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All the Latest News for
POWER and VSAM with z/VSE V5
zIN042

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Agenda

- POWER 8.3 in z/VSE 4.3
    - Output Limitation Facility
    - OGM
    - PUNCH output redirection into AF library

- POWER 9.1 in z/VSE 5.1
    - New TKN attribute
    - POWER 5.1.1 Announcements

- POWER 9.2 in z/VSE 5.2
    - Overview of functional enhancements
    - Enhancement for PUNCH output redirection
    - eXtended Event Message (XEM) support

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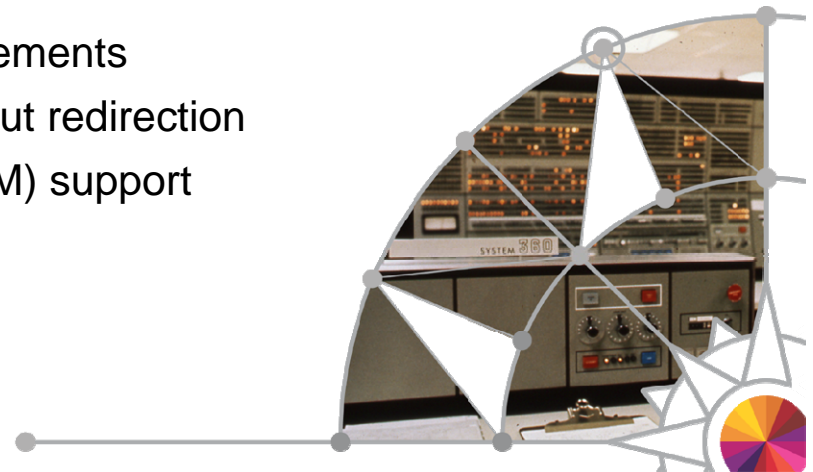
VSE/POWER 8.3

VSE/POWER 8.3 Release Information
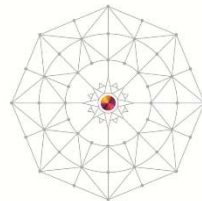
- Identification of VSE/POWER 8.3
    - MSHP Component identification number 5686-CF8-03-02C
    - SUBSID NOTIFY call with X'080300'
    - Character string C'02C' in each phase
    - PDISPLAY STATUS and SIR output show "VSE/POWER 8.3.0" plus APAR Level
- Manuals updated with z/VSE 4.3
    - VSE/POWER Administration & Operation 8.3, SC33-8314-03
    - VSE/POWER Application Programming 8.3, SC34-2601-00
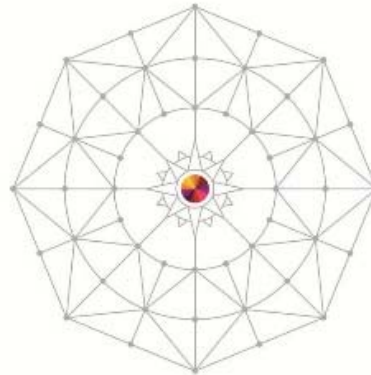
VSE/POWER 8.3 Output Limitation Facility

New **RBF** operand (Records Before Flush) cancels job(s), if their output exceeds specified amount of records. Programs running as subsystem, e.g. CICS, VTAM, are not canceled.

- **`SET RBF=nnnnnn`**
  - VSE/POWER auto start statement sets system value (recommended only for test system)
  - Each job is flushed whose LST or PUN output exceeds nnnnnn records
- **`* $$ JOB …,RBF=nnnnnn`**
  - Overwrites SET RBF=nnnnnn for VSE/POWER Job
  - Job is flushed if any LST or PUN output exceeds nnnnnn records
- **`* $$ LST …,RBF=nnnnnn`** or **`* $$ PUN …,RBF=nnnnnn`**
  - Overwrites SET RBF=nnnnnn and * $$ JOB …,RBF=nnnnnn
  - Job is flushed if output for specified spooled device exceeds nnnnnn records

- When RBF value is exceeded, internal **PFLUSH partition,HOLD cancels** job
  - Message 1Q5QI is displayed on console and appended to output exceeding limit
  - Additional output records can be spooled, e.g. LISTLOG messages
  - Flushed Job is held in RDR queue with the DISP=H or L
  - Output is created with temporary DISP=X to avoid automatic processing

- **RBF=0** (default) means that no limitation is applicable to the given output

VSE/POWER 8.3 OGM Support - Overview

As of z/VSE 4.2, VSE/POWER can generate the following notification messages for SAS (Spool Access Support) applications

– Job Completion Message 1Q5DI (JCM):
  Informs that the job, submitted via SAS interface, has completed

– Job Generation Message 1Q5HI (JGM):
  Informs that the job, submitted via SAS interface, has generated another job as punch output with DISP=I

With z/VSE 4.3, a new notification message has been added:

– **Output Generation Message 1Q5RI (OGM):**
  Is generated each time when the job, submitted via SAS interface, has created LST or PUN entry, and this entry became ready for processing

– Like the existing 1Q5HI and 1Q5DI messages, the new 1Q5RI message is stored into the SAS messages queue, and can be retrieved by means of the GCM (Get Completion Message) service later on.

VSE/POWER 8.3 OGM Support - Benefits

With OGM support, a Job Scheduler application can control the job lifetime

- Job Completion
- Job Generation (DISP=I)
- Output Generation

Without OGMs, its more difficult to find all outputs generated by a job

- A job may produce various outputs
  - Multiple LST/PUN cards in the job
  - Output segmentation
- Outputs may have different names than the generating job (JNM=nnn in LST/PUN card)
- Outputs may have different job numbers than the generating job due to
  - Segmentation overflow (more than 127 segments)
  - Multiple LST/PUN cards in the job (1st LST & 1st PUN inherit job number from job)

OGMs now provide a way to retrieve all outputs generated by a Job, which has been submitted via SAS interface.

- To enable generating and queuing of the OGM, VSE/POWER offers new options in the function byte SPLGFB1.

- For example, if you want to request messages of all types (JGM, JCM and OGM) you must specify the new option SPLGF1QX:

```
PWRSPL TYPE=UPD,SPL=OWNSPL,REQ=PUT,QUEUE=RDR
MVI      SPLGFB1,SPLGF1QX  -> ALL
```

- If you want to queue the OGM only, you can specify the new option SPLGF1QO :

```
PWRSPL TYPE=UPD,SPL=OWNSPL,REQ=PUT,QUEUE=RDR
MVI      SPLGFB1,SPLGF1QO  -> OGM only
```

Specify SPLGF1QP option to queue Job Completion and Output Generation messages or
Specify SPLGF1QQ option to queue Job Completion and Job Generation messages

- OGM has the following main features:

  - It can be queued in the user queue(default), common queue, or both (the same as existing fixed format messages)

  - For segmented output it is issued for every segment

  - If duplication is active then it is issued for every duplicate

  - 'OGM queuing' characteristic is inherited for child jobs created as punch output with the DISP=I

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- To retrieve fixed format messages VSE/POWER offers new options in the sub-request byte SPLGSRB of the SPL for the GCM service.

- For example, if user wants to retrieve JCM only he can specify the following SPL:

```
PWRSPL TYPE=UPD,SPL=OWNSPL,REQ=GCM

MVI    SPLGSRB,SPLGSRJC   -> JCM only
```

- In general there are the following selection criteria for messages retrieving:
  - Retrieve JGM only
  - Retrieve JCM only
  - Retrieve OGM only
  - Retrieve all messages
  - Retrieve all messages produced by the job with specified name
  - Retrieve all messages produced by the job with specified name + number

- Note that all messages should be retrieved, otherwise message queue will run full and new messages will be discarded

- With this new type of event message, the total number of the potentially generated messages increased.

- default size of the messages user queue is increased from 20 to 50,

- maximum size is increased from 99 to 255

  – which can be specified by the SET JCMQ= (VSE/POWER auto start statement).

- The size of the common message queue is taken now as size of the user queue multiplied by eight. Therefore, the

  – default value of common queue size is equal to 400,

  – maximal value of common queue size is equal to 2040.
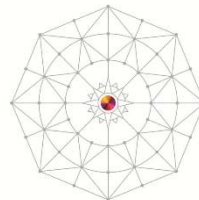
VSE/POWER 8.3 – OGM Restrictions

- The OGM is issued in the fixed format only, and can be retrieved by the GCM request of SAS interface only.

