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(E)JES Update

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Compatibility Matrix

Operating System	V5R2 09/12*	V5R1 09/11	V4R8 09/10	V4R7 09/09
z/OS 1.13	JES2/JES3	JES2/JES3	JES3	JES3
z/OS 1.12	JES2/JES3	JES2/JES3	JES2/JES3	JES3
z/OS 1.11	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.10	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.9	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.8	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.7	JES2/JES3	JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.6		JES2/JES3	JES2/JES3	JES2/JES3
z/OS 1.5			JES2/JES3	JES2/JES3
z/OS 1.4				JES2/JES3

- Only V5 releases support z/OS 1.13 JES2.
- All releases shown support z/OS 1.13 JES3.
- V5R2 GA is *expected* in September 2012.
- V4 releases still support ESA/390 architecture.
- V4R7 became stabilized at the end of March 2012.

V4R8 Highlights

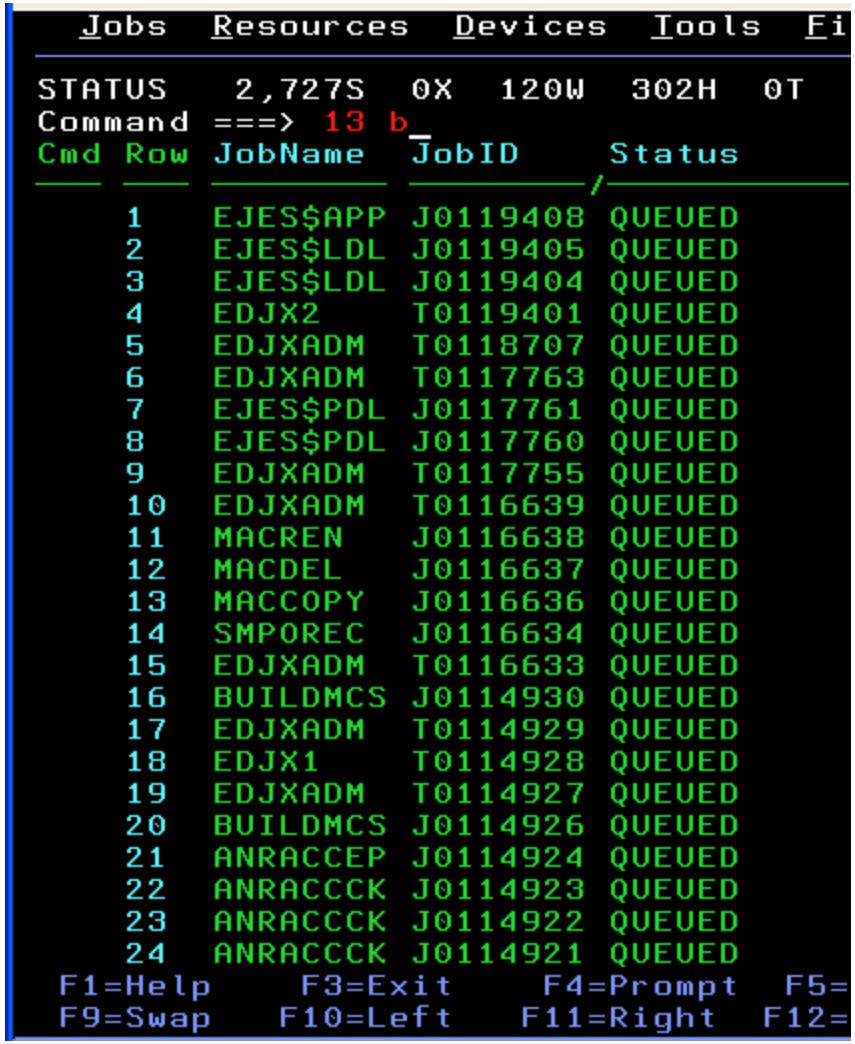
RowNum Administrative Column

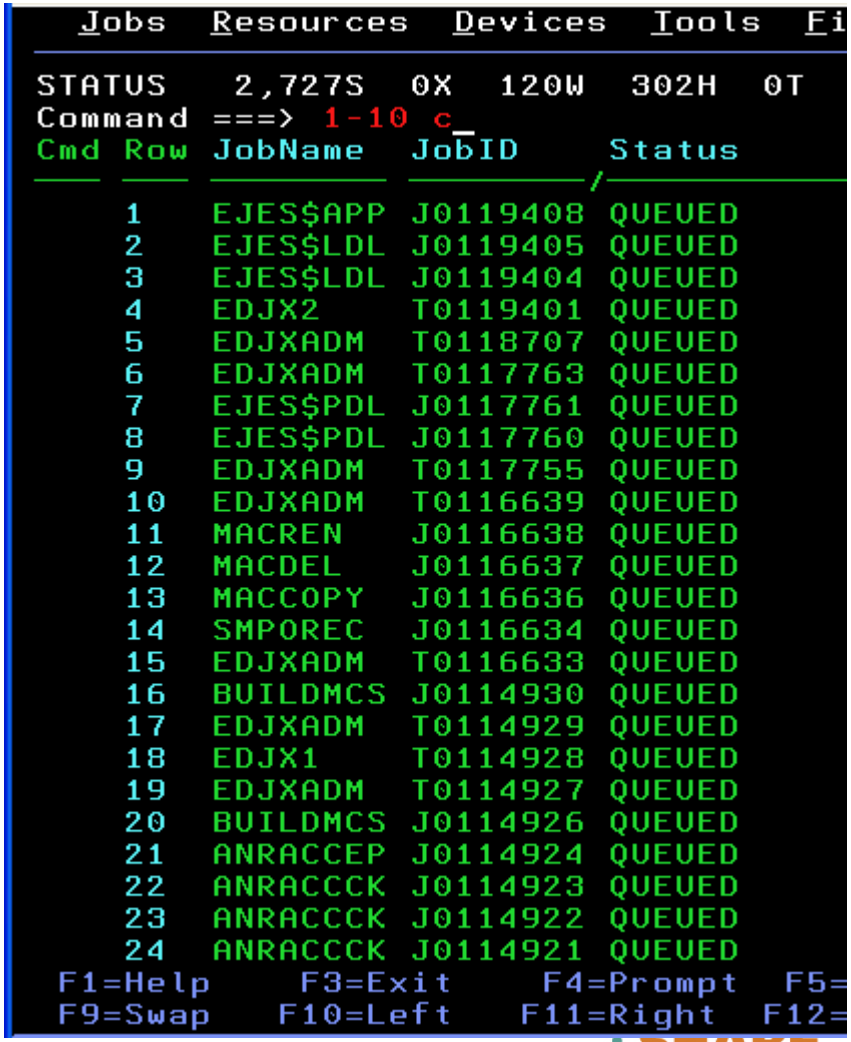
- V4R8 introduced the new RowNum column, an administrative column that optionally follows the Cmd column located at the extreme left side of a tabular display.
- This new column simply displays the number of the row. Big deal. Right? Reserve judgment until you see how it can be used with the SELECT command enhancements.
- ROWNUM ON|OFF enables/disables this feature.
- 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

- The SELECT command was enhanced 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. Previously, that 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.
- When specifying a row number or range of row numbers, the SELECT command itself is optional.

Select Command Enhancements



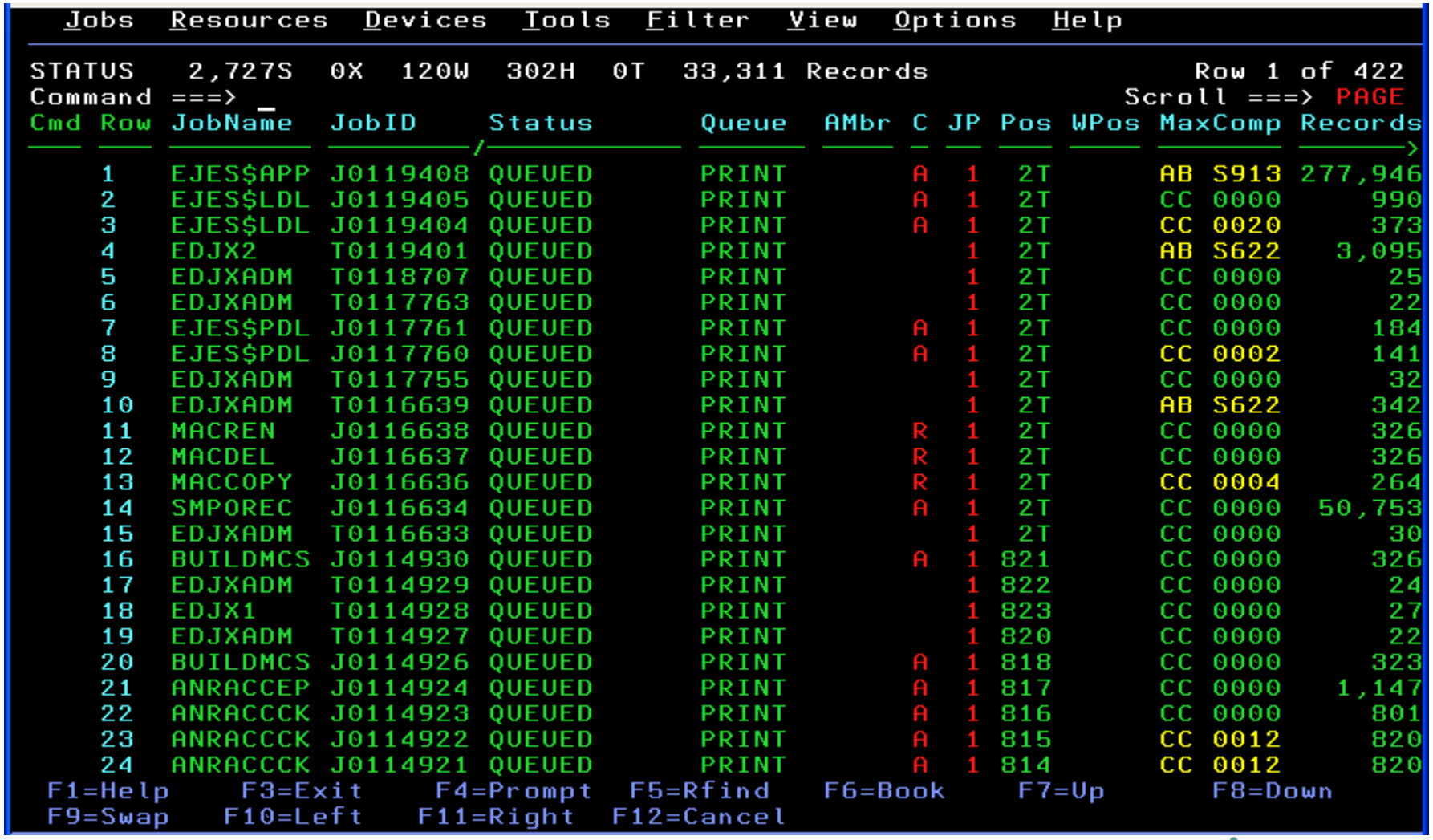


Exception Columns

- The color and highlighting of several tabular columns is modified depending on the value being formatted. The intent is to make these columns stand out to the user if they indicate errors.
- By default, the modified appearance is yellow and high-intensity. However, this may be customized by the user.
- The columns eligible for this treatment and the values considered to be exceptions are shown in the table below:

Column	Applicable Display(s)	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** greater than zero.

Exception Columns



```
  Jobs  Resources  Devices  Tools  Filter  View  Options  Help
STATUS   2,727S  0X  120W  302H  0T  33,311 Records                Row 1 of 422
Command ===> _                                                Scroll ===> PAGE
Cmd Row JobName  JobID    Status      Queue  AMbr C JP Pos WPos MaxComp Records
    1   EJES$APP J0119408 QUEUED      PRINT      A  1  2T      AB S913 277,946
    2   EJES$LDL J0119405 QUEUED      PRINT      A  1  2T      CC 0000     990
    3   EJES$LDL J0119404 QUEUED      PRINT      A  1  2T      CC 0020     373
    4   EDJX2    T0119401 QUEUED      PRINT         1  2T      AB S622   3,095
    5   EDJXADM  T0118707 QUEUED      PRINT         1  2T      CC 0000      25
    6   EDJXADM  T0117763 QUEUED      PRINT         1  2T      CC 0000      22
    7   EJES$PDL J0117761 QUEUED      PRINT      A  1  2T      CC 0000     184
    8   EJES$PDL J0117760 QUEUED      PRINT      A  1  2T      CC 0002     141
    9   EDJXADM  T0117755 QUEUED      PRINT         1  2T      CC 0000      32
   10   EDJXADM  T0116639 QUEUED      PRINT         1  2T      AB S622     342
   11   MACREN   J0116638 QUEUED      PRINT      R  1  2T      CC 0000     326
   12   MACDEL   J0116637 QUEUED      PRINT      R  1  2T      CC 0000     326
   13   MACCOPY  J0116636 QUEUED      PRINT      R  1  2T      CC 0004     264
   14   SMPOREC  J0116634 QUEUED      PRINT      A  1  2T      CC 0000  50,753
   15   EDJXADM  T0116633 QUEUED      PRINT         1  2T      CC 0000      30
   16   BUILDMCS J0114930 QUEUED      PRINT      A  1 821      CC 0000     326
   17   EDJXADM  T0114929 QUEUED      PRINT         1 822      CC 0000      24
   18   EDJX1    T0114928 QUEUED      PRINT         1 823      CC 0000      27
   19   EDJXADM  T0114927 QUEUED      PRINT         1 820      CC 0000      22
   20   BUILDMCS J0114926 QUEUED      PRINT      A  1 818      CC 0000     323
   21   ANRACCEP J0114924 QUEUED      PRINT      A  1 817      CC 0000   1,147
   22   ANRACCCK J0114923 QUEUED      PRINT      A  1 816      CC 0000     801
   23   ANRACCCK J0114922 QUEUED      PRINT      A  1 815      CC 0012     820
   24   ANRACCCK J0114921 QUEUED      PRINT      A  1 814      CC 0012     820
 F1=Help    F3=Exit    F4=Prompt  F5=Rfind   F6=Book    F7=Up      F8=Down
 F9=Swap   F10=Left   F11=Right  F12=Cancel
```

JES3 Output Descriptor Modify

- Use **A** line command on OUTDESC display to access. Make changes as needed and press <Enter>.

```
  Jobs  Resources  Devices  Tools  Filter  View  Options  Help
OUTDESCM LISTC    J0282877   MODIFY DD=..SYSPRINT                Row 1 of 171
Command ===>                                                Scroll ===> PAGE
Cmd Field     Value
--- --------/---------------------------------------------------------------->
    ADDRESS  831 Parkview Drive North
    ADDRESS  El Segundo, CA 90245
    ADDRESS
    ADDRESS
    AFPPARMS
    AFPSTATS
    BUILDING Headquarters
    BURST
    CKPTLINE
    CKPTPAGE
    CKPTSEC
    COLORMAP
    COMPACT
    COMSETUP
    COPYCNT
    DEPT     Research & Development_
    DEST
    FORMDEF
    FORMLEN
    FSSDATA
    INTRAY
    MAILBCC  edjaffe@phoenixsoftware.com
```

