

(E)JES[®]

Release Information

Version 4, Release 7.0
September 2009
0815-001-RI47



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(E)JES RELEASE INFORMATION

This document summarizes the functional and operational changes in (E)JES Version 4, Release 7.0 and all prior supported releases. As of this writing, (E)JES Version 4, Release 3.0 is the oldest supported release.

Each section summarizes the functional and operational changes between the indicated release and the prior release. Operational changes made available through the maintenance process are indicated and the corresponding service item and PTF numbers are referenced.

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Related Documents

(E)JES Installation

(E)JES Messages

(E)JES Reference

(E)JES Security

All (E)JES documentation is available as IBM BookManager™ softcopy books, Adobe® PDF documents, and traditional hardcopy books.

Compatibility Matrix

[Table 1](#) contains a compatibility matrix showing which (E)JES releases are supported after September 2009 and the operating system and JES releases with which they are compatible. While still supported, all (E)JES releases prior to V4R5 have been stabilized. V4R5 is scheduled to be stabilized after March 2010.

Table 1 - (E)JES Compatibility Matrix

Operating System	(E)JES V4R7	(E)JES V4R6	(E)JES V4R5	(E)JES V4R4	(E)JES V4R3
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	JES2 JES3
z/OS 1.7	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3
z/OS 1.6	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3

(E)JES Release Information

Operating System	(E)JES V4R7	(E)JES V4R6	(E)JES V4R5	(E)JES V4R4	(E)JES V4R3
z/OS 1.5	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3
z/OS 1.4	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3
z/OS 1.3		JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3
z/OS 1.2		JES2 JES3	JES2 JES3	JES2 JES3	JES2 JES3
z/OS 1.1		-	JES3	JES3	JES3
OS/390 V2R10		-	JES3	JES3	JES3
OS/390 V2R9		-	-	JES3	JES3
OS/390 V2R8		-	-	JES3	JES3
OS/390 V2R7		-	-	-	JES3
OS/390 V2R6		-	-	-	JES3
OS/390 V2R5		-	-	-	JES3

Note: This matrix is for informational purposes only. *The appearance of any back-level z/OS or OS/390 releases does not in any way imply those releases are currently supported or maintained by IBM.*

Each new (E)JES release provides compatibility with the most recent offerings from IBM as well as compatibility with all supported prior releases.

An (E)JES release should never be assumed compatible with any IBM JES offering not appearing in the compatibility matrix at the time that (E)JES release becomes generally available. If a subsequent matrix indicates the release is compatible with a newer JES, that statement of support assumes all available maintenance has been applied.

To obtain a current copy of the compatibility matrix, consult our Internet web site at <http://www.phoenixsoftware.com/ejes.htm> or contact us or one of our authorized agents worldwide by mail, e-mail, telephone, or fax.

Changes for Version 4, Release 7.0

z/OS 1.11 Support

Support for New JES2 JOE Control Blocks

z/OS 1.11 JES2 significantly changes the way JOEs are represented in the JES2 checkpoint. This (E)JES release provides support for this new organization of JES2 control blocks.

Tabular Displays

Block Line Commands

To maintain consistency with new z/OS 1.10 ISPF behaviors, block line commands are now supported. The start of the command block is denoted by two slash characters followed by the line command to be issued (if any). The end of the block is denoted by two slash characters followed by a blank.

For example, you can cancel all jobs shown on the STATUS display by typing **//C** into the **Cmd** column of the first row, scrolling down to the bottom of the display, typing **//** into the **Cmd** column of the last row, and pressing <Enter> .

Note: Block line commands are essentially an alternate syntax for requesting block propagation—a feature (E)JES has had since inception. A block propagation request requires fewer keystrokes.

Activity Display

Normalized zAAP and zIIP Time

Accumulated address space zAAP and zIIP time is now normalized.

This change impacts customers with sub-capacity System z models.

Normalized values show the amount of CPU that would have been accumulated if the same work had run on a standard CP.

This allows you to make valid (“apples to apples”) comparisons of accumulated time on CP, zAAP, and zIIP.

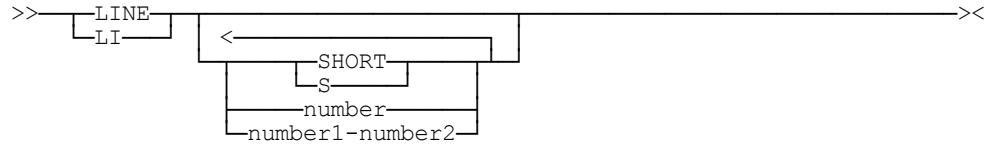
Promotion Due to Resource Contention

The following column was added to indicate an address space is currently promoted due to chronic resource contention.

Default Title	Description	Overtime
Prom	Promoted address space flag.	No

JES2 Lines Display

New invocation keywords have been added to the JES2 Lines display. The syntax of the **LINE** command is now:



SHORT	Do not display transmitters/receivers
number	Show specific line
number1-number2	Show a range of lines

Up to four (4) number/range values may be specified. If no selection keywords are specified, all devices are shown.

JES2 Spool Offload Display (New)

A new JES2 Spool Offload display has been added. This display helps you manage spool offload devices in the JESplex.

To access the new display, use the new **OFFLOAD** command or select **Offloaders** from the **Devices** pull-down menu under ISPF.

The functioning of this display is similar to that of the existing JES2 Lines display.

Optional Cancel/Purge for Executing Jobs

A new capability has been added to allow users to optionally allow or disallow cancel/purge requests for executing jobs.

Disabling Active Job Cancel/Purge can help you avoid accidentally canceling an executing job when cleaning up your queues. For example, if you use block repeat to cancel/purge a large number of jobs on the Status display, you might not notice that one of them is executing.

This facility is controlled using any of:

- The ACTPURGE command
- The Active Job Cancel/Purge setting on the Options panel
- The Set active job cancel/purge option on the Options pull-down under ISPF

If not explicitly enabled by an end user, Active Job Cancel/Purge is set to the safest setting: disabled. (By similar reasoning, Confirm Cancel is always enabled by default.) This setting represents a potentially surprising change in behavior for existing customers. Some customers will undoubtedly embrace the enhancement. Others might prefer no change to existing behaviors, even if the new way is demonstrably beneficial.

To remain 100 percent upward compatible, you must explicitly enable Active Job Cancel/Purge in EJESUX03 if it has not been set. This has been added as one of the pre-coded popular user exit modifications in member EJES\$X03.

Browsers

JCL Browser

Until recently, JES3 never kept stream input delimiters. So, the JCL Browser assumed all JES3 stream input data sets ended with a delimiter record. This assumption did not cause a problem. But, unconditionally inserting delimiters could sometimes produce a job stream that differed slightly from the original.

z/OS 1.10 JES3 now keeps track of stream input delimiters in so-called "spool pointer records" in JESJCLIN. (These records are 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 when reconstructing a job's original JCL image.

Customer Application Infrastructure

The Customer Application Infrastructure (CAI) is an integrated framework for TSO/ISPF that allows REXX-based customer and end user plug-in applications to be authored to customize and/or extend the capabilities of (E)JES for local environments.

The CAI is a formal rewrite in REXX of the CLIST-based Extract Post-Processor Package available in prior releases. When possible, the new functions leverage the EJESREXX application programming interface.

Though its parts are still delivered in SEJESAMP, the Extract Post-Processor Package has been deprecated. However, the CAI has been engineered so that the same call sequence, used to call Extract-Post Processors, is still used when invoking CAI plug-in applications—allowing existing Extract Post-Processors to be called by the CAI. This preserves customer investments in these tools.

Because REXX execs are now integrated with (E)JES, a new target library and distribution library have been introduced to hold them. The DDDEF low level qualifier names of these libraries are SEJEEXEC and AEJEEXEC respectively.

Note: Although (E)JES supports z/OS 1.4 and higher, some of the distributed CAI plug-ins depend upon JES providing Spool Data Set Browse functionality. This capability is provided by all supported JES2 releases. However, JES3 does not provide SDSB until z/OS 1.10 JES3. Customers on back-level JES3 releases might use the deprecated Extract Post-Processors as a workaround until they upgrade to at least z/OS 1.10 JES3.

Extract Facility Enhancements

Copy Job Information for Sysout Extract

A new Copy Job info YES or NO parameter has been added to the Print Extract Parameters panel. This parameter controls whether source job information should be made available to JES allocation.

NO specifies that a standard allocation be performed. This is the default value.

YES specifies that the source job name and job ID are to be made available to JES when the sysout data set is allocated. JES will retain this identification information and pass it to the system or installation routines that build header pages when printing occurs.

Security Enhancements

Internal Security Changes

The following profile keywords were added to internal security in support of the new JES2 Spool Offload display:

Keywords	Description
OFFLOAD OFFLOAD=	OFFLOAD appears under DISPLAY or NODISPLAY lists for parameterized internal security. OFFLOAD= is used with the EJESUM2 macro for macro-based internal security. They control access to the Spool Offload display.
[NO]MOFFLOAD MOFFLOAD=	These keywords control a user's ability to make changes on the Spool Offload display.

A new OFFLOAD (SOFLD) column list definition has been added to allow the columns on the Spool Offload display to be customized via internal security.

