

(E)JES®

Release Information

Version 5, Release 1.0
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PHOENIX Software International®

Phoenix Software International
831 Parkview Drive North
El Segundo, CA 90245-4932 USA
1-(310)-338-0400
<http://www.phoenixsoftware.com>

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Chapter 1. (E)JES RELEASE INFORMATION

This document summarizes the functional and operational changes in (E)JES Version 5, Release 1.0 and all prior supported releases. As of this writing, (E)JES Version 4, Release 5.0 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
- Phoenix TP Monitor Messages

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 2011 and the operating system and JES releases with which they are compatible. While still supported, all (E)JES releases older than V4R7 have been stabilized. V4R7 is scheduled to be stabilized after March 2012.

Table 1 - (E)JES Compatibility Matrix

| Operating System | (E)JES V5R1 | (E)JES V4R8 | (E)JES V4R7 | (E)JES V4R6 | (E)JES V4R5 |
|------------------|--------------|--------------|--------------|--------------|--------------|
| z/OS 1.13 | JES2 JES3 | JES3 | JES3 | - | - |
| z/OS 1.12 | JES2 JES3 | JES2 JES3 | JES3 | JES3 | - |
| z/OS 1.11 | JES2 JES3 | JES2 JES3 | JES2 JES3 | JES3 | JES3 |
| z/OS 1.10 | JES2 JES3 | JES2 JES3 | JES2 JES3 | JES2 JES3 | JES2 JES3 |
| z/OS 1.9 | JES2 JES3 | JES2 JES3 | JES2 JES3 | JES2 JES3 | JES2 JES3 |

(E)JES Release Information

| Operating System | (E)JES V5R1 | (E)JES V4R8 | (E)JES V4R7 | (E)JES V4R6 | (E)JES V4R5 |
|------------------|--------------|--------------|--------------|--------------|--------------|
| 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 |
| z/OS 1.5 | - | JES2 JES3 | JES2 JES3 | JES2 JES3 | JES2 JES3 |
| z/OS 1.4 | - | - | JES2 JES3 | JES2 JES3 | JES2 JES3 |
| z/OS 1.3 | - | - | - | JES2 JES3 | JES2 JES3 |
| z/OS 1.2 | - | - | - | JES2 JES3 | JES2 JES3 |
| z/OS 1.1 | - | - | - | - | JES3 |
| OS/390 V2R10 | | - | - | - | 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.

Chapter 2. Changes for Version 5, Release 1.0

Minimum Supported Processor Hardware

Previous releases of (E)JES supported ESA/390 architecture as well as z/Architecture.

(E)JES V5R1.0 requires a processor that implements z/Architecture with the *long-displacement facility*. This facility is standard on all IBM zSeries and System z processors with the exception of the z900. On the z900 processor, microcode level 3G or later is required.

64-bit Virtual Storage Requirement

In previous releases, the only advantage to making 64-bit virtual storage available to (E)JES was greater memory capacity—often needed for large SPOOL configurations.

Certain performance optimizations, new with this release, will not occur when no 64-bit virtual storage is available (i.e., when MEMLIMIT=0). Therefore, it is recommended that you make 64-bit virtual storage available to (E)JES clients.

The next (E)JES release will *require* 64-bit virtual storage for both clients and servers. Phoenix Software International suggests that you make 64-bit virtual storage available to your (E)JES clients and servers, when practical do to so, to avoid a forced migration action later.

z/OS 1.13 Support

Support for JES2 Spool Migration

This release of (E)JES supports the new JES2 Spool migration feature.

Support for JES3 Dynamic SPOOL Configuration

This release of (E)JES supports the new JES3 dynamic SPOOL add feature. This support was rolled back to earlier supported (E)JES releases via the service stream.

Improved Support for Running REXX ISFCALLS Applications

This release of (E)JES supports enhancements to IBM's ISFCALLS REXX interface provided in z/OS 1.10 through z/OS 1.13. These enhancements include the ISFGET, ISFLOG and ISFSLASH commands and the ISFRESET function.

Tabular Displays

Pop-up Input Window

In prior releases, an overtypable column had to be defined as large as any input you might wish to place into the column. For example, a column that supports 64-character values can be sized down to only ten characters in width. Direct overtyping into a field that is only ten characters wide allows no more than ten characters to be input. In addition, some customer's 3270 displays are not configured wide enough to display the maximum width of some very long overtypable columns.

This release supports a new pop-up input window, which provides space for up to 126 characters to be input into any overtypable field.

To activate the pop-up input window, place your cursor on the column to be overtyped and press the Prompt key (usually F4).

Note: For most overtypable columns, (E)JES only accepts input within the first eight characters of the column. Keep this in mind if you use the **ARRANGE** command or Column Arrangement dialog to make an overtypable column wider than its default size.

Denoting Sortable Columns

To determine if a column was sortable in prior releases you could search for it on the SORT dialog or just observe what happened if you tried to sort it.

