



WAVV 2010

## Session Title: Bringing you Up-to-Date with VSAM in zVSE v4.2 & v4.3



<http://twitter.com/IBMzVSE>

Speaker Name: Stev Glodowski  
Presentation by: Ekaterina Teplova

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# Agenda

- **IDCAMS SNAP Command Enhancements**
- **Backup/Restore Enhancements**
- **VSAM Meaningful Cluster Names**
- **Preventing Duplicate Candidate Volumes**
- **New VSAM Extent Prodexit**
- **Task ID for VSAM Lock requests x'A8'**
- **New VSAM Redirector AIX Support**
- **APARs/PTFs**



# IDCAMS SNAP command Enhancements

The IDCAMS SNAP command provides an interface to the FlashCopy feature.

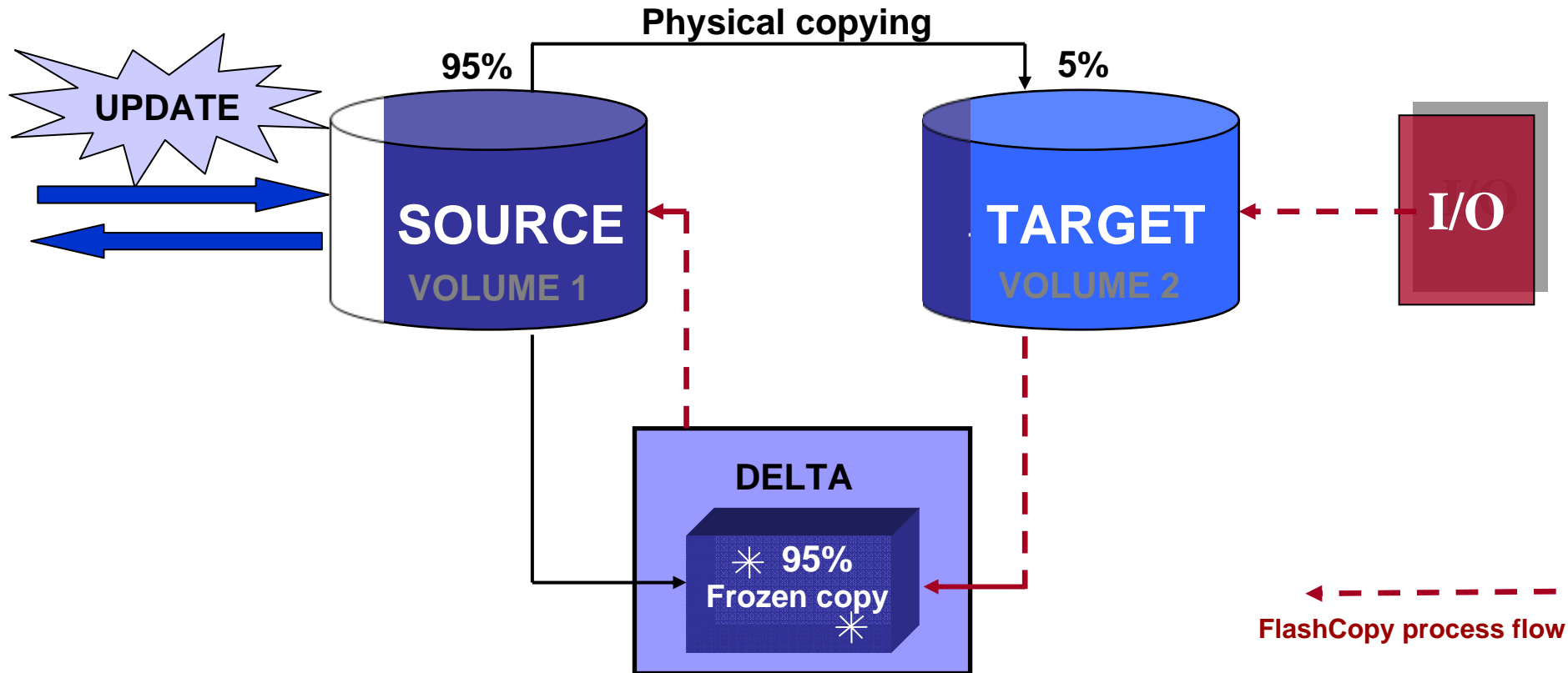
- New **NOCOPY** parameter of the IDCAMS SNAP command creates the FlashCopy. The physical copying of data to target volumes is not performed.
- New **DDSR** parameter of the IDCAMS SNAP command terminates the FlashCopy relation between the source and target volumes and frees the used resources.
- New parameter **COPY** of the IDCAMS SNAP command is now specified explicitly.
- Provided an opportunity to administrate user access rights to the IDCAMS SNAP command using the **Basic Security Manager (BSM)**.



See New Chapter 10, “Performing an IDCAMS SNAP (FlashCopy)”  
“VSE/VSAM User’s Guide and Application Programming”.

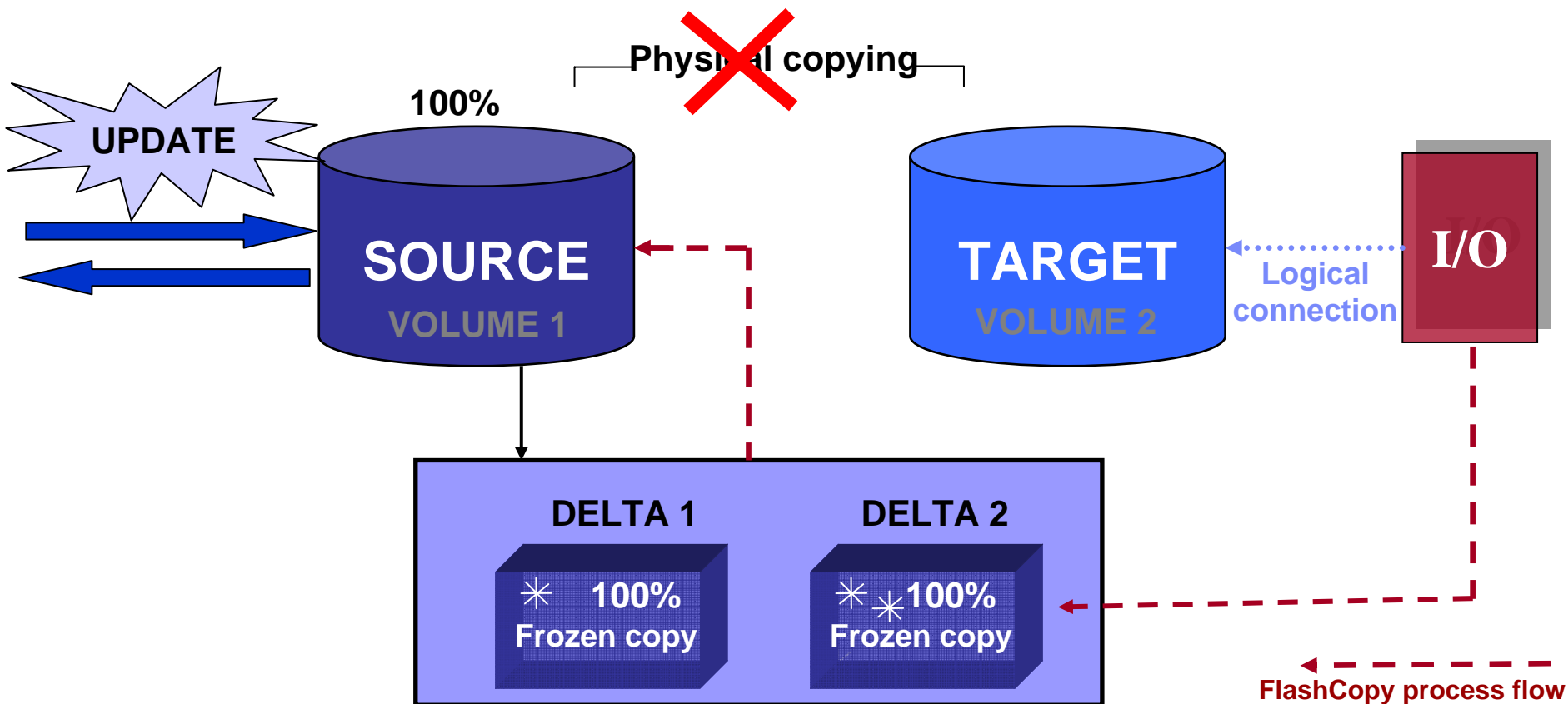
# IDCAMS SNAP COPY parameter

Explicit specification of the default COPY parameter of the IDCAMS SNAP command, facilitates referencing to it by other z/VSE components.



