ISPF Hidden Treasures and New Features

Sam Reynolds – samr@us.ibm.com
IBM ISPF and z/OS Communications Server Design
November 1, 2016

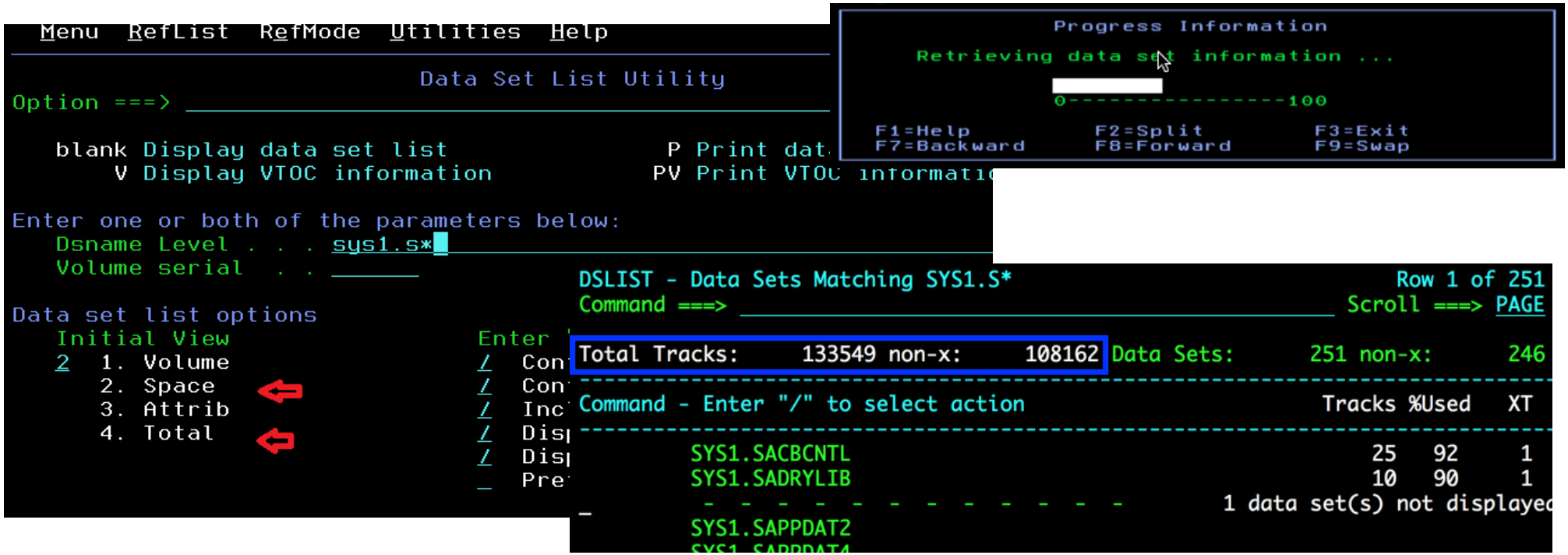
Agenda

- Dataset list enhancements
- Member list and scroll enhancements
- Edit enhancements
- PDSE V2 member generations
- UNIX directory list
- Multiple screens
- Selected z/OS V2R2 ISPF enhancements
- Closing comments
- Appendix

Dataset List Enhancements

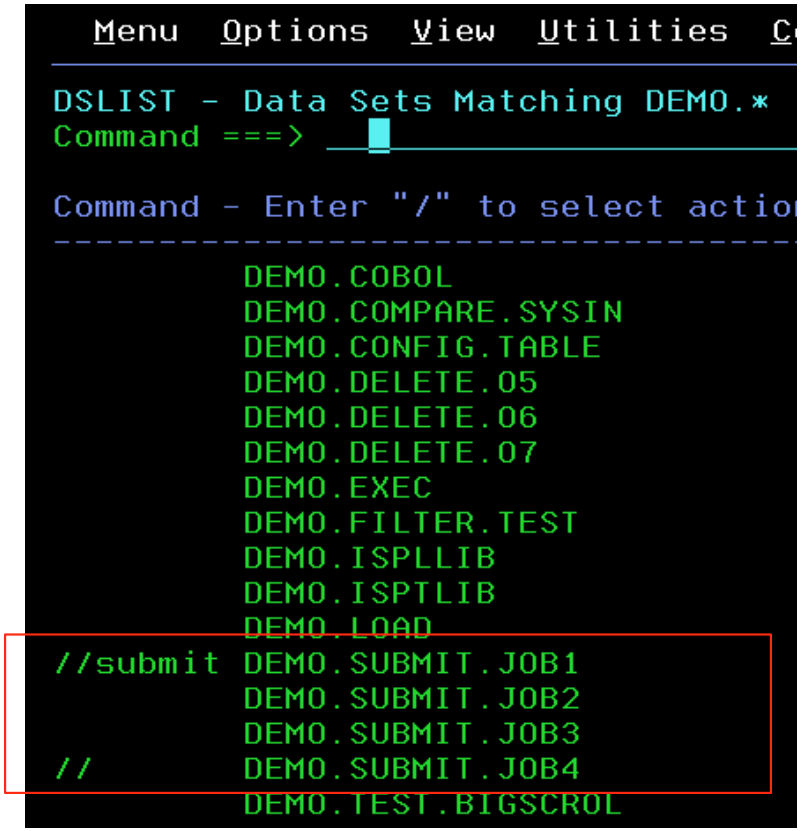
Data Set List Enhancements

- **Display Total Tracks Value (z/OS 1.9)**
  - Display Total Tracks option added to the Data Set List Utility entry panel
  - If selected, an additional header line showing the total tracks used by the data sets is displayed with the **Space** and **Total** views
  - Pop-up window showing data collection progress displayed when calculating total tracks for a list of 50 or more data sets



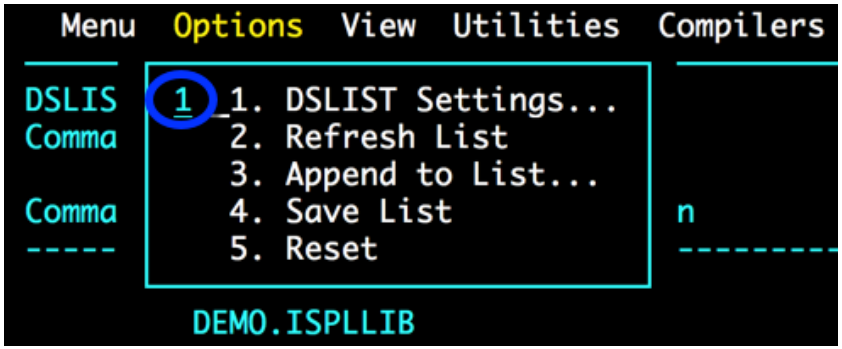
Data Set List Enhancements

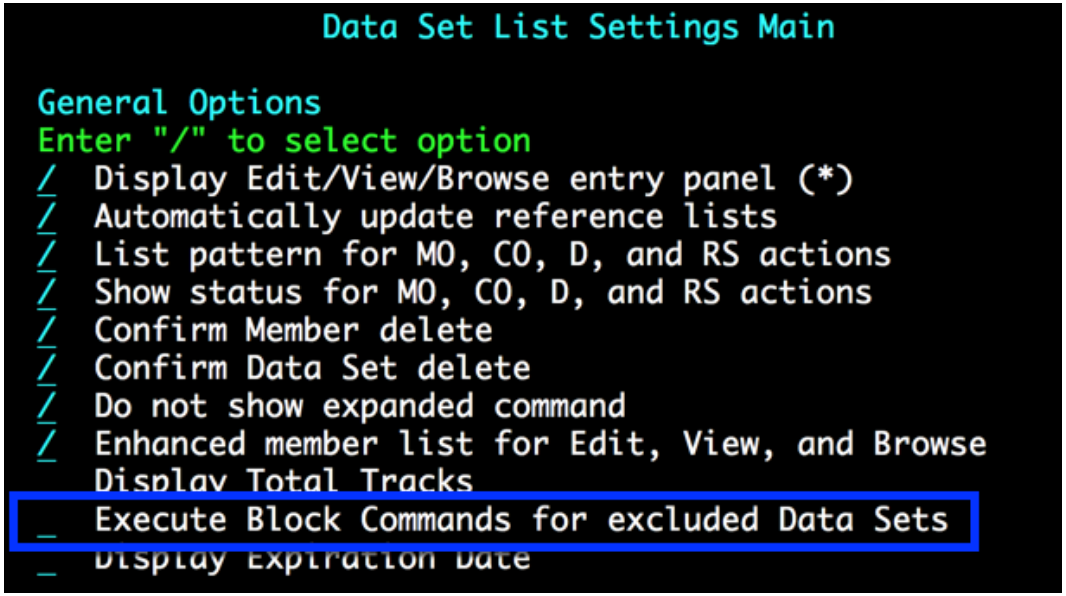
- **Block Line Commands (z/OS 1.10)**
  - Allows Data Set List line commands to be entered in blocks
  - A block of line commands is marked by entering two forward slash characters (//) at the start and end of the block
  - The required line command is entered on the first or last line of the block, immediately following the two forward slash characters
  - All line commands, including TSO commands, Clists and REXX execs can be executed as block commands

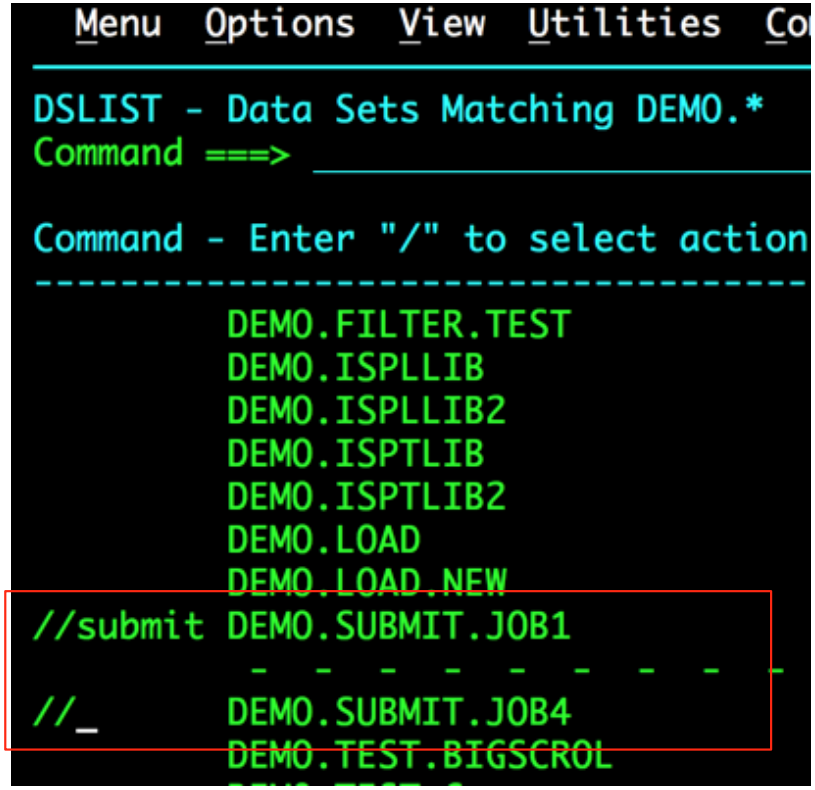


Data Set List Enhancements

- **Block Line Commands (z/OS 1.10) continued**
  - The block command will be executed against excluded lines in the block if you have selected the DSLIST settings option “Execute Block Commands for excluded Data Sets.”

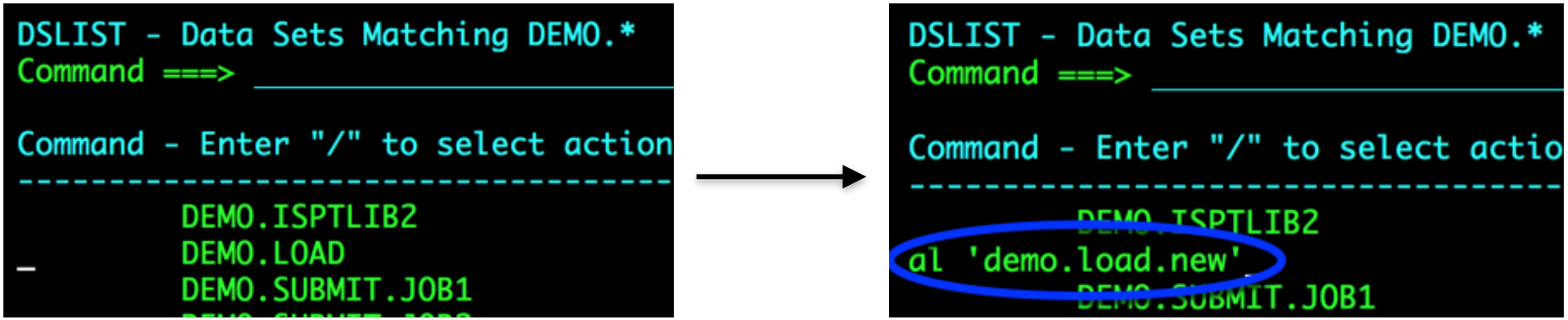




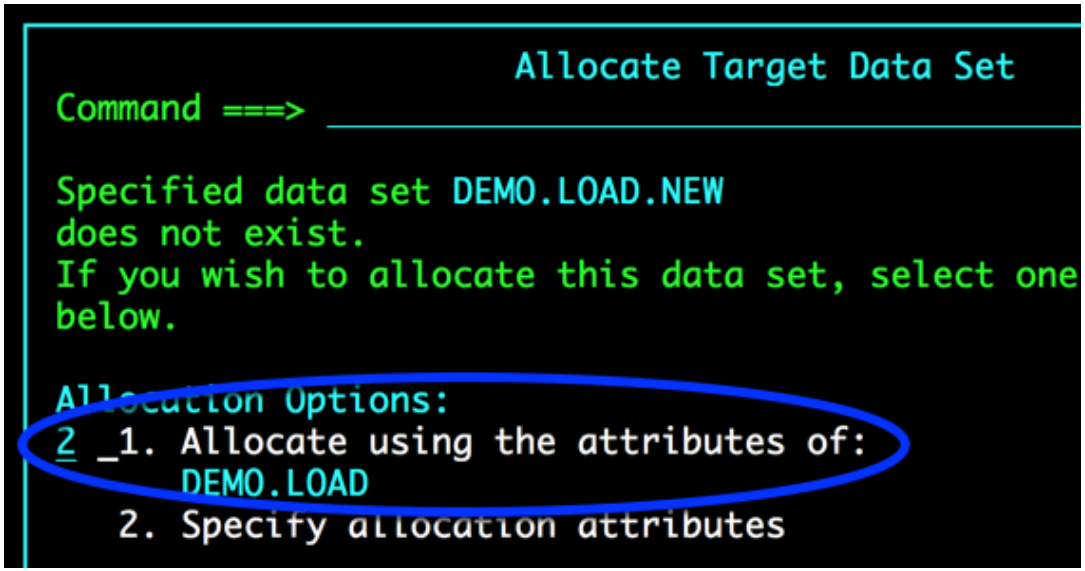


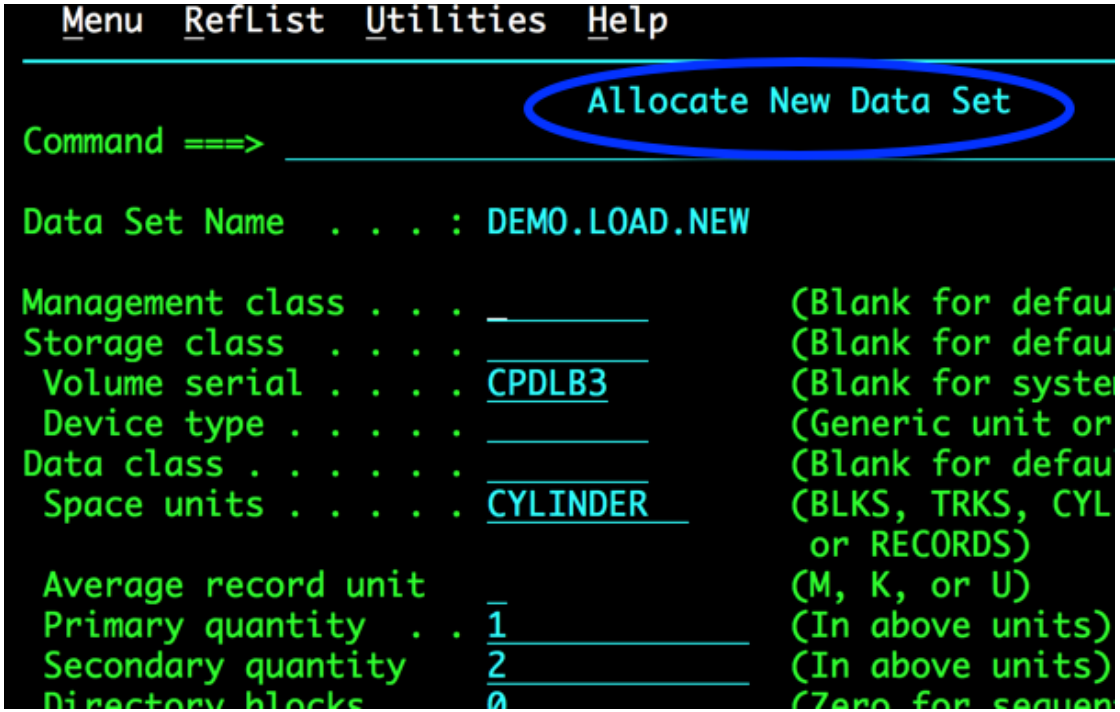
Data Set List Enhancements

- **Allocate Line Command (z/OS 1.13)**
  - New **AL** line command can be used to allocate a new data set
  - New data set name can be specified with the **AL** line command
  - When **AL** is entered against an existing data set the user has the option to:
    - Create the data set using the attributes of the existing data set
    - Specify the attributes of the data set on the Allocate New Data Set panel
  - If **AL** is entered against a deleted data set and a name is not specified, ISPF will use the name of the deleted data set



Data Set List Enhancements





Data Set List Enhancements

- **Display z/OS UNIX Directory List (z/OS 2.1)**
  - Entering a valid UNIX path name in the Dsname Level field will result in the display of a z/OS UNIX Directory List

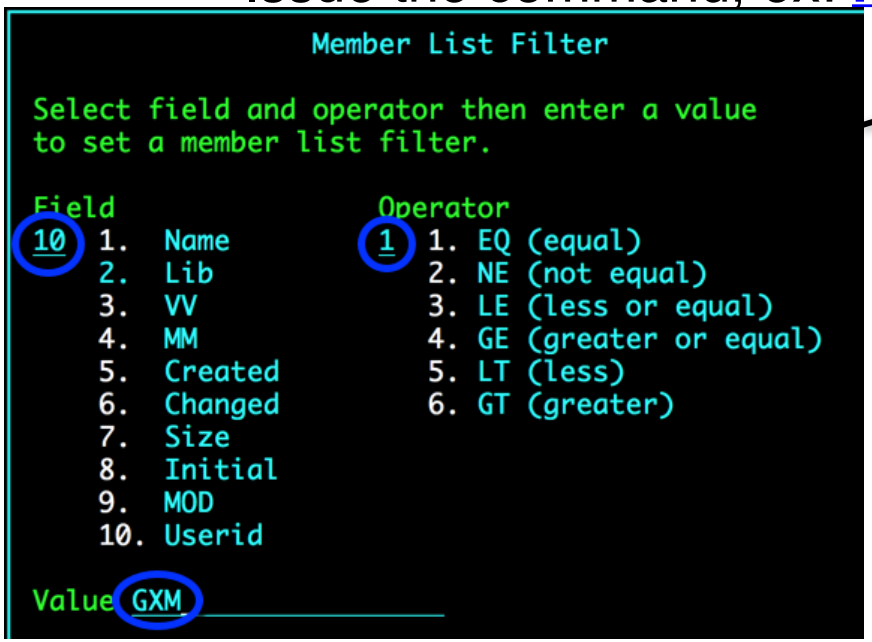
```
                          Data Set List Utility
Option ===>

   blank Display data set list                P Print
       V Display VTOC information             PV Print

Enter one or both of the parameters below:
   Dsname Level . . . /etc
   Volume serial  . .
```

