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# **(E)JES Update**

Ed Jaffe  
Phoenix Software International

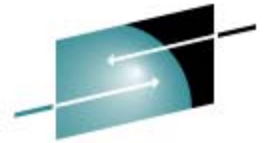
Tuesday, March 3, 2009  
Session 2730

# Support Matrix

Operating System	09/09?	09/08 V4R6	09/07 V4R5	09/06 V4R4
z/OS 1.11	JES2/JES3	JES3	JES3	-
z/OS 1.10	JES2/JES3	JES2/JES3	JES2/JES3	-
z/OS 1.9	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.8	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.7	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.6	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.5	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.4	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.3		JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.2		JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.1			JES3	JES3
OS/390 V2R10			JES3	JES3
OS/390 V2R9			-	JES3
OS/390 V2R8			-	JES3

- V4R4 does not support above z/OS 1.9. It will be stabilized at the end of this month (03/2009).
- We are currently working on support for z/OS 1.11.
- JES3 works fine in our testing. 😊
- **Warning! JES2 looks very incompatible! There are missing fields, changed control block orientation, new service calls, etc.**

Note: Fairly steep incline



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# V4R5 Highlights



# Exploitation of zIIP Specialty Engines



- zIIP specialty engines are available on IBM System z9 and later processors.
- zIIP specialty engines differ from traditional, general-purpose CPs in terms of the work they can run—only a subset is eligible for dispatch on a zIIP—and their effect on software licensing charges.
- Many software vendors, including both IBM and Phoenix Software, agree that execution on zIIP specialty engines should not count toward the measurements used to assess capacity-based software license charges.
- Also, customers with sub-capacity processors see performance benefits for zIIP execution because zIIPs are full-capacity.h

# (E)JES Work Eligible for zIIP Redirection

- All end-user interactive host client environments except CICS.  
**Note: This means that ordinary TSO/ISPF (E)JES work is eligible!**
- All “batch” scripts running in the background or foreground under TSO/E.
- Any use of (E)JES Application Programming Interface including the new REXX API.
- JES3 global data examination routines within the CAS server on the JES3 global processor.
- When (E)JES acts as Operating System Interface (OSI) within the workstation component server.

# Observing (E)JES zIIP Redirection in Action (as of V4R5)



- I ran a test by repeatedly issuing the following command sequence under ISPF using a 3270 emulator macro on two different TSO/E sessions.

## Repeating Commands:

```
=E3 (access JES3)
ST
F jobname
B line command
F NOTFOUND
=E2 (access JES2)
ST
F jobname
B line command
F NOTFOUND
[repeat indefinitely]
```

- After a while, I observed the following in the (E)JES Activity display:

JobName	CPU-Time	ACPU-Time
-----/-----	-----	-----
EDJX1	02:58.17	30:31.98
EDJX2	03:00.58	30:22.60

**Approximately 90% of the work in this test ran in enclave SRBs that were eligible for zIIP redirection.**

# Adaptation to Architectural Change

- IBM implemented a hardware feature to allow ASN reuse.
  - Facility first available on z990/z890 processors.
  - New instructions EPAIR, ESAIR, SSAIR, PTI etc.
  - Will reduce IPL frequency from lost ASIDs if exploited by cross-memory providers.
- z/OS 1.9 allows exploitation of this feature.
  - ReusAsid(YES) in DIAGxx enables the support.
  - REUSASID=YES specified on START command for those STCs that support the new architecture.
- SSAR instruction willabend if ASN (ASID) is reusable.
- Releases prior to V4R5 used SSAR instruction!
- Cross-memory access routines completely rewritten for V4R5.
  - Dependency on secondary address space mode removed.
  - No more management of TCB dispatchability under TSO/E. 😊

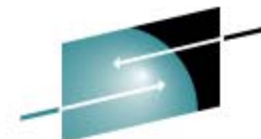
# “Display” Line Commands

- Most tabular displays now support various **D** line command(s).
- Commands generate appropriate system commands to display the status of the indicated resource.
- Relieves the user of having to remember inquiry or display command syntax and operands.
- Secured independently. Need not have / command authority.
- Response captured in both ULOG and in-line command response area.
- A permanent record of the command and its response is maintained in the system log.

# New Programming Interfaces

- **Application Programming Interface (EJESAPI)**
  - Similar to the batch interface in concept, but provides much more powerful programming capabilities.
  - May be called from programming languages such as Assembler, COBOL, PL/I, and C.
  - Supports both problem state and privileged callers.
- **REXX API (EJESREXX)**
  - REXX language implementation of the (E)JES API.
  - Implemented as an unauthorized assembler language program that uses EJESAPI to provide a REXX language interface.
  - This design point guarantees consistency and compatibility between the REXX and non-REXX programming interfaces.





