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Using IPCS with IMS

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Using IPCS With IMS Agenda

- This handout is reference material which outlines various IPCS commands which have been proven useful for IMS dump diagnostics.
- Agenda
  - IMS Dumps and IPCS
  - IMS Formatting of Unformatted Machine-readable Dumps
  - IMS Offline Dump Formatter
  - IMS Interactive Dump Formatter
  - Verifying Dump Contents
  - Controlling IPCS for Easier Dump Analysis
  - IPCS Storage Analysis Commands
  - Miscellaneous IPCS Commands

IMS and IPCS

IMS Dumps and IPCS

- IMS Dumps and IPCS
  - IMS uses IPCS to aid in the formatting and analyzing of unformatted machine-readable dumps
    - SVC dumps
    - SYSMDUMP ABEND Dumps
    - Stand-alone dumps

SVC Dumps

- SVC Dumps
  - Received by issuing
    - SDUMP or SDUMPX macro in an authorized program
    - DUMP or SLIP command
    - Specifying SLIP or DUMP SYS1.PARMLIB members
      - IEASLPxx or IEADMCxx
  - The following dump SDATA options should minimally be specified in the with IMS SVC dumps
    - SDUMP=(CSA,PSA,RGN,SQA,SUM,TRT)
    - Add to SDATA GRSQ for DUMP commands issued for wait conditions

SYSMDUMPs Dumps

- SYSMDUMPs Dumps
  - Received if SYSMDUMP DD statement in the region JCL and
    - ABEND macro used with DUMP
    - CALLRTM macro used with DUMP=YES
    - SETRP macro DUMP=YES
    - Internal SVC dump failure in the IMS control region
  - The following dump options should be specified in the SYS1.PARMLIB(IEADMR00) member to ensure that adequate areas of MVS storage are dumped to diagnose the problem under most circumstances:
    - SDATA=(CSA,RGN,SQA,SUM,TRT)

Stand-Alone Dumps

- Stand-Alone Dumps
  - A dump that is performed separately from normal system operations and does not require the system to be in a condition for normal operation
    - Disabled wait
    - Enabled wait
    - MVS System Loop
    - Partial MVS system hang
  - To obtain a Stand-alone dump
    - Code/Assemble the AMDSADMP macro
    - Place the stand-alone dump program onto the residence volume in ready-to-load form.
    - Initialize and Run Stand-alone Dump program
    - See MVS Diagnosis: Tools and Service Aids, for further information

IMS Formatting of Unformatted Machine-readable Dumps

IMS Formatting of Unformatted Machine-readable Dumps

- IMS provides two interfaces to produce IMS formatting of unformatted machine-readable dumps
  - IMS Offline Dump Formatter
    - The Offline Dump Formatter utility is invoked as a verb exit from the Interactive Problem Control System (IPCS).
    - IMS user control statement passed to the ODF to control dump format options
  - IMS Interactive Dump Formatter
    - The Interactive Dump Formatter provides ISPF dialog support for offline dump formatter requests
      - Allows you to format your IMS dumps through a series of interactive menu-driven panels rather than by memorizing the Offline Dump Formatter commands or editing a DFSFRMAT dataset

IMS Offline Dump Formatter

Installing the IMS Offline Dump Formatter

- Installing the IMS Offline Dump Formatter
  - Add the Offline Dump Formatting module name to the Print Dump Exit Control Table in SYS1.PARMLIB member BLSCECTX
    - The IMS Offline Dump Formatting module should already be defined to MVS as part of MVS preconditioning for IMS.
    - If the definition is missing, the BLSCECTX member of SYS1.PARMLIB should be updated.

      EXIT EP(DFSOFMD0) VERB(IMSDUMP) ABSTRACT('IMS analysis')
    - See z/OS V1R4.0 MVS Initialization and Tuning Reference, SA22-7592-04 for more details on BLSCECT (The Formatting exits for dump and trace analysis for IPCS) and IMS IVP job IV_D202T for an example.

Installing the IMS Offline Dump Formatter, continued

- Installing the IMS Offline Dump Formatter, continued
  - IMS.SDFSRESL
    - Option 1: Add IMS.SDFSRESL dataset to the ISPF ISPLLIB
    - Option 2: Add IMS.SDFSRESL dataset to STEPLIB in the TSO logon proc
    - Option 3: Use TSOLIB from TSO READY to establish IMS.SDFSRESL in the search list
      - TSOLIB ACTIVATE DATASET('IMS.SDFSRESL')
      - See z/OS V1R4.0 TSO/E Command Reference SA22-7782-04 for more detail

Installing the IMS Offline Dump Formatter, continued

- Installing the IMS Offline Dump Formatter, continued
  - If you do not want to add the entire IMS.SDFSRESL dataset to the concatenation:
    - Concatenate a dataset containing both DFSABND0 and DFSOFMD0 load modules from the highest IMS version level, along with the alias modules from the IMS.SDFSRESL for lower level IMS versions that you wish to format
    - EXAMPLE with DFSABND0 from IMS V8, but providing format support for IMS V7:

DFSABND0	DFSOFMD0
DFSAB810	DFSOF810
DFSAB710	DFSOF710

Invoking the IMS Offline Dump Formatter

- Invoking the IMS Offline Dump Formatter
  - Start the IPCS Dialog from ISPF
  - Initiate the formatter VERBX command
    - VERBX IMSDUMP 'jjjjjjjj [,p] FMTIMS fmtimsoptions' ipcsoptions
    - Where
      - jjjjjjjj = Job name or started task name of either the IMS CTL, DL/I, or the IMS batch address space.
      - p = ODF control parameters
        - R - Refresh dump formatter module to be loaded from current program libraries
        - H - Indicates HALFLINE, an optional parameter to request that the IMS dump formatter be limited to the width of a screen (that is, 80 characters per line)
        - N - No header, reduces header print volume
        - D - DEBUG , disables ODF ESTAE processing, allowing for dumps of ODF processing

Invoking the IMS Offline Dump Formatter - Continued

- Invoking the IMS Offline Dump Formatter - Continued
  - VERBX IMSDUMP 'jjjjjjjj [,p] FMTIMS fmtimsoptions' ipcsoptions
    - Where
      - FMTIMS - REQUIRED KEYWORD unless DFSFRMAT DD dataset is allocated and used to contain FMTIMS fmtimsoptions
      - fmtimsoptions- A subset of formatting options that describe the sections of the IMS dump to be formatted during the current pass of IPCS. These are listed on the following pages.
      - ipcsoptions - Valid IPCS VERBX command options
        - See the VERBEXIT Subcommand in z/OS V1R4.0 MVS IPCS Commands, SA22-7594-03

Invoking the IMS Offline Dump Formatter - Continued

- Invoking the IMS Offline Dump Formatter - Continued
  - fmtimsoptions - High-level, no additional arguments required

  - ALL or ALL,MIN
  - AUTO, or AUTO,MIN, or AUTO,SUM
  - CBT
  - DB or DB,MIN
  - DBRC
  - DC or DC,MIN
  - DEDB or DEDB,MIN
  - DISPATCH or DISPATCH,MIN
  - EMH or EMH,MIN
  - LOG or LOG,MIN
  - LUM
  - MSDB or MSDB,MIN
  - QM or QM,MIN
  - RESTART
  - SAVEAREA, or SAVEAREA,MIN or SAVEAREA,SUM
  - SB or SB,MIN
  - SCD or SCD,MIN
  - SPST
  - SUBS
  - SUMMARY or SUMMARY,MIN
  - SYSTEM or SYSTEM,MIN
  - UTIL

Invoking the IMS Offline Dump Formatter - Continued

- Invoking the IMS Offline Dump Formatter - Continued
  - fmtimsoptions - Low-level, additional arguments required as shown
    - CBTE,cbteid
    - CLB,address or CLB,nodename or CLB,lterm name or CLB, comm id
    - DPST,address or DPST, number or DPST,name
    - LLB,link number
    - LUB,lu name
    - POOL,poolid or POOL,poolid,MIN
    - SAP,sapaddr or SAP,ecbaddr
    - SYSPST,system pst address or SYSPST,system pst name
    - TRACE,name or TRACE,name,MIN

IMS Interactive Dump Formatter

Installing the IMS Interactive Dump Formatter

- Installing the IMS Interactive Dump Formatter
  - Add the following datasets to the associated DD statements used in the ISPF invocation
    - SYSPROC DD
      - IMS.SDFSCLST - CLISTs
      - IMS.SDFSEXEC - REXX EXEC
    - ISPMLIB DD
      - IMS.SDFSMLIB - Messages
    - ISPPLIB DD
      - IMS.SDFSPLIB - Panels
    - ISPTLIB DD
      - IMS.SDFSTLIB - Tables

Installing the IMS Interactive Dump Formatter, Continued

- **Installing the IMS Interactive Dump Formatter, Continued**
  - **Add the following datasets to the associated DD statements used in the ISPF invocation**
    - **IPCSPARM DD**
      - **IMS.SDFSMAC**
    - **MACLIB DD**
      - **IMS.SDFSMAC**