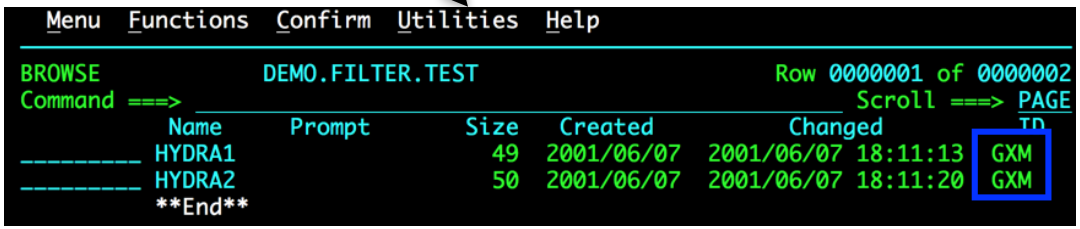
```
                          z/OS UNIX Directory List          Row 1 to 14 of 35
Command ===>                                                Scroll ===> PAGE
Time zone EST5EDT is used to calculate the displayed date and time values.
Pathname . : /etc
EUID . . . : 0
Command  Filename            Message          Type Permission Audit  Ext
-------------------------------------------------------------------------------
________ .                                    Dir  rwx------  fff---
________ ..                                   Dir  rwxr-xr-x  fff---
________ .nfsc                                File rw-r--r--  fff--- --s-
________ auto.map                             File rwx------  fff--- --s-
________ auto.master                          File rwx------  fff--- --s-
________ banner                               File rwxr-xr-x  fff--- --s-
________ dce                                  Dir  rwxr-xr-x  fff---
________ dfs                                  Dir  rwxr-xr-x  fff---
________ fwftp.data                           File rw-r--r--  fff--- --s-
```

Member List and Scroll Enhancements

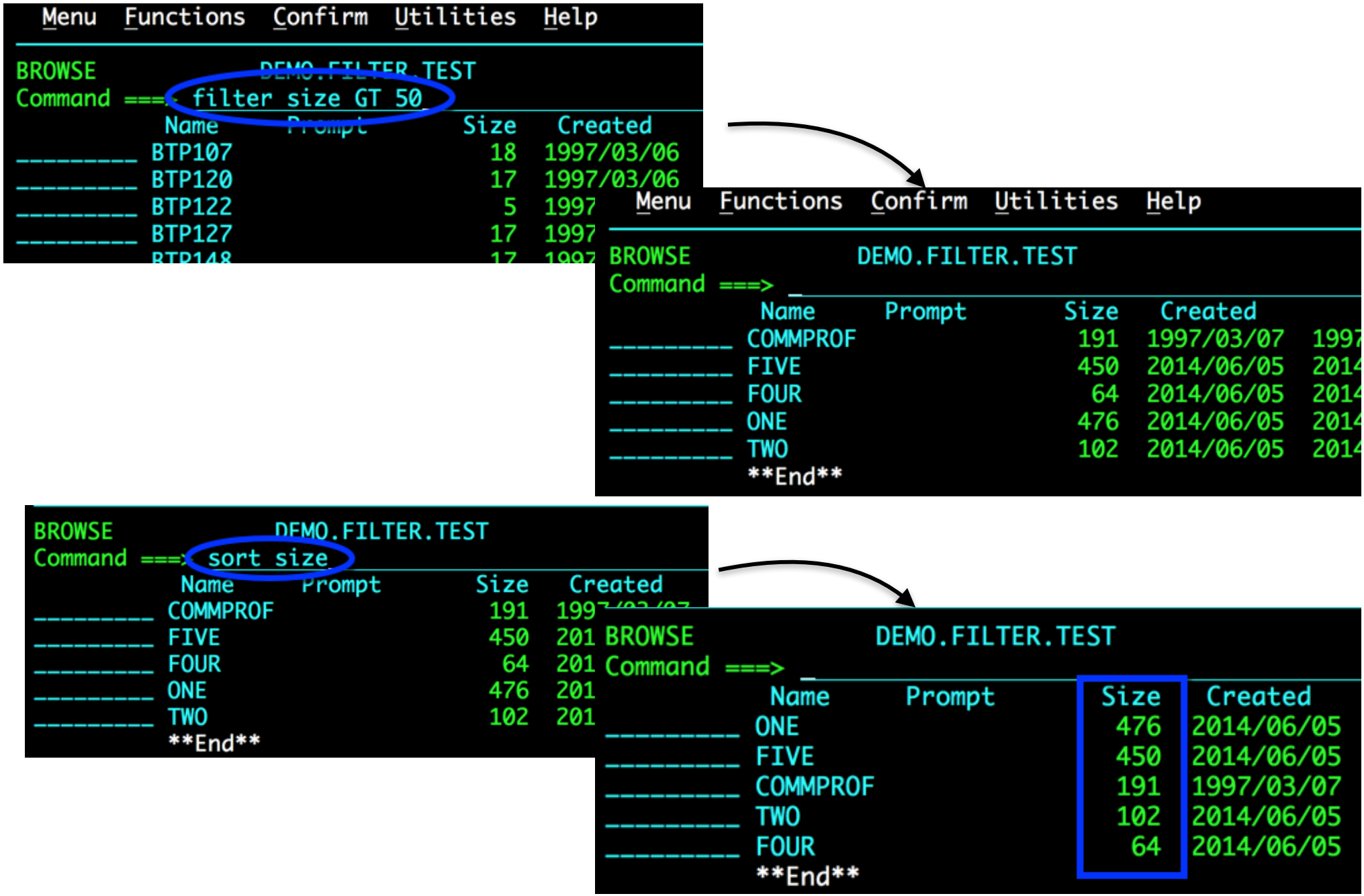
Member List Enhancements

- **FILTER command (z/OS 1.8)**
  - Filter by column name
  - Used to display only those members having an attribute matching a specified value
    - Syntax: **FILTER [*field operator value*]**
      field member list column name
      operator EQ, NE, LE, LT, GE, or GT
      value the comparison value
    - Two ways to issue:
      – Enter just **Filter** and use the menu (easy for remembering), or
      – Issue the command, ex: **Filter size GT 1000**



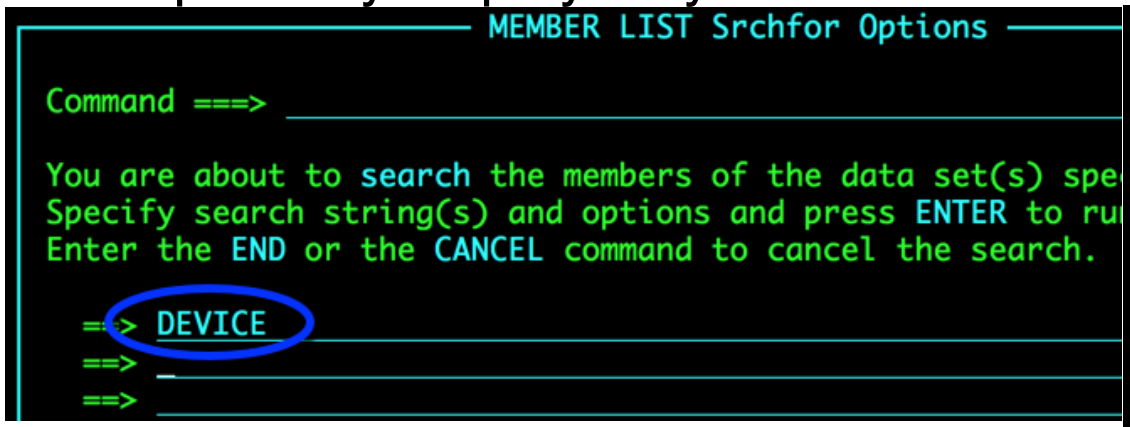


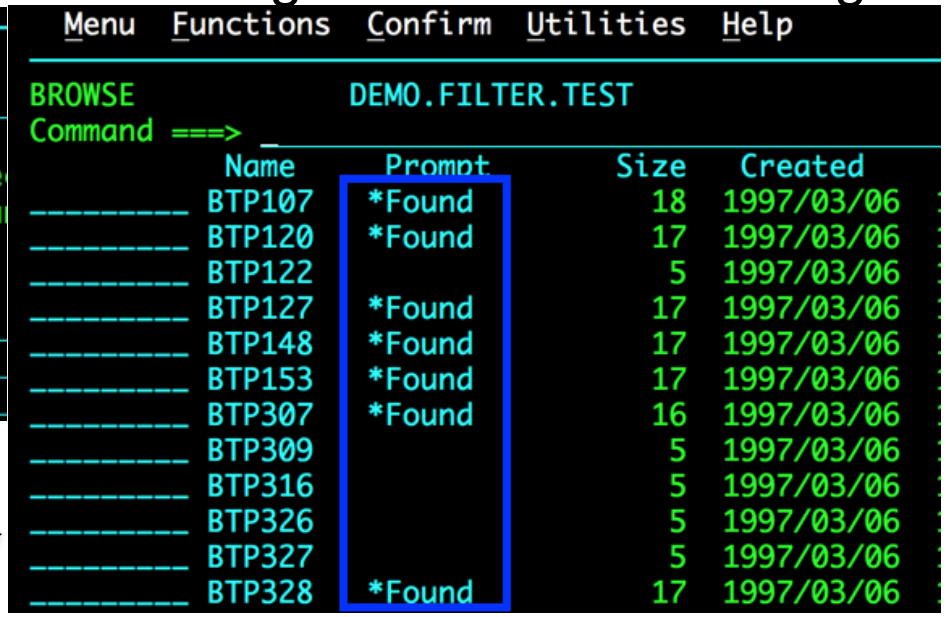
Member List Enhancements

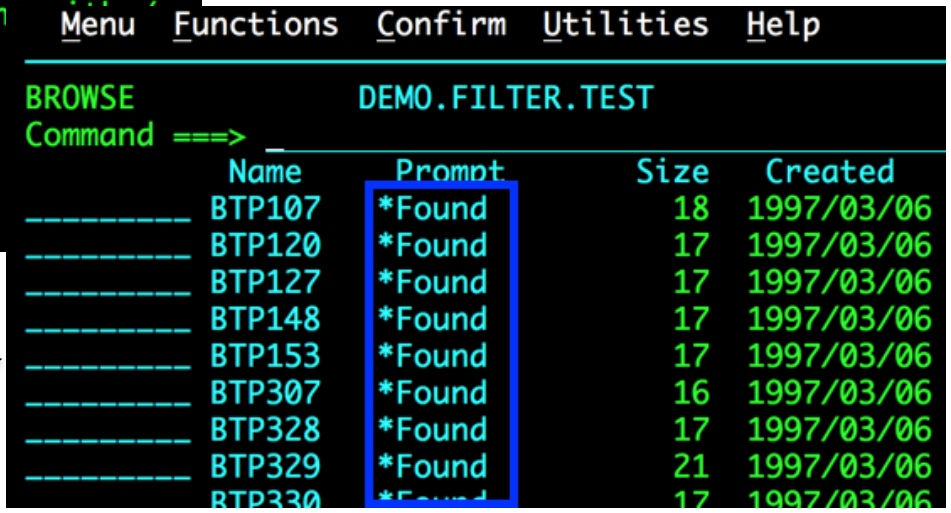


Member List Enhancements

- **FILTER command continued…**
  - Member List **SRCHFOR** command enhanced to use **FILTER** function to optionally display only those members containing the **SRCHFOR** string

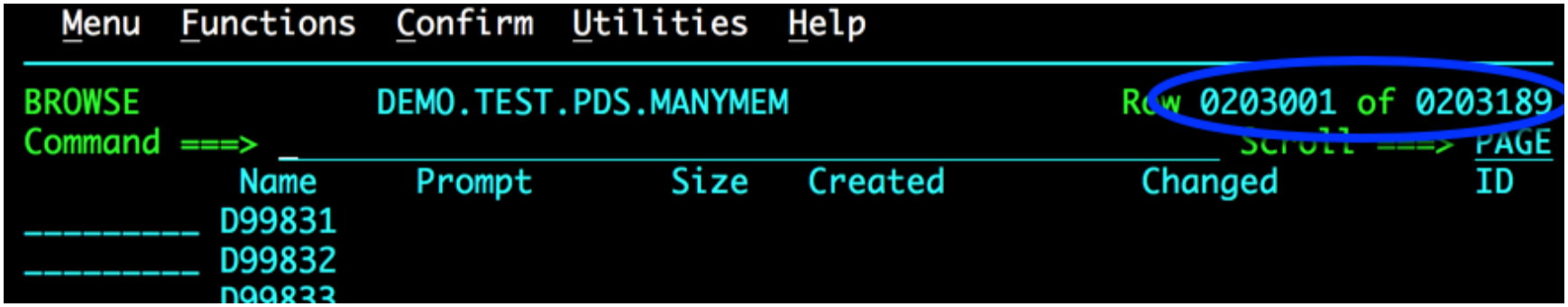






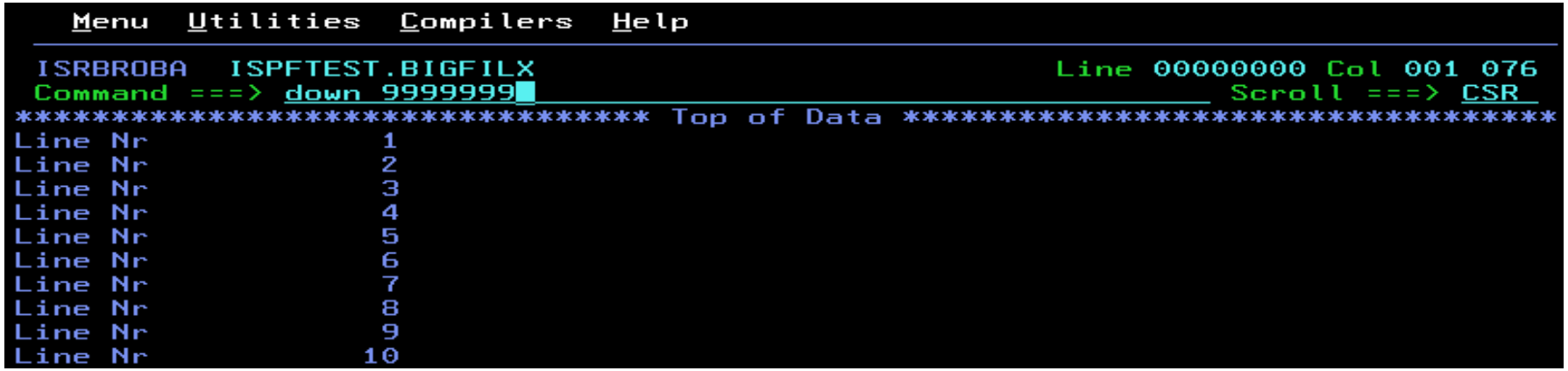
Member List Enhancements

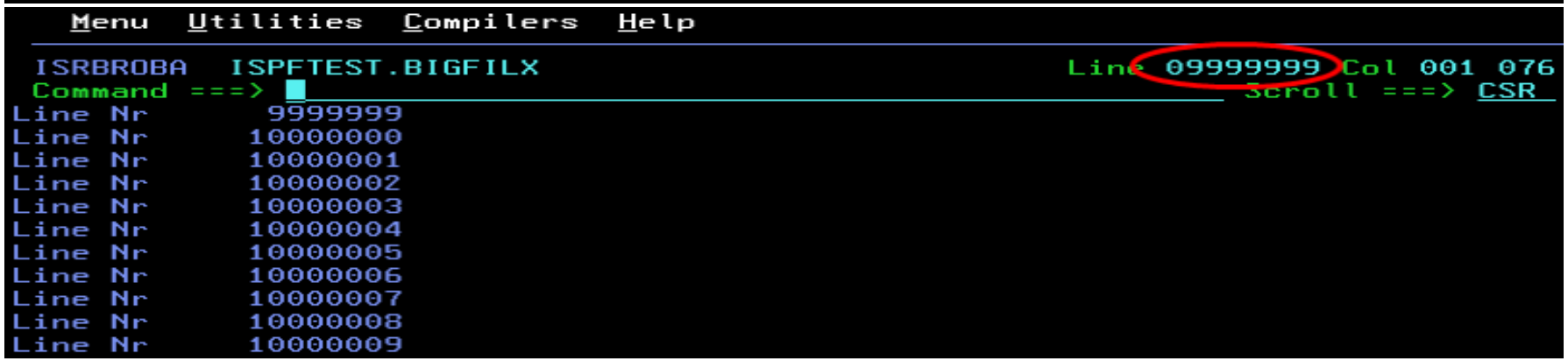
- **Member count > 99999 (z/OS 2.1)**
  - Member count fields on the member list panels have been expanded to 7 digits
  - Provide accurate member count values for partitioned data sets with more than 99999 members



Scroll Enhancements

- **Support provided for the input of scroll amounts up to 9,999,999 (z/OS V2R1)**
  - **Note**: The scroll fields on panels have not been changed to support the display and input of scroll amounts greater than 9999





Scroll Enhancements

- **Don’t forget to update your Configuration Table to support the larger scroll amounts!**

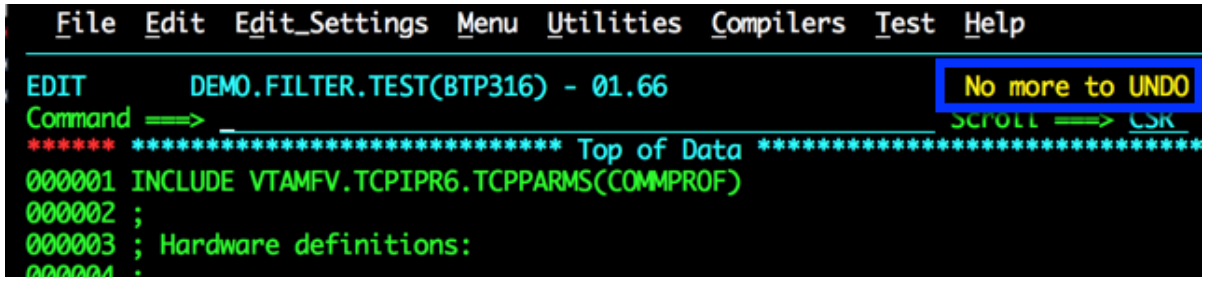
ispcconf

```
                    Modify ISPF Sitewide Defaults
Command ===>
                                                                More:    - +
 /  Show Pfkeys                          _  Reset Show Pfkeys
                                         _  Reset LOG Data Set Process Option
 Select Option 7.1 Dialog Test Panel     _  Reset LIST Data Set Process Option
 1  1. ISPYFP                            _  Reset Command Line Placement
    2. ISPYFPA
    3. ISPYFPB

 Command Line Placement                  PRINTDS Option
 1  1. Bottom                            1  1. DEST
    2. Asis                                 2. WRITER

 Scroll Defaults                         Status Area Default
 1  1. PAGE                              2  1. Calendar
    2. HALF                                 2. Session
    3. MAX                                  3. Function Keys
    4. CSR                                  4. User Point and Shoot
    5. DATA                                 5. None

                                         Reset flags
 Minimum Scroll Value   0                /  Reset Scroll Values
 Maximum Scroll Value   9999999
```

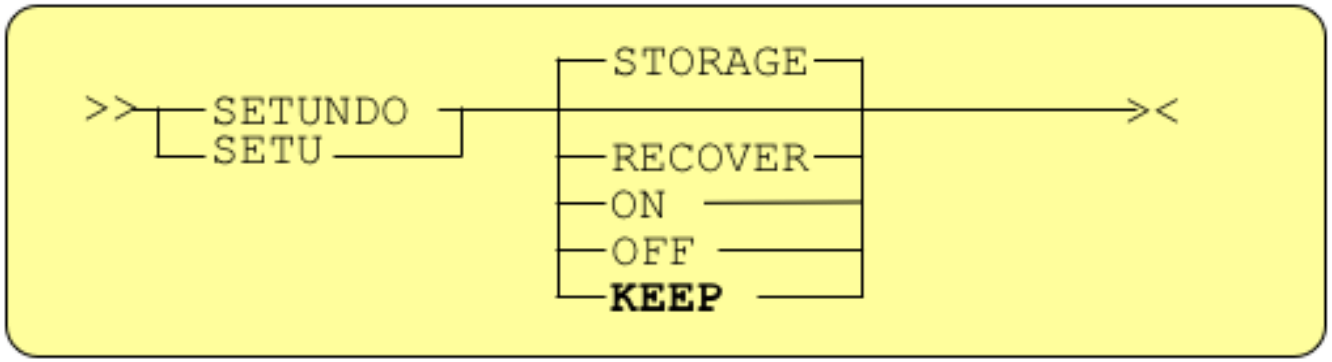
Edit Enhancements

Edit Enhancements

- **UNDO after SAVE (z/OS 1.9)**
  - By default, the UNDO buffers are cleared after a SAVE command is issued.



