

# IBM Education Assistant for z/OS V2R3

Line Item Name: Improve First Failure Data Capture (FFDC) of console dumps  
Element/Component: BCP / SDUMP



# Agenda

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

# Trademarks

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

# Session Objectives

- Things you will learn from this presentation
  - The purpose of Improving console dump's FFDC
  - Functional Content and benefit
  - How to invoke the function
  - Migration / coexistence issues or concerns
  - List of publications

# Overview

- Problem Statement / Need Addressed
  - Target ASID's cross-memory environment not in console dump
    - Useful in detecting root cause
      - obtained through manual reviews and multiple dumps
- Solution
  - Support XMEMENT to include target ASID's cross-memory address spaces (A/S)
- Benefit / Value
  - Improved serviceability
    - Reduces the need to manually gather additional diagnostic data
  - Ease of use
    - Support enabled / disabled through system commands

# Overview - Background

- More on the problem
  - DUMP commands are used when a job /system / application hangs
    - Difficult to guess what ASIDs should be dumped
    - Sometimes, target ASID's cross-memory environment/data may give important clues
      - CHNGDUMP's TYPE =XMEME or XMEM is irrelevant to console dumps
        - Applies to caller's cross-memory environment
          - Caller is MASTER
      - Data is collected manually by reviewing dump data, followed by requesting more dumps
        - Laborious, error-prone and time-consuming
  - Console dumps to include cross memory environment of target A/S

# Usage & Invocation

- To activate the support
  - Reply to DUMP command / in IEADMCxx
    - Specify XMEMT=YES
  - CHNGDUMP (CD) command
    - CD SET,SDUMP,TYPE=XMEMT
      - Currently, this is the default setting at IPL
- To deactivate the support
  - Reply to DUMP command / in IEADMCxx
    - Specify XMEMT=NO
  - CHNGDUMP command
    - CD DEL,SDUMP,TYPE=XMEMT
- As usual, DUMP command setting takes precedence unless CD is in OVER mode

# Usage & Invocation

- Effect of DUMP and CHNGDUMP settings on XMEMT

XMEMT on DUMP command	Value of XMEMT On DUMP command	TYPE=XMEMT on CD command	Overall result of XMEMT on dump
Specified	YES	YES in ADD and OVER modes	YES in ADD and OVER modes
Specified	YES	NO in ADD mode	YES in ADD mode
		NO in OVER mode	NO in OVER mode
Specified	NO	YES in ADD mode	NO in ADD mode
		YES in OVER mode	YES in OVER mode
Specified	NO	NO in both ADD and OVER modes	NO in both ADD and OVER modes
Not specified	---	YES in ADD and OVER modes	YES in ADD and OVER modes
Not specified	---	NO in ADD and OVER modes	NO in ADD and OVER modes



# Usage & Invocation

- Message IEE857I from D D,O shows XMEMT for TYPE

```
00- SY1  d d,o

SY1  IEE857I 09.50.27 DUMP OPTION 646

SYSABEND- ADD PARMLIB OPTIONS SDATA=(LSQA,TRT,CB,ENQ,DM,IO,ERR,SUM) ,
          PDATA=(SA,REGS,LPA,JPA,PSW,SPLS)

SYSUDUMP- ADD PARMLIB OPTIONS SDATA=(SUM) , NO PDATA OPTIONS

SYSMDUMP- ADD PARMLIB OPTIONS (NUC,SQA,LSQA,SWA,TRT,RGN,SUM)

SDUMP- ADD OPTIONS (LSQA,TRT,XESDATA) , TYPE=(XMEME,XMEMT) ,
        BUFFERS=00000000K,MAXSPACE=00000500M,
        MSGTIME=99999 MINUTES,MAXSNDSP=015 SECONDS,
        AUXMGMT=ON ,DEFERTND=NO ,MAXTNDSP=( , , ) SECONDS

SYSFAIL NO STRLIST OPTIONS

ABDUMP- TIMEENQ=0240 SECONDS
```

# Usage & Invocation

- with XMEMT,
  - Target ASIDs eligible for cross-memory environment detection
    - Non-exempt ASIDs specified on ASID, JOBNAME and TSONAME
  - Cross-memory ASIDs derived for these eligible candidates
    - Added to the current list of ASIDs (maximum is still 14)
    - IEA047I displaying added ASIDs
    - local data captured for the additional ASIDs
      - depending on SDATA options

# Usage & Invocation

- New message
- IEA047I DUMPID=nnn AT TIME=hh:mm:ss DATE=mm/dd/yyyy ADDING XMEMT ASIDS(xx[,xx,...,xx])

```
DUMP COMM=(DUMPTTEST WITH ADDITIONALS ASIDS)
*10 IEE094D SPECIFY OPERAND(S) FOR DUMP COMMAND
R 10,SDATA=(CSA,LSQA,RGN,SQA),ASID=(25,2D,1E,3E,47,4D),END
IEE600I REPLY TO 10 IS;SDATA=(CSA,LSQA,RGN,SQA),ASID=(25,2D,1E,3E,
IEA045I AN SVC DUMP HAS STARTED AT TIME=16.46.33 DATE=10/31/2016 851
FOR ASIDS(0025,002D,001E,003E,0047,004D)
QUIESCE = YES
IEA047I DUMPID=003 AT TIME=16.46.33 DATE=10/31/2016 ADDING XMEMT 852
ASIDS(000F,0041,004F,0049)
IEA794I SVC DUMP HAS CAPTURED: 853
DUMPID=003 REQUESTED BY JOB (*MASTER*)
DUMP TITLE=DUMPTTEST WITH ADDITIONAL ASIDS
IEF196I IGD100I 1056 ALLOCATED TO DDNAME SYS00006 DATACLAS (      )
IEF196I IEF285I    MVSSVA.GVV2R3.FFDCEMPC.N000.S00003  CATALOGED
IEF196I IEF285I    VOL SER NOS= DUMP06.
IEA611I COMPLETE DUMP ON MVSSVA.GVV2R3.FFDCEMPC.N000.S00003 858
DUMPID=003 REQUESTED BY JOB (*MASTER*)
FOR ASIDS(0025,002D,001E,003E,0047,004D,000F,0041,004F,0049)
INCIDENT TOKEN: PLEX1      SY1      10/31/2016 20:46:33
```