Installing the IMS Interactive Dump Formatter, Continued

- Installing the IMS Interactive Dump Formatter, Continued
  - Dataset IMS.SDFSRESL
    - Option 1: Option 1: Add IMS.SDFSRESL dataset to the ISPF ISPLLIB
    - Option 2: Add IMS.SDFSRESL dataset to STEPLIB in the TSO logon proc
    - Option 3: Use TSOLIB from TSO READY to establish IMS.SDFSRESL in the search list
      - TSOLIB ACTIVATE DATASET('IMS.SDFSRESL')
      - See z/OS V1R4.0 TSO/E Command Reference SA22-7782-04 for more detai

Installing the IMS Interactive Dump Formatter, continued

- Installing the IMS Interactive Dump Formatter, continued
  - If you do not want to add the entire IMS.SDFSRESL dataset to the concatenation:
    - Concatenate a dataset containing both DFSABND0 and DFSOFMD0 load modules from the highest IMS version level, along with the alias modules from the IMS.SDFSRESL for lower level IMS versions that you wish to format
    - EXAMPLE with DFSABND0 from IMS V8, but providing format support for IMS V7:

DFSABND0	DFSOFMD0
DFSAB810	DFSOF810
DFSAB710	DFSOF710

Invoking the IMS Interactive Dump Formatter

- **Invoking the IMS Interactive Dump Formatter**
  - **Begin an IPCS dialog**
  - **Select Option 0 (DEFAULTS)**

```
------------------- z/OS 01.02.00 IPCS PRIMARY OPTION MENU  ----------
OPTION  ===> 0_
                                                                ***********
   0  DEFAULTS     - Specify default dump and options           * USERID   -
   1  BROWSE       - Browse dump data set                       * DATE     -
   2  ANALYSIS     - Analyze dump contents                      * JULIAN   -
   3  UTILITY      - Perform utility functions                  * TIME     -
   4  INVENTORY    - Inventory of problem data                  * PREFIX   -
   5  SUBMIT       - Submit problem analysis job to batch       * TERMINAL-
   6  COMMAND      - Enter subcommand, CLIST or REXX exec       * PF KEYS -
   T  TUTORIAL     - Learn how to use the IPCS dialog           ***********
   X  EXIT         - Terminate using log and list defaults

Enter END command to terminate IPCS dialog
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **Specify the dump dataset name**

```
------------------------- IPCS Default Values --------------------------
Command ===>

  You may change any of the defaults listed below.  The defaults shown be
  any changes are LOCAL.  Change scope to GLOBAL to display global defaul

  Scope   ==> LOCAL    (LOCAL, GLOBAL, or BOTH)

  If you change the Source default, IPCS will display the current default
  Address Space for the new source and will ignore any data entered in
  the Address Space field.

  Source  ==> DSNAME('M030776.ABEND0C4.IMS810.DUMP')
  Address Space   ==>
  Message Routing ==> NOPRINT TERMINAL
  Message Control ==> NOCONFIRM VERIFY FLAG(TERMINATING)
  Display Content ==> NOMACHINE REMARK REQUEST STORAGE NOSYMBOL

Press ENTER to update defaults.
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **Select option 2 (Analysis)**

```
------------------- z/OS 01.02.00 IPCS PRIMARY OPTION "LEFT    " is no
OPTION  ===> 2_
                                                              ***********
   0  DEFAULTS     - Specify default dump and options          * USERID  -
   1  BROWSE       - Browse dump data set                      * DATE    -
   2  ANALYSIS     - Analyze dump contents                     * JULIAN  -
   3  UTILITY      - Perform utility functions                 * TIME    -
   4  INVENTORY    - Inventory of problem data                 * PREFIX  -
   5  SUBMIT       - Submit problem analysis job to batch      * TERMINAL-
   6  COMMAND      - Enter subcommand, CLIST or REXX exec      * PF KEYS -
   T  TUTORIAL     - Learn how to use the IPCS dialog          ***********
   X  EXIT         - Terminate using log and list defaults

Enter END command to terminate IPCS dialog
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **Select option 6 (Component)**

```
------------------- IPCS MVS ANALYSIS OF DUMP CONTENTS ---------------
OPTION  ===> 6_

To display information, specify the corresponding option number.

   1  SYMPTOMS     - Symptoms                                  ***********:
   2  STATUS       - System environment summary                * USERID  -
   3  WORKSHEET    - System environment worksheet              * DATE    -
   4  SUMMARY      - Address spaces and tasks                  * JULIAN  -
   5  CONTENTION   - Resource contention                       * TIME    -
   6  COMPONENT    - MVS component data                        * PREFIX  -
   7  TRACES       - Trace formatting                          * TERMINAL-
                                                               * PF KEYS -
                                                               ***********:

Enter END command to terminate MVS dump analysis.
```

Invoking the IMS Interactive Dump Formatter, Continued

- Invoking the IMS Interactive Dump Formatter, Continued
  - Select DFSAAMPR (IMS Interactive Dump Formatter)

```
------------------ IPCS MVS DUMP COMPONENT DATA ANALYSIS ----------------
OPTION ===>                                                 SCROLL ===>

To display information, specify "S option name" or enter S to the left
of the option desired.  Enter ? to the left of an option to display
help regarding the component support.

S Name     Abstract
_ CTRACE   Component trace summary
_ DAEDATA  DAE header data
_ DB2DATA  DB2 analysis
S DFSAAMPR IMS Interactive Dump Formatter
_ DIVDATA  Data in virtual storage
_ DLFDATA  Data Lookaside Facility data
_ DLFTRACE Data Lookaside Facility trace
_ ELXDATA  IMS Transport Manager Formatting
_ GRSDATA  ENQ/DEQ resources
_ ILMDATA  License manager data
_ IOSCHECK Active input/output requests
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **Select Option 0 (INIT) to initialize the dump dataset**

```
 ---------------------- IMS DUMP FORMATTING PRIMARY MENU -----------
OPTION  ===> 0_

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                    **********:
   2  HI-LEVEL     - IMS Component level formatting         *USERID  - MI
   3  LOW-LEVEL    - IMS ITASK level formatting             *DATE    - 0:
   4  ANALYSIS     - IMS dump analysis                      *JULIAN  - 0:
   5  USER         - IMS user formatting routines           *TIME    - 1!
   6  OTHER COMP   - Other IMS components (BPE, CQS...)     *PREFIX  - MI
   7  OTHER PROD   - Other IMS-related products             *TERMINAL- 3:
   E  EDA          - IMS Enhanced Dump Analysis             *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial           **********:
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **Enter the IMS Control or DLI region jobname, then press <Enter>**
  - **A series of informational panels will appear as the environment initializes. Exit the panels with PF3 until returning to IMS DUMP CONTENT STATUS AND CONTROL**

```
--------------------  IMS DUMP CONTENT STATUS AND CONTROL  ----------
COMMAND ===>
 YOU MUST PROVIDE CTL OR DLI JOBNAME FOR IMS FORMATTING
  Enter the IMS CTL/BATCH or DL/I jobname to cause the IMS symbols to
  be set for this dump. Request subsystem list for possible IMS names.

N <==== IMS SUBSYSTEM LIST DESIRED? (Y or N)
N <==== FORMATTER REFRESH?          (Y or N)

          JOBNAME        ID         ASID        DUMPED?
-------------------------------------------------------------------
  CTL     IMS1_
  DL/I
  DBRC
  IRLM
  TMS

  ABEND CODE =  SYS                USER
  MODULE     =
```

Invoking the IMS Interactive Dump Formatter, Continued

- Invoking the IMS Interactive Dump Formatter, Continued
  - Return to the IMS DUMP FORMATTING PRIMARY MENU using PF3

```
--------------------  IMS DUMP CONTENT STATUS AND CONTROL  ------------
COMMAND ===>

  Enter the IMS CTL/BATCH or DL/I jobname to cause the IMS symbols to
  be set for this dump. Request subsystem list for possible IMS names.

N <==== IMS SUBSYSTEM LIST DESIRED? (Y or N)
N <==== FORMATTER REFRESH?          (Y or N)

          JOBNAME         ID          ASID         DUMPED?
-------------------------------------------------------------------------
  CTL     IMS1            IMS1        002D           YES
  DL/I    DLIRCSAE                    0062           YES
  DBRC    DBRRCSAE                    0165           YES
  IRLM    N/A             N/A         N/A            N/A
  TMS

  ABEND CODE =  SYS                USER
  MODULE     =
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **You can now use the IMS Interactive dump formatter to format IMS control blocks**

```
 ---------------------- IMS DUMP FORMATTING PRIMARY MENU ------------
OPTION  ===> _

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                    ************
   2  HI-LEVEL     - IMS Component level formatting         *USERID  - MC
   3  LOW-LEVEL    - IMS ITASK level formatting             *DATE    - 03
   4  ANALYSIS     - IMS dump analysis                      *JULIAN  - 03
   5  USER         - IMS user formatting routines           *TIME    - 16
   6  OTHER COMP   - Other IMS components (BPE, CQS...)     *PREFIX  - MC
   7  OTHER PROD   - Other IMS-related products             *TERMINAL- 32
   E  EDA          - IMS Enhanced Dump Analysis             *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial           ************
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

Invoking the IMS Interactive Dump Formatter, Continued

- **Invoking the IMS Interactive Dump Formatter, Continued**
  - **Option 2 (HI-LEVEL) provides the high level IMS dump format options**

