

IBM Education Assistant (IEA) for z/OS V2R3

ISPF: Extended Statistics Usability

Agenda

- Trademarks
- Session Objectives
- Overview
- Usage & Invocation
- Interactions & Dependencies
- Migration & Coexistence Considerations
- Installation
- Session Summary
- Appendix

Trademarks

- See url <http://www.ibm.com/legal/copytrade.shtml> for a list of trademarks.
- Additional Trademarks:
 - None.

Session Objectives

- Describe the usability improvements for ISPF extended statistics in V2R3

Overview – Background

- In z/OS V1R11, the ISPF statistics maintained for PDS members were updated to support “Extended Statistics”.
- The ISPF Statistics (stored in the PDS Directory for each member) were expanded from 30 bytes to 40 bytes when extended statistics are generated.
 - Non-extended values stored in 2 byte fields (maximum value = 0xFFFF)
 - Extended values stored in 4 byte fields (maximum value = 0x7FFFFFFF)
 - Byte 3, bit 3 of statistics entry indicates whether ISPF extended statistics exist
 - When ON (indicating that extended statistics exist):
 - Bytes 29-32 contain 4-byte “Current number of lines” value
 - Bytes 33-36 contain 4-byte “Initial number of lines” value
 - Bytes 37-40 contain 4-byte “Number of modified lines” value

Overview – Background...

- The Miscellaneous Edit Settings in the ISPF Configuration Utility allow for enabling extended statistics for PDS members:

```
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 4K Pages)
Undo Storage Size . . . . . 0 (Number of 1K Blocks)
Text Flow Terminators . . . . . ;&<....
Edit CUT Default Action . . . . . REPLACE (APPEND or REPLACE)
Edit PASTE Default Action . . . . . KEEP (DELETE or KEEP)
Disable PACK globally . . . . . -
Global Line Command Table . . . . .

Enter "/" to select option
/ Allow Edit Highlighting
/ Default Editor to have Highlighting Enabled
/ Highlight Assembler Continuation Errors

/ Default Editor to have Action Bars Present
/ Warn on Trailing Blank Truncation
/ Allow Creation of CREATE/REPLACE Target Data Set
Error: ISPF376 is a NONHSCF passed arguments
/ Enable Extended Statistics
```

Background – Enabling ISPF Extended Statistics

- When you edit a PDS member, the STATS mode in the Edit profile controls whether statistics are generated when the member is saved.
 - STATS OFF – Statistics are not generated
 - STATS ON – 30-byte Non-extended statistics are generated
 - STATS EXT – 40-byte Extended statistics are generated
 - EXT only allowed when extended statistics are enabled
- The STATS mode can be changed while editing a member using an Edit primary command: STATS
 - Syntax:

.-ON--.

>>-STATS--+------+-----><

+ -OFF- +

'-EXT-'

- The new STATS mode is used to determine whether and what type of statistics are saved going forward.

Background – Enabling ISPF Extended Statistics...

- The Edit Profile Settings and Overrides allow for controlling the STATS mode in user edit profiles:



```
Profile Initial Macro      Force initial macro
Enter "/" to select option Enter "/" to force settings
/  STATS ON              /  STATS
/  STATS EXT            /  STATS EXT
/  RECOVERY ON          /  RECOVERY
/  RECOVERY warning message /  RECOVERY warning
/  SETUNDO ON           /  SETUNDO
/  PACK ON              /  PACK
/  CAPS ON
```

- If STATS EXT (left side) is selected, the STATS mode in newly created edit profiles is set to EXT (Edit will save extended statistics for PDS members).
- If the STATS EXT force setting (right side) is not selected:
 - The STATS mode is not changed in existing edit profiles.
 - Users are able to change the STATS mode in their edit profiles.
- If the STATS EXT force setting (right side) is also selected:
 - The STATS mode is set to EXT in all edit profiles (newly created and existing).
 - Users are not able to change the STATS mode in their edit profiles.

Background – Services that set or retrieve extended statistics

- The following ISPF services can set the ISPF statistics for a PDS member:
 - LMMADD – add a member to a dataset
 - LMMREP – replace a member of a dataset
 - LMMSTATS – set and store ISPF statistics
- For these services, when the call passes YES on the EXT parameter, this instructs ISPF to store statistics in extended format.
- The following ISPF services can retrieve the ISPF statistics for a PDS member:
 - LMMDISP – member list service
 - LMMFIND – find a library member
 - LMMLIST – list a library's members
- For these services, if extended statistics exist for a member, ISPF variables are populated with the extended line count values.

