

# (E)JES Update

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*SHARE in Seattle*

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# Release Compatibility Matrix

Operating System Release	(E)Next GA 09/15 Stbl 09/18	V5R4 GA 09/14 Stbl 09/17	V5R3 GA 09/13 Stbl 09/16	V5R2 GA 09/12 Stbl 09/15
z/OS 2.2	JES2/JES3	<i>TBD</i>	<i>TBD</i>	
z/OS 2.1	JES2/JES3	JES2/JES3	JES2/JES3	JES3
z/OS 1.13	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.12	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.11	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.10	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.9		JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.8			JES2/JES3	JES2/JES3
z/OS 1.7				JES2/JES3

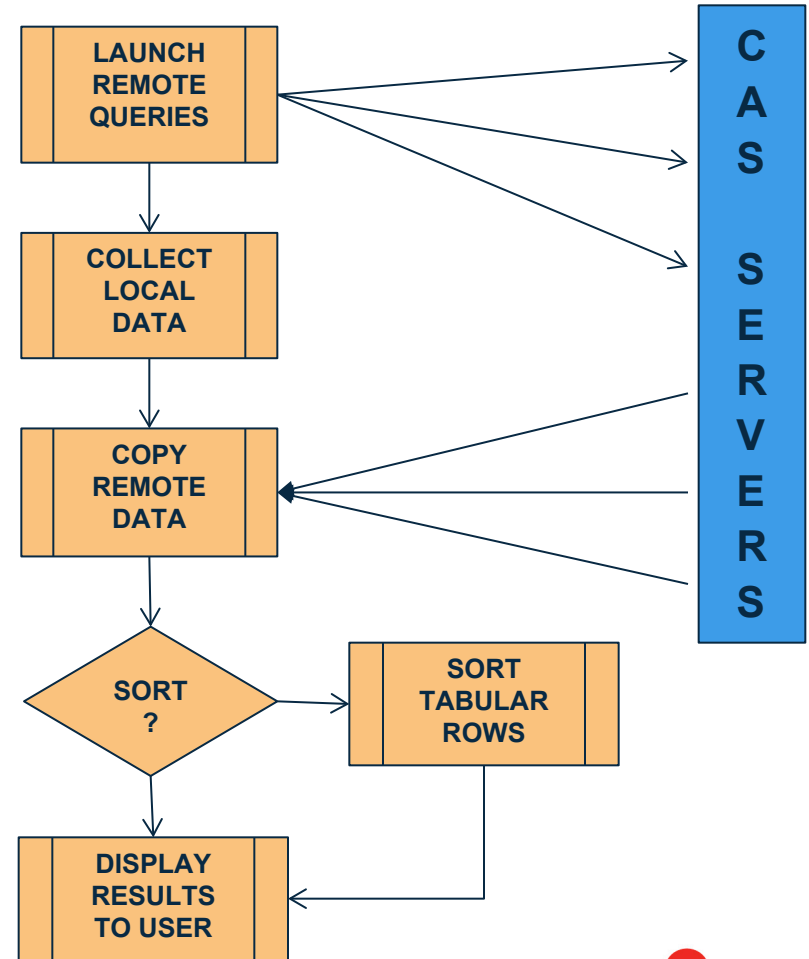
- Beginning April 2014, EOS dates no longer tied to GA date of N+2 release.
- Release stabilized three years after GA.
- Diagnostic technical support (i.e. dump analysis) ends four years after GA.
- Advice continues forever?

**Note:** z/OS 1.13 goes out of IBM support in 4Q16

# Highlights from the (E)JES V5R4 Press Release

# Asynchronous Multisystem Displays

- Remote queries are launched. CAS collects and readies the data.
- Local data is collected.
- Remote data is retrieved from CAS.
- Optional sorting of tabular rows occurs as normal
- Side effect: STD sort now always places current system first.



# 64-bit Addressing Mode

- Most programs run in 64-bit addressing mode. The conversion should be 100% complete in the 2015 release.
  - Only a handful of minor issues have been discovered as a result of this massive conversion. We are very pleased with the results so far.
- Areas of known virtual storage constraint were moved above the 2GiB bar. Others will move as needed.
- User exits continue to be given control in 31-bit mode (via BASSM) and all data areas passed to them reside below the 2GiB bar. Return is now via BSM.
  - A standard 144-byte F4SA save area is passed and the distributed user exit linkage has been updated to use it.
  - This allows user exits to use “grande” instructions and/or switch to 64-bit mode if they so choose. Not required.

# Parallelism

- Single core speeds are not increasing they have done historically. New technologies (e.g., SMT) allow greater parallelism for software developers brave enough to take the leap.
- PSI has implemented new highly-parallel, algorithms to the parts of our code that are the highest CPU consumers. The results so far are encouraging!
- For example, we observed the clock time required to sort a large amount of data was reduced by 64% using our new sort algorithm that – adaptively and dynamically – splits the work across three dispatchable units (SRBs).
  - **Disclaimer:** benchmark run on single core configuration.

# API Improvements

- New flag (EJESApiUPHiddenTC) requests tabular columns array return “hidden” columns (those with zero-length title).
- A new indicator (EJESApiTCScroll) set when a tabular column can scroll horizontally. This lets the caller detect where the scroll point is positioned.
- EJESApiUlgCART added to provide Command and Response Token (CART) of last system command issued
- *All* system commands now have a CART.
- New FIND command results array EJESApiFind:
  - Each FIND match is represented by a two-byte position and a length byte with end of array indicated by all zeros entry.
  - When enumerating (i.e., multiple browser lines returned), there is an array of pointers (terminated by a zero pointer), each of which points to an EJESApiFind array.
  - FIND match array returned for all requested data lines until FIND is RESET
- *All* pointers in *all* structures surfaced by EJESAPI4 are now 64 bits long, even if they still point to storage below 2GiB.

# (E)JES Web Production Release

- A browser-based interface to (E)JES implemented in Java.
  - Why Java? “IBM has given z/OS Java highly-preferential treatment in System z hardware/software design and customer terms and conditions. This trend is expected to continue, making z/OS Java a solid language/platform choice with good investment protection for the foreseeable future.”
- Our intent is to create a de-Facto interface to (E)JES for users who are less comfortable navigating traditional 3270 interfaces. By no means do we intend to supplant 3270!
- The REST API backing this technology will provide a framework for the creation of Eclipse plug-ins, mobile applications, and other web services clients.