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# Zero Tabular Column Width

```

Jobs Resources Devices Tools Filter View Options Help
SPVOL ALL 100,150 Actv 78,362 Free 22% Util Row 1 of 20
Command ==> arr status 0_ Scroll ==> CSR
Cmd SpoolDD Volume Status TGTotl TGUsed TGFree Util% SPart Xtnt BufSz GSz
-----/-----
JES3JCT MVSJ30 ACTIVE 0001 736
SPOOL1 MVSJ31 DRAINING 16,465 68 16,397 .41 PARTA 0002 4,084 36
SPOOL2 MVSJ32 DRAINING 16,465 49 16,416 .29 PARTA 0003 4,084 36
SPOOL3 MVSJ33 DRAINING 16,465 44 16,421 .26 PARTA 0004 4,084 36
SPOOL4 MVSJ34 DRAINED 873 0 873 .00 PARTB 0005 4,084 48

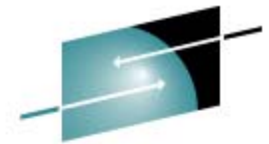
```

```

Jobs Resources Devices Tools Filter View Options Help
SPVOL ALL 100,150 Actv 78,350 Free 22% Util Row 1 of 20
Command ==> _ Scroll ==> CSR
Cmd SpoolDD Volume TGTotl TGUsed TGFree Util% SPart Xtnt BufSz GSz RPT TPC
-----/-----
JES3JCT MVSJ30 0001 736 41 15
SPOOL1 MVSJ31 16,465 68 16,397 .41 PARTA 0002 4,084 36 12 15
SPOOL2 MVSJ32 16,465 49 16,416 .29 PARTA 0003 4,084 36 12 15
SPOOL3 MVSJ33 16,465 44 16,421 .26 PARTA 0004 4,084 36 12 15
SPOOL4 MVSJ34 873 0 873 .00 PARTB 0005 4,084 48 12 15

```

# SHOW and HIDE Commands to Facilitate Managing a Subset of Tabular Columns



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```

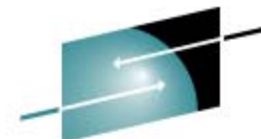
Jobs Resources Devices Tools Filter View Options Help
ACTIVITY PHXHQ(MVS60) Paging 0 SIO 6 CPU 3/3 Row 1 of 96
Command ==> show jobname acpu% acpu-time Scroll ==> CSR
Cmd JobName StepName ProcStep JobID ASID Pos DP Real Paging ExCP CPU%
-----/-----
AUTOCPU AUTOCPU J0313864 006B LO FF 2MB .00 .00
AUTOK101 AUTOK101 J0313863 0071 LO FF 2MB .00 .00
AUTOEXP AUTOEXP J0313862 0055 LO FF 2MB .00 .00
AUTOELIC AUTOELIC J0313861 0061 LO FF 2MB .00 .00
C4CONDOR C4CONDOR CONDOR STC39183 0038 NS F0 32MB .00 .00 .00
EJESC430 EJESC430 EJESCAS STC39147 0056 NS F0 2MB .00 .00 .00
    
```

```

Jobs Resources Devices Tools Filter View Options Help
ACTIVITY PHXHQ(MVS60) Paging 0 SIO 8 CPU 3/3 Row 1 of 96
Command ==> ACPU% ACPU-Time Scroll ==> CSR
Cmd JobName ACPU% ACPU-Time
-----/-----
AUTOCPU .41 00:00.51
AUTOK101 .48 00:00.62
AUTOEXP .48 00:00.62
AUTOELIC .41 00:00.52
C4CONDOR .00 00:06.14
EJESC430 .00 00:00.04
    
```

# ISPF Viewers

- ISPF users may now place (E)JES browser information into ISPF VIEW or ISPF BROWSE mode.
  - Not yet supported for the OPERLOG browser.
- Placing a browser's data lines directly into ISPF VIEW shortcuts the process of using ISPF EDIT against a DASD data set created by the EXTRACT function.
- You can invoke an ISPF viewer from within a browser simply by issuing the **BROWSE** or **VIEW** primary command. These commands cause the browser's data to be placed into the named ISPF viewer. When you exit the ISPF viewer, you return to the original browser.



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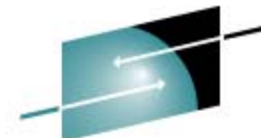
# ISPF Viewers (continued...)

```
Jobs Resources Devices Tools Filter View Options Help
AUTOCPU J0313864 Line 1 of 256
Command ==> view Scroll ==> CSR
Current Find Text: Dataset 1 of 7
-----1-----2-----3-----4-----5-----6-----7----->
//AUTOCPU JOB 1,SYSOPER,MSGCLASS=S 00000100
/*ROUTE XEQ PHXHQ 00000200
//*OBPARM S=S70 00000300
//*MAIN CLASS=P,SYSTEM=MVS70 00000402
//AUTOCPU EXEC PGM=IKJEFT01,DYNAMNBR=99,REGION=32M 00000500
//STEPLIB DD DSN=PHOENIX.UTIL.LOADLIB,DISP=SHR 00000600
```