External Security Changes

JES2 Spool Offload Support

The following SAF resources were added to external security in support of the new JES2 Spool Offload display:

Resource	Class	What's Protected
EJESCMD.OPERDISP.OFFLOAD. <i>node</i>	EJES	Access to the JES2 Spool Offload display.
EJESATTR.OFFLOAD	EJES	Updates to resources on the JES2 Spool Offload display.
EJESOFF. <i>device.jesx</i>	EJES	Offload devices by name.

Protection for EJESPSEC Command

In prior releases, PROGRAM security was used to secure the EJESPSEC command.

The new **EJES.EJESPSEC** SAF resource in the FACILITY class has been introduced in this release to provide better granularity when securing use of this command.

A QUERY operation requires READ access. The UPDATE and SWITCH operations require CONTROL access. No special access is required for a CHECK operation.

Performance Enhancements

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. HPRs have a shorter instruction path length than previous coding techniques and avoid delays in modern processor instruction pipelines.

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.)

Beginning with this release, 100% of the eligible routines for both JESes now use the HPR facility.

Improved zIIP Eligibility for JES2 Processing Routines

In prior releases, JES2 processing routines did not enjoy the same high level of eligibility for zIIP redirection as did their JES3 counterparts.

Beginning with this release, nearly all JES2 processing routines are eligible for zIIP redirection.

This change should provide additional cost savings for all JES2 customers with zIIP engines, no matter what kind of processor they own.

JES2 customers with sub-capacity models of System z processors should see better (E)JES performance because zIIP engines always run at full speed. This behavior differs from that of general CPs which are knee-capped on sub-capacity models.

High-Performance I/O Channel Programs

Prior to this release, the (E)JES STARTIO Driver used “ordinary” ECKD channel programs. These channel programs performed much better than older, CKD channel programs. But, there was still significant FICON protocol overhead.

In this release, the I/O channel programs for accessing SPOOL, the CAS server global data set (for JES3), and all TP Monitor proprietary files use much higher-performing channel programs. The intent is to reduce FICON protocol overhead to a minimum.

- If High Performance FICON (zHPF) is available, (E)JES V4R7 will use Transport Mode channel programs for SPOOL I/O. Refer to the following IBM Techdocs articles for more information on the performance benefits of High Performance FICON:

- PRS3658: High Performance FICON (zHPF) for System z
<http://www.ibm.com/support/techdocs/atmastr.nsf/WebIndex/PRS3658>
- FQ127122: zHPF FAQ Frequently Asked Questions
<http://www.ibm.com/support/techdocs/atmastr.nsf/WebIndex/FQ127122>
- When zHPF is not available, or when a CAS server performs I/O against the global data set, (E)JES V4R7 will use the highest-performing Command Mode channel programs currently available. These channel programs perform I/O *significantly* faster than the “ordinary” channel programs used in prior releases.

As part of this enhancement, support for devices that do not support at least ECKD channel programs has been removed. CKD-only devices are no longer supported.

User Exit Enhancements

Job Owner “Quick Access” Field

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

ISPF Variable	Program 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. Variable EJESJOB0 (the last line in the table) is new with this release:

ISPF Variable	Program Variable	Contains
EJESJOBN	xxxJOBNM	Job name
EJESJOBI	xxxJOBID	Job Id
EJESJOBT	xxxJOBTP	Job type
-	xxxJOBNO	Job number
EJESJOB0	xxxJOBOW	Job owner

Pre-Coded USERMODs for Popular Updates

USERMODs for the most popular user exit updates are now provided. They are:

Member	User Exit	Modification
EJES\$X03	EJESUX03	Maintain pre-V4R7 Active Job Cancel/Purge behavior Set STATUS as a first-time default command
EJES\$X04	EJESUX04	Ensure at least one of Job Name, User, or Owner is filtered
EJES\$X10	EJESUX10	Activate a unique console name for each ISPF logical screen

Enhancements Affecting the CICS Environment

EJESCICI has been enhanced to use the CICS OPENAPI. It is now a so-called “thread-safe” program. This means, for properly configured CICS environments, EJESCICI will now run under an Open TCB instead of the normal Quasi-Reentrant (QR) TCB.

The primary benefit is that all task switching, needed to avoid implied WAITs in the CICS environment, is eliminated. An Open TCB in the CICS environment can WAIT.

In addition, all CICS-related processing and storage is now AMODE(31).

Beginning with this release, module EJESCICS must be LPA resident for system integrity reasons. This means LPA=YES must be specified in the SIT (CICS startup) parameters or (E)JES will not work.

The delivered CICS RDO DEFINE PROGRAM statements have been updated as required to specify CONCURRENCY(THREADSAFE) and USALPACOPY(YES) where required.

The CICS macro-based definitions are no longer distributed.

TP Monitor Enhancements

REXX Logon Exit Enabled

The TP Monitor supports a LOGON “exit” written in REXX. Until now, this capability has been unavailable to (E)JES customers. Beginning with this release, (E)JES customers will be allowed 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 uses of REXX under the TP Monitor might 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 or issue a command to invoke (E)JES!

This capability is enabled by specifying **LOGON_EXIT(YES)** in the TP Monitor configuration stream. Member EJESVCON is being delivered with **LOGON_EXIT(NO)** to maintain the original behavior unless changed by the installation.

Miscellaneous

EJESCLDF Rewritten in REXX

EJESCLDF invokes (E)JES using ISPF LIBDEF allocations. This CLIST has been rewritten as a REXX exec.

Because REXX parameter processing is different from CLIST, the way in which parameters are passed to EJESCLDF from an ISPF panel (or command) has been changed in an incompatible way.

Removal of EJESBAT4 Batch Sample

The EJESBAT4 batch sample was the original method for processing JES3 JESJCLIN, merging stream input, and editing under ISPF. It was traditionally invoked by EJESUX08 when the **SUB** line command was issued.

Some years later, the Extract Post-Processor package was introduced. The **.J** command invoked the **EJES#CJ** post-processor to perform this function. EJES#CJ was more sophisticated than EJESBAT4 and eventually was enhanced to use the JCL Browser as its input source.

Currently, the **Jxx** line commands (e.g., **JV**) reconstruct a job without using external processors of any kind.

While of some historical interest, the EJESBAT4 CLIST is no longer worth maintaining. It has been removed in this release.

Changes for Version 4, Release 6.0

z/OS 1.10 Support

Extended Address Volumes

As of this writing, none of the data sets needed by (E)JES or the Phoenix TP Monitor can reside outside the track-managed space on an EAV.

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.

Spool Data Set Browse for JES3

In the prior release, support for allocating for JES spool data set browse was added. The **SA** and **SF** line commands on some displays requested allocation or freeing of the indicated spool data set.

JES3 support was removed (“capped”) during early testing because some users found the concept of a request that would always fail to be confusing.

In this release, that code is now restored (“uncapped”) and SDSB allocation requests are once again sent to JES3.

No release checking occurs. The SDSB allocation request is sent no matter which JES3 release is in use. Users on back-level JES3 releases will receive a standard DYNALLOC error code.

Tabular Displays

Server System Names Filter

In prior releases, peer-to-peer data from remote servers was retrieved from any system with an active CAS server.

In this release, the new **SYSNAME** command is provided to allow the establishment of a mask to limit the system names from which this data is gathered.

Unlike other masks used for filtering, an all-blank SYSNAME mask does not mean no filtering is to take place. Rather, it means that only information from the current system is to be obtained.

This mask affects only the subset of displays with data provided by peer-to-peer remote servers. For example, remote system information on the Activity display is provided in this way. So, the SYSNAME command will affect from which systems that data is gathered. On the other hand, information on the Job Status display is provided by JES. It is unaffected by this setting.

Implied Time Sorting when Sorting by Date

Starting with this release, when both date and time columns representing a single event (e.g., when a job was queued) are present on a display, sorting on the date column automatically uses the time column as a key secondary to the date column. That is, you are automatically sorting by date and time when you sort by 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.

DSNUM Column Sorting on Data Set Displays

The DSNUM column consists of the letter **D** followed by the character representation of a hex value. EBCDIC collating sequence puts all letters before all numbers: **D000000F** (x'C4F0F0F0F0F0C6') sorts lower than **D0000001** (x'C4F0F0F0F0F0F1'). Thus, sorting on DSNUM did not result in data sets sorted in the order in which they were created by JES – even though that was usually the intent of requesting such a sort.

Beginning with this release, sorting of DSNUM is performed against the binary representation of the hexadecimal portion of the value.

This change in behavior does not affect JES2 data set displays because JES2 uses only decimal values for the data set number.

Executing Jobs on Input Display

In the prior release, executing jobs were removed from the Input display. In this release, the display of executing jobs has been restored. However, a new invocation keyword has been added to easily remove them.

Contents of Origin Node Column

In prior releases, (E)JES always reported raw control block values for the origin node.

JES3 will return – to an SSI 80 (Extended Status) caller – different values for this field depending on the type of job.

Beginning in this release, (E)JES will report the same values that JES3 returns.

Installation Line Command Support

Previous releases allowed installations to support their own line commands on most of the popular tabular displays. (This is done by calling EJESUX08 at appropriate points in processing.)

(E)JES V4R6 extends this capability to all tabular displays.

