

# ISPF Hidden Treasures and New Features: Parts 1 and 2

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ISPF and z/OS Communications Server Design

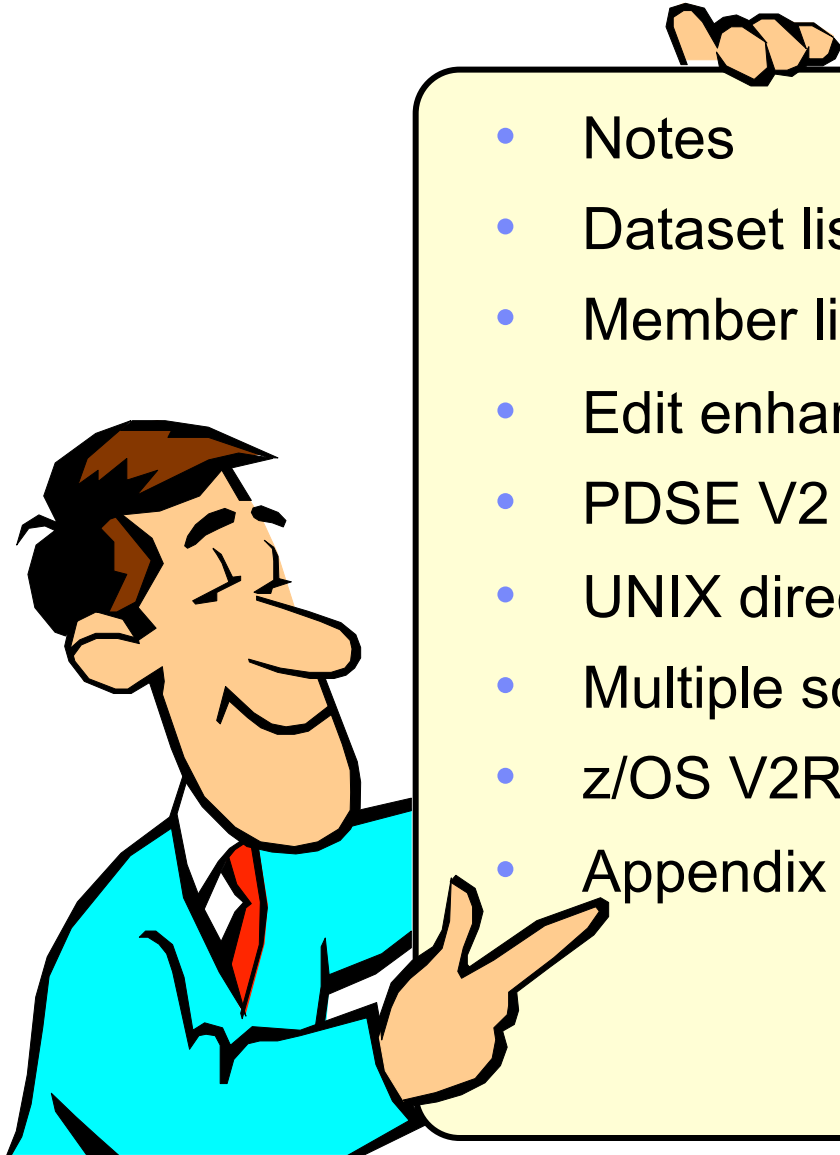
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SHARE 2015 Winter Technical Conference

Sessions 16630 and 16631

# Agenda



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

- This presentation will be a mixture of charts and live demo.
  - Part 1 and the first part of Part 2 will cover hidden treasures in ISPF, with a focus on more recent features (V2R1).
  - Part 2 will also include a preview of the ISPF new features in z/OS V2R2.
- The demo will be performed on a V2R2 development system from our Raleigh lab.
  - Expect the unexpected!

- Speaking of new features, by now most of you should be familiar with the RFE (Request for Enhancements) process for submitting and voting on requirements against ISPF, z/OS, and many other IBM products.
  - We are in the very early stages of planning for the next release (V2R2+). So, now is the time to vote and/or let us know of any new requirements.
  - Go to: <https://www.ibm.com/developerworks/rfe/>
  - Select Brand = Servers and Systems Software, and Product = ISPF

## Filter the page content

Select an IBM brand and product to filter the page content:

Brand:

Servers and Systems Software

Product:

ISPF

# Dataset 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

```
Menu RefList RefMode Utilities Help
Data Set List Utility
Option ==> _____

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

Enter one or both of the parameters below:
Dsname Level . . . sys1.s*
Volume serial . . . _____

Data set list options
Initial View
2 1. Volume
  2. Space
  3. Attrib
  4. Total

Enter "/" to select option
/ Confirm Data Set Delete
/ Confirm Member Delete
/ Include Additional Qualifiers
/ Display Catalog Name
/ Display Total Tracks
- Prefix Dsname Level
```

```
Progress Information
Retrieving data set information ...
0-----100
F1=Help      F2=Split    F3=Exit
F7=Backward  F8=Forward   F9=Swap
```