In this release, sortable columns appear in turquoise (or high intensity on monochrome displays).

Activity Display

JESplex or Sysplex-wide Scope

With this release, you may choose the scope for the Activity display via the **ACPLEX** command or **Plex for Activity display** setting on the Options panel.

An ACPLEX value of JES indicates a JESplex-wide scope. This scope uses (E)JES CAS servers to gather data from other systems and send it back to you. This is the most efficient way of obtaining the information because multiple requestors, even those on different systems, can share the same CAS request/response flows.

JESplex-wide information can be obtained using RMF, CMF or native (E)JES facilities. If you do not have an operational sysplex or CAS servers are not running, your display is limited to the current system image (i.e., the image on which your (E)JES session is executing).

An ACPLEX value of SYS indicates a sysplex-wide scope. This scope depends entirely on RMF Sysplex Data Gathering Services, even for the current system's data. Sysplex-wide data cannot be obtained using CMF or native (E)JES facilities.

Support for More Than 64 CPUs

With this release, the Activity display supports more than 64 logical CPUs, zIIPs and zAAPs on a single image.

Line Commands

The following line commands were added for JES2:

| Command | Function |
|---------|---|
| RJS | Restart job after current step completes |
| RJSH | Restart and hold job after current step completes |

Input Display

The following line commands were added:

| Command | Function |
|---------|---|
| AC | Invoke Activity display for executing job. |
| RJS | Restart job after current step completes (JES2 only) |
| RJSH | Restart and hold job after current step completes (JES2 only) |

Job Status Display

The following line commands were added:

| Command | Function |
|---------|---|
| AC | Invoke Activity display for executing job |
| RJS | Restart job after current step completes (JES2 only) |
| RJSH | Restart and hold job after current step completes (JES2 only) |

Data Set Status Display

The following line command was added:

| Command | Function |
|---------|--|
| SP | Cause the selected spin-any data set to spin (JES2 only) |

Output Descriptors Display

The Output Descriptors display has been updated to support display and alter of the following parameters:

| Field Name | Description |
|------------|--|
| COPYCNT | COPYCNT allows you to specify more than 255 copies—the largest number supported by the COPIES parameter. |
| PRTATTRS | PRTATTRS defines one or more job attributes for IBM's Infoprint Server. |

Enclaves Display

The following columns were added:

| Default Title | Description | Overtime |
|---------------|---|----------|
| Prom | Promoted address space indicator | No |
| zAAP-Time | CPU time consumed on zAAP processors | No |
| zACP-Time | GCP time consumed by zAAP-eligible work | No |
| zIIP-Time | CPU time consumed on zIIP processors | No |
| zICP-Time | GCP time consumed by zIIP-eligible work | No |

The following line command was added:

| Command | Function |
|---------|--|
| W | Recursively invoke Enclaves display for work-dependent enclave |

The behavior of the W command is similar to the existing M command for grouping multisystem enclaves.

Health Checker Display

The following line commands were added:

| Command | Function |
|-----------------|--|
| En ¹ | Extract health check messages |
| L | Invoke long Health Check History for selected check |
| P# ² | Extract health check messages to Print 1 or Print 2 |
| S | Invoke short Health Check History for selected check |

The following columns were added:

| Default Title | Description | Overtime |
|---------------|---|----------|
| RexxIn | REXX input data set name. | No |
| RexxOut | REXX output data set name. | No |
| LogStream | Name of the log stream used to record checks. | No |

Health Check History Display (New)

The new Health Check History display shows the run history of a selected check.

Depending on which line command was issued to invoke the Health Check History display, it may contain either a short history (up to ten rows) or the complete (long) history.

Each row represents an iteration of the check. You can browse and/or extract the messages from any given check iteration.

¹ n can be blank for a default extract (DASD when interactive), 'D' for DASD, 'U' for z/OS UNIX, or '1' or '2' for Print.

² # can be blank or '1' for Print Data Set 1 or '2' for Print Data Set 2.

Figure 1. Example of the Health Check History Display

```

Jobs Resources Devices Tools Filter View Options Help
-----
HCHKHIST MVS60 ASM_LOCAL_SLOT_USAGE/IBMASM                      Row 40 of 51
Command ==>                                                    Scroll ==> PAGE
Cmd Run  Status              Result Diag1   Diag2   RunDate   RunTime
-----/-----
      12 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 18:14:28
      11 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 17:44:28
      10 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 17:14:28
       9 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 16:44:28
       8 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 16:14:28
       7 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 15:44:28
       6 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 15:14:28
       5 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 14:44:28
       4 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 14:14:29
       3 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 13:44:29
       2 EXCEPTION-MEDIUM      8 00000000 00000000 2011/02/15 13:14:28
       1 SUCCESSFUL            0 00000000 00000000 2011/02/15 12:44:28
***** Bottom of Data *****

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

```

System Requests Display

The following columns were added and are visible on z/OS 1.12 and later:

| Default Title | Description | Overtypable |
|----------------|-----------------------------|-------------|
| AR-Delay | Auto-Reply delay in seconds | No |
| AR-Date | Auto-Reply date | No |
| AR-Time | Auto-Reply time | No |
| AutoReply-Text | Auto-Reply text | No |

JESplex Display

The following column was added to the JESplex display:

| Default Title | Description | Overtypable |
|---------------|--|-------------|
| CASStat | Status of the Coordination Address Space | No |

Overtypes to the new column are protected using the same mechanisms that protect other existing overtypeable columns on the same display.