The displays that have been added to complete the list are:

- DJC
- Job Classes
- JESplex
- Lines
- Nodes
- Resource Monitor
- Scheduling Environments
- Spool Partitions
- Spool Volumes
- System Requests

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
```

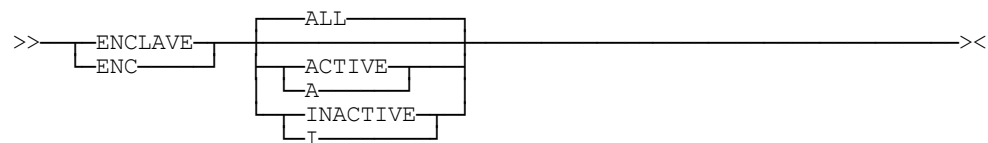
In this release, if only two operands are specified, the first is the column and the second is the comparison value. The comparison operator defaults to **EQ** and the Boolean operator defaults to **AND**. Therefore, you may now specify the following:

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

Enclaves Display

New invocation keywords are supported on the Enclaves display to allow initial filtering by the active/inactive state of the enclave.

The syntax of the ENCLAVE command is now:



Health Checker Display

Columns

The following columns were added:

Command	Function
D	Issue MVS command to display information about the message.

JES2 Activity Display

Line Commands

The following line commands were added:

Command	Function
H	Hold job.
R	Release job.
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES2 Data Set Status Display

Columns

The following columns were added:

Default Title	Description	Overtime
GrpName	Output group name	No
CrDate	Date output added to queue	No
CrTime	Time output added to queue	No

JES2 Hold Data Sets Display

Columns

The following column was added:

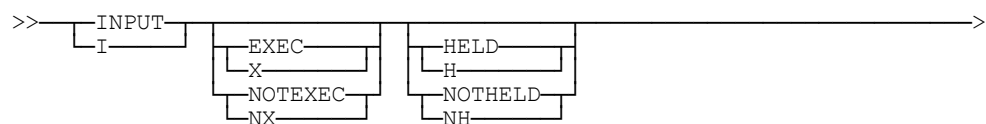
Default Title	Description	Overtime
GrpName	Output group name	No

JES2 Input Display

New Invocation Keywords

New invocation keywords allow you to filter the display to show only executing, not executing, held, and/or not held jobs respectively. These keywords must appear on the command line before any invocation filters.

The syntax of the INPUT command is now:



(E)JES Release Information

> _____<<
└─ Invocation Selection Criteria ─┘

Columns

The following column was added:

Default Title	Description	Overtime
SubGroup	Submitting security group	No

Line Commands

The following line command was added:

Command	Function
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES2 Job Status Display

Columns

The following column was added:

Default Title	Description	Overtime
SubGroup	Submitting security group	No

Line Commands

The following line command was added:

Command	Function
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES2 Nodes Display

Columns

The following column was added:

Default Title	Description	Overtime
Num	Node number	No

JES2 Output Data Sets Display

Columns

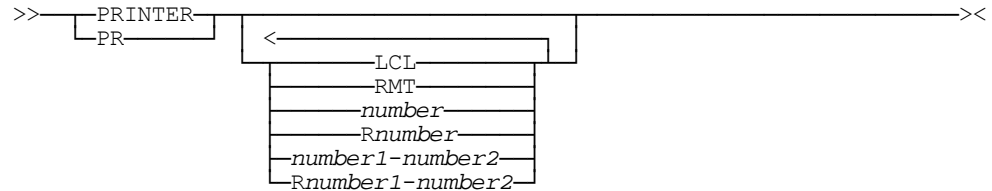
The following column was added:

Default Title	Description	Overtime
GrpName	Output group name	No

JES2 Printer/Punch Display

New invocation keywords are supported to allow initial filtering on the Printer/Punch display.

The syntax of the PRINTER command is now:



JES3 Activity Display

Line Commands

The following line commands were added:

Command	Function
H	Hold job.
R	Release job.
SA	Invoke Data Set Status display and allocate spool browse DDs for job.
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES3 Data Set Status Display

Columns

The following columns were added:

Default Title	Description	Overtime
CrDate	Date output added to queue	No
CrTime	Time output added to queue	No
BrowseDD	Spool Data Set Browse DD name	No

Line Commands

The following line commands were added:

Command	Function
SA	Allocate spool browse DD for data set
SF	Free spool browse DD for data set

JES3 DJC Jobs Display

Columns

The following columns were added:

Default Title	Description	Overtime
PrtDest	Default print destination	No
SubGroup	Submitting security group	No
Notify	Notify User ID	No

Line Commands

The following line commands were added:

Command	Function
SA	Invoke Data Set Status display and allocate spool browse DDs for job.
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES3 Hold Display

Columns

The following column was added:

Default Title	Description	Overtime
Notify	Notify User ID	No

Line Commands

The following line command was added:

Command	Function
SA	Invoke Data Set Status display and allocate spool browse DDs for job.

JES3 Hold Data Sets Display

Columns

The following column was added:

Default Title	Description	Overtime
BrowseDD	Spool Data Set Browse DD name	No

Line Commands

The following line commands were added:

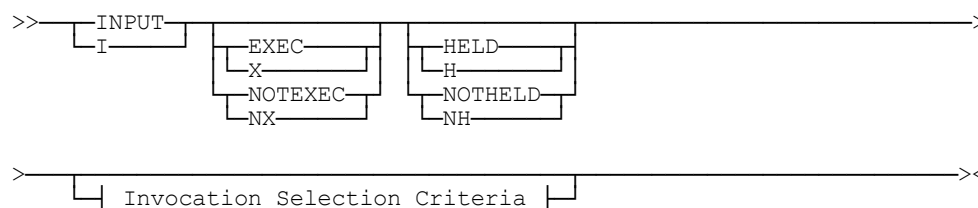
Command	Function
SA	Allocate spool browse DD for data set
SF	Free spool browse DD for data set

JES3 Input Display

New Invocation Keywords

New invocation keywords allow you to filter the display to show only executing, not executing, held, and/or not held jobs respectively. These keywords must appear on the command line before any invocation filters.

The syntax of the INPUT command is now:



Columns

The following columns were added:

Default Title	Description	Overtime
PrtDest	Default print destination	No
SubGroup	Submitting security group	No
Notify	Notify User ID	No

Line Commands

The following line commands were added:

Command	Function
DE	Issue JES3 command to display line, page, record, and card counts.
DM	Issue JES3 command to display the mains on which the job is eligible to run.
DMA	Issue JES3 command to display MDS allocate queue information.
DME	Issue JES3 command to display MDS error queue information.
DMR	Issue JES3 command to display MDS restart queue information.
DMSS	Issue JES3 command to display MDS system select queue information.
DMSV	Issue JES3 command to display MDS system verify queue information.
DMU	Issue JES3 command to display MDS unavailable volumes information.
DSD	Issue JES3 command to display DD names of all spool data sets that contain data.
DSH	Issue JES3 command to display DD names of data sets in spool hold status that contain data
DSP	Issue JES3 command to display spool partition names.
DX	Issue JES3 command to display extended job information.
SA	Invoke Data Set Status display and allocate spool browse DDs for job.
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES3 Job Status Display

Columns

The following columns were added:

Default Title	Description	Overtime
PrtDest	Default print destination	No
SubGroup	Submitting security group	No
Notify	Notify User ID	No

Line Commands

The following line commands were added:

Command	Function
DE	Issue JES3 command to display line, page, record, and card counts.
DM	Issue JES3 command to display the mains on which the job is eligible to run.
DMA	Issue JES3 command to display MDS allocate queue information.
DME	Issue JES3 command to display MDS error queue information.
DMR	Issue JES3 command to display MDS restart queue information.
DMSS	Issue JES3 command to display MDS system select queue information.
DMSV	Issue JES3 command to display MDS system verify queue information.
DMU	Issue JES3 command to display MDS unavailable volumes information.
DSD	Issue JES3 command to display DD names of all spool data sets that contain data.
DSH	Issue JES3 command to display DD names of data sets in spool hold status that contain data.
DSP	Issue JES3 command to display spool partition names.
DX	Issue JES3 command to display extended job information.
SA	Invoke Data Set Status display and allocate spool browse DDs for job.
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES3 Job Zero Data Sets Display

Columns

The following column was added:

Default Title	Description	Overtime
BrowseDD	Spool Data Set Browse DD name	No

Line Commands

The following line commands were added:

Command	Function
SA	Allocate spool browse DD for data set
SF	Free spool browse DD for data set

JES3 MDS Display

Columns

The following column was added:

Default Title	Description	Overtime
PrtDest	Default print destination	No

Line Commands

The following line commands were added:

Command	Function
SA	Invoke Data Set Status display and allocate spool browse DDs for job.
SJA	Invoke Data Set Status display, allocate JESJCLIN data set, and merge stream input.

JES3 NJE Display

Line Commands

The following line command was added:

Command	Function
SA	Invoke Data Set Status display and allocate spool browse DDs for job.

JES3 NJE Data Sets Display

Columns

The following column was added:

Default Title	Description	Overtime
BrowseDD	Spool Data Set Browse DD name	No

Line Commands

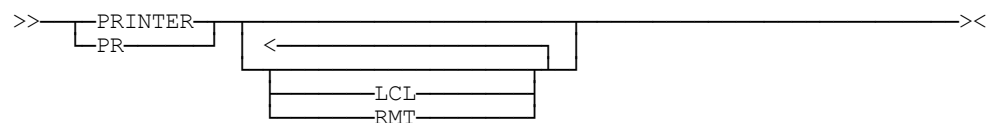
The following line commands were added:

Command	Function
SA	Allocate spool browse DD for data set
SF	Free spool browse DD for data set

JES3 Printer/Punch Display

New invocation keywords are supported to allow initial filtering on the Printer/Punch display.

The syntax of the PRINTER command is now:



JES3 Writer Display

Columns

The following column was added:

Default Title	Description	Overtime
Notify	Notify User ID	No

Line Commands

The following line command was added:

Command	Function
SA	Invoke Data Set Status display and allocate spool browse DDs for job.

JES3 Writer Data Sets Display

Columns

The following column was added:

Default Title	Description	Overtime
BrowseDD	Spool Data Set Browse DD name	No

Line Commands

The following line commands were added:

Command	Function
SA	Allocate spool browse DD for data set
SF	Free spool browse DD for data set

Browsers

User Log Browser

The ULOG command now allows you to specify the name of the EMCS console to be started. Previously, this specification was available only on the CONSOLE command.

API Enhancements

V4R5 introduced a new Application Programming Interface. The new API can be called from programming languages such as Assembler, COBOL, PL/I, and C.

At the same time, a new REXX API was developed – implemented using the assembler language API – to provide a powerful (E)JES interface to users of the REXX language.

These two interfaces are commonly referred to as the API and REXX API. Highlighted improvements to these interfaces are described in the topics that follow.

Enumeration

In the prior release, the concept of enumeration was implemented only for the REXX API. Enumeration allows you to populate variable “arrays” with information from some or all of the rows/lines available on a scrollable display. The implementation called for the REXX API to call the API for each row to be enumerated. This did not perform well for large numbers of rows.

In this release, the concept of enumeration is implemented in the API itself. The caller can request that some or all of the rows/lines on the display be captured into virtual storage arrays. Some metadata (e.g., job information) is also captured.

Performance of the REXX API is dramatically improved. It now uses this new API function to provide enumeration to REXX execs.

New Information Arrays

The API now surfaces all lines in the User Log via an array. This information is available even when the current display is not the ULOG.

The API now surfaces settings via the following three arrays:

- The filter settings array
- The options settings array
- The view settings array

The API now surfaces DD and data set names allocated in response to an **SA** or **SJA** command.

Row Key

Every row on a tabular display is now assigned a variable-length row key. The row key can be used on a subsequent **LOCATE KEY=** command to reposition to the row.

The row key is valid across a refresh of the display or from one execution to another.

System Command Options

New API invocation options allow you to always use the internal system console for all commands issued or to cause all commands to wait the full command response delay when using the EMCS console.

Simplified REXX API Return Codes

Previously, the API reason code was merged with the API return code before being surfaced to the REXX exec. It was difficult for REXX programmers to interrogate these composite values.

In this release, the reason code is no longer merged. Instead, it is now surfaced by a new **EJES_RsnCode** REXX variable.

The possible return codes are:

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 EJES_RsnCode .

Support for Running REXX ISFCALLS Applications

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.

This release 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 describing the use of the ISFCALLS interface.

The authors of the redbook provided “additional materials” in the form of sample REXX execs and associated programs, written in COBOL and Java, to help demonstrate how the ISFCALLS interface might be used. As of this writing, these additional materials are available from the IBM Redbooks Web site at <http://www.redbooks.ibm.com/>. Select **Additional Materials** and open the directory that corresponds with the IBM Redbooks form number, SG24-7419.

These IBM-provided sample REXX execs operate as expected 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.

Security Improvements

Minimum REFRESH Interval

In previous releases, a user that was authorized to issue the REFRESH command, to obtain automatic, timed screen updates, could specify any interval from 1-300 seconds.

Beginning with this release, the internal security profile now specifies the minimum allowed refresh interval. In addition, the REFRESH keyword is no longer set by the [NO]DISPLAY keyword.

Internal Security Conversion Assistant