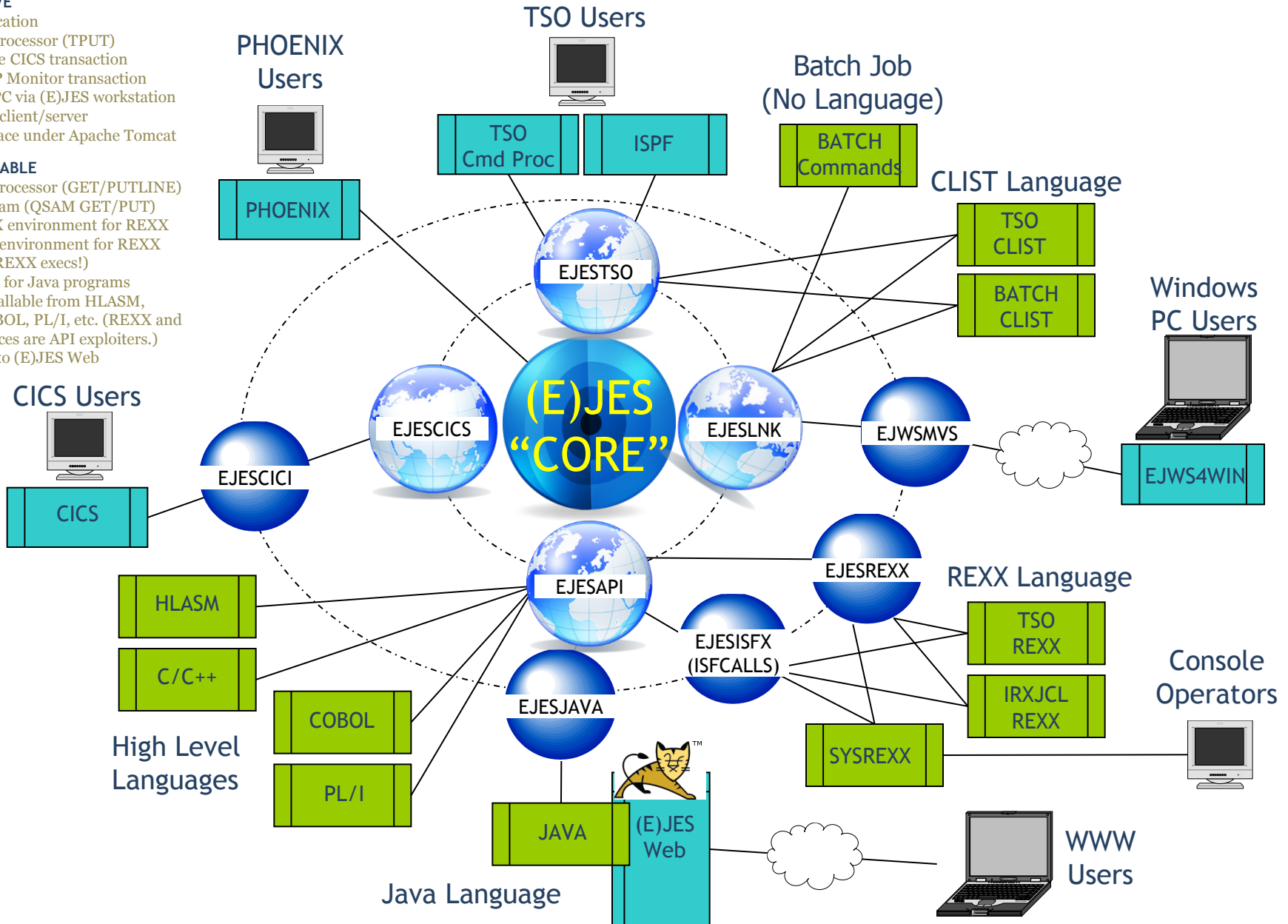
# The (E)JES Solar System

## INTERACTIVE

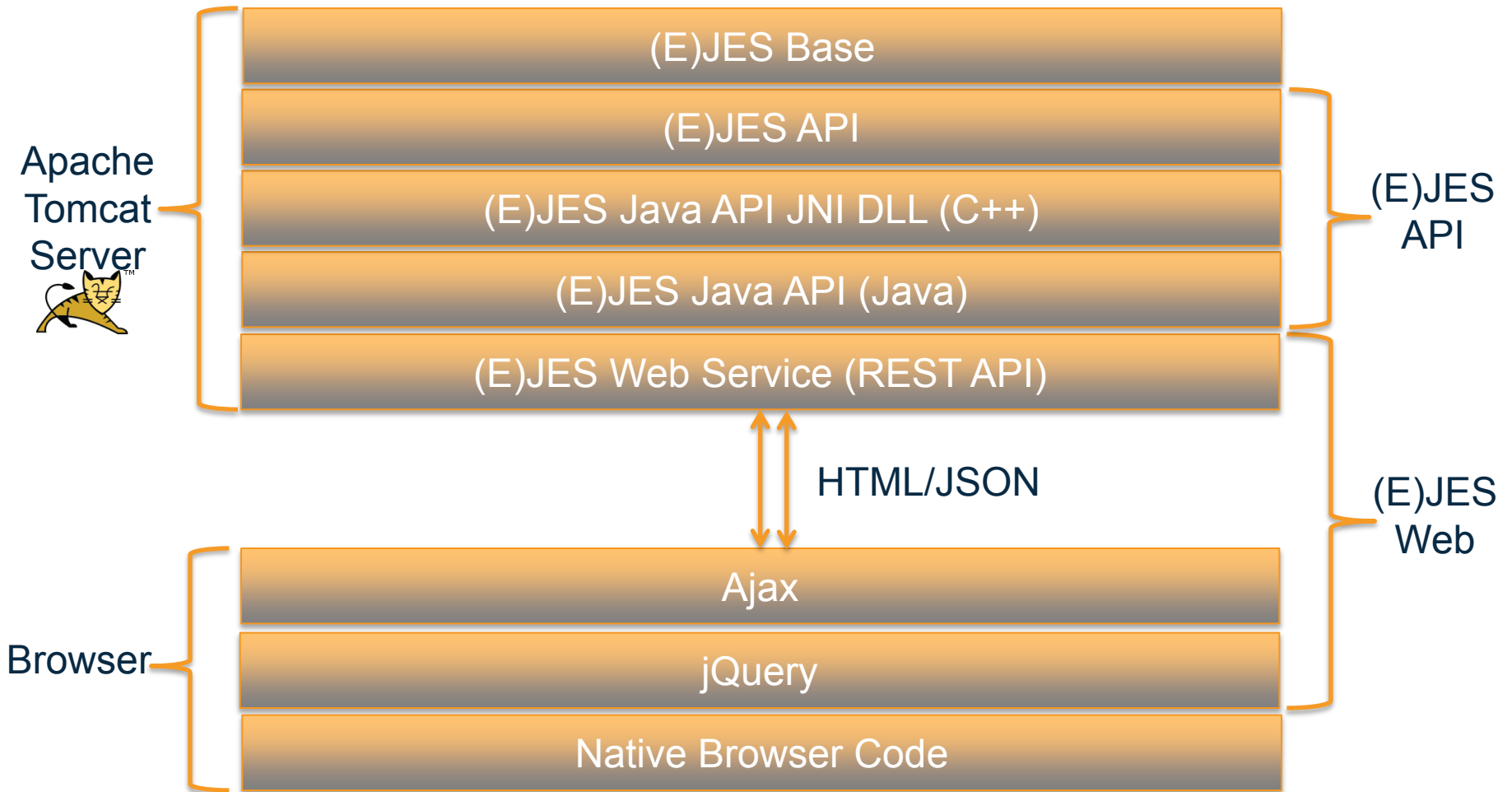
- ISPF application
- TSO cmd processor (TPUT)
- Thread-safe CICS transaction
- Phoenix TP Monitor transaction
- Windows PC via (E)JES workstation component client/server
- Web interface under Apache Tomcat

## PROGRAMMABLE

- TSO cmd processor (GET/PUTLINE)
- MVS program (QSAM GET/PUT)
- EJESREXX environment for REXX
- ISFCALLS environment for REXX (run SDSF REXX execs!)
- EJESJAVA for Java programs
- EJESAPI callable from HLASM, C/C++, COBOL, PL/I, etc. (REXX and Java interfaces are API exploiters.)
- REST API to (E)JES Web



# (E)JES Web Structure



# (E)JES Web Performance – NO SACRIFICE!

- Our performance goal is to do away with the accepted double standard; to replicate, as closely as possible, the awesome experience currently enjoyed by (E)JES 3270 users, while adding the power and flexibility of a modern GUI web interface.
- See below for average clock time measurements in our environment: zBC12 2828-B03 w/zIIP and OSA Express 5 connected (via GbE) to PCs with Intel Core i7 CPUs, running Mozilla Firefox under Microsoft 64-bit Windows 7 Professional.

Average Timings	ACTIVITY 52 jobs	ACTIVITY 5 jobs	STATUS 52 jobs	STATUS 15 jobs
Server	.202	.061	.167	.076
Network	.018	.018	.018	.018
Total	.220	.079	.185	.094



## (E)JES Web uses an Ultra-thin Client Model

- The client/server revolution implemented distributed models in which so-called “*fat*” clients offloaded as much processing as possible from a server.
- Inherent weaknesses in this model eventually led to the rise of so-called “*thin*” clients, which are used in modern desktop and mobile applications.
- Despite this, many GUI-interface products do too much locally.
  - Local sorting, searching, filtering, etc. necessarily requires *all* data be transferred from server. These are among the worst possible candidates for client-based functionality, yet are often implemented there by myopic developers or those with substandard servers.
- (E)JES Web is an “*ultra-thin*” – fully virtualized – client with an intelligent server. Sorting, filtering, searching, etc. is performed on server – where the data resides. The client is merely a slick user interface for requesting and viewing the results of these data manipulations.

# Poor Client Design Will Overcomplicate

- Some browser-based clients overcomplicate the user experience by unnecessarily surfacing too many layers of data.
- Example from one of our competitors:
  - Data at the server is divided into ‘pages’ of ‘n’ rows each.
  - A ‘page’ of data is what is downloaded to the client, but instead of using this as a hidden cache, the organization of the ‘pages’ is actually surfaced to the end user!
  - Each ‘page’ scrolls up and down in the client web browser; scrolling to the bottom scrolls to bottom of page, not bottom of data; likewise for top of page and top of data.
  - To see more data, the user can go to the next or previous ‘page’ or, in some cases, randomly select a ‘page’ by number.
- C’mon fellas. Consider the audience. Browser-based access should be as easy as possible.

## (E)JES Web Tries to Simplify, Not Complicate

- (E)JES web data is represented as a single stream of rows or lines, just as you would expect to see in any PC or web-based application.
- When you scroll to the top, you see top of data; when you scroll to the bottom, you see bottom of data.
- You reposition forward or backward using normal scrolling functions. You can jump ahead or back by positioning the scroll bar or by typing **L** (to use the LOCATE pop-up)
- Any dividing of server-resident data into units of transfer is strictly internal and never surfaced to the user.
- The result is a smooth, intuitive, uncomplicated interface that anyone can understand. (Even me!)