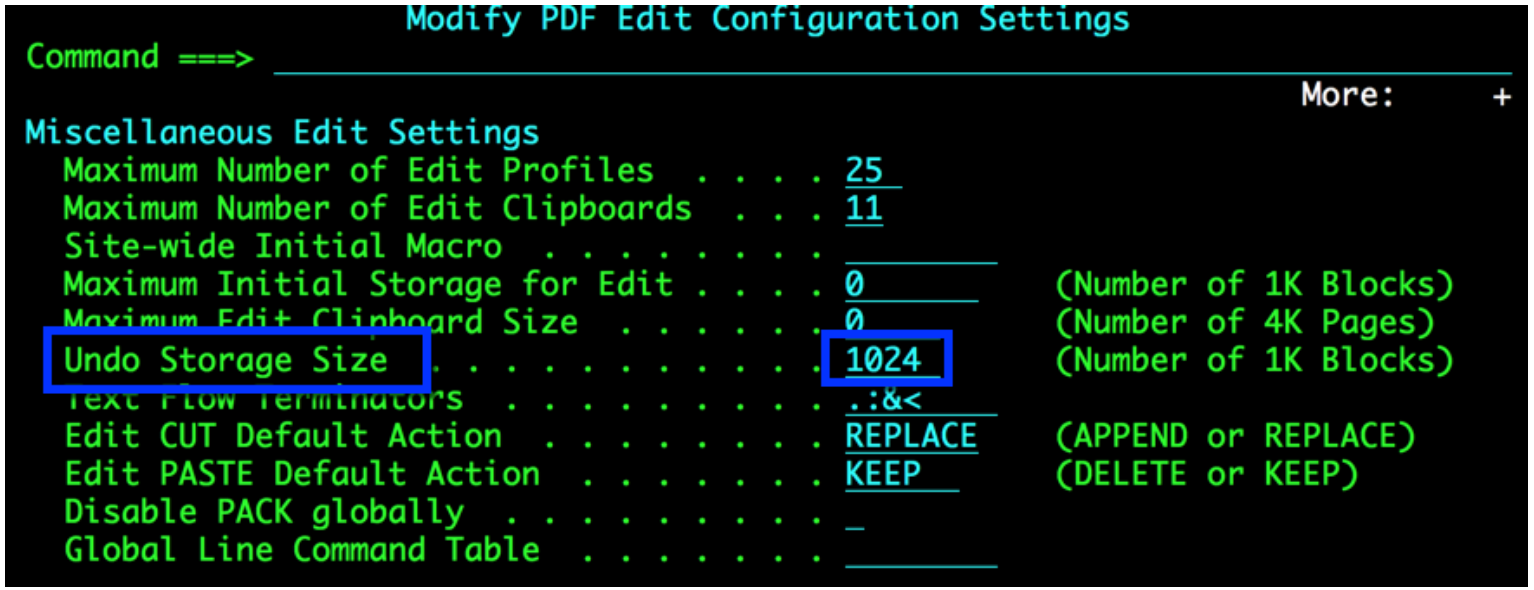
  - KEEP option added to the edit SETUNDO command

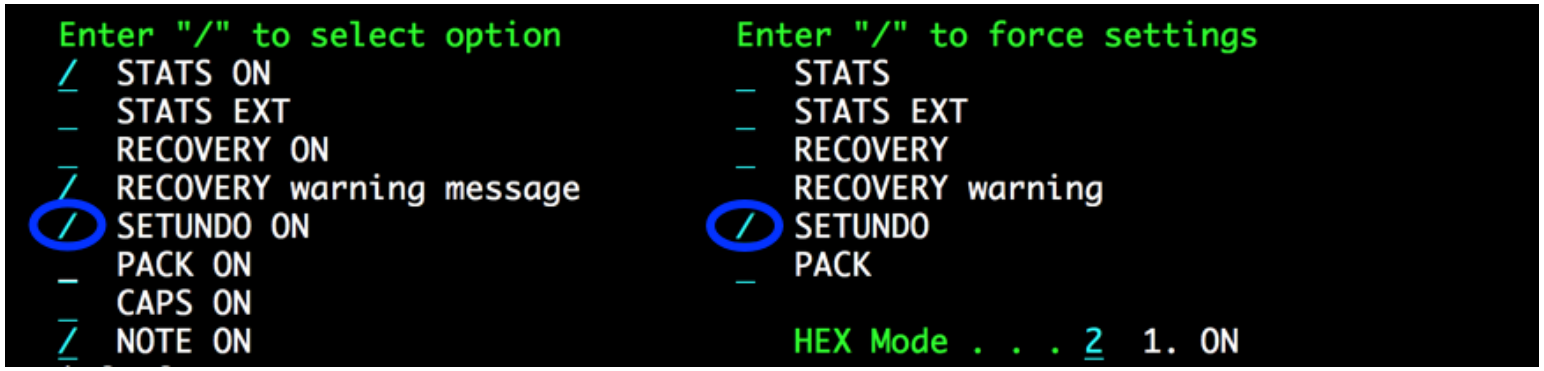


  - KEEP prevents the SAVE command from clearing the UNDO buffers in storage
    - Allows reversal of edit changes made prior to SAVE commands during the current edit session

Edit Enhancements

- **Enabling SETUNDO KEEP**
  - Must be enabled from the ISPF Configuration Utility
    - Under “Editor Settings”, set Undo Storage Size to a non-zero value, put a ‘/’ by SETUNDO ON, and force SETUNDO





Edit Enhancements

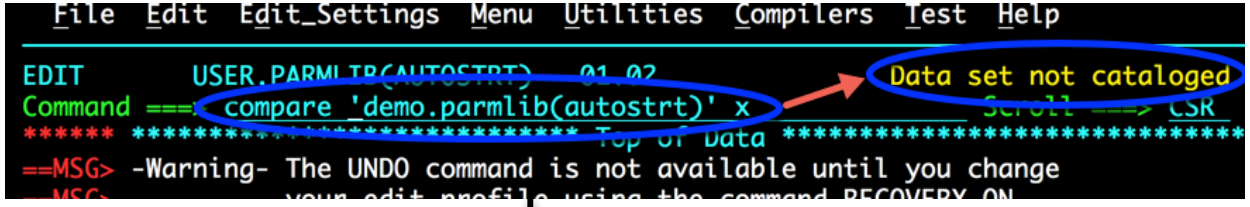
- **Edit Line Commands for HEX Display (z/OS 1.11)**
  - New edit line commands to display selected lines in hexadecimal format:

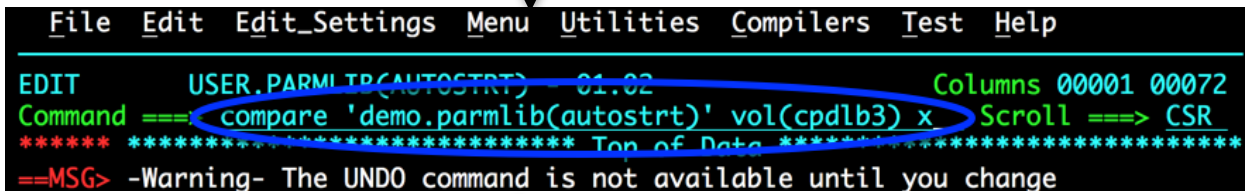
HX	display a single line in hexadecimal format
HXX	display a block of lines in hexadecimal format

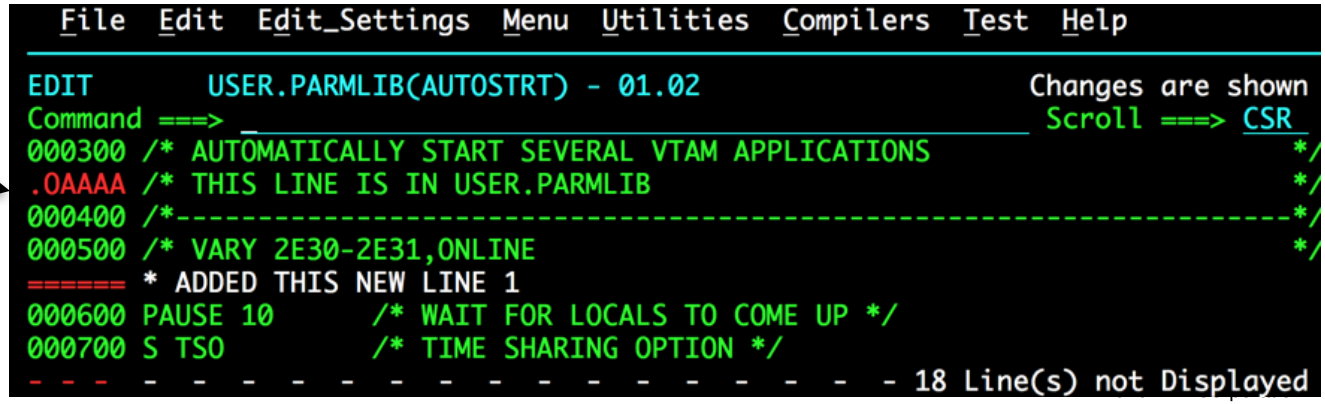
  - The **HX** and **HXX** line commands act as a toggle by switching a line's display format between normal and hexadecimal format

Edit Enhancements

- **COMPARE Command Enhancements**
  - New VOL keyword (z/OS 2.1)
    - VOL keyword is used to specify the volser for the volume on which the target data set resides
      Syntax: **VOL(*volser*)**
    - Allows comparison against an uncataloged data set



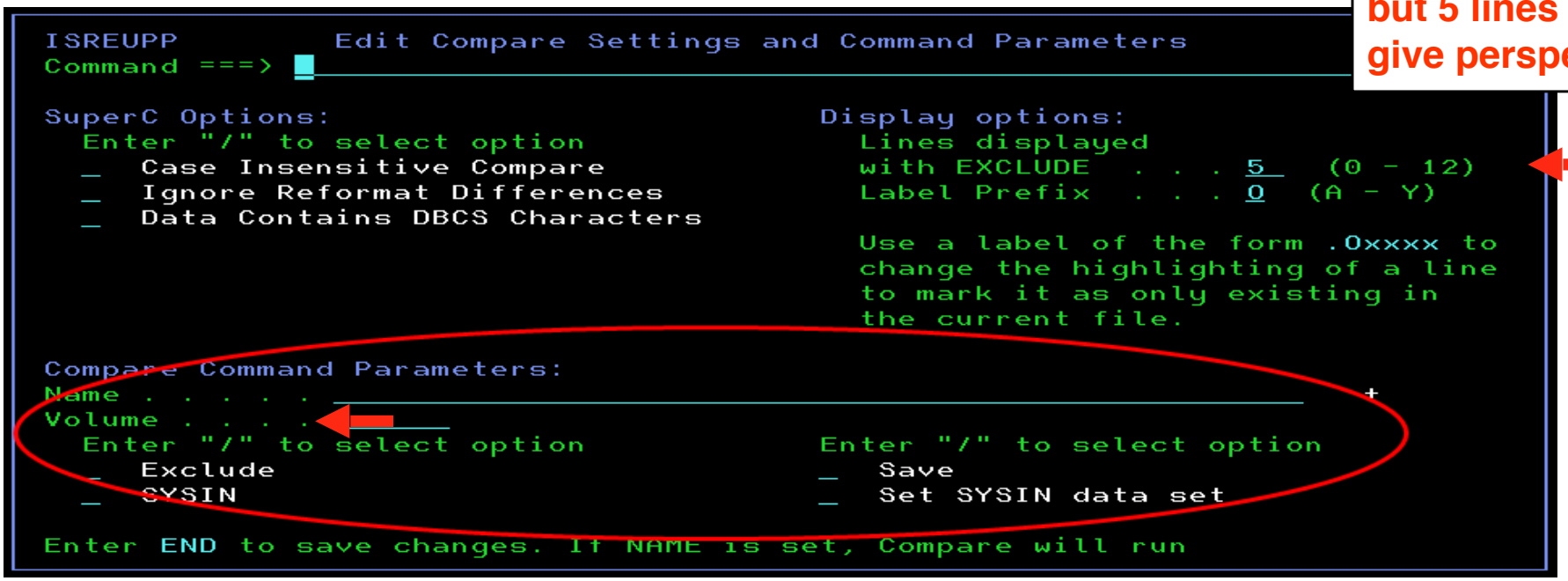




COMPARE Command Enhancements

- Enhanced COMPARE Settings Panel (z/OS 2.1)
  - Edit member and just issue “Compare” to launch the settings panel
  - COMPARE Settings Panel changed to allow specification of command parameters
    - Addresses problem where COMPARE command is too long for the command field
  - For easier viewing: Use “**Exclude**” option to exclude lines that are the same and the exclude ‘**Display** option’ allows for displaying a few lines around the change for perspective.

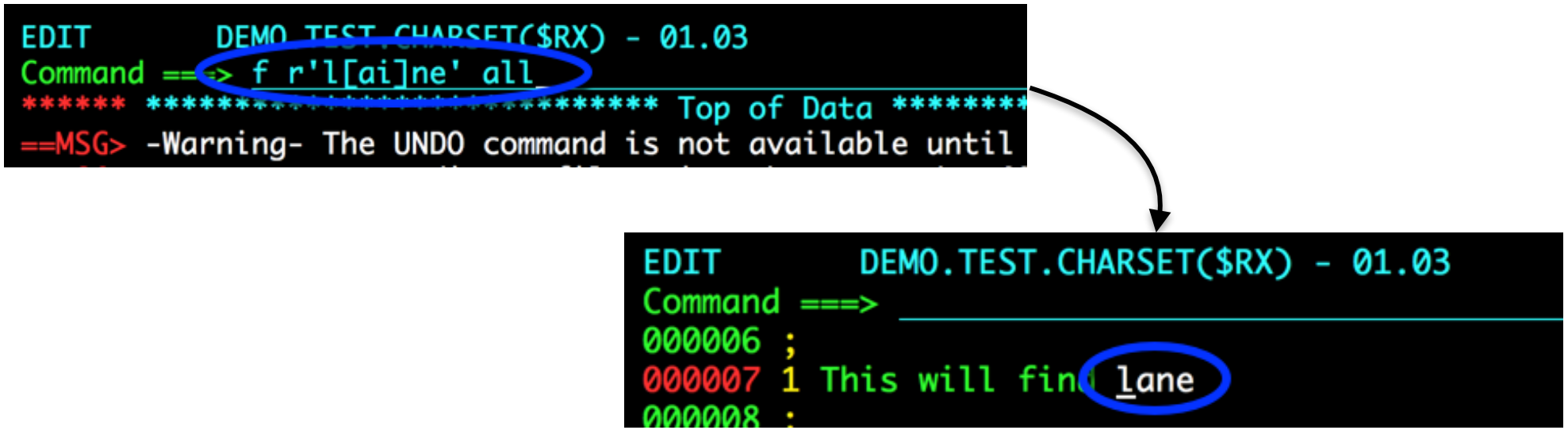
Ex: Exclude all but 5 lines to give perspective



Edit Enhancements

- **Regular Expressions for FIND/CHANGE (z/OS 2.1)**
  - FIND, CHANGE, and SEEK commands enhanced to allow the search string to be defined using a regular expression
  - Regular expression is specified as a quoted string preceded or followed by the letter “R”

e.g. FIND r'l[ai]ne' word
- will find the words lane and line

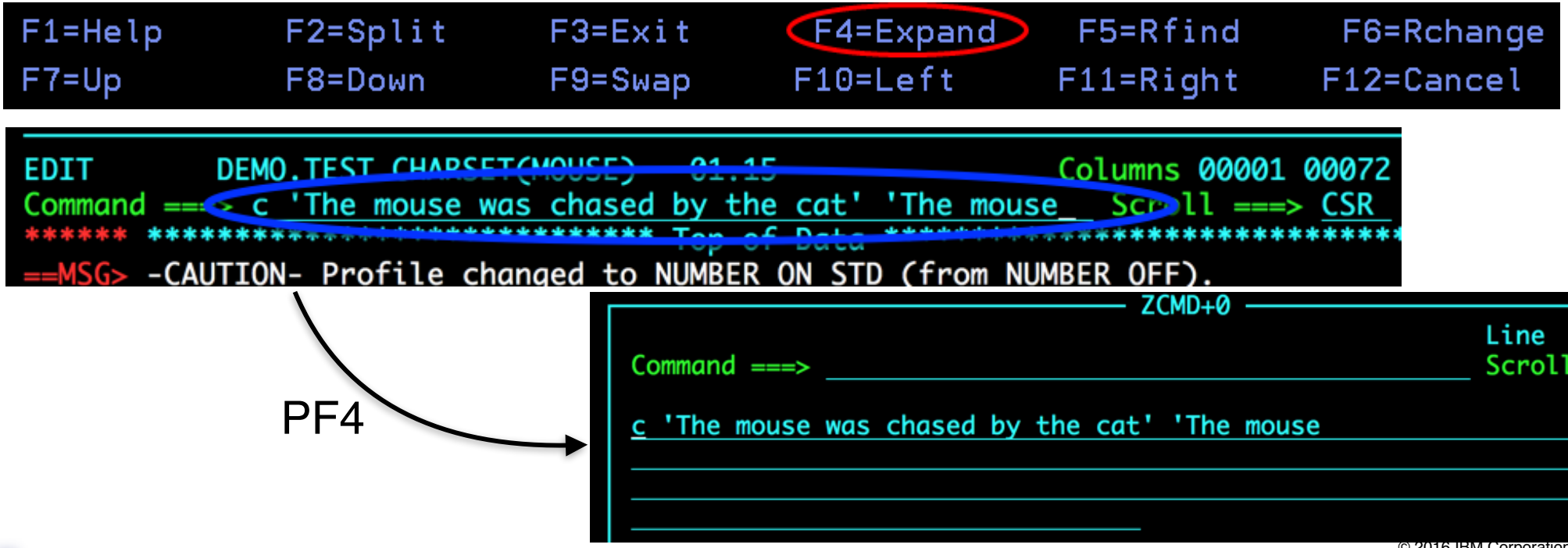


- **Regular Expressions for FIND/CHANGE (z/OS 2.1)**
  - Special symbols for regular expressions

`. (Period)`	`- matches any one character: e.g. d.g matches "dig", "dug", and "dog", but not "dg"`
`* (Asterisk)`	`- matches zero or more instances of the previous character: e.g. he*ath matches "hath" and "heath"`
`+ (Plus)`	`- matches one or more instances of the previous character: e.g. south+ern matches "southern", but not "soutern"`
`[`*`string`*`]`	`- matches any one of the characters in` *`string:`* `e.g. d[iu]g matches "dig" and "dug", but not "dog"`
`[`*`ch1-ch2`*`]`	`- matches any of the characters in the range between` *`ch1`* `and` *`ch2:`* `e.g. m[a-z]p matches "map" and "mop", but not "m9p"`
`[^`*`string`*`]`	`- matches any character other than those in` *`string:`* `e.g. d[^iu]g matches "dog", but not "dig" or "dug"`

Edit Enhancements

- **Expandable Command Field (z/OS 2.1)**
  - The command field on the ISPF-supplied edit display panels is changed to an expandable field
    - Supports the input of edit primary commands that would otherwise be too long for the command field
  - The ZEXPAND command is used to display a pop-up window with the command input field expanded to a length of 255 characters
    - PF4 is set to invoke the ZEXPAND command in the ISPF-supplied edit keylists



Edit Enhancements

- **HILITE Enhancement – lower case characters in JCL (z/OS 2.1)**
  - The edit HILITE command is changed to display in reverse video lower case characters invalidly used in JCL