Several releases ago, parameterized internal security was introduced. The old macro-based internal security was deprecated. This presented a challenge for some customers because large macro-based configurations would take time to convert manually.

This release introduces the EJEWC2M2P REXX exec to help automate the process of migrating from macro-based to parameterized internal security definitions. For more

information, please refer to “Migrating From Existing Macro-based Definitions” in *(E)JES Security*.

Install Improvements

JCL Customization

In prior releases, the EJESIEM2 REXX exec copied sample JCL members from the SMP/E temporary library to your customization library and then invoked the EJESIEM1 ISPF EDIT macro to tailor the members in the customization library by changing the “keys” to values you provided by hand-editing EJESIEM1.

In this release, this hand-editing procedure has been removed. Instead, a new utility EJESJCLU allows you to set the various replacement values using a full-screen presentation under ISPF. After you specify the values, it copies the members and invokes itself as an ISPF edit macro to perform the updates.

SMP/E Improvements

Changed SYSLIB Concatenation for DLIB Zone

When our SMP/E procedure was being developed, there were two documented – and equally acceptable – philosophies for choosing the assembler SYSLIB concatenation in the DLIB zone. This excerpt from the previous incarnation of *(E)JES Installation* explains the philosophy we used:

You might notice that the SYSLIB concatenation in EJES\$DDF for the DLIB zone includes macro libraries from the target zone. This is because our SMP/E packaging philosophy treats the distribution libraries as backup libraries for SMP/E RESTORE processing. Thus, if you need to restore a module, the level returned to the system is the same as had been previously installed. For more information on using distribution libraries as backup libraries for SMP/E RESTORE processing, see the topic entitled, “How to Determine the Appropriate SYSLIB Concatenation” in SMP/E Reference.

The choice never mattered because (E)JES is not a source-maintained product. And, since z/OS ServerPac does not place z/OS target libraries on the DLIB zone’s SYSLIB concatenation, our process was confusing for some installers.

In this release, we’ve removed the target libraries from the SYSLIB concatenation in the DLIB zone and removed the above paragraph from the book.

Better Support for BUILDMCS

In previous releases, ASSEM entries were used to generate the system environment tables. Unfortunately, ASSEM entries are not owned by any FMID. This means:

- They are not deleted when FMIDs are deleted.
- They are not part of the information stored in the DLIB zone after ACCEPT and therefore not part of the information available to BUILDMCS.
- They must be recreated after reinstall using BUILDMCS output.

In this release, improved JCLIN techniques allow SRC, rather than MAC and ASSEM, entries are used to build the system environment tables. SRC entries work well with BUILD MCS. Now all SMP/E entries are copied over completely.

Alternate System Environment Tables

JES control blocks can change drastically between releases. Therefore, it is critically important that the System Environment Table used by (E)JES be generated using the system macros appropriate to the operating system and JES release on which it is running. A mismatch can cause unpredictable results.

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.)

Sometimes, it may be desirable to deploy (E)JES quickly into a test or “sandbox” environment 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.

To help facilitate these non-standard configurations, (E)JES now attempts to locate and use an alternate System Environment Table if the normal EJESENV module appears to be generated for other than the current operating system and JES release. (Note: The Phoenix TP Monitor does not do this alternate table search.) Prospective alternate table names are generated by appending the suffix 0-9 and A-Z to the default module name EJESENV.

Alternate System Environment Tables are not SMP/E maintained.

A new **EJESIENV** TSO/E command has been provided to help you inventory your System Environment Tables.

Miscellaneous

W/ for System Command

When a non-zero command response delay is present and an EMCS console has been activated, (E)JES waits for a command response before proceeding.

Normally, if messages are returned before the command response delay expires, (E)JES will return control to you and display those messages. Prefix the command with **W/** to wait the full amount of time specified via the command response delay even if some messages are returned sooner.

ENF Signals in CAS Server

In prior releases, CAS servers relied on user activity or timer-driven processing to “wake up” the server and detect changes in the status of the associated JES address space. This would sometimes cause delays during DSI or similar activities.

Beginning in this release, CAS servers listen for ENF signals that indicate a change in JES status. These signals will “wake up” the server even when there is no user activity.

PDF Documents Enabled for Advanced Linguistic Search

Beginning with z/OS 1.7, IBM's Library Server (both for z/OS and multi-platforms) began supporting specialized indexing of PDF documents that allows them to be searched using the powerful BookManager-like search capabilities.

(E)JES documentation in the form of PDF documents are now delivered in PDF 1.4 format (may be read using Adobe Acrobat® Reader 5.0 and higher), are screen optimized at 600 bpi resolution, and have been indexed to allow searching with IBM's Advanced Linguistic Search Plug-in for Adobe Acrobat Reader 7.0.5 and higher.

Changes for Version 4, Release 5.0

Exploitation of zIIP Specialty Engines

By exploiting zIIP specialty engines, available on IBM System z9 processors, Phoenix Software International extends its commitment to its customers by helping to reduce the costs associated with running (E)JES and other utility software.

(E)JES V4R5.0 is designed to automatically make a significant portion of execution resources eligible for offload to zIIP processors. This support is leveraged:

- In all end-user interactive host client environments except CICS
- In all batch scripts running in the background or foreground under TSO/E
- When calling the (E)JES Application Programming Interface (including when used internally by the (E)JES REXX API)
- In the JES3 global data examination routines within the CAS server on the JES3 global processor
- When running (E)JES as the Operating System Interface (OSI) within the workstation component server

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, agree that execution on zIIP specialty engines should not count toward the measurements used to assess capacity-based software license charges.

z/OS 1.9 Support

Adaptation to Architectural Change

ASN/LX reuse is supported by z/OS 1.9. If enabled, some software products might take advantage of this architectural enhancement. Any software that uses SSAR/PT instructions to access such address spaces will terminate abnormally.

All SSAR/PT instructions have been removed from (E)JES code effective with this release.

Tabular Displays

D (Display) Line Commands

This release implements one or more variants of **D** line commands on most tabular displays. These commands result in an MVS or JES command being issued to the system to perform a display/inquiry about the selected resource.

This function is protected using new internal keywords and/or external security resources. In addition, when external security is used for objects protected from update by varying, named resource profiles (e.g., jobs by JESSPOOL resources), READ access is required to the resource profile that protects the object.

Tabular Column Management

Column Names

In prior releases, column names were never surfaced to the user. They were used only by the administrator when defining customized column lists. In some cases, column titles may have been referred to as column names – even in this book. That was incorrect terminology.

Beginning with this release, column names are surfaced to end users in Settings Notices, on tabular utility dialogs, such as the Column Arrangement and Sort dialogs, and may be specified instead of column titles as operands to various primary commands.

The benefit to using column names instead of titles is most apparent when authoring a batch script or API exploiter program. Unlike column titles, column names cannot be changed by the installation. In addition, each column name is unique within a display whereas multiple columns might be grouped under a single column title, requiring subscript notation to distinguish them from one another.

Column names may be specified on any primary command that accepts column titles. Column names are searched first. If no match is found, the column titles are searched. Unlike column titles, which may be specified with the minimum number of characters required to make the specification unique, column names must be specified exactly.

Note: The column name appears before the title on tabular utility dialogs. This means that the LOCATE and SELECT primary commands will now search column names rather than column titles on the Column Arrangement, Column Selection, and Metafilters dialogs. We expect this upward-incompatible change to go mostly unnoticed.

Setting Column Size

In prior releases, the user could set the width of a tabular column to any value from 1 to 127.

Beginning with this release, the width of a tabular column may be set to zero. The result is that the column will not be shown on the display.

To restore the width of a column to its original (default) size, you may now specify DEFAULT (or D) as the width value on the ARRANGE command or in the Column Arrangement dialog.

Working with a Subset of Columns

The new HIDECOLS command allows you to quickly “hide” (set width to zero) one or more columns on the display.

The new SHOWCOLS command allows you to limit the columns displayed to a named subset. All columns not named will have their width set to zero. Named columns have their width set to the default value.

Limiting a tabular display to a subset of columns is especially useful when working with the REXX API. Limiting the number of columns in use reduces overhead by limiting the number of REXX variables that must be defined and populated.

Allocating Spool Browse DDs

You might have your own programs that wish to read JES spool data sets produced by a job using a standard DCB/ACB interface. You can now use (E)JES to allocate spool data sets (using the JES spool data set browse facility) for this purpose.

Data set displays provide the **SA** (spool allocate) line command, which allocates a standard DD to allow spool browse by any program. The allocation is performed using the FREE=CLOSE option. So, once your program closes the data set, it should be automatically de-allocated by the system. If your program never opens the data set, it will remain allocated until the address space terminates or it is explicitly freed. You can free an existing allocation using the **SF** (spool free) line command from a data set display.

The **SA** command, when issued from job- and group-related displays, provides a processing short cut. The appropriate subordinate data set display is invoked and the **SA** command is automatically issued against all of the displayed data sets.

Note: Current JES3 releases do not support spool data set browse allocation. IBM has expressed strong interest in adding this functionality in a future JES3 release. Originally, we chose to support the **SA** and **SF** commands – though undocumented – on JES3 displays in anticipation of this support. (The allocation simply failed with error code 0478 in JES3 environments.) This decision was reversed during early testing because some customers found it confusing. We will add the **SA** and **SF** commands for JES3 displays only after IBM supports spool data set browse allocations for JES3.

Additional Data from SMF Type 26 JES3 Networking Section

The following JES3-only fields, from the spool-resident JMR used to build SMF Type 26 records, are now shown on the DJC Jobs, Hold, Input, Job Status, and Output/Writer displays when **Level of Detail = MAX**.

Default Title	Description
NetNode	Node name from SMF Type 26 JES3 networking section
NetAcct	Account number from SMF Type 26 JES3 networking section
NetDept	Department number from SMF Type 26 JES3 networking section
NetBldg	Building number from SMF Type 26 JES3 networking section
NetRoom	Room number from SMF Type 26 JES3 networking section

Removal of Executing Jobs from Input Display

In prior releases, the Input display contained jobs in both execution and pre-execution status. The inclusion of executing jobs made it more difficult for some customers, particularly those in large environments, to see which jobs were not running.

By popular user request, we have elected to remove executing jobs from the Input display in this release.

Health Checker Exception Interval