ASMENV60 10662265

Row 32,859 of 183,330

```

000001C2          109811+      DC      0S(L'CDCIXLST-CDCXIXACL) Ensure area fits          02-$CD
i000001C2          000001C2 00000198 109813+      ORG      CDCIXLST          ORG for next list form          02-$CD
DOC      CDCWORK -- MACRO $CDCWORK -- HASP CDC Processor PCE Work Area DSECT
Active Usings: None
D-Loc   Object Code      Addr1      Addr2      Stmt Source Statement                                     HLASM R6.0 2015/02/11 11.59
00000198 A single "stream" of lines. Scroll bar navigation works exactly as expected. Simple and intuitive.
109815+*----- IXZXIXMB MF=(L,CDCXIXMB) Create mailbox
109817+*          MACDATE -93/05/10-<1>
00000198 109818+M00M1563 DS      0H          IXZXIXMB-1          03-IXZ
109819+          PUSH PRINT          03-IXZ
109820+          PRINT ON          03-IXZ
00000198 109821+CDCXIXMB DS      0D          ++ IXZXIXMB PARM LIST          03-IXZ
00000198 109822+CDCXIXMB_XVERSION DS XL1          ++ INPUT XVERSION          03-IXZ
00000199 109823+CDCXIXMB_XEYECATCH DS CL6          ++ CONSTANT XEYECATCH          03-IXZ
0000019F 109824+CDCXIXMB_XRSV0001 DS CL1          ++ RESERVED XRSV0001          03-IXZ
000001A0 109825+CDCXIXMB_XMBOXNAME DS CL16          ++ XMBOXNAME          03-IXZ
000001B0 109826+CDCXIXMB_XPOSTXIT DS A          ++ XPOSTXIT          03-IXZ
000001B4 109827+CDCXIXMB_XPOSTDATA DS A          ++ XPOSTDATA          03-IXZ
000001B8 109828+CDCXIXMB_XPOSTALET DS F          ++ XPOSTALET          03-IXZ
000001BC 109829+CDCXIXMB_XGROUPTOKEN DS F          ++ XGROUPTOKEN          03-IXZ
000001C0 109830+CDCXIXMB_XSYSEVENTS DS BL.8          ++ FIELD_LABEL          03-IXZ
          00000080 109831+CDCXIXMB_XSYSEVENT_YES EQU B'10000000'          X03-IXZ
          +          ++ XSYSEVENT.YES KEYWORD
          00000040 109832+CDCXIXMB_XSYSEVENT_NO EQU B'01000000'          X03-IXZ
          +          ++ XSYSEVENT.NO KEYWORD
          00000029 109833+CDCXIXMBL EQU      *-CDCXIXMB          ++ LENGTH OF PLIST          03-IXZ
109835+          ORG      DDSTMT
          III

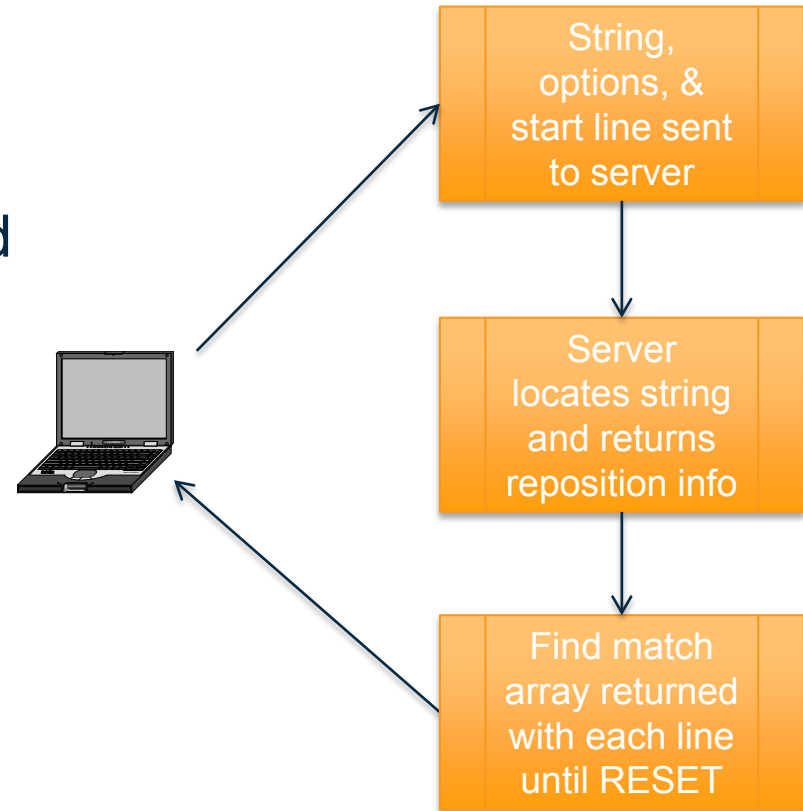
```

A single "stream" of lines. Scroll bar navigation works exactly as expected. Simple and intuitive.



# (E)JES Web FIND Implementation

- String, options, and start line are sent to server
- Server locates string (usually on SPOOL) at *ultra-high* speed and returns repositioning information
- Find match array returned with each data line. GUI shows all matches just like advanced 3270.
- ISPF-like find options such as prefix, suffix, word, chars, hex, etc. are fully supported.





MIGRATE J0658970

Row 15 of 136

```

//*MAIN ORG=EDJX2,USER=EDJX2                                XT00GENR
//* MIGRATE SUBMITTED 02/01/2015 AT 08:50:00 BY EDJX2  /LT01
//*MAIN SYSTEM=MVS60                                        000200
//COPY EXEC PGM=IEBCOPY,REGION=64M                        000300
//SYSPRINT DD SYSOUT=*                                    000400
//TEST DD DSN=PHOENIX.TEST.LOADLIB,DISP=SHR              000500
//PROD DD DSN=PHOENIX.PROD.LOADLIB,DISP=SHR             000600
//SYSUT3 DD UNIT=SYSDA,SPACE=(CYL,(10,10))              000700
//SYSUT4 DD UNIT=SYSDA,SPACE=(CYL,(10,10))              000800
//SERIALIZ DD DSN=SYS2.SINGLE.THREAD,DISP=OLD            000900
//SYSIN DD *                                             001000
/*                                                       001300
//DELETE EXEC PGM=IDCAMS,REGION=64M,COND=(0,NE)         001400
//TEST DD DSN=PHOENIX.TEST.LOADLIB,DISP=SHR             001500
//SERIALIZ DD DSN=SYS2.SINGLE.THREAD,DISP=OLD            001600
//SYSPRINT DD SYSOUT=*                                    001700
//SYSIN DD *                                             001800
/*                                                       002000
//NOTIFY EXEC PGM=GANOTIFY,COND=EVEN,PARM='EDJX2 '
//SYSABEND DD SYSOUT=D
//                                                       002100
1 //MIGRATE JOB (EDJX,SYS),'SP1-TEST-PROD',CLASS=R,PRTY=7,MSGCLASS=A
  //*MAIN ORG=EDJX2,USER=EDJX2                                XT00GENR
  //* MIGRATE SUBMITTED 02/01/2015 AT 08:50:00 BY EDJX2  /LT01
  //*MAIN SYSTEM=MVS60                                        000200
2 //COPY EXEC PGM=IEBCOPY,REGION=64M                        000300
3 //SYSPRINT DD SYSOUT=*                                    000400

```

Type F to open the SEARCH pop-up

Search: PHOENIX

# (E)JES Web Time-Oriented Browsers

- Some displays (such as SYSLOG and OPERLOG) are naturally oriented by date and time.
- The title line shows the date/time, associated with the top line, rather than line/record number.
- Handling such displays requires good design and a high degree of programming skill. *It's no wonder they are conspicuously absent in competitive implementations.*

Jobs ▾ Resources ▾ Devices ▾ Tools ▾ View ▾ Options ▾ Help ▾ Logout
(E)JES®

OPERLOG PHXHQ 2/12/2015, 4:37:17 PM

```

E          657 00000090 for coupling facility requests.
M 4040000 MVSA0 2015043 16:37:21.22 00000080 *IXC585E STRUCTURE HZS_HEALTHCHKLOG IN COUPLING FACILITY CF01, 658
D          658 00000080 PHYSICAL STRUCTURE VERSION CE3AC439 E4696F08,
D          658 00000080 IS AT OR ABOVE STRUCTURE FULL MONITORING THRESHOLD OF 80%:
D          658 00000080 SPACE USAGE      IN-USE      TOTAL      %
D          658 00000080 ENTRIES:          142          171      83
E          658 00000080 ELEMENTS:         900          1220    73
M 4040000 MVSA0 2015043 16:37:32.07 S0184385 00000090 *HZS0003E CHECK(IBMxcf,XCF_CDS_SPOF): 659
E          659 00000090 IXCH0242E One or more couple data sets have a single point of failure.
          
```

| Bottom of Data |

BOTTOM-SCROLL

⏪ ⏩ ↶ ↷ ↸ ↹

# (E)JES Web Uses Classic Context Menus

- This is tried-and-true programming practice.
- Why anyone would choose any other system is beyond me!
- But incredibly, at least one of our competitors does!
  - They make our job too easy. <smh>

Jobs ▾ Resources ▾ Devices ▾ Tools ▾ Filter ▾ View ▾ Options ▾ Help ▾ Logout (E)JES®

STATUS - 3574S- 1X- 114W- 0H- 0T- 2644111 Records- 2636735 Lines- 0 Pages Row 76 of 115

JobName	JobID	Status	Process	CurStep	NumStep	StepName	JP	MaxComp	Records	Lines
EJESSUB3	10658967	W-OUTPUT	OUTSERV		3		6	CC 0000	59,572	
EJESSUB3	10658968	W-OUTPUT	OUTSERV		4		6	CC 0000	50,728	
MIGRATE	10658970	W-OUTPUT	OUTSERV		3		7	CC 0000	136	
EJESSUB3	10658971	W-OUTPUT	OUTSERV		4		6	CC 0000	59,775	
MIGRATE	10658972	W-OUTPUT	OUTSERV		3		7	CC 0000	136	
EJESSUB3	10659355	W-OUTPUT	OUTSERV				6	CC 0000	50,724	
MIGRATE	10659357	W-OUTPUT	OUTSERV				7	CC 0000	136	
EJESSUB3	10659365	W-OUTPUT	OUTSERV				6	CC 0000	50,738	
MIGRATE	10659367	W-OUTPUT	OUTSERV				7	CC 0000	136	
PTFIE530	10659770	W-OUTPUT	OUTSERV				2	CC 0000	461	
PTFIE540	10659772	W-OUTPUT	OUTSERV				2	CC 0000	341	
SRVUE540	10659778	W-OUTPUT	OUTSERV				2	CC 0000	1,428	
EJESTS0	10660178	W-OUTPUT	OUTSERV				6	CC 0000	713	

- Activity
- Alter ▶
- Browse ▶
- Cancel** ▶
- DJC ▶
- Data Set Status
- Display ▶
- Download As ▶
- Hold ▶
- Out Desc

- Cancel
- Cancel ARM Dump
- Cancel BDT Queue
- Cancel Dump
- Cancel Execution**
- Cancel Execution ARM
- Cancel Hold Queue

# Simply Press '/' to Issue a System Command

- '/' is used in the 3270 interface to denote system commands.
- An intuitive choice for (E)JES Web as well.

