

IBM Education Assistance for z/OS V2R2

Item: ISPF Enhancements

Element/Component: ISPF



Agenda

- Trademarks
- Presentation Objectives
- For each function, as needed
 - Overview
 - Usage & Invocation
 - Interactions & Dependencies
 - Migration & Coexistence Considerations
 - Installation
- Presentation Summary
- Appendix



Trademarks

- See url <http://www.ibm.com/legal/copytrade.shtml> for a list of trademarks.



Presentation Objectives

- Provide a high-level overview of the ISPF functions in z/OS V2R2
 - z/OS UNIX file system support in ISPF
 - Interactive ISPF Gateway
 - Enhancements for using the ISPF Gateway with IBM HTTP server Powered by Apache
 - Browse enhancement to increase the record number limit
 - Browse enhancement to display the length of variable records
 - ISPSTART command enhancement to support an initial command stack on the OPT parameter
 - CONTROL service enhancement for left and right scroll commands
 - Continued on next chart ...



Presentation Objectives Continued ...

- Provide a high-level overview of the ISPF functions in z/OS V2R2 ...
 - EDIF and VIIF services enhancement to support an edit line command table
 - Global configuration option to define a default line command table
 - Global configuration option to disable the editor PACK operation
 - Remove BookManager/Build from ISPF z/OS Applications menu
 - DTL compiler to use ZISPFRC and remove command name COPY
 - ISPF configuration table



z/OS UNIX file system support in ISPF



Overview

- Problem Statement / Need Addressed
 - 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



Overview (continued)

▪ Solution

- Add 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

▪ Benefit / Value

- File system functions consolidated in single location
- Improved usability for mounted file systems displays



Usage & Invocation

- 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.**						
+ISPF RUN.**						
+ISPFTEST.**						
+ITIMRACF.**						
+IXM.**						
+JAVAOMVS.**						
-OMVS.**						
-OMVS.\$SSRCB.**						
-OMVS.\$SSRCB.ETC.**						
OMVS.\$SSRCB.ETC.ISA1	/etc	HFS	R/W	ISA1	YES	
-OMVS.\$SSRCB.VAR.**						
OMVS.\$SSRCB.VAR.ISA1	/var	HFS	R/W	ISA1	YES	
-OMVS.APC.**						
-OMVS.APC.HFS.**						
OMVS.APC.HFS.ISA1	/apc	HFS	R/W	ISA1	YES	



Migration & Coexistence Considerations

- None. You can continue to use the previous ISHELL menu option, although the newer menu is recommended.



Interactive ISPF Gateway



Interactive ISPF Gateway

- Problem Statement / Need Addressed
 - 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
- Solution
 - 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.
- Benefit / Value
 - The ISPF Gateway can be used to run programs that are interactive, issuing TSO/ISPF conversational mode commands.



Usage & Invocation: 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.



Usage & Invocation: API request types (continued)

- 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.



Usage & Invocation: Start a new TSO/ISPF session and start an interactive program