z/OS 1.8 adds an exception interval value to checks managed by the Health Checker for z/OS component. This field has been added as an overtypeable column on the Health Checker display.

Browsers

Support for ISPF Viewers

Beginning with this release, (E)JES users in the ISPF environment have the ability to place (E)JES browser information into ISPF VIEW or ISPF BROWSE mode. (**Note:** This function is currently not supported for the OPERLOG browser.)

Placing a browser's data lines directly into ISPF VIEW shortcuts the process of using ISPF EDIT against the data set created by extracting data lines into a data set.

You can invoke an ISPF viewer from within a browser simply by issuing the **BROWSE** or **VIEW** primary command. Both of 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.

Some browsers are invoked using line commands from tabular displays. For example, the **B** line command is commonly used to invoke the spool data browser from a job, group, or data set tabular display. To use an ISPF viewer, you can invoke the browser in the normal manner and then issue the **BROWSE** or **VIEW** primary command as described in the previous paragraph. Or, you can simply append the character **B** or **V** to the line command used to invoke the browser. In this case, specifying **BB** or **BV** instead of simply **B** instructs (E)JES to place the browser's data into the appropriate ISPF viewer. When you exit the ISPF viewer, you return to the tabular display from which it was invoked.

Unlimited Data Sets

Prior releases had limits on the number of data sets that could be concatenated together for simultaneous browsing:

- The JES2 limit was 979 data sets.

- The JES3 limit was 1072 data sets.

If the limit was reached, data sets above the limit were not concatenated and msgEJES147 Dataset capacity reached was issued. The only way to view the remaining data sets was to select them from a data set level display.

In this release, a dynamically sized data set list is used. This new list is limited in size only by 31-bit virtual storage constraints in the home address space.

Enhanced Extract Command

The **EXTRACT** command for browsers has been incrementally enhanced over the years – a staged implementation that has resulted in some subtle behavioral inconsistencies across the various browsers.

In this release, the **EXTRACT** command syntax is enhanced and the behavior unified across all browsers.

The most noticeable difference is that there is no longer a requirement to specify the end line or count. The new default is to extract data through the end of the display.

JES2 Syslog Automatic Command Routing

When using the JES2 system log browser with this option enabled, **ROUTE sysname** – where **sysname** is the name of the system whose log is being browsed – is automatically prepended to any command that does not specify explicit command routing.

With this option disabled or when not using the JES2 system log browser, commands are issued exactly as entered. This means commands are routed based on the CMDSYS setting of the console from which they are issued. In the case of the EMCS console associated with the (E)JES ULOG, this is usually the system where your (E)JES session is running.

To set this option, issue the **LOGROUTE** command, set the associated field on the Options panel, or choose **Set log options...** from the **Options** pull-down menu under ISPF.

Application Programming Interfaces

This release introduces a new (E)JES Application Programming Interface. The API is similar to the batch interface in concept, but provides much more powerful programming capabilities. The API can be called from programming languages such as Assembler, COBOL, PL/I, and C. It supports ordinary problem state and privileged callers alike.

The (E)JES REXX API is a REXX language implementation of the (E)JES API. The interface is an unauthorized assembler language program that uses the programming interface described above to provide an interface to users of the REXX language.

Security Enhancements

Internal Security Changes

The following profile keywords were added to internal security:

Keywords	Description
[NO]DISPLCMD DISPLCMD=	Protects all D (display) line commands.

The DSSTAT, DSHOLD, DSOUT, and DSWTR column lists have been updated with a new BROWSEDD column, used to display the pool data set browse DD name.

The JES3 Input column list has been updated to remove any columns that were intended to impart information about executing jobs.

The JES3 DJC Jobs, Hold, Input, Job Status, and Output/Writer column lists have been updated with new columns from the SMF Type 26 JES3 Networking Section.

JES2 External Security Changes

The following SAF resources were added to JES2 external security:

Resource	Class	What's Protected
EJESATTR.DISPLCMD	EJES	All D (Display) line commands

In addition, the following existing IBM-defined SAF resources are now being checked when external security is activated.

Resource Names	Class	What's Protected
<i>jesx.DISPLAY.type</i>	OPERCMDS	Command to display job resources
<i>jesx.DISPLAY.typeOUT</i>	OPERCMDS	Command to display output resources
<i>jesx.DISPLAY.DEV</i>	OPERCMDS	Command to display information about devices
<i>jesx.DISPLAY.INITIATOR</i>	OPERCMDS	Command to display initiators
<i>jesx.DISPLAY.JOBCLASS</i>	OPERCMDS	Command to display job classes
<i>jesx.DISPLAY.LINE</i>	OPERCMDS	Command to display information about lines
<i>jesx.DISPLAY.NODE</i>	OPERCMDS	Command to display information about nodes
<i>jesx.DISPLAY.SPOOL</i>	OPERCMDS	Command to display information about spool volumes
<i>jesx.DISPLAY.SYS</i>	OPERCMDS	Command to display member information
MVS.DISPLAY.OMVS	OPERCMDS	Command to display z/OS UNIX processes
MVS.DISPLAY.WLM	OPERCMDS	Command to display WLM scheduling environments and resources

JES3 External Security Changes

The following SAF resources were added to JES3 external security:

Resource	Class	What's Protected
EJESATTR.DISPLCMD	EJES	All D (Display) line commands

In addition, the following existing IBM-defined SAF resources are now being checked when external security is activated.

Resource Names	Class	What's Protected
<i>jesx.CALL.DISPLAY</i>	OPERCMDS	Command to call the DISPLAY DSP
<i>jesx.DISPLAY.A</i>	OPERCMDS	Command to display information about active jobs
<i>jesx.DISPLAY.C</i>	OPERCMDS	Command to display information about job classes
<i>jesx.DISPLAY.D</i>	OPERCMDS	Command to display information about devices
<i>jesx.DISPLAY.F</i>	OPERCMDS	Command to display information about functional subsystems
<i>jesx.DISPLAY.G</i>	OPERCMDS	Command to display information about job class groups
<i>jesx.DISPLAY.JOB</i>	OPERCMDS	Command to display information about jobs
<i>jesx.DISPLAY.MAIN</i>	OPERCMDS	Command to display information about mains
<i>jesx.DISPLAY.N</i>	OPERCMDS	Command to display information about DJC networks
<i>jesx.DISPLAY.NJE</i>	OPERCMDS	Command to display information about nodes
<i>jesx.DISPLAY.Q</i>	OPERCMDS	Command to display information about the spool configuration
<i>jesx.DISPLAY.SC</i>	OPERCMDS	Command to display information about job sysout classes
<i>jesx.DISPLAY.U</i>	OPERCMDS	Command to display information about output
<i>MVS.DISPLAY.OMVS</i>	OPERCMDS	Command to display z/OS UNIX processes
<i>MVS.DISPLAY.WLM</i>	OPERCMDS	Command to display WLM scheduling environments and resources

User Exit Changes

In this release, some user exits might now be invoked in SRB mode. The services available to user exits have been enhanced to allow an exit to switch to Task mode and then back to SRB mode if it uses any MVS services that do not support SRB mode callers.

Note: Invocation of Task mode services by SRB mode callers will often result in an abend0F8 condition.

Performance Improvements

A considerable amount of work was done to reduce the instruction path length and CPU consumption associated with many heavily used (E)JES functions.

In addition, (E)JES no longer uses JES2 or JES3 services to perform spool I/O as these services require the caller to execute on general-purpose CPs. (E)JES spool I/O routines have been rewritten to allow spool I/O to be initiated by work that has been offloaded to zIIP processors. In addition to being offloaded, the new, highly optimized routines consume far fewer CPU resources than the IBM-provided services.

Other (E)JES Enhancements

P Short Form for PSELECT

In release V4R5, **P** has been implemented as a short form of **PSELECT** on tabular displays. **P** will continue to be recognized as the short form of **PREV** on browsers.

Suppression of Numeric Magnitude Separator

Release V4R4.0 introduced customizable numeric magnitude and decimal separator characters.

Beginning with this release, you can set the magnitude separator to blank. This setting prevents magnitude characters from being inserted into numeric values.

When running (E)JES in any programmable environment, the numeric separator characters will now default to a blank for the magnitude character and a period or decimal point for the decimal separator character. This change should simplify the processing of numeric values in batch scripts or other programmable environments.

Default Subsystem

The SUBSYS invocation parameter is used to indicate which subsystem is to be accessed. The default is to access the subsystem under which the current (E)JES session was started.

In prior releases, the access would fail if the “current” subsystem was not a JES – resulting in message EJES001. Installations that routinely start (E)JES sessions under the MSTR subsystem would typically code the JESNAME installation option to provide a default subsystem name for this circumstance.

Beginning with this release, the primary JES is accessed if the session is not started under a JES, SUBSYS is not specified, and the JESNAME installation option is not configured.

LPAR Capacity Group License

The concept of an LPAR Capacity Group exists when running z/OS 1.8 or higher on the latest IBM System z9 processors. This allows a group of LPARs on the CEC to be managed by PR/SM and WLM to a given defined capacity in MSU.

(E)JES V4R5 may be licensed to an LPAR Capacity Group.

POOLSIZ= Installation Option Changed

The default value for the POOLSIZ= installation option, which controls the size of the (E)JES buffer pool under TSO, batch, and API environments, has been changed from 1000 to 4000.

TP Monitor Enhancements

Execution Redirect to zIIP Processors

All TP Monitor functions have been made eligible for redirection to zIIP processors.

SUB_TASKS Configuration Parameter Removal

The SUB_TASKS parameter is no longer used in the TP Monitor configuration. TCB management in the TP Monitor is now fully automatic.

Changes for Version 4, Release 4.0

z/OS 1.8 Support

BCP Support

The console restructure items present in z/OS 1.8 include removal of the master console and migration IDs for MCS extended consoles. Following is a summary of how (E)JES supports these changes.

Master Console Removal

The **/M** command prefix is still accepted. In z/OS 1.8, it is treated exactly like the **/I** command prefix.

Migration ID Removal

Regardless of the operating system on which (E)JES is compiled or runs, the MCSXMIG= keyword on the EJESOPT macro is still accepted and the MIG and NOMIG keywords on the CONSOLE command are still accepted.

In z/OS 1.7, the above specifications are ignored and NOMIG is forced. In z/OS 1.8, all migration ID processing is bypassed. The support has been completely removed by IBM.

JES2 Support

Among other things, JES2 now implements the JES3 MDEPTH concept in an attempt help balance batch job initiation within the JESplex. This support comes in the form of a new XEQMEMBER specification for a job class that limits the number of jobs that may be active in the class at a member level.

(E)JES provides support for this new functionality in the form of enhancements to the JESplex and Class displays.

JES3 Support

Among other things, JES3 now provides TCP/IP via NJE functionality. (E)JES provides support for this enhancement throughout the product in the form of new tabular columns and line commands.

The most visible changes are the new NJE and DSNJE displays. These new displays help you display and control sysout in both the BDT and TCP queues. The old BDT and DSBDDT displays have been removed.

DJC Jobs Display (JES3 Only)

Columns

The following column was added:

Default Title	Description	Overtime
T-OSE	Number of TCP OSEs present in the job structure.	No

Line Commands

The following line command was added:

Command	Function
CT	Cancel job TCP queue data.

JES3 Job Status Display

Columns

The following column was added:

Default Title	Description	Overtime
T-OSE	Number of TCP OSEs present in the job structure.	No

Line Commands

The following line command was added:

Command	Function
CT	Cancel job TCP queue data.

JES3 Data Set Status Display

The following line command was added:

Command	Function
JCT	Cancel all TCP queue output

NJE Display (JES3 Only)

This release of (E)JES introduces a new NJE display for JES3 environments, used to view and manage sysout in both the BDT and TCP NJE queues. This display replaces the BDT display from prior releases.

Figure 1. Example of the NJE Display