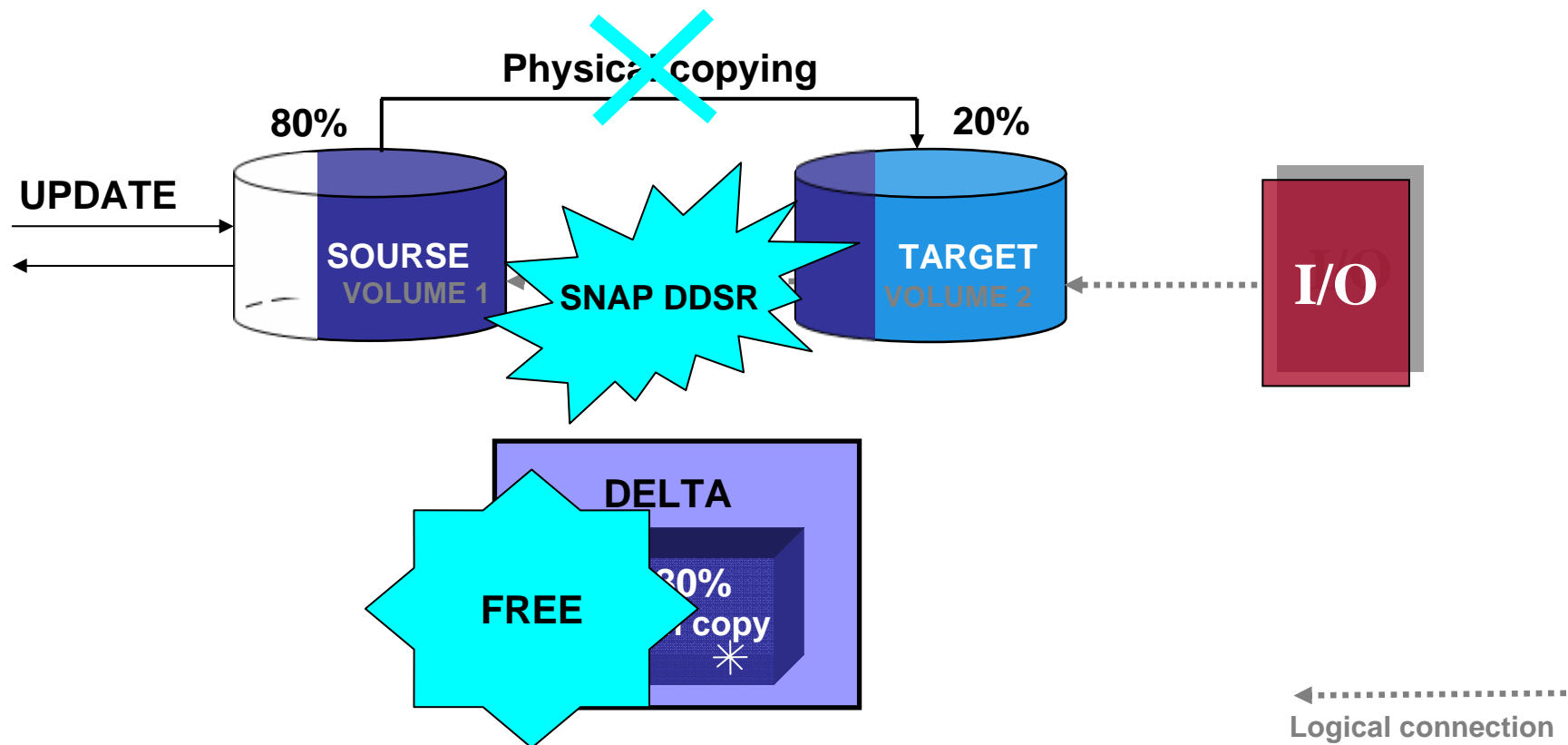
# IDCAMS SNAP **NOCOPY** parameter

The **NOCOPY** parameter of the IDCAMS SNAP command allows the user to eliminate real copying of source volumes to the target volumes for temporary FlashCopy and thus eliminate the superfluous I/O activity.



# IDCAMS SNAP **DDSR** parameter

The DDSR parameter of the IDCAMS SNAP command allows the user to delete FlashCopy relations and thus to stop unnecessary managing of a Delta File and to release internal ESS resources as soon as they are no longer needed.



# Sample of SNAP COPY, NOCOPY, DDSR

## COPY

```
SNAP SVOL(VSE222) TARGETVOLUMES(VSE444) COPY NOPROMPT

IMPORT CONNECT -
  OBJECTS((COPY.UCAT VOLUMES(VSE444) DEVT(3390))) -
  CAT(VSAM.MASTER.CATALOG)

BACKUP (FILE1) BPFIL(BF) SYNONYMLIST( -
  SOURCEVOLUMES(VSE222) TARGETVOLUMES(VSE444) -
  CATALOG(UCAT) SYNCATALOG(COPY.UCAT))

RESTORE OBJECTS(FILE1) BPFIL(BF) CAT(UCAT)

SNAP TARGETVOLUMES(VSE444) DDSR NOPROMPT

EXPORT COPY.UCAT DISCONNECT
```

## NOCOPY

```
SNAP SOURCEVOLUMES(VSE222) TVOL(VSE333) NOCOPY NOPROMPT

IMPORT CONNECT -
  OBJECTS((NOCOPY.UCAT VOLUMES(VSE333) DEVT(3390))) -
  CAT(VSAM.MASTER.CATALOG)

BACKUP (FILE1) BPFIL(BF) SYNONYMLIST( -
  SOURCEVOLUMES(VSE222) TARGETVOLUMES(VSE333) -
  CATALOG(UCAT) SYNCATALOG(NOCOPY.UCAT))

RESTORE OBJECTS(FILE1) BPFIL(BF) CAT(UCAT)

SNAP TARGETVOLUMES(VSE333) DDSR NOPROMPT

EXPORT NOCOPY.UCAT DISCONNECT
```



# Output of SNAP COPY, NOCOPY, DDSR

## COPY

```
SNAP SVOL(VSE222) TARGETVOLUMES(VSE444) COPY NOPROMPT
IDC32204I RACROUTE RESOURCE NOT PROTECTED OR BATCH SECURITY=OFF
IDC0935I IXFP/SNAPSHOT FUNCTION COMPLETED SUCCESSFULLY
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### IMPORT CONNECT -

```
OBJECTS((COPY.UCAT VOLUMES(VSE444) DEVT(3390))) -
CAT(VSAM.MASTER.CATALOG)
```

```
IDC0603I CONNECT FOR USER CATALOG COPY.UCAT SUCCESSFUL
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

```
BACKUP (FILE1) BPFIL(BF) SYNONYMLIST( -
SOURCEVOLUMES(VSE222) TARGETVOLUMES(VSE444) -
CATALOG(UCAT) SYNCATALOG(COPY.UCAT))
```

```
IDC01300I BACKUP FILE CREATED ON XX/XX/2008 AT XX:XX:XX
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### RESTORE OBJECTS(FILE1) BPFIL(BF) CAT(UCAT)

```
IDC01301I RESTORE'S BACKUP FILE CREATED ON XX/XX/2008 AT XX:XX:XX
IDC01304I SUCCESSFUL DEFINITION OF FILE1
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### SNAP TARGETVOLUMES(VSE444) DDSR NOPROMPT

```
IDC32204I RACROUTE RESOURCE NOT PROTECTED OR BATCH SECURITY=OFF
IDC0935I IXFP/SNAPSHOT FUNCTION COMPLETED SUCCESSFULLY
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### EXPORT COPY.UCAT DISCONNECT