JES2 Class Display

The following column was added to the JES2 Class display.

| Default Title | Description | Overtypable |
|---------------|--|-------------|
| JobRC | Default JOBRC= value for jobs in this class. | Yes |

Overtypes to the new column are protected using the same mechanisms that protect other existing overtypeable columns on the same display.

JES2 Spool Volumes Display

The following line command was added:

| Command | Function |
|---------|---|
| DJ | Issue JES2 command to display all jobs using the spool volume |

Browsers

Action Messages on JES2 System Log Browser

In previous releases, WTOR and AMRF messages were appended to the Operlog and JES3 Syslog browsers only. Starting with this release, these messages are now also appended to the JES2 Syslog browser.

The System Requests display remains the preferred method for viewing WTOR and AMRF messages in all environments.

Enhanced Relative Time Navigation on Log Browsers

The NEXT and PREV commands have been enhanced to support navigating forward or backward a number of seconds or minutes, in addition to the hours and days previously supported.

ISPF VIIF Interface Now Sensitive to Record Format

Previously, the VIIF was always invoked with a variable-length record format. Certain editor commands (such as renumbering) would behave differently than expected because of this.

Now if all of the data sets are fixed format, this information is passed to VIIF thus ensuring those editor commands will operate as users expect.

DSN Command Renamed to DDN

The DSN command—available on multi-data set browsers—has been renamed DDN. The old DSN command is still accepted as an alias for DDN, but it is no longer documented and might be reused in a future release.

Enhancements to Other Displays

Pattern Utility

The Pattern Utility has been enhanced with new options that allow you to specify the number of lines you want to be unconditionally matched at the start and end of each data set being browsed or extracted.

Figure 2. Example of the Pattern Utility Panel

```

Jobs Resources Devices Tools Filter View Options Help
-----
MYJOB      JOB23456                Pattern Utility
Command ===>

Pattern Utility commands:           Global matching options:
  PLOAD - Load pattern set         Start column  ===>
  PSTORE - Store pattern set       End column    ===>
  blank - Apply patterns           Case sensitive ===> (Yes or No)

Unconditional line matching:
  Lines at start ===>
  Lines at end   ===>

Pattern definitions:                Specific matching options:
(Prefix with a '/' for an exclude pattern)  Startcol  Endcol   Case
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>
====>                                     ==>      ==>      ==>

F1=Help      F3=Exit      F10=Actions  F12=Cancel

```

Since data in a batch script is placed into fixed-format displays positionally, these new fields present a migration action for batch scripts that directly update the Pattern Utility display without using the “pattern load” feature.

For example, the following commands will extract System Log messages that contain ‘MVS70 R=’ starting in column 30 within the time range from 05:00 AM through 05:30 AM on September 15, 2011.

```

LOG S
E 05:00-2011-09-15 05:30-2011-09-15 PATTERN
:<><><><><'MVS70 R='><30>

```

The last command is placing the string ‘MVS70 R=’ into the first pattern definition field and the string ‘30’ into the first StartCol field. This command will need to be changed as shown below:

```

:<><><><><'MVS70 R='><30>

```

Batch scripts that use the “pattern load” feature are unaffected. Pattern data sets are handled in an upward-compatible way.

Confirm Panel

The Confirm Panel has been enhanced with a new ACCEPT command. When ACCEPT is issued, all confirm actions queued for the current transaction are accepted. The status of the CONFIRM option is unaffected.

To get this functionality in prior releases, you would have had to issue CONFIRM OFF when prompted with the Confirm Panel and then, after all cancel actions were accepted, issue CONFIRM ON again.

Programmable API Enhancements

The Record Format and Logical Record Length for SDSB data sets are now surfaced to procedural language, REXX and Java APIs.

The new SDSALLOC and SDSFREE commands can be used to allocate and free SPOOL data sets shown on the Syslog Log browser.

Customer Application Infrastructure Enhancements

Email Plug-in (.M Command)

New Email Delivery Techniques

Previously, email could be delivered using only z/OS SMTP (or CSSMTP in z/OS 1.12 and higher).

In this release, email can now also be delivered via direct sockets or a popular freeware utility called XMITIP.

You choose which email delivery mechanism to use via the **Transport** action bar item.

Address Book

Pressing the Prompt key (F4) with the cursor positioned to an email address field on the dialog now invokes the address book. (Utility program EJES#UAB.)

Contacts can be manually added to or deleted from the address book.