Operlog Message Attributes

- Formats messages using original 3270 attributes. Toggle this setting using the **LOGATTR** command, the Options panel, or the **Set log options...** pull-down under ISPF.

```
 OPERLOG  PHXHQ                                                  2012/02/20
 Command ===>                                                Scroll ===> PAGE
 Current Find Text:
<--3----+----4----+----5----+----6----+----7----+----8----+----9----+---10----+>
 09:15:36.84 DFS      00000090  IOEX18217I Sharename FRED2 on device /dev/ufs105
 09:15:36.89 DFS      00000090  IOEX18217I Sharename PHX_KEY101 on device /dev/u
                517   00000090  successfully.
 09:15:37.14 DFS      00000090  IOEP01100I DFS daemon EXPORT has stopped.
 09:15:37.17 C1CONDOR 00000090  IGA030I: OPEN FAILURE, DDNAME=GAVLOG, FILE DISAB
 09:15:37.37 CICSA    00000090  +DFHAP1211I CICA1 Language Environment initializ
 09:15:37.80 C1CONDOR 00000090  IGA052I: THE SPECIFIED APPLID IS CURRENTLY BEING
 09:15:37.80 C1CONDOR 00000090 *1254 IGA053I: PHXT1    WAS REJECTED, ENTER ANOTH
 09:15:38.14 CICSA    00000090  +DFHWB1007 CICA1 Initializing CICS Web environme
 09:15:38.92 CICSA    00000090  +DFHWB1008 CICA1 CICS Web environment initializa
 09:15:39.24 CICSA    00000090  +DFHEC1006I CICA1 Event processing status is STA
 09:15:39.50 INTERNAL 00000290  F VTAM,USERVAR,ID=CICA,VALUE=CICA1
 09:15:39.54 INTERNAL 00000090  IST097I MODIFY ACCEPTED
 09:15:39.56 INTERNAL 00000090  IST1283I MODIFY USERVAR COMMAND COMPLETE 610
                610   00000090  IST813I USERVAR CICA CHANGED FROM CICA1 TO CICA1
                610   00000090  IST314I END
 09:15:39.59 CICSA    00000090  +DFHSJ0102I CICA1 SJ domain initialization has e
 09:15:39.60 CICSA    00000090  +DFHEJ0102 CICA1 Enterprise Java domain initiali
 09:15:39.62 CICSA    00000090  +DFHSI1517 CICA1 Control is being given to CICS.
 09:15:39.62 CICSA    00000090  +DFHDH0101I CICA1 Document domain initialization
 09:15:46.01 C4CONDOR 00000090  IGA009I: PHOENIX (RELEASE 20.1) IS WAITING FOR W
```

z/OS UNIX File Extract

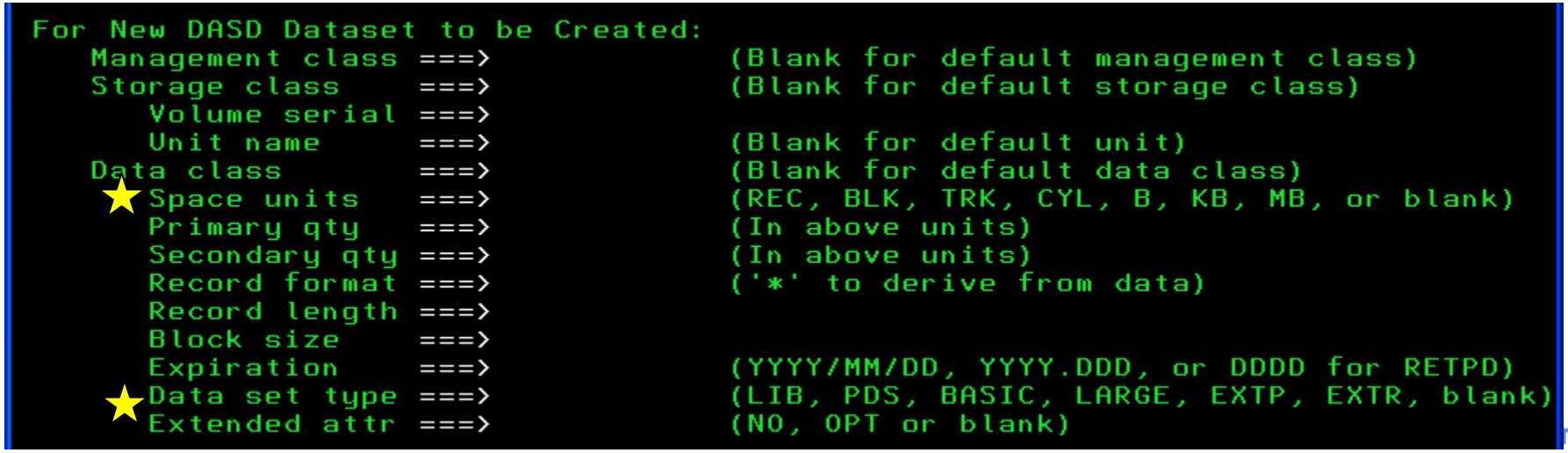
- Extract any scrollable data to a z/OS UNIX file. You may create new, overlay, or append to existing files.

```
RCVMAINT J0160773             Extract Parameters                  Z/OS UNIX
Command ===> _

For Extract to z/OS UNIX File System:
   Path name      ===> /u/edjx2



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

```
PATHSEL  /u/edjx1                                                Row 1 of 17
Command ===>                                                  Scroll ===> PAGE
Cmd Type Permission Owner    Group    FileName
--- ----/---------- -------- -------- ----------------------------------------->
    Dir  drwx------ EDJX1    DEV      .
    Dir  dr-xr-xr-x WEBADM   TTY      ..
    File -rw------- EDJX1    DEV      .bash_history
    File -rw------- EDJX1    DEV      .sh_history
_   Dir  drwxr-xr-x EDJX1    DEV      .ssh
  ------------- Line Commands -----------  ubs assembly
    L   Select file or directory           ev
    N   Prompt for new file or directory   port.CSV
    S   Select file or directory           port1.xls
                                           port1.CSV
```

Other Extract Enhancements

- DASD space units are now in tracks, cylinders, records, blocks, bytes, kilobytes or megabytes.
- DASD data set type is now LIB (a PDSE), PDS, BASIC, LARGE, EXTP (extended preferred), EXTR (extended required), or blank (unspecified).
- DASD extended attributes now allow extract data sets to be made eligible for EAV residency. (EATTR=OPT)



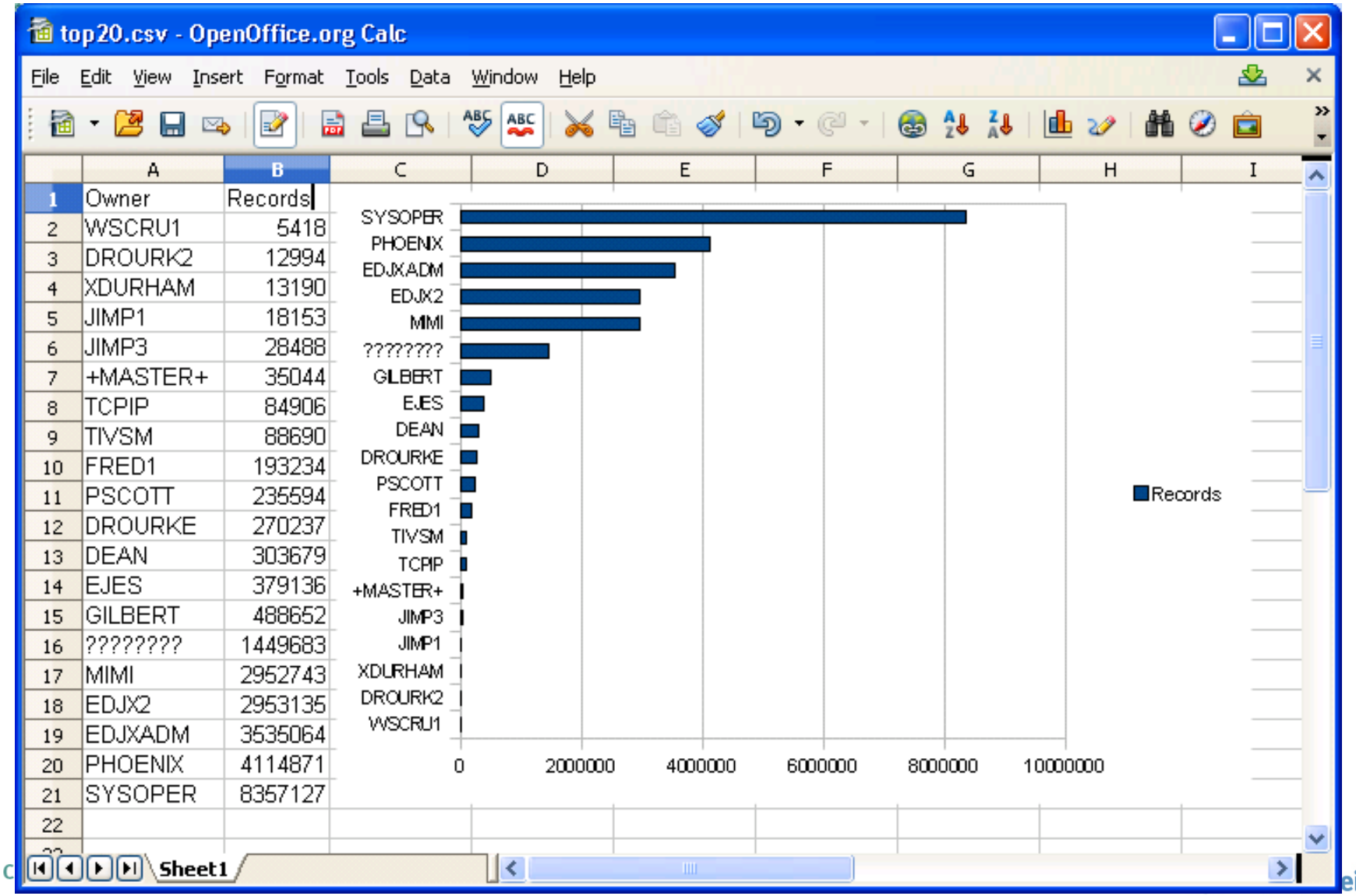
Java Application Programming Interface

- Provide unauthorized-program access from the Java Language to the programming facilities available through the (E)JES API.
- Complements existing APIs for REXX and procedural languages (HLASM, C/C++, COBOL, PL/I, etc.).
- Provided Javadoc documents all available classes and their members.
- Authored in Java with C++ JNI routines leveraging EJESAPI and EJESAPI4 for procedural languages.
- Eligible for zAAP or zIIP redirection when the Java code is running and for zIIP redirection when the core (E)JES code is running.

Java to Create CSV File Showing Top 20 Spool Consumers

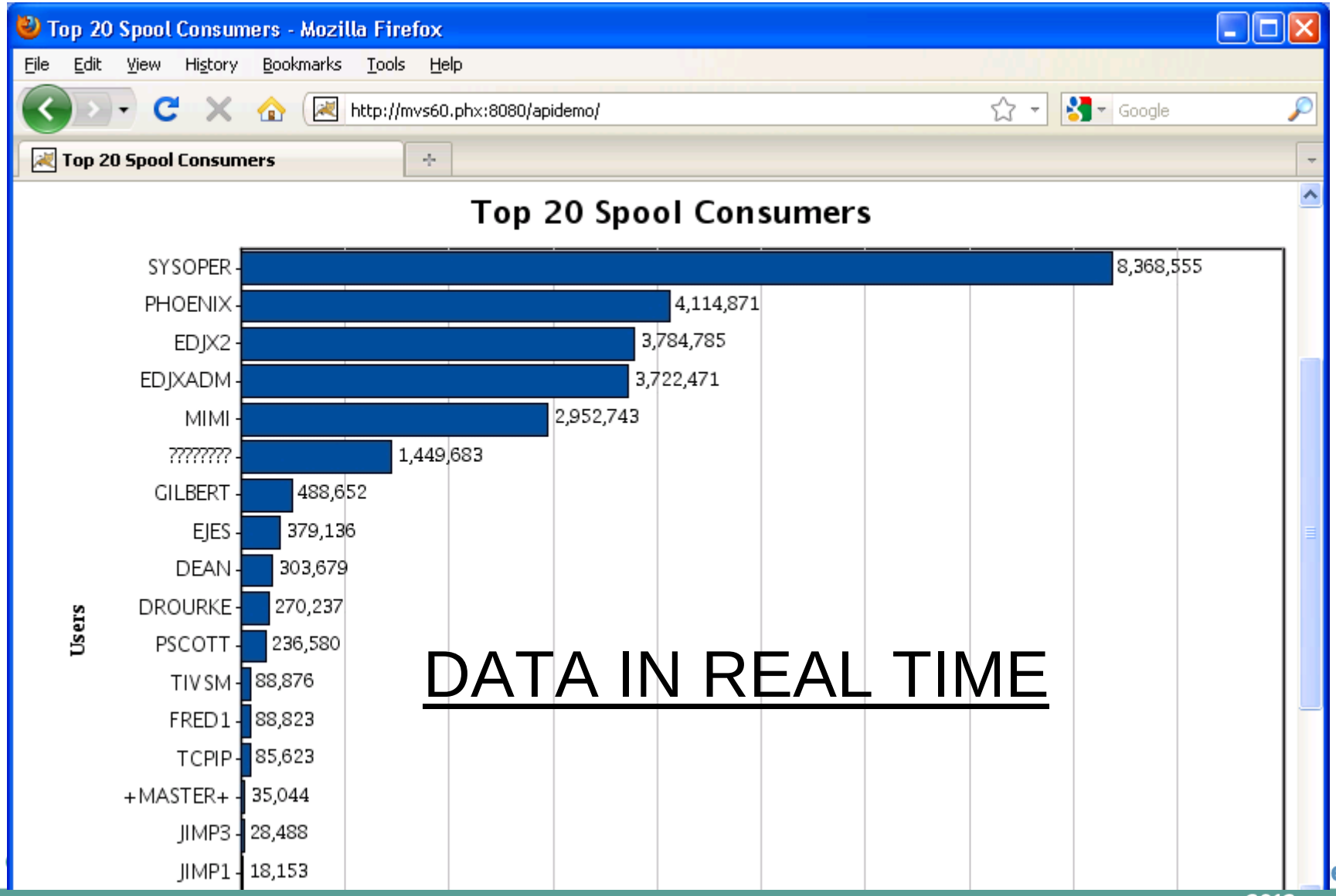
```
000001 import java.util.*;
000002 import com.phoenixsoftware.ejes.*;
000003 import static com.phoenixsoftware.ejes.EjesApi.Column;
000004 public class sample01 {
000005     static final int MAX_TOP = 20;
000006     public static void main( String[] args ) {
000007         Map<String,Column> cm = new HashMap<String,Column>();
000008         Map<String,Long> map = new HashMap<String,Long>();
000009         String key = null;
000010         Long value = null;
000011         /* Request enumeration of STATUS display */
000012         EjesApi api = new EjesApi( "sres;st", 100 );
000013         if ( api.returnCode <= 4 ) {
000014             String [] columnList = { "OWNER", "RECORDS" };
000015             while ( api.returnCode <= 4 ) {
000016                 Column[][] tabular = api.enumerateColumns( columnList );
000017                 /* Calculate sum of all records per user */
000018                 if ( tabular != null ) {
000019                     for ( Column[] row : tabular ) {
000020                         for ( Column col : row )
000021                             cm.put( col.columnName, col );
000022                         key = cm.get("OWNER").columnText;
000023                         value = cm.get("RECORDS").columnValue;
000024                         Long r = map.get( key );
000025                         map.put( key, r == null ? value : r + value );
000026                     }
000027                 }
000028                 /* Get next enumeration set */
000029                 if ( api.returnCode != 0 )
000030                     break;
000031                 api.runCommand( "" );
000032             }
000033             /* Create sortable string List */
000034             List<String> list = new ArrayList<String>(map.size());
000035             Iterator<Map.Entry<String,Long>> m = map.entrySet().iterator
000036             while ( m.hasNext() ) {
000037                 Map.Entry<String,Long> entry = m.next();
000038                 Formatter f = new Formatter();
000039                 f.format( "%,25d %-10.10s", entry.getValue(), entry.getK
000040                 list.add( f.toString() );
000041             }
000042             Collections.sort( list, Collections.reverseOrder() );
000043             /* Output top spool users */
000044             ListIterator<String> i = list.listIterator();
000045             System.out.printf( "%-10.10s %25.25s\n", "Owner", "Records"
000046             for ( int n = 0 ; n < MAX_TOP && i.hasNext() ; n++ ) {
000047                 String s = i.next();
000048                 System.out.printf( "%-10.10s ", s.substring(26).trim() )
000049                 System.out.printf( "%25.25s\n", s.substring( 0, 25 ).tri
000050             }
000051         }
000052         api.free();
000053 }
```

Result After Opening CSV File With OpenOffice.org and Inserting a Chart



	A	B
1	Owner	Records
2	WSCRU1	5418
3	DROURK2	12994
4	XDURHAM	13190
5	JIMP1	18153
6	JIMP3	28488
7	+MASTER+	35044
8	TCPIP	84906
9	TIVSM	88690
10	FRED1	193234
11	PSCOTT	235594
12	DROURKE	270237
13	DEAN	303679
14	EJES	379136
15	GILBERT	488652
16	????????	1449683
17	MIMI	2952743
18	EDJX2	2953135
19	EDJXADM	3535064
20	PHOENIX	4114871
21	SYSOPER	8357127
22		

Java Sample Modified to Use Krysalis jCharts Under z/OS Apache Tomcat



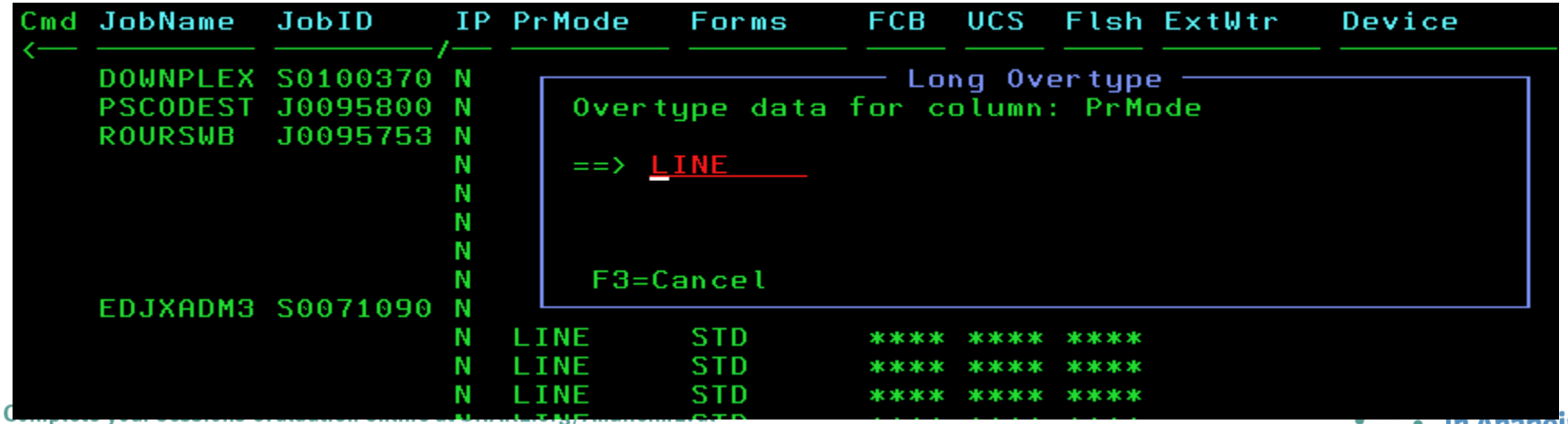
Other V4R8 Enhancements of Note

- Parameters column on HCHECK now overtypeable.
- Support for work-dependent enclaves on ENCLAVE.
- Full EAV support for SPOOL access as well new EAV column and displaying LoCylTrk and HiCylTrk on SPVOL in EAV format.
- Interface to provide **Queue** and **Status** columns from Thruput Manager® for customers that use this product.
- **MbrAff** column on JES2 CLASS display.
- TP Monitor password phrase support.
- Performance enhancements with new hardware-assisted sort and other significant path length reductions.

V5R1 Highlights

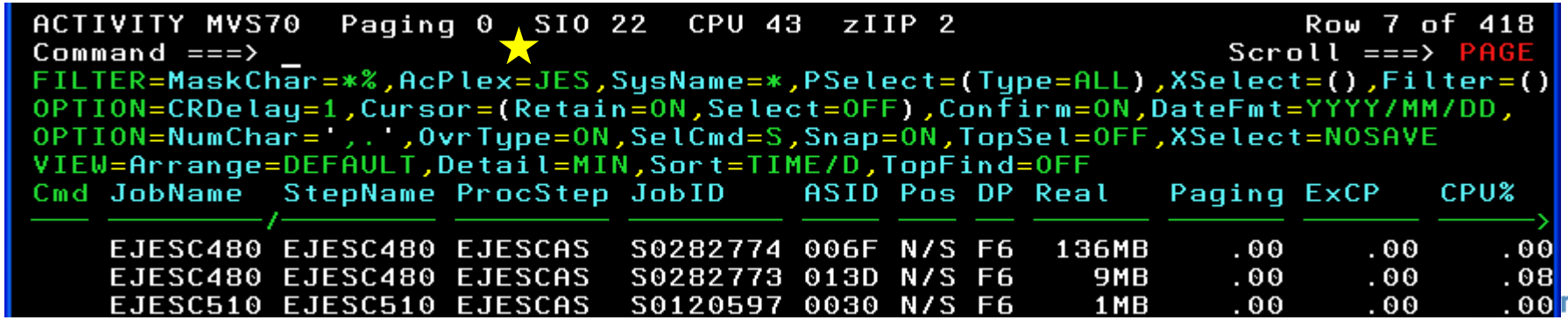
Pop-up Input Window

- Previously, an overtypeable column had to be defined and displayable as wide as any input to be placed into it.
- The new pop-up input window provides space for up to 126 characters to be input into any overtypeable field.
- To activate the pop-up input window, place your cursor on the column to be overtyped and press the Prompt key (usually F4).



Sysplex-wide Activity Display Scope

- Previously, ACTIVITY was always JESplex-wide. That is now the default value specified with ACPLEX JES.
- JESplex-wide information can be obtained using RMF, CMF or native (E)JES facilities.
- The new ACPLEX SYS value 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.



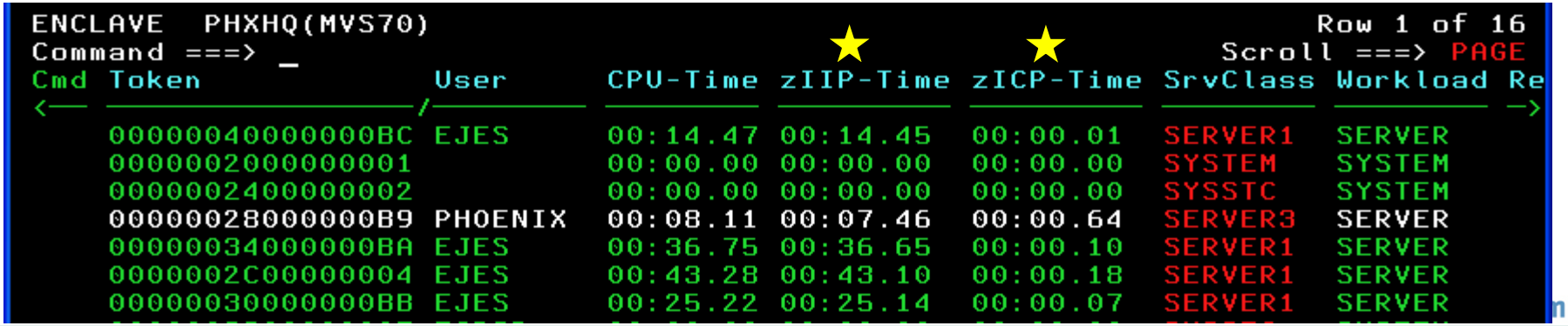
Enhancements to Enclaves Display

- The following columns were added:

Default Title	Description	Overtype
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	Yes

- The following line command was added:

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



Enhancements to Health Checker Display

- The following columns were added:

Default Title	Description	Overtype
RexxIn	REXX input data set name	No
RexxOut	REXX output data set name	No
LogStream	Name of the logstream used to record checks.	No

- The following line commands were added:

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

New Health Check History Display

- Run history of a selected check.
- Either short history (up to 10 rows) or the complete long history (from the log stream).
- Browse and extract messages from any check iteration.