Input: TSO EX 'TEST.EXEC (GWSVMULT) ' &REQUEST=NEWTSOISPF
 &PROCNAME=ISPFPROC &ACCTNUM=IBMGSA &GROUPID=DEFAULT
 ®IONSZ=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>
```



Usage & Invocation Respond to the prompt from the interactive program

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>



Migration & Coexistence Considerations

- 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.



Enhancements for using the ISPF Gateway with IBM HTTP server powered by Apache



Overview

▪ Problem Statement / Need Addressed

- z/OS V2R1 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 API's (which provide for remote access to TSO/ISPF) can be used with the IBM HTTP Server Powered by Domino. Provides some sample function which uses the Gateway.



Overview (continued)

- Solution

- Samples and Documentation are removed which are specific to the IBM HTTP Server Powered by Domino.
- Update documentation and samples to those that allow IHS Powered by Apache to use the gateway

- Benefit / Value

- Removes samples and documentation for unsupported option and adds sample and documentation for the recommended alternative



Usage & Invocation

- Review the documentation and samples for instructions on allowing IHS Powered by Apache to use the gateway.



Migration & Coexistence Considerations

- IBM recommends that installations using IBM HTTP Server Powered by Domino® migrate to the IBM HTTP Server Powered by Apache.
- 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.



Installation / Dependencies

- Installation
 - After installing the HTTP Server Powered by Apache, there is gateway-specific customization that must be done to the HTTP configuration file and the HTTP environment file. This customization is described in ISPF Planning and Customizing.
- Interactions & dependencies
 - None



Browse enhancement to increase the record number limit



Browse enhancement to increase the record number limit

- Problem Statement / Need Addressed

- The number of records that browse can process is limited to 99,999,999.

- Solution

- The number of records that browse can process is increased 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.

- Benefit / Value

- Users are able to browse a much larger number of records.



Usage & Invocation

- 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.



Browse enhancement to display the length of variable records



Overview

▪ Problem Statement / Need Addressed

- 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).



Overview

- Solution

- Enhance the Browse primary DISPLAY command to show the record descriptor word (RDW) for variable length records.
- An RDW | NORDW option is added to the command.

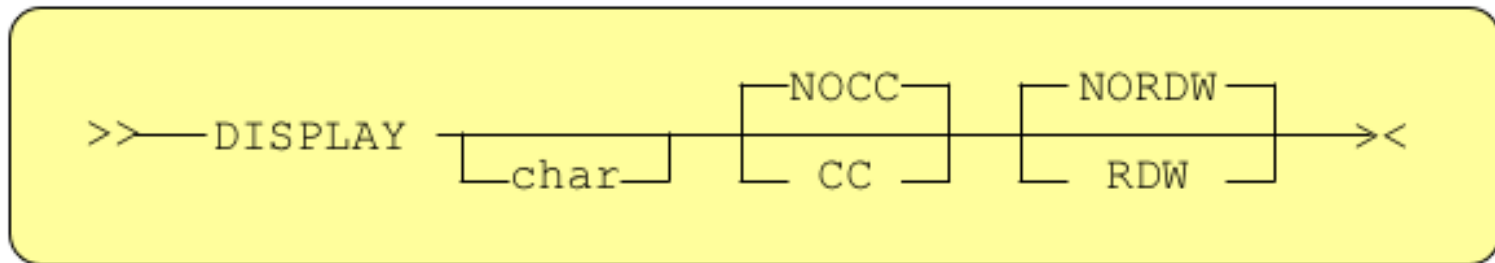
- Benefit / Value

- Allows visibility to the length of variable length records



Usage & Invocation

- Enhance the Browse primary DISPLAY command to show the record descriptor word (RDW) for variable length records.



- 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.



ISPSTART command enhancement to support an initial command stack on the OPT parameter



Overview

- Background
 - 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.
 -
- Problem Statement / Need Addressed
 - 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



Overview (continued)

▪ Solution

- Allow OPT(ZSTART) to be the default in cases where the OPT parameter can be specified, but is omitted
- Allow mixed and lower case when the OPT parameter is used to control the use of an initial command stack
- Enhance the ISPSTART command documentation

▪ Benefit / Value

- 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



Usage & Invocation

- Define a profile variable (ZSTART or other) with an initial command stack
- Use the OPT parameter to control the use of the initial command stack
 - Specify OPT(ZSTART) when an initial command stack is defined in profile variable ZSTART
 - Specify OPT(*varname*) when an initial command stack is defined in profile variable *varname*
 - Specify OPT(BASIC) to bypass processing of a defined ZSTART variable
 - Omit OPT parameter to have OPT(ZSTART) 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.



CONTROL service enhancement for left and right scroll commands



Overview

- Background
 - 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
- Problem Statement / Need Addressed
 - Using a command table to control the passthru 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



Overview (continued)

- Solution

- Enhance the CONTROL service to allow for controlling the PASSTHRU of the LEFT and RIGHT scroll commands.
 - Allow the dialog to turn the passthru of these commands on and off as needed
 - Allow the dialog to query the current status of the passthru of these commands

- Benefit / Value

- Provides more granular control of PASSTHRU of the LEFT and RIGHT scroll commands



Usage & Invocation

- 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 and RIGHT scroll commands



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



Overview

▪ Problem Statement / Need Addressed

- 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.

▪ Solution

- Allow for passing a new parameter: User Line Command Table
- Positional parameter, passed as last 9 characters (padded with blanks)

▪ Benefit / Value

- EDIF and VIIF services now accept a user line command table as a parameter just as previously supported for EDIT and VIEW services in V1R13.



Usage & Invocation

- 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).
- Example:

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



Global configuration option to define a default line command table



Overview

- Problem Statement / Need Addressed

- 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

- Solution

- Provide 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.

- Benefit / Value

- Improved usability for specifying a line command table



Usage & Invocation

- To provide a globally specified Line Command Table
 - New on Edit-related settings:
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.
- Refer to ISPF Planning and Customizing.



Global configuration option to disable the editor PACK operation



Overview

- Problem Statement / Need Addressed
 - PACK command controls how data is stored.
 - There is no way to globally disable the Pack option.
 - If it is inadvertently set ... oops!



Overview

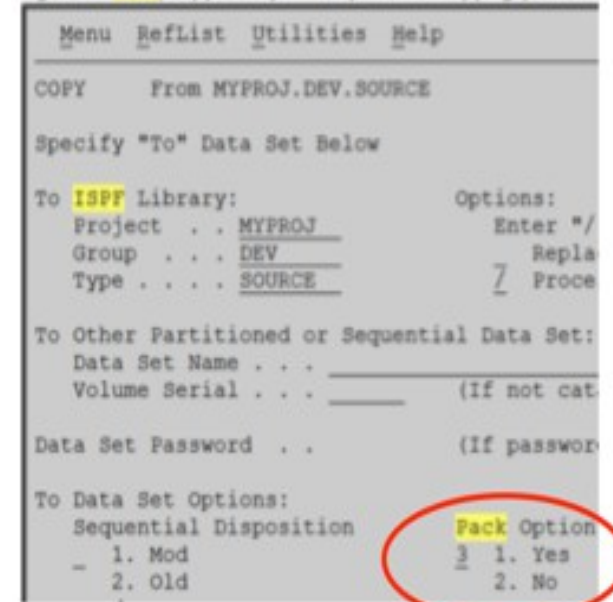
■ Solution

- Provide the ability to globally disable the Pack option for
 - 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.

■ Benefit / Value

- Helps to prevent inadvertently setting the PACK option on edit, move, and copy operations

Figure 1. Move/Copy Utility - "To" panel for copying (ISRUM)



Menu RefList Utilities Help

COPY From MYPROJ.DEV.SOURCE

Specify "To" Data Set Below

To **ISPF** Library: Options:
Project . . MYPROJ Enter "/"
Group . . . DEV Repla
Type SOURCE 7 Proce

To Other Partitioned or Sequential Data Set:
Data Set Name . . .
Volume Serial . . . (If not cat
Data Set Password . . (If passwor

To Data Set Options:
Sequential Disposition
- 1. Mod **Pack** Option
2. Old 3 1. Yes
2. No



Usage & Invocation

- To globally disable the pack operation, on Edit-related settings:
 - 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.



Remove BookManager/Build from ISPF z/OS Applications menu



Overview

- Problem Statement / Need Addressed
 - z/OS V2R1 was the last release for 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) option1
 - BookManager Build is no longer provided by IBM as of z/OS V2R2.
- Solution
 - Remove option 13.1
- Benefit / Value
 - Removal of unsupported option from menu structure



Usage & Invocation

- Option 13.1, BookManager Build, has been removed.



Migration & Coexistence Considerations

- BookManager Build is no longer supported by IBM.



DTL compiler to use ZISPFRC and remove command name COPY

Part 1: Removal of extraneous commands from the ISPF TSO command table



Overview

- Problem Statement / Need Addressed
 - 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
- Solution
 - In V2R2, these six commands have been removed.
- Benefit / Value
 - Removal of unsupported commands



Usage & Invocation

- The commands noted on the previous chart have been removed.



Migration & Coexistence Considerations

- The TSO Data Utilities product is no longer supported, and the six related commands discussed on the previous chart have been removed.



DTL compiler to use ZISPFRC and remove command name COPY

Part 2: DTL compiler enhancement to use the system variable ZISPFRC



Overview

- Problem Statement / Need Addressed
 - The final return code from the DTL compiler needs to be available to influence the JCL step return codes.
- Solution
 - In V2R2, the final return code from the DTL compiler is stored into the ISPF shared pool variable ZISPFRC.
- Benefit / Value
 - Allows a batch invocation of ISPD TLC to be aware of the success/failure of the DTL compilation



Usage & Invocation

- The ISPF shared pool variable ZISPFRC will contain the final return code from the DTL compiler.



ISPF configuration table



ISPF Configuration Utility enhancement

- Problem Statement / Need Addressed
 - An ISPF configuration load module can not be updated if the source keyword file is not available.
- Solution
 - The ISPF Configuration Utility is enhanced to provide a new option (option 7) for converting the active configuration load module, or one residing in a data set, to a keyword file. (APAR OA42680)
 - 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.
- Benefit / Value
 - Users are able to update existing configurations, even when the source keyword file is not available.



ISPF Configuration Utility enhancement – sample panels