If you activate the ISPF Workstation Agent (WSA), you can import a contact list from Microsoft Outlook, Mozilla Thunderbird or other popular email programs that run on your workstation.

TP Monitor Enhancements

System Search for Executable Modules

The TP Monitor is now able to load modules from LPA, LNKLST and STEPLIB using the standard system search order. The SYSTEM_FILE(LOAD) specification is no longer required in the configuration member.

Performance Enhancements

JES2 Checkpoint-resident Spin-Off Jobnames Filtering

Previously, JES2 installations with a significant amount of APPC/MVS or z/OS UNIX output would see slow response time building displays such as STATUS, HOLD or OUTPUT because of the need for a Spool-resident control block for filtering.

In this release, checkpoint-resident fields are now used for filtering these 'jobs' if the checkpoint is z11 mode or higher.

Improved Internal Selected Data Set Search Algorithm

An iterative sequential search through a potentially very large table was converted to a binary search resulting in many orders of magnitude performance improvement when many data sets are selected.

Security Enhancements

Userid and SXID Replacement Character Compression

Internal security processing replaces certain special characters with a matching character from the userid or SXID. For example, if the userid replacement character is a U.S. English exclamation point (x'5A'), a mask value of !!!!!!! will be automatically replaced with the user's userid (padded with blanks) when the profile is processed.

New with this release (and also delivered via the service stream to V4R8), any extraneous userid and/or SXID replacement characters are compressed out of a mask. If this was not done, a mask like !!!!!!!Z would contain embedded blanks for userids less than seven characters in length. For example, a mask of !!!!!!!Z would result in 'ABC Z' for userid ABC.

By compressing out extraneous mask replacement characters, the results are ABCZ for userid ABC and ABCDEZ for userid ABCDE.

Auditing of SWB Modify Requests

Message EJES510 audits end user changes made to resources on the system. However, until now output descriptor SWB modifications were not audited.

Beginning with this release, message EJES512 is written when a user modifies an output descriptor SWB.

It is a multi-line message that details which user is making the change, which output descriptor SWB is being updated, and the new values for every field being changed.

User Exit Enhancements

EJESUX02

Support for multiline messages has been added. This support was added specifically to allow customers to display messages IEF032I, IEF033I, IEF373I, and IEF374I on the Message Summary. The support should work for other multiline messages as well.

A new configuration member EJES\$X02 is now delivered. This member contains a USERMOD that will add messages IEF032I, IEF033I, IEF373I, and IEF374I to the Message Summary.

EJESUX03

A new infrastructure has been implemented to facilitate resetting all or part of your end users' cross-session profile data. This allows you to “push” changes for one or more profile fields out to your users without requiring them to delete their profiles.

The new EJESPRS macro provides a standardized method of managing changes to the profile data by using a serial number mechanism—numeric data hardened into the user's cross-session profile—to avoid unnecessary or disruptive updates.

All existing popular modifications to EJESUX03, delivered in configuration member EJES\$X03, have been converted to use the new infrastructure.

If you have your own modifications to EJESUX03, we highly recommend you rework them to use EJESPRS macro statements instead. Of course, you should feel free to write your own code before, after, or around EJESPRS macro statements if necessary. But it would not be prudent to duplicate the behavior of EJESPRS.

EJESUX10

A new ‘popular’ modification has been added to the USERMOD in member EJES\$X10. This modification optionally appends the sysplex system slot number to the default console name provided by EJESUX10.

Miscellaneous Enhancements

Settings Notices Enhanced Readability

The readability of settings notices has been enhanced for 3270 devices that support programmable color. When appearing outside a quoted string, labels are turquoise, parentheses are white, red or turquoise (depending on nesting level), and certain other non-alphanumeric characters are yellow.

Placement of MsgEJES150 under ISPF

When msgEJES150 Spool Data Has Changed was first developed, ISPF long messages were limited to 78 characters and they always appeared under the command line. Years later ISPF allowed longer messages and provided the **Long message in pop-up** option on the ISPF settings panel.

A long message in a pop-up blocks the content of the display behind it. This is acceptable for messages that are issued only occasionally, but for a busy job msgEJES150 can be issued often (sometimes every time you press <Enter>).

With this release, msgEJES150 is no longer issued using ISPF services. It is displayed on the screen where ISPF would normally put it with the **Long message in pop-up** option disabled.

Function Keys

The key lists delivered in prior (E)JES releases still used F4=RETURN even though ISPF key lists have not used this convention for over 15 years. Also, there was no key set to RFINDP.

New with this release, F4=Prompt (the convention used with IBM's HCD and similar software) and F17=RFINDP.

The ALTKEYS command has been eliminated.

Complete Removal of WLM Compatibility Mode Artifacts

WLM Compatibility Mode has not been supported for many releases. In this release, all remaining artifacts of WLM Compatibility Mode support have been removed. This includes the PGN and DMN columns on the Activity display, help panels, and all other references

z/OS UNIX FMID

(E)JES V4R8 delivered z/OS UNIX elements as part of the base (E)JES FMID. This release delivers these components in a separate FMID.

z/VM Guests With SET SHARE LIMITHARD

z/VM guest MSU is now correctly reported when SET SHARE LIMITHARD is used.