```
HCHKHIST MVS60 ASM_LOCAL_SLOT_USAGE/IBMASM                      Row 1 of 10
Command ===> _                                                  Scroll ===> PAGE
Cmd Run   Status                Result Diag1    Diag2    RunDate   RunTime
___ ____/_____________________ ______ ________ ________ ________ ________
      64 SUCCESSFUL                 0 00000000 00000000 2012/02/20 17:22:08
      63 SUCCESSFUL                 0 00000000 00000000 2012/02/20 16:52:08
      62 SUCCESSFUL                 0 00000000 00000000 2012/02/20 16:22:08
      61 SUCCESSFUL                 0 00000000 00000000 2012/02/20 15:52:08
      60 SUCCESSFUL                 0 00000000 00000000 2012/02/20 15:22:08
      59 SUCCESSFUL                 0 00000000 00000000 2012/02/20 14:52:08
      58 SUCCESSFUL                 0 00000000 00000000 2012/02/20 14:22:08
      57 SUCCESSFUL                 0 00000000 00000000 2012/02/20 13:52:08
      56 SUCCESSFUL                 0 00000000 00000000 2012/02/20 13:22:08
      55 SUCCESSFUL                 0 00000000 00000000 2012/02/20 12:52:08
********************************* Bottom of Data ********************************
```

Action Messages on JES2 Syslog Browser

- Previously this support existed for JES3 only.

```
SYSLOG  MVSA0/SA0 S0118897(SYSLOG06) 2012/02/19 10:02    Line 126496 of 126534
Command ===>                                             Scroll ===> PAGE
Current Find Text:                                       Dataset 58 of 60
<--3----+----4----+----5----+----6----+----7----+----8----+----9----+---10----+>
10:02:28.99 INTERNAL 00000280  IXC307I STOP PATHOUT REQUEST FOR DEVICE 5022 COM
                347 00000280  SUCCESSFULLY: SYSPLEX PARTITIONING OF LOCAL SYST
10:02:29.04 INTERNAL 00000280  IXC307I STOP PATHIN REQUEST FOR DEVICE 4011 COMP
                351 00000280  SUCCESSFULLY: SYSPLEX PARTITIONING OF LOCAL SYST
10:05:08.01 SYSLOG   00000000  IEE042I SYSTEM LOG DATA SET INITIALIZED
00:01:01.54 SYSLOG   00000000  IEE042I SYSTEM LOG DATA SET INITIALIZED
17:48:04.81 INTERNAL 00000290  D C,HC,L=Z
17:48:04.83 INTERNAL 00000090  CNZ4100I 17.48.04 CONSOLE DISPLAY 801
                801 00000090  CONSOLES MATCHING COMMAND: D C,HC
                801 00000090  MSG:CURR=0    LIM=5000 RPLY:CURR=3    LIM=20
                801 00000090  HARDCOPY  LOG=(SYSLOG,OPERLOG)  CMDLEVEL=CMDS
                801 00000090         ROUT=(1-10,12-13,15-128)
                801 00000090  LOG BUFFERS IN USE: 0       LOG BUFFER LIMIT: 15
10.04.44          *1242 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
09.52.18          *1233 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
09.37.17          *1224 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
07.05.09 DFHSM70  *ICH409I 878-000 ABEND DURING RACHECK PROCESSING
07.05.09 DFHSM70  *ICH409I 878-000 ABEND DURING RACHECK PROCESSING
04.51.04          *IOS003A 1501,INTERVENTION REQUIRED, READY THE LOADER
09.57.01 IOSHMCTL *IOSHM0803E HyperSwap Disabled
09.53.33 JES3     *IAT1005 SPOOL PARTITION PARTB    IS FULL AND OVERFLOWED INTO
17.52.10          *HZS0003E CHECK(IBMXCF,XCF_CDS_SPOF):
              732 IXCH0242E One or more couple data sets have a single point o
17.37.08          *HZS0003E CHECK(IBMXCF,XCF_CDS_SPOF):
 F1=Help    F3=Exit    F5=Rfind   F6=Book    F7=Up      F8=Down    F9=Swap
F10=Left   F11=Right  F12=Cancel
```

Programmable API Enhancements

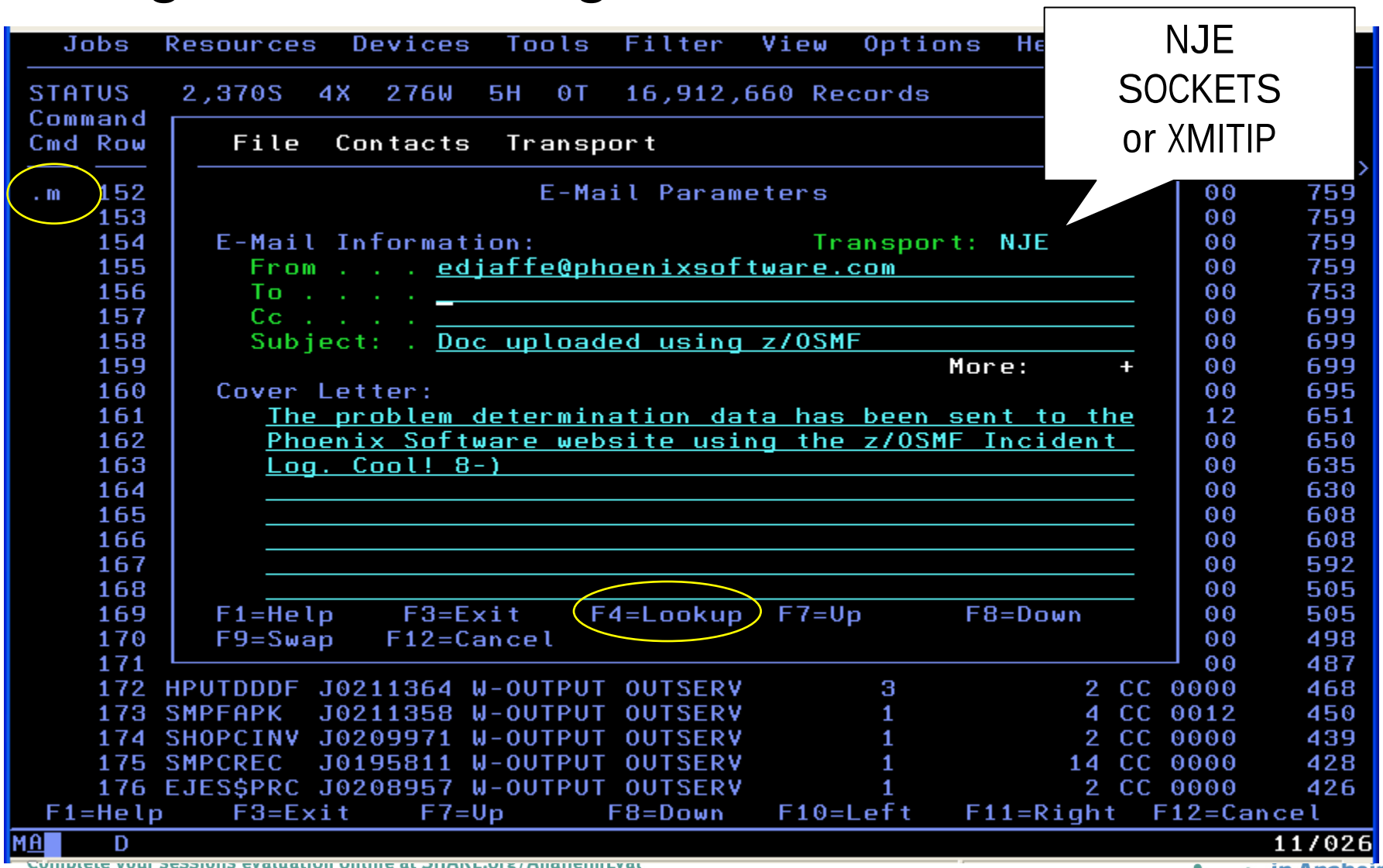
- The new SDSALLOC and SDSFREE commands will allocate and free the data sets shown on Syslog browser.
  - Previously, the only way to get SDSB allocation for Syslog data sets was to access SYSLOG as an ordinary job.
- RECFM and LRECL for SDSB data sets are now surfaced to procedural language, REXX and Java APIs.