# Usage & Invocation

- Things to note:
  - Local table of derived ASIDs in an a/s space can hold 14 entries
  - Common table of derived ASIDs also has a limit (14)
    - ASIDs derived from all eligible A/S may not make it to the common table
      - Capacity and Timing
  - Entries from the common table are added to Dump's internal tables
    - limit is still 14
  - There may be more derived ASIDs than are added to an existing dump
    - CTRACE the local and common tables
      - Diagnostic data in the dump will be helpful

## Usage &amp; Invocation- CTRACE

SY1 SPPDATBL 000000B7 11:14:18.021645 Derived ASIDs in SPPDATBL

ASID..... 003B IssueMod. IEAVTSDT TCB..... 005FF128

RetnAddr. 829CCE0C

LOCAL SPPDATBL:

+0000	0000003D	<b>00000014</b>	00000023	00000024	.....	
+0010	00000025	00000026	00000019	00000020	.....	
+0020	00000021	00000043	00000013	00000012	.....	
+0030	00000011	<b>00000016</b>			.....	

-----

SY1 SPPDATBL 000000B7 11:14:18.055694 Derived ASIDs in SPPDATBL

ASID..... 0047 IssueMod. IEAVTSDT TCB..... 005FF128

RetnAddr. 829CD4E0

COMMON SPPDATBL:

+0000	00000043	0000003D	<b>00000015</b>	00000023	.....	
+0010	00000024	00000025	00000026	00000019	.....	
+0020	00000020	00000021	00000013	00000012	.....	
+0030	00000011	<b>00000010</b>			.....	

# Usage & Invocation

- Sample data from dump showing private storage ranges in derived ASIDs
  - IEA047I showed ASIDS(000F,0049,0043)

```
ASID(X'000F')
  6000.:8FFF., 5D9000.:5FFFFFFF., 0A200000.:0B630FFF., 0B680000.:0B704FF
  7E3A4000.:7E3AEFFF., 7E3B8000.:7F600FFF., 7F7AB000.:7F7B4FFF.,
  7F7BA000.:7F7C0FFF., 7FEEC000.:7FF00FFF., 7FF07000.:7FF0DFFF.,
  7FF12000.:7FF1BFFF., 7FF4B000.:7FFFEFFF., 10_00400000.:10_005FFFFFFF.,
  50_00000000.:50_000FFFFFFF., 50_7FF00000.:50_801FFFFFFF., -----
  50_80400000.:50_804FFFFFFF., 50_84500000.:50_845FFFFFFF., |----> Low User Region
  50_B8900000.:50_B8AFFFFFFF., 50_B9100000.:50_BA9FFFFFFF. -----
X'04B1F000' bytes described in ASID(X'000F')
...
ASID(X'0043')
  6000.:6FFF., 5DB000.:5FFFFFFF., 0A200000.:0AA36FFF., 7F4E9000.:7F600FFF.
  7F7AB000.:7F7B3FFF., 7FEFD000.:7FF00FFF., 7FF07000.:7FF0DFFF.,
  7FF12000.:7FF19FFF., 7FF4B000.:7FFFEFFF., 10_00400000.:10_006FFFFFFF.
X'D45000' bytes described in ASID(X'0043')
..
ASID(X'0049')
  6000.:6FFF., 5DB000.:5FFFFFFF., 0A200000.:0AA36FFF., 7F4E9000.:7F600FFF.,
  7F7AB000.:7F7B3FFF., 7FEFD000.:7FF00FFF., 7FF07000.:7FF0DFFF.,
  7FF12000.:7FF19FFF., 7FF4B000.:7FFFEFFF., 10_00400000.:10_006FFFFFFF.
X'D45000' bytes described in ASID(X'0049')
```

# Interactions & Dependencies

- Software Dependencies
  - None
- Hardware Dependencies
  - None.
- Exploiters
  - Users of DUMP command

# Migration & Coexistence Considerations

- CD's default is TYPE=XMEMT at IPL
  - Use CD DEL to deactivate
- No toleration/coexistence APARs/PTFs.
- No change in behavior if XMEMT is not in effect



# Installation

- Are any APARs or PTFs needed for enablement?
  - No
- What jobs need to be run?
  - NONE
- What hardware configuration is required?
  - NONE
- What PARMLIB statements or members are needed?
  - IEADMCxx now accepts XMEMT=YES or NO
- Are any other system programmer procedures required?
  - No
- Are there any planning considerations?
  - No
- Are any special web deliverables needed?
  - No
- Does installation change any system defaults?
  - No

# Session Summary

- No change in behavior without XMEMT
- If XMEMT is in effect
  - Dumps resulting from DUMP commands may include additional ASIDs
    - Tasks in eligible target ASIDs will be held ND to figure out the cross-memory environment
      - except exempt ASIDs
    - Message IEA047I issued when ASIDs are added
      - local data capture of the derived ASIDs is BAU
    - CTRACES cut to provide additional diagnostic data
    - Support turned on / off through system commands

# Appendix

- Publications:
  - z/OS V2R3 MVS System Commands
    - Sections on CHNGDUMP and DUMP commands
  - z/OS V2R3 MVS System Messages Vol 6 (GOS-IEA)