Download Service Via HTTP

In previous releases, sample JCL member EJES\$PDL was configured to download the cumulative service package using the z/OS FTP client.

(E)JES Release Information

In this release, a new EJESDPTF utility has been developed using REXX. This utility allows you to choose whether to download the service via FTP or via HTTP using cURL—which, at the time of this writing, is delivered by IBM at no additional charge to z/OS customers as part of the z/OS UNIX Ported Tools Supplemental Toolkit.

The EJES\$PDL job stream has been enhanced to invoke the new EJESDPTF utility.

Chapter 3. Changes for Version 4, Release 8.0

z/OS 1.12 Support

Support for JES Spool Data Sets on EAV

This release of (E)JES supports placement of JES spool data sets in the cylinder-managed area of an Extended Address Volume (EAV).

Support for New JES2 Spool Address Format

z/OS 1.12 JES2 changes the way the addresses of many spool control blocks are represented. Previous releases used MTTRs. z/OS 1.12 now uses MQTRs to represent many of the spool control blocks accessed by (E)JES.

This (E)JES release provides MQTR support in its I/O driver and application layer code.

Exploitation of XTIO and 31-bit UCB VSCR

The use of 24-bit (captured) UCBs puts a strain on the 24-bit virtual storage resource. The use of ordinary (non-extended) TIOT entries puts a limit on the total number of allocations that can exist simultaneously in an address space.

With this release, both (E)JES and the TP Monitor now support and use 31-bit (uncaptured) UCBs and the extended TIOT (XTIO).

This support is activated on a z/OS image by specifying `NON_VSAM_XTIO=YES` in your `DEVSUPxx` parmlib member.

Tabular Displays

RowNum Administrative Column

This release introduces the new **RowNum** column, an administrative column that optionally follows the **Cmd** column located at the extreme left side of the screen.

This new column simply displays the number of the row. It can be particularly helpful when specifying row numbers on the **SELECT** command. You don't directly control the width of the **RowNum** column. It is automatically sized to three, six, or eleven characters, depending on the total number of rows in the display.

SELECT Command Enhancements

This release enhances the **SELECT** command in two ways:

- In addition to the existing support for mask comparisons, you may now specify a row number or range of row numbers against which the line command will be issued.
- You may now use the **SELECT** command to establish the default line command to be used when not specified on the **SELECT** command. In the past, this value could be set only by the **CURSOR SELECT** command or via the **Set cursor retention and selection...** dialog, accessed from the **Options** pull-down under ISPF.

The optional **RowNum** administrative tabular column can be helpful when specifying row numbers on the **SELECT** command.

When specifying a row number or range of row numbers, the **SELECT** command itself is optional.

Exception Values in Tabular Columns

Beginning in this release, the color and highlighting of several tabular columns will be modified depending on the value being formatted within the column. The intent is to make these columns stand out during visual inspection.

By default, the modified appearance is yellow and high-intensity. However, this may be customized by the end user.

The columns eligible for this treatment and the values considered to be exceptions are shown in the table below:

| Column Title | Applicable Display | Exception Value |
|--------------|---------------------------------|---|
| MaxComp | Job and group oriented displays | Anything other than blank or CC 0000 |
| Result | Health Checker | Any value greater than zero |
| Status | Health Checker | Any Result value greater than zero |

Output Descriptors Display

Modify mode is now supported for the JES3 Output Descriptors display when running on z/OS 1.11 JES3 or higher.

To modify output descriptors, you invoke the function recursively by issuing the **A** line command from the original Output Descriptors display. In this case, the Output Descriptors display changes from “browse” mode to “modify” mode.

Note: JES2 and JES3 users will observe slightly different behaviors when modifying Output Descriptors. JES2 modifies the entire output group to which the selected data set belongs; you cannot modify just one data set. JES3 modifies a single data set only.

Health Checker Display

The **Parameters** column on the Health Checker display is now overtypable.

Enclaves Display

The Enclaves display now shows the type for work-dependent enclaves as WDEP. In addition, overtypes against columns on a work-dependent enclave will be directed to the parent independent enclave.

Spool Volumes Display

The **LoCylTrk** and **HiCylTrk** columns are now formatted using the CCCCCC:H notation instead of the CCCCHHHH notation used in prior releases. The new notation supports spool extents being located in the cylinder-managed area of an Extended Address Volume (EAV).

Even though it should be obvious from inspection of the **LoCylTrk** and/or **HiCylTrk** values, the following column was added to the JES2 Spool Volumes display.

| Default Title | Description | Overtyp |
|---------------|--|---------|
| EAV | Location of spool extent on EAV (TRK or CYL) | No |

ThruPut Manager Queue/Status on JES2 Input and Job Status Displays

JES2 installations running ThruPut Manager® from MVS solutions inc. can now have the **Queue** and **Status** tabular columns on the Input and Status displays optionally augmented with information provided by ThruPut Manager.