Background – Reset Member Statistics panel

- The Reset Member Statistics panel was updated to allow a user to request that extended statistics be generated as part of the reset.
 - ISPF option 3.5 (panel ISRURSP)
 - G (reset) line command on the enhanced member list (displays panel ISRURSET)
 - Both panels allow the user to request that extended statistics be generated as part of the reset and allow line count values > 65535 to be calculated.
- The I (information) line command, on the enhanced member list, displays panel ISRUDSI:

The screenshot shows the ISRUDSI panel with the following content:

```

Menu  Functions  Confirm  Utilities  Help
ISRUDSI  DSLIST  PACKETT.EXEC
Command ==>

Member name      : ADDTHIS
Concatenation number : 1
Version . Modification : 01.00
Create Date      : 2015/11/04
Modification Date : 2015/11/04
Modification Time  : 16:30:26
Userid that Created/Modified : USER1234

Line counts : max values are 65535
Current    : 2147
Initial    : 65535
Modified   : 65535

Directory flag byte
Bit 0 : 0  SCLM
Bit 1 : 0
Bit 2 : 1  Ext Stats
Bit 3 : 0
Bit 4 : 0
Bit 5 : 0
Bit 6 : 0
Bit 7 : 0

Extended line counts
Current    : 2147
Initial    : 2147483647
Modified   : 2147483
  
```

In the screenshot, the 'Bit 2 : 1 Ext Stats' line and the 'Extended line counts' section are highlighted with blue boxes.

- Directory flag byte contains a bit indicating whether the member has extended statistics.
- The Line counts values are the non-extended statistics values.
- The Extended line counts values are the extended statistics values.

Overview – Problem and Solution

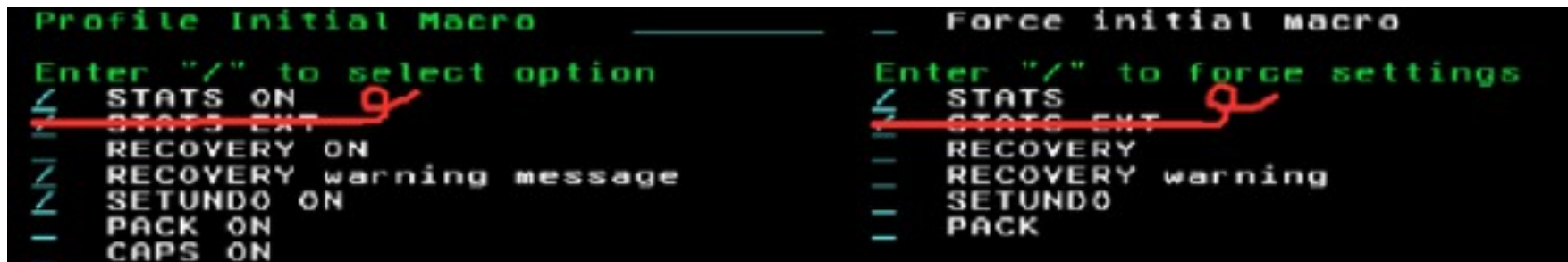
- Problem: Frequent feedback has expressed dissatisfaction with the current Extended Statistics solution:
 - Users and service callers are required to know when a member needs extended statistics and are required to explicitly request it.
 - User errors result in no extended statistics when they are needed and extended statistics when they are not needed.
 - Well documented in RFE 62810 “Extended Statistics is Unusable as Designed”
- Solution:
 - Remove the need/ability for a user or service caller to request extended statistics for a member.
 - Automatically generate extended statistics when appropriate.

Overview – Benefit / Value

- Simplifies the enablement and usage of ISPF extended statistics

Usage & Invocation - Configuration

- STATS EXT will be removed from the Edit Profile Settings and Overrides section in the ISPF Configuration Utility:
 - The setting will no longer be needed because EXT will no longer be a possible STATS mode value in the Edit profile.
 - No longer able to set the initial STATS mode in user Edit profiles to EXT
 - No longer able to force the STATS mode in user Edit profiles to always be EXT
 - The ability to set the initial/forced STATS mode in user Edit profiles to either OFF or ON remains.



```
Profile Initial Macro          Force initial macro
Enter "/" to select option    Enter "/" to force settings
/  STATS ON                   /  STATS
-  STATS EXT                 -  STATS EXT
-  RECOVERY ON                -  RECOVERY
/  RECOVERY warning message  -  RECOVERY warning
/  SETUNDO ON                 -  SETUNDO
-  PACK ON                    -  PACK
-  CAPS ON                    -
```

Usage & Invocation – Edit changes

- The ISPF editor will no longer allow the STATS mode to be changed to EXT.
 - If STATS mode of EXT is found in the Edit profile, it will be silently changed to ON.
 - If STATS EXT command is entered, it will be processed as STATS ON.
 - When STATS mode is ON and extended statistics are enabled in the ISPF configuration:
 - Non-extended statistics will be generated if all three line count values are ≤ 65535 .
 - Extended statistics will be generated if any of the line count values are > 65535 .
- The Edit STATS primary command will still accept the EXT option, but will process it as STATS ON.
 - STATS EXT command will result in a new message (e.g., STATS ON SUBSTITUTED)
 - The long message text will indicate that STATS ON generates extended statistics when appropriate.
- The Edit STATS macro command will still accept the EXT option, but will process it as STATS ON.
 - This will allow existing edit macros to work without modification.