```
Jobs Resources Devices Tools Filter View Options Help
-----
NJE          2,292S  4J  0T  18 Records (0 Sched)                               Row 1 of 4
Command ==>                                         Scroll ==> CSR
Cmd JobName  JobID  JP JobStat  NJEStat  GrpID   Que Tp  Dest  Records
-----
   BDTTEST1 J0204044  2 W-OUTPUT INACTIVE BDT00000 BDT J  SNANODE1    2
   BDTTEST2 J0204043  2 W-OUTPUT INACTIVE BDT00000 BDT S  SNANODE2    7
   TCPTEST1 J0204042  2 W-OUTPUT INACTIVE TCP00000 TCP J  TCPNODE1    2
   TCPTEST2 J0204041  2 W-OUTPUT INACTIVE TCP00000 TCP S  TCPNODE2    7
***** Bottom of Data *****

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

To invoke the NJE display, issue the **NJE** command or choose **NJE** from the **Jobs** pull-down menu under ISPF.

Access to this function and any modifications are controlled through new internal and external security definitions described in "[Security Enhancements](#)".

NJE Data Sets Display (JES3 Only)

This release of (E)JES introduces a new DSNJE display for JES3 environments. This display allows inspection of individual data sets on the BDT and TCP NJE queues. This display replaces the old DSBDDT display.