## ▪ **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

```
Menu Options View Utilities C
-----
DSLIST - Data Sets Matching DEMO.*
Command ==> █

Command - Enter "/" to select action
-----
DEMO.COBOL
DEMO.COMPARE.SYSIN
DEMO.CONFIG.TABLE
DEMO.DELETE.05
DEMO.DELETE.06
DEMO.DELETE.07
DEMO.EXEC
DEMO.FILTER.TEST
DEMO.ISPLLIB
DEMO.ISPTLIB
DEMO.LOAD
//submit DEMO.SUBMIT.JOB1
DEMO.SUBMIT.JOB2
DEMO.SUBMIT.JOB3
// DEMO.SUBMIT.JOB4
DEMO.TEST.BIGSCROL
```

## ▪ **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

## ▪ **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



# Member List and Scroll 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- 1) Enter just **Filter** and use the menu (easy for remembering) 2) Issue the command, ex:  
**Filter size GT 1000**
- Member List **SRCHFOR** command enhanced to use **FILTER** function to optionally display only those members containing the **SRCHFOR** string

## ▪ **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

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

```
Menu Utilities Compilers Help
ISRBROBA  ISPFTEST.BIGFILX          Line 00000000 Col 001 076
Command ==> down 9999999          Scroll ==> CSR
***** Top of Data *****
Line Nr      1
Line Nr      2
Line Nr      3
Line Nr      4
Line Nr      5
Line Nr      6
Line Nr      7
Line Nr      8
Line Nr      9
Line Nr     10

Menu Utilities Compilers Help
ISRBROBA  ISPFTEST.BIGFILX          Line 09999999 Col 001 076
Command ==>          Scroll ==> CSR
Line Nr      9999999
Line Nr     10000000
Line Nr     10000001
Line Nr     10000002
Line Nr     10000003
Line Nr     10000004
Line Nr     10000005
Line Nr     10000006
Line Nr     10000007
Line Nr     10000008
Line Nr     10000009
```

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

ispccconf

```
Modify ISPF Sitewide Defaults
Command ==> █
More: - +

/ Show Pfkeys
Select Option 7.1 Dialog Test Panel
1 1. ISPYFP
  2. ISPYFPA
  3. ISPYFPB

Command Line Placement
1 1. Bottom
  2. Asis

Scroll Defaults
1 1. PAGE
  2. HALF
  3. MAX
  4. CSR
  5. DATA

PRINTDS Option
1 1. DEST
  2. WRITER

Status Area Default
2 1. Calendar
  2. Session
  3. Function Keys
  4. User Point and Shoot
  5. None

Reset flags
/ Reset Scroll Values

Minimum Scroll Value 0
Maximum Scroll Value 9999999
```

# 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

## ▪ **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

**Ex: COMPARE 'DEMO.PARMLIB' VOL(CPDLB3) X**

(compare and exclude lines that are the same)

## 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..

```

ISREUPP          Edit Compare Settings and Command Parameters
Command ==> █

SuperC Options:
Enter "/" to select option
- Case Insensitive Compare
- Ignore Reformat Differences
- Data Contains DBCS Characters

Display options:
Lines displayed
with EXCLUDE . . . 5 (0 - 12)
Label Prefix . . . 0 (A - Y)

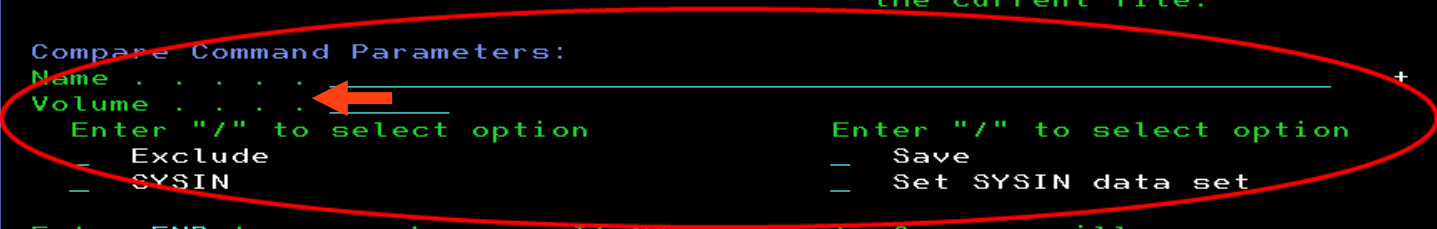
Use a label of the form .0xxxx to
change the highlighting of a line
to mark it as only existing in
the current file.

Compare Command Parameters:
Name . . . . .
Volume . . . . .
Enter "/" to select option
- Exclude
- SYSIN

Enter "/" to select option
- Save
- Set SYSIN data set

Enter END to save changes. If NAME is set, Compare will run
    
```

Ex: Exclude all but.. 5 lines To give perspective





## ▪ 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 "southern"

`[string]` - matches any one of the characters in *string*  
e.g. `d[iu]g` matches "dig" and "dug", but not "dog"