Jobs ▾ Resources ▾ Devices ▾ Tools ▾ View ▾ Options ▾ Help ▾ Logout (E)JES®

OPERLOG PHXHQ 2/16/2015, 3:09:12 PM

```

M 4040000 MVS60 2015047 15:09:12.79 HZSPROC 00000090 *HZS0003E CHECK(IBMxcf,XCF_CDS_SPOF): 881
E 881 00000090 IXCH0242E One or more couple data sets have a single point of failure.
N 0000000 MVS60 2015047 15:09:55.42 00000290 IEE252I MEMBER BPXPRM10 FOUND IN SYS2.PARMLIB
N 0000000 MVS60 2015047 15:09:55.61 00000281 IEF196I IEF285I SYS2.PARMLIB KEPT
N 0000000 MVS60 2015047 15:09:55.62 00000281 IEF196I IEF285I VOL SER NOS= MVSSY1.
N 0000000 MVS60 2015047 15:09:55.62 00000281 IEF196I IEF285I ADCD.Z21Z.PARMLIB KEPT
N 0000000 MVS60 2015047 15:09:55.62 00000281 IEF196I IEF285I VOL SER NOS= Z1RES1.
N 0000000 MVS60 2015047 15:09:55.63 00000281 IEF196I IEF285I SYS1.PARMLIB KEPT
N 0000000 MVS60 2015047 15:09:55.63 00000281 IEF196I IEF285I VOL SER NOS= Z1RES1.
M 4040000 MVS60 2015047 15:09:55.67 HZSPROC 00000090 HZS0001I CHECK(IBMUSS,USS_PARMLIB): 889
D 889 00000090 BPXH040E One or more differences were found between the system settings
E 889 00000090 and the settings in the current BPXPRMxx parmlib members.

```

Command:  ⏪ ⏩ ⏴ ⏵ ⏶ ⏷ ⏸ ⏹ ⏺ ⏻ ⏼ ⏽ ⏾ ⏿

OPERLOG PHXHQ 2/16/2015, 3:09:12 PM

**System Command Output** ✖

```

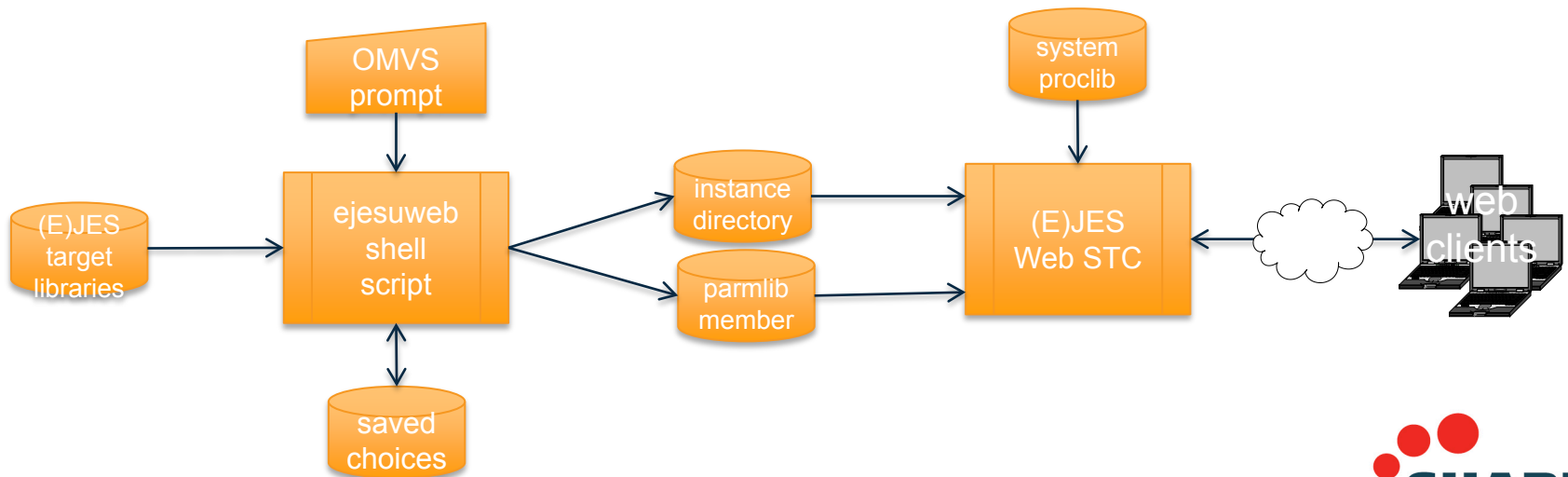
MVS60 2015047 15.28.41.56 EDJX2 -D ASM
MVS60 2015047 15.28.41.59 EDJX2 IEE200I 15.28.41 DISPLAY ASM 909
TYPE FULL STAT DEV DATASET NAME
PLPA 100% FULL 8203 SYS2.MVS60.PAGE.PLPA KEPT
COMMON 45% OK 8203 SYS2.MVS60.PAGE.COMMON KEPT
LOCAL 1% OK 8203 SYS2.MVS60.PAGE.LOCAL1 KEPT
LOCAL 0% OK 8030 SYS2.MVS60.PAGE.LOCALA
LOCAL 0% OK 8332 SYS2.MVS60.PAGE.LOCALB
PAGEDEL COMMAND IS NOT ACTIVE

```

point of failure.

# (E)JES Web Server Deployment

- Each (E)JES Web server instance must be *deployed*.
- A single JCL procedure is usually shared by all deployments.
- Each deployment requires its own z/OS UNIX directory.
- Deployment script remembers previous choices, making redeployment after service trivial.
- An (E)JES Web instance typically runs as a started task.
- The MVS STOP command shuts down a running instance.



# Other Interesting Enhancements in (E)JES V5R4

# Group ARRANGE by Column Name

- Some (E)JES tabular displays have grouped columns.
  - Multiple contiguous columns that appear under a single title.
- Column groups can be moved on the ARRANGE dialog.
- Previously, any attempt to use the ARRANGE command to move a grouped column by name would generate an error message. ARRANGE using the title was required.
- In this release, any grouped column moved by the ARRANGE command will move the entire group.

```

Help
----- Arrange -----
ARRANGE STATUS (MIN)
Command ==> Row 1 of 45
                Scroll ==> CSR
Cmd Column  Title  Width
-----
JNAME      JobName      8
JTYPJID    JobID        8
/          /            0
STATUS     Status       8
PROCESS    Process      8
CURSTEP    StepNum(1)   3
NUMSTEP    StepNum(2)   3
SNAME      StepName     8
  
```

# QUERY AUTH DISPLAY

- QUERY AUTH listed authorized commands, but provided no understanding of menu structure.
- This release implements an optional DISPLAY keyword that will return the menu structure and commands within.

```

Jobs Resources Devices Tools Filter View Options Help
2014/07/30 (2014.211) (E)JES Menu MVS60 V5R4.0 15:56
Command ==> QUERY AUTH_
AUTH=ABEND,ACTIVITY,CLASS,DEST,DJC,DUMP,DYNAMIC,ENCLAVE,FSS,GROUP,HCHECK,HOLD,
AUTH=INPUT,JCLASS,JESPLEX,JNAME,LOG,MAX,MDS,MIN,NATX,NETCONN,NETSERV,NJE,NJOB,
AUTH=NODE,NSTC,NTSU,ORIGIN,OWNER,PREFIX,PRINTER,PSTATUS,REFRESH,RESOURCE,
AUTH=SCHENV,SCLASS,SPART,SPVOL,STATUS,SYSCLS,SYSNAME,SYSREQ,TRACE,ULOG,USER,
AUTH=WRITER,YATX,YJOB,YSTC,YTSU,ZERO
Input Input queue NETConn Network connections
MDS Job setup queues NETServ Network servers

```

```

Jobs Resources Devices Tools Filter View Options Help
2014/07/30 (2014.211) (E)JES Menu MVS60 V5R4.0 15:47
Command ==> QUERY AUTH DISPLAY_
JOBS=ACTIVITY,DJC,HOLD,INPUT,MDS,NJE,PSTATUS,STATUS,WRITER,ZERO
RESOURCES=ENCLAVE,HCHECK,LOG,RESOURCE,SCHENV,SYSREQ
DEVICES=CLASS,FSS,GROUP,JESPLEX,NETCONN,NETSERV,NODE,PRINTER,SPART,SPVOL,
DEVICES=SYSCLS
TOOLS=DUMP,ULOG
Input Input queue NETConn Network connections
MDS Job setup queues NETServ Network servers

```



# Initial LOG Horizontal Positioning

- The JES2 SYSLOG, JES3 SYSLOG and OPERLOG displays have “smart” routines for setting initial horizontal display position.
- An assumption was made that these routines need not be called when 3270 screen width was greater than 80; far left positioning was fine. That assumption was wrong. ☹️
- In this release, far left positioning is used only when the 3270 screen is wide enough to display all of the data.

```

OPERLOG PHXHQ                                     2014/07/31
Command ==>                                       Scroll ==> CSR
Current Find Text:
<--3-----+----4-----+----5-----+----6-----+----7-----+----8-----+----9-----+---10-----+>
12:13:06.48          00000281 IEA989I SLIP TRAP ID=X33E MATCHED.  JOBNAME=*UNA
12:13:12.55 ISZSMGR  00000090 ISZ0283I DROURK2 LU A60TCP60 signed off
12:13:12.56 ISZSMGR  00000090 ISZ0031I LU A60TCP60 terminated
15.55.19             *2283 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
15.42.53             *2270 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
15.33.03             *2260 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
***** Bottom of Data *****

```

# Title Line Suppression for Tabular Extract

- Traditionally, three lines appear at the beginning of a tabular extract:
  - Line one is identical to the 3270 screen title line.
  - Line two contains the tabular column titles.
  - Line three contains the tabular column title underscores.
- Skipping over those three lines, adjusting record count, etc., can be inconvenient for post-processing programs.
- The new NOTITLES keyword on the EXTRACT command will suppress generation of these three lines.
- **Note:** previously, an empty data set was not possible. It is now.