Usage & Invocation - Member list displays

- In member list panels, the size value can be larger than will fit in a 5-digit field
 - Previously, if the value exceeded 65535, ISPF displayed “65535”
 - In V2R3, ISPF will display “>65535”
 - Sorting on that column will sort on the actual value, not the displayed “>65535” value
 - Opening the Information panel will allow you to see the actual value

Usage & Invocation – Member list displays...

Menu		Functions		Confirm		Utilities		Help			
ISRUDSM		DSL		LIST		PACKETT.EXEC				Row 00000001 of 00000059	
Command ==>										Scroll ==> PAGE	
	Name	Prompt	Size	Init	Mod	VV	MM	ID			
	LARGEMEM		>65535	>65535	>65535	01	.03	PACKETT			
	TESTSTA2		>65535	>65535	6	01	.08	PACKETT			
	TESTSTAT		65535	>65535	1	01	.09	PACKETT			
	ISPD TLC		42750	42655	0	01	.61	PACKETT			
	PNGCLNT		552	551	0	01	.01	MOOREJR			
	GWCLINT		544	544	0	01	.08	PACKETT			
	OGWCLNT		310	310	0	01	.00	PACKETT			
	TBADD		103	21	0	01	.24	PACKETT			
	TESTGW		96	94	0	01	.42	PACKETT			
	TEST		92	10	0	01	.18	PACKETT			
	RECALLOC		62	28	0	01	.99	PACKETT			
	LMMADD		47	28	0	01	.74	PACKETT			
	LMMREP		47	28	0	01	.99	PACKETT			
	LMMDISP		45	29	0	01	.09	PACKETT			
	GWSVMULT		44	44	0	01	.00	PACKETT			
	LMMLIST		44	29	0	01	.10	PACKETT			
	GWREXX		41	38	0	01	.01	PACKETT			
	LMCOPY		39	28	0	01	.82	PACKETT			
	LMMOVE		39	28	0	01	.83	PACKETT			
	EDIT		38	28	0	01	.89	PACKETT			
	FEKFLDSI		36	35	0	01	.05	PACKETT			
	LMMFIND		36	29	0	01	.04	PACKETT			
	TESTSKEL		34	34	2	01	.05	PACKETT			
	BROWDSN		29	28	0	01	.77	PACKETT			
	BROWSE		29	28	0	01	.74	PACKETT			
	EDITDSN		29	28	0	01	.77	PACKETT			
	LMMREN		29	29	0	01	.00	PACKETT			
	VIEW		29	28	0	01	.76	PACKETT			
	VIEWDSN		29	28	0	01	.78	PACKETT			
	DSINFO		28	5	0	01	.31	PACKETT			
	LMMREN2		28	28	0	01	.00	PACKETT			
	LMMDEL2		27	27	0	01	.00	PACKETT			
	LMMSTATS		23	21	0	01	.79	PACKETT			
	TESTHMS		23	22	0	01	.01	PACKETT			
	ADDTHIS		22	22	0	01	.03	PACKETT			
F1=Help		F2=Split		F3=Exit		F5=Rfind		F7=Up		F8=Down	
F10=Left		F11=Right		F12=Cancel						F9=Swap	

Usage & Invocation – Member list displays...

Menu	Functions	Confirm	Utilities	Help	Row 0000001 of 0000059		
ISRUDSM	DSL	LIST	PACKETT.EXEC		Scroll ==> PAGE		
Command	==>						
Name	Prompt	Size	Init	Mod	VV	MM	ID
LARGEMEM		>65535	>65535	>65535	01	03	PACKETT
TESTSTA2		>65535	>65535	6	01	08	PACKETT
TESTSTAT		65535	>65535	1	01	09	PACKETT
ISPD TLC		12700	12000	0	01	61	PACKETT
PNGCLNT		552	551	0	01	01	MOOREJR
GWCLINT		544	544	0	01	08	PACKETT
OGWCLNT		310	310	0	01	00	PACKETT
TBADD		103	21	0	01	24	PACKETT
TESTGW		96	94	0	01	42	PACKETT
TEST		92	10	0	01	18	PACKETT
RECALLOC		62	28	0	01	99	PACKETT
LMMADD		47	28	0	01	74	PACKETT
LMMREP		47	28	0	01	99	PACKETT
LMMDISP		45	29	0	01	09	PACKETT
GWSVMULT		44	44	0	01	00	PACKETT
LMMLIST		44	29	0	01	10	PACKETT
GWREXX		41	38	0	01	01	PACKETT
LMCOPY		39	28	0	01	82	PACKETT