```
VIEW       SYS2.E510.SEJEMAC(EJESAPIA) - 01.00          Columns 00001 00072
Command ===> _____________________________________________ Scroll ===> CSR
000338 EJESApiSdsbEnt    DSECT ,              SDSB table entry
000339 EJESApiSdsbDD     DS    CL8            DD name
000340 EJESApiSdsbLRECL  DS    H      Ver01   Logical record length from JFCB
000341 EJESApiSdsbDSNLn  DS    H              Length of data set name
000342 EJESApiSdsbDSN    DS    CL44           Data set name (blank padded)
000343 EJESApiSdsbEntLn0 EQU   *-EJESApiSdsbEnt Length of version 0 tbl entry
000344 EJESApiSdsbRfLn   DS    H      Ver01   Length of record format string
000345 EJESApiSdsbRfStr  DS    CL5    Ver01   Record format string (nul term'ed)
000346 EJESApiSdsbRECFM  DS    BL1    Ver01   Encoded record format from JFCB
000347 EJESApiSdsbRecfmU EQU    B'11000000'  .RECFM=U
000348 EJESApiSdsbRecfmF EQU    B'10000000'  .RECFM=F
000349 EJESApiSdsbRecfmV EQU    B'01000000'  .RECFM=V
000350 EJESApiSdsbRecfmB EQU    B'00010000'  .RECFM=?B
000351 EJESApiSdsbRecfmS EQU    B'00001000'  .RECFM=?S
000352 EJESApiSdsbRecfmA EQU    B'00000100'  .RECFM=?A
000353 EJESApiSdsbRecfmM EQU    B'00000010'  .RECFM=?M
```

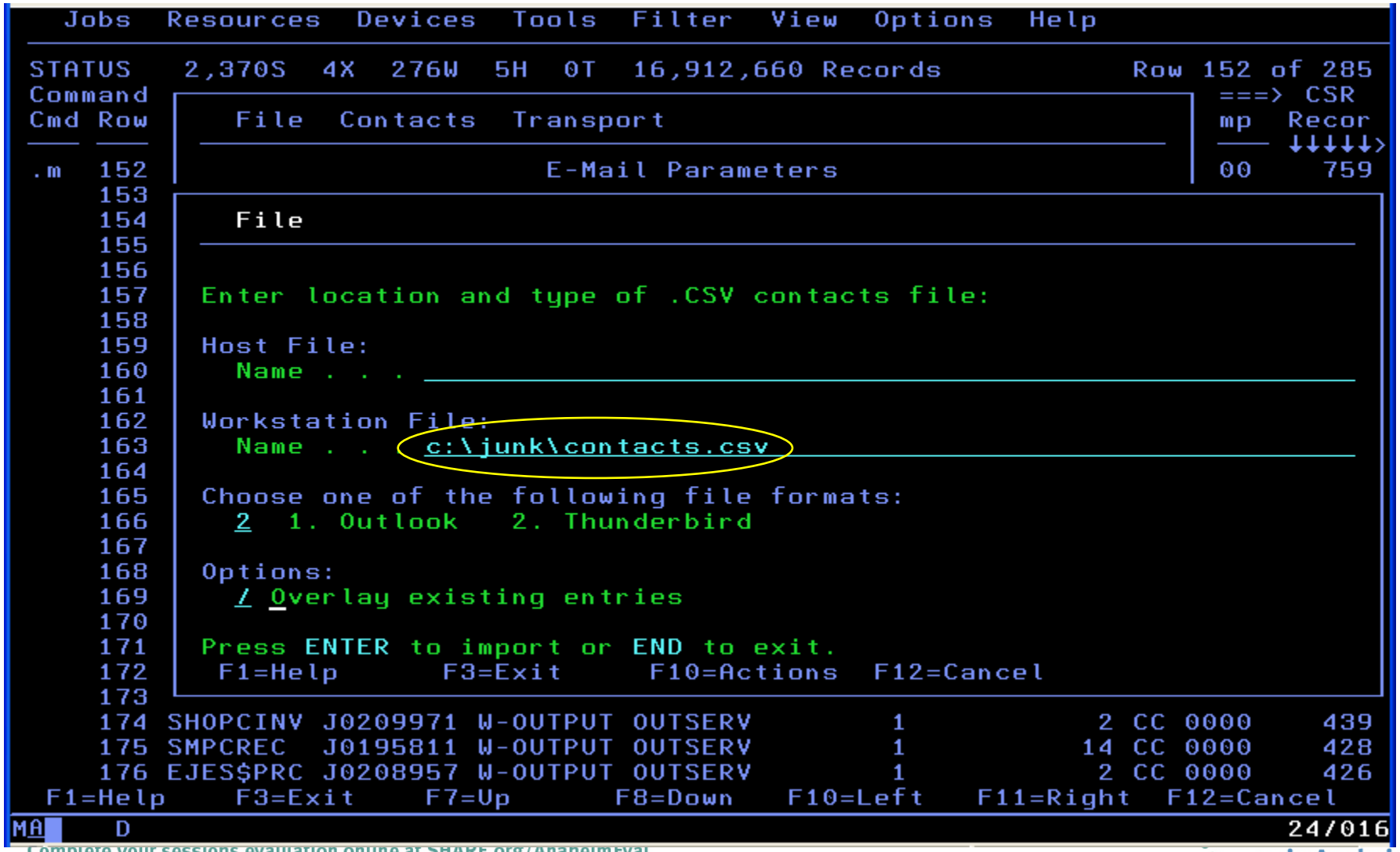
Email CAI Plug-in Enhancements

- Improved Transport Choices:
  - Previously, email could be delivered only via z/OS SMTP (or CSSMTP in z/OS 1.12 and higher).
  - Email can now also be delivered via direct sockets or a popular freeware utility called XMITIP.
  - You choose the email delivery mechanism via the **Transport** action bar item.
- Improved Address Book:
  - Pressing the Prompt key (F4) with the cursor positioned to an email address field on the dialog now invokes the address book.
  - 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.

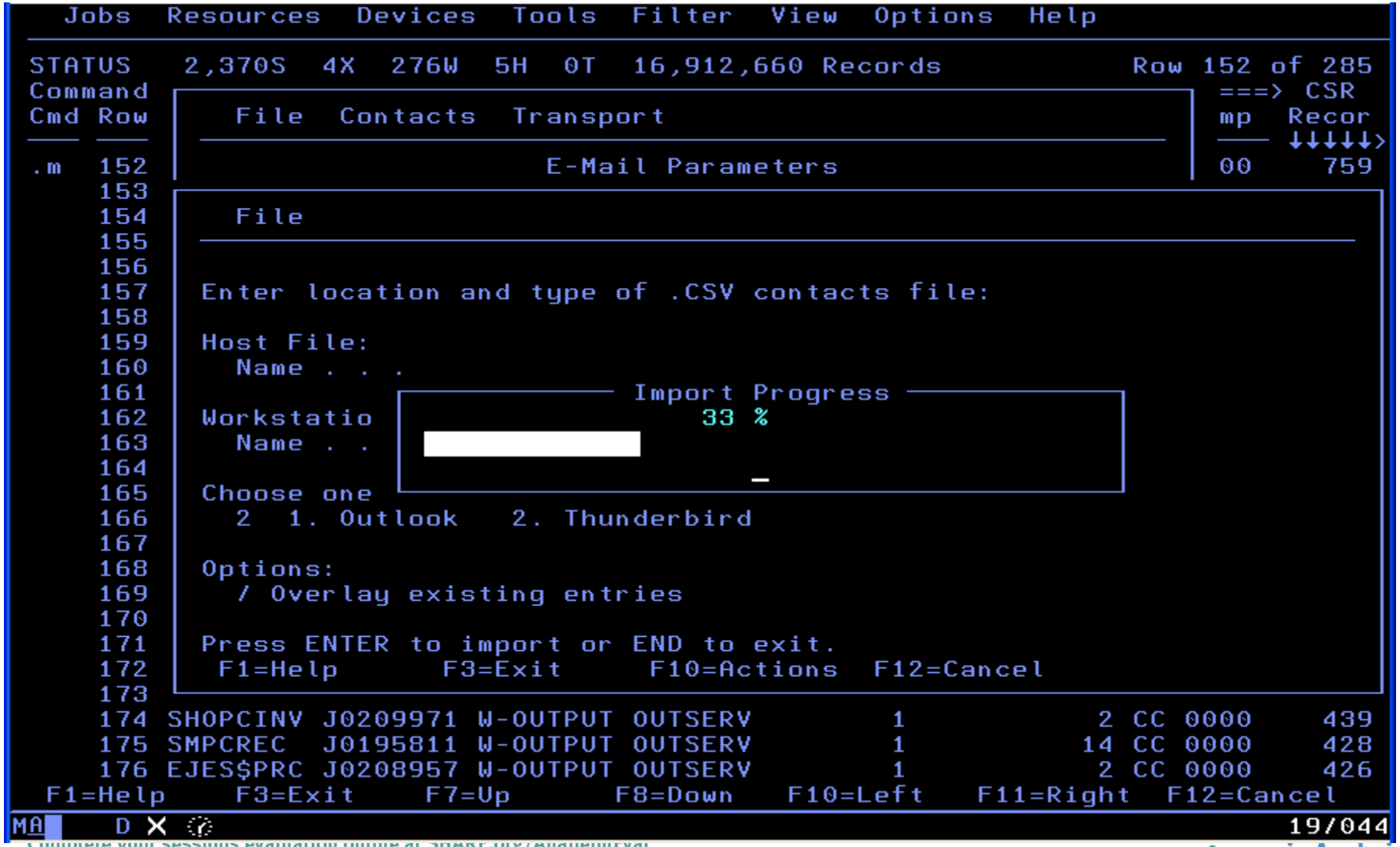
Using Email CAI Plug-in



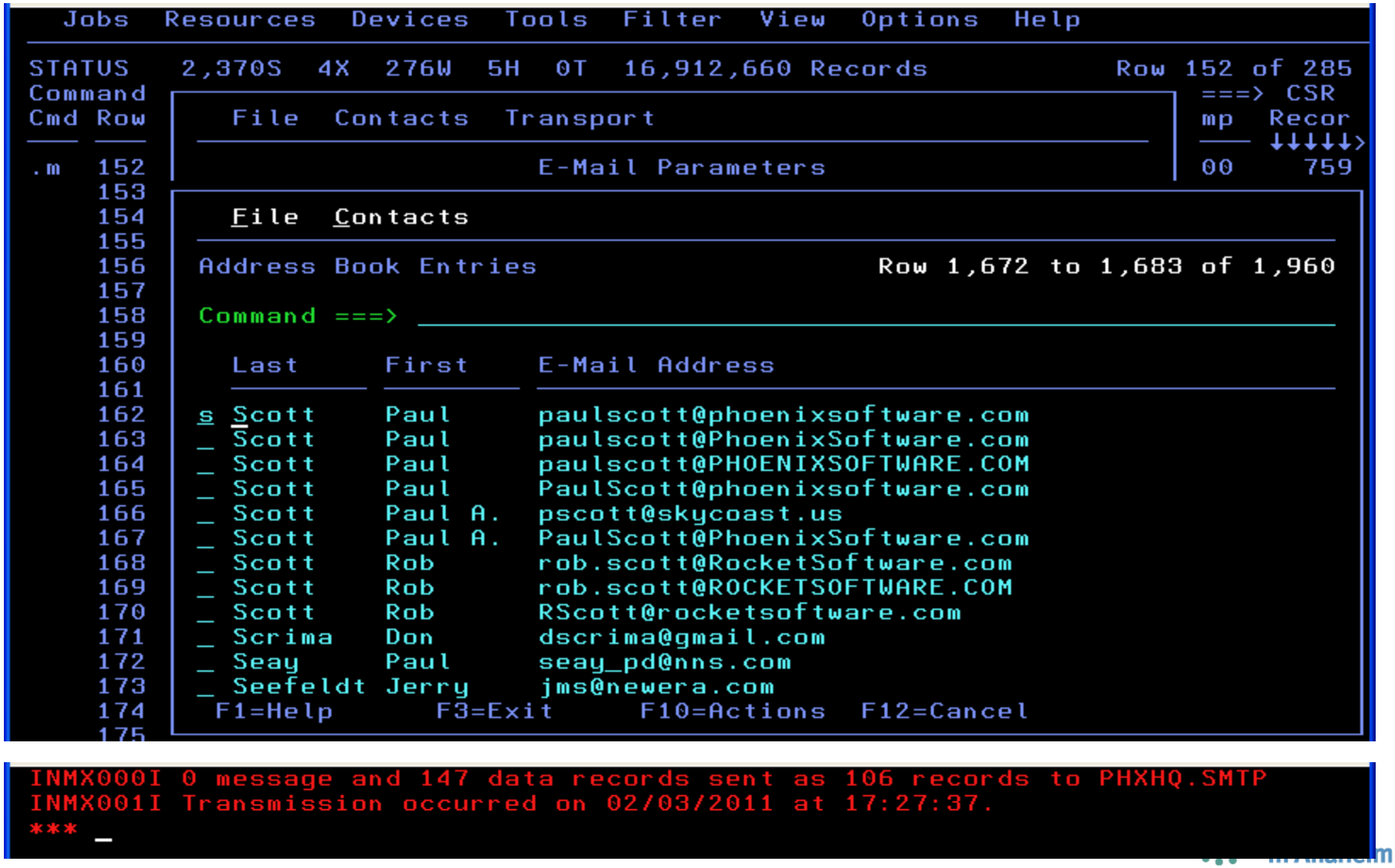
Using Email CAI Address Book Import



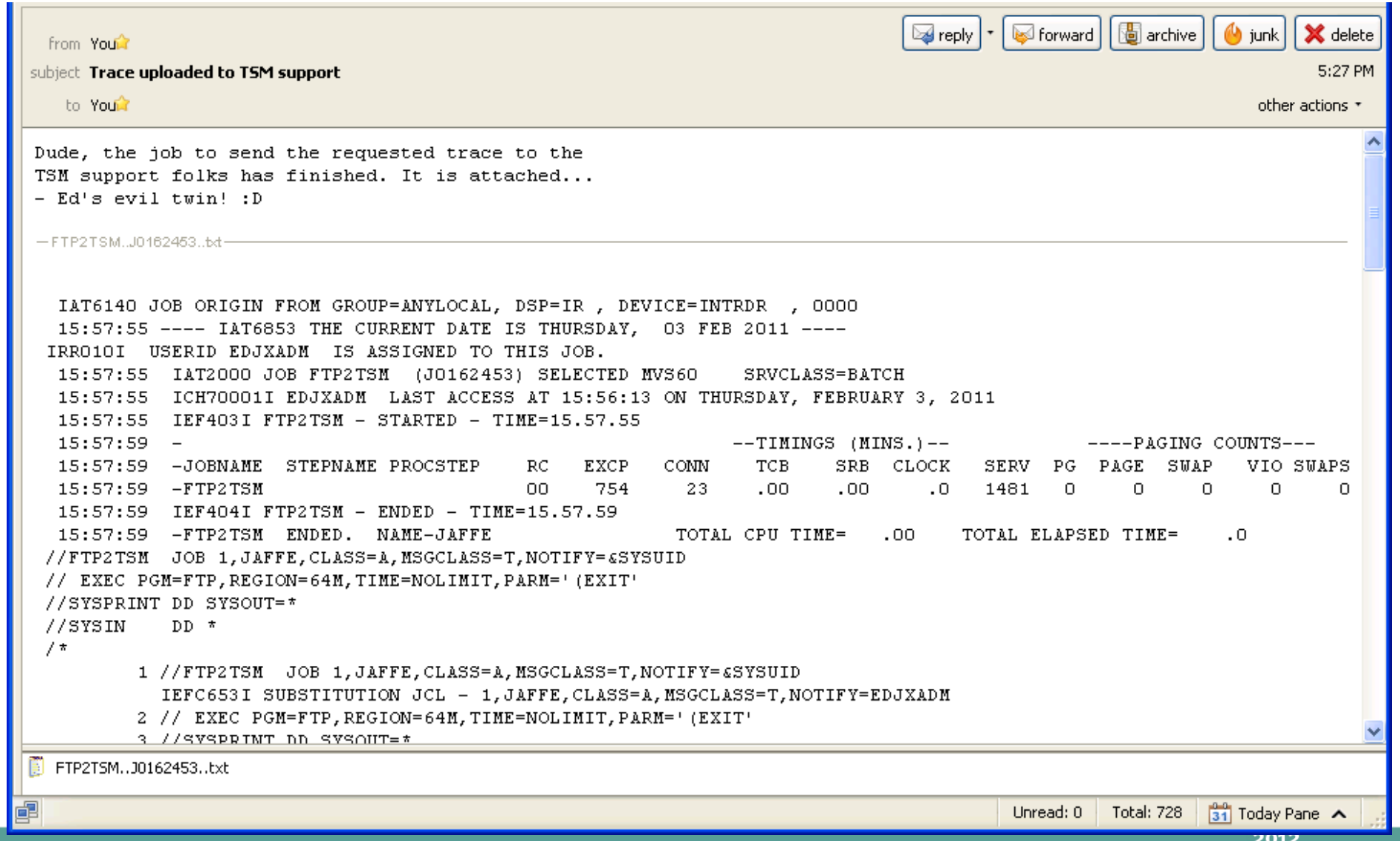
Using Email CAI Address Book Import



Using Email CAI Address Book Import



E-Mail Message With Job Attachment Successfully Received By Mail Client



Selective “Push” of Installation Defaults

- A new infrastructure was implemented to facilitate resetting all or part of end users' cross-session profile data. This allows administrators to "push" changes for selective profile fields out to users without requiring them to delete their profiles.
- New EJESPRS macro, used in EJESUX03, provides a standardized method of managing changes to 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, were converted to use the new infrastructure.

Other V5R1 Enhancements of Note

- Require z/Architecture with the long-displacement facility.
- Support JES2 SPOOL Migration.
- Support JES3 Dynamic SPOOL Add.
- ISFCALLS enhancements from z/OS 1.10 through z/OS 1.13.
- More than 64 logical CPs,zIIPs and zAAPs per image.
- New ACTIVITY drill-down from job-oriented displays.
- JES2 restart after step completion, spin-ANY data set, and JOBRC.
- New Auto-Reply support on System Requests display.
- Enhanced LOG relative time navigation: (add minutes & seconds).
- Pattern Utility unconditional matching or “bracketing”.
- Major performance enhancement for accessing JES2 sysout from spin-off jobs (e.g., APPC/MVS or z/OS UNIX). Requires checkpoint mode Z11. (Similar to JES3 processing that existed since OS/390 1.3.)
- Auditing of SWB Modify requests: (new EJES112 message).
- Function key rework: (F4=Prompt, F17=RFINDP and others).
- Service download via HTTP: (requires cURL from z/OS UNIX).

V5R2 Preview

New Displays

Network Connections Display

- Supported for both JES2 and JES3.
- Shows information about networking connections to an adjacent node, including BSC NJE lines, NJE over SNA, and TCP/IP socket connections, as well as associated receivers and transmitters.
- To access, use the new **NETCONN** command or select **Network Connections** from the **Devices** pull-down menu under ISPF.

