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IBM Education Assistance for z/OS V2R3

SVC DUMP Statistics Enhancements
Element/Component: BCP SVC DUMP

Agenda

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Trademarks

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

- Additional Trademarks:

    – None

Session Objectives

Describe the following enhancements for the SVC dump (SDUMP) Statistics:

- Provide more granular statistics for SDUMP capture time

- Include SDUMP statistics for partial dumps

- Ability to view SDUMP statistics with IPCS in Stand-Alone Dump (SADMP)

- Provide statistics of previously taken SDUMPs

- Capture System scope cross-SDUMP Statistics

Overview

- Problem Statement / Need Addressed

    - Gather more SDUMP statistics to help detect processing bottlenecks

    - Help understand how to predefine resources and possible impacts to systems

        - MAXSPACE

        - Size of the dump data set

- Solution

    - Provide more SDUMP CTRACE data for dump capture time

    - Include SDUMP statistics for partial dumps

    - Ability to view SDUMP statistics with IPCS in SADMP

    - Make SDUMP statistics of previously taken dumps available

    - Capture system scope cross-SDUMP statistics

- Benefit / Value

    - Improved SDUMP servicability

Usage & Invocation

- **Provide more SDUMP CTRACE data for dump capture time**

  - Start/End time of processing for requested area

  - Areas include SQA, LIKESQA, CSA, LIKECSA, High CSA, High Common storage associated with UserToken, High (private) region (RGN) associated with UserToken, Global Subpool List, PVT, LSQA, Local Subpool List

  - Example:

```
S7B0       SQASTART  0000009E  20:08:42.356886  SQA PROCESSING STARTED

    ASID..... 0005       ISSUEMOD. IEAVTVSM  TCB...... 00000000
    RETNADDR. 83190D9A

S7B0       SQAEND    0000009F  20:11:23.845876  SQA PROCESSING ENDED

    ASID..... 0005       ISSUEMOD. IEAVTVSM  TCB...... 00000000

    RETNADDR. 83190F24
```

Usage & Invocation

- **Include SDUMP statistics for partial dumps**

  – Help to diagnose what led to the partial dump

- **Make SDUMP statistics viewable with IPCS in SADMP**

  – IPCS VERBExit IEAVTSFS for SDUMP Statistics and Measurements has been enhanced to show SDUMP Statistics in SADMP

Usage & Invocation

- **Make SDUMP statistics of previously taken dumps available**

  - Retain history of previously taken SDUMPs statistics

    - Utilize 1Meg of high virtual common storage to save Statistics & Measurement Block (SMB) for upto 254 SVC DUMPs

      - 2 slots are reserved for the longest capture time and the largest size SDUMPs

  - Buffers will wrap when full

    - 1st SMB does not necessarily for the 1st dump taken

  - Optional parameters are added to existing IPCS VerbExit IEAVTSFS for the new support

Usage & Invocation

- **IPCS VERBEXIT IEAVTSFS Subcommand enhancement**

  - Function: Format SDUMP Statistics and Measurement Report

    - If VERBEXIT IEAVTSFS is issued for a SADMP, the report will indicate:

      *** The dump is a Standalone dump.

  - Syntax:

    VERBEXIT IEAVTSFS **['parameter']**

    - The optional parameter is applicable to both SDUMP and SADMP

    - If you omit the parameter, the default is:

      - For an SDUMP, the statistics that were captured in the dump are displayed
      - For a SADMP, no statistics data is displayed

Usage & Invocation

- **IPCS VERBEXIT IEAVTSFS Subcommand enhancement (continued)**

  - Syntax (continued)

    - Parameter options:

      - **MEMORY**

        Display dump statistics that are in SQA storage of the dump.

      - **HISTORY**

        Display the history of SDUMP statistics for up to 254 dumps that were captured. The first set of statistics presented may not be the oldest set of statistics.

      - **LS**

        Display the SDUMP statistics for the dump that has the largest dynamically allocated data set except the current dump.

      - **LT**

        Display the SDUMP statistics for the dump that has the longest total capture time.

Usage & Invocation

- IPCS VERBEXIT IEAVTSFS Subcommand enhancement (continued)

  - Example: **VERBEXIT IEAVTSFS 'HISTORY'**

Option = History

```
=============================================================
Capture phase partial dump reason codes (IHASDRSN):
  Are all zeros.
SMB Number   1
Dump Number                           1
Dump start                  03/28/2016 13:44:04.015638
Dump end                    03/28/2016 13:44:04.139764
Total dump capture time     00:00:00.124125
Snap trace start            03/28/2016 13:44:04.015774
Snap trace end              03/28/2016 13:44:04.019963
Elapsed time                00:00:00.004189
Total dump capture time     00:00:00.124125
                 …............
Exit address                05549078
  Home ASID                 0001
  Exit start                03/28/2016 13:44:04.139680
  Exit end                  03/28/2016 13:44:04.139753
  Exit time                 00:00:00.000073
  Exit attributes:  Sdump, SYSMDUMP, One Time
=============================================================
Capture phase partial dump reason codes (IHASDRSN):
  Are all zeros.
SMB Number   2
Dump Number                           2
Dump start                  03/28/2016 16:54:06.280338
Dump end                    03/28/2016 16:54:06.314874
Total dump capture time     00:00:00.034535
                 ----------------
```