```
 ---------------------- IMS DUMP FORMATTING PRIMARY MENU -----------
OPTION  ===> 2_

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                        **********:
   2  HI-LEVEL     - IMS Component level formatting             *USERID  - MI
   3  LOW-LEVEL    - IMS ITASK level formatting                 *DATE    - 0:
   4  ANALYSIS     - IMS dump analysis                          *JULIAN  - 0:
   5  USER         - IMS user formatting routines               *TIME    - 1(
   6  OTHER COMP   - Other IMS components (BPE, CQS...)         *PREFIX  - MI
   7  OTHER PROD   - Other IMS-related products                 *TERMINAL- 3:
   E  EDA          - IMS Enhanced Dump Analysis                 *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial               **********:
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

IMS Interactive Dump Formatter - High Level Options

- **Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL)**
  - **These are the various high-level fmtimsoptions and control parameters available from the Offline Dump Formatter**

```
-------------------- IMS HIGH LEVEL DUMP FORMATTING OPTIONS  Row 1 to 1
Command ===>                                                  Scroll ==

N <====SPOOL OUTPUT? (Y or N)        N <====REFRESH FORMATTER? (Y or N)
       S = select   M = select,min      select choice(s) and hit enter
                                        to process or UP/DOWN to scroll
Additional IMS format requests===>

Cmd  Option          Description
-------------------------------------------------------------------------
_    AUTO        Internally determined options (by failing ITASK type)
_    ALL         All high level IMS dump formatting options
_    SUMMARY     PSW, regs, SAP, failing ITASK blocks at time of abend
_    SCD         SCD, SLX, FP ESCD, scheduler sequence queues
_    SAVEAREA    SAP, savearea, ECB prefix, UEHB  (sorted by DSPNO)
_    DISPATCH    Dispatcher work areas, Dispatcher and Latch traces
_    SPST        System PSTs and subordinate blocks
_    RESTART     CHKPT ID table, SIDX, LCRE, RPST, RRE, EQEL, IEEQE, FRB
_    LOG         LCD, log buffer prefixes, log buffers (OLDS and MON)
_    DB          DDIRs, PDIRs, intent list, DLI/LOCK traces, DPSTs, DBT
```

IMS Interactive Dump Formatter - High Level Options, Continued

- **Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL), Continued**
  - **These are the various high-level fmtimsoptions and control parameters available from the Offline Dump Formatter**

```
-------------------- IMS HIGH LEVEL DUMP FORMATTING OPTIONS Row 11 to 23
Command ===>                                                  Scroll ===>

N <====SPOOL OUTPUT? (Y or N)        N <====REFRESH FORMATTER? (Y or N)
       S = select   M = select,min      select choice(s) and hit enter
                                        to process or UP/DOWN to scroll
Additional IMS format requests===>

Cmd  Option          Description
-------------------------------------------------------------------------
_    DEDB       ALDS, DMCB, DMAC, XCRB, SRB, ESRB, FPT blocks
_    MSDB       BHDR, Main storage databases
_    DC         CLB, LLB, VTCB, CTB, CNT, CTT, SPQB, LGND, USRD
_    EMH        RCTE, BALG, EMHB
_    QM         QPOOL, QMGR hash table, QBFPRF, Queue buffers
_    UTIL       Partial reorg blocks
_    SUBS       External subsystem blocks and trace      _
_    CBT        Control block table
_    SDE        Storage Descriptor Element Blocks and Storage
_    SB         Sequential buffering control block formatting
```

IMS Interactive Dump Formatter - High Level Options, Continued

- **Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL), Continued**
  - **These are the various high-level fmtimsoptions and control parameters available from the Offline Dump Formatter**

```
-------------------- IMS HIGH LEVEL DUMP FORMATTING OPTIONS Row 24 to 30
Command ===> _                                                Scroll ===>

N <====SPOOL OUTPUT? (Y or N)        N <====REFRESH FORMATTER? (Y or N)
       S = select   M = select,min     select choice(s) and hit enter
                                       to process or UP/DOWN to scroll
Additional IMS format requests===>

Cmd  Option          Description
-------------------------------------------------------------------------
_    LR          Log router trace and control blocks
_    TMS         Transport manager control blocks
_    TMSC        Transport manager component dump formatting
_    AOI         Automated Operator Interface (Directed Message Manager)
_    OTMA        Open TM Access
_    DBRM        Database Recovery Manager
_    SMBS        All SMBs
******************************** Bottom of data ********************************
```

IMS Interactive Dump Formatter - High Level Options - DISPATCH

- Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL),
  - Notable high level dump format options
    - DISPATCH

```
-------------------- IMS HIGH LEVEL DUMP FORMATTING OPTIONS  Row 1 to 13
Command ===>                                                  Scroll ===>

N <====SPOOL OUTPUT? (Y or N)        N <====REFRESH FORMATTER? (Y or N)
       S = select   M = select,min      select choice(s) and hit enter
                                        to process or UP/DOWN to scroll
Additional IMS format requests===>

Cmd  Option          Description
-------------------------------------------------------------------------
_    AUTO        Internally determined options (by failing ITASK type)
_    ALL         All high level IMS dump formatting options
_    SUMMARY     PSW, regs, SAP, failing ITASK blocks at time of abend
_    SCD         SCD, SLX, FP ESCD, scheduler sequence queues
_    SAVEAREA    SAP, savearea, ECB prefix, UEHB  (sorted by DSPNO)
S    DISPATCH    Dispatcher work areas, Dispatcher and Latch traces
_    SPST        System PSTs and subordinate blocks
_    RESTART     CHKPT ID table, SIDX, LCRE, RPST, RRE, EQEL, IEEQE, FRB
```

IMS Interactive Dump Formatter - High Level Options - DISPATCH, Continued

- Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL)
  - Notable high level dump format options - DISPATCH, continued
    - RESUMED/SUSPENDED, ASIDS, CECB, TCB

```
IPCS OUTPUT STREAM ---------------------------------- FOUND: LINE 327
Command ===>                                                SCROLL ===>

 *** CTL TASK DISPATCHER WORK AREA ***     *** THIS TCB IS RESUMED ***

 IDSPWRK SECTION 1
 SECT1 AT 0AE67590
     0000            WTITL  C3E3D340  VSSAV  00[illegible]8510  WRKA2  0AE58180
     000C            DSVH1  0AB[illegible]CE30  ICOD1  [illegible]A909B   DPXB  00CA9090
     0018             RESV  [illegible]0000  QPOST  [illegible]361A0  QREDY  0AE67650
     0024            QPRCR  [illegible]B95F30   CECB  0BEE06F0   ASCB  00FA6B80
     0030            ASIDS  002D002D   SCD1  00CC2840  CTRL1  00070002
     003C              PRB  00781AF0    TCB  007ABB60  TCBTB  0AC22100
     0048             RESV  00000000   RESV  00000000   RESV  00000000
     0054            RPSTN  00000000   RPST  00000000  ITCNT  0000003E
     0060            DPCNT  000000EE  CTRL2  [illegible]0001E   HCR3  0140002D
     006C             HCR4  0003002D    CR3  0140002D    CR4  0003002D
     0078             DSPX  03010000  SMASK  40408000
     SRB/PARM AT 0AE67610
    00080  E2D9C240 00000000 00FA6B80 0000002D    *SRB .....,.....*
```

IMS Interactive Dump Formatter - High Level Options - DISPATCH, Continued

- Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL),
  - Notable high level dump format options - DISPATCH, continued
    - Time of last dispatch

```
IPCS OUTPUT STREAM ---------------------------------------- Line 361 Cols
Command ===> _                                               SCROLL ===>
   STATISTICS SECT:
     00D8            STCK    B9C22505  STCK    41A28803  ACTIME 00000035
     00E4            ACTIME  41713FAF  STCKST  B9C2234A  STCKST 5082DB40
     00F0            STCKCU  B9C22505  STCKCU  4027CE03  IMSTIM 00000035
     00FC            IMSTIM  4165AF6F  CPUTIM  00000000  CPUTIM 43E065FC
     0108            #SUSP   00000085  #WRTCB  00000000
```

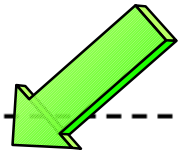
IMS Interactive Dump Formatter - High Level Options - SAVEAREA

- Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL),
  - Notable high level dump format options
    - SAVEAREA- SAPS (Save Area Prefixes)/saveareas sorted in desc dispatch order

```
-------------------- IMS HIGH LEVEL DUMP FORMATTING OPTIONS  Row 1 to 13
Command ===>                                                  Scroll ===>

N <====SPOOL OUTPUT? (Y or N)        N <====REFRESH FORMATTER? (Y or N)
       S = select   M = select,min      select choice(s) and hit enter
                                        to process or UP/DOWN to scroll
Additional IMS format requests===>

Cmd  Option          Description
-------------------------------------------------------------------------
_    AUTO        Internally determined options (by failing ITASK type)
_    ALL         All high level IMS dump formatting options
_    SUMMARY     PSW, regs, SAP, failing ITASK blocks at time of abend
_    SCD         SCD, SLX, FP ESCD, scheduler sequence queues
S    SAVEAREA    SAP, savearea, ECB prefix, UEHB  (sorted by DSPNO)
_    DISPATCH    Dispatcher work areas, Dispatcher and Latch traces
_    SPST        System PSTs and subordinate blocks
_    RESTART     CHKPT ID table, SIDX, LCRE, RPST, RRE, EQEL, IEEQE, FRB
_    LOG         LCD, log buffer prefixes, log buffers (OLDS and MON)
_    DB          DDIRs, PDIRs, intent list, DLI/LOCK traces, DPSTs, DBT
```