# Rename of TP Monitor Parts

- Previously, TP Monitor parts started with GA, PHNX or CAM (their “native” names).
- That had the potential for conflict when multiple, unrelated products with TP Monitor componentry were co-located or co-executed.
- In this release, all TP Monitor parts shipped with (E)JES start with QPX.

# MXGEJES

- (E)JES produces SMF records, but provides no code to help analyze them. (Left as an exercise for the customer...)
- MXG is a product from Merrill Consultants used for analyzing z/OS SMF records. See: <http://mxg.com/>
- MXGEJES is “*a standalone MXG code execution*” that will help analyze and report the contents of (E)JES SMF records.
- (E)JES supports two SMF record formats:
  - Format 0 is the default.
  - Format 1 uses self-describing triplets for various sections of the record and is the format required by MXGEJES.
- MXGEJES comes with MXG (32.047+); not with (E)JES.
- Many thanks to Barry Merrill for his help in understanding how SMF records *should* be formatted, for authoring the MXGEJES tooling, and for making it available to our customers. 😊

# Highlights from the (E)JES V5R3 Press Release

# (E)JES V5R3 Press Release

- z/OS 2.1 Support
- EJESMAIL utility
- DASD Extract Cataloged Data Set List
- Filtering using system symbols
- InfoCenter Integration
- CA Chorus Software Manager Install/Service
- (E)JES Web Technology Preview

**“The timing of the availability and the functionality included in this release should provide a smooth migration path for customers interested in becoming early adopters of the first new version of IBM's flagship operating system for System z in over twelve years.”**

**– Ed Jaffe, Chief Technology Officer**

# z/OS 2.1 Support

- MinOSLvl column and W-OSLVL delay reason
- JES2 eight-character job classes and job class groups
- JES3 support for in-stream data in JCL procedures

```

INPUT      59S  0X  4W  55H                               Row 1 of 59
Command ==>                               Scroll ==> CSR
Cmd JobName  JobID      QTime      Spin System-Affinity TGNuM TGPct MinOSLvl
-----
SYMBOLS  J0172445  12:18:24.62          SPIN          1      .00  z 2.1.0
WAIT4REP J0138872  15:55:09.39          SPIN          1      .00
WAIT4REP J0138871  15:13:53.70          SBO          1      .00
LOGSAVA0 J0040007  00:01:00.77          SPIN SAO      3      .00
LISTCAT8 J0038176  16:48:16.62          SPIN          1      .00
F1=Help  F3=Exit  F7=Up    F8=Down  F10=Left F11=Right F12=Cancel
. . . . .
File Edit Edit_Settings Menu Utilities Compilers Test Help
. . . . .
VIEW      EDJXADM.A.CNTL (SYMBOLS) - 01.00          Columns 00001 00072
Command ==>                               Scroll ==> CSR
***** ***** Top of Data *****
000001 //SYMBOLS JOB 1, JAFFE, CLASS=D, MSGCLASS=T, NOTIFY=&SYSUID
000002 // EXEC PGM=IEFBR14
000003 //SYSIN DD *,SYMBOLS=JCLONLY
  
```

Com

# EJESMAIL Utility

- EJESMAIL is a new REXX exec written to help customers send textual job output via email. It is not part of the Customer Application Infrastructure (CAI), but it does rely on some of the CAI utilities.
- EJESMAIL can be invoked as a TSO/E foreground command, from the z/OS UNIX OMVS command prompt, as a batch job step, or under System REXX.
- EJESMAIL supports the same three mail transport agents supported by the CAI email plug-in and utilities: NJE, direct sockets, and XMITIP (from Lionel Dyck).
- EJESMAIL can be a convenient way for a batch job to email some or all of its own output.



# EJESMAIL Usage Examples

```
//*****/
//* Email Output of our Job to JOEUSER */
//*****/
//EMAILJOB EXEC PGM=IKJEFT01
//SYSEXEC DD DSN=EJES.SEJEEEXEC,DISP=SHR
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
EJESMAIL mysystem@mycompany.com joeuser@mycompany.com +
CC: edjaffe@phoenixsoftware.com paulscott@phoenixsoftware.com +
(NJE Subject:"Output from &JNA" +
Please find attached the output from job &JNA. Thanks!
/*
```

```
//*****/
//* Email LISTVTOC Output to JOEUSER */
//*****/
//EMAILRPT EXEC PGM=IKJEFT01
//SYSEXEC DD DSN=EJES.SEJEEEXEC,DISP=SHR
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
EJESMAIL mysystem@mycompany.com joeuser@mycompany.com +
(XMITIP DD:SYSPRINT Subject:"Result of LISTVTOC command"
//NOTEDD DD *
```

Dear Joe,

The LISTVTOC output you requested is attached. We hope it provides you with the enlightenment you seek.

Thanks,

The Management

Complete your session evaluations online at [www.SHARE.org/Seattle-Eval](http://www.SHARE.org/Seattle-Eval)

# DASD Extract Cataloged Data Set List

Jobs Resources Develop Insights Filter View Options Help

LETTRGEN J0483014 Extract Parameters DASD

Command ==> \_

For Extract to DASD Dataset:

Dataset name ==> THIS.CAN.NOW.BE.A.MASK.\*\*  
Disposition ==> OLD (OLD, MOD, NEW or SHR)  
Page eject ==> NO (YES or NO to force eject for each dataset)

For New DASD Dataset to be Created:

Management class ==> (Blank for default management class)  
Storage class ==> (Blank for default storage class)  
Volume serial ==>  
Unit name ==> (Blank for default unit)  
Data class ==> (Blank for default data class)  
Space units ==> (REC, BLK, TRK, CYL, B, KB, MB, or blank)  
Primary qty ==> (In above units)  
Secondary qty ==> (In above units)  
Record format ==> (\*' to derive from data)  
Record length ==>  
Block size ==>  
Expiration ==> (YYYY/MM/DD, YYYY.DDD, or DDDD for RETPD)  
Data set type ==> (LIB, PDS, BASIC, LARGE, EXTP, EXTR, blank)  
Extended attr ==> (NO, OPT or blank)

Use ENTER to perform extract; Use END command to cancel extract.

Dataset Mask: THIS.CAN.NOW.BE.A.MASK.\*\*

Row 1 of 3

Command ==>

Scroll ==> CSR

Cmd Dataset Name / Volume

EDJX1.THIS.CAN.NOW.BE.A.MASK.A MVSNV1

EDJX1.THIS.CAN.NOW.BE.A.MASK.B MVSNV1

s\_ EDJX1.THIS.CAN.NOW.BE.A.MASK.C MVSNV1

\*\*\*\*\* Bottom of Data \*\*\*\*\*

# Enhanced Symbolic Substitution in Filters (Primary, Additional, Metafilters, etc)

- V3R5 introduced Environment Variables—symbols derived from the current environment that can be used in filters
  - These have been renamed to (E)JES Environment Symbols
- Beginning in this release, z/OS system symbols can also be used. If an ampersand remains after substitution of (E)JES environment symbols, a z/OS symbol substitution service is invoked to process the string.
- Both static (e.g., &SYSNAME) and dynamic (e.g., &WDAY) symbols are supported

```
Jobs Resources Devices Tools Filter View Options Help
2013/08/05 (2013.217) (E)JES Entry Panel MVS60 V5R3.0 10:45
Command ==> J=(A&SYSCLONE.B,&WDAY.*) _
Default Command ==>
More: +
Job Names/Nums ==> A60B ==> MON* ==> ==>
Cor ==> ==> ==> ==>
```

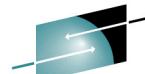
# Substitution for Metafilters is Dynamic

- Most filters are substituted immediately when the filter is established. Substitution for metafilters occurs at the time the filter is actually used. What you type is unchanged.

```
Jobs Resources Devices Tools Filter View Options Help
-----
STATUS 3,295S 145X 3,115W 35H 0T 44,583,780 Records Row 1 of 3295
Command ==> fil own=a&sysname.b* Scroll ==> CSR
Cmd JobName JobID Status Process StepNum StepName JP MaxComp Records
-----/-----
Jobs Resources Devices Tools Filter View Options Help
-----
Metafilters
Filter Help
-----
FILTER STATUS (MIN) Row 1 of 1
Command ==> Scroll ==> CSR
Cmd Column Title Op Value Bool
-----
OWNER Owner = A&SYSNAME.B*
***** Bottom of Data *****
```

# InfoCenter Search Integration Under ISPF

- **F6** is now assigned to the **INFO** command
  - Previously **F6** was assigned to the **BOOK** command
  - **BOOK** command moved to **F18** (Shift+F6)
- **INFO** command with no explicitly-specified search words and cursor not positioned results in display of InfoCenter Search pop-up
  - Search words can be entered and search launched
  - InfoCenter parameters pop-up is requested by pressing **F6** on InfoCenter Search pop-up
- **INFO** command with explicitly-specified search words or cursor positioned to word within scrollable area initiates an InfoCenter search



Jobs Resources Devices Tools Filter View Options Help

InfoCenter Search

2013/07/13

l ==> CSR

To search the InfoCenter, type a search string below.  
To define InfoCenter parameters, press F6.