`[ch1-ch2]`  
and `ch2` - matches any of the characters in the range between *ch1*  
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"

## ▪ 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

F1=Help	F2=Split	F3=Exit	F4=Expand	F5=Rfind	F6=Rchange
F7=Up	F8=Down	F9=Swap	F10=Left	F11=Right	F12=Cancel

- **NOTE:** The pop-up window is only for edit primary command, use the CMDE command for other (e.g. TSO) commands

- 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 //SYSTPD DD DISP=SHR,DSN=HANKO.PDSCNTL(FTPDATA)
000009 //sysin DD *
000010 192 168 128.222
000011 xxxxxxxxxx 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 *****
  
```

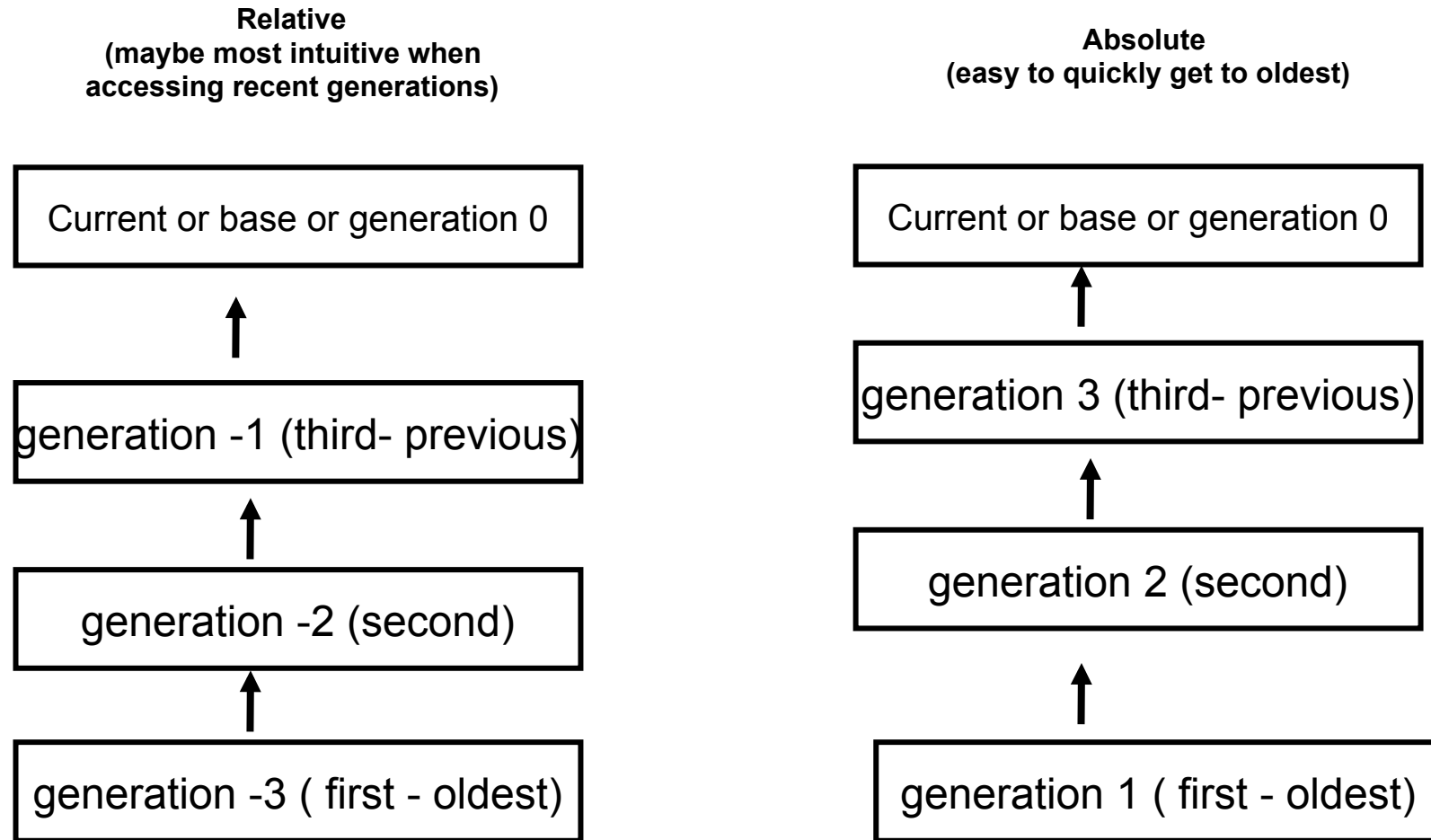
# PDSE V2 Member Generations

# 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
    - DSort 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!***

- Two ways to interact with generations, specifying



Example with 3 Generations

- 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 with generations is not supported.



## Allocate 3.2