This feature is enabled or disabled using the **TMQSTAT** command, the **ThruPut Mgr Queue & Status** input field on the **Options** panel, or using the **Set ThruPut Mgr Queue & Status** choice on the **View** pull down menu under ISPF.

Thruput Manager must be running at the TMT6209 level with APAR TR62174 or higher for this interface to function as expected.

JES2 Class Display

The following column was added to the JES2 Class display.

| Default Title | Description | Overtyp |
|---------------|--|---------|
| MbrAff | Whether jobs in the class can be scheduled to this member. | Yes |

Overtypes to the new column are protected using the same mechanisms that protect other existing overtypeable columns on the same display.

Browsers

OPERLOG Message Attributes

In prior releases, the OPERLOG browser formatted messages using only the standard presentation characteristics used by all (E)JES browsers.

Beginning with this release, the OPERLOG browser can optionally display the messages using their original 3270 console presentation characteristics. With this option enabled, messages will be formatted using their original color and extended highlighting—for example: red and blinking.

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

Extract Enhancements

z/OS UNIX File Support

This release allows you to extract scrollable data to a z/OS UNIX file. You may create new, overlay, or append to existing files.

To indicate the target of your extract is a z/OS UNIX file, specify the **EU** line command or the **UNIX** keyword on the **EXTRACT** primary command.

When you specify a z/OS UNIX file as the extract target location, the z/OS UNIX Extract Parameters panel is displayed. On this panel, you specify the name and characteristics of the file that is to be the target of the extract operation.

Figure 3. Example of the z/OS UNIX Extract Parameters Panel

```
Jobs Resources Devices Tools Filter View Options Help
-----
MYJOB JOB23456 Extract Parameters Z/OS UNIX
Command ==>

For Extract to z/OS UNIX File System:
Path name ==>

Path option ==> (NEW, REPLACE, APPEND)
File data ==> (TEXT, BINARY, or blank)
Page eject ==> (YES or NO to force eject for each dataset)
Record format ==> (*' to derive from data)
Record length ==>
Owner perms ==> (R, RW, or blank)
Group perms ==> (R, W, RW, or blank)
Other perms ==> (R, W, RW, or blank)

Use ENTER to perform extract; Use END command to cancel extract.
F1=Help F3=Exit F10=Actions F12=Cancel
```

If you specify a path name that names an existing directory, the z/OS UNIX Extract File List dialog is invoked. Each row represents one directory entry. All directory types are listed. You can list directories that are lower or higher in the hierarchy, select a target file, or create a new one.

Figure 4. Example of the z/OS UNIX Extract File List Dialog

```

Jobs Resources Devices Tools Filter View Options Help
-----
PATHSEL /u/ibmuser Row 1 of 10
Command ==> Scroll ==> CSR
Cmd Type Permission Owner Group FileName
----->
Dir drwxr-xr-x IBMUSER DEV .
Dir dr-xr-xr-x SYSOPER TTY ..
File -rw----- IBMUSER DEV .bash_history
File -rw----- IBMUSER DEV .cshrc
File -rwx----- IBMUSER DEV .profile
File -rw----- IBMUSER DEV .sh_history
Dir drwx----- IBMUSER DEV .ssh
Dir drwx----- IBMUSER DEV bin
File -rw----- IBMUSER DEV extract.out
Dir drwx----- IBMUSER DEV src
***** Bottom of Data *****

```

DASD Space Units

When allocating a new DASD extract data set, previous releases allowed two possible units of space allocation: tracks and cylinders.

With this release, (E)JES now supports allocation in tracks, cylinders, records, blocks, bytes, kilobytes or megabytes.

DASD Data Set Type

When allocating a new DASD extract data set, previous releases did not allow you to specify the data set type. To get other than a default data set type, you had to specify a data class that contained the desired data set type.

With this release, (E)JES now allows you to specify the data set type. You can choose from LIB (a PDSE), PDS, BASIC, LARGE, EXTP (extended preferred), EXTR (extended required), or blank which leaves this attribute unspecified.

DASD Extended Attributes

When allocating a new DASD extract data set, previous releases did not allocate them with extended attributes. Therefore, the data sets were not eligible for the extended address space of an EAV device unless the data class made them explicitly eligible.

With this release, (E)JES now allows you to specify whether extended attributes are allowed for the new DASD data set.

Batch Scripting Enhancements

Command Response Delay

In prior releases, the Command Response Delay (set by the CRDELAY command) was ignored (treated as if set to zero) in batch scripts. This ensured that no in-line command response would overlay a screen image a batch script might wish to inspect.

Previously, the recommended way of delaying a batch script to wait for a command response was to use the REFRESH command.

Beginning in this release, CRDELAY will work for batch scripts just as in interactive environments to allow the script to wait for a command response. However, no in-line command response will be formatted in the screen image.