- The OGM is always queued in the message queue of the job's submitter only, and can not be sent to any another destination.

- In the selection criteria of the GCM request only one type of messages can be specified for retrieving (or all types of generated messages).

- The OGM is not issued for the punch output with DISP=I which produces the RDR entry actually. (but JGM maybe be created if selected)

- The message is not generated for output spooled to tape.

VSE/POWER 8.3 - PUNCH output redirection into AF library

In addition of spooling punch output either into punch or reader queue, punched output can now be catalogued as a VSE/AF library member and later on retrieved by an * $$ SLI statement.

New format of the * $$ PUN JECL statement provides the possibility for redirecting punch output to a VSE/AF library member

S=Lib.Sublib

- Each spooled PUNCH device can be redirected independently

- The output is not placed in PUN queue but spooled into VSE/AF library member

- You need the appropriate access right to create or replace a member

- In-creation queue element shows re-direction

- Segmentation attempts are **rejected** with 1R9BI message

```
* $$ JOB JNM=COMPILE,DISP=D,CLASS=A
* $$ PUN MEM=PRECOMP1.C,S=PRD2.TEST,PUN=FED,REPLACE=YES  <= redir. PUN output to lib. member
// JOB COMPILE TRANSLATE PROGRAM CSOURCE
// ON $CANCEL OR $ABEND GOTO ENDJ2
// OPTION NOLIST,NODUMP,DECK
// EXEC DFHEDP1$,SIZE=512K
* $$ SLI ICCF=(CSOURCE),LIB=(0019)
/*
// PAUSE
* $$ PUN PUN=FED                                         <= close library member & switch PUN back
// LIBDEF *,SEARCH=(PRD2.SCEEBASE,PRD2.DBASE)
// LIBDEF PHASE,CATALOG=PRD2.TEST
// OPTION ERRS,SXREF,SYM,CATAL,NODECK
   PHASE CSOURCE,*
   INCLUDE DFHELII
// EXEC EDCCOMP,SIZE=EDCCOMP,PARM='NATLANG(ENU)/LONGNAME'
* $$ SLI MEM=PRECOMP1.C,S=PRD2.TEST
/*
// EXEC EDCPRLK,SIZE=EDCPRLK,PARM='NATLANG(ENU)/UPCASE'
/*
// EXEC LNKEDT,SIZE=256K
/*
/. ENDJ2
// EXEC LIBR,PARM='A S=PRD2.TEST;DEL PRECOMP1.C;END'
/&
* $$ EOJ
```

```
D CRE,PART,F5
AR 0015 1C39I  COMMAND PASSED TO VSE/POWER
F1 0001 1R4BI    CREATE QUEUE  C I  LINES BUDBGP   QNUM   TASK    OWNER
F1 0001 1R4BI   PUNCH02   00316 A L     11   000001 01790  F5 FEE JOB=PUNCH02
F1 0001 1R4BI   PUNCH02   00316 A P     28 PRD2.CONFIG    F5 FED JOB=PUNCH02


D A
AR 0015 1C39I  COMMAND PASSED TO VSE/POWER
...
F1 0001 1R48I   F5,FEC,H5,  PUNCH02 ,00316,H
F1 0001 1R48I   F6,FEC,M6,       INACTIVE,
F1 0001 1R48I   F7,FEC,N7,  TCPIP00 ,00304,7
...
F1 0001 1R48I   F3,FEE,,  VTAMSTRT,00302,A     21 LINES SPOOLED,QNUM=01803
F1 0001 1R48I   F2,FEE,,  CICSICCF,00303,A   2104 LINES SPOOLED,QNUM=01799
F1 0001 1R48I   F7,FEE,,  TCPIP00 ,00304,A   1502 LINES SPOOLED,QNUM=01797
F1 0001 1R48I   F5,FEE,,  PUNCH02 ,00316,A     11 LINES SPOOLED,QNUM=01790
F1 0001 1R48I   F5,FED,,  PUNCH02 ,00316,A     28 CARDS TO PRD2.CONFIG
F1 0001 1R48I  RDR,00C,A,
```

VSE/POWER 9.1
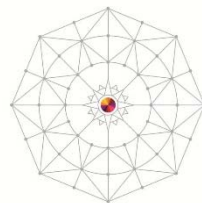
VSE/POWER 9.1 Release Information

VSE/POWER 9.1 Release Information, Manual and Migration

- z/VSE 5.1 contains VSE/POWER 9.1 (part of VSE/Central Functions 9.1)

- Identification of VSE/POWER 9.1
    - MSHP Component identification number 5686-CF9-03-51C
    - SUBSID NOTIFY call with X'090100'
    - Character string C'51C' in each phase
    - PDISPLAY STATUS and SIR show "VSE/POWER 9.1.0" plus APAR Level

- Manuals updated with z/VSE 5.1
    - VSE/POWER Administration & Operation 9.1, SC34-2625-00
    - VSE/POWER Application Programmer's Guide (5.1.1) SC34-2642-00
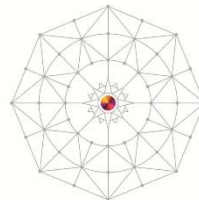
VSE/POWER 9.1
TKN (Token) Support (MR012710448)

New TKN (Token) attribute to link all spooled outputs of a job together

- To address with operator commands all spooled job outputs as an entity
- Unchangeable TKN value defined for each VSE/POWER job

  - **Explicitely** by new *$$ JOB operand TKN=hhhhhhhh (80000000 to FFFFFFFF)
    ```
    * $$ JOB JNM=MYJOB,CLASS=C,DISP=K,TKN=94A89182
    ```

  - **Implicitely** in range 00000001 to 7FFFFFFF (incremented for each job)
  - Once defined it can not be changed

- In Shared Spooling environment single counter in MasterRecord ensures unique TKN
- Shown in job start message 1Q47I
  ```
  1Q47I   BG PAUSEBG 65267 FROM POWER511(SYSA),TIME=20:33:33,TKN=00000009
  ```
- Shown in PDISPLAY queue,...,FULL=YES
  ```
  pdisplay rdr,full=yes
  AR 0015 1C39I COMMAND PASSED TO VSE/POWER
  F1 0001 1R46I  READER QUEUE   P D C S  CARDS BU
  F1 0001 1R46I  PAUSEBG  65267 3 * 0       4   PART=BG FROM=(SYSA)
  F1 0001         D=07/01/2011 DBGP=000001 ORGDP=K
  F1 0001         QNUM=00008 T=11:53:48 TKN=00000009
  ```

VSE/POWER 9.1 – TKN Usage Example

- Each output spooled by the job will inherit the TKN value

```
pdisplay cre,part,bg

AR 0015 1C39I COMMAND PASSED TO VSE/POWER

F1 0001 1R4BI    CREATE QUEUE  C I   LINES BUDBGP   QNUM  TASK     OWNER
F1 0001 1R4BI    PAUSEBG  65267 A P      37   000001 01858   BG FED JOB=PAUSEBG
                                                                    TKN=00000009
F1 0001 1R4BI    PAUSEBG  65267 A L      49   000001 01859   BG FEE JOB=PAUSEBG
                                                                    TKN=00000009
```

- Same TKN value for output when job is released multiple times, e.g. CICS, VTAM, TCPIP (DISP=K | L)

- New **CTKN** operand for operator commands to select spool entries with same TKN value

- New „**ALL**,CTKN=hhhhhhhh" to address all entries in all queues (RDR|LST|PUN|XMT)

  – Available for PALTER, PDELETE, PDISPLAY, PHOLD, PRELEASE
    No further selection operands allowed to force entity

```
phold all,ctkn=00000009

AR 0015 1C39I COMMAND PASSED TO VSE/POWER

F1 0001 1R88I  OK : 2 ENTRIES PROCESSED BY PHOLD ALL,CTKN=00000009
```

- PNET and POFFLOAD backup & restore preserve existing TKN values

VSE/POWER 9.1- TKN
Usage by JCL PWR command

- JCL PWR command submits PRELEASE and PHOLD commands to VSE/POWER

- // PWR PHOLD|PRELEASE command with CTKN=POWERJOB for PUN or RDR or LST

  - VSE/POWER replaces POWERJOB with TKN value of active job
  - Addresses already created queue entries <u>only</u>
  - Changes DISPosition for output created