```
AUTOCPU J0313864 ----- Columns 00001 00072
Command ==> _____ Scroll ==> CSR
***** ***** Top of Data *****
000001 //AUTOCPU JOB 1,SYSOPER,MSGCLASS=S
000002 /*ROUTE XEQ PHXHQ
000003 /*OBPARM S=S70
000004 /*MAIN CLASS=P,SYSTEM=MVS70
000005 //AUTOCPU EXEC PGM=IKJEFT01,DYNAMNBR=99,REGION=32M
000006 //STEPLIB DD DSN=PHOENIX.UTIL.LOADLIB,DISP=SHR
000007 // DD DSN=SYS2.LINKLIB,DISP=SHR
000008 // DD DSN=PHOENIX.CNET.LOADLIB,DISP=SHR
```

## ISPF Viewers (*continued...*)

- For browsers invoked using line commands from tabular displays, another alternative is to append the character **B** or **V** to the line command used to invoke the browser.
- Example commands from Job Status display:
  - **BB** browse job using ISPF BROWSE.
  - **JV** place ready-to-submit JCL into ISPF VIEW.
- When you exit the ISPF viewer, you return to the tabular display from which it was invoked.
- EJESUX08 converts **.B**, **.E**, and **.J** to **BV**, **BV**, and **JJV**. The post-processors are still distributed.



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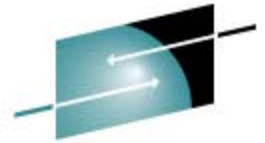
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# ISPF Viewers (continued...)

```
Jobs Resources Devices Tools Filter View Options Help
STATUS 2,519S 98X 2,269W 152H 0T 27,405,942 Records Row 1650 of 2519
Command ==> Scroll ==> CSR
```

Cmd	JobName	JobID	Status	Process	StepNum	StepName	JP	MaxComp	Records
jv_	LISTCAT	J0297382	W-OUTPUT	OUTSERV	1		2 CC	0000	1,436
	EDJXADMB	J0297324	W-OUTPUT	OUTSERV	1		3 CC	0000	490
	EDJX2	T0297309	W-OUTPUT	OUTSERV	1		15 AB	S522	6,303
	EDJXADM	T0297278	W-OUTPUT	OUTSERV	1		15 CC	0000	5,492
	LIC2218	J0297277	W-OUTPUT	OUTSERV	8		2 CC	0000	703

