001362,AVG_CPU_TIME=0.000263,
$HASP660 ROUTINE=PSAFSCAN,COUNT=392,AVG_QUEUE_TIME=0.000033,
$HASP660 AVG_RUN_TIME=0.000080,AVG_CPU_TIME=0.000078,
$HASP660 ROUTINE=RPDBSEC,COUNT=330,AVG_QUEUE_TIME=0.000008,
$HASP660 AVG_RUN_TIME=0.000106,AVG_CPU_TIME=0.000102,
$HASP660 ROUTINE=XINITST,COUNT=16,AVG_QUEUE_TIME=0.000151,
$HASP660 AVG_RUN_TIME=0.002650,AVG_CPU_TIME=0.001659
```



<http://www.ibm.com/support/techdocs/atmsastr.nsf/PubAllNum/W9744B>

## \$D PERFDATA Usage Examples



- **JES2 initialization takes too long:**
  - \$D PERFDATA(INITSTAT) - See elapsed time for each routine
- **Checkpoint delays:**
  - \$D PERFDATA(CKPTSTAT) - Elap'd time for R1, R2, PW, IW, FW
  - \$D PERFDATA(QSUSE) - Callers of \$QSUSE & avg. delays
- **JES2 CPU Utilization too high:**
  - \$D PERFDATA(CPUSTAT) - Summary of PCE stats
  - \$D PERFDATA(PCESTAT) - PCE detailed statistics
  - \$D PERFDATA(SUBTSTAT) - Subtask statistics
- **WLM managed initiators not behaving:**
  - \$D PERFDATA(SAMPDATA) - WLM init sampling data
- **Misc. errors:**
  - \$D PERFDATA(EVENT) - JES2 internal errors & delays

# JES2 Service Information

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

- ▶ See PSP buckets for an up-to-date list
  - ZOSV1Rx / JES2

DATE	APAR	PTF	VOLID	COMMENTS
4/07/13	OA07705	UA12164	1000	ASID or TCB hung because
4/07/13	OA08143	UA12165	1000	0C4 in HASPCOMM after OA06186
4/06/03	OA06356	UA11086	0406	MSGHASP185 PRTN Terminated
4/06/03	OA07072	UA11069	0406	MSGHASP096 DISAST.Err @ CBIMPL4
4/06/03	OA07357	UA10991	0406	JOB'S SPOOLS USED MASKED incorrect
4/05/17	OA07213	UA10490	0405	After OA03748 JES2 Warm Start hangs
4/03/26	OA05639	UA09493	0403	PSF Prtr remains Draining after 024
4/03/26	OA05832	UA09625	0403	ABEND0C4 in HASCSRIC - HASPJOS \$XMIT
4/03/17	OA06230	UA09579	0403	SSS2CLON Return Code set w/SAPI
4/03/11	OA05924	UA09203	0403	ABEND0E0 RC34 HASPRAS - STARETN

- ▶ <https://techsupport.services.ibm.com/server/390.psp390>  
(requires IBM Registration userid)

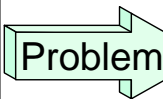
- **Other service of interest:**

- ▶ New Function
- ▶ Performance Improvements

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



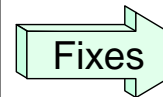
- BERTs provide extensions to the Checkpoint for dynamic extensions to JQEs, CATs, etc.



**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
- **OW48246** - Eliminates unnecessary use of BERTs (F103)
- **OW49431** - Prevents overlapping \$BERTTABs (F108)
- **OA07213** - Warm Start Hangs when 100% BERT Utilization (F405)

## OW55708 - Compatibility with z/OS Rel. 5

- Problem** → MsgHASP710 if attempting to initialize zR5 with earlier levels of JES2 in a MAS
- Fix** → JES2 releases prior to z/OS Rel. 5 must be able to recognize JES2 Release 5
- ▶ OS/390 R10, z/OS R2, R4 (F307)
  - ▶ See also OA04948 - \$Q04 for apps using the FSI - (F310) HiPer
- Note** → Service level J2SLVL increased (1)
- \$HCT:    \$SLVL     DC     AL1 (&J2SLVL)
  - \$HCCT:  CCTSLVL  DS     AL1