- // PWR PHOLD|PRELEASE ALL,CTKN=POWERJOB

  - address all output created and in creation
  - Changes DISPosition for output created + output in creation ! (D $\rightarrow$ H & K $\rightarrow$ L)
  - Useful to prevent job output being printed / punched when job fails

```
* $$ JOB JNM=ACNTJOB,CLASS=C,DISP=D
* $$ LST JNM=OUTPUT1,LST=00E,CLASS=W,DISP=D,UINF='USER INFORMATION'
* $$ LST JNM=ACCOUNT1,LST=FEE,CLASS=Z,DISP=D
* $$ PUN JNM=CHECKS,PUN=FED,DEST=(OTHERNOD,PUNCH01)
// JOB ACNTJOB
// ON $ABEND GOTO ERR01                   for abnormal termination go to ERR01
// EXEC PGM1
// GOTO $EOJ                              skip abnormal term. handling
/. ERR01                                  handle abnormal termination
// PWR PHOLD ALL,CTKN=POWERJOB            hold all output with same TKN as job
/&
* $$ EOJ
```

VSE/POWER 9.1 in z/VSE 5.1 Refresh by DY47302

IPWSEGM Supports Duplicates for LST and PUN Output (MR0920106734**)**

- Output duplication allows multiple VSE/POWER tasks to access a single image of spooled data.

- VSE/POWER has supported creation of duplicate output since z/VSE 4.1 using * $$ LSTDUP and * $$ PUNDUP JECL statements, or by PCOPY operator command

- NOW **output duplication** is also **available via IPWSEGM** **(program-driven)**

- Programs that spool output can now request duplication for the next output segment using the new operand DUP=YES for statements * $$ LST and * $$ PUN supplied by IPWSEGM

Enhanced Dynamic Access to VSE/POWER Job Attributes

- **TKN** can now be extracted from MAPPOWJB DSECT using
  GETFLD FIELD=POWJOB

VSE/POWER 9.2

VSE/POWER 9.2 Release Information, Manual and Migration

- z/VSE 5.2 contains VSE/POWER 9.2 (part of VSE/Central Functions 9.2)

- Identification of VSE/POWER 9.2
  - MSHP Component identification number 5686-CF9-03-52C
  - SUBSID NOTIFY call with X'090200'
  - Character string C'52C' in each phase
  - PDISPLAY STATUS and SIR show "VSE/POWER 9.2.0" plus APAR Level

- Manuals updated with z/VSE 5.2
  - VSE/POWER Application programming 9.2, SC34-2642-00
  - VSE/POWER Administration & Operation 9.2, SC34-2625-01

- FSU from z/VSE 4.3 / 5.1 to z/VSE 5.2 converts VSE/POWER spool files to 9.2 level
  - POFFLOAD BACKUP,ALL before FSU for possible restore of previous level
  - WARMSTART existing Queue & Data File (see messages 1Q0HI & 1Q0HD)
    - In case of return to z/VSE 4.3/5.1, cold start on old system is required
  - Shared Spooling requires all systems on same Version & Release
    - For FSU only one system must be active

- VSE/POWER can migrate spool files from VSE/ESA 2.7 onwards to current level

- Migrate spooled data between different releases by POFFLOAD and/or PNET

- Control blocks IPWDPA, IPWDTC and PWRSPL extended for future use
    - Backward compatible for User Exits and SAS Applications
    - New PWRSPL level SPLGVM40
    - Recompile of Application / Exit recommended

- Deletion for VSE/AF sublibrary member after * $$ SLI processing (WAVV201107)

- eXtended Event Message (XEM) support to monitor VSE/POWER queues

z/VSE 5.2

VSE/POWER 9.2 - Delete VSE/AF sublibrary member after * $$ SLI

- z/VSE 4.3 introduced Redirection of spooled PUN to VSE/AF sublibrary
  - * $$ PUN MEM=membername.type,S=lib.sublib,PUN=cuu,REPLACE=<u>NO</u>|YES
  - Useful for compile jobs with pre-compile steps
    - * $$ PUN into member1, * $$ SLI to read member1
    - * $$ PUN into member2, * $$ SLI to read member2 ...
    - Member(s) are left in sublibrary

- Now deletion of VSE/AF sublibrary member is offered (WAVV201107)
  - With * $$ SLI MEM=membername.type,S=lib.sublib,DEL=YES
  - Executed by VSE/POWER after successful SLI insertion
  - Uses the Authorization associated with executing partition
  - Batch Security is required to prevent misuse !

VSE/POWER 9.2 - PUNCH Redirection Example

Using PUNCH output re-direction for compile jobs with pre-compile steps

```
* $$ JOB JNM=COMPILE,DISP=D,CLASS=A
* $$ PUN MEM=PRECOMP1.C,S=PRD2.TEST,PUN=FED,REPLACE=YES <= redir. PUN output to lib. member
// JOB COMPILE TRANSLATE PROGRAM CSOURCE
// OPTION NOLIST,NODUMP,DECK
// EXEC DFHEDP1$,SIZE=512K
* $$ SLI ICCF=(CSOURCE),LIB=(0019)
/*
* $$ PUN PUN=FED                                    <= close library member & switch PUN back
// LIBDEF *,SEARCH=(PRD2.SCEEBASE,PRD2.DBASE)
// LIBDEF PHASE,CATALOG=PRD2.TEST
// OPTION ERRS,SXREF,SYM,CATAL,NODECK
   PHASE CSOURCE,*
   INCLUDE DFHELII
// EXEC EDCCOMP,SIZE=EDCCOMP,PARM='NATLANG(ENU)/LONGNAME'
* $$ SLI MEM=PRECOMP1.C,S=PRD2.TEST,DEL=YES       <= include created library member and
/*                                                         request deletion
// EXEC EDCPRLK,SIZE=EDCPRLK,PARM='NATLANG(ENU)/UPCASE'
/*
// EXEC LNKEDT,SIZE=256K
/*
/&
* $$ EOJ
```

Introduction to XEM Support

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- As of VSE/POWER 9.2, a new XEM (stands for eXtended Event Message) support has been introduced as an extension of the JCM/JGM/OGM support.

- XEMs cover a much wider set of events compared to JCMs/JGMs/OGMs. Thus while only a few JCMs/JGMs/OGMs are issued, many XEMs can be produced.

- VSE/POWER generates new Fixed Format message 1Q5XI for a requesting application if:

  - A new queue entry has been created within a VSE/POWER queue or spooled to a tape.
  - An existing queue entry has been altered in a VSE/POWER queue.
  - An existing queue entry has been deleted from a VSE/POWER queue (moved into DEL queue).

- XEM can be used e.g. for auditing, scheduling or archiving VSE/POWER queues
  - VSE Connector delivers a new example called PowerEventProcessor in source in the samples directory. It shows how the new XEM support can be used.

VSE/POWER 9.2 - XEM Overview

- An application program initializes XEM by means of a special SAS request (as opposed to JCMs/JGMs/OGMs created only for a job submitted via the SAS with specific options)

- Every XEM application is provided with its own message queue

- XEMs are generated whenever VSE/POWER creates, changes or deletes queue entries

- A new queue entry is created in a VSE/POWER queue or spooled to tape, for example:
  - Spooling and segmenting output
  - Receiving a job via reader or SAS application
  - Duplicating an entry (* $$ LSTDUP, * $$ PUNDUP, PCOPY)

- An existing queue entry is altered in a VSE/POWER queue, e.g.:
  - Processing of entry (with initial DISP=K), for example: printing or punching an output, getting an entry via SAS interface (or by GETSPOOL macro), sending it via PNET.
  - Specific operator commands issuance: PRELEASE, PHOLD and PCANCEL, PALTER and PFLUSH (externally or internally).

- An existing queue entry is deleted from RDR | LST | PUN | XMT queue (moved into the DEL queue), for example:
  - An output (DISP=D) is printed or punched.
  - A job (DISP=D) is executed or canceled (PCANCEL operator command issued).
  - PDELETE command is issued.

VSE/POWER 9.2
When are XEMs NOT generated

- Creation and deletion of internal queue entries, e.g. queue displays requested by SAS application, is ignored by XEM support

- Deletion of a queue entry 'in creation' , e.g. due PURGE=nn, is ignored by XEM support

- Alteration by SAS application for Browse is ignored

- Generated XEMs are not routed to other systems of a shared spooling complex nor to other PNET nodes

- XEMs are generated for master and duplicate queue entries but without indication whether the queue entry is master or duplicate

- 4 KB of real (fixed) storage of the VSE/POWER partition for XEM Control Block.