```
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

## NOCOPY

```
SNAP SOURCEVOLUMES(VSE222) TVOL(VSE333) NOCOPY NOPROMPT
IDC32204I RACROUTE RESOURCE NOT PROTECTED OR BATCH SECURITY=OFF
IDC0935I IXFP/SNAPSHOT FUNCTION COMPLETED SUCCESSFULLY
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### IMPORT CONNECT -

```
OBJECTS((NOCOPY.UCAT VOLUMES(VSE333) DEVT(3390))) -
CAT(VSAM.MASTER.CATALOG)
```

```
IDC0603I CONNECT FOR USER CATALOG NOCOPY.UCAT SUCCESSFUL
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

```
BACKUP (FILE1) BPFIL(BF) SYNONYMLIST( -
SOURCEVOLUMES(VSE222) TARGETVOLUMES(VSE333) -
CATALOG(UCAT) SYNCATALOG(NOCOPY.UCAT))
```

```
IDC01300I BACKUP FILE CREATED ON XX/XX/2008 AT XX:XX:XX
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### RESTORE OBJECTS(FILE1) BPFIL(BF) CAT(UCAT)

```
IDC01301I RESTORE'S BACKUP FILE CREATED ON XX/XX/2008 AT XX:XX:XX
IDC01304I SUCCESSFUL DEFINITION OF FILE1
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### SNAP TARGETVOLUMES(VSE333) DDSR NOPROMPT

```
IDC32204I RACROUTE RESOURCE NOT PROTECTED OR BATCH SECURITY=OFF
IDC0935I IXFP/SNAPSHOT FUNCTION COMPLETED SUCCESSFULLY
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

### EXPORT NOCOPY.UCAT DISCONNECT

```
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0
```

# The FLASHCOPY VSAM CATALOG/FILES dialog

The „FLASHCOPY VSAM CATALOG / FILES“ dialog ( fastpath 3719 ) is enhanced to allow user to choose the option to create a FlashCopy of the source volumes on the target volumes

```
DSF$SNP2                FLASHCOPY VSAM CATALOG / FILES
```

Enter the required data and press ENTER.

Enter all entire Source Disk Volumes where the CATALOG and all its Datasets reside and the Target Volumes to which the FlashCopy has to be done.

```
SOURCE VOLUME 1..... _____      Enter the Volume-id where the CATALOG
                                         resides
TARGET VOLUME 1..... _____      Enter the Volume-id to which Flash
                                         Copy has to be done
MORE VOLUMES..... 2                  Enter 1 to add more volumes.
                                         Otherwise, enter 2
COPY/NOCOPY..... 1                    Enter 1 to initiate a FlashCopy
                                         relation and copy source to target
                                         volumes, otherwise, enter 2
                                         to initiate a FlashCopy relation
                                         with option NOCOPY.
```

```
PF1=HELP      2=REDISPLAY  3=END
```

# IDCAMS SNAP using the Basic Security Manager

**z/VSE administrator enabled to control the usage of the IDCAMS SNAP command.**

## SAMPLE ( z/VSE console):

```
r rdr,pausebg
```

```
0 exec bstadmin
```

```
BG 0000 1S54I PHASE BSTADMIN IS TO BE FETCHED FROM IJSYSRS.SYSLIB
```

```
BG-0000 BST901A ENTER COMMAND OR END
```

**everybody is allowed to use SNAP...COPY command**

```
0 add facility vsam.snap.copy uacc(read)
```

```
BG 0000 BST904I RETURN CODE OF ADD IS 00
```

```
BG-0000 BST901A ENTER COMMAND OR END
```

**everybody is allowed to use SNAP...DDSR command**

```
0 add facility vsam.snap.ddsr uacc(read)
```

```
BG 0000 BST904I RETURN CODE OF ADD IS 00
```

```
BG-0000 BST901A ENTER COMMAND OR END
```

**nobody is allowed to use SNAP...NOCOPY command**

```
0 add facility vsam.snap.nocopy uacc(none)
```

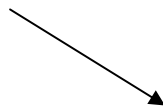
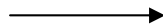
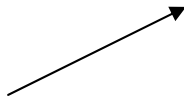
```
BG 0000 BST904I RETURN CODE OF ADD IS 00
```

```
BG-0000 BST901A ENTER COMMAND OR END
```

```
0 end
```

```
BG-0000
```

```
0
```



# IDCAMS SNAP using the Basic Security Manager

**Administering the usage of the IDCAMS SNAP command can be done with the following Basic Security Manager Facilities:**

VSAM.SNAP.COPY for IDCAMS SNAP COPY

VSAM.SNAP.NOCOPY for IDCAMS SNAP NOCOPY

VSAM.SNAP.DDSR for IDCAMS SNAP DDSR

If no BATCH security is enabled in the zVSE system (**SYS SEC=NO**) or it is enabled but no **VSAMSNAP.[COPY|NOCOPY|DDSR] RACROUTE** facility was defined using **BSTADMIN**, then the **IDCAMS SNAP [COPY|NOCOPY|DDSR]** statements are executed as requested but with a warning:

```
IDC32204I RACROUTE RESOURCE NOT PROTECTED OR BATCH SECURITY=OFF
```

If BATCH security is enabled and the corresponding VSAMSNAP Facility has been defined to the BSM, then an ID statement has to be supplied in the job to identify the user.

**If at least one of the following is true:**

- ✓ *the user has at least **READ** access for the corresponding VSAMSNAP Facility related to the issued **IDCAMS SNAP** command,*
- ✓ *the **VSAMSNAP** Facility is defined with universal access,*
- ✓ *the supplied user ID is an administrator ID and, therefore, the user has access to all the **BSTADMIN** resources,*

then the appropriate **IDCAMS SNAP** function is executed, accompanied by the following message:

```
IDC32200I RACROUTE (AUTH) SUCCESSFUL
```

**In all the other cases the requested IDCAMS SNAP function is suspended.**

# Backup/Restore Enhancements

- Producing cross-reference listings using the RESTORE command
- Producing cross-reference listings without objects being restored
- Correct identification of compressed files in cross-reference listings
- Correct identification of empty files in cross-reference listings



# Backup/Restore Enhancements

## Invocation and Description

VSE/VSAM Backup/Restore provides a new capability to produce cross-reference listings of objects backed up and their place on the tape or disk volumes as a result of the RESTORE command processing.

For a backup file on *tape*, the following two listings are produced:

- *Volume cross-reference listing*
- *Object cross-reference listing*

For a backup on *disk*, the following three listings are produced:

- *Extent cross-reference listing*
- *Object cross-reference listing*
- *Extent list*

**Note:** Thus, the same set of cross-reference listings are produced by both the BACKUP command and the RESTORE command.

# Backup/Restore Enhancements Invocation and Description

## NOXREF|XREF|XREFONLY

Specify whether the cross-reference listings are to be produced.

- **NOXREF** specifies that the cross-reference listings will not be produced but objects restoration will be performed.

### Abbreviations: NXREF

- **XREF** specifies that both the cross-reference listings will be produced and objects restoration will be performed.

### Abbreviations: None

- **XREFONLY** specifies that only the cross-reference listings will be only produced and thus objects restoration will not be performed.

### Abbreviations: XREFY

- **Default: NOXREF**

# Backup/Restore Enhancements Sample

## XREFONLY

### RESTORE

RESTORE OBJECTS(\*) XREFY

IDC01301I RESTORE'S BACKUP FILE CREATED ON XX/XX/2008 AT 13:38:25

IDCAMS SYSTEM SERVICES

TIME: 13:38:38

XX/XX/2008

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#### BACKUP EXTENT CROSS-REFERENCE LISTING (BECL)

EXTSEQ	VOLSER	OBJECT NAME	OBJECT TYPE	SEGMENT TYPE
001	WRK002	VSMCKD.KSDS.KEY8.A.C001 .....	KSDS	CMP ONLY
		VSMCKD.KSDS.KEY8.A.C002 .....	KSDS	ONLY
		VSMCKD.KSDS.KEY8.A.C003 .....	KSDS	ONLY
		VSMCKD.KSDS.KEY8.A.C004 .....	KSDS	ONLY
		VSMCKD.KSDS.KEY8.A.C005 .....	KSDS	CMP EMPTY
		VSMCKD.KSDS.KEY8.A.C006 .....	KSDS	CMP ONLY
		VSMCKD.KSDS.KEY8.A.C007 .....	KSDS	CMP ONLY
		VSMCKD.KSDS.KEY8.A.C008 .....	KSDS	CMP ONLY

IDCAMS SYSTEM SERVICES

TIME: 13:23:45

XX/XX/2008

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# Restore Cross Reference Listing

- The Restore VSAM File dialog (fastpath 3714) is enhanced to allow user to choose the option to produce cross-reference listings of objects backed up and their place on the tape or disk volumes as a result of the RESTORE command processing.

A new section has been introduced in the following IUI dialog:

# Fastpath 3714

DSF\$RES1

RESTORE VSAM FILE

Enter the required data and press ENTER.

CATALOG TYPE..... 3

Enter 1 to restore into the MASTER catalog, or enter 2 to restore into a USER catalog, or enter 3 to restore MULTIPLE catalogs.

Enter the identification of the user catalog if you specify 2 for USER in the CATALOG TYPE field.

RESTORE ALL..... \_

Enter 1 to restore EVERYTHING from your backup file. Otherwise enter 2 to restore SELECTED files only.

INPUT MEDIUM..... 2

Enter 1 for DISK or 2 for TAPE or 3 for Virtual Tape.

**XREFERENCE LISTINGS..... 2**

**Enter 1 to restore objects or 2 to produce cross-reference listings or 3 to do both.**

# VSAM Meaningful Clusternames

If not specified explicitly by the user, meaningful cluster names are now generated by VSAM for AIX/Cluster data and index component.

The generated data component and index component names will use:

- the specified clustername + **.DATA** or **.D** for the data component
- the specified clustername + **.INDEX** or **.I** for the index component

# Old VSAM generated names

Up to now, VSAM generated the 44-characters name of the data and index components using the following data:

- the current value of bits 0-55 of the time-of-date (TOD) clock at the moment of the name creation,
- the year and the day of creation,
- inserting in the name some constants and the period signs.

## Example of the OLD NAME Format:

part 1	part 2	part 3	part 4	part 5
T99EFB7B.	VSAMDSET.	DFD08086.	TC05B8EF.	T99EFB7B

The TOD clock value (bits 0-63) stored by STCK instruction: C05B8EF9 9EFB7B40

# New VSAM Meaningful Clusternames

- **If the last qualifier of the name is CLUSTER : CLUS.TESTNAME.CLUSTER**

Generated data name = CLUS.TESTNAME.**DATA**

Generated index name = CLUS. TESTNAME.**INDEX**

---

- **If the cluster name <= 38 characters : DEPTABC.TEST.INFO**

Generated data name = DEPTABC.TEST.INFO.**DATA**

Generated index name = DEPTABC.TEST.INFO.**INDEX**

---

- **If the cluster name is between 39 and 42 characters inclusive :  
DEPTABCD.RESOURCE. ABCDEFGH.DATA1234.STUFF**

Generated data name = DEPTABCD.RESOURCE.ABCDEFGH.DATA1234.STUFF.**D**

Generated index name = DEPTABCD.RESOURCE. ABCDEFGH.DATA1234.STUFF.**I**

---

- **If longer than 42 characters, and the last qualifier is not CLUSTER :  
COMPANY.DEVISION.DEPT.DLREPORT.DECADE.MONTH**

Generated data name = COMPANY.DEVISION.DEPT.DLREPORT.**D99EFB7B**

Generated index name = COMPANY.DEVISION.DEPT.DLREPORT.**I1A12FAE**

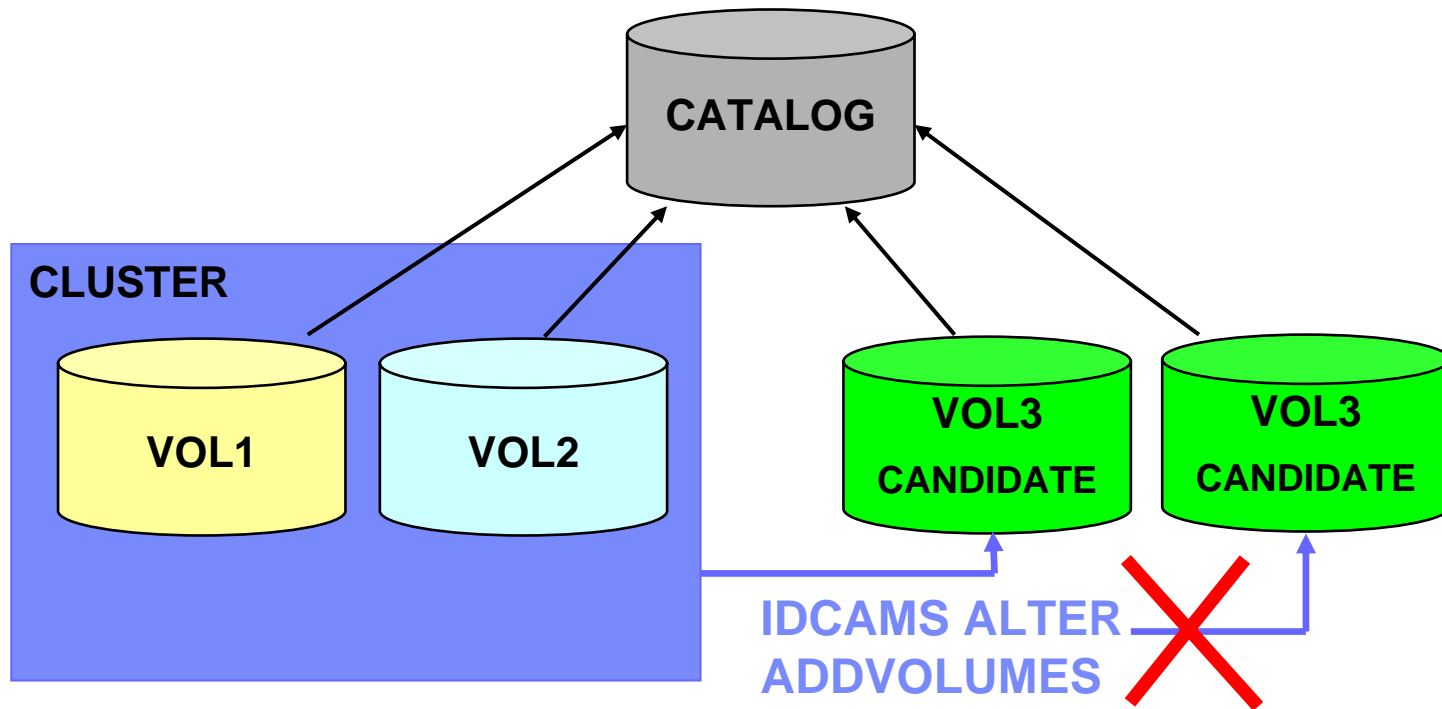
# VSAM Meaningful Clusternames

## Note:

- In 4.2 the name of DATA and INDEX portion generated by VSAM is always the same
- In releases before the name for DATA and INDEX portion generated by VSAM was always a different one because of the timestamp
- This may affect your IDCAMS ALTER / REDEFINE strategy since ALTER of the Base Cluster name is no longer enough in order to redefine a VSAM Cluster

# Preventing Duplicate Candidate Volumes

The IDCAMS ALTER command will allow to add any volume as candidate only once.



Note: do not use IDCAMS Define to define the same volume as candidate for the same cluster twice.



## New error message

If the candidate volume is already present in the list of object candidate volumes, the request will be rejected with IDCAMS Return Code 60 and new Reason code 40