## OA03779 - Checkpoint Damage

- Problem** → \$ACTIVATE on JES2 z/OS R2 or R4, then \$T command changing checkpoint size on a different member without a hotstart updates KITKLNG incorrectly.
- Fix** → HASPCKPT ensures that the JIX size is correct .
- ▶ z/OS R2, R4 (F307) **HiPer**
- Avoid** → Issue \$T commands on same member you \$ACTIVATED
- ▶ Hotstart all members after \$ACTIVATE

## OA03216 - Catastrophic errors



- Problem** → \$Q06, Qxx, Jxx catastrophic errors after JES2 zR4 system joins the MAS and Checkpoint MODE=DUAL.
- ▶ (Some checkpoint updates may be lost.)
- Fix** → HASPCKPT sets the correct CKPT MODE during initialization.
- ▶ z/OS R4 (F306) **HiPer**
- Avoid** → Switch to CKPTDEF MODE=DUPLEX before zR4 JES2 system joins the MAS.
- ▶ (Also remember to update your JES2 init deck in the unlikely even you need to cold-start.)

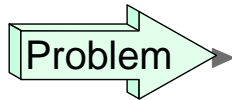
## OA06186 - Health Monitor Fixes



- Problem** → JES2 "Loops" reported because TCB not dispatched by MVS. (PSW not moving.)
- Fix** → New alert for "MVS NOT DISPATCHING JES2 MAIN TASK" (\$HASP9212)
- ▶ Recognize "LONG PCE DISPATCH" situations in PURGE and \$DILBERT processing
  - ▶ z/OS R4 & R5 (F405)
  - ▶ See also OA08143 - 0C4 in HASPCOMM (F407) **HiPer**
- Plus** → Subscripts added to \$JDDetails and \$JDHistory
- ▶ HOURS= keyword added to \$JDHistory to reduce the amount of output.

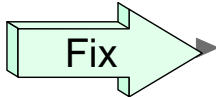


## OA05981 - CSA Exhausted with high volume of messages



CSA storage is filled up with high volume of branch-entry WTOs (e.g., ICH408I messages) that JES2 cannot keep up with.

- ▶ May result in S878 and need to re-IPL.



Under development

- ▶ (new data space used for CMBs)
- ▶ Contact IBM JES2 Service (L2 Support) if interested in a fix-test.

## JES2 Performance APARs

### Since PUT/RSU F301:

- ▶ **OA01825**: MSGHASP263 w/job producing a large amount of spin datasets goes into unspun processing (**F304**)
- ▶ **OA02686**: High CPU w/PSO processing Held datasets (**F306**)
- ▶ **OA04556**: Hi CPU w/ **SEGMENT=** after OA03169 (**F309**)
- ▶ **OA05786**: \$Q12 or JES2 High CPU w/ PSO processing (**F402**)
- ▶ **OA05864**: High CPU in JES2 maintask w/\$GETWORK (**F403**)
- ▶ **OA06186**: Health Monitor Loop Detection messages misleading (**F403**)
- ▶ **OA06431**: Hi CPU when shutting down STC w/ lots of JOEs (**F405**)
- ▶ **OA06432**: Hi CPU when starting a dreaining spool volume (**FIN**)
- ▶ **OA06694**: SAPI processing loop if user hasn't proper authority (**OPEN**)

# Survey Questions



**What is your JES2 Release level (are you \$ACTIVATED) ?**

JES2 Rel.#	Count this SHARE	SHARE 102 2/2004	SHARE 101 8/2003	SHARE 100 3/2003	SHARE 99 7/2002	SHARE 98 3/2002	SHARE 97 7/2001
OS/390 R.5/6				1 (1)	0	4 (2)	3
OS/390 R.7				0	0	3 (2)	1
OS/390 R.8/9		1	1 (1)	3 (3)	6	7 (4)	8
OS/390 R.10/z1		9(9)	11 (11)	27	20 (9)	21 ( )	9
z/OS R2		5(4)	5( )	14 (4)	9 (4)	5 (3)	n/a
z/OS R4		23(7)	8 (1)	8 (1)	n/a	n/a	n/a
z/OS R5							

## SDSF Update