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
ISREDDE2    VANDYKE.JCLLIB(FTPDT) - 01.01                Columns 00001 00080
Command ===> _                                            Scroll ===> CSR
****** ********************************* Top of Data ***********************************
000001 //VANDYKEF JOB (#ACCT),'PETER',
000002 //           MSGLEVEL=(1,1),MSGCLASS=X,CLASS=A,REGION=4M,
000003 //           NOTIFY=&SYSUID
000004 //*
000005 //ALLOC      EXEC PGM=IEFBR14
000006 //DDF1       DD   DSN=vandyke.HSD1110.F1.XMI
000007 //COPY       EXEC PGM=FTP
000008 //SYSFTPD    DD   DISP=SHR,DSN=HANKO.PDSCNTL(FTPSDATA)
000009 //sysin      DD   *
000010 192.168.128.222
000011 xxxxxxxxx yyyyyyy
000012 bin
000013 cd "C:\SCLM Suite\FTP downloads for Boulder\SCLM DT"
000014 put 'IBM.HSD1110.F1.XMI' HSD1110.F1BIN
000015 put 'IBM.HSD1110.F2.XMI' HSD1110.F2BIN
000016 put 'IBM.HSD1110.F3.XMI' HSD1110.F3BIN
000017 put 'IBM.HSD1110.F4.XMI' HSD1110.F4BIN
000018 put 'IBM.HSD1110.F5.XMI' HSD1110.F5BIN
000019 put 'IBM.HSD1110.SMPMCS.XMI' HSD1110.MCSBIN
000020 quit
000021 /*
000022 //OUTPUT     DD   SYSOUT=*
****** ********************************* Bottom of Data ********************************
```

PDSE V2 Member Generations

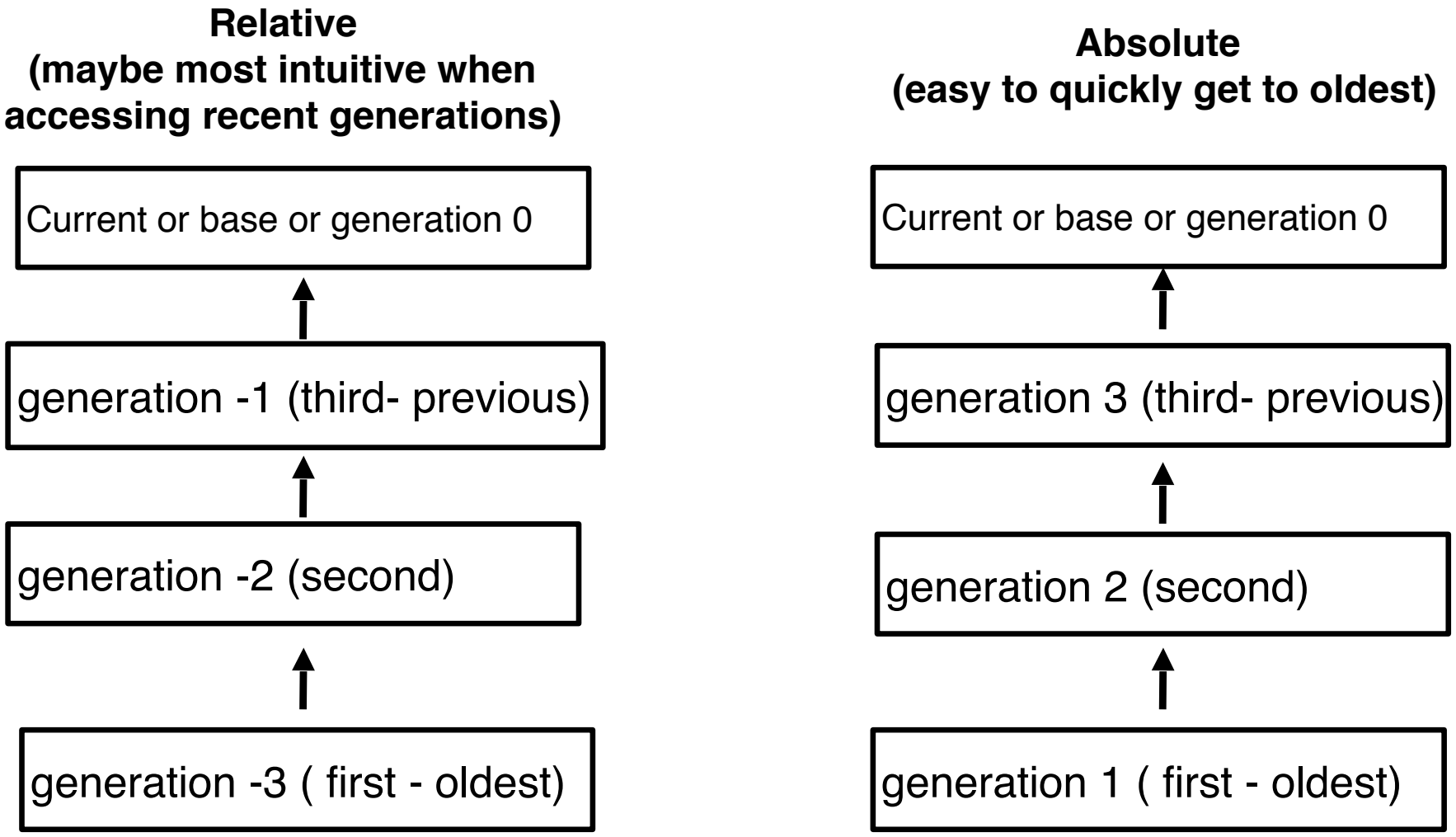
PDSE V2 Member Generations (z/OS V2R1 +)

- ISPF provided support for PDSE Version 2 Member Generations included with DFSMS APAR **OA42358**
  - Requires ISPF APARs **OA42247** and **OA42248**.
  - DFSMS parmlib member IGDSMSxx, MAXGENS_LIMIT setting

- Provides the ability to work with previous generations of a member.
  - *Current ISPF Support:*
    - Data set allocation (ex: option 3.2) provides the ability to specify the maximum generations
    - Data set information includes the maximum number of generations in the data set
    - DSList member display using the “prompt” allows a user to specify the generation to edit or browse
      - *Generation 0 (zero) is the “current” generation*
    - Support in edit for SAVE NEWGEN/NOGEN
    - Limited support on ISPF services: DSINFO (return #), LMDLIST (return #), EDIT,VIEW, BROWSE
  - ***Fyi…Data set Commander V8R1*** *product provides robust support for managing member generations!*

PDSE V2 Member Generations

- Two ways to interact with generations, specifying



Example with 3 Generations

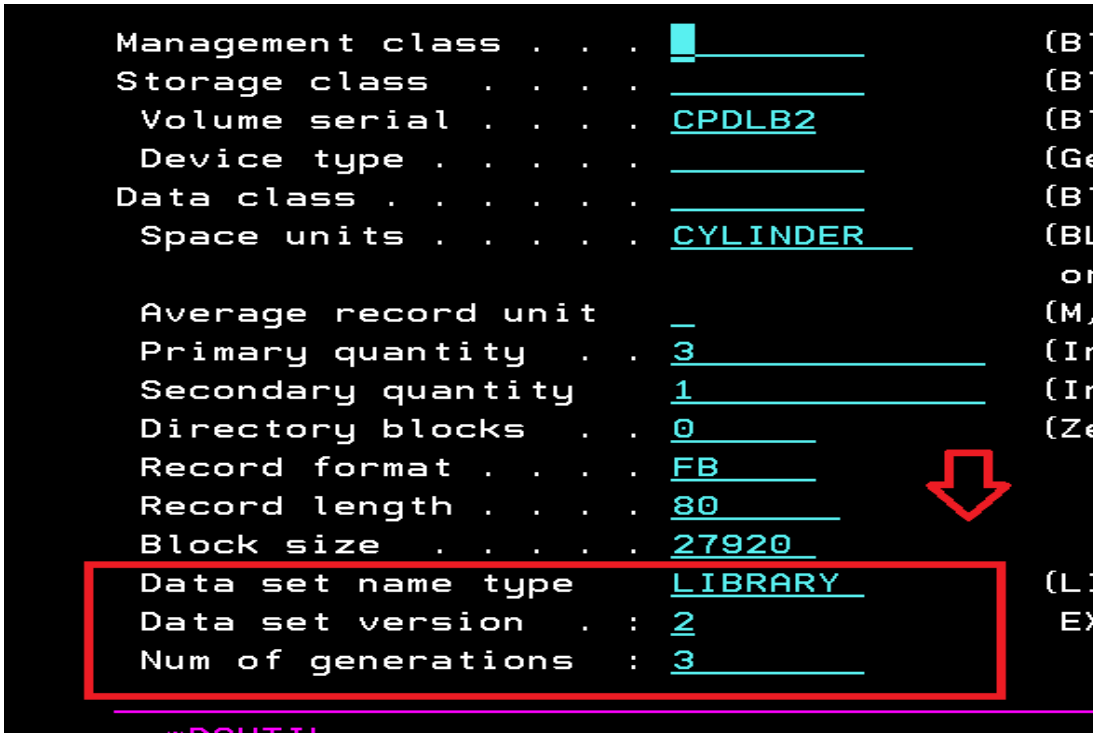
Working with Member Generations

- By default:
  - Editing the current member (Gen 0) without specifying a generation results in a new generation being created
  - Editing prior generations does NOT result in a new generation
- However,
  - Can edit any generation and specify “SAVE **NEWGEN**”
    - Newly saved member will become generation 0 (base).
  - Can edit the base generation and specify “SAVE **NOGEN**”
    - Newly saved member is changed but no new generation is created.
- Rename – causes ISPF to delete all generations except base
- Delete – deletes all generations
- Copy - only copies the base generation
- Edit will tell you which absolute generation you are working with

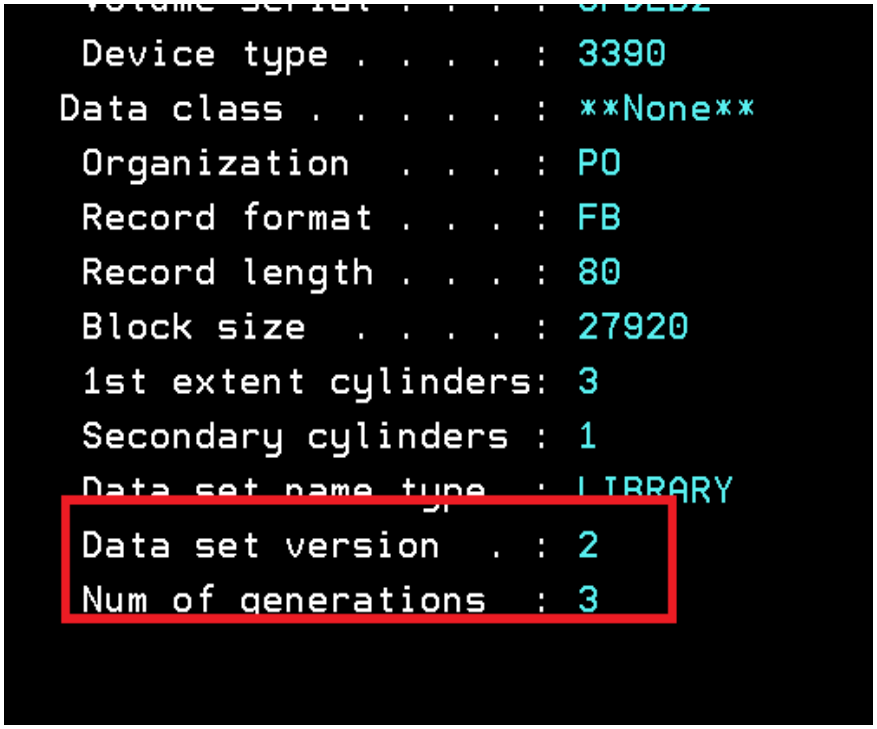
```
EDIT       TREED.GENTST2(TST1) - 01.00                  Columns 00001 00080
Command ===> _____________________________________________ Scroll ===> CSR
****** ******************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
==MSG> -CAUTION- Edit session has been invoked for generation 1
==MSG>           High generation number is currently 2
000100 Generation1                                                    00010000
000200 this is a test                                                 00020000
****** ***************************** Bottom of Data ********************************
```

PDSE V2 Member Generations

Allocate 3.2

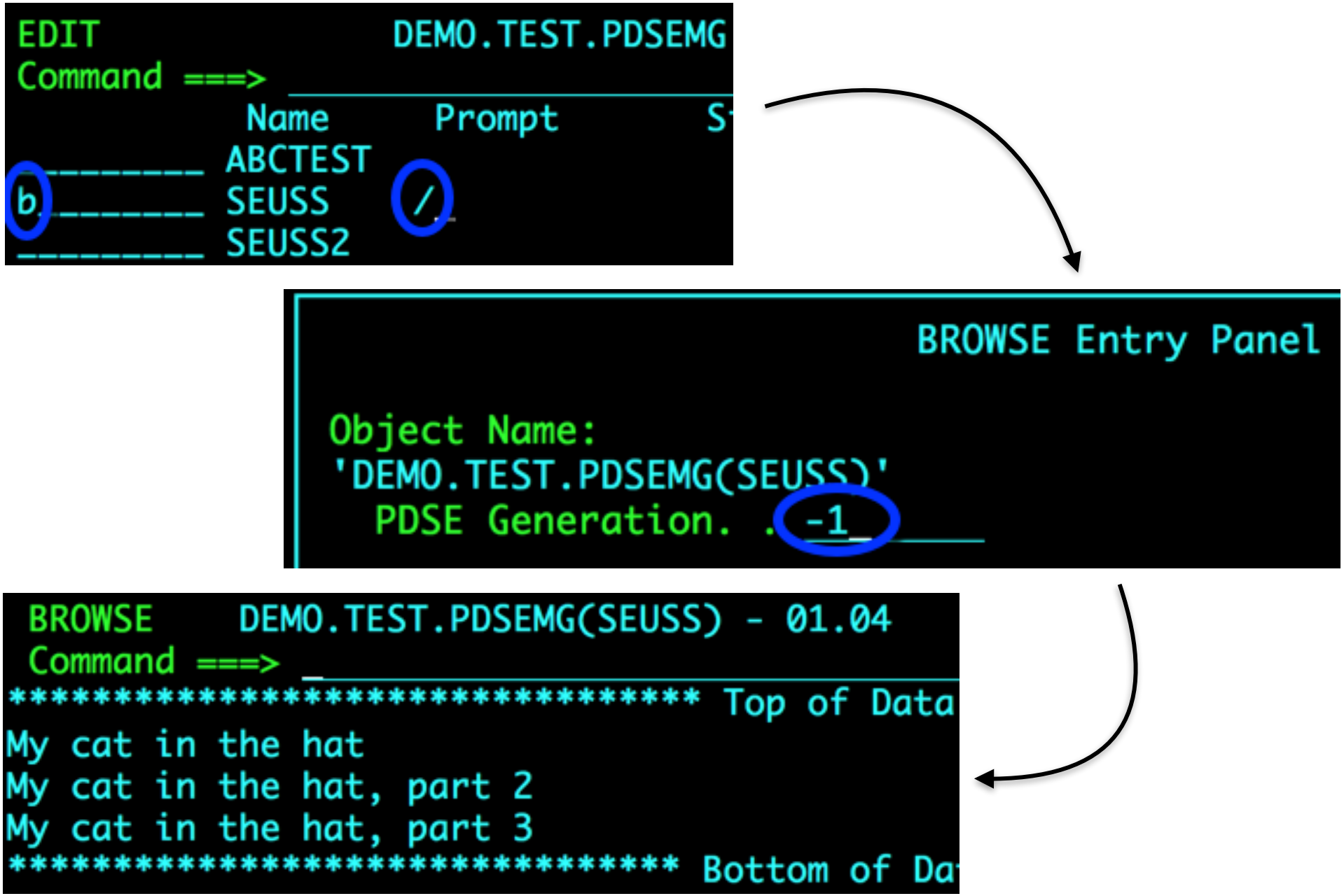


Dataset Information



PDSE V2 Member Generations …

Browsing a generation



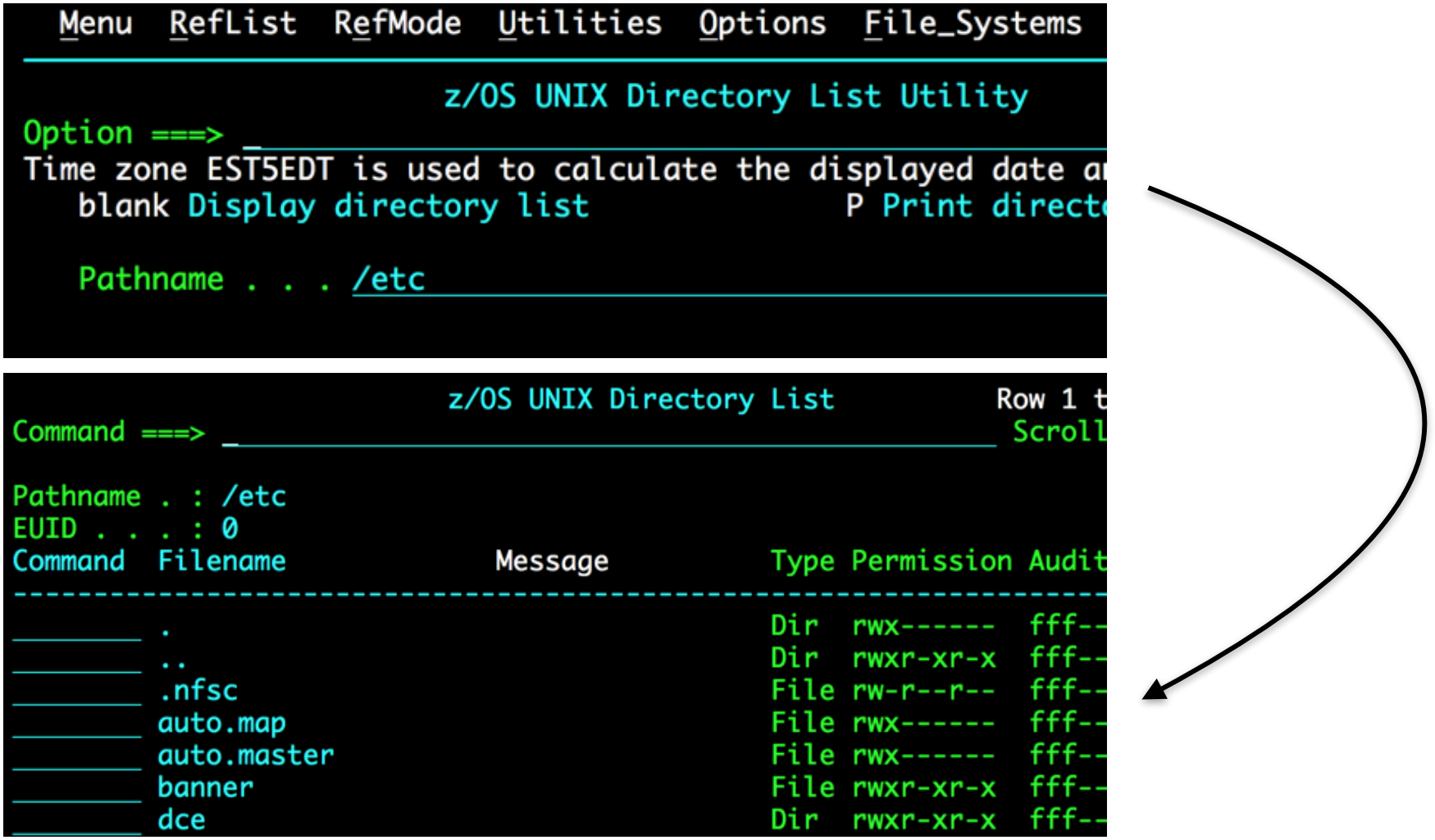
Unix Directory List

z/OS UNIX Directory List Utility

- **z/OS UNIX directory list can be displayed …. Several ways!**
  - ISPF option 3.17 (z/OS 1.8)
    - z/OS UNIX Directory List Utility
  - ISPF options 1 & 2 (z/OS 1.9)
    - Enter a directory path name in the “Other” name field
  - UDLIST command (z/OS 1.10)
    - System command used to display a directory list from any command field
    - Lower case path name support added with z/OS 2.1
  - DIRLIST service (z/OS 1.10)
    - Programming API available for programs wanting a directory list display
  - ISPF option 3.4 (z/OS 2.1)
    - Enter a directory path name in the “Dsname Level” field

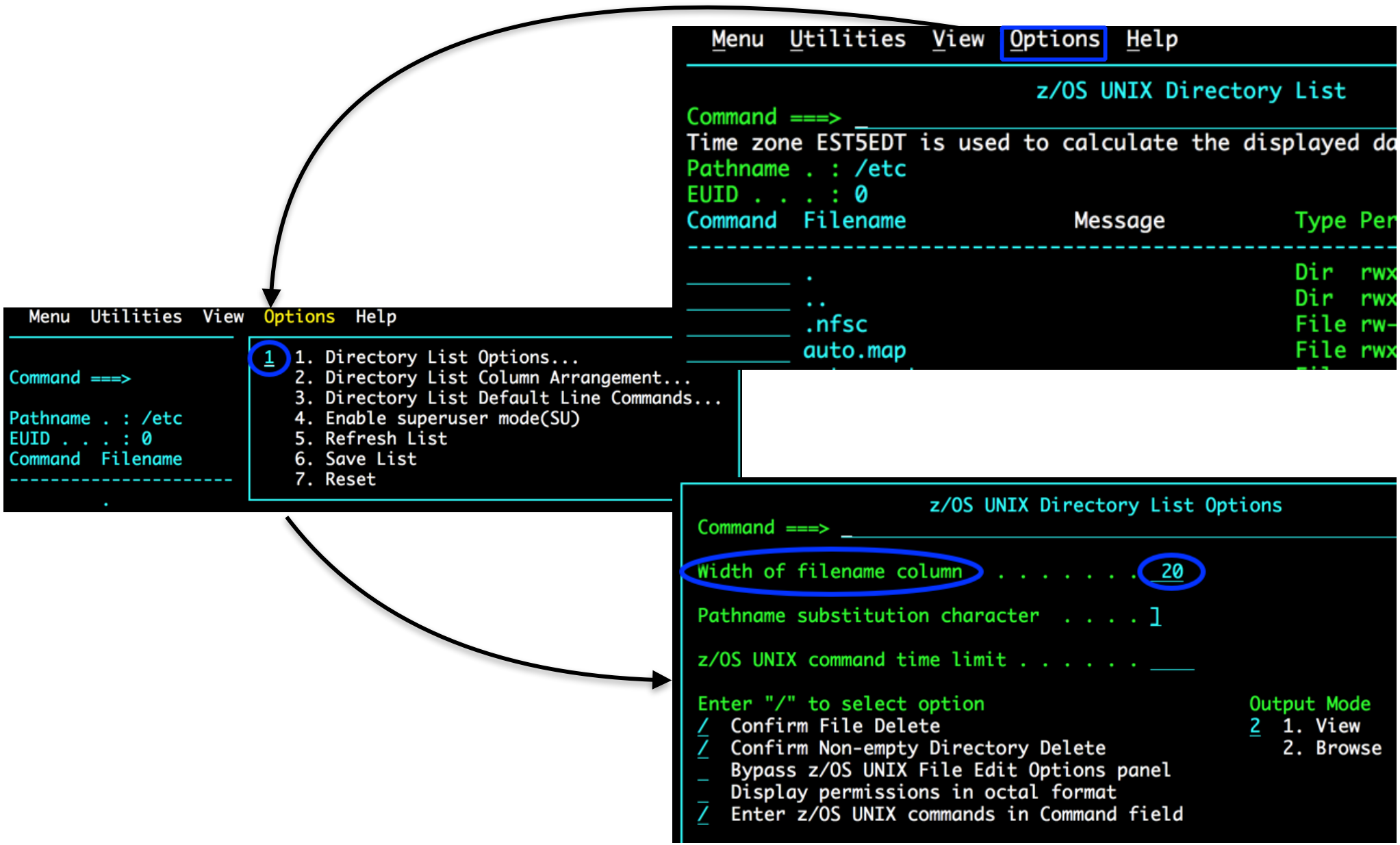
z/OS UNIX Directory List Utility (3.17) (z/OS V1R8)

- **Displays a list of files in a z/OS UNIX directory**
  - Provides some of the functions supported by the ISHELL utility

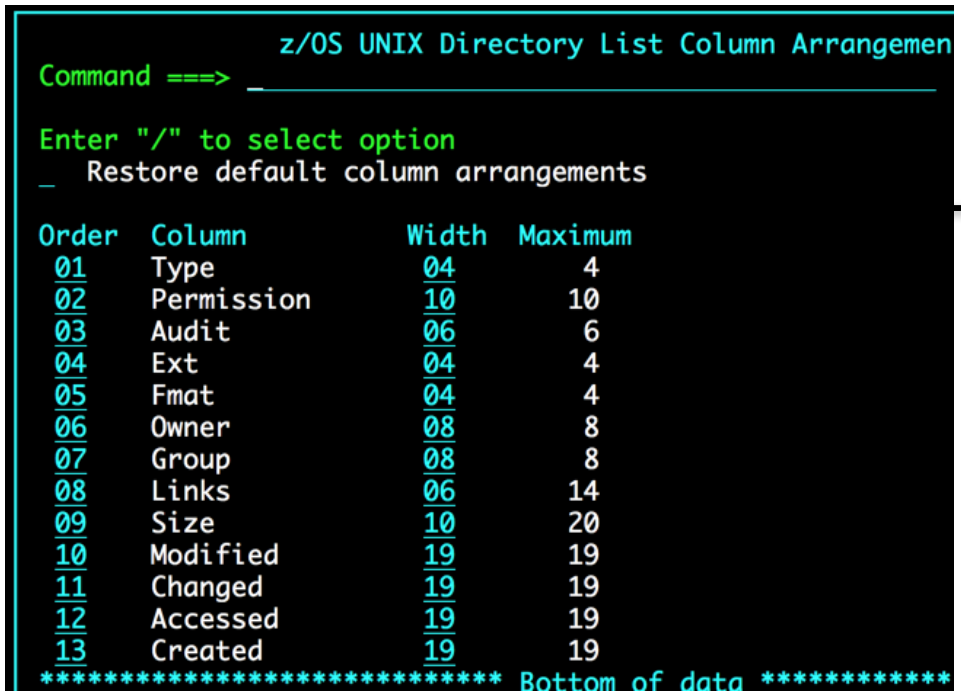


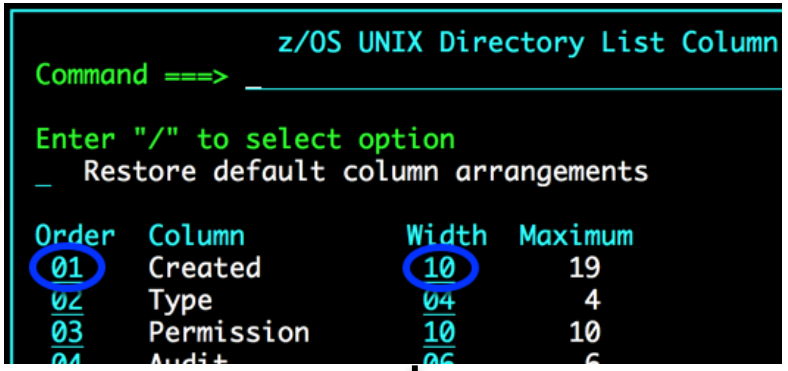
z/OS UNIX Directory List Utility - Options Menu

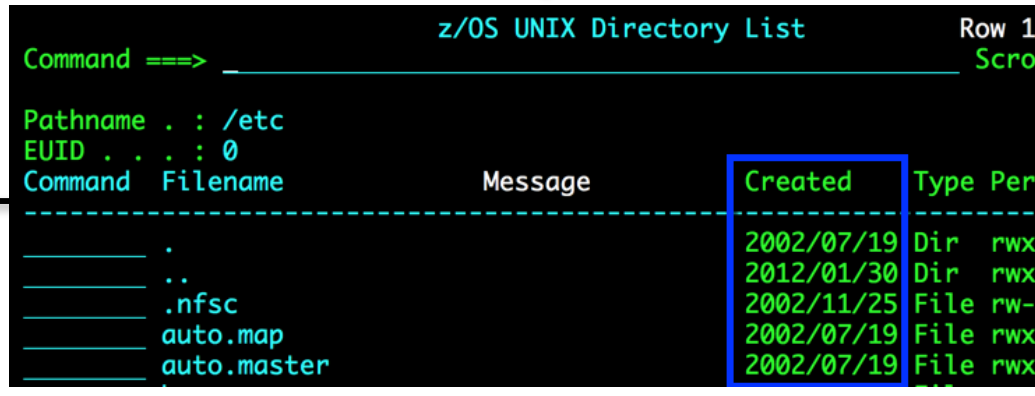
- Option 1 - Adjust size of the filename column

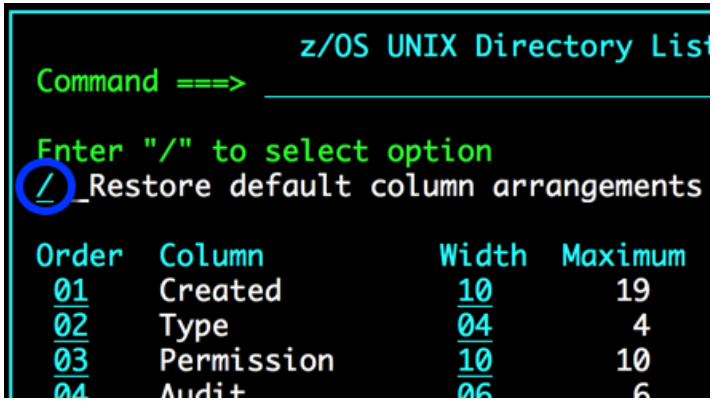


- Option 2 – Tailor column arrangement









z/OS UNIX Directory List Utility

- **Option 3.17 - Filtering the display of z/OS UNIX path names (z/OS 2.1)**
  - Support is added to allow the following global or pattern-matching characters to be specified in a path name entered for a z/OS UNIX Directory List display:

```
?               match any single character
* (asterisk)    match multiple characters
[               open a set of single characters
]               close the set of single characters
                Each character in the set can match a
                single character at the position
                specified.
```

  - ISPF builds a list consisting of files and directories with path names that match the specified pattern
  - This support is available for all ISPF functions that can be used to display a z/OS UNIX directory list

z/OS UNIX Directory List Utility

- **Filtering of z/OS UNIX path names (z/OS 2.1)**
  - **Example**:

```
Pathname . . . /usr/l*/[cs]*_
```

```
  Menu  Utilities  View  Options  Help
 ──────────────────────────────────────────────────────────────────
                                z/OS UNIX Directory List
Command ===> _

List . . . : /usr/l*/[cs]*
EUID . . . : 0
Command  Pathname                                Message
-------------------------------------------------------------------
_______  /usr/lib/cdserprt.dll
_______  /usr/lib/cdsibmut.dll
_______  /usr/lib/cdskwtf.dll
```

...

```
_______  /usr/lpp/cpo
_______  /usr/lpp/customizer
_______  /usr/lpp/cyanea
_______  /usr/lpp/sdsf
_______  /usr/lpp/set
```

z/OS UNIX Directory List Utility

- **Further filtering of the path name:**

```
  Menu  Utilities  View  Options  Help
                                z/OS UNIX Directory List
Command ===> filter /IBM/CP*

List . . . : /usr/l*/[cs]*
EUID . . . : 0
Command   Pathname                              Message
---------------------------------------------------------
________ /usr/lib/cdserprt.dll
```

```
  Menu  Utilities  View  Options  Help
                                z/OS UNIX Directory List
Command ===>