```

Menu RefList Utilities Help
Allocate New Data Set
Command ==>
Management class . . . (Blank for de
Storage class . . . (Blank for de
Volume serial . . . CPDLB2 (Blank for sy
Device type . . . (Generic unit
Data class . . . (Blank for de
Space units . . . CYLINDER (BLKS, TRKS,
or RECORDS)
Average record unit (M, K, or U)
Primary quantity . . 3 (In above uni
Secondary quantity . 1 (In above uni
Directory blocks . . 0 (Zero for seq
Record format . . . FB
Record length . . . 80
Block size . . . 27920
Data set name type LIBRARY (LIBRARY, HFS
Data set version . : 2 EXTREQ, EXTP
Num of generations : 3
    
```

## Dataset Information

```

Data Set Information
Command ==>
Data Set Name . . . : DEMO.XXX.MGEN
More:
General Data
Management class . . : **None**
Storage class . . . : **None**
Volume serial . . . : CPDLB2
Device type . . . . : 3390
Data class . . . . . : **None**
Organization . . . . : P0
Record format . . . : FB
Record length . . . : 80
Block size . . . . . : 27920
1st extent cylinders: 3
Secondary cylinders : 1
Data set name type : LIBRARY
Data set version . . : 2
Num of generations : 3
Current Allocation
Allocated cylinders : 3
Allocated extents . : 1
Maximum dir. blocks : NOLIMIT
Current Utilization
Used pages . . . . . : 5
% Utilized . . . . . : 0
Number of members . : 0
Dates
Creation date . . . : 2014/09/26
Referenced date . . : ***None***
Expiration date . . : ***None***
    
```

## Editing a generation

```

Menu Functions Confirm Utilities
EDIT DEMO.TEST.PDSEGENS
Command ==>
Name Prompt Size
s N5 / 2
    
```

```

EDIT Entry Panel
Object Name:
'DEMO.TEST.PDSEGENS (N5) '
* No workstation connection
Initial Macro . . .
PDSE Generation . . -1
Line Command Table NEUTOP
    
```

# Unix Directory List

- **z/OS UNIX directory list can be displayed using.... Several ways!**
  - ISPF option 3.17
    - 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
  - ISPF option 3.4 (z/OS 2.1)
    - Enter a directory path name in the “Dsnname Level” field
  - **DIRLIST** service (z/OS 1.10)
    - Programming API available for programs wanting a directory list display

# z/OS UNIX Directory List Utility (z/OS 1.8)



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

```
Menu RefList RefMode Utilities Options Help
ISRUULP                               z/OS UNIX Directory List Utility
Option ==> █

blank Display directory list          P Print directory list

Pathname . . . /u/vandyke

Enter "/" to select option
/ Confirm File Delete
/ Confirm Non-empty Directory Delete

When the directory list is displayed, enter either:
"/" on the directory list line command field for the command prompt pop-up,
an ISPF line command, the name of a TSO command, CLIST, or REXX exec, or
"=" to execute the previous command.
```

```
Menu Utilities View Options Help
ISRUUDL0                               z/OS UNIX Directory List          Row 1 to 14 of 288
Command ==> █                          Scroll ==> CSR

Pathname . . : /u/vandyke
EUID . . . . : 0
Command  Filename      Message          Type Modified          Permission
-----
.                .                .                Dir   2013/06/11 13:26:21  rwxrwxrwx
..               .                .                Dir   2013/06/11 07:03:20  rwxrwxrwx
.ishell-reflist  .                .                File  2008/11/05 15:35:34  r-----
.profile         .                .                File  2013/03/07 13:29:52  rwx---r--
.profpaul        .                .                File  2008/06/08 12:42:48  rwxrwxrwx
.setup           .                .                File  2013/03/07 13:53:51  rwx-----
.sh_history      .                .                File  2013/05/17 11:08:32  rw-----
```

# z/OS UNIX Directory List Utility - Options Menu



- Option 1 - Adjust size of the filename column
- Option2 – Tailor column arrangement

```
1.  Menu Utilities View Options Help
    Command ==>
    Pathname . : /u/user1
    EUID . . . : 0
    Command  Filename
    -----
    .
    ..
    .bash_history
    .bash_profile
    .bashrc
```

of 20  
PAGE

1. Directory List Options...  
2. Directory List Column Arrangement...  
3. Directory List Default Line Commands...  
4. Enable superuser mode(SU)  
5. Refresh List  
6. Save List  
7. Reset

Dir r-xr-xr-x IBMUSER  
File rwxrwxrwx IBMUSER  
File rwxrwxrwx IBMUSER  
File rwxrwxrwx IBMUSER

```
Menu Utilities View Options Help
z/OS UNIX Directory List Column Arrangement
Command ==>
Enter "/" to select option
_ Restore default column arrangements
```

Order	Column	Width	Maximum
01	Type	04	4
02	Permission	10	10
03	Owner	08	8
04	Ext	04	4
05	Fmat	04	4
06	Audit	06	6
07	Group	08	8
08	Links	06	14
09	Size	10	20
10	Modified	19	19
11	Changed	19	19
12	Accessed	19	19
13	Created	19	19

### ▪ **At 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:

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

- 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

## ▪ Filtering of z/OS UNIX path names (z/OS 2.1)

- **Example:** List from the sub-directories in /usr all entries that have a first character of i or l all files with an 8 character name starting with c and an extension beginning with c, d, or h