To invoke this function, issue the **S** line command from the NJE display.

JES2 Class Display

Prior to OS/390 V2R4, job classes were defined at the member level and this display would have showed one line, per class, per member, just like other (E)JES JES2 multimember displays.

In OS/390 V2R4, JES2 job classes were made a JESplex-wide resource, like JES3, meaning only one set of definitions was used. (Actually, job classes are defined on each JES2 member, but they must be identical to the definitions on other members.)

Beginning with z/OS 1.8 JES2, certain job class specifications are now defined for each member. Because of this, the (E)JES JES2 Job Classes display has been reorganized to operate exactly like the JES3 Job Classes display. Specifically:

- One line per member is shown for each class. JESplex-wide specifications are shown only once on the first displayed line for the class; member-level specifications are shown on every line.
- Issuing the new **C** line command from the JESplex display invokes the Job Classes display showing only one line per class, with the member-specific information tailored to the selected member.

The following columns were added:

Default Title	Description	Overtime
Mbr ¹	Member name.	No
MbrCur	Number of jobs in this class running on the member.	No
MbrMax	Maximum number of jobs allowed to run on the member.	Yes

JES2 JESplex Display

The following line command was added:

Command	Function
C	Invoke Job Classes display for member.

JES3 Nodes Display

Columns

The following columns were added in support of TCP/IP via NJE:

Default Title	Description	Overtime
NetServ	Name of network server associated with first or only active socket	Yes
Sec	Secure signon protocol option	Yes
TLS	Transport Layer Secure option	Yes
JT	Job transmitter count	Yes
OT	Output transmitter count	Yes
JR	Job receiver count	Yes
OR	Output receiver count	Yes

Line Commands

The following line commands were added in support of TCP/IP via NJE:

Command	Function
CS	Cancel network server
RS	Restart network server
SA	Start all sockets for a node
XS	Call network server

Resource Monitor Display (JES2 Only)

This release of (E)JES introduces a new Resource Monitor display for JES2 environments, designed to help you monitor JES resources for the JESplex. Using this function, you can identify and correct resource shortages and view resource utilization history.

¹ This column does not appear when invoked via the **C** line command from the JESplex display.

Figure 2. Example of the Resource Monitor Display

```
Jobs Resources Devices Tools Filter View Options Help
-----
RESMON PHXHQ2 Resource Usage Summary Row 1 of 51
Command ==> Scroll ==> CSR
Cmd Resource JMbr Status Limit Used Free Used% Warn% LowUse HighUse
-----
BERT SA0 HISTWARN 12,100 223 11,877 1.84 80 223 225
BSCB SA0 2,000 0 2,000 .00 0 0 0
BUFY SA0 300 0 300 .00 70 0 0
CKVR SA0 17 0 17 .00 80 0 0
CMBS SA0 113 0 113 .00 80 0 0
CMDS SA0 100 0 100 .00 80 0 0
ICES SA0 9 0 9 .00 80 0 0
JNUM SA0 99,002 627 98,375 .63 80 627 628
JOES SA0 PREVWARN 15,000 917 14,083 6.11 80 917 917
JQES SA0 WARNING 6,000 631 5,369 10.51 9 631 632
LBUF SA0 120 0 120 .00 70 0 0
NHBS SA0 203 0 203 .00 80 0 0
SMFB SA0 8 0 8 .00 80 0 0
TBUF SA0 106 0 106 .00 0 0 0
TGS SA0 116,665 16,644 100,021 14.26 80 16,644 16,650
TTAB SA0 3 0 3 .00 80 0 0
VTMB SA0 2,000 0 2,000 .00 0 0 0
F1=Help F3=Exit F7=Up F8=Down F10=Left F11=Right F12=Cancel
```

To invoke the Resource Monitor display, issue the **RESMON** command or choose **Resource Monitor** from the **Resources** pull-down menu under ISPF.

Access to this function and any modifications are controlled through new internal and external security definitions described in "[Security Enhancements](#)".

JES2 Printer/Punch Display

This display now honors primary selection criteria.

Primary Selection Enhancements

New with this release, the **PSELECT** command may be used to selectively enable or disable the use of primary selection criteria for any of the displays where primary selection criteria are recognized.

An ISPF pull-down choice under the Filters menu on the action bar may also be used for this purpose.

Invocation Selection Enhancements

Invocation selection criteria, introduced in V4R2, provide a temporary override of primary selection criteria for the duration of the current tabular display invocation. These criteria are supplied as parameters on the command used to invoke the display. For example:

```
====> H O=ME
```

invokes the Hold queue display while temporarily overriding the Owner selection to show only jobs owned by **ME**. An invocation selection override remains in effect until the criterion is re-specified or the function is exited.

In this release, environment variable substitution is now performed against the command parameters. For example:

```
====> H 0=&UID
```

invokes the Hold queue display while temporarily overriding the Owner selection to show only jobs owned by the current user's User ID.

Temporary Selection Enhancements

(E)JES V4R2 introduced the **TSELECT** command, used to establish temporary selection criteria for a tabular display.

Temporary selection criteria consist of character mask(s) to be matched against one or two display-dependent columns (e.g., **JobName** and **JobID**) on a tabular display.

While temporary selection criteria are active, primary selection, additional selection, invocation selection, and metafilters are ignored. Temporary selection criteria are disabled by re-invoking the display or issuing **TSELECT OFF**.

This release introduces new Temporary Selection pop-up windows, customized for each tabular display, that make entering the criteria easy. To display the new pop-up window, issue **TSELECT** with no operands.

In addition, environment variable substitution is now performed against the **TSELECT** command parameters.

Performance Improvements

We continue to work on improving (E)JES performance, especially as measured by raw CPU consumption. In this release, we:

- dramatically reworked tabular display processing in order to eliminate some n^2 and $2n^2$ column table probes
- replaced most System Environment Table accesses in the performance path with a new dynamic compilation process
- did more work to better utilize cache on modern processors

Security Enhancements

JES2 Internal Security Changes

The following profile keywords were added to JES2 internal security:

Keywords	Description
[NO]DISPLAY(RESMON) RESMON=	Specifies whether the user may issue the RESMON command.
[NO]MRESMON MRESMON=	Specifies whether the user can modify the status of resources displayed on the Resource Monitor display.

A new RESMON/RMFLD column list has been established to allow customization of the columns on the Resource Monitor display.

The ACTMIN/DAMINFLD and ACTMAX/DAMAXFLD column lists have been updated as needed to support the new tabular columns for zAAP and zIIP support.

JES2 External Security Changes

The following SAF resources were added to JES2 external security:

Resource	Class	What's Protected
EJESCMD.OPERDISP.RESMON. <i>node</i>	EJES	Access to the RESMON display.
EJESATTR.RESMON	EJES	Updates on the JES Resource Monitor display.
EJESRMON.resource.jesx	EJES	JES Resources by resource name.

In addition, the following existing IBM-defined SAF resources are now being checked when JES2 external security is activated.

Resource Names	Class	What's Protected
<i>jesx</i> .MODIFY.BUFDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.CKPTDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.CKPTSPACE	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.CONDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.JOBDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.NJEDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.OUTDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.SMFDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.SPOOLDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.TPDEF	OPERCMDS	Updates on the JES Resource Monitor display.
<i>jesx</i> .MODIFY.TRACEDEF	OPERCMDS	Updates on the JES Resource Monitor display.

JES3 Internal Security Changes

The following profile keywords were removed from JES3 internal security:

Keywords	Description
[NO]DISPLAY(BDT) BDT=	Specifies whether the user may issue the BDT command.
[NO]MBDT(HOLD) [NO]MBDT(CANCEL) MBDT= MBHOLD= MBCANCL=	These fields collectively control modifications on the BDT display.

The following profile keywords were added to JES3 internal security:

Keywords	Description
[NO]DISPLAY(NJE) NJE=	Specifies whether the user may issue the NJE command.
[NO]MNJE(HOLD) [NO]MNJE(CANCEL) MNJE= MNHOLD= MNCANCL=	These fields collectively control modifications on the NJE display.

The BDTMIN/DBMINFLD, BDTMAX/DBMAXFLD, and DSBBDT/XBFLD column lists have been removed.

New NJEMIN/DNMINFLD, NJEMAX/DNMAXFLD, and DSNJE/XNFLD column lists have been established to allow customization of the columns on the NJE and NJE Data Sets displays.

The ACTMIN/DAMINFLD and ACTMAX/DAMAXFLD column lists have been updated as needed to support the new tabular columns for zAAP and zIIP support.

The DJCJOBS/NJFLD, STATMIN/DSMINFLD, STATMAX/DSMAXFLD, and NODES/NOFLD column lists have been updated as needed to support the new columns introduced in support of TCP/IP via NJE.

JES3 External Security Changes

The following SAF resources were removed from JES3 external security:

Keywords	Class	Description
EJESCMD.USERDISP.BDT. <i>node</i>	EJES	Controls access to the BDT display.
EJESATTR.OUTPUT.BDT.HOLD	EJES	Protects updates to the hold status of output on the BDT queue.
EJESATTR.OUTPUT.BDT.CANCEL	EJES	Protects output on the BDT queue from being canceled.