- 512 KB as a message queue for each XEM application
  - 256 byte slot for one message, 2048 XEM slots per application
  - Resides in GETVIS-31 area of VSE/POWER partition

- Up to 32 applications can use XEM service concurrently.
  - Extend ALLOCation for VSE/POWER partition accordingly

- VSE/POWER notifies about excesses of XEM capacity by means of:
  - Return / feedback codes in the verification SPL.
  - Messages 1Q3KI and 1Q4AI displayed on the system console.
  - Outputs of the PDISPLAY STATUS command.
  - Number of lost messages within XPCCB.

- To start XEM service, an application issues the the GCM-XEM-START request:
  - specify queuing criterion within flag byte SPLXFLG1 for queuing event messages:
    - RDR entry type only (option SPLX1XRD)
    - LST entry type only (option SPLX1XLS)
    - PUN entry type only (option SPLX1XPN)

- To retrieve XEMs, an application issues the GCM-XEM-OPEN request:
  - XEM are returned within a 4KB reply buffer (includes up to 16 messages)
  - When the buffer is full or the time interval (explicitly specified or default) has expired

- To stop XEM service, an application issues the the GCM-XEM-STOP request
  - All not returned messages are canceled for the application

Functional Enhancements by APAR

- DY47464 | DY47467 | integrated

  Improved messages 1QAFD & 1QAFI to prevent spool file corruption

  (only 1 active system per SYSID is allowed)

  ```
  1QAFI   SHARING SYSTEM SYSID=n INDICATED AS ACTIVE ON CPU-ID xxxxxxxxxxxxxxx
          BUT REQUESTING WARM START ON ACTUAL CPU-ID yyyyyyyyyyyyyyy
  1QAFD   ENSURE SYSID=n IS INACTIVE ON CPU-ID xxxxxxxxxxxxxxx,
          THEN ALLOW WARM START BY 'YES', ELSE 'NO'
  ```

- - | DY47474 | integrated

  New search operand CEXPMOM=NULL for PALTER, PDISPLAY, PDELETE, PHOLD & PRELEASE (MR0524121941)

  To select output without expiration moment (no EXPDAYS, no EXPHRS)

  New POFFLOAD LOAD|SELECT operand KEEP=EXPMOM (MR0215104838)

  To preserve expiration moment during restore DY47509 | DY47510 | DY47519

  Show number of queue entries restored by POFFLOAD LOAD|SELECT

  ```
  1Q2AI   OFFLOADING LOAD|SELECT SUCCESSFULLY COMPLETED ON cuu,
          TOTAL ENTRIES=mmmmmmmmmm
  ```

- - | DY47520 | DY4764

  Problem: Creation date and time is calculated from start of creation. Long running jobs like CICS, VTAM and TCP/IP create output, which is several days old when job completes, e.g. due to an abend. PDELETE with CRAGE or CRDAYS may delete dumps inadvertently.

  Add output creation date = end of spooling time for correct age handling of outputs from long running jobs

  New search operands ENDAGE and ENDDAYS for PALTER, PDISPLAY, PDELETE, PHOLD & PRELEASE to select queue entries by end of spooling time

  ENDAGE

  indicates that only those queue entries are to be addressed, whose age in hours and minutes (current date and time minus end of spooling date and time) adheres to the comparison.

  ENDDAYS

  indicates that only those queue entries are to be addressed, whose age in days beginning with the end of spooling date (current date minus end of spooling date) adheres to the comparison.

  ➔ New end of spooling date and time fields do not affect CRAGE & CRDAYS
  ➔ CRDATE, CRDAYS, CRAGE, ENDAGE and ENDDAYS are mutually exclusive.

VSE/POWER 8.3 | 9.1 | 9.2 Functional Enhancements by APAR

- DY47528 | DY47524 | DY47529

  Show correct number of records for large outputs and extend RBF to 9 digits

- DY47569 | DY47554 | DY47570

  Prevent jobs from z/OS or z/VM to be canceled due to wrong interpretation of RBF

  Jobs created on z/OS or z/VM and sent via PNET to VSE/POWER have a different control structure which will now be respected correctly.

Agenda

- **VSAM V5.1**
  - SHOWCB Enhancements
  - IUI improvement for VSAM files

- **VSAM V5.2**
  - IDCAMS Security
  - DLBL CISIZE
  - Catalog Management Trace
  - Additional Enhancements

- **VSAM Service**

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VSE/VSAM 9.1
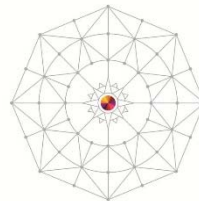
SHOWCB Enhancements 5.1

ACB, AMBL and AMDSB API are extended in order to enable user to obtain status information for open VSAM datasets.

9 NEW FIELDS are supported by SHOWCB ACB starting 5.1.
The following new FIELDS are supported as SHOWCB ACB:

SHOWCB FIELD	Actual Control Block Field	Control Block	Length	FIELD Description
IDACB	ACBID	ACB	4	ACB identifier
IDDOS	ACBDOSID	ACB	4	DOS DTF identifier
CDBUF	AMBDBUF	AMBL	4	count of Data Buffers
CIBUF	AMBIBUF	AMBL	4	count of Index Buffers
CNAME	AMBCNAME	AMBL	44	Cluster ID
CIPCA	AMDCIPCA	AMDSB	4	number of CIs per CA
LNEST	AMDLNEST	AMDSB	4	local number of index levels
BFREE	AMDBFREE	AMDSB	4	number of unassigned buffers
OPENOBJ	AMDAMS	AMDSB	4	AMS Flag byte

```
SHOWCB Example:


SHOWCB     ACB=ACB1,AREA=AREA1,LENGTH=100,FIELDS=(IDACB,IDDOS,       X
           CDBUF,CIBUF,CIPCA,LNEST,BFREE,OPENOBJ,CNAME)
LTR        R15,R15
BNZ        SHOWERR
. . .
AREA1      DS 0F
IDACB      DS F
IDDOS      DS F
CDBUF      DS F
CIBUF      DS F
CIPCA      DS F
LNEST      DS F
BFREE      DS F
OPENOBJ    DS F
CNAME      DS 44CL
```

SHOWCB Enhancements 5.1

LSR Matrix

Local Shared Resource (LSR) information is provided within a new SHOWCB matrix that contains the following information about specific VSAM SHR pools:

For a specified share pool:
- Share Pool Number,
- Total Number of Strings,
- Number of active Strings,
- Number of free Strings,
- High-water-mark of active Strings

For each sub-pool:
- Size of Buffers,
- Type of Buffer,
- Number of Buffers,
- Number of modified Buffers and Number of free Buffers,
- Number of Buffer-reads,
- Number of Retrieval-Requests without I/O,
- Number of User-Initiated writes from Buffer Pool,
- Number of Non-User-Initiated writes from Buffer Pool

For each cluster the following information will be provided:
- Number of Active Strings for this Cluster,
- Size of Data Buffers,
- Number of Data Buffers used,
- Size of Index Buffers,
- Number of Index Buffers used

LSR Matrix output (header):

Header contains the following information:
- Length of area supplied by User,
- Total length used (required) by VSAM,
- Length of fixed area (Share Pool Statistics Area),
- Number of rows in LSR Pool Buffer Matrix
- Length of rows in LSR Pool Buffer Matrix
- Number of rows in Cluster Matrix
- Length of rows in Cluster Matrix

Length of area supplied by User	Total length used (or required) by VSAM	Length of fixed area	Number of rows in LSR Pool Buffer Matrix
4 bytes	4 bytes	4 bytes	4 bytes

… continued

Len of rows in Buffer Matrix	Number of rows in Cluster Matrix	Length of rows in Cluster Matrix	(reserved)	(reserved)
2 bytes	4 bytes	2 bytes	4 bytes	4 bytes

SHOWCB Enhancements 5.1

LSR Matrix output (Share Pool Statistics Area,fixed area):

For a specified share pool:
- Share Pool Number,
- Total Number of Strings,
- Number of active Strings,
- Number of free Strings,
- High-water-mark of active Strings

share pool #	total # of strings	# of active strings	# of free strings
2 bytes	2 bytes	2 bytes	2 bytes