```
LISTCAT J0297382 Job Control Language ----- Columns 00001 00072
Command ==> Scroll ==> CSR
***** ***** Top of Data *****
000001 //LISTCAT JOB 1,E2DEMO,CLASS=A,MSGCLASS=T
000002 // EXEC PGM=IDCAMS
000003 //SYSPRINT DD SYSOUT=*
000004 //SYSIN DD *
000005 LISTCAT
000006 /*
000007 //
***** ***** Bottom of Data *****
```



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# V4R6 Highlights



# REXX ISFCALLS Support

- There might be occasions when you will want to use IBM-, ISV-, or user-written REXX execs that exploit IBM's ISFCALLS REXX host command environment. In most cases, such **execs will run unchanged** with (E)JES.
- (E)JES V4R6 provides highly-compatible support for the ISFCALLS host command environment as defined for z/OS 1.9. This interface is described in IBM publication SG24-7419 – a redbook that exemplifies SDSF REXX support.
- Like all other programmable (E)JES environments, CPU cycles are **eligible for zIIP redirection**.

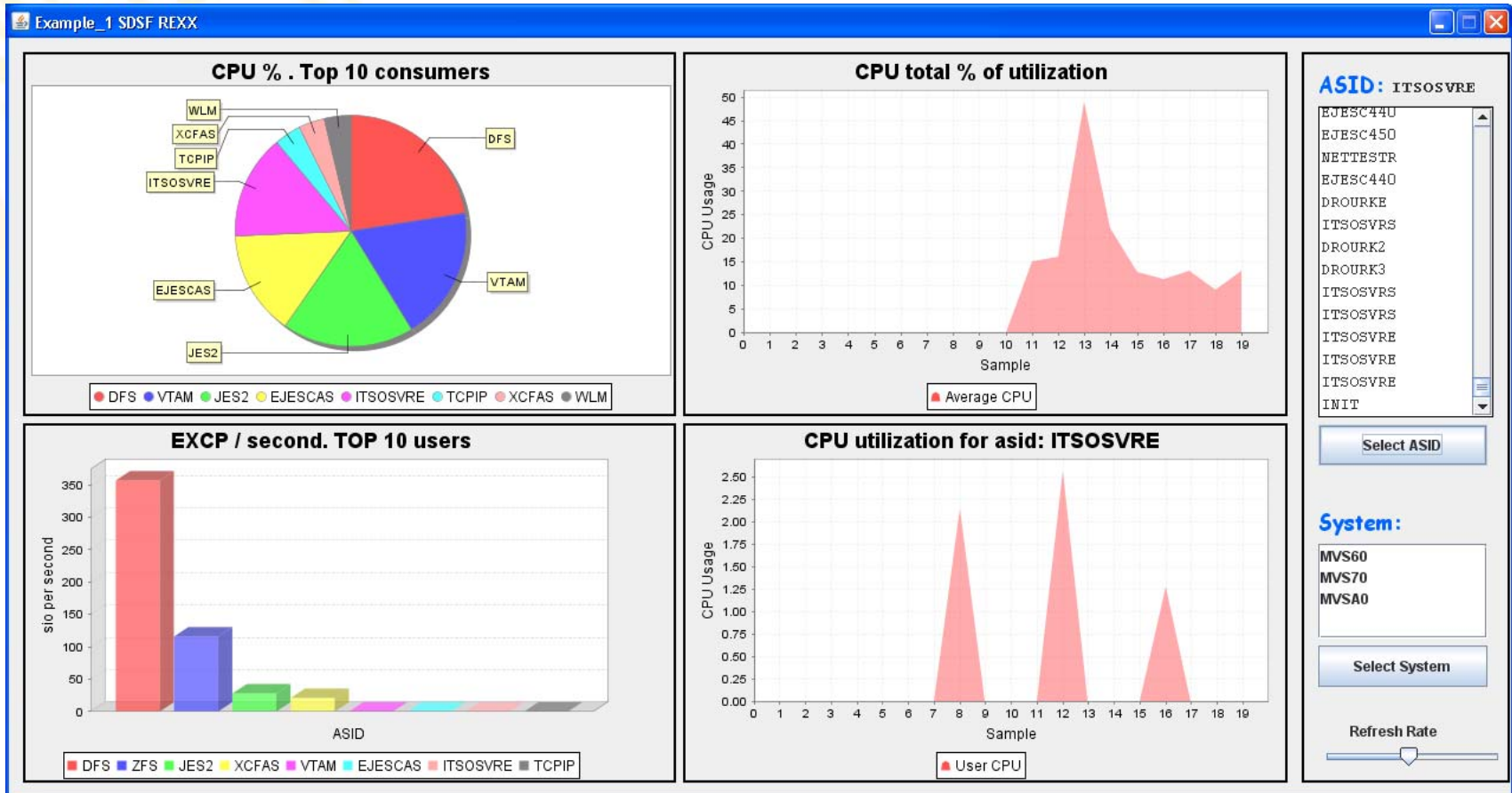
# REXX ISFCALLS Support (*continued...*)



- The redbook provides “additional materials” in the form of sample REXX execs and associated programs, written in COBOL and Java, to help demonstrate ISFCALLS.
- Available from the IBM Redbooks Web site at <http://www.redbooks.ibm.com/>.
- These IBM-provided sample REXX execs operate with (E)JES in both JES2 and JES3 environments. Their behavior is nearly indistinguishable from that observed when running them with the native ISFCALLS interface!
- Examples only. Code is nowhere near “bullet proof”!

# Chapter 9, Example 1 – Dashboard

- Utilizes TCP/IP, z/OS UNIX, and ISFCALLS on z/OS; TCP/IP, Java and JFreeChart on Windows.



## Server System Names Filter

- In prior releases, a single system image was always presented. Peer-to-peer data from remote servers was retrieved from any system with an active CAS server.
- The new **SYSNAME** command specifies a mask to limit the systems from which data is gathered.
- Unlike other filtering masks, an all-blank value does not mean “no filtering”. Rather, it means that only information from the current system should be obtained.
- **SYSNAME** only affects displays with data provided by peer-to-peer remote servers. For example, remote system information on the Activity display is provided in this way. Job Status and similar JES displays are unaffected.

# Implied Time Column Sort Key

- Custom sort allows up to four keys – each representing one tabular column.
- Starting with V4R6, when both date and time columns representing a single event (e.g., when a job was queued) are present, sorting on the date column *automatically* uses the time column as a key secondary to the date column.
- The use of the time column in this manner is strictly internal and does not count toward the four sort key limit.



# Spool Data Set Browse (SDSB) for JES3



- In V4R5, support for allocating for JES spool data set browse was added. **SA** and **SF** line commands request SDSB allocation or free of spool data set.
- JES3 support was removed (“capped”) during early testing because customers did not want like commands that would always fail.
- z/OS 1.10 JES3 now supports SDSB.
- In V4R6, the code is now restored (“uncapped”). SDSB allocations are once again sent to JES3.
- No release checking occurs. Users on back-level JES3 releases receive a standard DYNALLOC error code.

# Job Level JCL Spool Data Set Browse Commands



- In previous release, **SA** line command issued against **JESJCLIN** from DSSTAT panel was the only way to effect a JCL Spool Data Set Browse.
  - JES will insert stream input as needed to make job ready to resubmit.
- In V4R6, **SJA** commands have been added to job-level displays to perform this same function.

# Enhanced FILTER Command Syntax

- In prior releases, each of the following were valid ways of specifying a filter with an equal comparison operator:

```
====> FIL COLUMN EQ VALUE
```

```
====> FIL COLUMN = VALUE
```

```
====> FIL COLUMN=VALUE
```

- In V4R6, if only two operands are specified, the first is the column and the second is the comparison value. The comparison operator defaults to **EQ** and the Boolean operator defaults to **AND**. Therefore, you may now specify the following:

```
====> FIL COLUMN VALUE
```

- Equivalent to:

```
====> FIL COLUMN = VALUE AND
```

## New Invocation Keywords

- Enclaves display for **ALL**, **ACTIVE**, and **INACTIVE**.
- Process Status display for **ALL**, **ACTIVE**, and **INACTIVE**.
- Input display for **EXEC**, **NOTEXEC**, **HELD**, and **NOTHELD**.
- User Log for console name to be activated.
- Printer/Punch display for **LCL**, **RMT**, and local or remote device name ranges (JES2 only).
- System Requests display for **CRITICAL**, **EVENTUAL**, and **IMMEDIATE** action messages,

## New Tabular Columns

- The following columns were added to JES3 job- and output-oriented displays where appropriate:

Default Title	Description	Overtime
<b>PrtDest</b>	Default print destination. (Already exists for JES2.)	No
<b>Notify</b>	Notify User ID. (Already exists for JES2.)	No
<b>SubGroup</b>	Submitting security group	No
<b>CrDate</b>	Date output added to queue	No
<b>CrTime</b>	Time output added to queue	No
<b>BrowseDD</b>	Spool Data Set Browse DD name (Already exists for JES2.)	No

- The following columns were added to JES2 job- and output-oriented displays where appropriate:

Default Title	Description	Overtime
<b>SubGroup</b>	Submitting security group	No
<b>CrDate</b>	Date output added to queue	No
<b>CrTime</b>	Time output added to queue	No

# Enhancements to Health Checker Display



- The following columns were added:

Default Title	Description	Overtime
<b>ExecName</b>	Name of REXX exec performing the check, if applicable.	No
<b>Locale</b>	Address space reference where the check runs.	No
<b>Origin</b>	Method by which the check was established.	No
<b>Vrb</b>	Verbose mode indicator.	Yes

- The following line command was added:

Command	Description
<b>U</b>	Remove categories.

```

Jobs Resources Devices Tools Filter View Options Help
HCHECK 168NX 14Low 6Med 0High 0Del Row 1 of 188
Command ==> _ Scroll ==> CSR
Cmd Check ExecName Locale Origin Vrb DfltDate Us
<-----/----->
ASM_LOCAL_SLOT_USAGE HZSPROC HZSADDCK NO 20041006 20
ASM_NUMBER_LOCAL_DATASETS HZSPROC HZSADDCK NO 20041006 20
ASM_PAGE_ADD HZSPROC HZSADDCK NO 20041006 20
    
```

# API Enumeration

- Enumeration populates arrays with information from some or all rows/lines on a scrollable display. Powerful way of processing very large data with limited memory resources.
- In V4R5, the concept of enumeration was implemented only for EJESREXX. It invoked EJESAPI for each enumerated row. Needless to say, this did not perform well.
- In V4R6, enumeration is implemented directly by EJESAPI. The caller can request that some or all rows/lines on the display be captured into virtual storage arrays.
- By leveraging this new capability, REXX API performance was dramatically improved.

## New API Information Arrays

- All lines in the User Log are surfaced. This information is available even when the current display is not ULOG.
- Settings notices are surfaced.
  - Can be used to query filters, options, view settings, etc.
- DD and data set names allocated in response to **SA** or **SJA** commands are surfaced.
- Each of these arrays is also surfaced as stems by EJESREXX.

## Other V4R6 API Enhancements

- Every row on a tabular display is assigned a variable-length key.
  - Used to reposition to the row using the LOCATE KEY= command.
  - Valid across a refresh of the display or even from one execution to another.
  - Also surfaced by the REXX API.
- REXX API return codes simplified.
  - API return and reason codes are no longer merged.
  - Reason code surfaced by new **EJES\_RsnCode** REXX variable.

Return Code	Meaning
0	Successful completion.
4	No more lines to enumerate.
8	Error message produced.
Value > 8	Severe error occurred within API. Reason code returned in REXX variable <b>EJES_RsnCode</b> .

# Alternate System Environment Tables

- JES control blocks can change dramatically between releases.
- It is critically important that the System Environment Table used by (E)JES be generated using the appropriate system macros.
- Mismatch can cause unpredictable results!
  - At z/OS 1.9, a loop occurred if the System Environment Table was compiled against an earlier release—or vice versa.
- The recommended configuration is to have a separate (E)JES install for each z/OS release you maintain.
  - This mirrors what IBM does with z/OS-related components.
  - It's most convenient to have (at least) a separate target zone for each z/OS release. If sharing a GLOBAL zone, customization USERMODs should have unique names for each release.

# Alternate System Environment Tables (continued...)



- Sometimes, it may be desirable to deploy (E)JES quickly without a complete re-install.
- The target libraries can be copied from a working environment. However, you *cannot* ignore the requirement that the System Environment Table match the run-time environment.
- It might also be desirable, in certain situations, to share (E)JES libraries between systems that run different z/OS or JES releases. For example:
  - You are upgrading z/OS, but don't have time to reinstall (E)JES. You want easy fall-back / fall-forward that doesn't involve recompiling (or renaming saved copies of) the System Environment Table.
  - You wish to leverage REXX API support from a back-level z/OS release, but maintain only one copy of (E)JES.

# Alternate System Environment Tables (continued...)

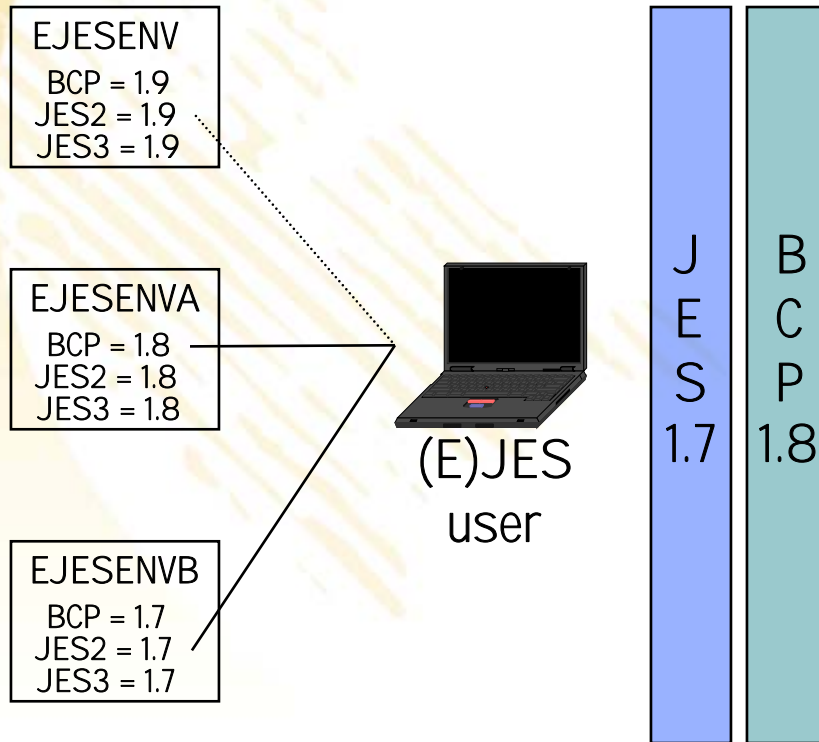


- To help facilitate these “non-standard” configurations, (E)JES V4R6 attempts to locate and use an alternate System Environment Table if the current one appears to be generated for another operating system or JES release.
- Prospective alternate table names are generated by appending the suffix 0-9 and A-Z to EJESENV.
- Alternate tables are not SMP/E maintained.
- The EJESIENV TSO/E command helps customers inventory their System Environment Tables.