```
NETCONN  PHXHQ Network Connections Status                    Row 12 of 18
Command ===> _                                          Scroll ===> CSR
Cmd Row Device         Status   Type ANode    JobName  JobID    JobType  Owner
    12  HQSOCK3        INACTIVE TCP  VM80
    13  HQSOCK2        ACTIVE   TCP  PHXHQ2
    14  HQSOCK2.OR1    INACTIVE
    15  HQSOCK2.OT1    INACTIVE
    16  HQSOCK2.JR1    INACTIVE
    17  HQSOCK2.JT1    INACTIVE
```

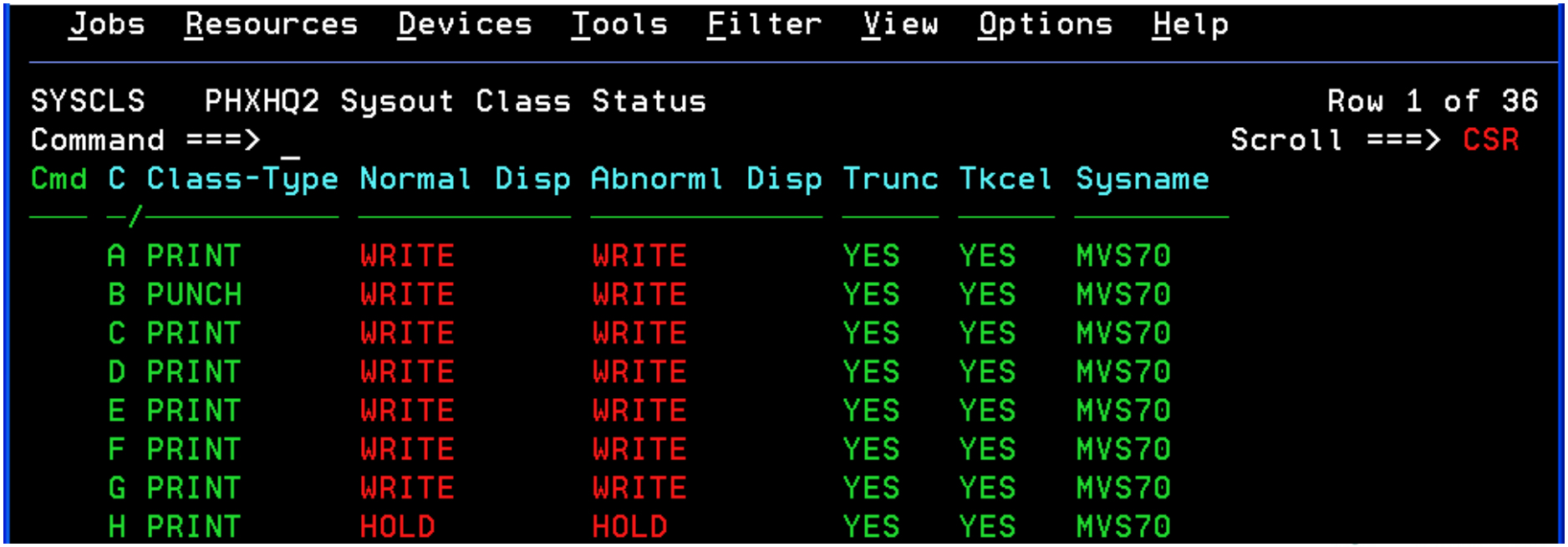
Network Servers Display

- Supported for both JES2 and JES3.
- Shows information about network servers, including NETSERV devices and BDT instances.
- To access, use the new **NETSERV** command or select **Network Servers** from the **Devices** pull-down menu under ISPF.

```
NETSERV  PHXHQ Network Servers Status                          Row 1 of 2
Command ===> _                                            Scroll ===> CSR
Cmd  Row Device      Status   DSPName  Stack    TrC TrJ TrV ASID  ServName   IP-
____ ___ ___________/________ ________ ________ ___ ___ ___ ____ __________ ___>
     1   NZSERV1     INACTIVE                   YES NO  NO                   192
     2   HQSRV1      ACTIVE   J0329933          NO  NO  NO  0050 J0329969
********************************* Bottom of Data ********************************
```

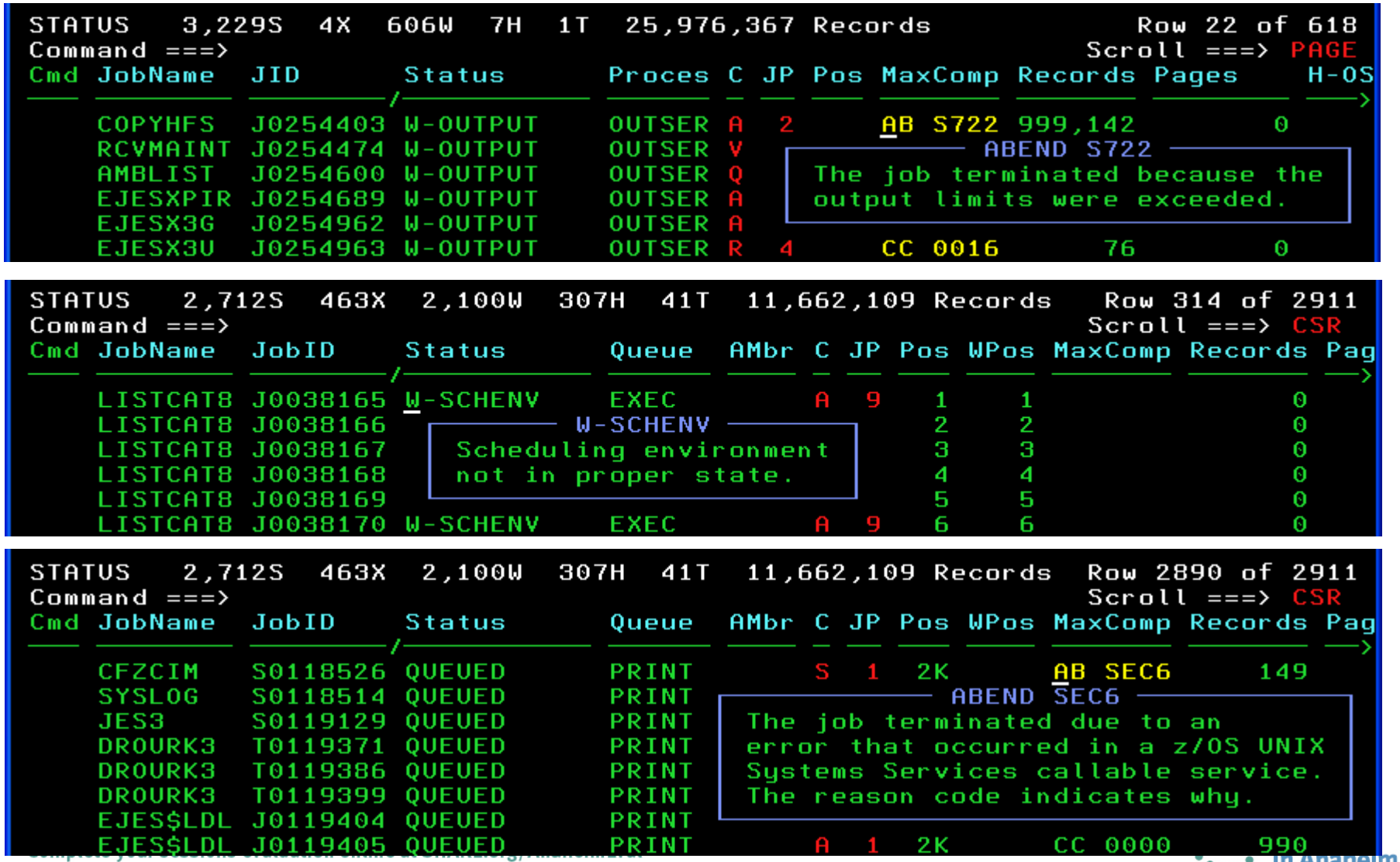
Sysout Classes Display for JES2

- This display is an analog to the already-existing JES3 display of the same name.
- Helps you manage sysout classes in the JESplex.
- To access, use the **SYSCLS** command or select **Sysout Classes** from the **Devices** pull-down menu under ISPF.



Enhancements To Existing Displays

“Smart” Help Pop-ups for Status and MaxComp Columns



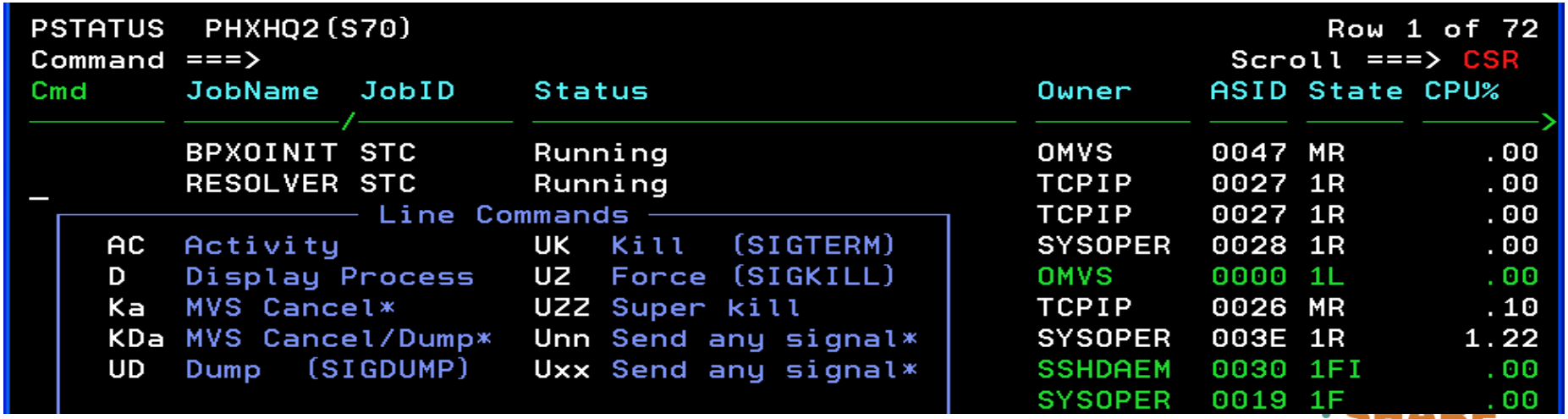
Mutual Drill-Down Between Activity and Process Status Displays

- The following line command was added to Activity:

Command	Function
PS	Invoke Process Status display for selected address space.

- The following line command was added to Process Status:

Command	Function
AC	Invoke Activity display for selected z/OS UNIX process.



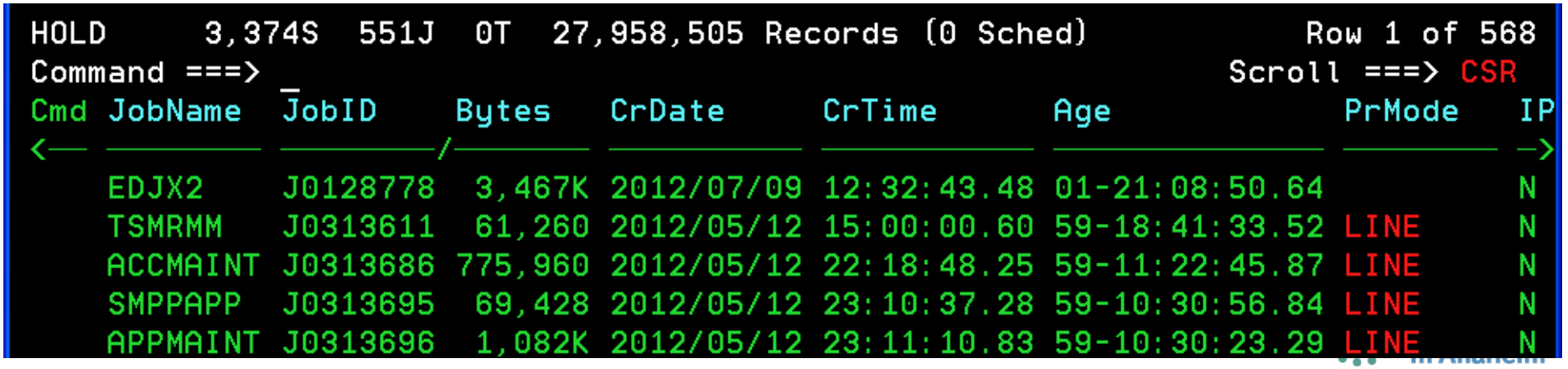
Hold Display

- The following column was added for JES2:

Default Title	Description	Overtype
Age	Time since output was created.	No

- The following columns were added for JES3:

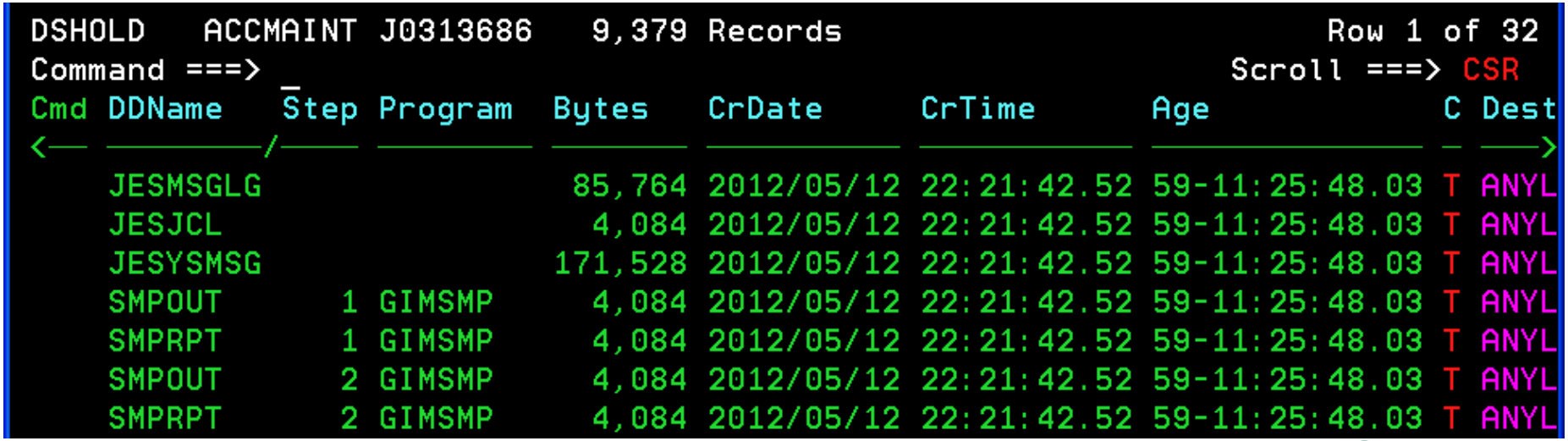
Default Title	Description	Overtype
Bytes	Number of output bytes	No
CrDate	Date output was added to queue	No
CrTime	Time output was added to queue	No
Age	Time since output was created	No



Hold Data Sets Display

- The following columns were added:

Default Title	Description	Overtype
Step	Job step number	No
Program	Job step program name	No
Bytes	Number of output bytes	No
Age	Time since output was created	No



Output/Writer Display

- The following column was added for JES2:

Default Title	Description	Overtype
Age	Time since output was created.	No

- The following columns were added for JES3:

Default Title	Description	Overtype
Bytes	Number of output bytes	No
CrDate	Date output was added to queue	No
CrTime	Time output was added to queue	No
Age	Time since output was created	No