```
Pathname . . . /usr/[il]*/[c]??????.[cdh]*
```

---

```
Menu Utilities View Options Help
```

```
ISRUUDL0 z/OS UNIX Directory List Row 1 to 15 of 15
```

```
Command ==> █ Scroll ==> PAGE
```

```
List . . . : /usr/[il]*/[c]??????.[cdh]*
```

```
EUID . . . : 0
```

Command	Pathname	Message	Type	Permission
_____	/usr/include/ceedcct.h		File	rw-r--r--
_____	/usr/include/csnpdefs.h		Syml	rw-rw-rw-
_____	/usr/include/cssmdefs.h		Syml	rw-rw-rw-
_____	/usr/include/cssmport.h		Syml	rw-rw-rw-
_____	/usr/include/cssmtype.h		Syml	rw-rw-rw-
_____	/usr/lib/cdserprt.dll		Syml	rw-rw-rw-
_____	/usr/lib/cdsibmut.dll		Syml	rw-rw-rw-
_____	/usr/lib/cdskwuucs.dll		Syml	rw-rw-rw-
_____	/usr/lib/cdsnspsp.dll		Syml	rw-rw-rw-
_____	/usr/lib/cdsrandm.dll		Syml	rw-rw-rw-
_____	/usr/lib/ceasapii.dll		File	rw-r-xr-x
_____	/usr/lib/ceasapis.dll		File	rw-r-xr-x
_____	/usr/lib/ceasapiw.dll		File	rw-r-xr-x
_____	/usr/lib/cssmmanp.dll		Syml	rw-rw-rw-
_____	/usr/lib/cssmusep.dll		Syml	rw-rw-rw-

## ▪ 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 **DSL** and member list **SRCHFOR** commands
      - Support for ASCII search strings



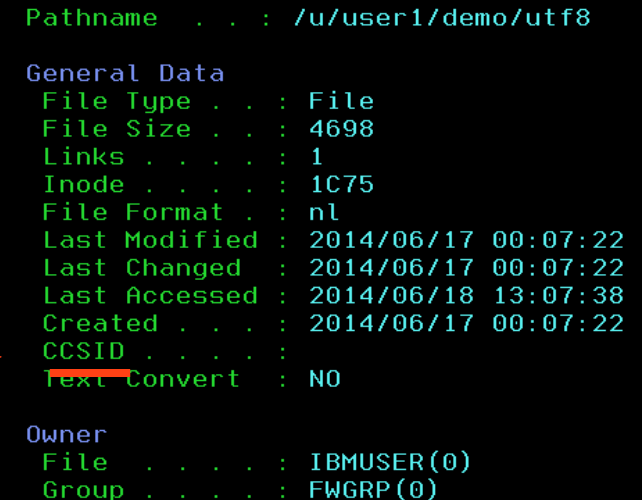
## ▪ Line commands available:

- **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)

- **Line commands available for ASCII and Unicode:**

- **New with z/OS 2.1:**

Not “tagged”



```
Pathname . . . : /u/user1/demo/utf8
General Data
File Type . . . : File
File Size . . . : 4698
Links . . . . . : 1
Inode . . . . . : 1C75
File Format . . . : nl
Last Modified . : 2014/06/17 00:07:22
Last Changed . . : 2014/06/17 00:07:22
Last Accessed . : 2014/06/18 13:07:38
Created . . . . . : 2014/06/17 00:07:22
CCSID . . . . . :
Text Convert . . : NO
Owner
File . . . . . : IBMUSER(0)
Group . . . . . : FWGRP(0)
```

- **Require if the file is not “tagged” with CCSID**

- **EU** - Unicode edit

- **VU** - Unicode view

- The **E** and **V** line commands will provide the same functions if the file is tagged with CCSID 1208

### ▪ **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 2.1)

```

Menu  Utilities  View  Options  Help
ISRUUDLO                               z/OS UNIX Directory List                               Row 41 to 80 of 113
Command ===>                               Scroll ==> PAGE