IMS Interactive Dump Formatter - High Level Options - SAVEAREA, Continued

- Invoking the IMS Interactive Dump Formatter, Option 2 (HI-LEVEL),
  - Notable high level dump format options - SAVEAREA, continued
    - SAPS (Save Area Prefixes)/saveareas sorted in desc dispatch order
    - For wait/Loop analysis
      - Enter Command: F ***END - Position to oldest entries



```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> F ***END_                                      SCROLL ===>

 ***END OF SORTED SAP FORMATTING (A C T I V E / W A I T I N G) ***

 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
      END OF IMS FORMATTED DUMP
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

 ********************************* END OF DATA *********************************
```

IMS Interactive Dump Formatter - High Level Options - SAVEAREA, Continued

- Notable high level dump format options - SAVEAREA, continued
  - For wait/Loop analysis - To find previous ACTIVE SAP:
    - Enter Command: F ' **** ' PREV;RFIND;F '*SAVE';DOWN 1;RETRIEVE

```
IPCS OUTPUT STREAM ------------------------------------------------
Command ===> F '  **** ' PREV;RFIND;F '*SAVE';DOWN 1;RETRIEVE_SCROLL ===>
 ***SAVE AREA SET***

 EP   DFSCLM20+20021212+17.42+810PQ62156 A
 R14-R12: 00000534
 SA  0AE6A540    WD1 8AEEA3C0     HSA 80000000     LSA 0AE6A5C8
                 RET 8AB96424     EPA 0ABA4210      R0 00CC2840
                  R1 0AE6A504      R2 00000001      R3 00000001
                  R4 0AE67040      R5 00000004      R6 0AE67100
                  R7 0AE6A504      R8 0AE6A4E4      R9 0AE6A984
                 R10 0AEEA3C0     R11 00CC2840     R12 0AB95EF0

 EP   DFSIWAIT
 R14-R12: 000000B8       R14-EPA: 000000B8
 SA  0AE6A5C8    WD1 00000000     HSA 0AE6A540     LSA 0AE6A650
                 RET 8ABA42C8     EPA 8AB974C6      R0 00000000
                  R1 0AE6A504      R2 00CC9AF8      R3 00000001
                  R4 0AE67040      R5 00000004      R6 0AE67100
                  R7 0AE6A504      R8 0AE6A4E4      R9 0AE6A504
                 R10 0AE6A4E0     R11 00CC2840     R12 0ABA4210
```

IMS Interactive Dump Formatter, Low Level Options

- IMS Interactive Dump Formatter, Low Level Options
  - Option 3 (LOW-LEVEL) provides the low-level IMS dump format options

```
 ---------------------- IMS DUMP FORMATTING PRIMARY MENU -----------
OPTION  ===> 3_

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                    ************
   2  HI-LEVEL     - IMS Component level formatting         *USERID  - M
   3  LOW-LEVEL    - IMS ITASK level formatting             *DATE    - 0
   4  ANALYSIS     - IMS dump analysis                      *JULIAN  - 0
   5  USER         - IMS user formatting routines           *TIME    - 1
   6  OTHER COMP   - Other IMS components (BPE, CQS...)     *PREFIX  - M
   7  OTHER PROD   - Other IMS-related products             *TERMINAL- 3
   E  EDA          - IMS Enhanced Dump Analysis             *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial           ************
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

IMS Interactive Dump Formatter, Low Level Options, Continued

- **IMS Interactive Dump Formatter, Low Level Options, Continued**
  - **These are the various low level fmtimsoptions and control parameters available from the Offline Dump Formatter**

```
-------------------- IMS LOW LEVEL DUMP FORMATTING OPTIONS - Row 1 to 12
COMMAND ===>                                                  Scroll ===

N <===== SPOOL OUTPUT? (Y or N)    N <==== REFRESH FORMATTER? (Y or N)
         S or  M at left plus required ARGument value to select option.
         (Items marked *P* will prompt if ARG blank). UP/DOWN to scroll

Additional IMS formatter requests===>

Cmd  Option   Type      ARG              Argument description
v-----------------------vvvvvvvv-----------------------------------
_    CLB      ADDRESS                    CLB/LLB address (hexadecimal)
_    CLB      NODE                       VTAM node name
_    CLB      LTERM                      IMS logical terminal name (CNT)
_    CLB      CID                        VTAM communication ID (hexadecimal)
_    CLB      LINE                       BTAM line number (decimal)
_    LLB      LINK                       MSC link number (decimal)
_    DPST     ADDRESS                    Dependent region PST address (hexad
_    DPST     NUMBER                     Dependent region PST number (hexade
_    DPST     NAME                       Dependent region PST jobname
```

IMS Interactive Dump Formatter, Low Level Options, Continued

- **IMS Interactive Dump Formatter, Low Level Options, Continued**
  - **Selecting and item with *P* next to the ARG field, and leaving the ARG value blank will display the available options**

```
-------------------- IMS LOW LEVEL DUMP FORMATTING OPTIONS  Row 10 to 18
COMMAND ===>                                                 Scroll ===>

N <===== SPOOL OUTPUT? (Y or N)    N <==== REFRESH FORMATTER? (Y or N)
         S or  M at left plus required ARGument value to select option.
         (Items marked *P* will prompt if ARG blank). UP/DOWN to scroll

Additional IMS formatter requests===>

Cmd  Option   Type      ARG              Argument description
v-------------------vvvvvvvv-------------------------------------
_    SYSPST   ADDRESS                    System PST address
_    SYSPST   NAME                *P*    System PST name
S    TRACE    NAME        _       *P*    Trace table ID  (2 characters)
_    SAP      ADDRESS                    Savearea block address (hexadecimal)
_    SAP      ECBADR                     SAP's ECB address (hexadecimal)
_    POOL     NAME                *P*    IMS storage pool name
_    CBTE     NAME                       Control Block Table name
_    LUB      NAME                       LU name
_    DTT      ADDRESS                    DTT address
```

IMS Interactive Dump Formatter, Low Level Options, Continued

- **IMS Interactive Dump Formatter, Low Level Options, Continued**
  - **Trace menu is displayed after selecting TRACE with a blank ARG**

```
---------------------- IMS TRACE TABLE FORMATTING SELECTION - Row 1 to 14
COMMAND ===>                                                  Scroll ===>

    Place an S in front of desired trace table type(s) and hit
    ENTER or END to process or UP/DOWN to scroll.

CMD Table   Trace       Trace Content Description
    ID      Name
v-------------------------------------------------------------------------
_   ALL     ALL         All IMS Table Traces
_   FO      FORCE       Early Initialization Internal Trace
S   DS      DISP        IMS Dispatcher Activity
_   DL      DL/I        DL/I, DFP Interface, OSAM, and PI Activity
_   LG      DLOG        IMS Logging Activity
_   FP      FAST        Fast Path Activity
_   LA      LATC        Latch Manager Activity
_   DL      LOCK        Lock Manager Activity (alias for DL/I trace)
_   SC      SCHD        Transaction Scheduling Activity
_   SS      SUBS        External Subsystem Interface Activity
_   SM      STRG        Storage Manager Activity
_   IC      IDC0        Intercommunications Trace Table (CNXA+IDC)
```

IMS Interactive Dump Formatter, Low Level Options, Continued

- IMS Interactive Dump Formatter, Low Level Options, Continued
  - IMS Dispatcher Trace Activity

```
IPCS OUTPUT STREAM ------------------------------------- Line 15 Cols
Command ===> _                                            SCROLL ===>
 ************************************************************
 ***TRACE PRINTED FROM OLDEST TO MOST CURRENT ENTRY**
 ************************************************************

   FUNCTION        WORD 0    WORD 1    WORD 2    WORD 3
                   WORD 4    WORD 5    WORD 6    WORD 7

 IWAIT             04057CB7  0AE2A060  00C3E2E3  8019D0D2
                   00CAA498  00000000  40080000  B1673C97  RST     CST
 IECB STORE        1B057CB8  0AE2A060  80CA90AB  00C3E2E3
                   00000000  00000000  00000000  B1673CA4  RST
 SUSPEND           27057CB9  00000000  002D002D  0AE676A0
                   007AB838  B9C223B1  673CBB46  B1673CBA  RST
 ITASK TERM        03027CD2  00053098  00000000  0AB31900
                   00000000  00000000  007ABB60  B16740D2  CTL
 IECB STORE        1B027CD3  00053098  80CA909B  00000000
                   00000000  00000000  00000000  B16740DC  CTL
 RE-DISPATCH       05027CD4  0004F738  40C3D8E2  40008000
                   80000000  8BC1AA64  00000000  B16740FC  CTL
```

Verifying Dump Contents

Verify Dumped ASIDs

- Verify Dumped ASIDs
  - Enter Command: IP CBF RTCT