... continued

High water mark of active strings	reserved	reserved	reserved
2 bytes	2 bytes	2 bytes	2 bytes

SHOWCB Enhancements 5.1

LSR Matrix output (LSR Pool Buffer Matrix):

For each sub-pool:
- Size of Buffers,
- Type of Buffer,
- Number of Buffers,
- Number of modified Buffers and Number of free Buffers,
- Number of Buffer-reads,
- Number of Retrieval-Requests without I/O,
- Number of User-Initiated writes from Buffer Pool,
- Number of Non-User-Initiated writes from Buffer Pool

Size of buffers	Type of Buffer ("D" or "I")	Flags	Number of buffers	Number of modified buffers	Number of free buffers
2 bytes	1 byte	1 byte	4 bytes	4 bytes	4 bytes

… continued

NUMBER OF BUFFER-READS	NUMBER OF RETR-REQ WITHOUT I/O	NUMBER OF USER-INITIAT WRITES FROM BP	NUMBER OF NON USER-INI WRITES FROM BP
4 bytes	4 bytes	4 bytes	4 bytes

SHOWCB Enhancements 5.1

LSR Matrix output (Cluster Matrix):

For each cluster the following information will be provided:

- DDNAME of the cluster
- Cluster type ('B' if base cluster)
- Number of Active Strings for this Cluster,
- Size of Data Buffers,
- Number of Data Buffers used,
- Size of Index Buffers,
- Number of Index Buffers used

DDNAME	Type of Cluster ('B' if Base Cluster)	Flags	# of Active Strings for this Cluster	Size of Data Buffers	Number of Data Buffers used	Size of Index Buffers
8 bytes	1 byte	1 byte	2 bytes	4 bytes	4 bytes	4 bytes

... continued

Number of Index Buffers used	(reserved)	(reserved)
4 bytes	4 bytes	4 bytes

SHOWCB Enhancements 5.1

LSR Matrix

The new LSR MATRIX and Extent Information MATRIX can be specified using the SHOWCB macro.
The syntax of the SHOWCB macro for LSR matrix is given below:

```
name SHOWCB AREA=address,                        X
            LENGTH=number,                       X
            SHAREPL=number,                      X
            FIELDS=(keywords),                   X
            MF=form                              X
```

**Example of LSR Matrix call:**

_SHOWCB AREA=USER_AREA, LENGTH=100, **SHAREPL**=6, FIELDS=(**LSRINF**)_

SHOWCB Enhancements 5.1

Extent Matrix

A second new matrix has been made available by SHOWCB to present information about extents and device characteristics for a specified cluster.

The physical device characteristics for the indicated Cluster are provided.
The data volume information will come first, followed by the index, if applicable:

- Physical Block Size
- Number of Bytes per Track
- Number of Bytes per Control Area
- Number of Physical Blocks per Control Interval
- Number of Physical Blocks per Track
- Number of Tracks per Control Area
- Number of Tracks per Cylinder
- Number of Physical Blocks per Control Area

For each extent (data and index) of the specified cluster the following information is provided:

- Volume Serial Number
- Type of Extent ('D' if Data. "I" if Index)
- Flags
- Low Extent
- High Extent
- Low RBA
- High RBA

Extent Matrix output (header):

Header contains the following information:
- Length of area supplied by User,
- Total length used (required) by VSAM,
- Length of fixed area (Physical Device Characteristics Area),
- Number of data extents
- Length of data extents row
- Number of index extents
- Length of index extents row

Length of area supplied by User	Total length used (or required) by VSAM	Length of fixed area	Number of data extents (AMDNEXT)
4 bytes	4 bytes	4 bytes	4 bytes

… continued

Len of data extents row	Number of index extents (AMDNEXT)	Len of ind extents row	(reserved)	(reserved)
2 bytes	4 bytes	2 bytes	4 bytes	4 bytes

SHOWCB Enhancements 5.1

Extent Matrix output (Physical Device Characteristics Area,fixed area):

The physical device characteristics for the indicated Cluster are provided.
The data volume information will come first, followed by the index, if applicable:

- Physical Block Size
- Number of Bytes per Track
- Number of Bytes per Control Area
- Number of Physical Blocks per Control Interval
- Number of Physical Blocks per Track
- Number of Tracks per Control Area
- Number of Tracks per Cylinder
- Number of Physical Blocks per Control Area (for FBA only, ignore for ECKD)

Volume id	Type of extent ('D' if Data. "I" if Index	Flags	Physical Block Size	Number of Bytes per Track	Number of Bytes per Control Area	Number of Physical Blocks per Control Interval
6 bytes	1 byte	1 byte	4 bytes	4 bytes	4 bytes	4 bytes

... continued

Number of Physical Blocks per Track	Number of Tracks per Control Area	Number of Tracks per Cylinder	Number of Physical Blocks per Control Area	Reserved	Reserved
4 bytes	4 bytes	4 bytes	4 bytes	4 bytes	4 bytes

SHOWCB Enhancements 5.1

Extent Matrix output (Extent information):

For each extent (data and index) of the specified cluster the following information is provided:

- Volume Serial Number
- Type of Extent ('D' if Data. "I" if Index)
- Flags
- Low Extent
- High Extent
- Low RBA
- High RBA

Volser	Type of extent ('D' if Data. "I" if Index	Flags	Low Extent (CCCCHH)	(reserved)	High Extent (CCCCHH)	(reserved)
6 bytes	1 byte	1 byte	4 bytes	4 bytes	4 bytes	4 bytes

… continued

Low RBA	High RBA	(reserved)	(reserved)
8 bytes	8 bytes	4 bytes	4 bytes

Extent Matrix

The syntax of the SHOWCB macro for Extent Information Matrix is given below:

```
name SHOWCB ACB=address,
            AREA=address,
            LENGTH=number,
            FIELDS=(keywords),
            MF=form
```

Example of Extent Matrix call:

SHOWCB AREA=*USER_AREA*, LENGTH=*300*, *ACB=ACb1*, FIELDS=(**EXTINF**)

SHOWCB Enhancements 5.1

Example of Extent Matrix output:

```
00403CE0                                                      0000012C   10                                    ....
                                                              ^==============USER'S AREA=X'12C'=300
00403D00  000000E0 00000060 00000001 00300000 00010030 00000000 00000000 E5E2C5D9      .......-...................VSER
          |        |        |        |  |      |        |        |        ^==============VOLID=VSER02
          |        |        |        |  |      |        |        ^=======================RESERVED2
          |        |        |        |  |      |        ^================================RESERVED1
          |        |        |        |  |      ^=========================================LEN OF INDEX EXT ROW
          |        |        |        |  ^================================================IND EXTENTS=1
          |        |        |        ^===================================================LEN OF DATA EXT ROW
          |        |        ^==========================================================DATA EXTENTS=1
          |        ^=================================================================FIXED AREA LEN=96
          ^=====================================================================VSAM NEEDS=E0=224
00403D20  F0F2C426 00000800 0000A800 0009D800 00000001 00000015 0000000F 0000000F      02D.......y...Q................
          |        |        |        |        |        |        |        ^==============TRACKS PER CYL=X'F'
          |        |        |        |        |        |        ^=======================TRACKS PER CA=X'F'
          |        |        |        |        |        ^================================PHYS BLOCKS PER TRACK=X'15'
          |        |        |        |        ^=========================================PHYS BLOCKS PER CI=X'1'
          |        |        |        ^==================================================NUM BYTES PER CA=X'9D800'
          |        |        ^===========================================================NUM BYTES PER TRACK=X'A800'
          |        ^==================================================================PHYS BLOCK SIZE=X'800'
          |    ^======================================================================FLAGS=X'26'
          ^=========================================================================TYPE OF EXT='D'
00403D40  0000A800 00000000 00000000 E5E2C5D9 F0F2C926 00000E00 0000B600 0000B600      ..y.......VSER02I.............
          |        |        |        |        |  |      |        ^==============NUM BYTES PER CA=X'0000B600'
          |        |        |        |        |  |      ^=======================NUM BYTES PER TRACK=X'0000B600'
          |        |        |        |        |  ^================================PHYS BLOCK SIZE=X'E00'
          |        |        |        |        ^=========================================FLAGS=X'26'
          |        |        |        ^==================================================TYPE OF EXT='I'
          |        |        ^===========================================================VOLID=VSER02
          |        ^==================================================================RESERVED2
          |    ^======================================================================RESERVED1
          ^=========================================================================NUM PHYS BLOCKS PER CA(FBA only)
00403D60  00000001 0000000D 00000001 0000000F 0000B600 00000000 00000000 E5E2C5D9      ...........................VSER
          |        |        |        |        |        ^==============VOLSER=VSER02
          |        |        |        |        ^=======================RESERVED2
          |        |        |        ^================================RESERVED1
          |        |        ^=========================================NUM PHYS BLOCKS PER CA(FBA only)
          |        |    ^==============================================TRACKS PER CYL=X'F'
          |        ^======================================================TRACKS PER CA=X'1'
          |    ^==============================================================PHYS BLOCKS PER TRACK=D
          ^=========================================================================PHYS BLOCKS PER CI=X'1'
```