---13----->

Search for \_\_\_\_\_

F1=Help      F6=Setup      F11=Clear      F12=Cancel

IEA519I IODF DSN = SYS4.IODFA0  
IEA520I CONFIGURATION ID = ZOS      . IODF DEVICE NUMBER = 8100  
IEA091I NUCLEUS 1 SELECTED  
IEA370I MASTER CATALOG SELECTED IS CATALOG.MCATZ.PHXHQ  
IEA009I SYMBOLIC DEFINITIONS WILL BE READ FROM: 008  
          IEASYM00  
          IEASYM18  
IEE252I MEMBER IEASYM00 FOUND IN SYS2.PARMLIB  
IEE252I MEMBER IEASYM18 FOUND IN SYS2.PARMLIB  
\*IEA008I SYSTEM PARMS FOLLOW FOR z/OS 02.01.00 HBB7790 011  
          IEASYS18  
          IEASYS02

F1=Help      F3=Exit      F6=Info      F7=Up      F8=Down      F10=Left      F11=Right  
F12=Cancel

MA D

07/019

# InfoCenter Setup Pop-up

- Accessed via **F6** from InfoCenter Search pop-up
- Specify URL of InfoCenter server. If not specified, defaults as follows based upon the current z/OS release:
  - <http://publib.boulder.ibm.com/infocenter/zos/v2r1>
  - <http://publib.boulder.ibm.com/infocenter/zos/v1r13>
  - <http://publib.boulder.ibm.com/infocenter/zos/v1r12>
  - <http://publib.boulder.ibm.com/infocenter/zos/v1r11>
- Scope defaults to **All Topics**
- Browser name and directory not required for Windows



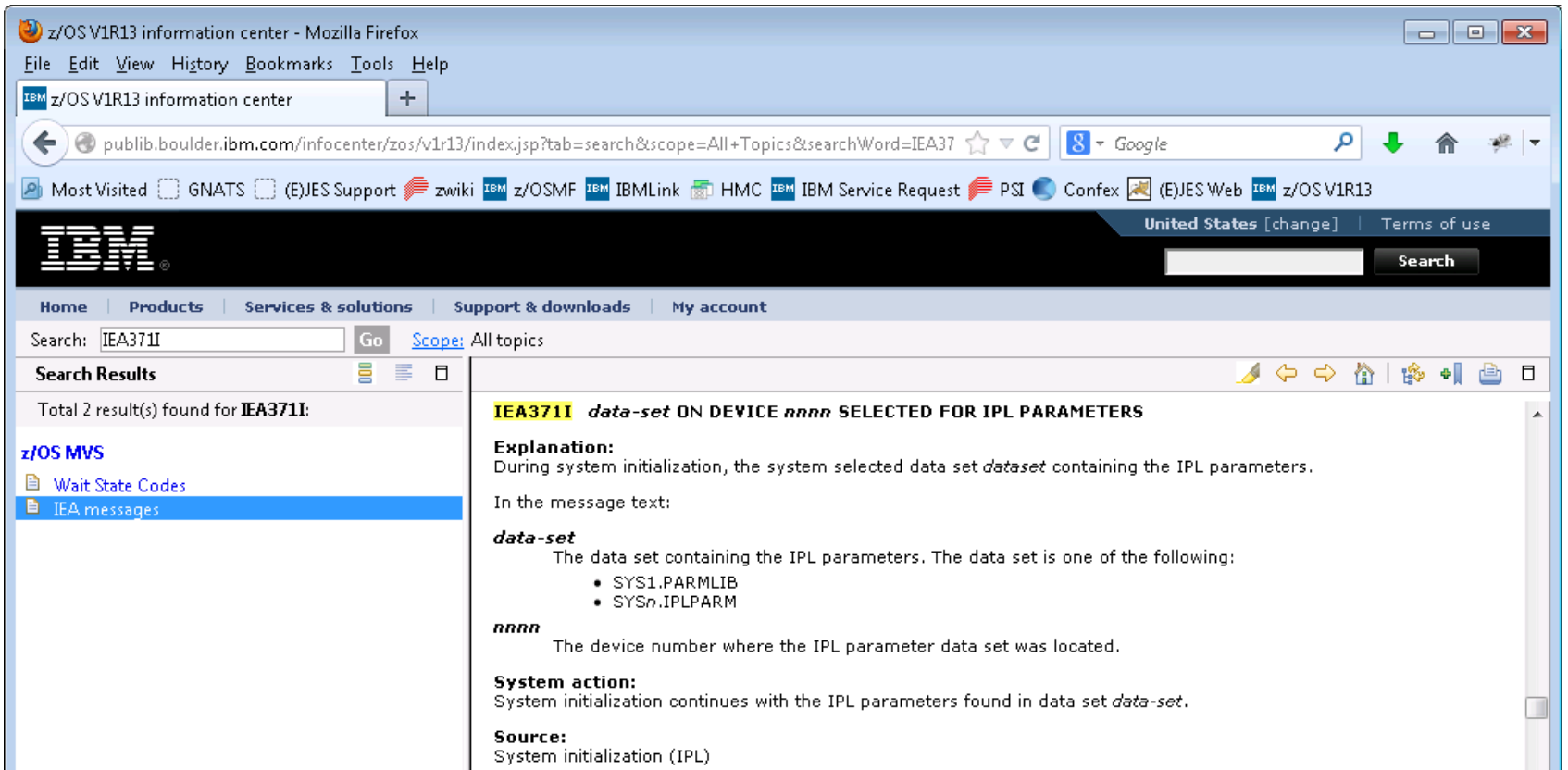


# InfoCenter Search Behavior

- If ISPF Workstation Agent (WSA) connected, web browser is launched on local workstation to initiate the InfoCenter search
  - Connect WSA using WSCON command
  - Do not confuse WSA with ISPF C/S; GUI not required
- If WSA not connected, URL is displayed on 3270 screen
  - Most modern 3270 emulators provide “hot spot” support for URLs displayed within the 3270 presentation area
  - Clicking on the URL usually results in a launching of web browser to process the URL

## InfoCenter Search URL

<http://publib.boulder.ibm.com/infocenter/zos/v1r13/index.jsp?tab=search&scope=All+Topics&searchWord=IEA371I>



The screenshot shows a Mozilla Firefox browser window displaying the IBM InfoCenter search results for the keyword "IEA371I". The browser's address bar shows the URL: [publib.boulder.ibm.com/infocenter/zos/v1r13/index.jsp?tab=search&scope=All+Topics&searchWord=IEA371I](http://publib.boulder.ibm.com/infocenter/zos/v1r13/index.jsp?tab=search&scope=All+Topics&searchWord=IEA371I). The search results page shows two results found for "IEA371I". The first result is highlighted and is titled "IEA371I *data-set* ON DEVICE *nnnn* SELECTED FOR IPL PARAMETERS".

**IEA371I *data-set* ON DEVICE *nnnn* SELECTED FOR IPL PARAMETERS**

**Explanation:**  
During system initialization, the system selected data set *dataset* containing the IPL parameters.

In the message text:

***data-set***  
The data set containing the IPL parameters. The data set is one of the following:

- SYS1.PARMLIB
- SYS*n*.IPLPARM

***nnnn***  
The device number where the IPL parameter data set was located.

**System action:**  
System initialization continues with the IPL parameters found in data set *data-set*.

**Source:**  
System initialization (IPL)

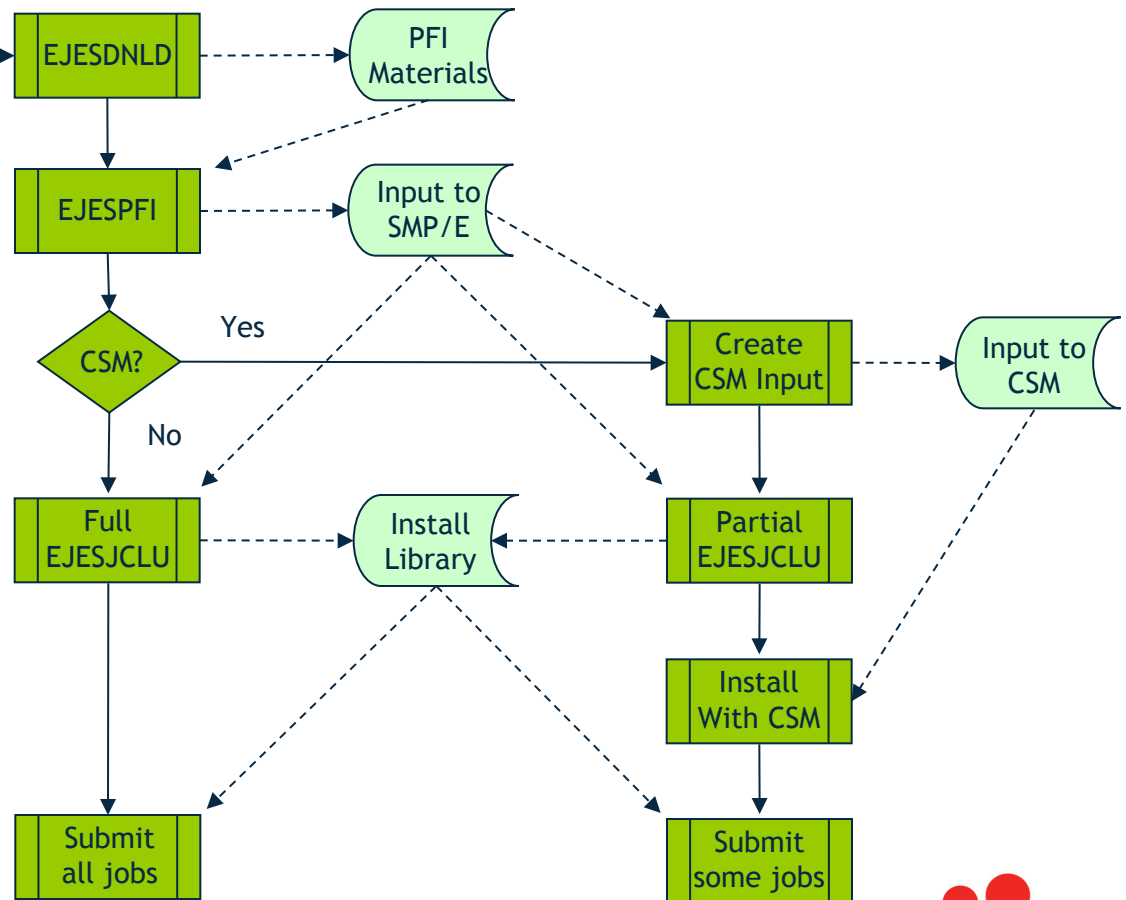
# Installation via Chorus Software Manager from CA Technologies



PHOENIX Software International®

FTP or HTTP

- Install continues to use existing PFI download and unlock technology.
- Install path diverges based on user response.
- Input to CSM created by EJESPF1 utility in z/OS UNIX directory of choice.
- JCL customization has fewer replaceable keys and sample jobs for CSM install.





MVS60 ----- PFI Installation Utility ----- V5R3

Command ==> \_

Transform  
 Transform PFI Installation  
 Materials into SMP/E Input

SMP/E Data Set Parameters:

Data set prefix ==> EDJX1.SMPE530  
Volume serial ==> NONE (Volume serial or NONE)

Local Work Files Parameters:

Your TSO/E Prefix ==> EDJX1  
Volume serial ==> NONE (Volume serial or NONE)

CA Chorus Software Manager Choice:

Install via CSM? ==> YES (YES or NO)

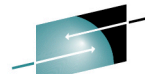
Press HELP for help with this utility.

F1=Help F3=Exit F12=Cancel

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02/015





```

----- Install JCL Customization Utility ----- V5R3
Command ==> _
More: - +

Customization Library Parameters:
  Data Set Name          ==> EDJX1.SMPE530.INSTALL

Target Library Parameters:
  Dsname Prefix          ==> EJES
  z/OS UNIX Path         ==> /usr/lpp/ejes

Maintenance Data Set Parameters:
  Dsname Prefix          ==> EJES

Documentatation Parameters:
  Adobe Document Path    ==> /local/PDFdocs
  HTML Document Path     ==> /local/HTMLdocs
  Eclipse Plugins Path   ==> /local/infocenter/eclipse/plugins

System Data Set Parameters:
  JES Library Prefix     ==> SYS1
  TCPIP Library Prefix   ==> TCPIP

CICS Profile Data Set Parameters:
  F1=Help   F3=Exit   F12=Cancel

```

Eleven prompts disappear for CSM install

```
Portable File Installation Detected ...
Allocating libraries ...
Copying members ...
Customizing members ...
EJES$ACC: not used for CSM install
EJES$APP: not used for CSM install
EJES$CAP: copied and customized
EJES$CPA: copied and customized
EJES$DAL: not used for CSM install
EJES$DDF: not used for CSM install
EJES$DOC: copied and customized
EJES$DRL: copied
EJES$ENA: copied
EJES$ENV: copied
EJES$ENV: renamed
EJES$EN2: copied
EJES$EN2: renamed
EJES$EN3: copied
EJES$EN3: renamed
EJES$GAL: copied
EJES$GAS: copied
EJES$ISF: copied
```

Some members are not used

```
EJES$ISF: renamed to PTFCISF for CSM install
EJES$JNL: copied and customized
EJES$LDL: copied and customized
EJES$LIC: copied and customized
EJES$LIC: renamed to UMODLIC for CSM install
EJES$LSR: copied and customized
EJES$LSV: copied and customized
EJES$OPT: copied and customized
EJES$OPT: renamed to UMODOPT for CSM install
EJES$PAC: not used for CSM install
EJES$PAP: not used for CSM install
EJES$PDL: copied and customized
```

Some are transformed and renamed

MVS60 ----- PFI Installation Utility ----- V5R3

Command ==> \_

CSM

CA Chorus Software Manager

To use CA Chorus Software Manager to perform the SMP/E install, supply the following parameters and press the ENTER key. The Java and SMP/E class paths are needed only if ICSF is not available.

CA Chorus Software Manager Install Parameters:

```
Output path ==> /u/edjx1
Work path   ==> /tmp/edjx1/EJES530
Java path   ==> /usr/lpp/java/J6.0_64/
SMP/E path  ==> /usr/lpp/smp/classes
```

Press ENTER to create input to CA Chorus Software Manager.
Press the END key to continue without creating this file.

F1=Help F3=Exit F12=Cancel

MA D

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24/006

```
-----</FILEDEF>
-----<FILEDEF name="EDJX1.SMPE530.$QPX1L10.F2"
      archid="QPX1L10.F2" type="SMPRELF"
      description="Phoenix TP Monitor load modules">
-----</FILEDEF>
-----</GIMZIP>
GIM47500I  ARCHIVE PROCESSING IS COMPLETE FOR EDJX1.EJESPF1.CSM.SMPMCS.
GIM47500I  ARCHIVE PROCESSING IS COMPLETE FOR EDJX1.SMPE530.$QEJ5300.F1.
GIM47500I  ARCHIVE PROCESSING IS COMPLETE FOR EDJX1.SMPE530.$QEJ5300.F2.
GIM47500I  ARCHIVE PROCESSING IS COMPLETE FOR EDJX1.SMPE530.$ZEJ53U0.F1.
GIM47500I  ARCHIVE PROCESSING IS COMPLETE FOR EDJX1.SMPE530.$ZEJ53U0.F2.
GIM47500I  ARCHIVE PROCESSING IS COMPLETE FOR EDJX1.SMPE530.$ZEJ5300.F1.
GIM47500I  ARCHIVE
GIM47500I  ARCHIVE
GIM47500I  ARCHIVE
GIM47500I  ARCHIVE
GIM47500I  ARCHIVE
PAGE 0002
```

```
PSI.DEPLOYMENT.XML
PSI.EULA.TXT
PSI.PACKAGE.XML
PSI.README.TXT
PSI.SMPEINSTALL.XML
PSI.SMPESETUP.XML
Creating install package...
EJES530/
EJES530/PSI.DATASET.XML
EJES530/SMPPTFIN/
EJES530/SMPPTFIN/S0001.EDJX1.EJESPF1.CSM.SMPMCS.pax.Z
EJES530/SMPRELF/
```

MVS60 ----- PFI Installation Utility ----- V5R3

Command ===> \_

Congratulations!

You have completed all of the early installation steps!

You should now be ready to use CA Chorus Software Manager to install (E)JES. Please continue with Chapter 7. Install (E)JES Using CA Chorus Software Manager in (E)JES V5R3.0 Installation to perform the remainder of the product installation.

A copy of your customization library in NETDATA format has been included with the CSM package, making it available for post-installation tasks if you install on another system. Use member EJES\$CSX to retrieve this data.

F1=Help F3=Exit F12=Cancel

MA D

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24/006



Firefox CA Chorus™ Software Manager - Add Pr...

CA Chorus™ Software Manager edjxadm

Software Status Products SMP/E Environments Deployments

Search Vendor

Search Products

Search Products

Actions

Update Show List Add Product Install External Package Add CA Update Show History

Filter

**Add Product**

Specify the name, release, and gen level of the product, and click OK. The product will be added to the product list.

Vendor\*: PSI

Product\*: (E)JES

Release\*: 5.3

Gen Level: 0

OK Cancel Help

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Firefox CA Chorus™ Software Manager - swcat...

CA Chorus™ Software Manager edjxadm

Add External Package

Enter the path to the package for 0.

Type of Input Source

UNIX File  FTP File

UNIX Path\*: /u/edjxadm/EJES530.pax.Z

OK Cancel Help

Products

- PSI
  - (E)JES
    - 5.3
      - 0

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Firefox CA Chorus™ Software Manager - Main ...

CA Chorus™ Software Manager edjxadm

Products Deployments Configurations System Registry Tasks Settings

Products > PSI > (E)JES > 5.3 > 0

Base Install Packages Add External Package

Show: All

Select and: Download Show All

Select	Name	Last Modified	Type	Download Status	Size	Release/Gen Level	Actions
<input type="checkbox"/>	EJES530.pax.Z	Mar 11, 2013	Base Install	Yes	30 MB		Install Delete

Selected 0 of 1.

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Search In: Products

The product was updated in the window.

