IBM Education Assistance for z/OS V2R3

SDUMP maximum task non-dispatchability support
Element/Component: BCP SVC DUMP

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

- You will learn about
  - System and task non-dispatchability processing during an SVC Dump (SDUMP)
  - New option to control/bypass task non-dispatchability during an SDUMP
  - Functional contents and benefits
  - Migration and coexistence issues/concerns
  - Publication updates

Usage & Invocation - Background

System non-dispatchability

- Process of quiescing the System
  - Controlled by CHNGDUMP (Q=) and SDUMPX (QUIESCE=)
  - Set prior to capturing the global data
  - Reset either after global capture completes or if system ND time exceeds MAXSNDSP
- MAXSNDSP (maximum time a System is kept ND during an SDUMP)
  - Controlled via CHNGDUMP
    - Default is 15 seconds

Usage & Invocation - Background

Task non-dispatchability

- Setting tasks non-dispatchable in participating A/S
  - Set prior to capturing the global data
  - Reset:
    - After local capture completes for the address space
    - Task ND time exceeds 5 seconds & **no data** has been captured since last check (1 second)
- DEFERTND=YES bypasses setting tasks ND for global data capture
  - Available only for SDUMPs initiated via DUMP command
- Critical member monitoring – XCF can request tasks to be set dispatchable prematurely in an A/S

Overview

- **Problem Statement / Need Addressed**
  - Address space/Application availability compromised
    - Tasks set and kept non-dispatchable (ND) to collect more consistent data closer to the failure
      - Reset dispatchable after local data capture completes or stops completely
    - Long data capture means longer Application unavailability
      - Progressing, but barely
        - Escapes DUMPSRV DIE protection

Overview

- **Solution**
  - Allow Installations to control tasks' non-dispatchability
    - Provide an option to limit or bypass setting tasks non-dispatchable for different address space (A/S) categories

- **Benefit / Value**
  - Reduced impact of tasks ND on Application availability
    - Independent tasks in an A/S may resume sooner

Usage & Invocation - Solution

- Provide new option **MAXTNDSP** on CHNGDUMP (CD) to control the maximum task ND time during an SDUMP
  - In seconds per A/S category
    - '0' means bypass setting tasks ND
  - For A/S categories - critical, important and normal
    - Determined by Installations via System Resource Manager (SRM)
- Tasks are reset dispatchable if task ND exceeds timeout set for appropriate A/S category
  - Data capture continues
- Can be specified while an SDUMP is progressing

Usage & Invocation

- **Set MAXTNDSP:**

```
CD SET,SDUMP,MAXTNDSP=(critical, important, normal)
```

  - Time values are null, zero and non-zero
  - Default is null, hence BAU

- Time values are optional & positional

`CD SET,SDUMP,MAXTNDSP=(8,,)` - control task ND for critical A/S only

- Time of '0' will indicate to skip setting tasks ND

`CD SET,SDUMP,MAXTNDSP=(0,5,)` - skip setting tasks ND for critical A/S

- Task ND time for 'not important' A/S category can not be specified
- Time value ranges from 0,1-9999

Usage & Invocation

- **Disable MAXTNDSP:**

```
CD SET,SDUMP,MAXTNDSP=(,,)
```

  - Disables MAXTNDSP monitoring task ND for all A/S category

```
CD SET,SDUMP,MAXTNDSP=(5,,)
```

  - Disables MAXTNDSP monitoring task ND for important and normal A/S categories, but monitors task ND for critical A/S

```
CD RESET,SDUMP
```

  - Resets SDUMP options list to values established during System initialization
    - no MAXTNDSP monitoring for any A/S category

Usage & Invocation

- Message IEE857I shows task ND settings for all A/S categories
  - Example of MAXTNDSP exploitation setting

```
SY1  cd set,sdump,maxtndsp=(4,8,16)
SY1  IEE712I CHNGDUMP PROCESSING COMPLETE
SY1  d d,o
SY1  IEE857I 10.21.38 DUMP OPTION 722
  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=(0004,0008,0016) SECONDS
        SYSFAIL NO STRLIST OPTIONS
  ABDUMP- IGNORE DUMP REQUESTS
```

Usage & Invocation

- Message IEE857I shows task ND settings for all A/S categories
  - Example of MAXTNDSP default settings

```
SY1  d d,o
SY1  IEE857I 10.21.38 DUMP OPTION 722
  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- IGNORE DUMP REQUESTS
```

Usage & Invocation

- No external indication when MAXTNDSP exceeds
  - A new CTRACE entry in SDUMP shows MAXTNDSP related data