SHOWCB Enhancements 5.1

Example of Extent Matrix output:

```
00403D80  F0F2C415  00070000  00000000  0009000E  00000000  00000000  00000000  00000000        02D............................
          | |  |    |                    |                                 |
          | |  |    |                    |                                 ^===============HIGH RBA=X'001D87FF'=1935359
          | |  |    |                    |                                 ^================================LOW RBA=0
          | |  |    |                    ^=============================================================HIGH EXTENT=X'0009000E'
          | |  |    ^=============================================================================LOW EXTENT=X'00070000'
          | |  ^=================================================================================FLAGS=X'15'
          | ^===================================================================================TYPE OF EXT='D'
00403DA0  001D87FF  00000000  00000000  E5E2C5D9  F0F2C915  000A0000  00000000  000A000E        ..g.........VSER02I.............
          |         |         |         |         | |  |    |
          |         |         |         |         | |  |    ^===============HIGH EXT=X'000A000E'
          |         |         |         |         | |  ^================================LOW EXT=X'000A0000'
          |         |         |         |         | ^====================================FLAGS=X'15'
          |         |         |         |         ^======================================TYPE OF EXT='I'
          |         |         |         ^=========================================VOLSER=VSER02
          |         |         ^===========================================RESERVED2
          |         ^=============================================RESERVED1
00403DC0  00000000  00000000  00000000  00000000  000AA9FF  00000000  00000000  00000000        ..................z.............
          |                   |                    |
          |                   |                    ^=========================RESERVED2
          |                   |                    ^=========================RESERVED1
          |                   ^=========================================================HIGH RBA=X'000AA9FF'=698879
          ^=======================================================================LOW RBA = 0
```

IUI improvements on the VSAM panels FILFL1 and FILFL2

- VSAM Addressing Mode listed in IUI
  - Standard or XXL

1. Old View Of The Panel FILFL1

- In z/VSE 4.3 and before the panel FILFL1 looked like:

Before at the dataset XXL.FILE.KSDS.ONLY we can not see the XXL addressing on the panel.

2. New Field 'FILE ADDR' Part 1 (FILE)

- Starting z/VSE 5.1 to show addressing of datasets the panel FILFL1 looks like:


```
D - VSE-IUI-SPB - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help

IESFILFL1                    DISPLAY OR PROCESS A FILE              Page   1 of   1
CATALOG:      VSAM.MASTER.CATALOG                            IJSYSCT

OPTIONS:     1 = SHOW         2 = SORT        3 = PRINT      4 = COPY      5 = DELETE
             6 = VERIFY       7 = LOAD

OPT        FILE ID                                    FILE      FILE   FILE
                                                      NAME      TYPE   ADDR
  _        VSAM.COMPRESS.CONTROL                      *NONE*      B      1
  _        VSE.CRYPTO.LIBRARY                         CRYPTO      B      1
  _        VSE.DUMP.LIBRARY                           SYSDUMP     B      1
  _        VSE.MESSAGES.ONLINE                        IESMSGS     B      1
  _        VSE.PRD1.LIBRARY                           PRD1        B      1
  _        VSE.PRD2.LIBRARY                           PRD2        B      1
  _        XXL.FILE.KSDS.ONLY                         MYKSDS      B      2




PF1=HELP           2=REFRESH        3=END            4=RETURN
                                    9=PREFIX


LOCATE FILE ID ==> _
MA       d                                                                    15/003
   Connected to remote server/host boevmspb.boeblingen.de.ibm.com using port 23        Print to Disk - Append
```

Now the dataset XXL.FILE.KSDS.ONLY shows its 2=XXL addressing on the panel.

- Starting from z/VSE 5.1 the new column 'FILE ADDR' is added to show the corresponded VSAM file addressing:

  - 1 – used for the default addressing,

  - 2 – for XXL addressing (KSDS only).

- Look at the dataset XXL.FILE.KSDS.ONLY to see the XXL addressing samples.

- To accept the new column 'FILE ADDR', the panel FILFL1 was re-organized a bit: it contains the same data as before but the existing field 'FILE ID' is shifted to the left; the captions of the columns 'FILE NAME' and 'FILE TYPE' are re-formatted to be more compact on the panel.

3. New Field 'FILE ADDR' Part 3 (AIX)

- The similar changes were done on the panel FILFL2:


```
D - VSE-IUI-SPB - [24 x 80]

File  Edit  View  Communication  Actions  Window  Help

IESFILFL2                  DEFINE AN ALTERNATE INDEX OR NAME          Page    1 of    1
CATALOG:      VSAM.MASTER.CATALOG                               IJSYSCT

OPTIONS:      1 = DEFINE ALTERNATE INDEX      Move cursor to the base file
              2 = DEFINE ALTERNATE NAME

OPT       FILE ID                                          FILE    FILE   FILE
                                                           NAME    TYPE   ADDR
          VSAM.COMPRESS.CONTROL                           *NONE*    B      1
          VSE.CRYPTO.LIBRARY                              CRYPTO    B      1
          VSE.DUMP.LIBRARY                                SYSDUMP   B      1
          VSE.MESSAGES.ONLINE                             IESMSGS   B      1
          VSE.PRD1.LIBRARY                                PRD1      B      1
          VSE.PRD2.LIBRARY                                PRD2      B      1
          XXL.FILE.KSDS.ONLY                              MYKSDS    B      2
          XXL.FILE.KSDS.ONLY.AIX                          MYAIX     A      1



PF1=HELP          2=REFRESH         3=END            4=RETURN
                                    9=PREFIX


LOCATE FILE ID ==>
MA      d                                                                  16/003
Connected to remote server/host boevmspb.boeblingen.de.ibm.com using port 23      Print to Disk - Append
```

The addressing for an AIX
itself can not be 2=XXL!
It can be 1=Default only!

3. New Field 'FILE ADDR' Part 4

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- To accept the new column 'FILE ADDR', the panel FILFL2 was re-organized likes the panel FILFL1: the layout of the panel was re-formatted to show more content.

- Look at the dataset XXL.FILE.KSDS.ONLY for the sample of an XXL dataset on the panel FILFL2.

- NOTE that the addressing for AIXes themselves must have the type 1=Default only for z/VSE 5.1!   See for the sample of an AIX addressing at XXL.FILE.KSDS.ONLY.AIX on the panel FILFL2.