```
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.
```



Usage & Invocation

- From the ISPF Configuration Utility, select option option 7 to convert the active configuration load module, or one residing in a data set, to a keyword file.
- 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.



Installation / Dependencies / Migration & Coexistence Considerations

- Installation
 - None. However, note that this enhancement is also available on V2R1 via APAR OA42680.
- Interactions & dependencies
 - None
- Migration & coexistence considerations
 - None



Presentation Summary

- z/OS V2R2 ISPF contains a number of usability enhancements as well as significant enhancements such as:
 - z/OS UNIX file support in ISPF
 - Interactive ISPF Gateway
 - Browse enhancement to increase the record number limit



Appendix

▪ ISPF Publications:

- *z/OS V2R2 ISPF Dialog Developer's Guide and Reference* (SC19-3619)
- *z/OS V2R2 ISPF DTL Guide* (SC19-3620)
- *z/OS V2R2 ISPF Edit and Edit Macros* (SC19-3621)
- *z/OS V2R2 ISPF Messages and Codes* (SC19-3622)
- *z/OS V2R2 ISPF Planning and Customizing* (SC19-3623)
- *z/OS V2R2 ISPF Reference Summary* (SC19-3624)
- *z/OS V2R2 ISPF SCLM Guide and Reference* (SC19-3625)
- *z/OS V2R2 ISPF Services Guide* (SC19-3626)
- *z/OS V2R2 ISPF User's Guide, Volume I* (SC19-3627)
- *z/OS V2R2 ISPF User's Guide, Volume II* (SC19-3628)