```
WRITER   3,375S  9J  0T  179,480 Records (0 Sched)                  Row 1 of 9
Command ===> _                                                  Scroll ===> CSR
Cmd JobName  JobID    Bytes   CrDate     CrTime       Age                 IP W-OSE
<-- --------- --------/------- ---------- ------------ ------------------- -- ------>
    LOGSAVA0 JOB92807       0 2010/07/17 08:34:26.42 0725-01:20:20.80 N       1
    LOGSAVA0 JOB92810       0 2010/07/17 08:34:26.42 0725-01:20:20.80 N       1
    LOGSAVA0 JOB92811       0 2010/07/17 08:34:37.95 0725-01:20:09.26 N       2
    BDTQUEUE J0247583   4,084 2011/12/04 14:44:08.00 0219-18:10:39.22 N       1
    BDTQUEUE J0249084   4,084 2011/12/04 14:44:08.00 0219-18:10:39.22 N       1
```

Output/Writer Data Sets Display

- The following columns were added:

Default Title	Description	Overtype
Step	Job step number	No
Program	Job step program name	No
Bytes	Number of output bytes	No
Age	Time since output was created	No

```
DSHOLD   EJES20   J0332457   1,422,983 Records                    Row 4 of 187
Command ===> _                                                 Scroll ===> CSR
Cmd Row DDName   Step Program  Bytes   CrDate     CrTime       Age             C
<-- --- --------/---- -------- ------- ---------- ------------ --------------- ->
    4   SYSPRINT    1 SSIVLF     4,084 2012/07/09 15:42:27.32 03-17:43:37.25 E
    5   SYSPRINT    2 CAMDEFN  555,424 2012/07/09 15:42:27.32 03-17:43:37.25 E
    6   SYSPRINT    3 IEWBLINK   8,168 2012/07/09 15:42:27.32 03-17:43:37.25 E
    7   SYSPRINT    4 CAMDEFN  637,104 2012/07/09 15:42:27.32 03-17:43:37.25 E
    8   SYSPRINT    5 IEWBLINK   8,168 2012/07/09 15:42:27.32 03-17:43:37.25 E
    9   SYSPRINT    6 CAMDEFN  130,688 2012/07/09 15:42:27.32 03-17:43:37.25 E
    10  SYSPRINT    7 IEWBLINK   8,168 2012/07/09 15:42:27.32 03-17:43:37.25 E
```

Job Status Display

- The following column was added for JES3:

Default Title	Description	Overtype
Bytes	Number of output bytes	No

```
STATUS   3,300S  0X  268W  9H  0T  20,244,707 Records                Row 1 of 277
Command ===> _                                                  Scroll ===> CSR
Cmd Row JobName  JobID    Lines      Pages  Bytes   Pos H-OSE W-OSE B-OSE T-OSE
<--- --- -------- -------- ---------- ------ ------- --- ----- ----- ----- ----->
    1   LETTRGEN J0333446        215      0  65,344         5     0     0     0
    2   EDJX2    T0332928      3,360      0 14,155K         1     0     0     0
    3   MIGRATE  J0332548        155      0  65,344         5     0     0     0
    4   EJESTSO1 J0332545     20,511      0  2,132K         7     0     0     0
    5   EJESTSO1 J0332544     20,121      0  2,111K         6     0     0     0
    6   GARMGR   J0332543      2,126      0 228,704         2     0     0     0
    7   COPYEJES J0332472      6,100      0 396,148        11     0     0     0
    8   EJES40   J0332462     78,948      0  5,734K        27     0     0     0
    9   EJES50   J0332463      3,379      0 240,956        11     0     0     0
    10  EJES20   J0332457  1,418,384      0     162M       187     0     0     0
    11  EJES21   J0332458  1,047,048      0     115M       190     0     0     0
```

Data Set Status Display

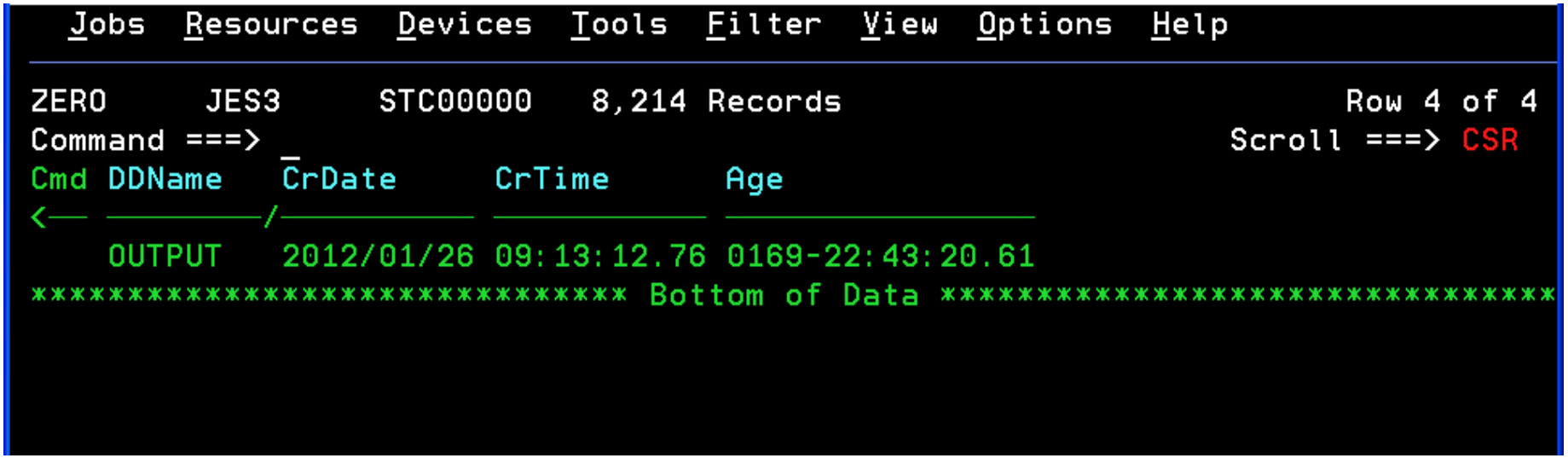
- The following columns were added:

Default Title	Description	Overtype
Step	Job step number	No
Program	Job step program name	No
Bytes	Number of output bytes	No
Age	Time since output was created	No

Job Zero Data Sets Display

- The following columns were added:

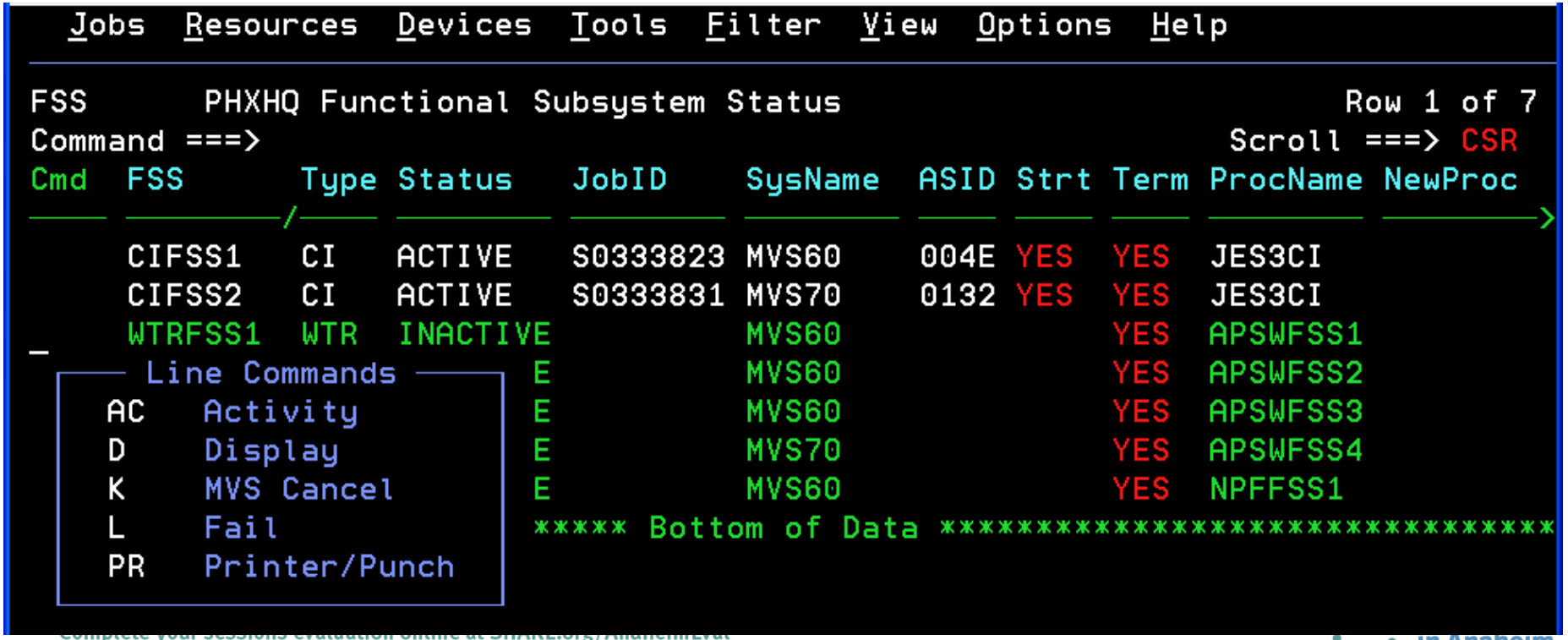
Default Title	Description	Overtype
CrDate	Date output was added to queue	No
CrTime	Time output was added to queue	No
Age	Time since output was created	No



FSS Display

- The following line command was added:

Command	Function
L	Fail the device. This single character line command replaces **FAIL** to facilitate additional options consistent with the Network Servers display. **FAIL** is still available as an alias.



Printer/Punch Display

- The following line command was added for JES3:

Command	Function
L	Fail the device. This single character line command replaces **FAIL** to facilitate additional options consistent with the Network Servers display. **FAIL** is still available as an alias.

```
PRTPUN   6Av  0Ac  0W  0S  0Intv  0Pnd  160ff <Setup>                Row 1 of 22
Command ===>                                                 Scroll ===> CSR
Cmd  DevName  DevType  Status Typ Controlling-Job    Current-Processing-DataSet
____ ________/________ ______ ___ _________________ ________________________>
     PR00E    PRT1403  OFFLN  DYN
_
                          Line Commands
   AC   FSS activity  K    MVS Cancel FSS  RL  Restart + Load
   B*   Backspace     MOFF Vary off main   RN  Restart at Note
   C    Cancel        MON  Vary on main    RSC Restart sched.
   CG   Cancel Grp    OFF  Vary offline    RT  Restart + Term
   CJ   Cancel Job    ON   Vary online     S   Start
   CT   Cancel + Term R    Restart         ST  Start + Term
   D    Display       RC   Restart at Ckpt X   Call
   DL   Display(long) RG   Restart Grp     XC  Call (NAV=C)
   F*   Forward space RH   Restart + Hold  XR  Call (NAV=R)
   L    Fail          RJ   Restart Job     Z   Force FSS wtr
```

Enclaves Display

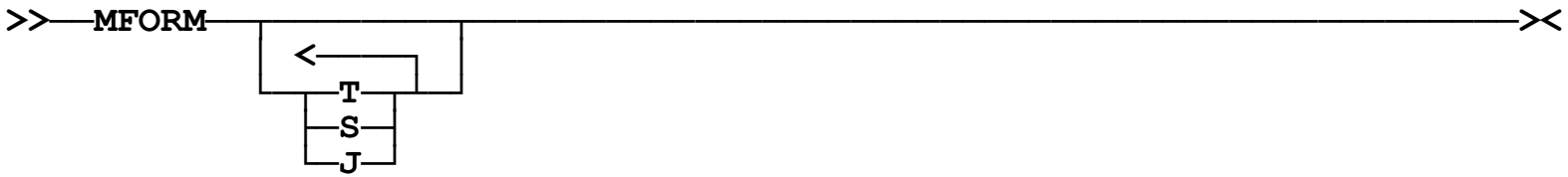
- Accumulated enclave zAAP and zIIP time is now normalized.
- This change impacts customers with sub-capacity System z models.
- Normalized values show the amount of CPU that would have been accumulated if the same work had run on a standard CP.
- This allows you to make valid (“apples to apples”) comparisons of accumulated time on CP, zAAP, and zIIP.