VSE/VSAM 9.2

z/VSE V5.2: IDCAMS Command Security

- IDCAMS provides a number of cluster management and catalog maintenance commands which can be destructive to data
  - System administrators can restrict the usage of IDCAMS commands with z/VSE V5.2

- The administrator can control access to IDCAMS commands by using the 'IDCAMS.GENERAL' BSM resource profile of the resource class FACILITY

  - IDCAMS commands access control is designed for batch processing only
  - If batch security is not active (SYS SEC=NO) or IDCAMS function is executed in ICCF pseudo partition, then no security checks are performed

z/VSE V5.2: IDCAMS Command Security

- The JCL sample below shows how to use BSTADMIN utility for defining the IDCAMS.GENERAL resource profile in BSM

```
// EXEC BSTADMIN
   ADD FACILITY IDCAMS.GENERAL UAC(READ)
   PERMIT FACILITY IDCAMS.GENERAL ID(USR1) ACCESS(UPD)
   PERMIT FACILITY IDCAMS.GENERAL ID(USR2) ACCESS(ALT)
   PERFORM DATASPACE REFRESH
   LIST FACILITY IDCAMS.GENERAL
/*
```

```
IESADMBSLE                    MAINTAIN SECURITY PROFILES
BSM RESOURCE CLASS: FACILITY      (START is Case Sensitive)      STATUS: ACTIVE
START....   DFHRCF.RSL24
OPTIONS:    1 = ADD          2 = CHANGE        5 = DELETE    6 = ACCESS LIST

  OPT    PROFILE NAME                      DESCRIPTION       UNIVERSAL AUDIT
                                         >                   ACCESS VALUE
   _        DFHRCF.RSL24                                                  12
   _        IBMVSE.JCL.ASSGN.PERM                                         12
   _        IBMVSE.JCL.LIBDEF.PERM                                        12
   _        IBMVSE.JCL.LIBDROP.PERM                                       12
   _        IBMVSE.JCL.OPTION.PARSTD                                      12
   _        IBMVSE.JCL.OPTION.STDLABEL                                    12
   6       *IDCAMS.GENERAL                                       2        12
```

z/VSE V5.2: IDCAMS Command Security

What is needed to turn on VSAM IDCAMS Security ?

a) Batch security is active
b) The corresponding IDCAMS.GENERAL profile is defined,
c) An ID statement is supplied within the job to authenticate a user.

Decisions and Messages

⟹ If user's authorization level for the IDCAMS.GENERAL profile is high enough
then the command is executed without any extra messages.

⟹ If user's authorization level for the IDCAMS.GENERAL profile is **not high** enough
the IDCAMS command will be interrupted and the following messages displayed

```
IDC32240I RACROUTE (AUTH) FAILED WITH RETURN CODE 8 REASON 0
IDC32241I SAF RETURN CODE 8 FOR RACROUTE (AUTH)

BG 0000 BST120I USER(OPER )
        BST120I IDCAMS.GENERAL CL(FACILITY)
        BST120I INSUFFICIENT ACCESS AUTHORITY
        BST120I FROM IDCAMS.GENERAL
        BST120I ACCESS INTENT(UPDATE ) ACCESS ALLOWED(READ )
```

Note: The Job is NOT cancelled, IDCAMS processing continues with the next command specified.

z/VSE V5.2: IDCAMS Command security

- **Users having *Read* authorization level are permitted to perform the following set of IDCAMS commands:**

  - LISTCAT - lists entries contained in a catalog

  - PRINT - lists a part or the whole VSAM file

  - BACKUP - produces a backup copy of one or more VSAM objects

- **Users having *Alter* authorization level are permitted to perform commands:**

  - DEFINE MASTERCATALOG|USERCATALOG|SPACE - defines master catalog, user catalog, or space

  - DELETE MASTERCATALOG|USERCATALOG|SPACE - deletes master catalog, user catalog, or space

  - IMPORT CONNECT - disconnects user catalog from master catalog

  - EXPORT DISCONNECT - connects user catalog to master catalog

  - ALTER - changes attributes of catalog entries

  - **Alter is the highest authorization and includes Read and Update**

z/VSE V5.2: IDCAMS Command security

- **Users having *Update* authorization level are permitted to perform commands:**

  - DEFINE CLUSTER|AIX|PATH|NONVSAM - defines cluster, alternate index or path

  - DELETE CLUSTER|AIX|PATH|NONVSAM - deletes cluster, alternate index or path

  - EXPORT/IMPORT - exports/imports cluster or alternate index

  - REPRO - copies data from one dataset to another

  - RESTORE - defines cluster (if required) and fills it with the data from the backup medium

  - BLDINDEX - builds one or more alternate indexes

  - VERIFY - verifies and corrects (if required) end-of-file information

Note:

1. The scope of using the DEFINE and DELETE commands is limited to cluster, alternate index, path and non-VSAM object.
2. EXPORT DISCONNECT and IMPORT CONNECT are not allowed for this authorization level.

IDCAMS Security
IDCAMS.GENERAL Profile Setup in IUI

- Adding new IDCAMS.GENERAL resource profile of the class FACILITY (fastpath 2819)

```
IESADMBSLE                    MAINTAIN SECURITY PROFILES
BSM RESOURCE CLASS: FACILITY      (START is Case Sensitive)      STATUS: ACTIVE
START....
OPTIONS:    1 = ADD          2 = CHANGE       5 = DELETE       6 = ACCESS LIST

   OPT    PROFILE NAME                       DESCRIPTION        UNIVERSAL AUDIT
                                           >                    ACCESS VALUE
          DFHRCF.BRSLPU                                                   12
    _     DFHRCF.BRSL00                                                   12
    _     DFHRCF.BRSL01                                                   12
    _     DFHRCF.BRSL02                                                   12
```

```
IESADMBSAE                    MAINTAIN SECURITY PROFILES
BSM RESOURCE CLASS:     FACILITY

Add Profile:

  PREFIX.............. _____        CICS region

  RESOURCE NAME......                   Maximum length is 39 characters.
  ........ IDCAMS.GENERAL

  GENERIC............ 1                 (1=yes, 2=no)

  UNIVERSAL ACCESS... 2                 (_=None, 2=Read, 3=Update, 4=Alter)

  AUDIT-LEVEL 1 .....                   (_=None, 1=Failure, 2=Success, 3=All)
  ACCESS-LEVEL 1 ....                   (2=Read, 3=Update, 4=Alter, _=default)

  AUDIT-LEVEL 2 .....                   (_=None, 1=Failure, 2=Success, 3=All)
  ACCESS-LEVEL 2 ....                   (2=Read, 3=Update, 4=Alter, _=default)
  DESCRIPTION.......                    Optional remark
PF1=HELP                    3=END                          5=UPDATE

RESOURCE NAME FIELD IS CASE SENSITIVE. ENTER DATA AS REQUIRED.
```

IDCAMS Security
IDCAMS.GENERAL Profile Setup in IUI

- Configuring IDCAMS.GENERAL resource profile access list (fastpath 2819)

```
IESADMBSLE                 MAINTAIN SECURITY PROFILES
BSM RESOURCE CLASS: FACILITY    (START is Case Sensitive)    STATUS: ACTIVE
START....   DFHRCF.RSL24
OPTIONS:    1 = ADD         2 = CHANGE       5 = DELETE      6 = ACCESS LIST

   OPT    PROFILE NAME                        DESCRIPTION      UNIVERSAL AUDIT
                                                 >            ACCESS VALUE
    _         DFHRCF.RSL24                                             12
    _         IBMVSE.JCL.ASSGN.PERM                                    12
    _         IBMVSE.JCL.LIBDEF.PERM                                   12
    _         IBMVSE.JCL.LIBDROP.PERM                                  12
    _         IBMVSE.JCL.OPTION.PARSTD                                 12
    _         IBMVSE.JCL.OPTION.STDLABEL                               12
    6        *IDCAMS.GENERAL                               2           12
```

```
IESADMBSLA                 MAINTAIN ACCESS LIST
BSM CLASS: FACILITY
PROFILE:   *IDCAMS.GENERAL
START....                              NUMBER OF ENTRIES ON LIST:   00000
OPTIONS:     1 = ADD        2 = CHANGE       5 = DELETE

   OPT    NAME    ACC
    1
```

```
IESADMBSAA                 MAINTAIN ACCESS LIST
BSM CLASS: FACILITY
PROFILE:   *IDCAMS.GENERAL

Add Userid or Groupid:

   NAME............... USR1           Userid or Groupid

   ACCESS............. 3              (_=None,
                                       2=Read, 3=Update, 4=Alter)
```

IDCAMS Security
IDCAMS.GENERAL Profile Setup in IUI

- Rebuilding BSM Security Information (fastpath 283)

```
IESADMSL.IESEBSEC              SECURITY MAINTENANCE
                                              APPLID: DBDCCICS
    Enter the number of your selection and press the ENTER key:

        1    BSM Resource Profile Maintenance
        2    BSM Group Maintenance
        3    BSM Security Rebuild
        4    Maintain Certificate - User ID List
        5    Define Transaction Security (DTSECTXN)
        6    BSM Cross Reference Report
        7    Unified BSM Resource Profile Maintenance













PF1=HELP                    3=END        4=RETURN              6=ESCAPE(U)
                            9=Escape(m)
SECURITY INFORMATION WAS SUCCESSFULLY REBUILT.
==> 3_                                          Path: 28
```

- The JCL sample below shows how to use BSTADMIN utility for defining the IDCAMS.GENERAL resource profile in BSM.