Add External Maintenance

Enter the path to the maintenance for (E)JES/5.3 - Use the asterisk (\*) for PDS and PDSE members.

Type of Input Source

Data Set  UNIX File  FTP File

Data Set Name\*: EDJXADM.SMPE530.INSTALL(UMODLIC)

OK Cancel Help

Available Products

- Products
  - PSI
    - (E)JES
      - 5.3

Select and: Update Working Set

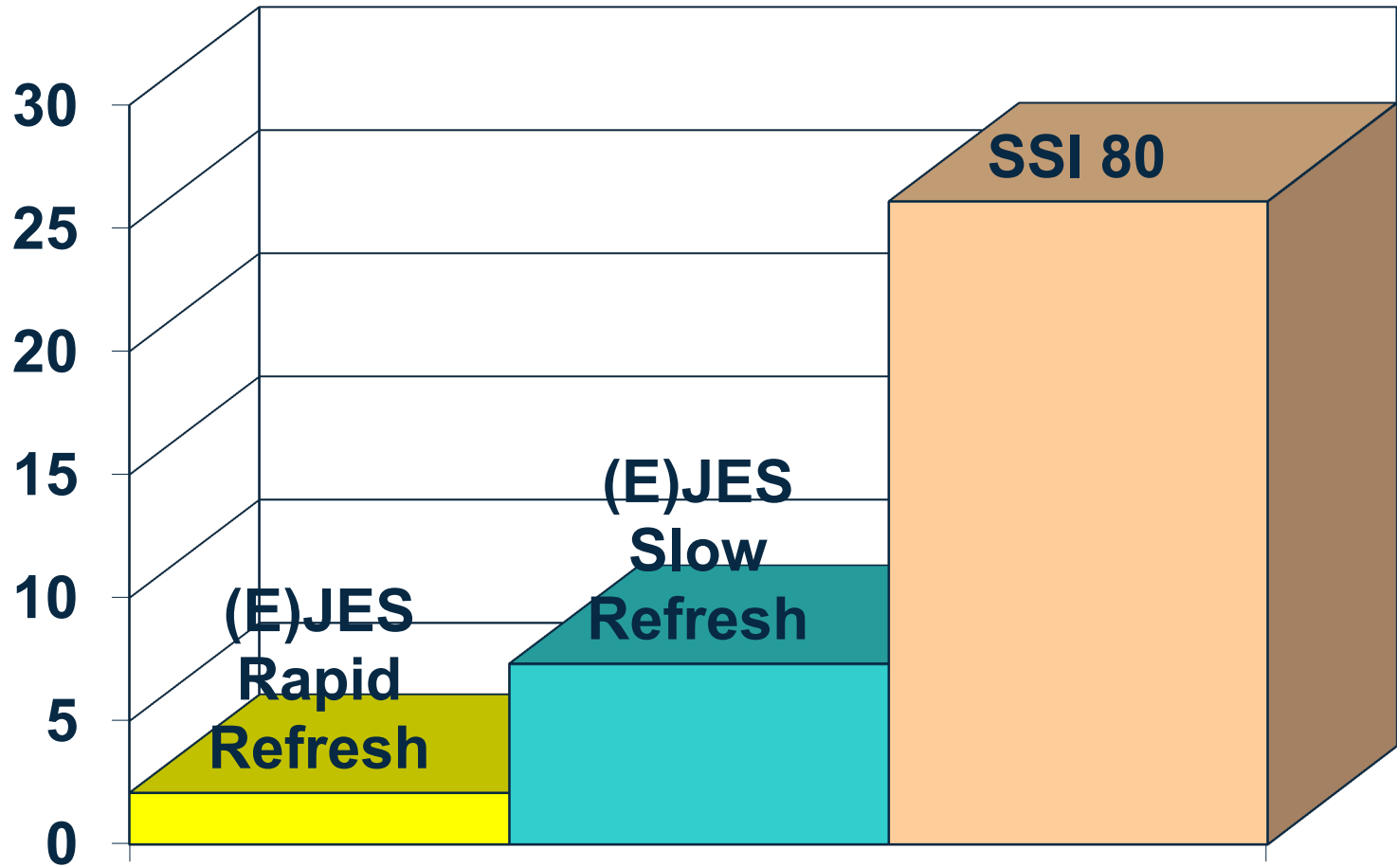
Select

Selected 1 of 1.

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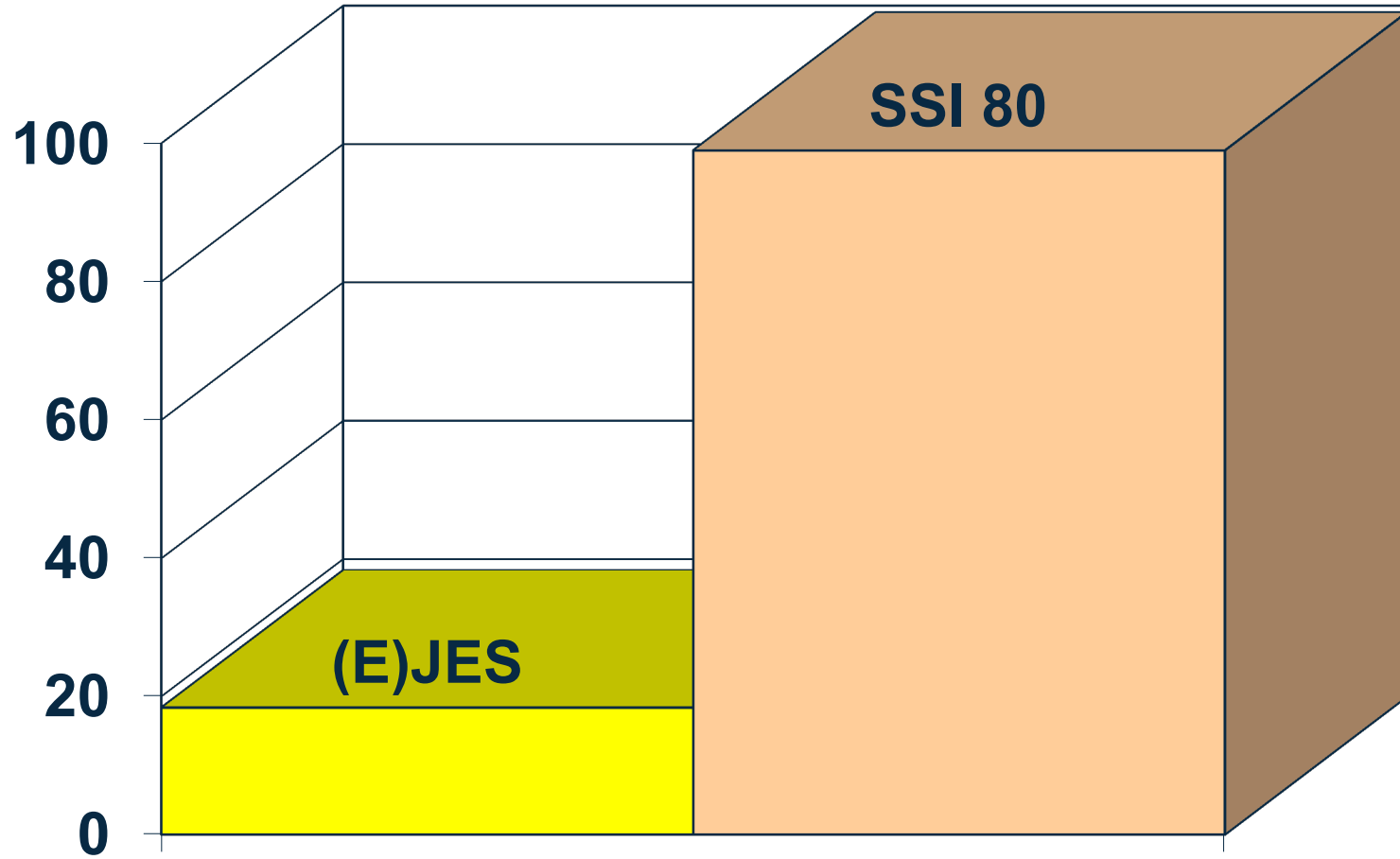
# CPU Performance Benchmark Results

# JES2 CPU Performance Benchmark: Between 3.5x and 12.5x



**JES2 Held Output Display**

# JES3 CPU Performance Benchmark: 5.4x



**JES3 Held Output Display**

# Performance Differences in Perspective

- The benchmark savings occur using apples-to-apples measurements with TCB-mode only, GCP execution.
- Customers with zIIP processor(s) will gain additional benefits.
- Not only does (E)JES use far less CPU than any SSI 80 exploiter, but nearly all of it is eligible for redirection to zIIP.
- In the case of SSI 80, none of the CPU resources are eligible for zIIP redirection—even for customers with zIIP processors available.

JobName	CPU-Time	ACPU-Time	zIIP-Time	GCP-Time	zICP-Time	
-----/-----	-----	-----	-----	-----	-----	
JOEUSER	00:06.15	00:12.20	00:05.94	00:05.94	00:00.00	BEFORE
JOEUSER	00:07.16	00:29.12	00:21.71	00:06.91	00:00.00	AFTER
<b>JOEUSER</b>	<b>00:01.01</b>	<b>00:16.92</b>	<b>00:15.77</b>	<b>00:00.97</b>	<b>00:00.00</b>	<b>DIFFERENCE</b>

**94%**  
**Offload**



# Questions?



Complete your session evaluations online at [www.SHARE.org/Seattle-Eval](http://www.SHARE.org/Seattle-Eval)