List . . . : /usr/l*/[cs]*/IBM/CP*
EUID . . . : 0
Command   Pathname                              Message
---------------------------------------------------------
________ /usr/lpp/cpo/IBM/CPOCOMM
________ /usr/lpp/cpo/IBM/CPOCPCFG
________ /usr/lpp/cpo/IBM/CPOCPREG
```

z/OS UNIX Directory List Utility

- **Primary commands available:**
  - **EDIT** - edit a file in the current directory
  - **FIND** - find a string within a filename
  - **LEFT** - scroll the directory list columns to the left
  - **LOCATE** - locate a directory list entry based on the sort order
  - **REFRESH** - redisplay directory list with any changes that have occurred
  - **RESET** - redisplay list removing line commands and messages
  - **RIGHT** - scroll the directory list columns to the right
  - **SAVE** - write the directory list data to a data set
  - **SORT** - sort the directory list by the specified fields

- **New with z/OS 2.1:**
  - **FILTER** - filter the list using a file name pattern
  - **SRCHFOR** - search for string in regular files in the list
    - Similar to the **DSLIST** and member list **SRCHFOR** commands
    - Support for ASCII search strings

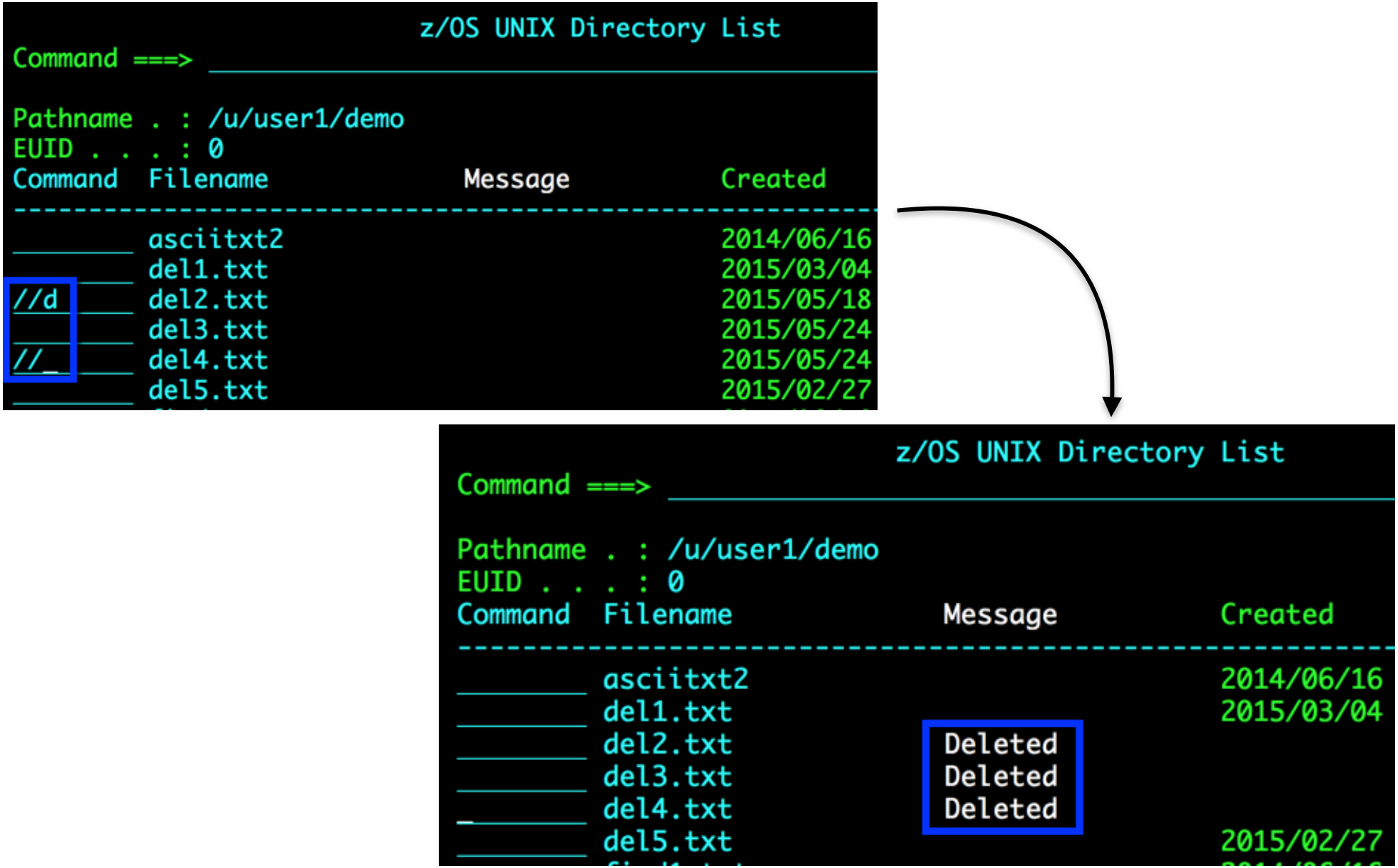
z/OS UNIX Directory List Utility

- **Line commands available:**
  - **E** - Edit a file
  - **B** - Browse a file
  - **N** - Create a new file
  - **L** - List a directory
  - **D** - Delete a file
  - **R** - Rename a file
  - **V** - View a file (z/OS 1.9)
  - **EA**- ASCII edit (z/OS 1.9)
  - **VA**- ASCII view (z/OS 1.9)
  - **RA**- REFLIST add (z/OS 1.10)
  - **FS**- File system (z/OS 1.11)
  - **MA**- Modify ACL (z/OS 1.13)
  - **CO** - Copy data out
  - **CI** - Copy data in
  - **I** - Display attributes
  - **MM** - Modify mode fields
  - **MX** - Modify extended attributes
  - **X** - Execute a command
  - **MO** - Modify owner (z/OS 1.11)
  - **MG** - Modify group (z/OS 1.11)
  - **MF** - Modify format (z/OS 1.11)
  - **UA** - User auditing (z/OS 1.11)
  - **AA** - Auditor auditing (z/OS 1.11)

- **Block Line Commands (z/OS 2.1)**
  - Allows the same line command to be executed against multiple files at once
  - Implementation is similar to the block line command support in the ISPF Data Set List Utility (ISPF option 3.4)
  - The start and end of the block is indicated by the user typing 2 forward slash (//) characters in the line command fields for the start and end of the block
  - The line command must immediately follow the 2 forward slashes at either the start or end of the block
  - All line commands, including z/OS UNIX commands, TSO commands, CLISTs and REXX execs can be invoked as block commands

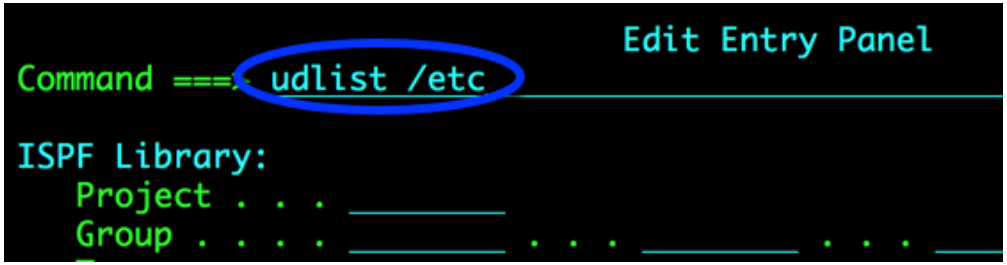
z/OS UNIX Directory List Utility

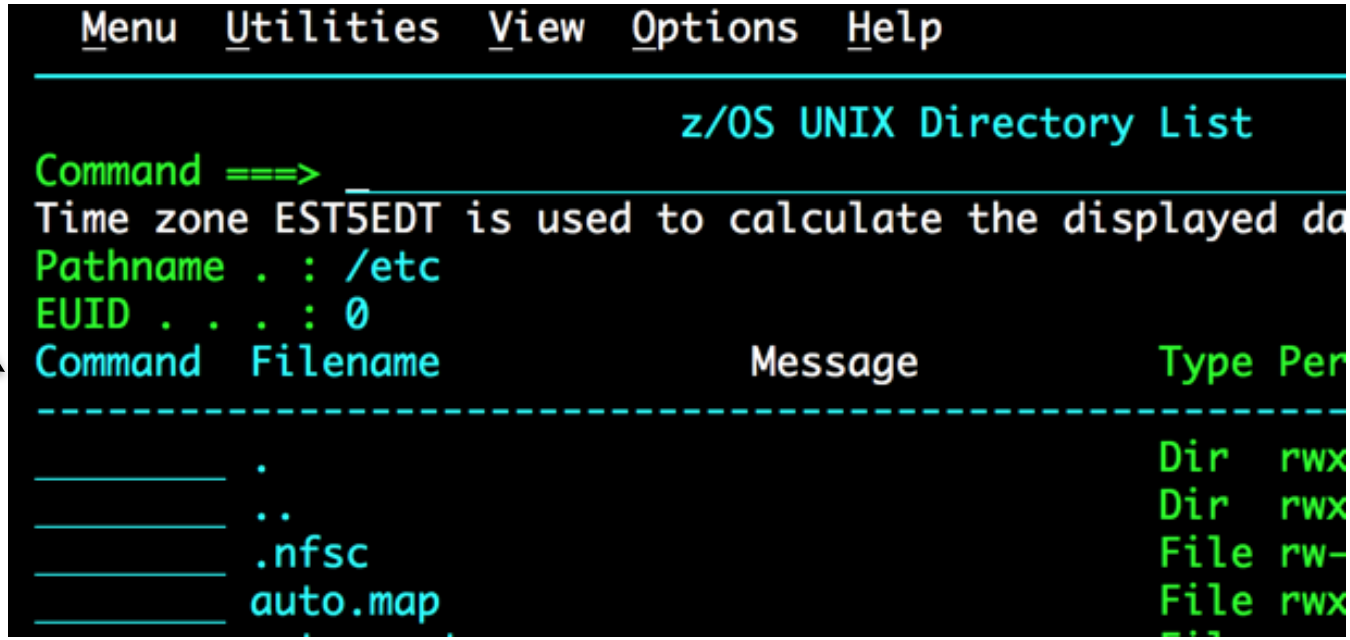
- **Block line commands**



z/OS UNIX Directory List Utility

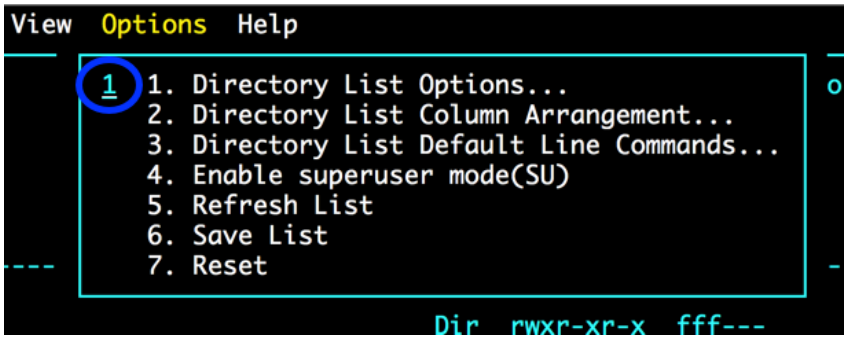
- **UDLIST command (z/OS 1.10)**
  - System command used to display a directory list from any command field
  - Lower case path name support added with z/OS 2.1

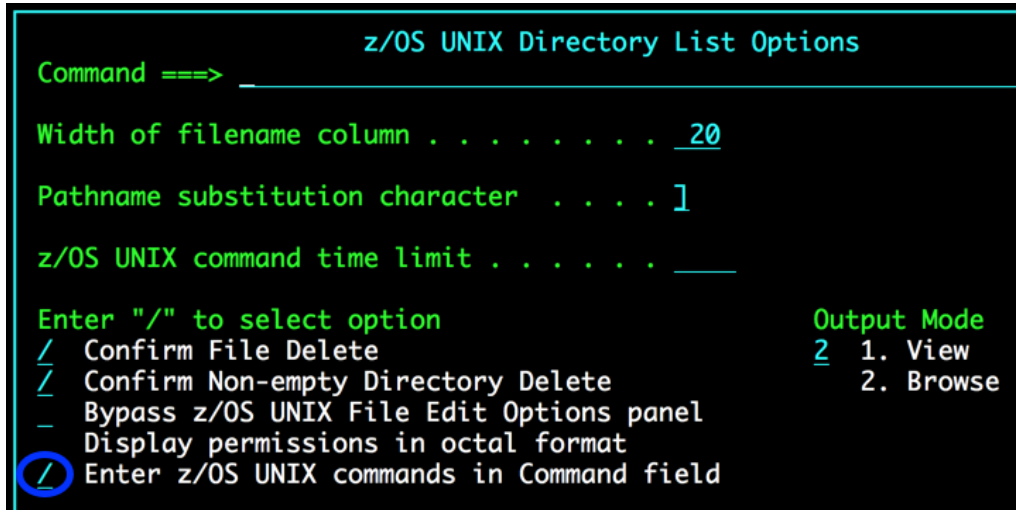


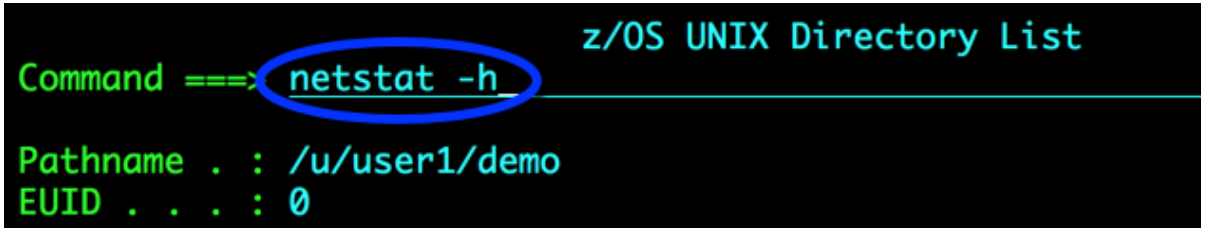


z/OS UNIX Commands from ISPF

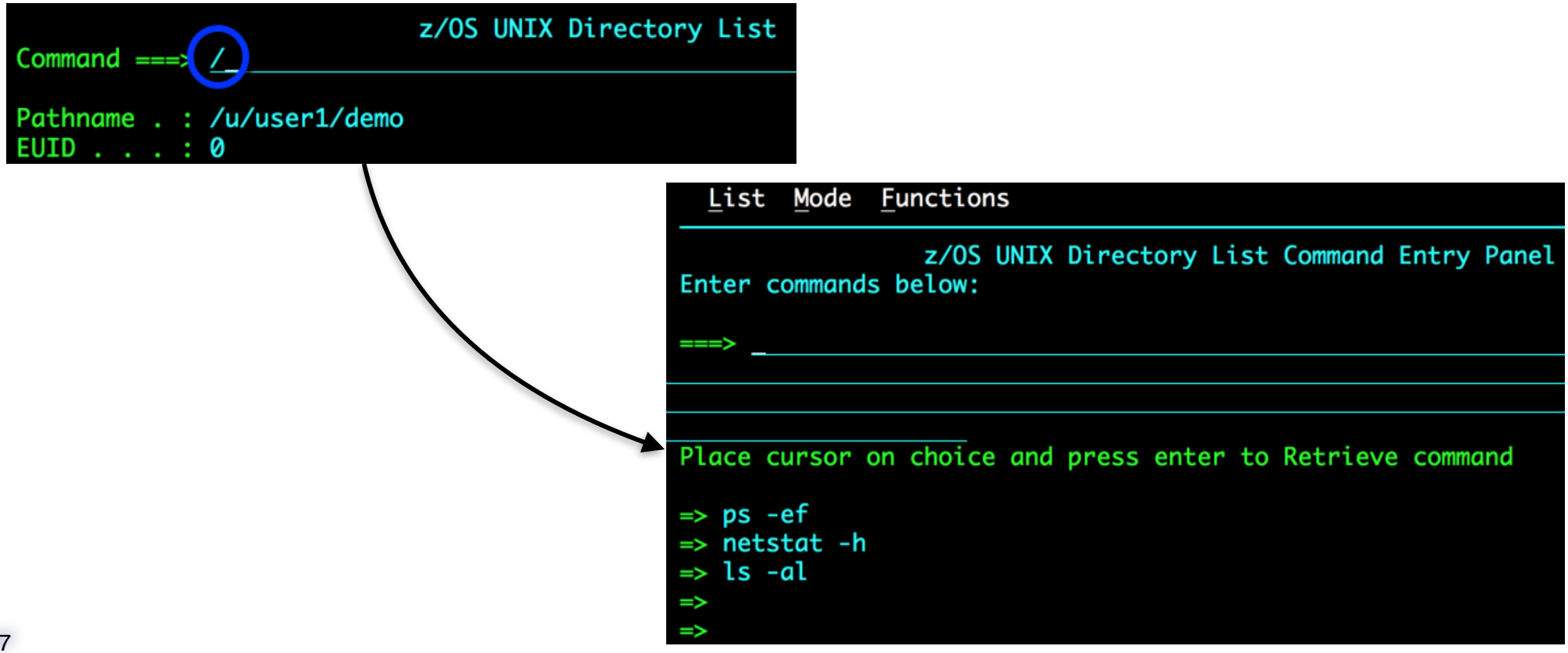
- **Running z/OS UNIX Commands**
  - z/OS UNIX commands can be entered in the command field on the directory list panel (z/OS 1.11)
    - Directory list option “Enter z/OS UNIX commands in Command field” must be selected
    - Output to stdout and stderr captured and displayed using the browse function
  - z/OS UNIX Command output mode (z/OS 2.1)
    - Option available to display command output using either browse or view



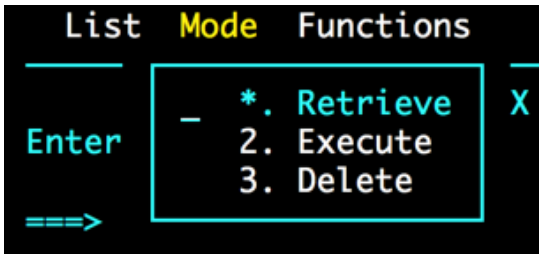




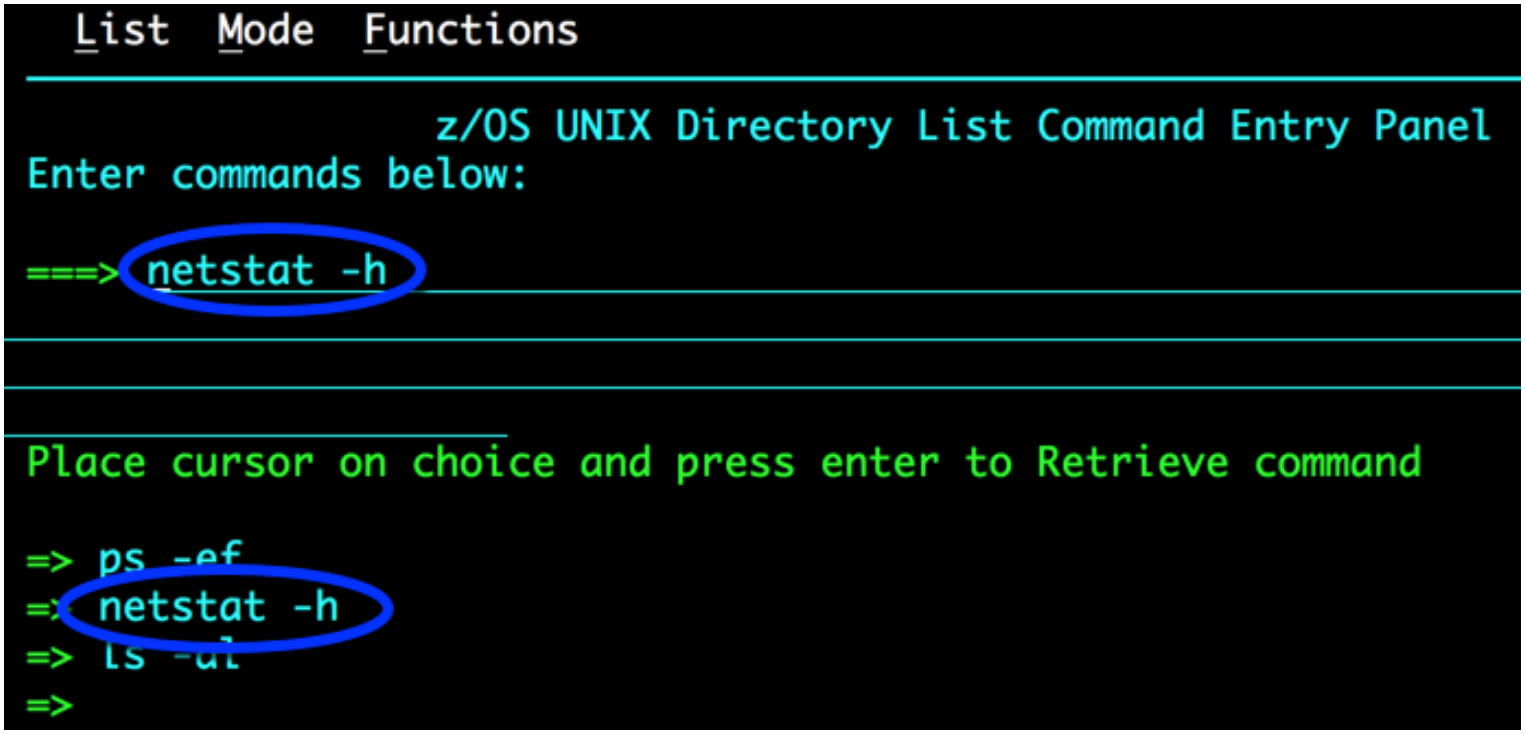
- **Running z/OS UNIX Commands (continued)**
  - z/OS UNIX Command Shell (z/OS 2.1)
    - Provides the ability to enter, save and retrieve z/OS UNIX commands
    - Works in a similar way to the ISPF Command Shell (ISPF option 6)
    - Invoked by entering a / (forward slash) in the primary command field of the z/OS UNIX Directory List panel
      - A 255 character length command field is provided for long z/OS UNIX commands
      - a list of point-and-shoot fields showing the last 10 z/OS UNIX commands entered
      - user can control retrieval from and updates to the list

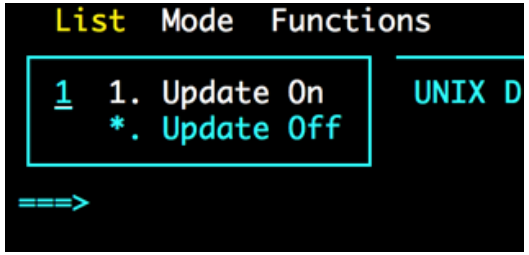


z/OS UNIX Commands from ISPF



You can choose to retrieve a command to the command line, execute it, or delete it from the list.





You can choose whether or not to add a command to the list.

Multiple Screens

Using Multiple Screens

- **ISPF allows up to 32 synchronously multi-tasking screens under one ISPF session**

- **Create new logical screens using:**
  - SPLIT [NEW] command
    - reposition horizontal line separating 2 screens on 3270 display
    - new logical screen created when NEW specified

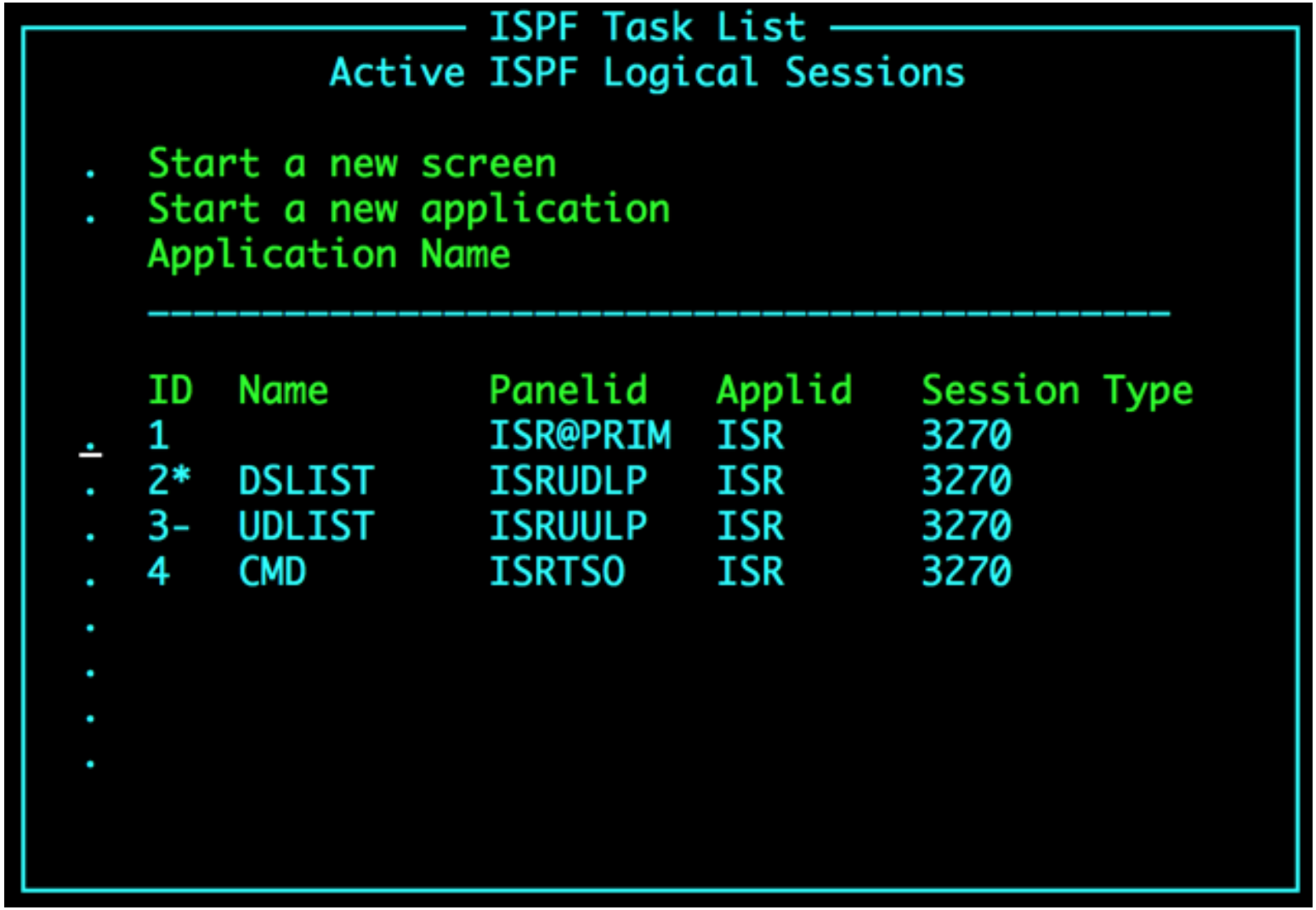
  - START command
    - creates new logical screen with different "initial dialog“

```
START PANEL(panel)|PGM(program)|CMD(command)
  [select_parameters]
 |  ISPF_command
 |  primary_option_menu_option
```

- **Navigate screens using:**
  - SWAP [LIST | PREV | NEXT | *screen name* | *n*] command
  - ISPF Task List panel (invoked using SWAP LIST command)

Using Multiple Screens …

- **ISPF Task List panel (invoked using SWAP LIST command):**



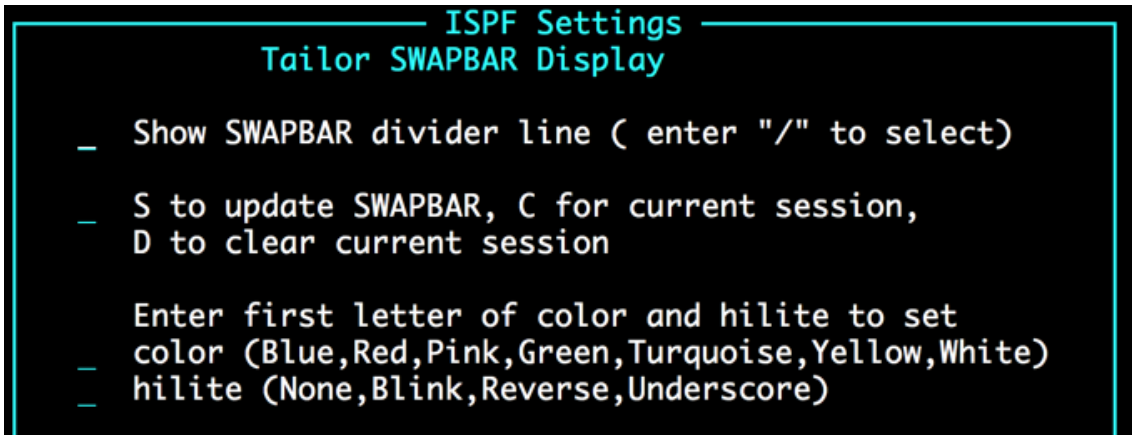
Using Multiple Screens

- **SWAPBAR (z/OS 1.10)**
  - Simplifies the task of swapping between ISPF logical screens
  - Displays at the bottom of the physical screen point-and-shoot fields associated with each logical screen for the session

    - Use the point-and-shoot field to invoke the associated logical screen
      Tip: Customize your terminal emulator to make the action of clicking the mouse simulate placing the cursor and pressing the enter key.

      Ex: With PCOMM - from “File” pull-down, go to “Edit”->”Preferences”->”Mouse” and select “Customize”. From “File” select “Customize Macro/Script”. Program the Right mouse button to simulate “Mouse Position” and then “Enter”.

  - Enabled using the SWAPBAR system command
    - Syntax:
      SWAPBAR [/|ON|OFF]
    - Format of the SWAPBAR display can be customized (z/OS 2.1) by specifying
      SWAPBAR /



Using Multiple Screens

- **Multiple Screens at ISPF Invocation (z/OS 2.1)**
  - Allows a user to define a set of logical screens that are automatically created when ISPF is invoked
  - ISPF profile variable (7.3) is used to define a series of commands to start ISPF logical screens at ISPF invocation
    - Variable must contain the identifier ISPF, followed by the command delimiter then the command stack used to start the logical screens