Pathname . : /SYSTEM/tmp
EUID . . . : 0
Command  Filename                          Message                          Type Modified                Permission Audit  Ext  Fmat Owner  Group
-----
//d      BWBCALLR                                  File 2011/02/23 15:20:33  rwxr-xr-x  fff--- --s- ---- IBMUSER
CEEDUMP.20120815.111620.957                File 2012/08/15 11:16:20  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.111624.930                File 2012/08/15 11:16:24  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.111632.940                File 2012/08/15 11:16:32  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.111752.167781             File 2012/08/15 11:17:52  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.111841.671096             File 2012/08/15 11:19:13  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.112314.965                File 2012/08/15 11:23:14  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.112318.167781             File 2012/08/15 11:23:18  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.112326.918                File 2012/08/15 11:23:26  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.112345.167781             File 2012/08/15 11:23:45  rw-rw-rw-  fff--- --s- ---- FEJJMON
//      CEEDUMP.20120815.112404.964                File 2012/08/15 11:24:04  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.112405.503325             File 2012/08/15 11:24:05  rw-rw-rw-  fff--- --s- ---- IBMUSER
CEEDUMP.20120815.112409.671097             File 2012/08/15 11:24:09  rw-rw-rw-  fff--- --s- ---- IBMUSER
CEEDUMP.20120815.112805.972                File 2012/08/15 11:28:05  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.113927.838870             File 2012/08/15 11:39:27  rw-rw-rw-  fff--- --s- ---- FEJJMON
DOHERTL                                     Dir 2008/05/05 10:00:48  rwxr-xr-x  fff--- --s- ----
DOHERTL.ISPF.SYSTSPRT                       File 2011/01/13 16:42:11  rwx----- fff--- --s- ---- IBMUSER
    
```

```

Menu  Utilities  View  Options  Help
ISRUUDLO                               z/OS UNIX Directory List                               Row 41 to 80 of 113
Command ===>                               Scroll ==> PAGE

Pathname . : /SYSTEM/tmp
EUID . . . : 0
Command  Filename                          Message                          Type Modified                Permission Audit  Ext  Fmat Owner  Group
-----
BWBCALLR                                  File 2011/02/23 15:20:33  rwxr-xr-x  fff--- --s- ---- IBMUSER
CEEDUMP.20120815.111620.957                Deleted
CEEDUMP.20120815.111624.930                Deleted
CEEDUMP.20120815.111632.940                Deleted
CEEDUMP.20120815.111752.167781             Deleted
CEEDUMP.20120815.111841.671096             Deleted
CEEDUMP.20120815.112314.965                Deleted
CEEDUMP.20120815.112318.167781             Deleted
CEEDUMP.20120815.112326.918                Deleted
CEEDUMP.20120815.112345.167781             Deleted
CEEDUMP.20120815.112404.964                Deleted
CEEDUMP.20120815.112405.503325             File 2012/08/15 11:24:05  rw-rw-rw-  fff--- --s- ---- IBMUSER
CEEDUMP.20120815.112409.671097             File 2012/08/15 11:24:09  rw-rw-rw-  fff--- --s- ---- IBMUSER
CEEDUMP.20120815.112805.972                File 2012/08/15 11:28:05  rw-rw-rw-  fff--- --s- ---- FEJJMON
CEEDUMP.20120815.113927.838870             File 2012/08/15 11:39:27  rw-rw-rw-  fff--- --s- ---- FEJJMON
DOHERTL                                     Dir 2008/05/05 10:00:48  rwxr-xr-x  fff--- --s- ----
DOHERTL.ISPF.SYSTSPRT                       File 2011/01/13 16:42:11  rwx----- fff--- --s- ---- IBMUSER
    
```

## ▪ Running z/OS UNIX Commands

- z/OS UNIX command 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 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 and TSO 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 Command output mode (z/OS 2.1)
  - Option available to display command output using either browse or view

## ▪ Running z/OS UNIX Commands

```
ISRUUDL0          z/OS UNIX Directory List          Row 1 to 13 of 282
Command ==> /      Scroll ==> CSR

  List  Mode  Functions
-----
ISRULCME          z/OS UNIX Directory List Command Entry Panel
Enter commands below:

==>

Place cursor on choice and press enter to Retrieve command

=> printenv STEPLIB
=> /u/vandyke/hello
=> man ps
=> /u/vandyke/psents
=> man echo
=> echo $HOME
=> ps -ef
=>
=>
=>
```

# 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)



## ■ **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

```
- SETTINGS SCLM *DSLIST -ISR@PRI SDSF EDIT DTEST
```

Tip: Customize your terminal emulator to make the action of clicking the mouse simulate:

- 1) Placing the cursor
- 2) Pressing the ENTER key

Ex: with PCOMM from “File” pull-down, go to “Edit”->”Preferences”->”Mouse” 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
  - **Format of the SWAPBAR display can be customized (z/OS 2.1)**

Syntax: **SWAPBAR** [/ | ON | OFF]

## ▪ 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;2;START 3.4;START 10;START S;LOG;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)**

- Screen 1 – ISPF option 2 (edit), Screen 2 – ISPF option 3.4 (DSLIS), Screen 3 – ISPF option 10 (SCLM), Screen 4 – SDSF Log panel (assuming S is the option for SDSF on the primary menu)
- **SWAP** command is used to make the edit panel the initial screen displayed when ISPF is invoked

# 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

Option 7.3

```
READY
ispf

Menu  Utilities  Help

ISPYVPN          Variables - Application: ISR          Row 822 to 832 of 949
Command ==>      Scroll ==> PAGE

Add, delete, and change variables. Underscores need not be blanked.
Enter END command to finalize changes, CANCEL command to end without
changes.