With MAXTNDSP=(1,1,1) – Reset tasks in critical, important and normal ASIDs dispatchable after 1 seconds

```
SY1       TASK ND   0000009B  16:35:17.819637  Task ND prior to local capture
 ASID..... 0005      IssueMod. IEAVTSDS  TCB...... 005FCC98  RetnAddr. 86204B52

        CHNGDUMP TNDSP:

 +0000  00000001  00000001  00000001  E0000000

        RTCTASTB:

 +0000  0037F800  002EF800  0015F800  0031F800  0025F800  0006D800  001DF800

        RTSDXATB:

 +0000  80800000  00000000  00000000  00000000  00000000  80800000  00000000  00000000

 +0020  00000000  00000000  80800000  00000000  00000000  00000000  00000000  80800000

 +0040  00000000  00000000  00000000  00000000  80800000  00000000  00000000  00000000

 +0060  00000000  80800000  00000000  00000000  00000000  00000000  80000000  00000000

 +0080  00000000  00000000  00000000
```

Usage & Invocation

- No external indication when MAXTNDSP exceeds

When MAXTNDSP=(0,,) – Do NOT set tasks non-dispatchable in critical ASIDs

```
SY1       TASK ND   0000009B  16:09:43.291289  Task ND prior to local capture
 ASID..... 0005      IssueMod. IEAVTSDS  TCB...... 005FCC98  RetnAddr. 86204B52
        CHNGDUMP TNDSP:
 +0000  00000000  00000000  00000000  80000000
        RTCTASTB:
 +0000  0037D800  002ED800  0015D800  0031D800  0025D800  0006D800  001DF800
        RTSDXATB:
 +0000  C0800000  00000000  00000000  00000000  00000000  C0800000  00000000  00000000
 +0020  00000000  00000000  C0800000  00000000  00000000  00000000  00000000  C0800000
 +0040  00000000  00000000  00000000  00000000  C0800000  00000000  00000000  00000000
 +0060  00000000  C0800000  00000000  00000000  00000000  00000000  80000000  00000000
 +0080  00000000  00000000  00000000
```

'C'x = RTSDDMPA & RTSDBYND are ON indicating that setting task ND for this ASID was bypassed

Usage & Invocation

- **Effect of TYPE=XMEMT and MAXTNDSP for console dumps**
  - Tasks in explicitly requested ASIDs are set ND while looking for ‘derived’ ASIDs even when MAXTNDSP says otherwise
    - MAXTNDSP=(0,0,0) and TYPE=XMEMT in effect
    - Sample ND times from SMB via IP VERBX IEAVTSFS

‘0015’ is one of the explicitly specified ASIDs

```
Asid 0015:
  Local storage start              02/22/2017 17:50:55.000229
  Local storage end                02/22/2017 17:50:55.070306
  Local storage capture time       00:00:00.070077
  Tasks reset dispatchable         02/22/2017 17:50:55.000240
  Tasks were nondispatchable       00:00:00.000011
```

‘000F’ is one of the derived ASIDs – tasks not set ND

```
Asid 000F:
  Local storage start
  Local storage end                02/22/2017 17:51:36.486198
  Local storage capture time
  Defers for frame availability              0
  Pages requiring input I/O                  0
  Source page copied to target            5173
  Source frames re-assigned                 22
  Source AUX slot IDs re-assigned            0
```

Interactions & Dependencies

- Software Dependencies
  - None
- Hardware Dependencies
  - None
- Exploiters
  - Users of SVC Dumps

Migration & Coexistence Considerations

- No migration or coexistence considerations
- On lower releases without support
  - Exploitation of MAXTNDSP unavailable
  - Syntax error message IEE390I seen when MAXTNDSP is specified on CHNGDUMP command

```
IEE309I CHNGDUMP UNIDENTIFIABLE KEYWORD
```

  - Display Dump,Option (D D,O) command output will not show MAXTNDSP values

Installation

- No unique considerations

Session Summary

- Tasks ND monitoring available via

  CHNGDUMP MAXTNDSP=(critical,important,normal)

  - No change in behavior without MAXTNDSP exploitation
    - No special task ND monitoring done by default
  - When MAXTNDSP exploited
    - Tasks' non-dispatchability in participating address spaces monitored
      - Tasks reset dispatchable when specified "time" exceeds for its category
      - Data capture continues
  - New ctrace entries capture MAXTNDSP related footprints

Appendix

- Publications:
  - z/OS V2R3 MVS System Commands
    - CHNGDUMP chapter