```
EJESV30I System Environment Table Inventory - Release V4R6.0
Module      Create-Timestamp  BCP-Version      JES2-Ver  JES3-Ver  Elig
EJESENV     2008-07-19 14.01  z/OS 01.09.00  z/OS 1.9   z 1.9.0  Yes
EJESENV0    2008-06-20 09.15  z/OS 01.09.00  z/OS 1.8   z 1.9.0  Yes
EJESENV3    2008-07-10 13.13  z/OS 01.09.00  z/OS 1.9   n/a      Yes
EJESENVA    2008-06-20 09.15  z/OS 01.08.00  z/OS 1.7   z 1.8.0  Yes
```

End

# Choosing System Environment Table(s)



- Each session chooses its own table(s).
- More than one System Environment Table might be accessed.
- EJESENV is the default table. Since neither BCP nor JES release numbers match, it is not used for this session.
- In this case EJESENVA (BCP) and EJESENVB (JES).

# Table Choices Reflected in WHO Command

```

Jobs Resources Devices Tools Filter View Options Help
STATUS 2,300S 103X 1,766W 125H 0T 40,190,710 Records Row 1 of 1994
Command ==> Scroll ==> CSR
EJES026 USER=EDJX1,SAFGRP=DEV,PROC=$IKJTEST,TERM=A60TCP34,EJESSEC=G0000005,
EJES026 BCPREL=z/OS 1.9.0,SYSPLEX=PHXHQ,SYSTEM=MVS60,SMFID=MV60,JESTYPE=JES3,
EJES026 JESNAME=JES3,JESREL=z 1.9.0,NODE=PHXHQ,MEMBER=MVS60,GLOBAL=MVS60,
EJES026 GLOBALREL=z 1.9.0,EJESREL=V4R6.0,CASKEY=EJES,EXECENV=ISPF,
EJES026 ENVTBL=(BCP=(PHNXENV,REL=z/OS 1.9.0),JES=(EJESENV0,REL=z 1.9.0))
AUTOEXP J0422473 X-MVS60 MAIN 1 1 AUTOEXP 13 0
AUTOK101 J0422474 X-MVS60 MAIN 1 1 AUTOK101 13 0
AUTOCPU J0422476 X-MVS60 MAIN 1 1 AUTOCPU 13 0
SUPASUBS J0422470 W-OUTPUT OUTSERV 4 4 CC 0001 520
EDJX2 T0422469 X-MVS60 MAIN 1 1 $IKJTEST 15 0
EJESWR J0422468 W-OUTPUT OUTSERV 4 6 CC 0000 15,416
EJESWS J0422467 W-OUTPUT OUTSERV 4 6 CC 0000 14,283
LETTRGEN J0422466 W-OUTPUT OUTSERV 2 2 CC 0000 196
AUTOELIC J0422461 W-OUTPUT OUTSERV 1 13 CC 0000 303
AUTOEXP J0422462 W-OUTPUT OUTSERV 1 13 CC 0000 301
AUTOK101 J0422463 W-OUTPUT OUTSERV 1 13 CC 0000 250
AUTOCPU J0422464 W-OUTPUT OUTSERV 1 13 CC 0000 250
BPXAS S0422460 X-MVS60 MAIN 1 1 BPXAS 15 0
EJESSV2 J0422459 W-OUTPUT OUTSERV 4 6 CC 0000 15,610
PSCOTT T0422458 X-MVS60 MAIN 1 1 $IKJTEST 15 0
BPXAS S0422456 X-MVS60 MAIN 1 1 BPXAS 15 0
BPXAS S0422454 X-MVS60 MAIN 1 1 BPXAS 15 0
AUTOELIC J0422450 W-OUTPUT OUTSERV 1 13 CC 0000 237
AUTOEXP J0422451 W-OUTPUT OUTSERV 1 13 CC 0000 23
    