Programmable API Enhancements

Java Application Programming Interface

This release introduces the new (E)JES Java Application Programming Interface (API). This complements the existing APIs for REXX and procedural languages.

The (E)JES Java API and supporting classes provide unauthorized-program access from the Java Language to the programming facilities available through the (E)JES API.

Consult *(E)JES Reference* and the Javadoc provided with the (E)JES Java API for documentation on all available classes and their members.

The Java API is built in Java and C++ using the (E)JES API for procedural languages. Execution will be eligible for zAAP or zIIP redirection when the Java code is running and zIIP redirection when the core (E)JES functions are running.

Enumeration Stop Time

Enumeration stop time has been added to all API interfaces.

This new field applies only to time-oriented browsers, such as SYSLOG and OPERLOG. When a non-zero value is provided and the time/date for the last enumerated record equals or exceeds this value, enumeration stops as if end of data has been reached.

TP Monitor Enhancements

Password Phrases

The TP Monitor now supports 9-100 character password phrases in addition to the traditional 1-8 character passwords.

Performance Enhancements

This release introduces even more path length reductions in heavily used code.

For example, the sort algorithm used by (E)JES for the past 20 years was designed to work even in the most storage constrained environments. It has been replaced with a much faster algorithm that leverages today's relatively storage rich environments.

In addition, blocking of internal storage elements has been increased as has the efficiency of saving and restoring those elements; more lightweight linkage protocols are employed for often-accessed routines; the use of various "expensive" z/OS and JES system services has been optimized.

These and other similar improvements have resulted in measurable CPU reductions compared to previous releases.

User Exit Enhancements

EJESUX09

Some installations, especially JES2 shops converting from SDSF, made security decisions based upon the value of the NOTIFY= keyword on the JOB card.

EJESUX09 is the exit routine that decides whether the user should be considered an extended submitter of the job

In this release, the NOTIFY= value on the job card is passed to EJESUX09 if it has already been obtained. No special code has been added to force (E)JES to obtain this value prior to every invocation of EJESUX09.

Luckily, this value happens to be available at the right times for the JES2 installations that wish to use it to bypass SAF checking of resources in the JESSPOOL class.

Phoenix Software International does not recommend the use of NOTIFY= on the JOB card for making security decisions. This functionality is provided as a migration aid only.

EJESUX10

A new 'popular' modification has been added to the USERMOD in member EJES\$X10. This modification optionally appends the character Z to the default console name provided by EJESUX10 when (E)JES is executing in a batch script or under the API.

Chapter 4. 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.

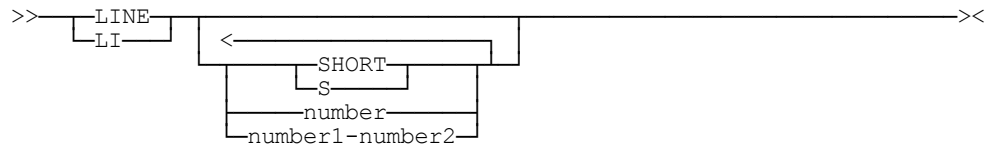
Promotion Due to Resource Contention

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

| Default Title | Description | Overtype |
|---------------|------------------------------|----------|
| 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 |
| EJESJOB1 | 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.

Chapter 5. 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
```

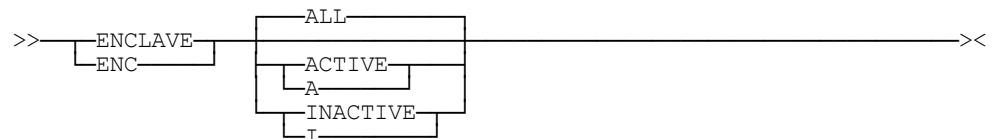
In this release, if only two operands are specified, the first is the column and the second is the comparison value. The comparison operator defaults to **EQ** and the Boolean operator defaults to **AND**. Therefore, you may now specify the following:

```
====> 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:

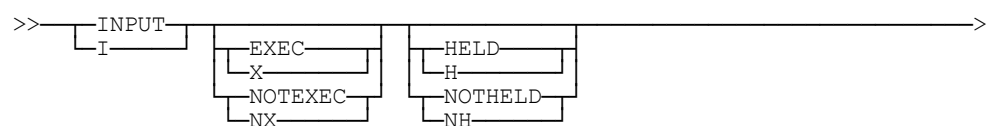
| Default Title | Description | Overtime |
|---------------|-------------------|----------|
| GrpName | Output group name | No |

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

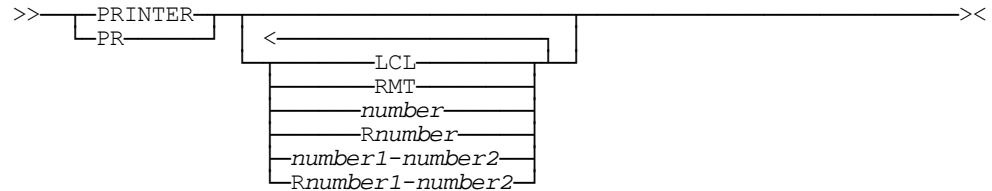
The following column was added:

| 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:

(E)JES Release Information

| 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:

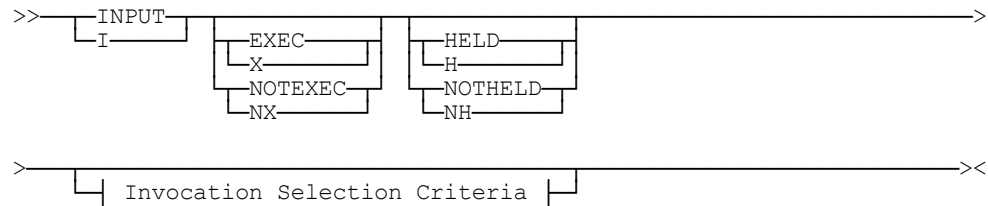
| Command | Function |
|---------|---------------------------------------|
| SA | Allocate spool browse DD for data set |
| SF | Free spool browse DD for data set |

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:

(E)JES Release Information

| 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

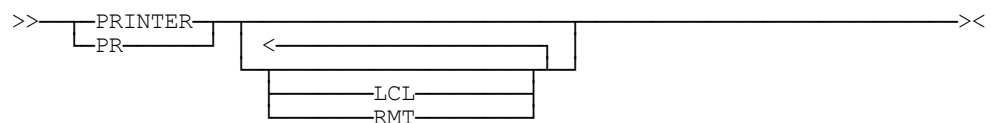
The following line commands were added:

| 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 EJEWCM2P 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.

Chapter 6. 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.

Programming Interfaces

New 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.

Enhancements to Existing Batch Interface

The processing of colon-prefixed commands on tabular displays has been enhanced to no longer require explicit cursor positioning. If the cursor is not positioned to a row on the display, the line command is issued against the row to which the display itself is positioned.

For example, if the display is positioned to row 53, and the cursor has not been explicitly positioned to a row using **FIND** or other commands, **:S** will issue the **S** line command against row 53.

This enhanced behavior is fully upward compatible for batch scripts without errors. However, if an existing batch script contains an extraneous colon-prefixed command without the (previously) required cursor-positioning command(s), the colon-prefixed command will no longer be discarded as was done in older releases.

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 spool 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> | OPERCMD5 | Command to display job classes |
| <i>jesx.DISPLAY.LINE</i> | OPERCMD5 | Command to display information about lines |
| <i>jesx.DISPLAY.NODE</i> | OPERCMD5 | Command to display information about nodes |
| <i>jesx.DISPLAY.SPOOL</i> | OPERCMD5 | Command to display information about spool volumes |
| <i>jesx.DISPLAY.SYS</i> | OPERCMD5 | Command to display member information |
| MVS.DISPLAY.OMVS | OPERCMD5 | Command to display z/OS UNIX processes |
| MVS.DISPLAY.WLM | OPERCMD5 | 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> | OPERCMD5 | Command to call the DISPLAY DSP |
| <i>jesx.DISPLAY.A</i> | OPERCMD5 | Command to display information about active jobs |
| <i>jesx.DISPLAY.C</i> | OPERCMD5 | Command to display information about job classes |
| <i>jesx.DISPLAY.D</i> | OPERCMD5 | Command to display information about devices |
| <i>jesx.DISPLAY.F</i> | OPERCMD5 | Command to display information about functional subsystems |
| <i>jesx.DISPLAY.G</i> | OPERCMD5 | Command to display information about job class groups |
| <i>jesx.DISPLAY.JOB</i> | OPERCMD5 | Command to display information about jobs |
| <i>jesx.DISPLAY.MAIN</i> | OPERCMD5 | Command to display information about mains |
| <i>jesx.DISPLAY.N</i> | OPERCMD5 | Command to display information about DJC networks |
| <i>jesx.DISPLAY.NJE</i> | OPERCMD5 | Command to display information about nodes |
| <i>jesx.DISPLAY.Q</i> | OPERCMD5 | Command to display information about the spool configuration |
| <i>jesx.DISPLAY.SC</i> | OPERCMD5 | Command to display information about job sysout classes |
| <i>jesx.DISPLAY.U</i> | OPERCMD5 | Command to display information about output |
| MVS.DISPLAY.OMVS | OPERCMD5 | Command to display z/OS UNIX processes |
| MVS.DISPLAY.WLM | OPERCMD5 | 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.

Readers Comment Form

(E)JES Release Information
0815-001-RI51

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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|--------------------------------------|---|---|---|---|---|
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Phoenix Software International
Attn: Technical Writing Department
831 Parkview Drive North
El Segundo, CA 90245-4932 USA

or send internet e-mail to:

document@phoenixsoftware.com