- Enter the “i” command to open the Info panel

Menu	Functions	Confirm	Utilities	Help
ISRUDSI	DSL	LIST	PACKETT.EXEC	
Command	==>			
Member name : TESTSTAT				
Concatenation number : 1				
Version . Modification : 01.09				
Create Date : 2016/04/07				
Modification Date : 2016/04/11				
Modification Time : 13:33:19				
Userid that Created/Modified : PACKETT				
Directory flag byte				
Bit 0 : 0 SCLM				
Bit 1 : 0				
Bit 2 : 1 Ext Stats				
Bit 3 : 0				
Bit 4 : 0				
Bit 5 : 0				
Bit 6 : 0				
Bit 7 : 0				
Line counts : max values are 65535				
Current : 65535				
Initial : 65535 (>)				
Modified : 1				
Extended line counts				
Current : 65535				
Initial : 65558				
Modified : 1				

Usage & Invocation – ISPF services

- ISPF services that set member statistics (LMMADD, LMMREP, and LMMSTATS):
 - Will ignore the EXT parameter when it is specified
 - Will accept line count values up to 2147483647 whenever extended statistics are enabled
 - When extended statistics are enabled in the ISPF configuration:
 - Non-extended statistics will be generated if all three line count values are ≤ 65535 .
 - Extended statistics will be generated if any of the line count values are > 65535 .
 - Ignoring the EXT parameter allows existing service calls to work without modification.
- ISPF Services that retrieve member statistics will not be changed.

Usage & Invocation – Reset Member Statistics panels

- The field to request generation of extended statistics will be removed from both panels:

```

Menu RefList Utilities Help
ISRURSP                      Reset ISPF Statistics
Option ==> _____

R Reset (create/update) ISPF statistics    D Delete ISPF statistics

New Userid . . . . . (If userid is to be changed)
New Version Number . . . . . (If version number is to be changed)

SCLM Setting                      Enter "/" to select option
3 1. SCLM      2. Non-SCLM      3. As is
/ Reset Mod Level
/ Reset Sequence Numbers
/ Reset Date/Time
/ Reset Number of Lines
- Generate extended statistics

ISPF Library:
Project . . . . . PDFTDEV
Group . . . . . SVT
Type . . . . . SOURCE
Member . . . . .
(Blank or pattern for member selection list, "*" for all members)

Other Partitioned Data Set:
Name . . . . .
Volume Serial . . . . . (If not cataloged)

Data Set Password . . . . . (If password protected)

ISRURSET                      Reset Member Statistics

Data Set Name:
'PDFTDEV.SVT.SOURCE(ALLOC)'

Options
- 1. Reset ISPF statistics
  2. Delete ISPF statistics

New Userid . . . . . (If userid is to be changed)
New Version . . . . . (If version number is to be changed)
New Mod . . . . . (If mod number is to be changed)
"/" to select . . . . . (If extended stats to be generated)

Press ENTER to process action. Press CANCEL to cancel reset.

```

- When extended statistics are enabled in the ISPF configuration:
 - Non-extended statistics will be generated if all three line count values are ≤ 65535 .
 - Extended statistics will be generated if any of the line count values are > 65535 .

Interactions & Dependencies

- None.

Migration & Coexistence Considerations

- None.

Installation

- None.

Session Summary

- The enablement of ISPF extended statistics is simplified by removing the need/ability for a user or service caller to request extended statistics for a member. Instead, extended statistics are automatically generated when appropriate.

Appendix

- ISPF Publications:
 - z/OS V2R3 ISPF Dialog Developer's Guide and Reference (SC19-3619-02)
 - z/OS V2R3 ISPF DTL Guide (SC19-3620-02)
 - z/OS V2R3 ISPF Edit and Edit Macros (SC19-3621-02)
 - z/OS V2R3 ISPF Messages and Codes (SC19-3622-02)
 - z/OS V2R3 ISPF Planning and Customizing (SC19-3623-02)
 - z/OS V2R3 ISPF Reference Summary (SC19-3624-02)
 - z/OS V2R3 ISPF SCLM Guide and Reference (SC19-3625-02)
 - z/OS V2R3 ISPF Services Guide (SC19-3626-02)
 - z/OS V2R3 ISPF User's Guide, Volume I (SC19-3627-02)
 - z/OS V2R3 ISPF User's Guide, Volume II (SC19-3628-02)