Current scrollable width of variables is: 57
Variable P A Value
-----1-----2-----3-----4-----5-----+--
ZSTART    P    ISPF;7.3;L ZSTART;START 3.4;START 2;START 10;SWAP 1
ZSVIEWWS  P
ZT#EDDEF  P    OFF
ZT#EDIME  P    OFF
ZT#EXCS#  P X
ZT#EXDC   P
ZT#EXHDF  P    ON
ZT#EXHS#  P X
ZT#EXMC   P
ZT#EXPDM  P    V
ZT#EXPL#  P X
*DTEST   DSLIST   -EDIT   SCLM
```

## ▪ 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

```
READY
ispf basic

Menu  Utilities  Compilers  Options  Status  Help

ISR@PRIM                    ISPF Primary Option Menu
Option ==>

0  Settings      Terminal and user parameters      User ID . . : PVANDYK
1  View          Display source data or listings   Time. . . . : 09:36
2  Edit          Create or change source data      Terminal. . : 3278T
3  Utilities     Perform utility functions         Screen. . . : 1
4  Foreground   Interactive language processing   Language. . : ENGLISH
5  Batch        Submit job for language processing Appl ID . . : ISR
6  Command      Enter TSO or Workstation commands TSO logon  : ISPF
7  Dialog Test  Perform dialog testing            TSO prefix: PVANDYK
9  IBM Products IBM program development products System ID  : ISA1
10 SCLM         SW Configuration Library Manager  MVS acct. : IBMGSA
                                           Release . . : ISPF 7.1

ISRL0999 Licensed Materials - Property of IBM      ons
5650-ZOS   Copyright IBM Corp. 1980, 2013.        pps
US Government Users Restricted Rights -
Use, duplication or disclosure restricted
by GSA ADP Schedule Contract with IBM Corp.      y

*ISR@PRI
```

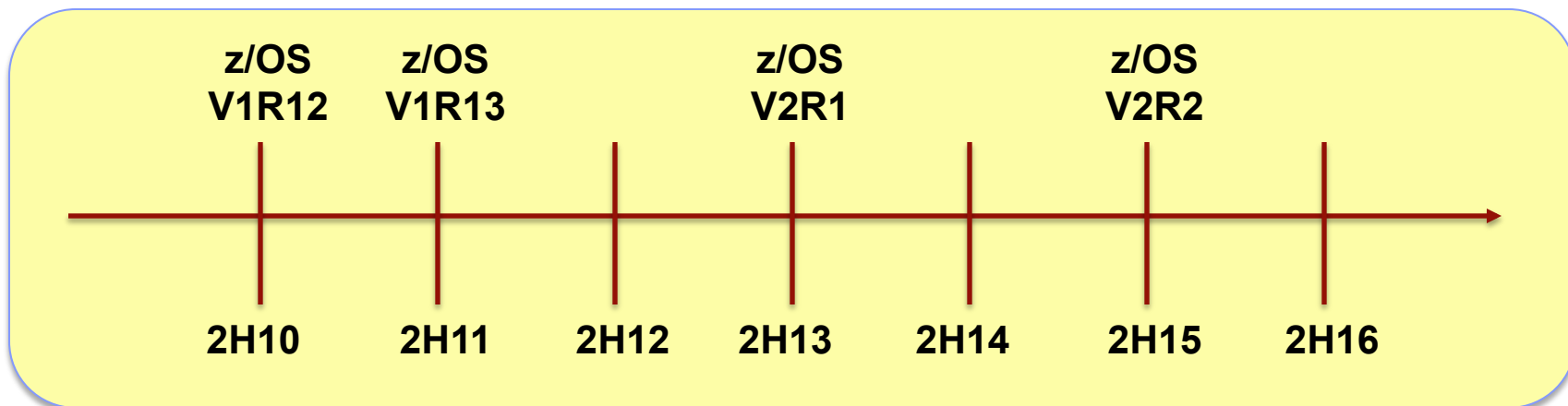
## ■ **=XALL Command (z/OS 2.1)**

- 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

# **z/OS V2R2 ISPF Enhancements**

- Plans for z/OS ISPF are subject to change prior to general availability.
- Information provided in this section may not reflect what is actually shipped by z/OS ISPF.
- This section includes an early overview of selected future ISPF enhancements.

Plans may change before GA of z/OS V2R2



*Statements regarding IBM future direction and intent are subject to change or withdrawal, and represent goals and objectives only.*

- 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 IHS Powered by Apache to use the gateway.
  - ISPF Planning and Customizing documents 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 Apache.



- 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

- 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.

- 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 ISPD TLC to be aware of the success/failure of the DTL compilation

- 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

- 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 9 characters (padded with blanks).

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

- 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

- 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



- An ISPF configuration load module can not 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. (APAR OA42680)
  - 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 ...