```

Display Filter View Print Options Help
-----
HQX7705 ----- SDSF PRIMARY OPTION MENU -----
COMMAND INPUT ==>                                SCROLL ==> CSR

DA   Active users          INIT  Initiators
I    Input queue          PR    Printers
O    Output queue         PUN   Punches
H    Held output queue    RDR   Readers
ST   Status of jobs      LINE  Lines
                                NODE  Nodes
LOG   System log         SO    Spool offload
SR    System requests    SP    Spool volumes
MAS   Members in the MAS
JC    Job classes        ULOG  User session log
SE    Scheduling environments
RES   WLM resources
ENC   Enclaves
PS    Processes

END   Exit SDSF
    
```

## z/OS R4 SDSF Enhancements

- **JES2 Exploitations**
  - ▶ Spool I/O interface used for in-core buffers
  - ▶ JES2 Recovery States (Rebuild, EOM) shown
  - ▶ Additional JES2 zR4 fields displayed on most panels
- **System Command extensions**
  - ▶ Recall last 10 unique commands
  - ▶ Reply to WTOR pop-up displays message text
- **Minor usability enhancements**
  - ▶ Full-screen version of WTOR pop-up
    - allows for Insert in the command text
- **Migration / Coexistence PTFs**
  - ▶ Check PSP buckets or SDSF home page

## z/OS R5 SDSF Enhancements

- **Multilevel Security - "SECLABEL Dominance"**
  - ▶ Restrict rows on an SDSF display based on:
    - SDSF command to access a panel
    - "Seclabel Dominance" of "object"
    - Action Characters allowed
  - ▶ SECLABEL sources used for the objects on each panel:
    - DA: Address Space (JQE or SJB)
    - I, ST: Job (JQE)
    - O, H: Output (JOE)
    - JDS & OD: Dataset & output descriptor (PDDB)
    - Device: DCT or NIT
    - ENC & SR: SYSHIGH\*
    - others: SYSNONE
  - ▶ Column added for SECLABEL to many panels
- **Misc:** "Y" = MVS "Stop" (P) on DA panel
- **See Session 2672 "SDSF Security Changes in z/OS 1.5" (Th. 9:30)**

## zAAP CPU Utilization on DA panel

- **SDSF DA panel does not differentiate between General Purpose CPs and zAAPs**

- ▶ **Example:**

- 4 GCPs are using 1%, and the zAAP is using 96%.
- SDFS reports the CPU busy as 20%.  
(4 + 96)/5 = 20