The following SAF resources were added to JES3 external security:

Keywords	Class	Description
EJESCMD.USERDISP.NJE. <i>node</i>	EJES	Controls access to the NJE display.
EJESATTR.OUTPUT.NJE.HOLD	EJES	Protects updates to the hold status of output on any NJE queue.
EJESATTR.OUTPUT.NJE.CANCEL	EJES	Protects output on any NJE queue from being canceled.

Miscellaneous

Customizable Numeric Separator Characters

In prior releases, most numeric values were formatted using a comma (,) as the magnitude separator character and a period (.) as the decimal separator character. This formatting follows the convention used in the United States.

This release now allows:

- the user to change the numeric formatting characters to any desired values.

- the installation to establish default formatting characters for new users (those without a cross-session profile).

The user sets these characters from the **Options** panel or using the new **NUMCHAR** command. The installation sets the default characters using the new **NUMCHAR=** keyword on the EJESOPT macro.

Support for RECFM=FBS on DASD Extract

The record format field for a DASD extract now accepts FBS. Among other things, this allows SYSMDUMPs to be easily copied from sysout to DASD for processing with IPCS.

Even More Streamlined Installation Procedure

The installation procedure has been reworked again. Some highlights:

- pfiboot.exec has been replaced by an ejesdnld.exec which performs many of the same functions, but using ISPF full-screen prompting instead of REXX line mode prompting.
- ejespfi.cmd has been renamed ejespfi.exec to make it easier to invoke.
- Many of the options presented to the user by ejespfi.exec are no longer YES or NO questions. Rather, they are now full-screen ISPF panels with detailed explanations.
- The manual steps associated with editing EJESIEM1 and executing EJESIEM2 have been incorporated into ejespfi.exec using the full-screen prompting approach.
- EJESIEM1 is no longer copied into a user REXX/CLIST library. It is now invoked directly from the SMP/E TLIB. This means the actual member used to customize your JCL will be copied to the SEJESAMP and AEJESAMP libraries during APPLY and ACCEPT processing.

WARNDAY= Installation Option

The GRACDAY= option was renamed to WARNDAY=.

Changes for Version 4, Release 3.0

Fixed-width Displays

General Behavior

In prior releases, certain (E)JES displays (e.g., the Entry Panel) were referred to as “fixed format” or “static” displays. These displays were always formatted for a 24x80 presentation space.

Beginning in this release, these displays are now referred to as “fixed-width” displays. The data on fixed-width displays is always presented in a format that fits on a display device with 80 columns. However, most fixed-width displays can be scrolled vertically when the number of lines in the display area is too small to accommodate all of the data to be shown.

Fixed-width Panel Collapse

Most fixed-width displays that were designed to conform to the old restrictions have been changed to take advantage of the new fixed-width panel capabilities.

For example, the Options and Extract Parameters panels have been enhanced to use a single, scrollable fixed-width presentation where multiple panels existed previously.

In addition, the Entry Panel may no longer be expanded or contracted using the **EPEXPAND** command and associated option. In this release, the Entry Panel is always expanded fully.

Pattern Utility PSTORE Prompting Panel

This panel has been enhanced to prompt for the following:

- An indication whether to allow an overlay of an existing member in the library
- Optional user commentary to describe the patterns being stored

Tabular Displays

Output Descriptors Display in JES2

The JES2 Output Descriptors display has been enhanced to use the available JES2 SSI interface to allow user modification of SWB-maintained output descriptor text units.

To modify output descriptors for an output group, use the **A** line command from the traditional Output Descriptors display. This will recursively invoke the Output Descriptors display in so-called “modify” mode. It is from this new display that your updates will be accepted, verified, and processed.

Output descriptors are always modified at the output group level.

Pattern Utility Member List Dialog

The Pattern Utility Member List dialog was introduced in release V4R2. In that release, it showed only the name of a member in the pattern library.

Beginning with this release, this display has been enhanced to show/maintain member statistics and user-supplied commentary. The commentary field may be overtyped.

Extract Post-processor Enhancements

Interface Redesign

In this release, the Extract Post-processor Package interfaces were redesigned slightly to provide more generalized support. (The prior support was strictly job-oriented and could not be applied to other kinds of displays.)

Unfortunately, these required changes are not upward compatible with older post-processors. For example, the old **JobName** and **JobID** positional parameters have been replaced with a Parm1 positional parameter and an optional Parm2 keyword parameter. In addition, the concept of an *object type* has been introduced.

Please refer to *(E)JES Reference* for a complete description of the updated Extract Post-processor Package interfaces.

Post-processors for Health Checker Display

The redesigned interfaces described in the prior topic have made the Extract Post-processor capabilities available to the Health Checker display.

You may now use various Extract Post-processors, such as ISPF BROWSE or EDIT, XMIT, ftp, e-mail, etc. to process the messages produced by a check shown on the Health Checker display.

Security Enhancements

Internal Security Changes

The following profile keywords were removed from JES2 internal security:

Keywords	Description
HOLD(IPDEST) and MHIPDST=	Controls whether IP destination can be updated for output on the Hold queue.
OUTPUT(IPDEST) and MOIPDST=	Controls whether IP destination can be updated for output on the Output queue.

The following profile keywords were added to JES2 internal security:

Keywords	Description
HOLD(SWB) and MHSWB=	Controls whether the user can modify SWB-maintained attributes on the Hold queue not protected by other authorization keywords.
OUTPUT(SWB) and MOSWB=	Controls whether the user can modify SWB-maintained attributes on the Output queue not protected by other authorization keywords.

The following profile keywords were changed in both JES2 and JES3 macro-based internal security:

Old Name	New Name	Description
WLMSCH=	SCHENV=	Controls access to the Scheduling Environments display. This keyword had already been changed to SCHENV in the parameterized internal security. Not changing it for the macro-based security was an oversight that is being corrected in this release.

External Security Changes

The following SAF resources were removed from JES2 external security:

Resource	Description
EJESATTR.OUTPUT.HOLD.IPDEST	Protects IP destination for sysout on the Hold queue.
EJESATTR.OUTPUT.OUTPUT.IPDEST	Protects IP destination for sysout on the Output queue.

The following SAF resources were added to JES2 external security:

Keywords	Description
EJESATTR.OUTPUT.HOLD. <i>swbfield</i>	Protects SWB-maintained attributes for sysout on the Hold queue not protected by other authorization keywords. See "Alterable Fields in Modify Mode" under "Using the Output Descriptors Display" in <i>(E)JES Reference</i> for a complete list of SWB-maintained fields that can be altered.
EJESATTR.OUTPUT.OUTPUT. <i>swbfield</i>	Protects SWB-maintained attributes for sysout on the Output queue not protected by other authorization keywords. See "Alterable Fields in Modify Mode" under "Using the Output Descriptors Display" in <i>(E)JES Reference</i> for a complete list of SWB-maintained fields that can be altered.

The following profile keywords were changed in both JES2 and JES3 macro-based internal security:

Old Name	New Name	Description
WLMSCH=	SCHENV=	Controls access to the Scheduling Environments display. This keyword had already been changed to SCHENV in the parameterized internal security. Not changing it for the macro-based security was an oversight that is being corrected in this release.

SAF Trace Records Written to User Log

Beginning with this release, EJES511 messages produced via SAF tracing are now written to both the User Log and System Log. In the past, these messages were written to the System Log only.

Miscellaneous

System and Member Name on Entry Panel and Menu

The upper right corner of the Entry Panel and Menu now display, in addition to the existing product release and time of day, the system name and JES member name separated by a slash (e.g., MVS60/MV60). If both names are identical, only one value is shown.

Function Keys on Non-ISPF Help Panels

In prior releases, no function key area existed on help panels in non-ISPF environments. This oversight has been corrected.

Performance Enhancements

This release begins to implement numerous low-level changes intended to enhance overall (E)JES performance in certain target areas. These low-level changes include:

- A complete conversion of all programs to use instructions designated as part of the immediate-and-relative-instruction facility in every case where they may be used in place of their non-immediate or non-relative (based) counterparts
- A new “lightweight” linkage protocol used for some heavily executed functions that don’t require nested stacking (ongoing analysis)
- Instruction re-sequencing intended to optimize processor pipeline utilization (ongoing analysis)
- Cache line usage optimization (ongoing analysis)
- Reduction of redundant data movement (ongoing analysis)

Product Registration

This (E)JES release registers itself to z/OS through the product registration interface.

The **DISPLAY PROD,REGISTERED** system command can be used to inspect the list of products currently registered on the system, including (E)JES. In addition, you may now customize the IFAPRDxx parmlib member to prohibit the use of (E)JES on one or more systems in your environment.

Mixed-case Password Support

The TP Monitor distributed with this release provides support for mixed-case passwords. This support requires z/OS Security Server (RACF) 1.7 or OEM equivalent external security product.

Readers Comment Form

(E)JES Release Information
0815-001-RI47

How satisfied are you with the information in this book?

Legend:

- 1. Very satisfied
- 2. Satisfied
- 3. Neutral
- 4. Dissatisfied
- 5. Very dissatisfied

Please circle the number that corresponds to the level of your satisfaction.

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Grammatically correct and consistent	1	2	3	4	5
Graphically well designed	1	2	3	4	5
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