```
MYSTART  P   ISPF;START 3.4;START 3.17;START 6;SWAP 1
```

    - The variable name is specified as an option with the ISPF or ISPSTART command

      Syntax: **`ISPF MYSTART or`**
      `ISPSTART PANEL(ISR@PRIM) NEWAPPL(ISR) OPT(MYSTART)`

Using Multiple Screens

- **Multiple Screens at ISPF Invocation (z/OS 2.1)**
  - If a variable name is not specified with ISPF/ISPSTART, default profile variable ZSTART is used for the initial command stack
    - If ZSTART is not found or does not contain the **ISPF** identifier, then ISPF starts normally

Under Option 7.3

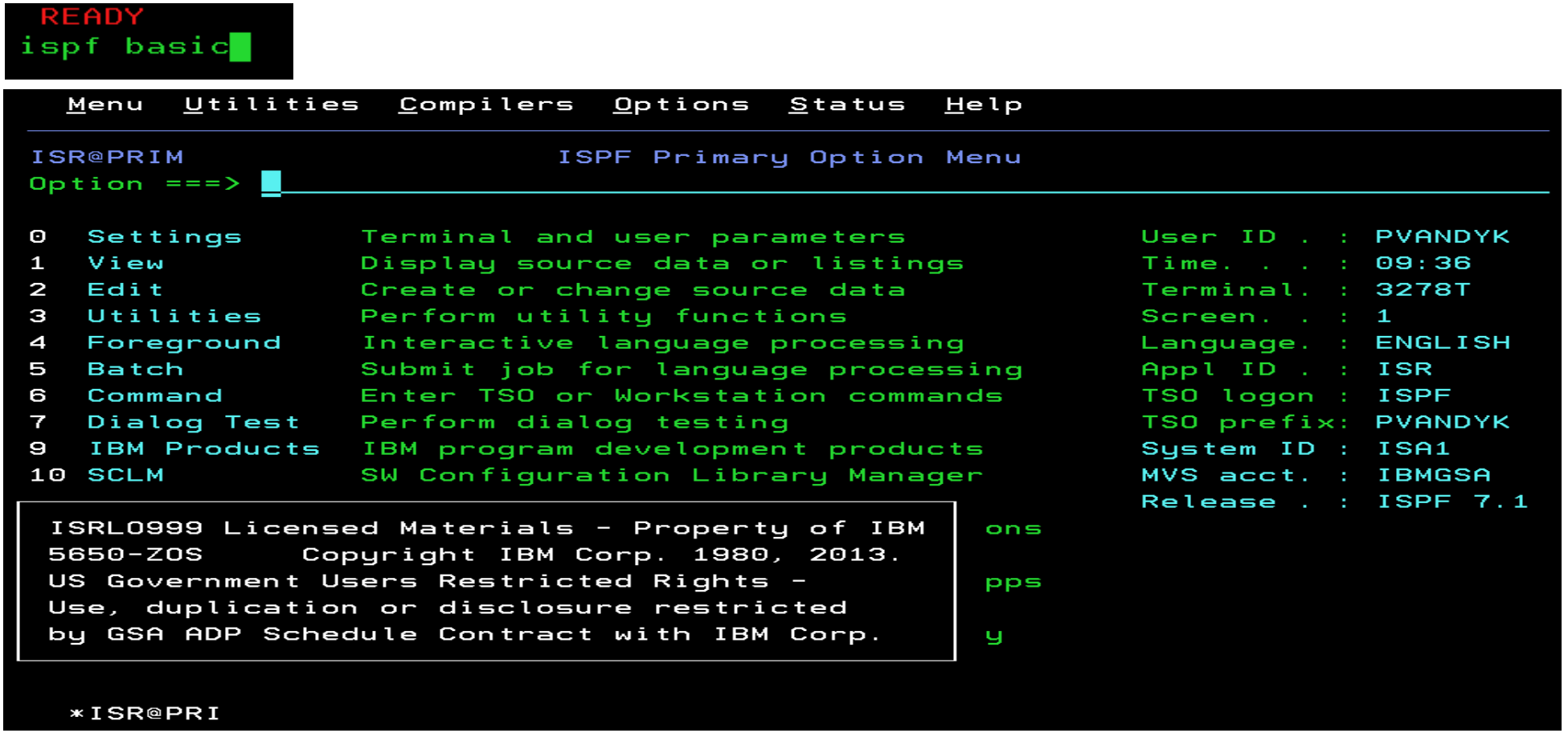
```
ZSTART   P   ISPF;START 3.4;START 3.17;START 6;SWAP 2_
```

```
READY
ispf
```

```
                          Data Set List Utility
Option ===> _                                                          Mo

   blank Display data set list             P Print data set list
       V Display VTOC information         PV Print VTOC information

Enter one or both of the parameters below:
   Dsname Level . . . DEMO.*
   Volume serial  . . ______

Data set list options
   Initial View                  Enter "/" to select option
   2  1. Volume                  /  Confirm Data Set Delete
      2. Space                   /  Confirm Member Delete
      3. Attrib                  /  Include Additional Qualifiers
      4. Total                   /  Display Catalog Name
                                 _  Display Total Tracks
                                 _  Prefix Dsname Level

When the data set list is displayed, enter either:
  "/" on the data set list command field for the command prompt pop-u
 ISR@PRIM *DSLIST  -UDLIST  CMD
```

Using Multiple Screens

- **Multiple Screens at ISPF Invocation (z/OS 2.1)**
  - New BASIC keyword for ISPF/ISPSTART command can be used to start ISPF normally at the primary panel



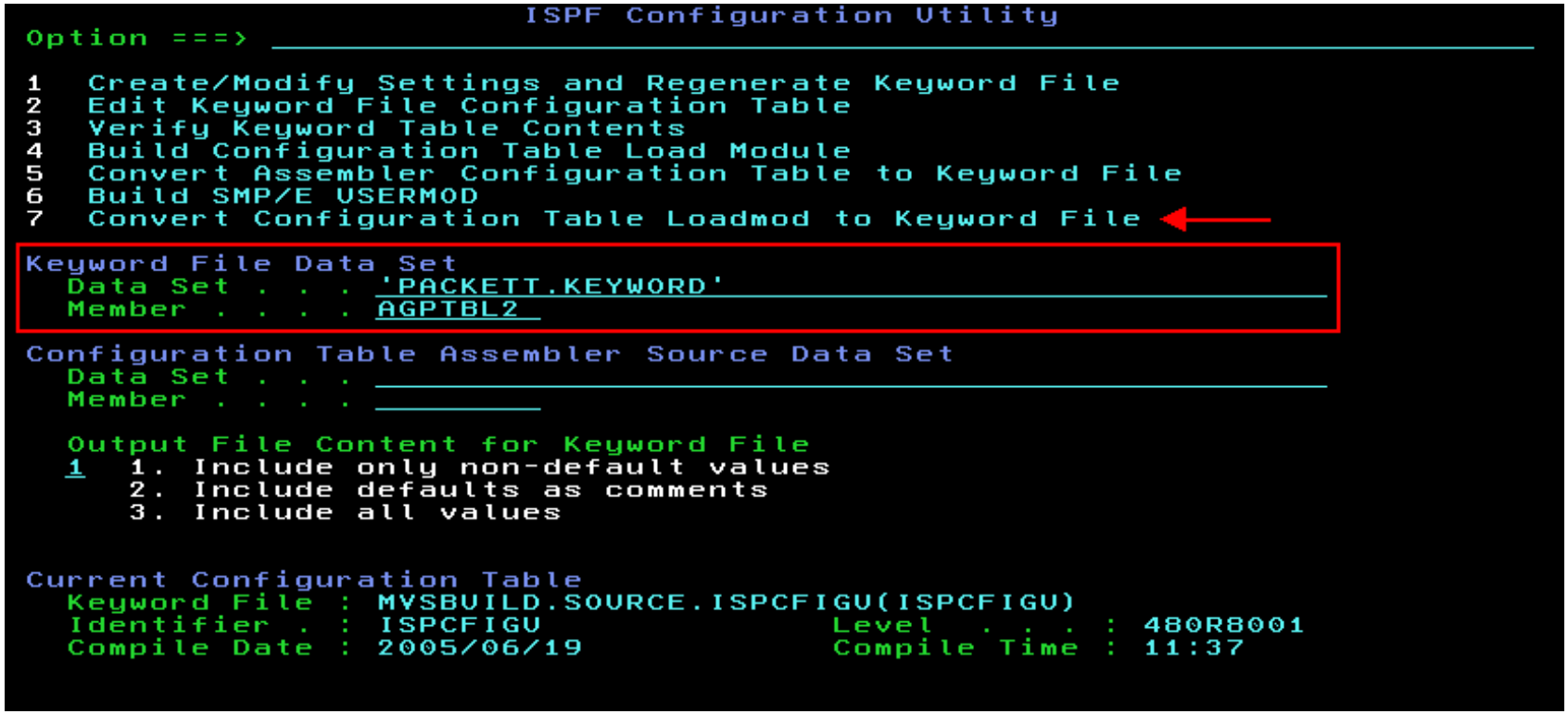
- **=XALL Command (z/OS 2.1)**
  - Provided to help terminate all logical screens with one command
    - =X command propagated to every logical session to terminate each application that supports =X
    - If =X not supported termination process halts on that logical screen
      - Once that logical screen is terminated **=XALL** processing can be continued for each remaining logical screen

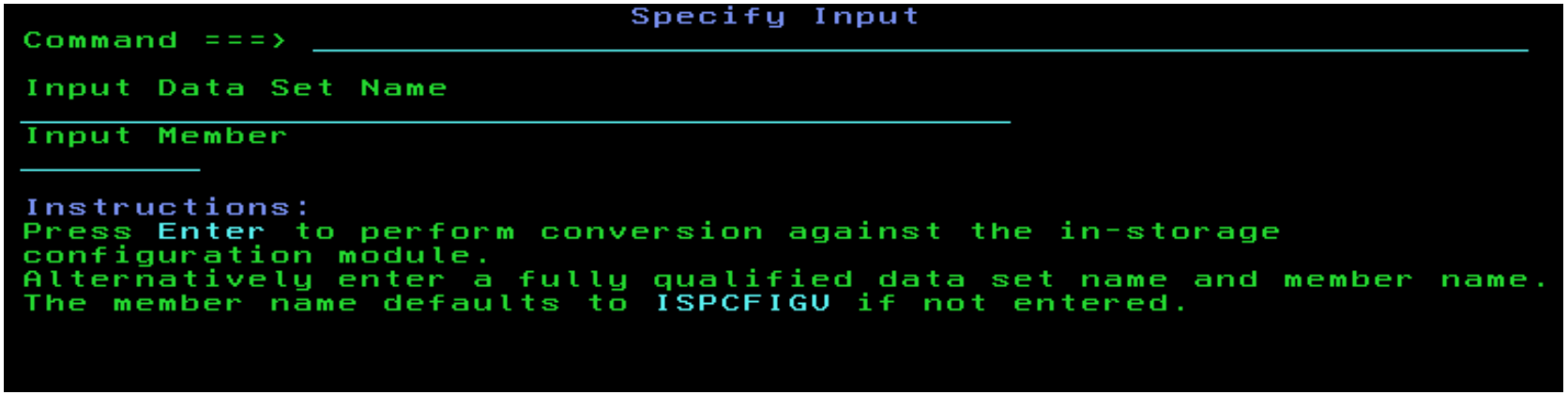
Selected z/OS V2R2 ISPF Enhancements

ISPF configuration table to keyword file conversion

- An ISPF configuration load module cannot be updated if the source keyword file is not available.
- In V2R2, the ISPF Configuration Utility (TSO ISPCCONF command) is enhanced to provide a method for converting the active configuration load module, or one residing in a data set, to a keyword file.
  - From the ISPF Configuration Utility, select option 7
  - The generated keyword file can then be updated using existing option 1 or 2 of the ISPF Configuration Utility.
  - A configuration load module can then be built from the updated keyword file using existing option 4 of the ISPF Configuration Utility.
  - Added to z/OS V2R1 by APAR OA42680

ISPF configuration table to keyword file conversion …





Interactive ISPF Gateway

- The ISPF Gateway does not support a conversational mode of interaction between the remote client and TSO/ISPF.
  - For example, a REXX program that prompts for a response
- In V2R2, the ISPF Gateway API is enhanced to support conversational mode interaction.
  - Uses z/OS TSO CEA Address Space Services to create TSO address spaces and provide communication between the remote client and the address space.
- The ISPF Gateway can be used to run programs that are interactive, issuing TSO/ISPF conversational mode commands.

Interactive ISPF Gateway …

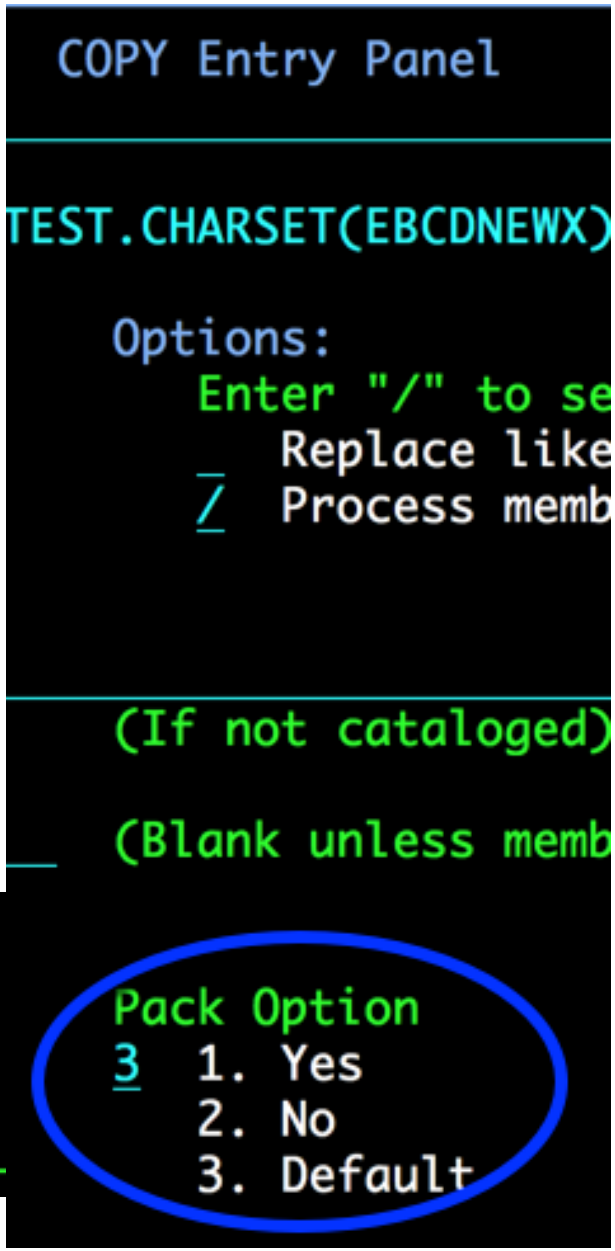
- No updates are necessary to programs exploiting the ISPF Gateway API unless you wish to exploit the new conversational mode interaction capability.
- To exploit the new capability, the environment variable CGI_CEATSO must be set to TRUE, and the new API capabilities utilized as described in ISPF Planning and Customizing.
- More details in the appendix

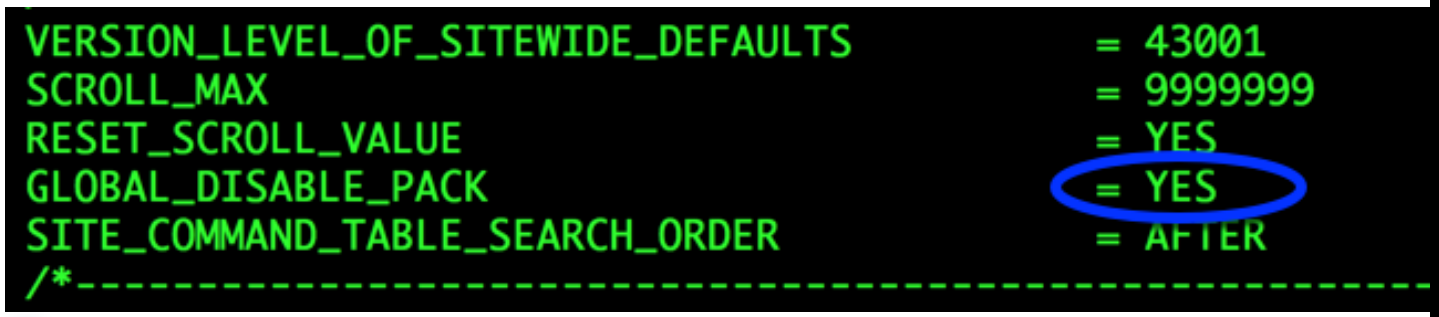
Global configuration option to define a default line command table

- Use of the user Line Command Table was provided by specifying the table as a parameter to ISPF services Edit/View and on Edit/View entry panels. With V2R2, also provided on EDIF and VIIF services.
  - Requires passing the table as a parameter on services or specifying on Edit/View entry panels
- V2R2 provides support for globally specifying a Line Command Table
  - A new setting, GLOBAL_LINE_COMMAND_TABLE, defines a line command table that will be active when not otherwise specified by the user or supplied as parameter on the service call.
  - Defined in Editor Settings via “Global Line Command Table” field

Global configuration option to disable the editor PACK operation

- The PACK command controls how data is stored.
  - There is no way to globally disable the Pack option.
    - If it is inadvertently set … oops!
- V2R2 provides the ability to globally disable the Pack option:
  - The PACK option for Move/Copy utility
  - The Edit Pack primary command
  - A new setting, GLOBAL_DISABLE_PACK, disables the pack operation used by the editor. Any currently packed data will be unpacked if saved. This option also disables PACK from having any effect with COPY and MOVE services.



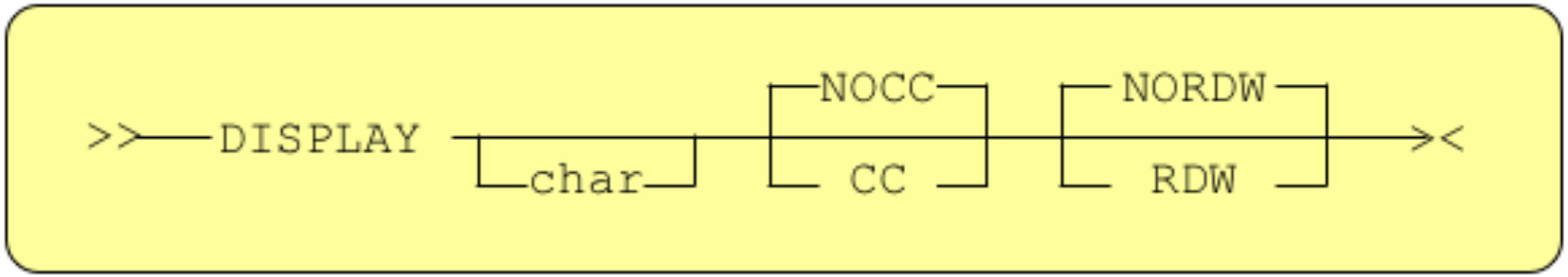


Browse enhancement to display the length of variable records

- The Browse primary DISPLAY command allows for viewing data that would not normally be displayed.
  - For a dataset with variable length records (formats V or VB), users have requested the ability to display the record descriptor word (RDW).
    - The RDW is a 4-byte field describing the record. The first 2 bytes contain the length of the logical record (including the 4-byte RDW).
- V2R2 enhances the Browse primary DISPLAY command to optionally show the record descriptor word (RDW) for variable length records.
  - Allows visibility to the length of variable length records

Browse enhancement to display the length of variable records …

- In V2R2, the existing Browse primary DISPLAY command now has an RDW option:



  - RDW: Display the record descriptor word. Hex mode is automatically turned on.
  - NORDW: The record descriptor word is removed from the display and hex mode is turned off. This is the default.

