ISPF Hidden Treasures and New Features: Part 1

SHARE 2015 Summer Technical Conference
Session 17230

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ISPF and z/OS Communications Server Design
August 13, 2015
ISPF Hidden Treasures and New Features: Part 2

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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 new features in z/OS V2R2 ISPF.

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 planning stage 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
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
  - 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

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

```
ispcconf
```

<table>
<thead>
<tr>
<th>Modify ISPF Sitewide Defaults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ====&gt;</td>
</tr>
</tbody>
</table>

| Show Pfkeys                    | Reset Show Pfkeys |
| Select Option 7.1 Dialog Test Panel | Reset LOG Data Set Process Option |
| 1 1. ISPYFP                   | Reset LIST Data Set Process Option |
| 2. ISPYFP/A                   | Reset Command Line Placement |

<table>
<thead>
<tr>
<th>Command Line Placement</th>
<th>PRINTDS Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1. Bottom</td>
<td>1 1. DEST</td>
</tr>
<tr>
<td>2. Asis</td>
<td>2. WRITER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scroll Defaults</th>
<th>Status Area Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1. PAGE</td>
<td>2 1. Calendar</td>
</tr>
<tr>
<td>2. HALF</td>
<td>2. Session</td>
</tr>
<tr>
<td>3. MAX</td>
<td>3. Function Keys</td>
</tr>
<tr>
<td>4. CSR</td>
<td>4. User Point and Shoot</td>
</tr>
<tr>
<td>5. DATA</td>
<td>5. None</td>
</tr>
</tbody>
</table>

| Minimum Scroll Value          | Reset flags       |
| 0                             | 1 Reset Scroll Values |
| 99999999                      |                   |

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Edit Enhancements
Edit Enhancements

- **UNDO after SAVE (z/OS 1.9)**
  - Allows reversal of edit changes made prior to SAVE commands during the current edit session
  - KEEP option added to the edit SETUNDO command

- KEEP prevents the SAVE command from clearing the UNDO buffers in storage
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

```
Modify PDF Edit Configuration Settings
Command ===> More: +

Miscellaneous Edit Settings
  Maximum Number of Edit Profiles ... 25
  Maximum Number of Edit Clipboards ... 11
  Site-wide Initial Macro ...
  Maximum Initial Storage for Edit ... 0 (Number of 1K Blocks)
  Maximum Edit Clipboard Size ... 0 (Number of 1K Blocks)
  **Undo Storage Size** ...

TEXT FLOW Terminators
  Edit CUT Default Action ...
  Edit PASTE Default Action ...
  Disable PACK globally ...
  Global Line Command Table ...

Enter "/" to select option   Enter "/" to force settings
/ STATS ON
- STATS EXT
- RECOVERY ON
/ RECOVERY warning message
/ SETUNDO ON
- PACK ON
- CAPS ON
/ NOTE ON

HEX Mode . . . 2 1. ON
```
### 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.

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 “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”

- **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
**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
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!*
Two ways to interact with generations, specifying

- Relative
  (maybe most intuitive when accessing recent generations)
  - Current or base or generation 0
  - generation -1 (third - previous)
  - generation -2 (second)
  - generation -3 (first - oldest)

- Absolute
  (easy to quickly get to oldest)
  - Current or base or generation 0
  - generation 3 (third - previous)
  - generation 2 (second)
  - generation 1 (first - oldest)

Example with 3 Generations
Working with Member Generations

- By default:
  - Editing the current member without specifying a generation (GEN 0) 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
Allocate 3.2

Dataset Information

- 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

Editing a generation

- Command: DEMO.TEST.PDS
- Name: N5
Future Enhancements to Support for Member Generations?

- We would like to improve the usability of the ISPF support for PDSE Member Generations in the future.
- Currently two RFEs are open requesting enhancements to the support:
  - RFE 55041: ISPF SAVE NEWGEN add message indicating number of generations
  - RFE 55908: ISPF edit member generation message
- We would welcome additional RFEs in this area with your suggestions for improvements.
Unix Directory List
z/OS UNIX directory list can be displayed …. 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 “Dsname Level” field

- DIRLIST service (z/OS 1.10)
  - Programming API available for programs wanting a directory list display
- 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

#### Option 1: Adjust size of the filename column

1. **Options Menu**
   - Command: `Command ==>`
   - Pathname: `::/u/user1`
   - ENID: `:::0`
   - **Command Filename**
     - `...`
     - `.bash_history`
     - `.bash_profile`
     - `.bashrc`

#### Option 2: Tailor column arrangement

2. **Directory List Column Arrangement**
   - **Order**
     - 01: Type
     - 02: Permission
     - 03: Owner
     - 04: Ext
     - 05: Fmt
     - 06: Audit
     - 07: Group
     - 08: Links
     - 09: Size
     - 10: Modified
     - 11: Changed
     - 12: Accessed
     - 13: Created
   - **Column Width**
     - 04: 4
     - 10: 10
     - 08: 8
     - 04: 4
     - 04: 4
     - 08: 8
     - 06: 14
     - 10: 20
     - 19: 19
     - 19: 19
     - 19: 19
     - 19: 19
   - **Maximum**
     - 04: 4
     - 10: 10
     - 08: 8
     - 04: 4
     - 04: 4
     - 08: 8
     - 06: 14
     - 10: 20
     - 19: 19
     - 19: 19
     - 19: 19
     - 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:

  - `?` 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
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

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

Menu Utilities View Options Help

ISRUUDLO z/OS UNIX Directory

Command ===>

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

EUID . . . : 0

Command Pathname Message

--------- ------- 
/usr/include/ceeedcct.h
/usr/include/csnpdefs.h
/usr/include/cssmdefs.h
/usr/include/cssmport.h
/usr/include/cssmtype.h
/usr/lib/cdserprt.dll
/usr/lib/cdsimmut.dll
/usr/lib/cdskwucsc.dll
/usr/lib/cdskwucss.dll
```
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

- 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
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:
    - Required 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
Default line commands can be defined for different file types (z/OS 1.11)

- Default line command is processed when the cursor is placed in the line command field and the ENTER key is pressed

- IBM-configured default line commands:
  - Directory          L (List)
  - Regular file       B (Browse)
  - Character special  I
  - FIFO               I
  - Symbolic link      I

- User can change default line commands on the “z/OS UNIX Directory List Default Line Commands” panel available from the Options pull-down menu
- **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
Block Line Commands (z/OS 2.1)
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 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

ISRUDLO z/OS UNIX Directory List
Command ===>

List Mode Functions
ISRULCMEM 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
=>
=>
=>

Row 1 to 13 of 282
Scroll ===>
CSR

43
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
```
Using Multiple Screens …

- **Navigate screens using:**
  - `SWAP [LIST | PREV | NEXT | screen name | n]` command
  - 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:
      1) Placing the cursor
      2) 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
    - **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.

```plaintext
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

Option 7.3

```
READY
ispf
```

```
Menu Utilities Help

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

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>P</th>
<th>A</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSTART</td>
<td>P</td>
<td></td>
<td>ISPF;7,3;L ZSTART;START 3,4;START 2;START 10;SWAP 1</td>
</tr>
<tr>
<td>ZSVIEWWS</td>
<td>P</td>
<td></td>
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</tr>
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<td>ZTHEDDEF</td>
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<td>P</td>
<td>V</td>
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<tr>
<td>ZTHEXPXL</td>
<td>P</td>
<td>X</td>
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</table>

*DTTEST DLIST -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

```
<table>
<thead>
<tr>
<th>Option</th>
<th>Setting</th>
<th>Description</th>
<th>Settings</th>
<th>View</th>
<th>Edit</th>
<th>Utilities</th>
<th>Foreground</th>
<th>Batch</th>
<th>Command</th>
<th>Dialog Test</th>
<th>IBM Products</th>
<th>SCLM</th>
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<tbody>
<tr>
<td>0</td>
<td>Settings</td>
<td>Terminal and user parameters</td>
<td></td>
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<td>Display source data or listings</td>
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<td>Perform utility functions</td>
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<td>Command</td>
<td>Enter TSO or Workstation commands</td>
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<td>Perform dialog testing</td>
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<td>IBM program development products</td>
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<td>SCLM</td>
<td>SW Configuration Library Manager</td>
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</table>
```

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Using Multiple Screens …

- **=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.

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 the gateway to be used with IHS 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 ISPDTLC 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 8 characters (padded with blanks).

```call isplink ('viif','edifdsn','edifprof','f',
80,rdrtn,cmdrtn,mydata,lincmtab);```
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
```
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.

- 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 ...

---

**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 : 'PACKFLT.KEYWORD'
- Member : 'AGPTBL2'

**Configuration Table Assembler Source Data Set**
- Data Set : 
- Member : 

**Output File Content for Keyword File**
1. Include only non-default values
2. Include defaults as comments
3. Include all values

---

**Current Configuration Table**
- Keyword File : MYSBUILD.SOURCE.ISPCFIGU(ISPCFIGU)
- Identifier : ISPCFIGU
- Level : 400R8001
- Compile Date : 2005/06/19
- Compile Time : 11:37

---

**Specify Input**

**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.
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.
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
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.

```
VERSION_LEVEL_OF_SITEWIDE_DEFAULTS = 43001
SCROLL_MAX = 9999999
RESET_SCROLL_VALUE = YES
GLOBAL_DISABLE_PACK = YES
SITE_COMMAND_TABLE_SEARCH_ORDER = AFTER
```
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.
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

List entries can expand/contract for access to files systems of interest
Please complete your session evaluations

- ISPF Hidden Treasures and New Features, Parts 1 & 2
- Session # 17230 & 17231
- QR Code – Part 1

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Visit the z/OS CS YouTube channel at http://www.youtube.com/user/zOSCommServer
Appendix
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=0000168000009D &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>