```
IDC3009I ** VSAM CATALOG RETURN CODE IS nnn - REASON CODE IS IGG0CLxx - mmm
```

Return code	Reason code	Explanation
60	40	<b>Explanation:</b> An attempt was made to add a volume to the object which already has this volume as candidate. Request rejected.



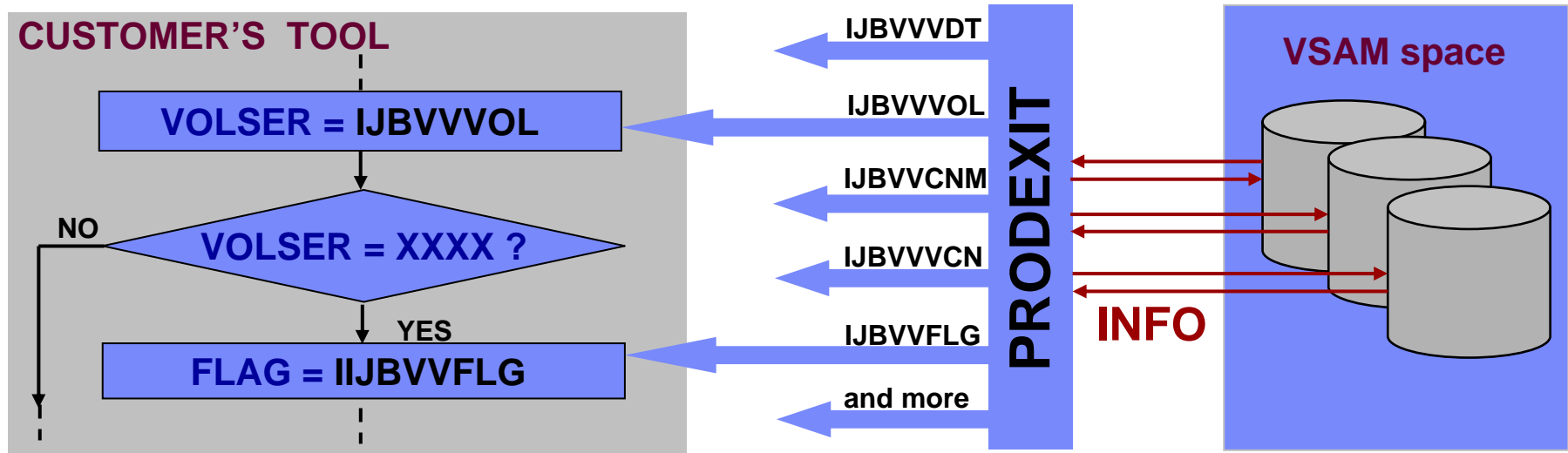
See “z/VSE Messages and Codes Volume 2”.

# New VSAM Extent PRODEXIT

- New IJBVVEXU VSAM PRODEXIT allows monitoring of allocations of VSAM data space extents and the suballocation of VSAM cluster extents.

## Advantages:

- The PRODEXIT provides to the customers facilities to create his own tools to monitor VSAM events and optimize DASD space usage.



# New VSAM Extent PRODEXIT

IJBVINP points to the communication area (input area). The area holds the information shown in the following table at exit entry.

Field	Size	Description
- IJBVLENV	H	Length of area
- IJBVPIK	H	Updated by supervisor. PIK of current task
- IJBVTIK	H	Updated by supervisor. TIK of current task
-	H	Reserved
- IJBVVVER	X	Version of the vendor info block, currently x'00'
- IJBVVFLG	X	Flags with values as follows:
- IJBVVDEL	X'80'	- ON if extent is to be deleted, otherwise extent is to be allocated
- IJBVVCYL	X'40'	- ON if extent is specified in cylinders, otherwise allocation units are tracks
- IJBVVFBA	X'20'	- ON if extent is on an FBA device
- IJBVVSE	X'10'	- ON for anonymous data space extents, otherwise extent is suballocated for a named cluster component
- IJBVVVOL	CL6	Volume serial number
- IJBVVVCT	0XL4	Device class and type as after the GETVCE macro
- IJBVVVD1	X	Device operational character (as DCTUFLG)
- IJBVVVD2	X	Device optional features (as DCTUOPT)
- IJBVVVDC	X	Device class (as DCTUDCL), X'21' for FBA devices
- IJBVVVDT	X	Device type (as DCTUTYP)
- IJBVVVCN	F	Number of cylinders on the volume.
- IJBVVVTN	H	Number of tracks per cylinder
- IJBVVVBN	H	Number of blocks per track on FBA disks or number of bytes per track on ECKD
- IJBVVEXB	F	Extent begin, number of starting allocation unit (** track or cyl)
- IJBVVEXS	F	Extent size, number of allocation units
- IJBVVCNM	CL44	Catalog name
- IJBVVDNM	CL44	If is OFF - data set name of the cluster component as appeared in LISTVTOC, otherwise one of the following strings: "DEFINE CATALOG", "DEFINE SPACE", "DELETE CLUSTER", "DELETE SPACE"

# New VSAM Extent PRODEXIT

## Notes:

- Any return code setting in IJBVRC is ignored
- At **catalog creation**, the catalog components which appeared in the LISTCAT as VSAM.CATALOG.BASE.INDEX and VSAM.CATALOG.BASE.DATA are reported by the exit as a **single extent** named VSAM.CATALOG.BASE
- When a **catalog is deleted**, the exit reports that as a **single event**. Since the catalog deletion can cause deletion of several data space extents on several volumes, the fields IJBVVVOL, IJBVVVCT, IJBVVVTN, IJBVVVTN, IJBVVVBN are set to binary zeroes, the fields IJBVVEXB and IJBVVEXS are set to -1.

# New VSAM Extent PRODEXIT

## How to use PRODEXIT:

- Prepare a program, which receives PRODEXIT data and is using it (for example, print it)
- Generate a phase and put it into SVA
- Enable PRODEXIT (using an enabling program)
- Run a test, which is to be investigated by VSAM PRODEXIT
- Disable PRODEXIT

# New VSAM Extent PRODEXIT

## SAMPLE OUTPUT:

```
BG 0000 VEXU: 10 VSE300 0000000F 00000087 UCAT          DEFINE CATALOG
BG 0000 VEXU: 00 VSE300 0000000F 0000004B UCAT          VSAM.CATALOG.B
BG 0000 VEXU: 10 VSE300 00000096 000005DC UCAT          DEFINE SPACE
BG 0000 VEXU: 00 VSE300 00000096 0000012C UCAT          SAMESDS.DATA
BG 0000 VEXU: 80 VSE300 00000096 0000012C UCAT          SAMESDS.DATA
BG 0000 VEXU: 90 VSE300 00000096 000005DC UCAT          DELETE SPACE
BG 0000 VEXU: 90          FFFFFFFF FFFFFFFF UCAT          DELETE CATALOG
```



Please find the information about macros for PRODEXITs in “Preparing a product for VSE”.

<http://publibz.boulder.ibm.com/epubs/pdf/iespve10.pdf>

Updated with 4.2.1 Refresh

# Task ID for VSAM Lock requests

- For VSAM X'A8 Lock requests the task id of the owner of the lock will be returned in case the lock cannot be acquired because the resource is locked already by another task.

## Advantages:

- This information will help to find the reason for locked tasks without the necessity to use the LOCKTRACE on all VSAM locking activities.

## Examples:

### Trying to open a file, which is already in use within 1 VSE system:

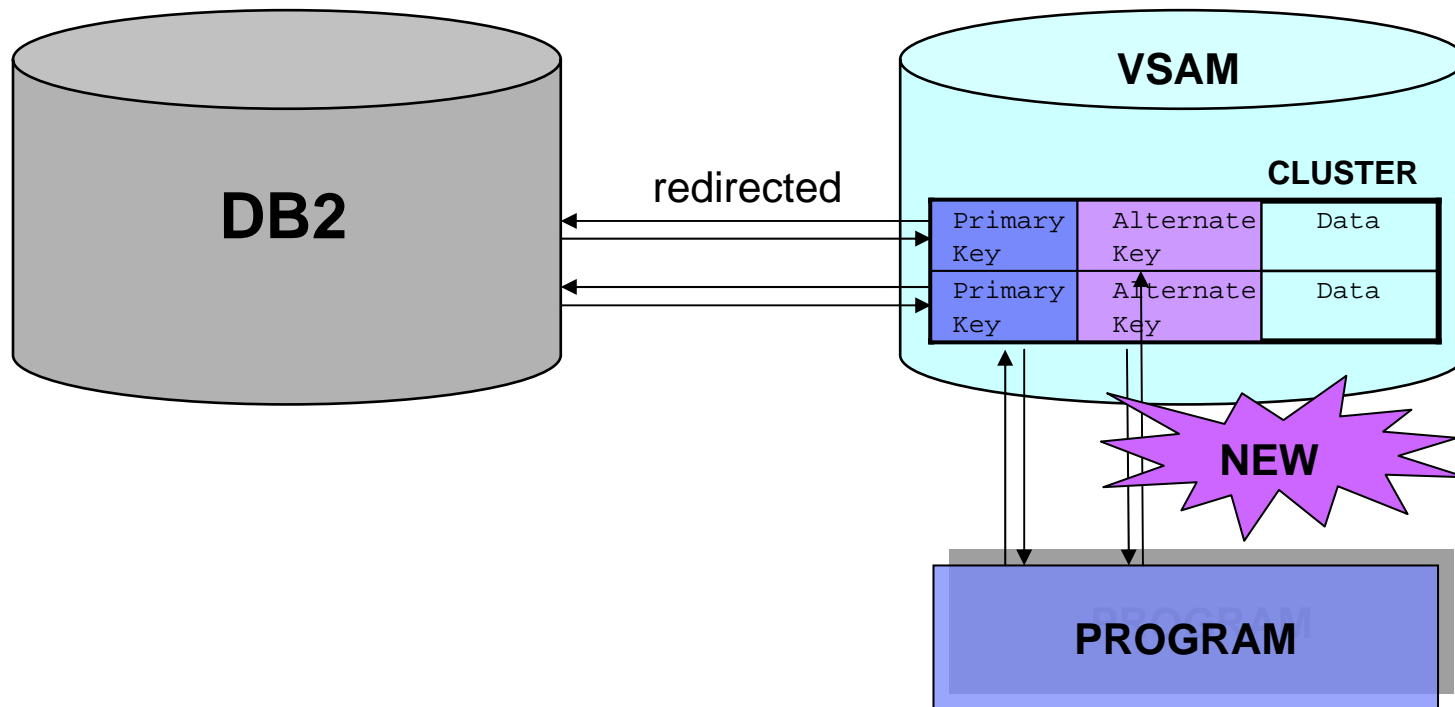
```
Y2 0047 4228I FILE OPEN ERROR X'A8'(168) CAT=IJSYSCT  
(OPNH1-45) FILE ALREADY OPEN IN ANOTHER PARTITION, RC X'04' TASK X'0020'
```

### Trying to open a file, which is locked on a different VSE system (shared system):