```
 ---------------------- IMS DUMP FORMATTING PRIMARY MENU ------------
OPTION  ===> IP CBF RTCT

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                    ************
   2  HI-LEVEL     - IMS Component level formatting         *USERID   - M
   3  LOW-LEVEL    - IMS ITASK level formatting             *DATE     - 0
   4  ANALYSIS     - IMS dump analysis                      *JULIAN   - 0
   5  USER         - IMS user formatting routines           *TIME     - 1
   6  OTHER COMP   - Other IMS components (BPE, CQS...)     *PREFIX   - M
   7  OTHER PROD   - Other IMS-related products             *TERMINAL- 3
   E  EDA          - IMS Enhanced Dump Analysis             *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial           ************
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

Verify Dumped ASIDs, Continued

- Verify Dumped ASIDs, Continued
  - Find the ASTB - Address Space Table
    - SDAS column will contain dumped ASIDs
    - NOTE: This table will contain all zeros for a SYSMDUMP

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> IP CBF RTCT;F ASTB_                              SCROLL ===>
             ASTB

                 SDAS   SDF4   SDF5
                 ----   ----   ----
             001 002D   00     00
             002 0062   00     00
             003 0165   00     00
             004 0063   00     00
             005 0162   00     00
             006 0000   00     00
             007 0000   00     00
             008 0000   00     00
             009 0000   00     00
             010 0000   00     00
```

Verify Dumped ASIDs, Continued

- Verify Dumped ASIDs, Continued
  - Format the dumped ASIDs from the ASTB
    - Enter Command: IP SELECT ASID(X'2d',X'62',X'165',X'63',X'162')

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> ip select asid(x'2d',x'62',x'165',x'63',x'162')  SCROL
 ******************************** TOP OF DATA ***********************

  ASID JOBNAME  ASCBADDR  SELECTION CRITERIA
  ---- -------- --------  ------------------
  002D IMS1     00FA6B80  ASID
  0062 DLIRCSAE 00FB0200  ASID
  0063 SCI1     00FB0680  ASID
  0162 CQSRE1   00FB0380  ASID
  0165 DBRRCSAE 00FA4A00  ASID
 ******************************** END OF DATA ***********************
```

Verify SDUMP Options

- Verify SDUMP Options, Storage areas dumped.
  - Enter Command: IP CBF CVT+23C?+9C? STR(SDUMP) VIEW(FLAGS)
    - SDATA flags tell you what storage was dumped=

```
Command ===> IP CBF CVT+23C?+9C? STR(SDUMP) VIEW(FLAGS)          SCROLL
  SDUMP_PL: 0232AE58

     ==> FLAGS SET IN SDUFLAG0:
      HDR/HDRADR specified.
      Set system non-dispatchable while dumping global storage.

     ==> FLAGS SET IN SDUFLAG1:
      SVC dump request.
      ASIDLIST specified.
      48+ byte parameter list.

     ==> FLAGS SET IN SDUSDATA:
      Dump all PSAs.                    Dump LPA mod. for rgn.
      Dump current PSA.                 Dump trace data.
      Dump the nucleus.                 Dump CSA.
      Dump SQA.                         Dump SWA.
      Dump LSQA.                        Dump summary dump data.
      Dump rgn-private area.
```

Verify Whether the SDUMP was Complete

- Verify Whether the SDUMP was Complete
  - Enter Command: IP L E0. L(16) BLOCK(0)
    - Partial dump bits - Mapped by MVS SDRSN DSECT

```
IPCS OUTPUT STREAM ------------------------------------------ Line 0
Command ===> IP L E0. L(16) BLOCK(0)                          SCROLL
 ******************************** TOP OF DATA ********************************

 LIST E0. BLOCK(0) LENGTH(X'10') AREA
 E0. LENGTH(X'10')==>All bytes contain X'00'
 ******************************** END OF DATA ********************************
```

  - If all bits are zeros, SDUMP was successfully captured
  - If all bits are not zeros, use MVS SDRSN DSECT to interpret the bit settings
    - See z/OS V1R4 MVS Data Areas, Vol 4, GA22-7584-03

Verify Private Region Storage is Dumped

- Verify Private Region Storage is Dumped
  - SDUMP SDATA may indicate private is dumped, but is private storage in the dump dataset?
    - To determine this, Select Option 1 (BROWSE)

```
 ---------------------- IMS DUMP FORMATTING PRIMARY MENU ------------
OPTION  ===> 1

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                    **********
   2  HI-LEVEL     - IMS Component level formatting         *USERID  - M
   3  LOW-LEVEL    - IMS ITASK level formatting             *DATE    - 0
   4  ANALYSIS     - IMS dump analysis                      *JULIAN  - 0
   5  USER         - IMS user formatting routines           *TIME    - 1
   6  OTHER COMP   - Other IMS components (BPE, CQS...)     *PREFIX  - M
   7  OTHER PROD   - Other IMS-related products             *TERMINAL- 3
   E  EDA          - IMS Enhanced Dump Analysis             *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial           **********
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

Verify Private Region Storage is Dumped, Continued

- Verify Private Region Storage is Dumped, Continued
  - Select the beginning of user private x'6000' to determine if storage is present

```
DSNAME('M030776.ABEND0C4.IMS810.DUMP') POINTERS  --------------------
Command ===>                                                  SCROLL
ASID(X'002D') is the default address space
PTR   Address   Address space                                 Data type
S0001 00006000  ASID(X'002D')                                 AREA
      Remarks:  IMS1 - Start of User Private
00002 00006000  ASID(X'0062')                                 AREA
      Remarks:  DLIRCSAE - Start of User Private
00003 00006000  ASID(X'0063')                                 AREA
      Remarks:  SCI1 - Start of User Private
00004 00006000  ASID(X'0162')                                 AREA
      Remarks:  CQSRE1 - Start of User Private
00005 00006000  ASID(X'0163')                                 AREA
      Remarks:  DBRRCSAE - Start of User Private
****************************** END OF POINTER STACK ********************
```

Verify Private Region Storage is Dumped, Continued

- **Verify Private Region Storage is Dumped, Continued**
  - **If storage is listed, indicates private storage is present**

```
ASID(X'002D') ADDRESS(6000.) STORAGE ------------------------------------
Command ===>                                                SCROLL ===> C
00006000   00000000   00000000   C4C6E2D9   E2D9F0F0   | ........DFSRSR00 |
00006010   00006424   0000F348   00006024   00006074   | ......3...-...-. |
00006020   00000001   D9E2D94D   D5D65D40   40404040   | ....RSR(NO)      |
00006030.:603F.--All bytes contain X'40', C' '
00006040   40404040   40404040   40615C40   D9E2D940   |          /* RSR  |
00006050   C9E240D5   D6405C61   40404040   40404040   | IS NO */         |
```

  - **If storage is not listed, indicates private storage is not present**

```
ASID(X'0163') ADDRESS(1000.) STORAGE ------------------------------------
Command ===>                                                SCROLL ===> C
00001000.:C97FFF.--Storage not available
00C98000   0FC4E2D7   00000000   00000000   00000000   | .DSP............ |
00C98010   00130000   0AE67590   800C81B8   00000000   | .....W....a..... |
00C98020   80CA909B   00054F0C   00C98040   00C9849A   | ......|..I. .Id. |
00C98030   40404040   40404040   00000000   00000000   |          ........ |
00C98040   04520000   00000000   00000000   00000000   | ................ |
```

What was the Reason for the Dump? SVC DUMP

- What was the reason for the dump?
  - Enter Command: IP LIST TITLE
    - Displays dump title

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> ip list title_                                SCROLL ===> CSR
 ******************************** TOP OF DATA ***************************

 LIST 00. LITERAL LENGTH(X'64') CHARACTER
 00000000 | IMS1     ABEND SYS 0C4 USER 0000-010, DATE.TIME: 203.135218, CAL
 00000040 | LER=CTL , TCB=CTL, MODULE=DFSICLP0,P
 ******************************** END OF DATA ***************************
```

What was the Reason for the Dump? MVS SLIP Trap

- What was the reason for the dump?, Continued
  - Enter Command: IP LIST TITLE - Dump title indicates SLIP

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> IP LIST TITLE                                      SCROLL
 ******************************** TOP OF DATA ***************************

 LIST 00. LITERAL LENGTH(X'11') CHARACTER
 00000000 | SLIP DUMP ID=IMA2
 ******************************** END OF DATA ***************************
```

  - Enter Command: IP LIST SLIPTRAP
    - Will show MVS SLIP specifications if used

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> IP LIST SLIPTRAP_                          SCROLL ===> CSR
 ******************************** TOP OF DATA ***************************

 LIST 00. LITERAL LENGTH(X'4A') CHARACTER
 00000000 | SLIP SET,A=SVCD,COMP=U0711,JOBLIST=(IMSIMA2,RRS),ID=IMA2,DSPNAME |
 00000040 | =('RRS'.*)
 ******************************** END OF DATA ***************************
```