```
ENCLAVE  PHXHQ(MVS70)                                              Row 1 of 17
Command ===>                                                  Scroll ===> CSR
Cmd Token             CPU-Time zIIP-Time zICP-Time SrvClass Workload ResGroup SP
<-- ----------------/↓↓↓↓↓↓↓↓ ---------- ---------- -------- -------- -------- ->
    0000002C00000004 07:52.29 07:48.77  00:03.52  SERVER1  SERVER              1
    0000004400000031D 00:09.15 00:09.08  00:00.07  SERVER1  SERVER              1
    0000003000000031E 00:08.52 00:08.40  00:00.12  SERVER1  SERVER              1
    0000002800000031B 00:06.77 00:06.69  00:00.08  SERVER1  SERVER              1
    0000003400000CF3 00:00.31 00:00.31  00:00.00  SERVER1  SERVER              1
```

User Log (ULOG) Browser Console Message Format

- EMCS message format was previously not customizable.
- In V5R2, message format can be specified in two ways:
  - **MFORM** command sets the message format in advance of implicit or explicit console activation
  - **MFORM** operand on the **CONSOLE ACTIVATE** command specifies the message format during console activation
- **MFORM** allows the user to add time, system, or job ID to the console messages by specifying values similar to those specified on the **K S,MFORM=** MCS console command.
- The message format setting is saved in the cross-session profile.

MFORM Command



T	Add time to the console's Message Form settings
S	Add system name to the console's Message Form settings
J	Add job ID to the console's Message Form settings

The T, S and J parameters may be separated by blanks, commas or not separated at all and may appear in any order. **MFORM S** is the default:

```
IEE112I 13.37.57 PENDING REQUESTS 179
RM=3     IM=0      CEM=0      EM=0      RU=0     IR=0     AMRF
ID:R/K      T SYSNAME  MESSAGE TEXT
       3806 R MVS60    *3806 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
       3797 R MVS70    *3797 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
       3788 R MVSA0    *3788 ISTEXC200 - DYN COMMANDS MAY BE ENTERED
```

User Log (ULOG) Browser Migration ID Removal

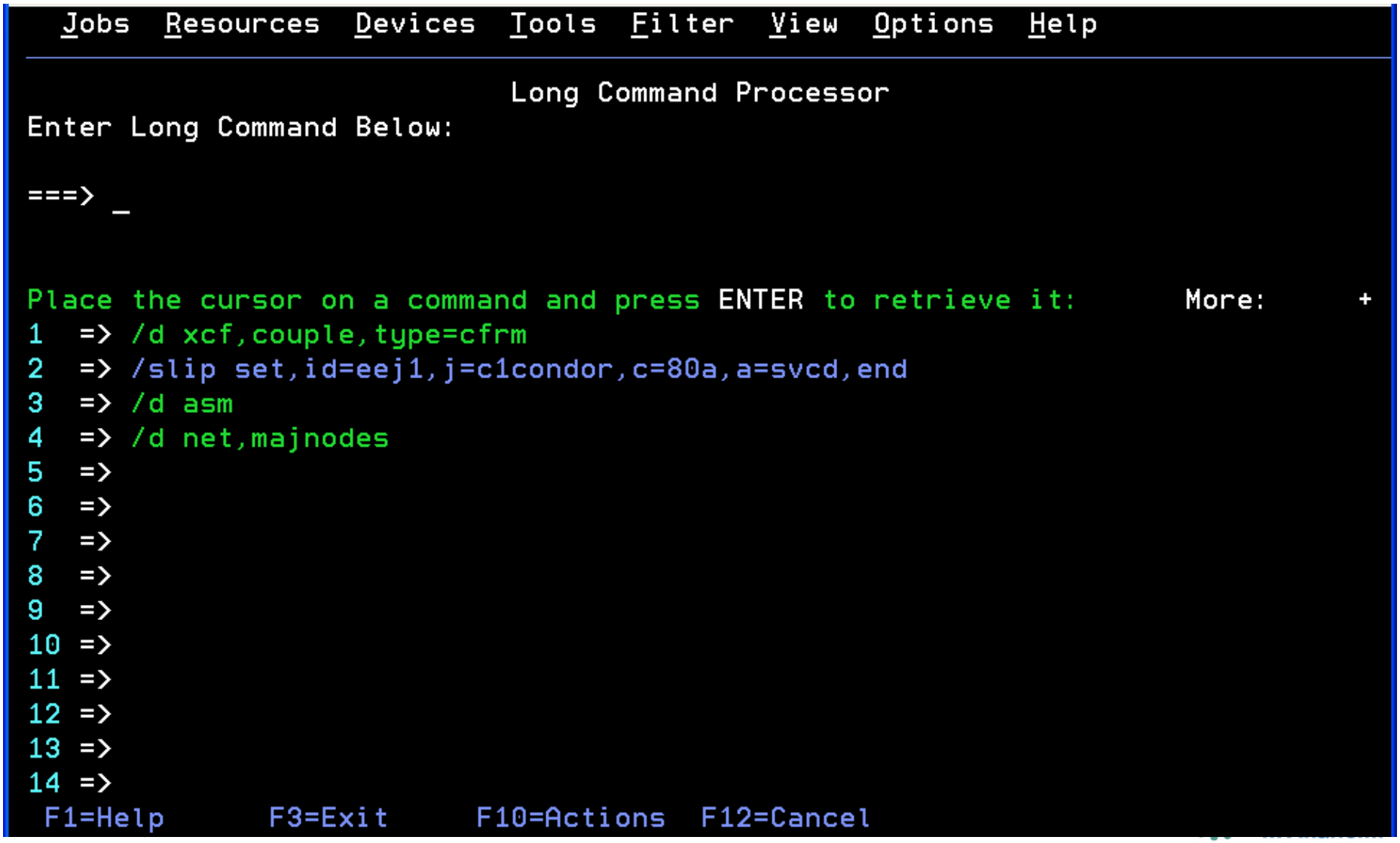
- **MIG|NOMIG** operand was removed from the **CONSOLE ACTIVATE** command.
- Migration ID value was removed from the ULOG Browser title line
- The **MCSXMIG** installation option was removed.

```
  Jobs  Resources  Devices  Tools  Filter  View  Options  Help
 ULOG      Console(EDJX2   )                                  Line 1 of 6
 Command ===>                                              Scroll ===> CSR
 Current Find Text:
<4----+----5----+----6----+----7----+----8----+----9----+---10----+---11----+-->
 EJES500 Console EDJX2    was successfully activated
-$CT(128760),P
 $HASP890 JOB(DROURK3)
 $HASP890 JOB(DROURK3)   STATUS=(AWAITING PURGE),CLASS=TSU,
 $HASP890                PRIORITY=1,SYSAFF=(ANY),HOLD=(NONE),
 $HASP890                PURGE=YES,CANCEL=YES
****************************** Bottom of Data ******************************
```

Long Command Processor Enhancements

- Dynamic Sizing
  - The number of commands shown is now variable, depending upon the depth of the 3270 device. (Was previously eight per scroll.)
  - All 32 stored commands visible on modern, larger displays.
- Row Numbering (independent of **RowNum** setting)
- Row Locking via **SELECT** command.
  - Locked row not removed when new command added to a full list.
  - Unlocked rows appear as normal protected data (usually blue); Locked rows appear as colorized protected data (usually green).
- Row Clearing via **SELECT** and **CLEAR** commands.

Long Command Processor Enhancements



Forms ID On Print Extract Parameters

- Previous releases allowed only a 1-4 character **Forms ID** value due to the restriction that MVS JCL and Dynamic Allocation allow only a 1-4 character SYSOUT forms value. Now, up to 8 chars are accepted.
- If you specify a value >4 chars long, (E)JES automatically requests creation of a Dynamic Output Statement—as if an asterisk (*) was placed into the **Output ref.** field. Your **Forms ID** value is automatically propagated to the **FORMS** input field on the panel where Dynamic Output parameters are specified.
- This **FORMS** value does not *permanently* overlay an existing value.
- At allocation time, a long value is supplied via Dynamic Output only. No value is presented to Dynamic Allocation as SYSOUT forms.
- A long **Forms ID** value is not allowed when **Output ref.** specifies a JCL or Dynamic Output descriptor name since (E)JES can propagate only to output descriptors it actually creates.

Administrative Enhancements

Parameterized Installation Options

- This allows you to specify options via parmlib member rather than **EJESOPT** macro and SMP/E USERMOD.
  - The **SVC** and **XWASIZE** options must still be specified through the **EJESOPT** macro. All other options may be specified via the parmlib member.
  - These two options are merged from the macro-based specifications. All other parameterized options completely replace their macro counterparts.
- WHEN clauses allow one member to specify options for different environments.
- System symbol substitution is performed.
- Parameterized installation options are activated using the **EJESPOPT** authorized TSO command.

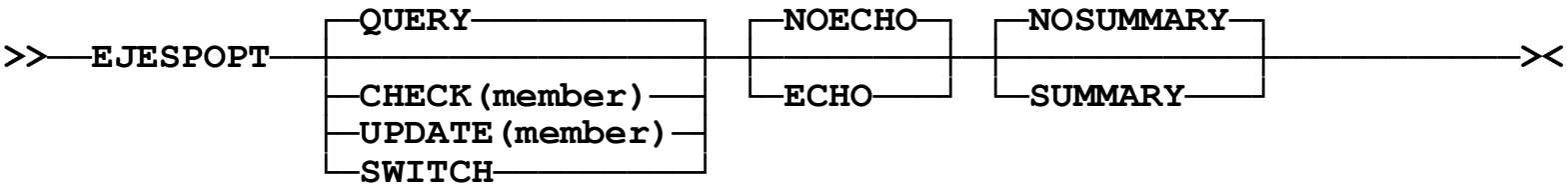
Parameterized Installation Options

```
/*************************************************************/
/*                                                           */
/*                        (E)JES OPTIONS                     */
/*                                                           */
/*************************************************************/
/**/
 OPTIONS
 /* */
 /* Locale formatting:                                       */
      DATEFMT(YYYYMMDD)        /* Default is: YYYYDDD         */
 /*   DATESEP(SLASH DOT)       /* Default is: SLASH DOT       */
 /*   LANG(ENU)                /* Default is: ENU             */
 /*   NUMCHAR(',' '.')         /* Default is: ',' '.'         */
 /* */
 /* Security:                                                */
 /*   SAFTYPE(RACF/ACF2/TOPS)  /* Default is: no SAF support  */
      SAFRCLS(                 /*                             */
              SDSF             /* Default is: EJES JESSPOOL   */
              JESSPOOL         /*   WRITER OPERCMDS JESSPOOL  */
              WRITER           /*   XFACILIT. Specify '-' to  */
              OPERCMDS         /*   suppress the use of a class.*/
              JESSPOOL         /*   .                         */
              XFACILIT         /*   .                         */
              )                /*   .                         */
 /* NOSAFTRACE                /* Default is: NOSAFTRACE      */
 /*   SAFNODE                 /* Default is: SAFNODE         */
 /*   SAFJBID(JOB)            /* Default is: JOB             */
 /* NODDDSNAM                 /* Default is: NODDDSNAM       */
 /* NOSAFPUBC                 /* Default is: NOSAFPUBC       */
 /* NOSAFPVTC                 /* Default is: NOSAFPVTC       */
 /*   SUBUACC(ALTER)          /* Default is: ALTER           */
 /* NOSUBXTND                 /* Default is: NOSUBXTND       */
```

Parameterized Installation Options

```
/*   SAFVLIM(                  /*                                  */
/*           JOBS              /* Default is: no SAF-based         */
/*           DATASETS          /*   view limiting occurs.          */
/*           DJCS              /*    .                             */
/*           PRPUNS            /*    .                             */
/*           NODES             /*    .                             */
/*           SPOOL             /*    .                             */
/*           FSS               /*    .                             */
/*           ENCLAVES          /*    .                             */
/*           )                 /*    .                             */
/* */
/* Performance:                                                     */
/*   DYNMRET(JOBS)             /* Default is: JOBS                 */
/*   ISALSIZ(256)              /* Default is: 256                  */
/*   JOBLMMU(100)              /* Default is: 100                  */
/*   JOBLMSU(1000)             /* Default is: 1000                 */
/*   SAFLMMU(100)              /* Default is: 100                  */
/*   SAFLMSU(1000)             /* Default is: 1000                 */
/*   POOLSIZ(4025)             /* Default is: 4025 (16MB)          */
     SPIOTHR(2048)             /* Default is: 256                  */
/*   TIMSORT(QUEUE)            /* Default is: QUEUE                */
/* */
/* DASD Allocations:                                                */
     DSNSIZE(10 30 CYL)        /* Default is: 1 15 TRK             */
/*   DSNUNIT(SYSALLDA)         /* Default is: SYSALLDA             */
/*   DSNVOL(volume)            /* Default is: not used             */
/*   DSNMGCL(mgmtclas)         /* Default is: not used             */
/*   DSNSTCL(storclas)         /* Default is: not used             */
/*   VIOUNIT(unitname)         /* Default is: VIO                  */
/* */
.
. (and more...)
.
```

Parameterized Installation Options



QUERY	Displays the current and previous policy status on the system.
CHECK	Requests syntax checking only of the named member.
UPDATE	Requests syntax checking of the named member and, if successful, an update of current live policy on the system. The success or failure of this request is logged on the system log.
SWITCH	(E)JES maintains two options policies in memory: the one being accessed by users, known as the current policy, and the one that was current prior to the last UPDATE, known as the previous policy. When you specify SWITCH, (E)JES switches the current and previous policy memory pointers. The current policy becomes previous and the previous policy becomes current. This can be used to “back out” an erroneous policy update.
[NO]ECHO	Indicates whether policy statements should be echoed to the output stream. This parameter applies only to the CHECK and UPDATE requests.
[NO]SUMMARY	Indicates whether an options summary should be echoed to the output stream. This parameter does not apply to SWITCH requests.

Parameterized Installation Options