```
Y1 0045 4228I FILE OPEN ERROR X'A8'(168) CAT=  
(OPNH1-45) FILE ALREADY OPEN IN ANOTHER PARTITION, RC X'04' TASK X'FFFF'
```

# New VSAM Redirector AIX Support

- VSE/VSAM redirector provides the capability to perform output requests to redirected KSDS cluster over the PATH using AIX.





# New VSAM Redirector AIX Support

To perform output requests to redirected KSDS cluster over the PATH using AIX, user should perform the following tasks:

1. **DEFINE and BUILD AIX right after loading cluster with DUMMY record**
2. **Indicate AIX key field in the MAP file for redirected cluster**
3. **Point AIX key field while creating DataBase Tables (Create DBTables program 'create.bat')**

Mapname: **TSTKSDS**  
 Catalog: **CATNAME**  
 Cluster: **CLUSNAME**  
 System: **VSEXXX**

Fieldname	Type	Offset	Length
prefix	STRING	0	4
<b>aix1</b>	STRING	<b>0</b>	<b>6</b>
<b>key</b>	STRING	4	8
aix2	STRING	9	3
suffix	STRING	12	28

# New VSAM Redirector AIX Support

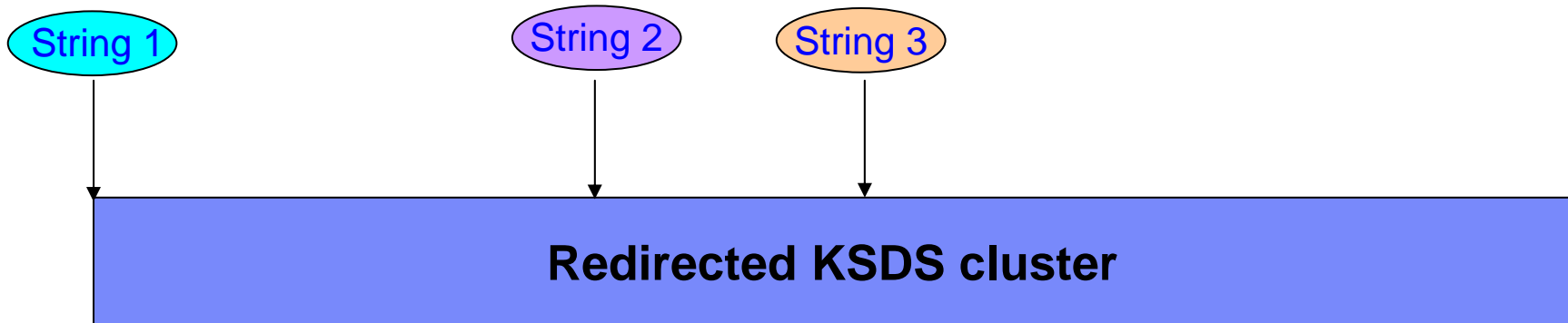
- Support of concurrent access with multiple strings to Redirected KSDS clusters is provided (over base cluster or path).

## Advantage:

User is capable to keep separate positioning information for each string.

## Notes:

- User should specify the number of strings with STRNO parameter of ACB macro.
- MAX 255 strings.
- User can not use primary and AIX at the same time.



# Latest Service for z/VSE 4.1 VSAM (91C)

- **DY47135**/UD53581 0C1 ABEND From IKQBFA
- **DY47087**/UD53523 Error on BROWSE BACKWARD on SAM File
- **DY47044**/UD53503 ABEND at IKQVDTPE
- **DY47083**/UD53544 Exclusive Control LOOP When VSAM Returns Internal RPL Address Back to CICS/TS as Owner of Locked Resource
- **DY47084**/ Task WAIT on Buffers (FCBFWAIT) Under CICS/TS
- **DY47085**/ SDUMP Under CICS/TS From Heavily Used VSAM CLUSTER
- **DY47068**/UD53520 LOOP Then ABEND in IKQIXF Processing a Backlevel INDEX Record for a SHR(4,4) VSAM CLUSTER
- **DY46972**/UD53435 SDUMP Issued Due to Wrong PLHXEO Index Offset Value
- **DY46996**/UD53432 Error Message was not Issued When Implicitly Defined SAM ESDS File Exceeds 4 GB Limit
- **DY47012**/UD53453 Implicit DEFINE Can Specify Incorrect Cluster Names
- **DY46937**/UD53377 OPEN ERROR RC=x'74' Instead of RC=x'76'

# Latest Service for z/VSE 4.2 VSAM (01C)

- ----- E422 -----
- **DY47135**/UD53580 0C1 ABEND From IKQBFA
- **DY47086**/UD53522 Error on BROWSE BACKWARD on SAM File
- **DY47104**/UD53560 ABEND at IKQVDTPE
- **DY47083**/UD53543 Exclusive Control LOOP When VSAM Returns Internal RPL Address Back to CICS/TS as Owner of Locked Resource
- **DY47084** Task WAIT on Buffers (FCBFWAIT) Under CICS/TS
- **DY47085** SDUMP Under CICS/TS From Heavily Used VSAM CLUSTER
- **DY47068**/UD53519 LOOP Then ABEND in IKQIXF Processing a Backlevel INDEX Record for a SHR(4,4) VSAM CLUSTER
- **DY46995**/UD53451 I/O Error at End of 1st Extent on 2nd Volume of SAM ESDS
- **DY46983**/UD53423 BACKUP/RESTORE PAV Compatibility PTF
- **DY46972**/UD53434 SDUMP Issued Due to Wrong PLHXEO Index Offset Value
- **DY46996**/UD53431 Error Message was not Issued When Implicitly Defined SAM ESDS File Exceeds 4 GB Limit
- ----- E421 -----

## z/VSE v4.3

- **VSAM 24-bit Constraint Relief**
- **SHOWCB Enhancements**
- **VSAM SNAP trace cleanup**
- **IDCAMS RECMAP Command Enhancements**
- **VSAM Redirector EXPAD**
- **VSAM using DLBL CYL/BLK**
- **New upcoming CATLG Interface package**

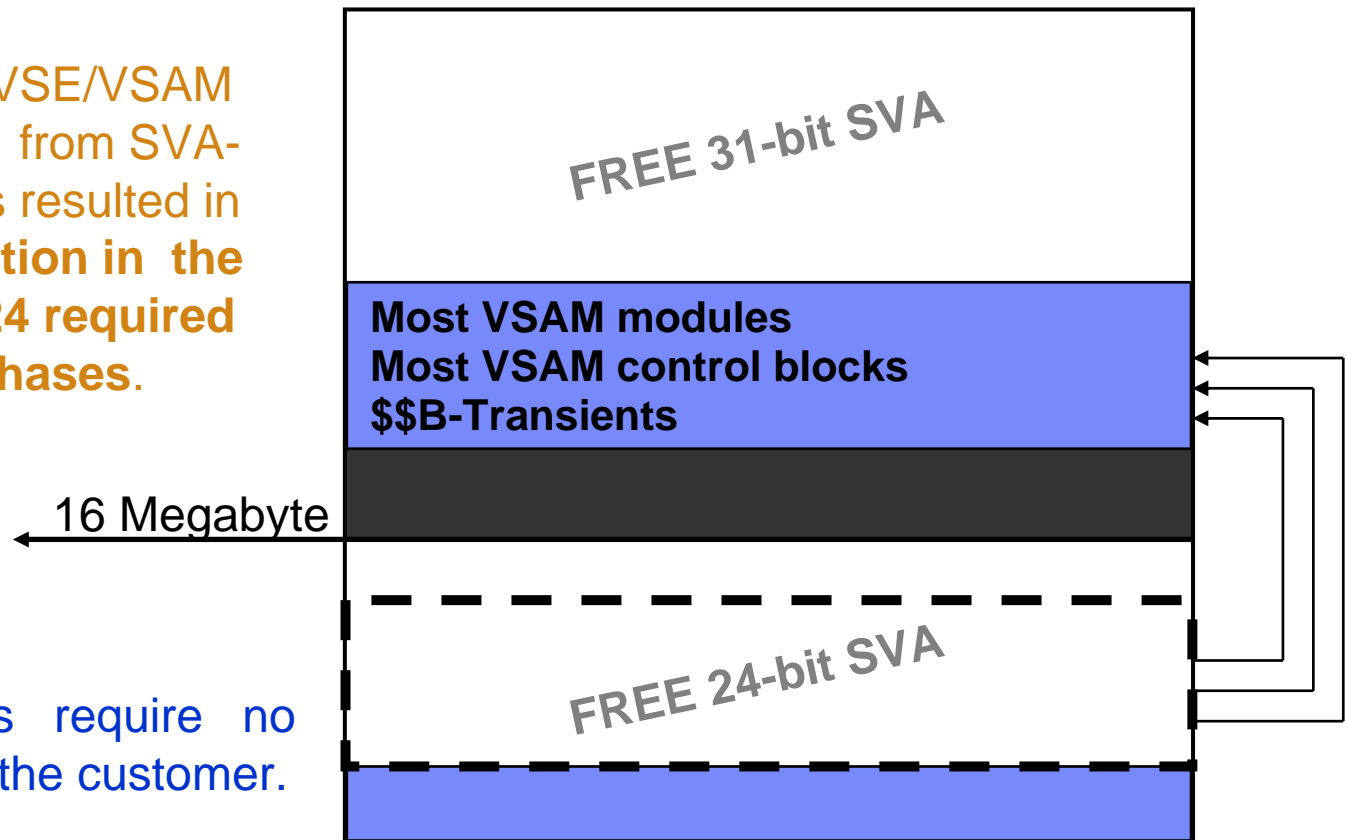


## VSAM 24-bit Constraint Relief

Customers with growing (CICS) workload and/or those who want to consolidate their VSE systems might have an increased need of 24-bit storage that is storage below the 16 Megabyte line which is still a limited resource.

In z/VSE 4.3, most VSE/VSAM phases were moved from SVA-24 to SVA-31. This resulted in a significant reduction in the amount of SVA-24 required for z/VSE system phases.

The above benefits require no action on the part of the customer.



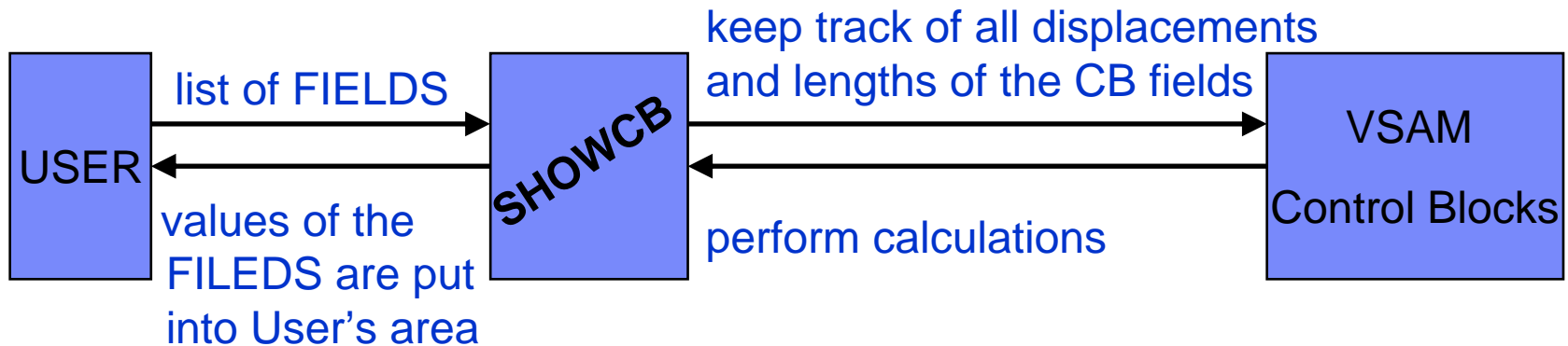
## VSAM 24-bit Constraint Relief

**What is more, the following external changes will be made to the VSE/VSAM product:**

1. VSE/VSAM will be acquired in GETVIS pools. This will allow closer tracking of GETVIS usage by the product.
2. VSE/VSAM will support user-generated control blocks (ACB, RPL, EXLST) as well as the action macros (OPEN, CLOSE, GET, PUT, ERASE, TESTCB, SHOWCB, GENCB) to be located in and executed from 31-bit Partition GETVIS.
3. In addition to the above, an option (“BUFDAT=RMODE31”) will be added to the DLBL to allow a legacy application to move the VSE/VSAM data buffers to 31-bit Partition GETVIS.

## SHOWCB Enhancements

With SHOWCB macro you can examine the contents of fields in an ACB, EXLST, or RPL control block. VSE/VSAM displays the requested fields in a user's area.