```
BROWSE    DEMO.CONFIG.TABLE(MYTABLE) - 01.01
Command ===> display rdw
****************************** Top of Data ******
/* ISPF Configuration table definition.  Generated
/*   Created 03:46:44 on 8 Jul 2014
```

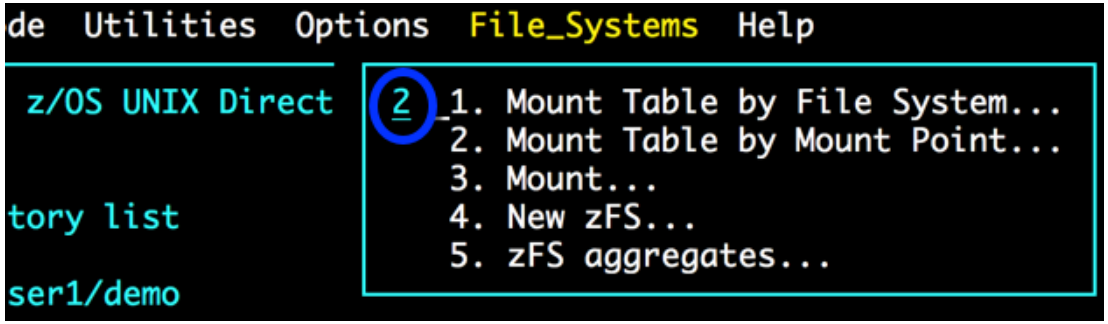
```
....RESET_SCROLL_VALUE                                  = YES
0300DCECE6ECDDDD6ECDEC4444444444444444444444444474ECE
050095253D239633D513450000000000000000000000000E0852
 ----------------------------------------------------------
....TEST_LINE=1
0000ECEE6DCDC7F
0F003523D3955E1
 ----------------------------------------------------------
```

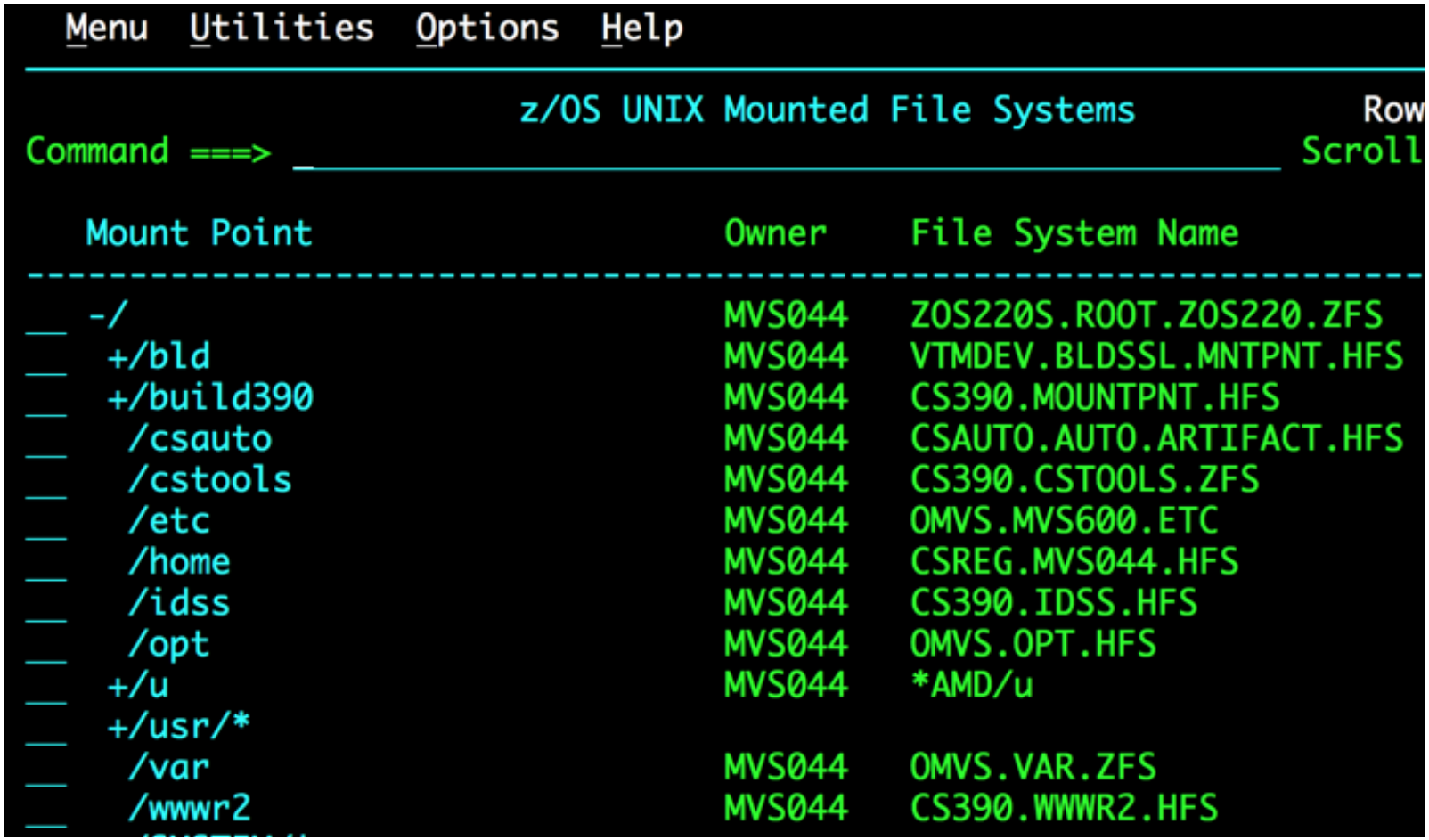
z/OS UNIX file system support in ISPF

- There are multiple locations for working with UNIX file systems
  - The File_Systems pull-down menu in the UNIX System Services ISPF Shell (ISHELL)
  - ISPF option 3.17 (z/OS UNIX Directory List Utility)
- Usability issues exist when there are many file systems to be displayed and managed in ISHELL
- V2R2 adds the ISHELL file system functions to ISPF option 3.17
- Provide enhanced displays for mounted file systems
  - Lists ordered by either file system name or mount point name
  - Lists that can be expanded and collapsed to improve usability
- File system functions consolidated in single location
- Improved usability for mounted file systems displays

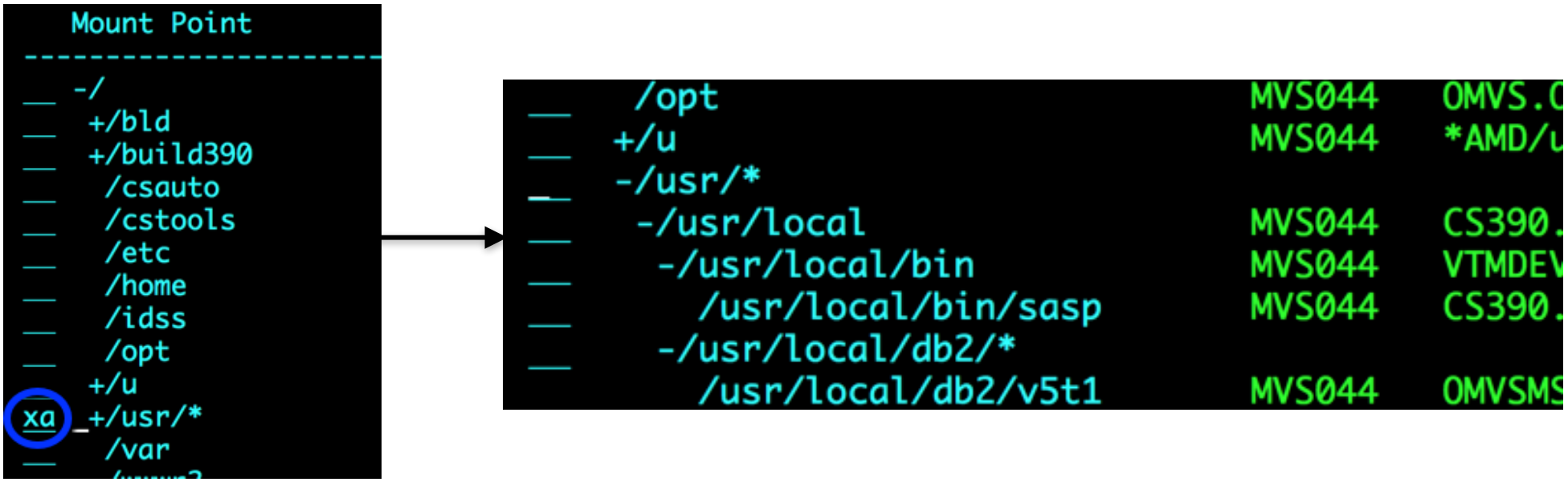
z/OS UNIX file system support in ISPF …

- A new “File Systems” menu is added under ISPF option 3.17

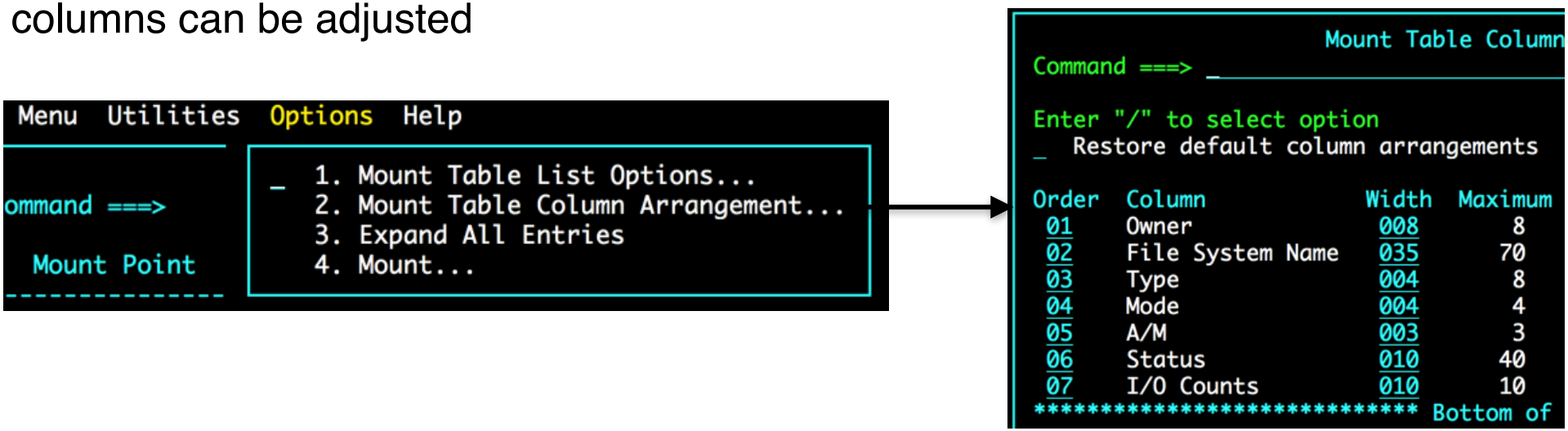




- List entries can expand/contract for access to files systems of interest



- Columns can be rearranged and the width of “Mount Point” and “File System” columns can be adjusted



Closing Comments

Appendix

Additional ISPF Enhancements in z/OS V2R2

- z/OS V2.1 is the last release to include the IBM HTTP Server Powered by Domino® (IHS powered by Domino).
  - IBM recommends that customers migrate to the IBM HTTP Server Powered by Apache. This is provided as part of the z/OS Ported Tools.
  - ISPF documents in ISPF Planning and Customizing how the TSO/ISPF Client Gateway APIs (which provide for remote access to TSO/ISPF) can be used with the IBM HTTP Server Powered by Domino. Sample function which uses the Gateway is also provided.
- V2R2 removes samples and documentation specific to the IBM HTTP Server Powered by Domino, and provides updated documentation and samples that allow the gateway to be used with IHS Powered by Apache.

Remove BookManager/Build from ISPF z/OS Applications menu

- z/OS V2R1 was the last release for the BookManager Build Optional Feature.
  - Official statements of direction provided in 2013.
  - Access to BookManager Build application provided under Primary options menu 13 (z/OS User) option 1
  - BookManager Build is no longer provided by IBM as of z/OS V2R2.
- V2R2 ISPF removes option 13.1

Removal of extraneous commands from the ISPF TSO command table

- Even though the TSO Data Utilities product is no longer supported, there are six commands related to that product that still exist in ISPTCM:
  - COPY, FORM, FORMAT, LIST, MERGE, and PASCALVS
- In V2R2, these six commands have been removed.

DTL compiler enhancement to use the system variable ZISPFRC

- The final return code from the DTL compiler needs to be available to influence the JCL step return codes.
- In V2R2, the final return code from the DTL compiler is stored into the ISPF shared pool variable ZISPFRC.
  - Allows a batch invocation of ISPDTLC to be aware of the success/failure of the DTL compilation

Browse enhancement to increase the record number limit

- Prior to V2R2, the number of records that browse can process is limited to 99,999,999.
- V2R2 increases the number of records that browse can process to 2,147,483,647.
  - The browse LOCATE command is enhanced to increase the maximum line number value allowed.
  - The BRIF service uses the new limit when the caller passes a new parameter (EXTEND) and the READ routine is altered to accept record numbers up to the new maximum value.

- In V2R1, the ISPSTART command was enhanced to provide support for an initial command stack
  - Command stack is processed as though entered on the first panel
  - One way to control the use of an initial command stack is by using the OPT parameter.

- There are issues with the OPT parameter specification
  - OPT(ZSTART) is not used as the default
  - Only upper-case values are accepted
  - There is no documentation for using the OPT parameter to control the use of an initial command stack

- V2R2 allows OPT(ZSTART) to be the default in cases where the OPT parameter can be specified, but is omitted.
  - The OPT parameter controls the use of the initial command stack
    - You can specify OPT(ZSTART) when an initial command stack is defined in profile variable ZSTART
    - You can specify OPT(*varname*) when an initial command stack is defined in profile variable *varname*
    - You can specify OPT(BASIC) to bypass processing of a defined ZSTART variable
    - If OPT parameter is omitted, OPT(ZSTART) is used as default
      - ISPSTART PANEL(), with the OPT parameter not specified
  - Mixed or lower case can be used when either the keyword BASIC or an initial command stack variable is specified on the OPT parameter.
- This provides better usability when specifying an initial command stack with ISPSTART
- Provides documentation for using the OPT parameter for controlling the use of an initial command stack

EDIF and VIIF services enhancement to support an edit line command table

- In z/OS V1R13, new support was provided for user-defined line commands. These can be defined in an ISPF command table (option 3.16 can assist with defining)
  - EDIT and VIEW services supported passing a command table as a parameter.
  - EDIF (Edit Interface service) and VIIF (View Interface service) were not enhanced to support the passing of the user line command table.
- V2R2 allows for passing a new parameter: User Line Command Table
  - When invoking EDIF and VIIF services, the user line command table can now be passed as the last positional parameter.
  - The parameter is 8 characters (padded with blanks).

```
CALL ISPLINK ('VIIF','EDIFDSN','EDIFPROF','F',
              80,RDRTN,CMDRTN,MYDATA,LINCMTAB);
```

CONTROL service enhancement for left and right scroll commands

- A command table can be used to indicate that a command should not be processed by ISPF, but instead should be passed to the dialog for processing
  - Indicated by using the PASSTHRU action in the command table
  - Using a command table to control the pass through of a command results in that command always being passed to the dialog for processing
  - Some dialogs need more granular control for the LEFT and RIGHT scroll commands than the command table provides
    - For example, only pass the LEFT and RIGHT scroll commands to the dialog while in help panels

CONTROL service enhancement for left and right scroll commands …

- V2R2 enhances the CONTROL service to allow for controlling the pass through of the LEFT and RIGHT scroll commands.
  - Allow the dialog to turn the pass through of these commands on and off as needed
  - Allow the dialog to query the current status of the pass through of these commands
  - Provides more granular control of pass through of the LEFT and RIGHT scroll commands
  - A new parameter is provided on the CONTROL service.

```
PASSTHRU cmd option
 where:
   cmd = LRSCROLL
   option is one of the following:
     PASON: LEFT and RIGHT scroll commands are passed to the dialog
     PASOFF: LEFT and RIGHT scroll commands not passed to the dialog
     PASQUERY: Query PASSTHRU status for LEFT & RIGHT scroll commands
```

Interactive ISPF Gateway (V2R2)

Additional Details

Interactive ISPF Gateway: API request types

- NEWTSO
  - Start a new TSO/E address space. Do not start ISPF.
- NEWTSOISPF
  - Start a new TSO/E address space. Start ISPF.
- RECONNTSO
  - Reconnect to a dormant TSO/E address space. Do not start ISPF.
- RECONNTSOISPF
  - Reconnect to a dormant TSO/E address space. Start ISPF.
- REUSE
  - Reuse a TSO/E address space for a new command.
- RESPOND
  - Respond to a prompt from a TSO/E address space.

Interactive ISPF Gateway: API request types …

- PING
  - Ping a TSO/E address space. Required every 15 minutes to keep the address space alive.
- ATTN
  - Send an attention interrupt to a TSO/E address space.
- DORMANT
  - Put a TSO/E address space in a dormant state. Activating a dormant address space is faster than starting a new address space.
- LOGOFF
  - Log off a TSO/E address space.
- CANCEL
  - Cancel a TSO/E address space.

Interactive ISPF Gateway: Example

- Input: `TSO EX 'TEST.EXEC(GWSVMULT)' &REQUEST=NEWTSOISPF`
  `&PROCNAME=ISPFPROC &ACCTNUM=IBMGSA &GROUPID=DEFAULT`
  `&REGIONSZ=2000000`

- Command to be issued: `TSO EX 'TEST.EXEC(GWSVMULT)'`

- Output:

```
<ISPINFO>
<ISPF>
Hello client, what's your name? **Output of TEST.EXEC(GWSVMULT)
</ISPF>
RC=0
</ISPINFO>
<SESSION-INFO>
<SESS>&VER=1&ASID=90&STOKEN=000001680000009D&INDEX=2
     &MSGQID=4456456 &TYPE=ISPF</SESS>   ** Address space
                                            identification
<TSOPROMPT>YES</TSOPROMPT> ** Indication that prompt was issued </
  SESSION-INFO>
```

Interactive ISPF Gateway: Example …

- Previous Output:
```
Hello client, what's your name?
<TSOPROMPT>YES</TSOPROMPT>
```

Input:
```
RESPONSE "JOHN" &REQUEST=RESPOND &VER=1 &ASID=90
&STOKEN=000001680000009D &INDEX=2 &MSGQID=4587528 &TYPE=ISPF
```

Response to prompt:
```
JOHN
```

Output:
```
<ISPINFO>
<ISPF>
Hello JOHN                    ** Output from TEST.EXEC(GWSVSING)
 Enter a digit and I'll give you a word. Enter END to stop.
</ISPF>
RC=0
</ISPINFO>
<SESSION-INFO>
<TSOPROMPT>YES</TSOPROMPT> ** Indication that prompt was issued
</SESSION-INFO>
```