```
 READY
ejespopt update(psiejopt) summary
 EJEST01I EJESREL(0520) HWNAME(STARBASE) LPARNAME(MVSA0) VMUSER()
 EJEST01I SYSPLEX(PHXHQ) SYSNAME(MVSA0)
 EJEST08I All specifications are valid
 EJEST40I Options summary:
 EJEST41I   Options specified via EJESOPT macro:
 EJEST41I     SVC number is 252 (Standard SVC used)                    SVC
 EJEST41I     User Exit Work Area is 002048 bytes long                 XWASIZE
 EJEST42I   Locale formatting:
 EJEST42I     Gregorian date format is DD/MM/YYYY                      DATEFMT
 EJEST42I     Julian date format is YYYY.DDD                           DATESEP
 EJEST42I     Numeric magnitude separator character is ','             NUMCHAR
 EJEST42I     Numeric decimal separator character is '.'               NUMCHAR
 EJEST43I   Security:
 EJEST43I     SAF security tailored for RACF                           SAFTYPE
 EJEST43I     SAF resource classes:
 EJEST43I       SDSF      (E)JES-architected resources                 SAFRCLS
 EJEST43I       JESSPOOL  IBM-architected job resources                SAFRCLS
 EJEST43I       WRITER    IBM-architected writer device resources      SAFRCLS
 EJEST43I       OPERCMDS  IBM-architected system command resources     SAFRCLS
 EJEST43I       JESSPOOL  IBM-architected job data set resources       SAFRCLS
 EJEST43I       XFACILIT  IBM-architected extended facility resources SAFRCLS
 EJEST43I       TSOAUTH   IBM-architected TSO authorization resources builtin
 EJEST43I     SAF checking activity will not be traced                 SAFTRAC
 EJEST43I     SAF resources for jobs/datasets will include node name   SAFNODE
 EJEST43I     SAF resources containing JES3 jobids will use JOB        SAFJBID
 .
 . (and more...)
```

Optional Disaster Recovery Mode Activation

- Once Disaster Recovery Mode begins, the installation is expected to request, download and install a new license with an embedded 7, 14 or 21-day grace period. This requirement was inconvenient for situations in which the DRM activation was accidental.
- The new **DRM** installation option specifies whether Disaster Recovery Mode is allowed to start if (E)JES is invoked in an unlicensed environment.
- With this option disabled, an invocation of (E)JES in an unlicensed environment will not trigger Disaster Recovery Mode. Rather, message EJES003 will be issued and the (E)JES session will immediately terminate.

Requesting a License Using z/OS Facilities – No Web Browser, No Email

- Under ISPF, invoke the new EJESDLIC REXX exec.
- Fill in the values as directed on the ISPF panel and press <Enter>. (The values are saved in your ISPF profile.)
- If the free-form response to your request appears correct, press <Enter> to submit job EJES$LDL.
- The EJESDLIC utility, executed by job EJES$LDL, looks for your license file every minute for up to one hour. After the file is downloaded, member EJES$LIC is automatically updated with the new license string. If the EJES$LDL job completes normally, you should simply be able to submit EJES$LIC to install the new license.
- EJESDLIC requires cURL—delivered by IBM at no additional charge as part of the z/OS UNIX Ported Tools Supplemental Toolkit.

Requesting a License Using z/OS Facilities – No Web Browser, No Email

```
---------------------- License Code Request Utility --------------------- V5R2
Command ===> _
                                                                More:     +

Phoenix Credentials:
   Userid          ===> edjaffe
   Password        ===> iscool
   CPU Serial      ===> 09632          (Serial and type of
   CPU Type        ===> 2098            a licensed machine)

Contact Information:
   Your CustNum    ===> 01234
   Your Name       ===> Ed Jaffe
   Your Company    ===> Phoenix Software International
   Your Phone      ===> 310-338-0400X318
   Your Email      ===> edjaffe@phoenixsoftware.com

License Request:
   Grace Period    ===> 7              (7, 14 or 21)
   Reason          ===> 1              (1=DR Test, 2=Real DR, 3=Machine Inoperable)

Parameters for Local Work Files:
   Your TSO/E Prefix ===> EDJX1
   Unit name         ===> SYSALLDA
 F1=Help    F3=Exit    F12=Cancel
```

Miscellaneous Changes and Enhancements

Change to License Acceptability

- Prior (E)JES releases would accept a license generated by an older release.
- V5R2 (E)JES will accept a license generated by an equal or higher release, but not a lower release.
- This change affects customers that might be accustomed to carrying old licenses forward to new releases.
  - The new approach requires you to use the new license that is already being sent to you (along with the 34-digit PFI unlock code) as part of the new install. This should be a very minor procedural change.
- **GENREL=** reported by the **LICSTAT** command displays the (E)JES release for which the license was generated.

Integer Scaling Suffixes

- Previously, scaled integer values were formatted with a suffix of **T**, **M**, or **B** to indicate thousands (10^3), millions (10^6), or billions (10^9) respectively. These non-standard suffixes were USA-centric, which caused confusion, and made potential future scaling to higher values (e.g., 10^{12}, 10^{15},10^{18}) problematic.
- In V5R2, scaled values are formatted with a suffix of **K**, **M**, or **G** to indicate kilo-(10^3), mega-(10^6), or giga-(10^9) respectively.
- This change might create a migration action if you have procedures that 'screen scrape' or otherwise attempt to translate scaled values into binary integers. API exploiters should not be affected because the unscaled integer values have been available from the beginning.

Larger Elapsed Time Values

- In prior releases, the maximum value for an elapsed time was 99-23:59:59.99. Elapsed time values of 100 days or more were formatted as asterisks (an indication of overflow).
- In this release, the maximum width of the days portion of an elapsed time value has been increased to four digits.
- The intelligent formatting rules for elapsed times values have been updated to do the “right” thing when the number of days is <= 100, >=100, or >=1000. There is no need to widen any date display fields.
- API exploiters will see the new, full-size elapsed time field for all such dates.

Faster Pattern Utility Matching

- Matching for the Pattern Utility has been enhanced to use the SRST hardware instruction.
- Empirical measurements show this technique is *far* faster on modern System z processors than alternatives such as the TRT instruction or “brute force” matching techniques using CLI/CLC.
- **Note:** The SRST approach has been used by the **FIND** command for quite some time.

Help Load Library Removal

- The SEJEHENU, AEJEHENU, SEJEHENP and AEJEHENP load libraries have been removed from the product.
- Help in non-ISPF environments is now handled by dynamically allocating the ISPF panel library and translating the appropriate help panel(s) as required.
- The new **HELPDSN** installation option was introduced to specify the name of the ISPF panel library where the help members reside.

TP Monitor System Search For Executable Modules

- In releases prior to V5R1, the **SYSTEM_FILE(LOAD)** specification was used to specify the data set names of the libraries containing application modules to be loaded. A STEPLIB concatenation was also required for the TP Monitor's own system-level modules.
- In release V5R1, all libraries containing modules to be loaded were specified via the STEPLIB concatenation.
- In V5R2, the TP Monitor is now able to load (E)JES modules from LPA and LNKLST, as well as from STEPLIB. The TP Monitor load library continues to be listed on the STEPLIB concatenation.

Performance Study

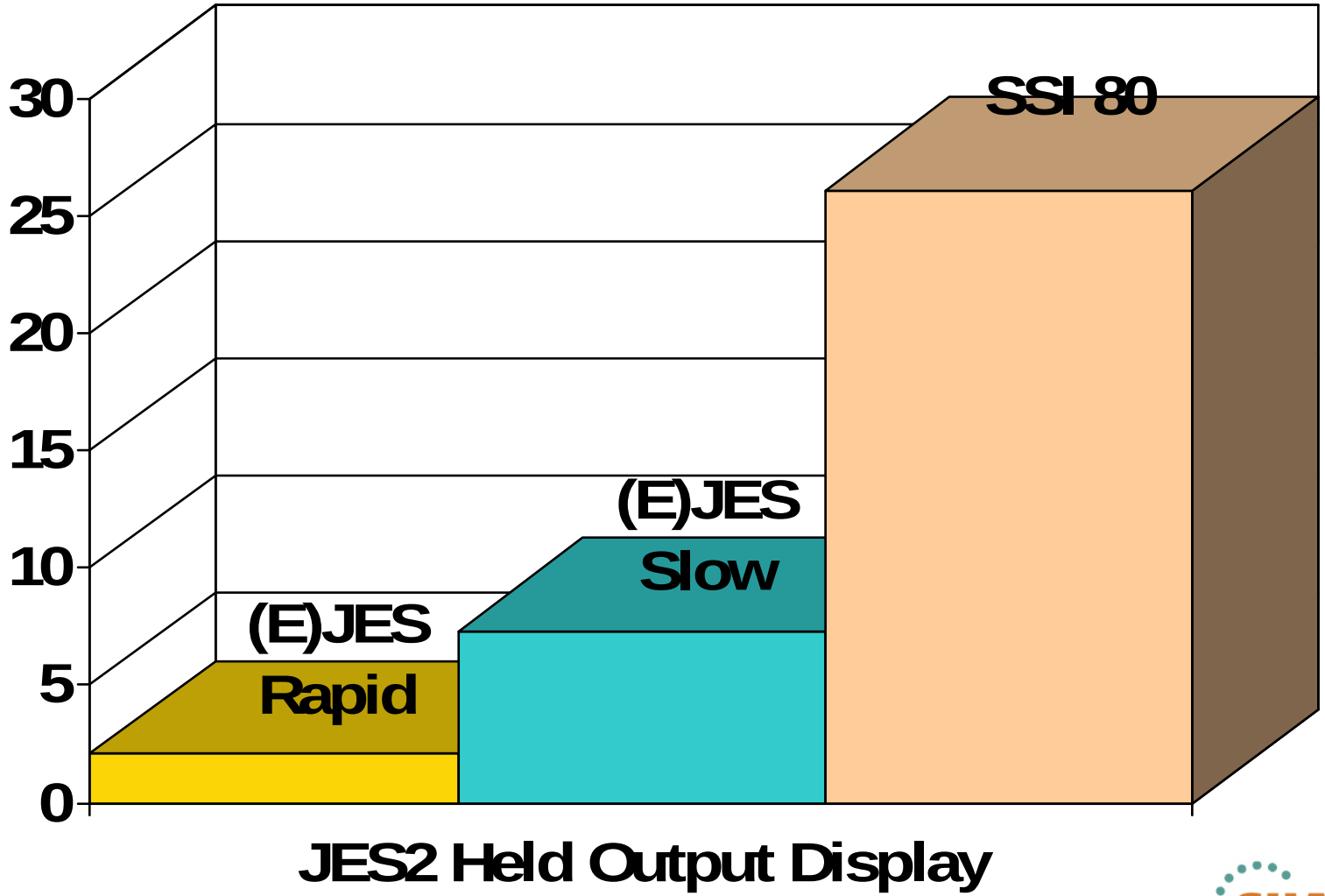
Importance of a Performance Value-Add

- One key goal of any good ISV software product is to try to provide a value-add in the area of performance. This has been one of our primary areas of focus since 1978.
- Back then, there was no such thing as specialty engine offload. Writing well-performing code was the only way to save run-time “hard dollars” for customers.
  - There was/is also always the issue of increased user productivity through a rich feature set. Such gains, while substantial, are more difficult to quantify with benchmarks.
- CPU savings is our most important objective. WLC-style pricing makes this even more important today, especially for products that might run during the afternoon peak.
- I/O performance savings is a close second.

JES2 CPU Performance Quantified

- Competing products tend to rely on the most resource-intensive interface available: the JES-provided SSI 80.
- Our internal benchmark testing against the most readily-available JES2 SSI 80 exploiter showed it needed 3.5x as much CPU as (E)JES to refresh the JES2 HOLD display pressing <Enter> slowly, once every five seconds.
- Pressing <Enter> as rapidly as possible yielded a 12.5x CPU requirement!
- The benchmark was run on an idle 2098-D04 running z/OS 1.13.

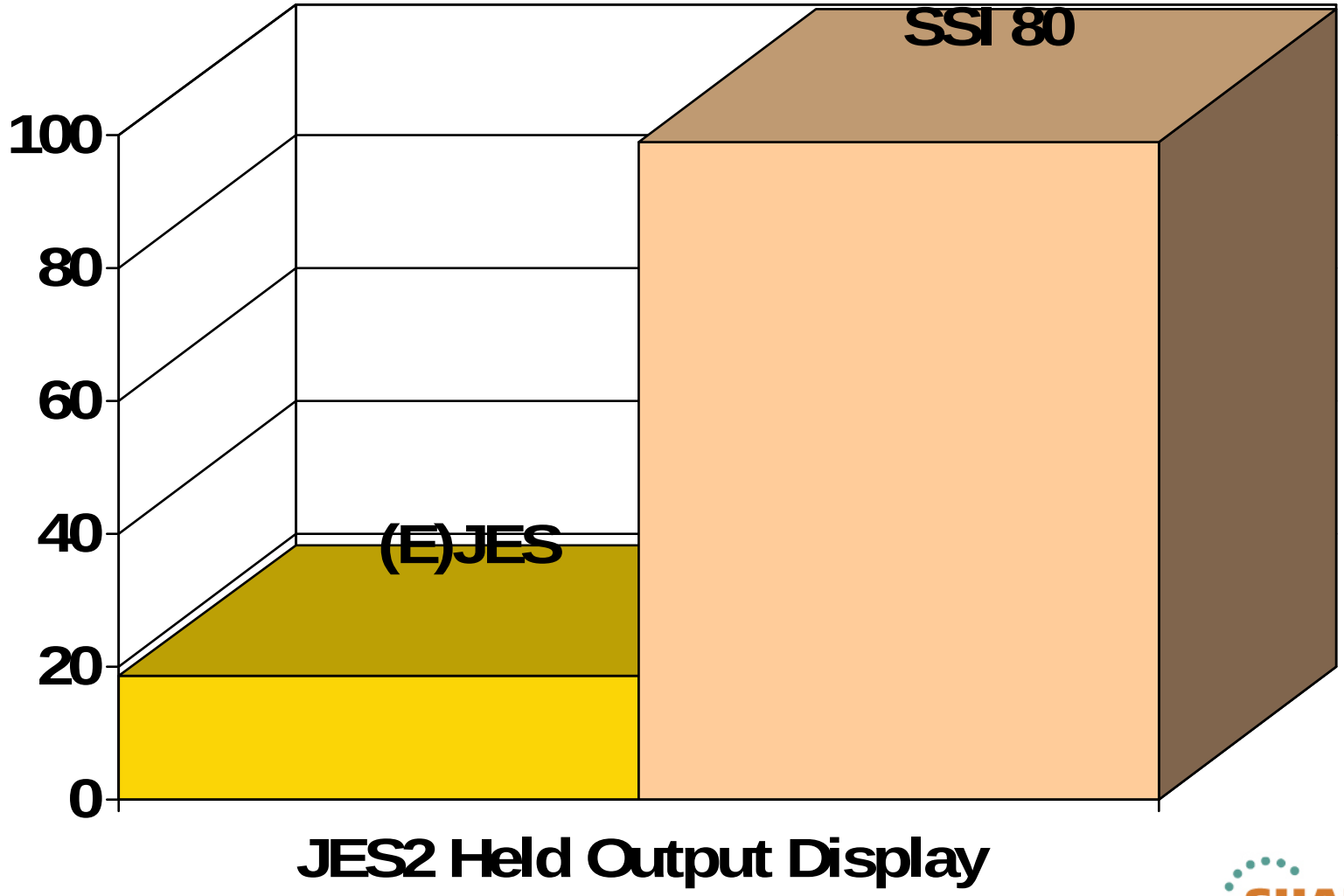
JES2 CPU Performance Quantified: Between 3.5x and 12.5x



JES3 CPU Performance Quantified

- JES3 benchmarking is slightly more difficult than JES2, because a *significant* amount of SSI 80 processing runs as high-priority work in the JES3 global address space.
- All JES3 activity must be quiesced (so that JES3 is waiting) and its CPU utilization carefully measured.
- Our internal benchmark testing against the most readily-available JES3 SSI 80 exploiter showed it needed 5.4x as much CPU as (E)JES to refresh the JES3 HOLD display.
- This includes both CPU consumed by the TSO user and CPU consumed by the high-priority JES3 address space.
- Rapidity of refreshes makes no difference for JES3.
- Like the previous test, the benchmark was run on an idle 2098-D04 running z/OS 1.13.

JES3 CPU Performance Quantified: 5.4x



Performance Differences in Perspective

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

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

94%

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Questions?