The first part of the enhancement extends SHOWCB to enable monitoring of VSAM LSR datasets using an officially supported API.

The following two FIELDS are supported as SHOWCB ACB:

SHOWCB FIELD	Actual FIELD	FIELD Description
ASTRNUM	RPHDASTR	Number of active strings in pool
STRTOT	RPHDSTNO	Total number of strings in the pool



## SHOWCB Enhancements

The second part of the enhancement extends AMDSB and EDB API, in order to enable user to obtain status information for open VSAM datasets using an officially supported API.

18 NEW AMDSB and EDB FIELDS are supported by SHOWCB ACB. The part of these FIELDS are listed in a table below:

SHOWCB FIELD	Actual AMDSB	FIELD Description
ATRB	AMDATTR, AMDATTR3, AMDRCFRM	Dataset Attributes and SAM ESDS record info
SHAREOP	AMDSHOPT	SHARE OPTIONS
LNCIS	AMDLNCIS	Local number of CI SPLITS
LNUPDR	AMDLUPR	Local number of updated records
LNLOGR	AMDLNLR	Local number of logical records
LAVSPAC	AMDLASPA	Local number of bytes of free space



See the full list of a new SHOWCB FIELDS in Chapter 12 “Descriptions of VSE/VSAM Macros” in “VSE/VSAM User’s Guide and Application Programming”.

# VSAM SNAP trace cleanup

Enable the following SNAP Traces:

<u>Type:</u>	<u>Enables:</u>
<b>0001</b>	Catalog management error code trace
<b>0002</b>	Buffer manager trace
<b>0003</b>	OPEN control block dump (when OPEN processing is complete) OPEN error trace (prints control blocks if an error occurs during OPEN processing) CLOSE control block dump (at the beginning of CLOSE processing)
<b>0004</b>	VSE/VSAM I/O trace
<b>0005</b>	I/O error trace
<b>0008</b>	Catalog management I/O trace (prints all I/O operations done by VSE/VSAM catalog management)
<b>0009</b>	Record management error trace (prints control blocks for any error detected by VSE/VSAM record management)
<b>0010</b>	Redirector Trace
<b>0013</b>	In-core wrap trace for trace points within VSE/VSAM Record Management
<b>0014</b>	Level2 SNAP013 Trace (I/O, EXCPAD and zVSE Lock Activity)
<b>0015</b>	Level3 SNAP013 Trace (Buffer Management)
<b>0016</b>	Produce a printout (PDUMP) each time the SNAP013 Trace Table wraps.

# IDCAMS RECMAP Command Enhancements

New parameter **DECIMALPOS** for IDCAMS RECMAP command is implemented to specify the position of decimal point for decimal numbers. The DECIMALPOS indicates the number of digits from the right, after which the decimal point should be placed.

This parameter can only be applied to the field types:

PACKED, UNPACKED, ZONED, and UNZONED.

Examples:

123.45	has a decimal position of 2
12345	has a decimal position of 0 (or no decimal position)
1234500	has a decimal position of -2

**Such decimal numbers are used by customer applications on COBOL or PL/1 to do calculations with decimal values. For example, for storing money, there are usually 2 digits after the point for cents, e.g. 123.45**

# IDCAMS RECMAP Command Enhancements

Two new parameters **MAPNAMES** and **CLUSTERNAME**s, are implemented for IDCAMS RECMAP LIST command to produce a list of map names.

Example of CLUSTERNAMEs:

UCAT1

**CLUSTER.NAME.A**

**MAP.NAME.AA**

**MAP.NAME.BB**

**CLUSTER.NAME.B**

**MAP.NAME.CC**

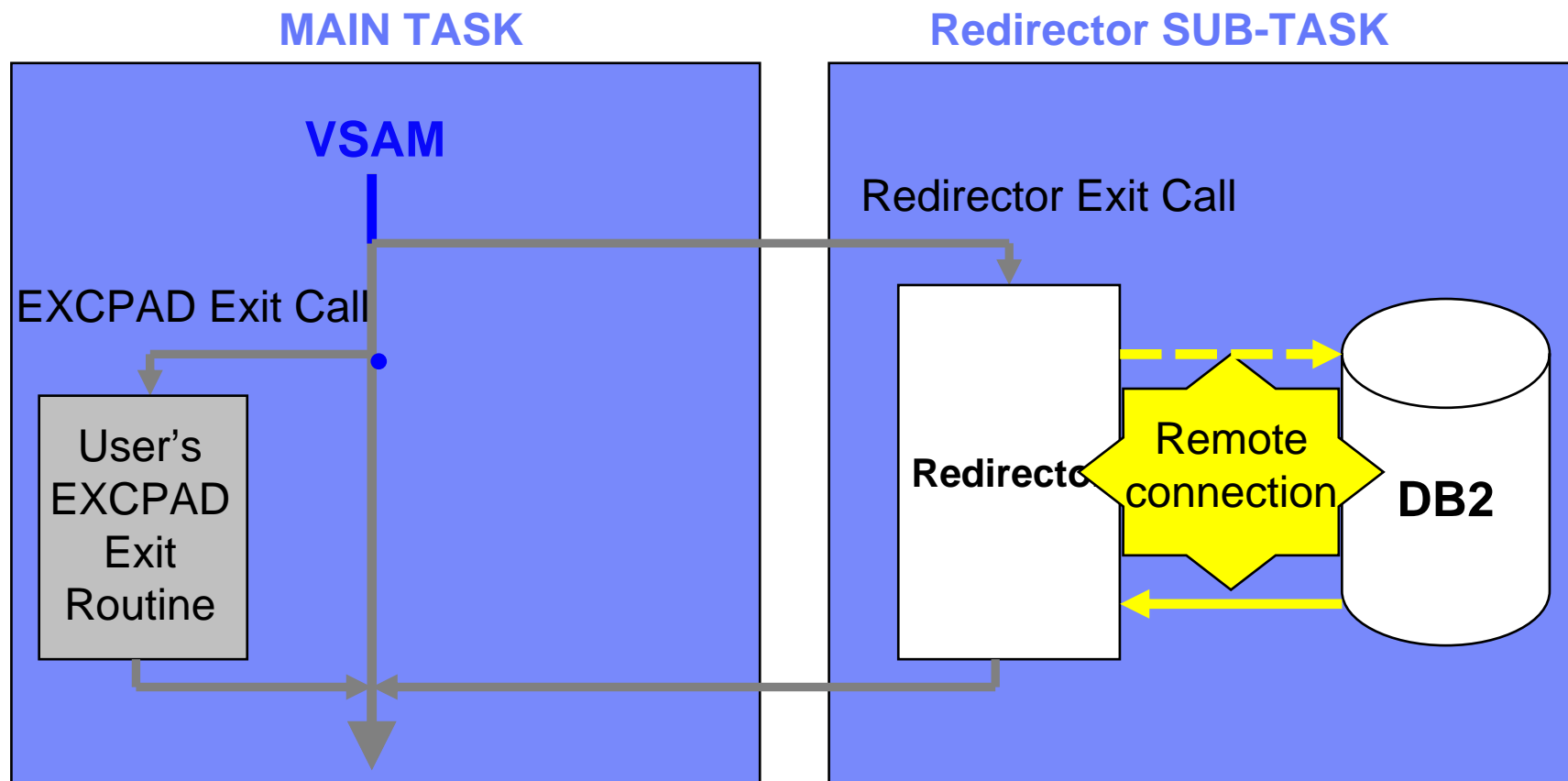
**MAP.NAME.DD**

**These lists are to help customers find information about defined maps and clusters quicker.**

**WAVV requirement 2008**

# VSAM Redirector EXCPAD

The VSAM Redirector EXCPAD is supported. When the EXCPAD exit routine is used, then the Redirector call is performed in a separate subtask. This allows VSAM to continue processing concurrently by returning to the EXCPAD exit routine, while the Redirector task waits for a remote connection.



## VSAM using DLBL CYL/BLK

The DLBL statement supports the following new operands:

**CYL=n**    **CYL=(n,n1)**

This operand indicates the number of cylinders on a CKD device to be used for space allocation.

---

**BLK=n**    **BLK=(n,n1)**

This operand indicates the number of blocks on an FBA device to be used for space allocation.

n specifies the number of blocks used for the primary allocation,

n1 specifies the number used for secondary allocations.

n and n1 can be a decimal number up to 2,147,483,645.

Example of DLBL statements:

```
// DLBL HUSFIL1,'HUSFILE-ID 1',0010,VSAM,CYL=10
```

```
// DLBL HUSFIL2,'HUSFILE-ID 2',0020,VSAM,BLK=(20000,10000)
```

# CATLG Interface package

- Existing CATLG interface will be made partially made an official external interface
- The CATLG interface has NOT been changed
- Reading from Catalog records but no update or define
- CTGPL (Catalog Parameter List)
- CTGFL (Catalog Field List Entry)

Stev Glodowski

stev.glodowski@de.ibm.com



<http://twitter.com/IBMzVSE>