```
Display Filter View Print Options Help
```

```
-----
SDSF DA SYSB  SYSB  PAG  0 SIO  0 CPU  20/ 20  LINE 1-2
COMMAND INPUT ===>                                SCROLL ===> CSR
NP   JOBNAME  SrvClass DP C StepName Workload JobID      CPU%
    WALSH    SYSSTC  FE  IKJACCNT SYSTEM  TSU23659  0.04
    WALSH3   OMVS    F7  *OMVSEX  OMVS_WKL STC23590 19.69
```

- **See RMF for CPU utilization by processor type.**

- ▶ RMF Monitor III System Information
- ▶ RMF Workload Activity Reports

## Appendix

- ▶ [OS/390 & z/OS JES2 Releases](#)
- ▶ [z/OS JES2 Library](#)
- ▶ [Softcopy Books](#)
- ▶ [other JES-related Books](#)
- ▶ [JES2 Education](#)
- ▶ [z/OS Web Sites](#)

## OS/390 & z/OS 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
- 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,...
- z/OS Release 2** - >64K jobs, Spool, Proclib, etc. relief ...
  - ▶ \$ACTIVATE=Z2 required for new functions
- z/OS Release 4** - Health Monitor, Usability, RAS, ...
- z/OS Release 5** - Multilevel Security

## JES2 - z/OS R4



- **Usability enhancements**
  - INCLUDE statement
  - Default PARMLIB processing
  - //XMIT JCL support
  - WLM Initiator Balancing
  - Blank Truncation on FSS Printers
  - JES2 no longer checks for duplicate TSO logons in a sysplex
- **JES2 Health Monitor**
  - Examine/Diagnose JES2 from separate address space
- **Miscellaneous changes**
  - End of Memory (EOM) processing
  - Prevention of and Recovery from JES2 CKPT errors
  - HASP Access Method (HAM) I/O

# 4

## z/OS JES2 LIBRARY



SA22-7535	JES2 Introduction *
GA22-7538	JES2 Migration
SA22-7532	JES2 Initialization & Tuning Guide
SA22-7533	JES2 Initialization & Tuning Reference
SA22-7537	JES2 Messages
SA22-7526	JES2 Commands
SA22-7527	JES2 Commands Summary
SA22-7534	JES2 Installation Exits
SA22-7536	JES2 Macros
GA22-7531	JES2 Diagnosis
GA22-7528	JES2 Data Areas, V.1 \$A - \$E *
GA22-7529	JES2 Data Areas, V.2 \$F - \$O *
GA22-7530	JES2 Data Areas, V.3 \$P - \$X *

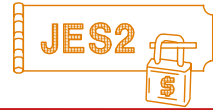
★ SoftCopy only (CD-ROM)

## z/OS Softcopy Books



- **z/OS Softcopy Collection CD-ROMs**
  - z/OS Rel. 1 CD-ROMs: SK3T-4269 (Unlicensed)
    - ◆ available on tape (optional, no-charge feature)
  - Software Products: SK3T-4270
  - z/OS & S/W Products - DVD: SK3T-4271
  - Licensed z/OS CD-ROM: LK3T-4307
- **Softcopy site:**  
<http://www.ibm.com/servers/eserver/zseries/softcopy>
- **Online books at:**  
<http://www.ibm.com/servers/eserver/zseries/zos/bkserv>
- **JES2 PDF files at:**  
<http://www.ibm.com/servers/eserver/zseries/zos/bkserv/r1pdf/jes2.html>
- **See what's new at:**  
<http://www.ibm.com/servers/eserver/zseries/softcopy/whatsnew.htm>

## NJE Formats & Protocols



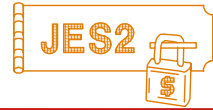
- **"Network Job Entry Formats & Protocols"** SC23-0070 dropped from OS/390 & z/OS library (no "product owner"...)
  - ▶ Will be restored to the OS/390 OnLine Softcopy Bookshelf (& eventually to the z/OS Bookshelf.)
- **In the mean-time you can access it by...**
  1. Go to <http://www.ibm.com/servers/s390/os390/bkserv/>
  2. Click on OS/390 elements and features publications V2R10
  3. Click on OS/390 V2R10.0 elements and features bookshelf (Discs 1 and 2) - Search (Titles, names or doc numbers)
  4. Type in a search argument of 'network job entry' or 'protocols'.

## Other JES2-Related Documents



- ▶ z/OS V1 R3 & R4 Implementation, SG24-6581
- ▶ z/OS V1 R2 Implementation, SG24-6235
- ▶ OS/390 V2 R10 Implementation, SG24-5976
- ▶ VSE to OS/390 Migration Notebook, SG24-2043
- Deleted (obsolete) - save your old copies
  - ▶ ~~MVS/ESA JES2 Exit Coding, GG24-4127~~
  - ▶ ~~SDSF/RACF 1.9.2 Conversion, GG24-4085~~
  - ▶ ~~NJE with JES2 and Other Systems, GG22-9339-1~~
  - ▶ ~~JES2 MAS in Sysplex Environment, GG66-3263~~

## IBM JES2 Education



- **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**
  - ▶ Start, Stop, Control JES2 processes and devices
  - ▶ JES2 and Workload Manager, and Sysplex
  - ▶ NJE, RJE, SNA, and OS/390 Print Server

## z/OS Web Sites



### **z/OS Product Support - find everything from here!**

- ▶ <http://techsupport.services.ibm.com/server/support>

### **Planning for Installation**

- ▶ <http://www.ibm.com/servers/eserver/zseries/zos/installation/>

### **Publications (view, print, order books)**

- ▶ <http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>

### **SDSF home page**

- ▶ <http://www.ibm.com/servers/eserver/zseries/zos/sdsf/>

### **Advanced Tech. Support (Flashes, White Papers, etc.)**

- ▶ <http://www.ibm.com/support/techdocs>

### **Redbooks**

- ▶ <http://www.redbooks.ibm.com>