```

# ENF Signal Listen Exit in CAS Server



- CAS servers will resynchronize their roles in the JESplex after JES is detected down.
- Previously:
  - JES might not be detected down immediately.
  - End-user interaction from JES3 local not guaranteed.
  - 10-minute timer would eventually “pop”.
- ENQ could be held by CAS server on old JES3 global during DSI that would delay initialization of CAS server on new global.
- V4R6 support causes CAS server to “wake up” immediately on any JES start/stop ENF event.

## Extended Address Volumes

- None of the data sets needed by (E)JES or the Phoenix TP Monitor are eligible to reside outside the track-managed space on an EAV (yet).
- Nevertheless, all applicable code within these products has been changed, where possible, to use the new z/OS 1.10 track format conversion services and to expect and tolerate Format-8 and Format-9 DSCBs when processing VTOC contents.

# Internal Security Conversion Assistant

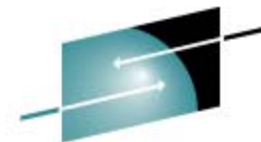


- V4R2 introduced parameterized internal security.
  - Macro-based internal security was deprecated.
  - A challenge for some customers with very large macro-based configurations.
- V4R6 introduces the EJEWC2M2P REXX exec to help automate the process of migrating from macro-based to parameterized internal security definitions.
- EJESCM2P reads in member with EJESUM2 or EJESUM3 statements and produces equivalent parameterized definitions.
  - Comment blocks are maintained.
  - Output is left-justified, one parameter or sub-parameter per line.
  - Intended for one-time conversion.
  - Most users will want to “massage” the result to match their aesthetic preferences.

# JCL Customization Utility



- Replaces EJESIEM1 and EJESIEM2 REXX used at install time.
- EJESIEM1 was an ISPF edit macro. Had to be manually edited with substitution values.
- EJESIEM2 was a “wrapper” used to copy all EJES\$xxxx members from \$QEJxxxx.F1 to the customization library.
- Uses full-screen ISPF interface.
- Minimizes mistakes by validating input.
- Provides context-sensitive help for every entry field.
- Scroll up/down to make changes. Press <Enter> to execute.



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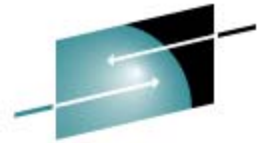
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# JCL Customization Utility (continued...)

```
----- Install JCL Customization Utility ----- V4R6
Command ==> _
                                                    More:      +
Job Card and Other General JCL Parameters:
  Job Name                ==>                (Null won't overlay JCL)
  Accounting              ==> 1
  Programmer Name        ==>                (Null won't overlay JCL)
  Job Class               ==> A            (NONE to remove CLASS=)
  Message Class          ==> A
  2nd Job Card:
    ==> /**
  3rd Job Card:
    ==> /**
  JES3 Job Class          ==> A            (On /***MAIN JECL)
  1st User JECL Card:
    ==> /**
  2nd User JECL Card:
    ==> /**
  Sysout Class            ==> *
  Work File Unit Name     ==> SYSDA

Customization Library Parameters:
  Data Set Name           ==> EDJX1.SMPE450.INSTALL