Usage & Invocation

- **Capture System scope cross-SDUMP Statistics**

    - Following statistics for the system from IPL time are provided:

        - Number of SDUMPs taken

        - Number of partial dumps

        - Longest total capture time

            - Dump number

            - Time when the dump was taken

            - Number of address spaces captured

            - Complete/Partial dump

        - Largest dump size in blocks

            - Dump number

            - Time when the dump was taken

            - Number of address spaces captured

            - Complete/Partial dump

        - Maximum number of pages captured in DUMPSRV high virtual that were used to hold Exits data

Usage & Invocation

- **Capture System scope cross-SDUMP Statistics (Continued)**

  - Statistics for the following interesting partial dumps reasons will be gathered on a system from IPL time:

    - Shows number of partial dumps for following reasons:

      - SDRAUXSH – critical auxiliary storage shortage
      - SDRSNDSP - system has been reset to be dispatchable
      - SDRSTRNS - no facility dump space allocated or no facility dump space is available
      - SDRSTRLE - some or all of the STRLIST could not be processed
      - SDRSTRRS - structure dump serialization was released before all the data was captured
      - SDRTDISP – IEAVTSDB has reset the tasks of an address space involved in the dump dispatchable when sdump has either hung or terminated without resetting the tasks
      - SDRSDISP - IEAVTSDB has reset the system dispatchable when sdump has either hung or terminated without resetting the system
      - SDRSPMX – MAXSPACE limit has been reached
      - SDRPLCL - emergency dump attempt of possibly hung address space

Usage & Invocation

- Capture System scope cross-SDUMP Statistics (Continued)

    - New IPCS VERBEXIT **IEAVTFCB**

        - Format SDUMP System-scope Statistics

        - Syntax - VERBEXIT **IEAVTFCB**

        - The report does not include the data from the current dump. To include the data of the current dump, you can issue

        IPCS VERBX IEAVTFCB STORAGE

Usage & Invocation

- Capture System scope cross-SDUMP Statistics (Continued)

    - Example 1: **VERBEXIT IEAVTFCB**

```
              SVC DUMP SYSTEM SCOPE STATISTICS REPORT


SVC Dump System Scope Statistics Report

Number of SDUMPs taken                        264
Number of partial dumps                         5
Longest capture time               00:00:00.557058
  Dump Number                                 213
  Start time                 03/29/2017 11:03:15.596488
  Number of address spaces captured           1
  Complete dump
Largest dump size in blocks        00000000 000134A8
  Dump Number                                 111
  Start time                 03/29/2017 10:47:08.497326
  Number of address spaces captured          14
  Complete dump
Maximum exit data pages            00000000 00002082
Interesting partial dumps statistics:
  SDRSPMX                                       1
```

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Usage & Invocation (continued)

- Capture System scope cross-SDUMP Statistics (Continued)

  - Example 2: **VERBEXIT IEAVTFCB**

```
                          SVC DUMP SYSTEM SCOPE STATISTICS REPORT


NUMBER OF SDUMPS TAKEN                              4
NUMBER OF PARTIAL DUMPS                             2
LONGEST CAPTURE TIME                    00:00:00.118459
  DUMP NUMBER                                      1
  START TIME                            04/29/2016 15:54:38.288400
  NUMBER OF ADDRESS SPACES CAPTURED           1
  COMPLETE DUMP
LARGEST DUMP SIZE IN BLOCKS             00000000 00002632
  DUMP NUMBER                                      2
  START TIME                            04/29/2016 16:23:43.553687
  NUMBER OF ADDRESS SPACES CAPTURED           1
  COMPLETE DUMP
MAXIMUM EXIT DATA PAGES                  00000000 00000053
INTERESTING PARTIAL DUMPS STATISTICS:
  SDRSPMX                                          2
```

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Interactions & Dependencies

- Software Dependencies

    - None.

- Hardware Dependencies

    - None.

- Exploiters

    - Users of SDUMP.

Migration & Coexistence Considerations

- None.

Installation

- None. The support is in the base of z/OS 2.3.

Session Summary

Enhancements for the SVC dump (SDUMP) Statistics:

- Provide more granular statistics for SDUMP capture time

- Include SDUMP statistics for partial dumps

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- Provide statistics of previously taken SDUMPs

- Capture System scope cross-SDUMP Statistics

Appendix

- Publication references:

    - z/OS MVS IPCS Commands