- This profile setup allows everyone to use the 'read-only' commands and grants user USR1 *update* authorization level and user USR2 *alter* authorization level to the IDCAMS.GENERAL profile.

```
// EXEC BSTADMIN
   ADD FACILITY IDCAMS.GENERAL UAC(READ)
   PERMIT FACILITY IDCAMS.GENERAL ID(USR1) ACCESS(UPD)
   PERMIT FACILITY IDCAMS.GENERAL ID(USR2) ACCESS(ALT)
   PERFORM DATASPACE REFRESH
   LIST FACILITY IDCAMS.GENERAL
/*
```

BSTADMIN LIST command output in SYSLST:

```
FACILITY    IDCAMS.GENERAL

UNIVERSAL ACCESS
----------------
       READ

INSTALLATION DATA
-----------------
NONE

AUDITING
--------
FAILURES(READ)

USER        ACCESS
----        ------
USR1        UPDATE
USR2        ALTER
```

DLBL CISIZE parameter
for SAM-ESDS Implicit Definition

- Existing DLBL CISIZE parameter now allowed not only for SD files but also for VSAM files.

```
►►──// DLBL filename,'file-id'──,──────────────────,VSAM─────────────────────────────►
                                      └─date─┘           └─,BUFDAT=RMODE31─┘

►─────────────────────────────────────────────────────────────────────────────────►
  └─,BUFND=n─┘  └─,BUFNI=n─┘  └─,BUFSP=n─┘  └─,CAT=filename─┘  └─,CISIZE=n─┘

  ┌─,DISP=(OLD,KEEP,KEEP)─┐
►─┤                       ├──────────────────────────────────────────────────────►◄
  └─,DISP=──d1───────────┘  ┌─,RECORDS=──n────────┬─,RECSIZE=n─┐
          ├─(d1,d2)───┤                └─(n,n1)─┘
          └─(d1,d2,d3)┘  ├─,BLK=──n──────────┤
                                  └─(n,n1)─┘
                         └─,CYL=──n──────────┘
                                 └─(n,n1)─┘
```
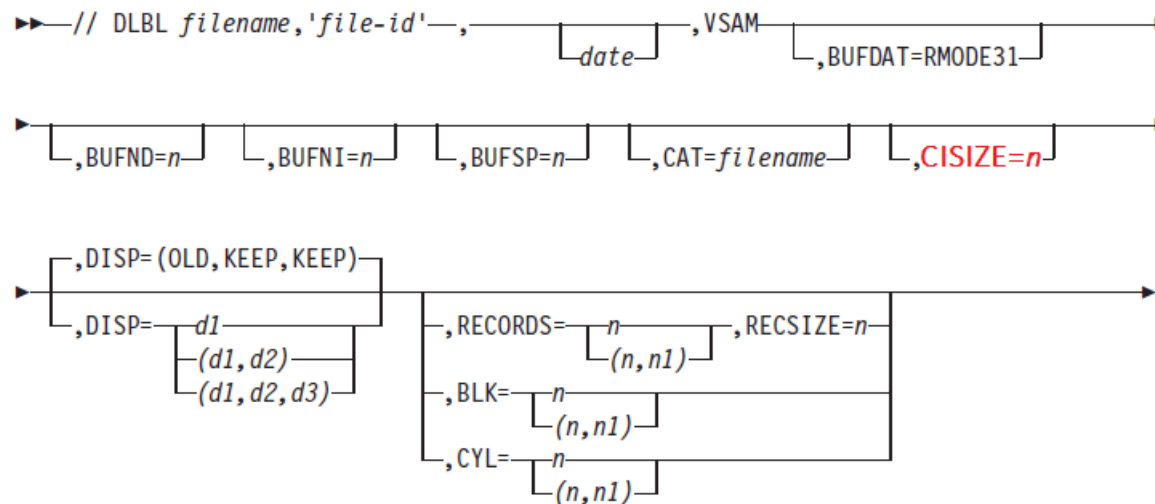
CISIZE=n
   For VSE/VSAM this parameter specifies a control interval size for SAM-ESDS dataset.
   The size overrides that specified (or defaulted) in the respective DTF macro.

Catalog Management Trace

- Catalog Management Trace was enhanced to support the investigation and resolution of CatalogManagement problems

```
IDC3009I ** VSAM CATALOG RETURN CODE IS 8 - REASON CODE IS IGG0CLBN-6
4228I FILE DFHTEMP    OPEN  ERROR X'B4'(180) CAT=VSESPUC (  4,AH, 10)
```

- Existing Catalog Management SNAP TRACE 001 in IKQVEDA tool has been enhanced.

New DUMP parameter was added

- IKQVEDA SNAP 001 trace command format is shown below:

```
ENABLE SNAP=001,PART=partition,DUMP=(return_code,module_id,reason_code)
```

PART=*partition*   specifies partition in which the specified SNAP001 trace is enabled.

DUMP=(*return_code,module_id,reason_code*)   specifies the return_code, module_id, and reason code combination which is to cause SDUMP.

- Sample of the IKQVEDA SNAP command:
```
        // EXEC IKQVEDA,PARM='SYSIPT'
            ENABLE SNAP=001,PART=F8,DUMP=(4,AH,10)
```

Additional Enhancement for VSAM within z/VSE V5.2

- Deletion of the KSDS cluster with ERASE attribute after unsuccessful RESTORE

    When KSDS cluster cannot be extended on the RESTORE, then there might be an error during follow on deletion attempt if that cluster has been defined with ERASE attribute.

    ```
    IDC01304I SUCCESSFUL DEFINITION OF TEST.CLUSTER
    IDC31338I CANNOT EXTEND TEST.CLUSTER
    IDC31334I CANNOT DELETE OLD VERSION OR ASSOCIATION OF TEST.CLUSTER
    IDC31316I ** VSAM CATALOG RETURN CODE IS 250 - REASON CODE IS IGG0CLGB-52
    ```

- DEFINE SPACE CANDIDATE on FBA/SCSI or FAT disks.

    An attempt to define data space with CANDIDATE option on FBA/SCSI or FAT device ended up with the following error:

    ```
    IDC0511I SPACE ALLOCATION STATUS FOR VOLUME SCSI00 IS 68
    IDC3020I INSUFFICIENT SPACE ON USER VOLUME
    ```

- Remove duplicate VOLSERs during DEFINE CLUSTER

    In previous releases IDCAMS permitted the definition of a cluster with duplicate Volser's:

    ```
    VOLUMES(SYSWK2,SYSWK2,SYSWK3,SYSWK3,SYSWK3)
    ```

    However that could lead to the following error if this volume ever needs to be removed (via ALTER REMOVEVOLUME) :

    ```
    IDC3012I ENTRY TEST.KSDS1.DATA NOT FOUND
    IDC3009I ** VSAM CATALOG RETURN CODE IS 8 - REASON CODE IS IGG0CLBN-6
    IDC3003I FUNCTION TERMINATED. CONDITION CODE IS 1
    ```

- **NOW VSAM automatically eliminates duplicate Volser's for**

    DEFINE CLUSTER and DEFINE ALTERNATEINDEX,

MILA4VSAM v1.4 (updated July-2014)

MILA4VSAM v1.4 (updated July-2014)

New features in release 1.4

- 1. Data Space Analysis has been added
  - Data space analysis performs a cross check between cluster Volume Groups and a volume's Data Set Directory.

Error Type	Volume Name	Cluster / AIX Name
The number of extents is not equal(Volume: Data Set Directory / Cluster: Volume Group).	VOL001	CLUSTER.ONE

Summary
1 defective data space(s) found.

- 2. Overall statistic has been added
  - At the end of analysis you will find information about how many Catalogs, Clusters, Data, etc. were processed and analyzed.

```
Statistics
The number of entries processed was:

      # Total ------------ 36

          AIXs ------------ 0
      Catalogs ------------ 1
      Clusters ------------ 6
          Data ------------ 6
      Datasets ------------ 13
    Dataspaces ------------ 5
         Index ------------ 3
       Volumes ------------ 2
```

MILA4VSAM v1.4 (updated July-2014)

New features in release 1.4

- 2. Space Map has a better overview
  - You can now see the fragmentation level of your data.

Result of Space Map Analysis

For more information,
please see the z/VSE web site:

http://www.ibm.com/zvse/

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