SMP/E Data Set Parameters:
  Dsname Prefix           ==> EDJX1.SMPE450
  Unit Name               ==> SYSALLDA
  Volume ID               ==> SMPVOL
  TLIB Unit Name          ==> SYSALLDA
  TLIB Volume ID          ==> SMPVOL
  Zone Name Chars         ==> EJES
```



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# Planned Enhancements



## z/OS 1.11 Support

- JES3: seems completely compatible in our testing.
- JES2: the System Environment Table won't even assemble! They have done some major restructuring that might not be so easily retrofitted back to older (E)JES releases.
- Support for extended sequential data sets in cylinder-managed space on EAV.
- Support for more than 64 CPUs.
- Possible support for zHPF (depends on timing of IBM support for “ordinary” channel commands).

# z/OS 1.10 ISFCALLS Enhancements

- ISFCALLS in z/OS 1.9 supported two REXX commands:
  - ISFEXEC issues primary commands.
  - ISFACT enters an “action character” against a previously-seen row.
- z/OS 1.10 introduces:
  - ISFGET to return all column variables for a previously-seen row.
  - SSTYPE=JES2 invocation parameter to force use of JES2.
- (E)JES ISFCALLS in the upcoming release adds support for these and other “nits”.

# CICS Enhancements

- EJESCI has been enhanced to use the CICS OPENAPI.
  - CONCURRENCY(THREADSAFE) now present on DEFINE PROGRAM.
  - Open TCB now used instead of the Quasi-Reentrant (QR) TCB.
  - Eliminates task switching to avoid implied WAITs.
- All CICS-related processing and storage is now AMODE(31).
- New requirement for LPA residency of EJESCI.
  - Security/integrity consideration.
  - LPA=YES required in SIT (CICS startup) parameters.
  - USALPACOPY(YES) now present on DEFINE PROGRAM statements.
- CICS macro-based definitions no longer distributed.

# TP Monitor Enhancements

- The TP Monitor supports a LOGON “exit” written in REXX. We will allow customers to exploit this capability.
- REXX Support in the TP Monitor will be enabled, but not fully documented.
  - Our intent is to allow customers to author and customize the LOGON exit.
  - Other use of REXX under the TP Monitor will be possible, but would be unintended.
- As delivered, the LOGON exit will issue the EJES command when a user logs on to the TP Monitor—eliminating the need to press a function key to enter (E)JES!

# High Performance Routines

- In an earlier release, a new high performance routine (HPR) facility was developed to make (E)JES code execute faster while accessing data in JES control blocks from a user client session. HPRs:
  - Have a shorter instruction path length.
  - Avoid delays in modern processor instruction pipelines.
  - Measured performance difference on z9 was about 3x.
- HPRs were previously implemented in about half of the JES2 access routines and none of the JES3 access routines. (The JES3 routines had been previously optimized using another technique that was less effective than HPR.)
- In this release, 100% of the eligible routines for both JESes now use the HPR facility.

## More zIIP Eligibility for JES2

- JES2 routines do not enjoy the same high level of eligibility for zIIP redirection as their JES3 counterparts.
- In this release, many more JES2 cycles are eligible for zIIP.
- Everyone understands that zIIP execution saves money. But, on sub-capacity models, it can also improve performance because zIIP engines are never knee-capped.



# Accurate Delimiters in Reconstructed JES3 Jobs



- (E)JES has been processing JES3 JESJCLIN and merging stream input for years.
  - Long, long ago the **SUB** line command invoked a sample CLIST for this.
  - In more recent past, the **.J** line command invoked the **EJES#CJ** post-processor CLIST to handle this.
  - Currently, the **Jxx** line commands (e.g., **JV**) reconstruct the job without using external processors.
- JES3 never kept delimiter information, so (E)JES assumed all stream input data sets ended with a delimiter.
- z/OS 1.10 JES3 now keeps track of delimiters in so-called spool pointer records in JESJCLIN (apparently needed for the JCL facility of Spool Data Set Browse).
- (E)JES now uses these spool pointer records (if present) to know whether or not to insert delimiters.

# Job Owner Now Passed in “Quick Access” Fields to Applicable User Exits



- Currently, installation exits that might wish to interrogate tabular columns are passed these pointers and ISPF variables:

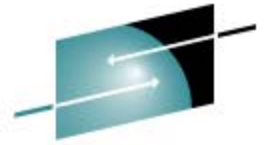
ISPF Variable	Pgm Variable	Contains
EJESHDR1	xxxHEADR	Title line
EJESHDR2	xxxULINE	Underscore line
EJESDATA	xxxDETLN	Detail line associated with line command

- The following job-related information is also passed for quicker access to the most popular fields (**red** is new with this release):

ISPF Variable	Pgm Variable	Contains
EJESJOBN	xxxJOBNM	Job name
EJESJOBI	xxxJOBID	Job Id
EJESJOBT	xxxJOBTP	Job type
-	xxxJOBNO	Job number
<b>EJESJOB0</b>	<b>xxxJOBOW</b>	<b>Job owner</b>

# Post-processor Package Rewrite

- The Post-processor package infrastructure is all CLIST.
- It is being rewritten in REXX.
- The intent is to leverage EJESREXX to improve performance and simplify the code.
- The post-processor calling interface is being maintained using CLIST conventions.
  - This ensures existing customer post-processor CLISTs continue to work.
  - REXX cannot natively handle CLIST-style keyword parameters.
  - We plan to distribute some REXX code (hopefully as a callable routine) that allows REXX programs to handle CLIST-style keywords.
  - The caveat is that keyword abbreviations will likely not be supported.



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# Questions?