What was the Reason for the Dump? MVS DUMP Command

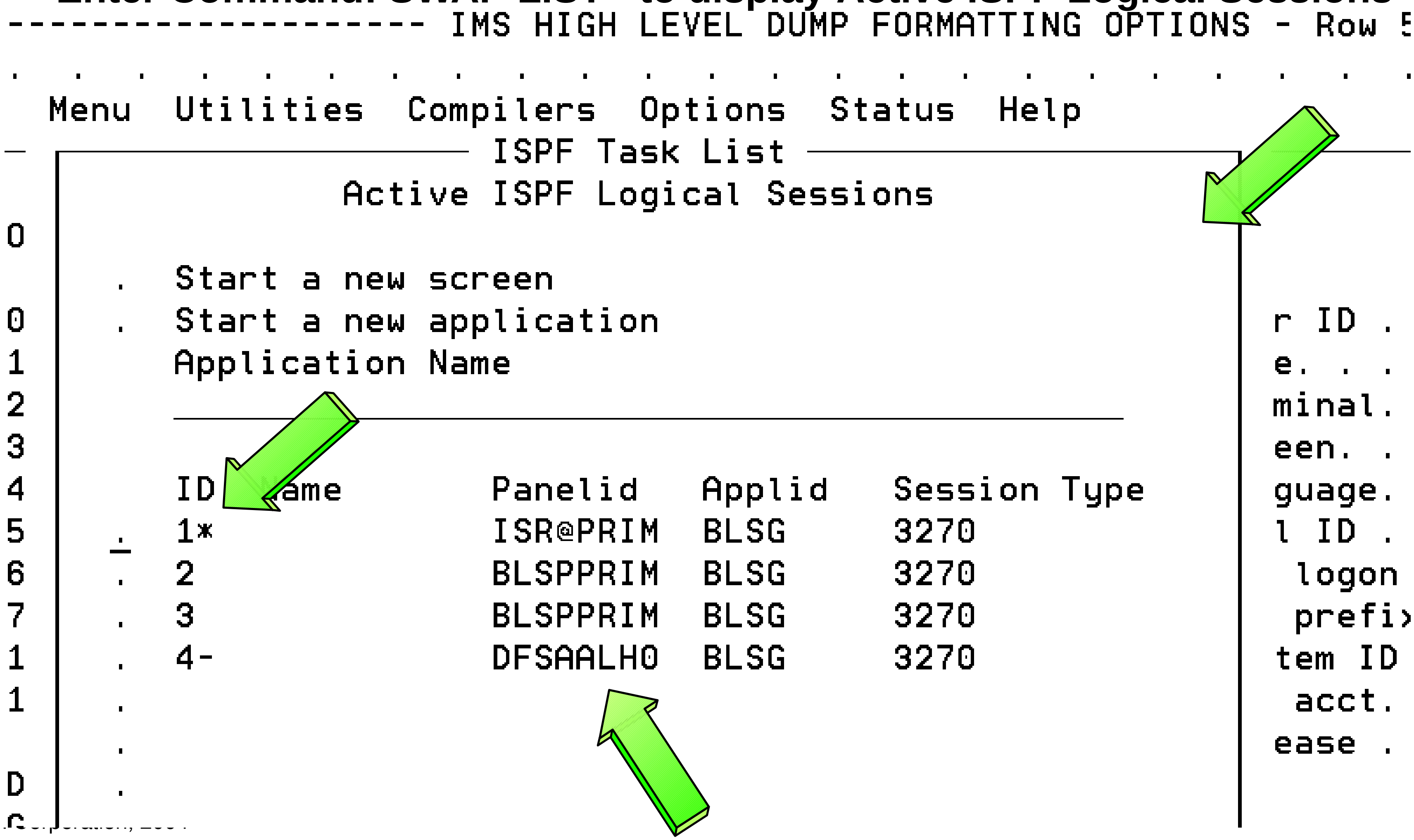
- What was the reason for the dump?, Continued
  - Enter Command: IP VERBX MTRACE
    - Will show MVS DUMP command if used

```
IPCS OUTPUT STREAM ----------------------------------------------------------
Command ===> IP VERBX MTRACE;F 'DUMP COMM='                    SCROLL ===>

 00000290  DUMP COMM=(CBAU2A04 HUNG)
 00000090 *7652 IEE094D SPECIFY OPERAND(S) FOR DUMP COMMAND
 00000081  +IBVERSG0> IBVERSG0 DPV6 LNV1 CIV3 10/12/01 09.46 @

 00000090  DXR162I IRLF001 CYCLE NUMBER 0003474F PROCESSED FOR

 00000081  ¢HEDED BY 600 MINUTES       TIME EXCEEDED BY 600 MINUTES
 00000081  IS 00000081  IS2015I SDS2 COMMAND EXECUTED  'REPLY 7652 TEXT OF
             REPLY
 00000281  R
 00000090  IE 00000281  R 7652,JOBNAME=(IMSF,IMSF0203,IMDLIF,IMIRLF)
              00000090  IEE600I REPLY TO 7652 IS;JOBNAME=(IMSF,IMSF0203,IMDLIF
 00000081  DM
 00000081  ¢H 00000081  DMB604I DMSCSVCR PASSING DUMP TO IBM
```

Controlling IPCS for Easier Dump Analysis

Use ISPF SPLIT to Create Multiple Logical Sessions

- ISPF SPLIT/SWAP allows you to view multiple logical screens while diagnosing
  - Enter Command: SPLIT NEW - to create a new logical screen
  - Enter Command: SWAP n - to swap to the desired logical screen
  - Enter Command: SWAP LIST - to display Active ISPF Logical Sessions


IMS HIGH LEVEL DUMP FORMATTING OPTIONS - Row 5
Menu Utilities Compilers Options Status Help
ISPF Task List
Active ISPF Logical Sessions
Start a new screen
Start a new application
Application Name
ID Name Panelid Applid Session Type
1* ISR@PRIM BLSG 3270
2 BLSPPRIM BLSG 3270
3 BLSPPRIM BLSG 3270
4- DFSAALH0 BLSG 3270
r ID .
e. . .
minal.
een. .
guage.
l ID .
logon
prefi›
tem ID
acct.
ease .

Routing IPCS Output to a Dataset

- Route IPCS output to a dataset for editing
- Use ISPF 3.2
  - Choose dsname
  - Enter "A" for allocate
    - Units=CYLS
    - Primary=10
    - 2ndry=5
    - DirBlks=0
    - RecF=VBA
    - LRECL=133
    - BLKSZ= (leave blank)
- Go to IPCS COMMAND Panel
  - IP FREE FI(IPCSPRNT)
  - TSO ALLOC FI(IPCSPRNT) DSN('dsname') SHR
  - --- enter the IPCS Command for which output is desired -- PRINT NOTERM
    - Example: IP SUMMARY FORMAT PRINT NOTERM
  - IP CLOSE PRINT

IPCS Pointer Panel Commands

- **IPCS Pointer Panel Commands**
  - **Select Option 1 (BROWSE)**

```
 ----------------------- IMS DUMP FORMATTING PRIMARY MENU -----------
OPTION  ===> 1

   0  INIT         - IMS formatting initialization and content summary
   1  BROWSE       - Browse Dump dataset                    ************
   2  HI-LEVEL     - IMS Component level formatting         *USERID  - M
   3  LOW-LEVEL    - IMS ITASK level formatting             *DATE    - 0
   4  ANALYSIS     - IMS dump analysis                      *JULIAN  - 0
   5  USER         - IMS user formatting routines           *TIME    - 0
   6  OTHER COMP   - Other IMS components (BPE, CQS...)     *PREFIX  - M
   7  OTHER PROD   - Other IMS-related products             *TERMINAL- 3
   E  EDA          - IMS Enhanced Dump Analysis             *PF KEYS -
   T  TUTORIAL     - IMS dump formatting tutorial           ************
   X  EXIT         - Exit IMS dump formatting
 Enter END or RETURN command to terminate IMS component formatting.
 Use PFKeys to scroll up and down if needed.
```

IPCS Pointer Panel Commands, Continued

- **POINTERS Panel PTR line commands**
  - **S - Browse the storage**
  - **R - Repeat the current PTR entry**
  - **F - Format the STRUCTURE control block**

```
DSNAME('IMSDUMP.X030802.Y170802.SJFEVMX.MADDIX') POINTERS  --------------
Command ===>                                                SCROLL ===>
ASID(X'002D') is the default address space
PTR   Address   Address space                                Data type
S0001 00000000  ASID(X'002D')                               AREA
      Remarks:
R0002 007ABB60  ASID(X'002D')                               STRUCTURE(Tcb)
      Remarks:  IMS CTL TCB
00003 00781AF0  ASID(X'002D')                               STRUCTURE(Prb)
      Remarks:  IMS CTL RB
00004 0078BB50  ASID(X'002D')                               STRUCTURE(Svrb)
      Remarks:  IMS CTL RB
00005 00779130  ASID(X'002D')                               STRUCTURE(Prb)
      Remarks:  IMS CTL Last RB
F0006 00770918  ASID(X'002D')                               STRUCTURE(Sdwa)
      Remarks:  SDWA Describing ABEND
00007 00FCB8E0  ASID(X'0001')                               STRUCTURE(Cvt)
      Remarks:  Communications Vector Table
****************************** END OF POINTER STACK ************************
```