```
ISPF Configuration Utility
Option ==>
1 Create/Modify Settings and Regenerate Keyword File
2 Edit Keyword File Configuration Table
3 Verify Keyword Table Contents
4 Build Configuration Table Load Module
5 Convert Assembler Configuration Table to Keyword File
6 Build SMP/E USERMOD
7 Convert Configuration Table Loadmod to Keyword File
Keyword File Data Set
Data Set . . . 'PACKETT.KEYWORD'
Member . . . . AGPTBL2
Configuration Table Assembler Source Data Set
Data Set . . .
Member . . . .
Output File Content for Keyword File
1 1. Include only non-default values
2 2. Include defaults as comments
3 3. Include all values
Current Configuration Table
Keyword File : MYSBUILD.SOURCE.ISPCFIGU(ISPCFIGU)
Identifier . : ISPCFIGU Level . . . . : 480R8001
Compile Date : 2005/06/19 Compile Time : 11:37
```

```
Specify Input
Command ==>
Input Data Set Name
Input Member
Instructions:
Press Enter to perform conversion against the in-storage
configuration module.
Alternatively enter a fully qualified data set name and member name.
The member name defaults to ISPCFIGU if not entered.
```



- 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 2,147,483,646.
  - 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.

```
Menu Utilities Compilers Help
ISRBROBA  ISPFDEV.SM00903.EXTDS2          Line 0342139405 Col 001 080
Command ==>
0342139405- .....
0342139406- .....
0342139407- .....
0342139408- .....
```

- 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.

- 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

- 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.
  - Requires passing the table as a parameter 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 edit/view service call.
  - Defined in Edit-related 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.

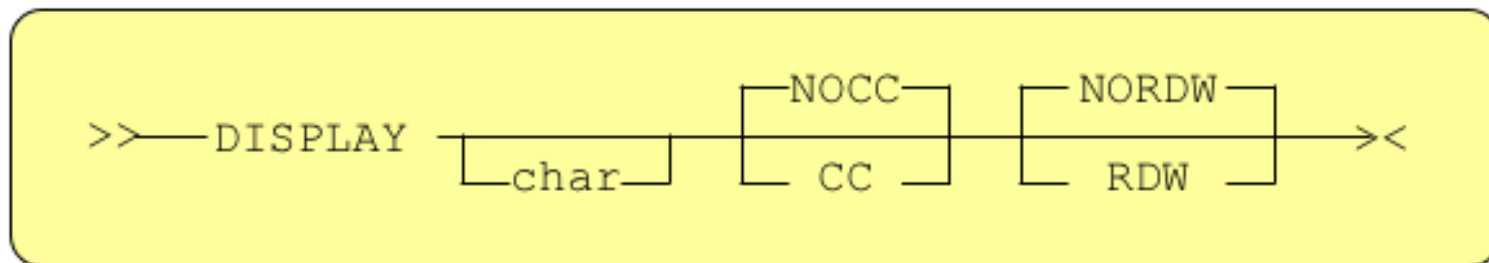
```
COPY Entry Panel
TEST.CHARSET(EBCDNEWX)
Options:
  Enter "/" to se
  Replace like
  / Process memb
(If not cataloged)
(Blank unless memb
Pack Option
3 1. Yes
  2. No
  3. Default
```

```
VERSION_LEVEL_OF_SITWIDE_DEFAULTS = 43001
SCROLL_MAX = 9999999
RESET_SCROLL_VALUE = YES
GLOBAL_DISABLE_PACK = YES
SITE_COMMAND_TABLE_SEARCH_ORDER = AFTER
/*-----
```

- The View (Primary option 1) 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



- 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.

- 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

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

```
Menu RefList RefMode Utilities Options File_Systems Help
                                     z/OS UNIX Direct
blank Display directory list
Pathname . . . /u

Enter "/" to select option
/ Confirm File Delete
/ Confirm Non-empty Directory Delete

When the directory list is displayed, enter either:
"/" on the directory list line command field for the command prompt pop-up,
an ISPF line command, the name of a TSO command, CLIST, or REXX exec, or
"=" to execute the previous command.
```

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

```
z/OS UNIX Mounted File Systems Row 1 from 151
-----
File System Name          Mount Point  Type Mode Owner  A/M
-----
+DB2.**
+FEK.**
+IPT4Z.**
+ISPFRUN.**
+ISPFTEST.**
+ITIMRACF.**
+IXM.**
+JAVAOMVS.**
-OMVS.**
-OMVS.$$$SRCB.**
-OMVS.$$$SRCB.ETC.**
  OMVS.$$$SRCB.ETC.ISA1  /etc        HFS  R/W  ISA1  YES
-OMVS.$$$SRCB.VAR.**
  OMVS.$$$SRCB.VAR.ISA1  /var        HFS  R/W  ISA1  YES
-OMVS.APC.**
-OMVS.APC.HFS.**
  OMVS.APC.HFS.ISA1     /apc        HFS  R/W  ISA1  YES
-----
```

# Appendix

# Interactive ISPF Gateway (V2R2)

- 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.

- 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>