IPCS Pointer Panel Commands, Continued

- POINTERS Panel PTR line commands
  - F - Format the STRUCTURE control block
    - Format example for SDWA

```
IPCS OUTPUT STREAM ------------------------------------- Line 0 Cols
Command ===> _                                          SCROLL ===>
 ********************************* TOP OF DATA ********************************

  SDWA: 00770918
     +0000  PARM..... 0000AAC8  ABCC..... 840C4000  CTL1..... FF740010
     +000C            00000000  CTL2..... FF740010  00000000
            GRSV - GPRs at time of error
       0-3  00CC2840  0BBC8EDC  0BEE0714  0AE380B8
       4-7  0BEE0714  800D0208  000619C8  0BEE07F0
       8-11 0005FDF0  0BEE06F0  000619C8  00CC2840
      12-15 000D084C  0BE366B8  2003203F  00CC80D8
     +0058  NAME..... 00781AF0  00000000            EPA..... 00000000
     +0064  IOBR..... 00000000
            EC1 -  PSW at time of error
 PSW=077C2000 800D0A60
     (Running in PRIMARY, key 7, AMODE 31, DAT ON)
     DISABLED FOR PER
     +0070  AEC1..... 00040010  20032000            EC2..... 077C2000
     +007C            800D0A60  AEC2..... 00040010  20032000
```

IPCS Storage Analysis Commands

IPCS Storage Analysis

- **IPCS Storage analysis for ABEND878 or ABEND80A out of storage conditions**
  - **Enter Command: IP VERBX VSMDATA 'ASIDLIST(dd) SUMMARY'**
    - **Where dd = Decimal ASID value**

```
IPCS OUTPUT STREAM ------------------------------------------------------------
Command ===> IP VERBX VSMDATA 'ASIDLIST(210) SUMMARY'              SCROLL ===>
 ****************************** TOP OF DATA ******************************



     VIRTUAL STORAGE MANAGEMENT DUMP FORMAT ROUTINE


     THE FOLLOWING KEYWORDS ARE IN EFFECT:
            CONTROLBLOCKS
            ASIDLIST
            GLOBAL
            SUMMARY
```

IPCS Storage Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of storage conditions
  - Enter Command: F 'LOCAL STORAGE MAP'

Abend878 RC10 (Out of virtual private) Example

```
                L O C A L   S T O R A G E   D A T A   S U M M A R Y
              LOCAL STORAGE MAP

 _____________________________
|                             |80000000  <- TOP OF EXT. PRIVATE
| Extended                    |
| LSQA/SWA/229/230            |80000000  <- MAX EXT. USER REGION ADDRESS
|_____________________________|7CD90000  <- ELSQA BOTTOM
|                             |
| (Free Extended Storage)     |
|_____________________________|2BFA9000  <- EXT. USER REGION TOP
|                             |
| Extended User Region        |
|_____________________________|21900000  <- EXT. USER REGION START
:                             :
: Extended Global Storage     :
=======================================<- 16M LINE
: Global Storage              :
:_____________________________:  700000  <- TOP OF PRIVATE
|                             |
| LSQA/SWA/229/230            |  700000  <- MAX USER REGION ADDRESS
|_____________________________|  621000  <- USER REGION TOP**
|                             |
|                             |
|                             |
|                             |
| User Region                 |
|_____________________________|    6000  <- USER REGION START
: System Storage              :
:_____________________________:       0

**   User Region Top has hit bottom of LSQA
```

IPCS Storage Analysis, Private Storage Analysis

- IPCS Storage analysis for ABEND878 or ABEND80A out of private storage
  - Go to IPCS BROWSE mode POINTERS panel
  - Enter Command: STACK nnnnnnnn ASID(X'aa')
    - Where nnnnnnnn = USER REGION TOP from Local Storage Map
  - Select the PTR entry for nnnnnn

```
DSNAME('IMSDUMP.X030804.Y155720.SJFEVMX.MODDIV') POINTERS  --------------
Command ===> STACK 00621000 ASID(X'D2')                      SCROLL ===>
ASID(X'00D2') is the default address space
PTR   Address   Address space                                Data type
00001 00000000  ASID(X'00D2')                               AREA
      Remarks:
S0002 00621000  ASID(X'00D2')                               AREA
      Remarks:
********************************* END OF POINTER STACK ***************************
```

IPCS Storage Analysis, Private Storage Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of private storage
  - Scan backward (toward zeros) from User Region Top (00621000) to see if you can identify the storage
    - User Private allocated from the bottom up
  - Continue scanning backward while attempting to spot a pattern

```
ASID(X'00D2') ADDRESS(61FF50.) STORAGE ----------------------------------
Command ===>                                                 SCROLL ===> C
0061FF50.:62014F.--All bytes contain X'00'
00620150   C3C9D6D7   C9000000   0061CCC8   00000000   | CIOPI..../.H.... |
00620160.:62035F.--All bytes contain X'00'
00620360   00000000   00000000   C3C9D6D7   C9000000   | ........CIOPI... |
00620370   0061CCC8   00000000   00000000   00000000   | ./.H............ |
00620380.:62057F.--All bytes contain X'00'
00620580   C3C9D6D7   C9000000   0061CCC8   00000000   | CIOPI..../.H.... |
00620590.:62078F.--All bytes contain X'00'
00620790   00000000   00000000   C3C9D6D7   C9000000   | ........CIOPI... |
006207A0   0061CCC8   00000000   00000000   00000000   | ./.H............ |
006207B0.:6209AF.--All bytes contain X'00'
006209B0   C3C9D6D7   C9000000   0061CCC8   00000000   | CIOPI..../.H.... |
```

IPCS Storage Analysis, Private Storage Analysis, Continued

- **IPCS Storage analysis for ABEND878 or ABEND80A out of private storage**
  - **Enter Command: IP VERBX VSMDATA 'ASIDLIST(dd) DETAIL NOG'**
    - **Where dd = Decimal ASID value**

```
IPCS OUTPUT STREAM ---------------------------------------------------------
Command ===> IP VERBX VSMDATA 'ASIDLIST(210) DETAIL NOG'        SCROLL ===>
 ****************************** TOP OF DATA *****************************




      VIRTUAL STORAGE MANAGEMENT DUMP FORMAT ROUTINE


      THE FOLLOWING KEYWORDS ARE IN EFFECT:
             CONTROLBLOCKS
             ASIDLIST
             NOGLOBAL
             DETAIL
```

IPCS Storage Analysis, Private Storage Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of private storage
  - Enter Command: F ' 005F' - Finds VSM Descriptor Queue Elements
    - From Summary output: 621000 <- USER REGION TOP**
  - These storage allocation patterns may help you identify storage areas in BROWSE mode. In this case, the blocks start at x'5F0800' and x'5F3800' with a length of x'2800' bytes

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> F ' 005F'                                          SCROLL ==

          DQE AT ADDRESS 7D68A6B8
    +0000  NEXT..... 7D68A7F0  PREV..... 7D68A868  FFQE..... 7D68A7D8
    +000C  LFQE..... 7D68A7D8  AREA..... 005F0000  SIZE..... 00003000

              FQE AT ADDRESS 7D68A7D8
    +0000  AREA..... 005F0000  SIZE..... 00000800  NEXT..... 7D68A6B8
    +000C  PREV..... 7D68A6B8  DQE...... 7D68A6B8

          DQE AT ADDRESS 7D68A7F0
    +0000  NEXT..... 7D68A910  PREV..... 7D68A6B8  FFQE..... 7D68A898
    +000C  LFQE..... 7D68A898  AREA..... 005F3000  SIZE..... 00003000

              FQE AT ADDRESS 7D68A898
    +0000  AREA..... 005F3000  SIZE..... 00000800  NEXT..... 7D68A7F0
    +000C  PREV..... 7D68A7F0  DQE...... 7D68A7F0
```

Allocated Storage

Free Storage

IPCS Storage Analysis, CSA Analysis

- IPCS Storage analysis for ABEND878 or ABEND80A out of CSA storage
  - Go to IPCS BROWSE mode POINTERS panel
  - Enter Command: STACK CSA
  - Select the CSA PTR entry

```
DSNAME('IMSDUMP.X030804.[illegible].SJFEVMX.MADDIX') POINTERS  --------------
Command ===> STACK CSA                                          SCROLL ===>
ASID(X'0001') is the default address space
PTR   Address   Address space                                   Data type
00001 00000000  ASID(X'00D2')                                   AREA
      Remarks:
S0002 00700000  ASID(X'0001')                                   AREA(CSA)
      Remarks: Common system area
********************************* END OF POINTER STACK *************************
```

IPCS Storage Analysis, CSA Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of CSA storage
  - Scan forward from the first displayed address to see if you can identify the allocated storage
    - CSA Storage is allocated from the top down
  - Continue scanning forward while attempting to spot a pattern

```
ASID(X'0001') ADDRESS(5EC000.) STORAGE ----------------------------------
Command ===>                                                  SCROLL ===>
005EC000.:8FCFFF.--Storage not available
008FD000.:8FD1EF.--All bytes contain X'00'
008FD1F0   C3E2C3E7   01000000   008FD204   00000000 | CSCX.....K.....
008FD200   00000000   00000000   C2D4D7E3   C2D7C4C2 | ........BMPTBPDB
008FD210   10F04C00   C3E2C3E7   01000000   008FD228 | .0<.CSCX.....K.
008FD220   00000000   00000000   00000000   C2D4D7E3 | ............BMPT
008FD230   C2D7C4F0   10F04D00   C3E2C3E7   01000000 | BPD0.0(.CSCX....
008FD240   008FD24C   00000000   00000000   006EF0C0 | ..K<.........>0{
008FD250   C9D5C9E3   40404040   10F04E00   C3E2C3E7 | INIT    .0+.CSCX
008FD260   01000000   008FD270   00000000   00000000 | ......K.........
008FD270   006EF040   C9D5C9E3   40404040   10F04F00 | .>0 INIT    .0|.
008FD280   C3E2C3E7   01000000   008FD294   00000000 | CSCX.....Km....
008FD290   00000000   00000000   D9E3C2C4   C4F9F5F5 | ........RTBDD955
008FD2A0   10F05000   C3E2C3E7   01000000   008FD2B8 | .0&.CSCX.....K.
```

IPCS Storage Analysis, CSA Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of CSA storage
  - Enter Command:
    - IP VERBX VSMDATA 'OWNCOMM DETAIL ALL SORTBY(TIME)' - and/or
    - IP VERBX VSMDATA 'OWNCOMM DETAIL ALL SORTBY(ADDRESS)'
  - Using Time, Address, Length, Job Name, and Ret Addr - analyze patterns to determine the reason for the storage growth - Available if the MVS Common Storage Tracker was set on. See MVS Initialization and Tuning Guide

```
ASID Job Name Id       St T Address  Length   Ret Addr MM/DD/YYYY HH:MM:SS CAUB     GQE
---- -------- -------- -- - -------- -------- -------- ---------- -------- -------- --------
0000 *SYSTEM* ........ Ac S 00904000 00001000 0144237C 07/16/2003 16:54:18 0204F480 16312E68
 Data ------> 0000001F 00904080 0000001F 00CE0000  *.....  .........*
00D2 IMS$     JOB07312 Ac S 0091C010 00000018 1D79E426 07/16/2003 16:54:17 13CE85B0 11BAC760
 Data ------> 00B5EAE0 20E8E150 000000B0 E77000D2  *...\.Y.&....X..K*
010D IMS$     JOB07312 Ac S 0091C040 00000018 1D79E426 07/16/2003 16:54:15 12043B98 0F3BF220
 Data ------> 009BC0A0 20F76490 000000B0 E770010D  *..{..7.....X...*
00B4 IMS$     JOB07312 Ac S 0091C058 00000018 1D79E426 07/16/2003 16:54:10 13AB93B8 0FC12B38
 Data ------> 00B7F5A0 20DD6120 000000B0 E77000B4  *..5.../.....X...*
01A9 IMS$     JOB07312 Ac S 0091C070 00000018 1D79E426 07/16/2003 16:53:58 12043E20 0D7689B8
 Data ------> 00B6E220 18F3DEB8 00001148 E77001A9  *..S..3......X..z*
010D IMS$     JOB07312 Ac S 0091C088 00000018 1D79E426 07/16/2003 16:53:55 12043B98 14165448
 Data ------> 0095B658 20F769C0 000000B0 E770010D  *.n...7.{....X...*
05EC IMS$     JOB07312 Ac S 0091C700 00000018 1D79E426 07/16/2003 16:53:47 1D6EF370 0FE20B20
 Data ------> 00B9E7F8 20DE2400 000000B0 E77005EC  *..X8........X...*
00FC IMS$     JOB07312 Ac S 0091C718 00000018 1D79E426 07/16/2003 16:53:38 13CE86D0 12F9F790
 Data ------> 0091C748 20C829F0 000000B0 E77000FC  *.jG..H.0....X...*
```

IPCS Storage Analysis, CSA Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of CSA storage
  - Enter Command: IP VERBX VSMDATA 'NOASIDS DETAIL'

```
IPCS OUTPUT STREAM ----------------------------------------------------------
Command ===> IP VERBX VSMDATA 'NOASIDS DETAIL'                  SCROLL ===>
 ********************************* TOP OF DATA ***********************************



      VIRTUAL STORAGE MANAGEMENT DUMP FORMAT ROUTINE


      THE FOLLOWING KEYWORDS ARE IN EFFECT:
            CONTROLBLOCKS
            GLOBAL
            NOASIDS
            DETAIL
```

IPCS Storage Analysis, CSA Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of CSA storage
  - Enter Command: F ' 0090' - Finds VSM Descriptor Queue Elements
    - From BROWSE mode display analysis
  - These storage allocation patterns may help you identify storage areas in BROWSE mode. Eyecatchers often exist at the top of control blocks

```
IPCS OUTPUT STREAM ----------------------------------------------------
Command ===> F ' 0090'                                      SCROLL ===>
          DQE AT ADDRESS 18BCFE80
     +0000  NEXT..... 0F62D010  PREV..... 028ADA0C  FFQE..... 18BCFE80
     +000C  LFQE..... 18BCFE80  AREA..... 00901000  SIZE..... 00001000

          DQE AT ADDRESS 0F62D010
     +0000  NEXT..... 1C9E8148  PREV..... 18BCFE80  FFQE..... 0F62D010
     +000C  LFQE..... 0F62D010  AREA..... 00902000  SIZE..... 00001000

          DQE AT ADDRESS 1C9E8148
     +0000  NEXT..... 1C09C8B0  PREV..... 0F62D010  FFQE..... 1C9E8148
     +000C  LFQE..... 1C9E8148  AREA..... 00903000  SIZE..... 00001000

          DQE AT ADDRESS 1C09C8B0
     +0000  NEXT..... 0F513880  PREV..... 1C9E8148  FFQE..... 1C09C8B0
     +000C  LFQE..... 1C09C8B0  AREA..... 00906000  SIZE..... 00001000
```

Allocated Storage

IPCS Storage Analysis, CSA Analysis, Continued

- IPCS Storage analysis for ABEND878 or ABEND80A out of CSA storage
  - Go to IPCS BROWSE mode to examine the storage for eyecatchers, etc.
    - Suspicious addresses x'00901000', x'00902000', x'00903000', etc
    - Note "AW" eyecatcher

```
ASID(X'00D2') ADDRESS(901000.) STORAGE ----------------------------------
Command ===> L 0901000                                    SCROLL ===> C
00901000   17C1E600   00902DC8   000FCD22   00000000   | .AW....H........ |
00901010   000FCCE8   268EFA70   00000000   00000000   | ...Y............ |
00901020   40000000   00000000   00000000   00000000   |  ............... |
00901030.:90103F.--All bytes contain X'00'
00901040   00000000   00000000   17C1E600   00902F30   | .........AW..... |
00901050   000FCFE8   00000000   000FCFCC   268D6B10   | ...Y...........,. |
00901060   D1F4F6F4   F0F4F0F1   01000000   00000000   | J4640401........ |
00901070.:90108F.--All bytes contain X'00'
00901090   17C1E600   0090A510   1D82060C   F1F0F0F7   | .AW...v..b..1007 |
009010A0   13880000   267A89D0   00000000   C3D5E3E2   | .h...:i}....CNTS |
009010B0   13233060   13233060   C4D3C1F3   00000000   | ...-...-DLA3.... |
009010C0.:9010CF.--All bytes contain X'00'
```

Miscellaneous IPCS Commands

Miscellaneous IPCS Commands

- Miscellaneous IPCS Commands useful for IMS dumps
  - SELECT ASID(X'aa') -or- JOBNAME(j) -or- ALL
    - Shows JOBNAMEs or ASIDs, respectively
  - SUMMARY FORMAT ASID(X'aa') -or- JOBNAME(j)
    - MVS address space formatting - ASCB, TCBs, CDEs, RBs (FIFO), RTM2WAs, etc.
  - SUMMARY REGS
    - MVS abbreviated address space formatting-no CDEs, RBs in reverse order(LIFO)
  - CBF aaaaaaa STR(ctlblkname)
    - Format ctl blk
  - LIST aaaaaaa.:eeeeeee. STRUCTURE
    - List storage with offsets
  - FINDLIM 99999
    - Change ISPF FIND limit

Miscellaneous IPCS Commands

- Miscellaneous IPCS Commands useful for IMS dumps
  - RSMDATA VIRTPAGE RA(aaaaaaaa) ALL
    - Displays RSM real address
      - Need to add 3 0s to the right of the word in the RLOC column
  - GTFTRACE USR(F65)
    - GETMAIN/FREEMAIN DS Format
  - LIST aaaaaaa.: bbbbbbb. DISPLAY
    - Show Machine storage key
  - VERBX SUMDUMP
    - RTM2WA formatting
  - SSIDATA
    - Subsystem SSCVT list
  - SYSTRACE TIME(LOCAL) or TIME(GMT)
    - MVS System Trace Table with formatted timestamp for local time or Greenwich mean time

Using IMS With IPCS Summary

- Using IMS with IPCS summary
  - IMS Dumps and IPCS
    - SVC dumps, SYSMDUMPs, Stand-alone dumps
  - IMS Formatting of Unformatted Machine-readable Dumps
    - ODF and IDF
  - IMS Offline Dump Formatter
    - IPCS Verb Exit based formatter
    - Command syntax and options
  - IMS Interactive Dump Formatter
    - ISPF dialog driven IMS dump formatter
    - Initialization, high level formatting, low level formatting

Using IMS With IPCS Summary, Continued

- Using IMS with IPCS summary, continued
  - Verifying Dump Contents
    - Understanding the dump we are about to diagnose
    - Address spaces, storage options, dump compete bits, reason for the dump
  - Controlling IPCS for Easier Dump Analysis
    - Splitting, sending output to a dataset, IPCS BROWSE formatting
  - IPCS Storage Analysis Commands
    - VERBX VSMDATA Private and CSA analysis
  - Miscellaneous IPCS Commands
    - Memory joggers for useful dump analysis commands

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