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Bringing you Up-to-Date with VSAM in zVSE v4.2

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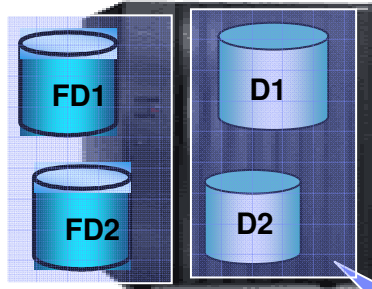
Agenda

- **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**
- **VSAM data Encryption / Protection**
- **APARs/PTFs**



Disaster Recovery Site - IBM Storage System

Increased Availability and DR



(TPC) Totalstorage Productivity Center for Replication

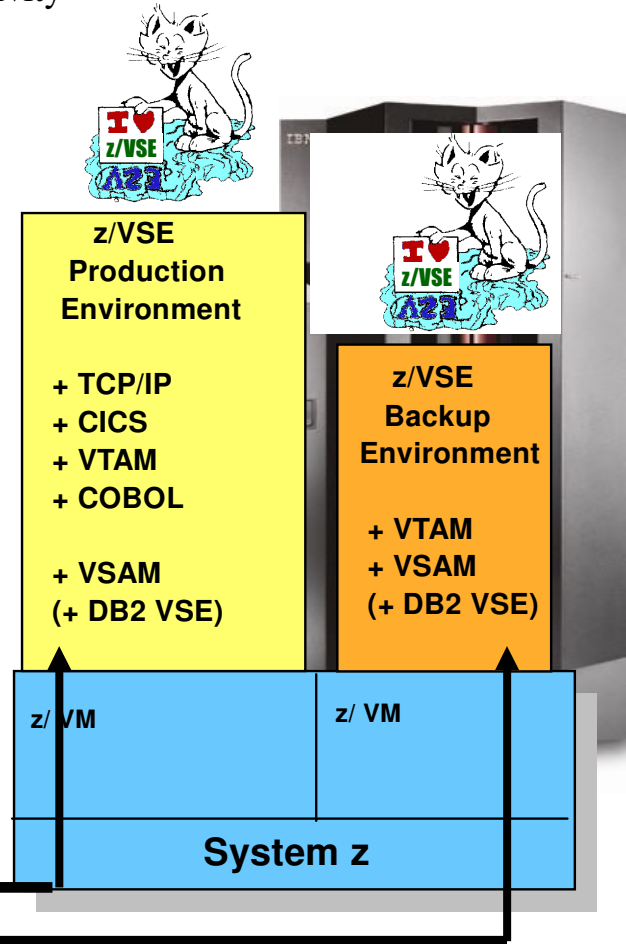
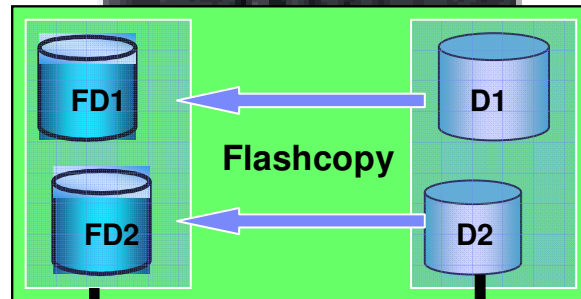
GLOBAL / Metro Mirror



IBM Storage System
ESS, DS6000, DS8000

Flashcopy:

- minimal interruption,
- immediate access to source and target
- feature available for zSeries and the open system servers



(offline backup process)

IDCAMS SNAP command Enhancements

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

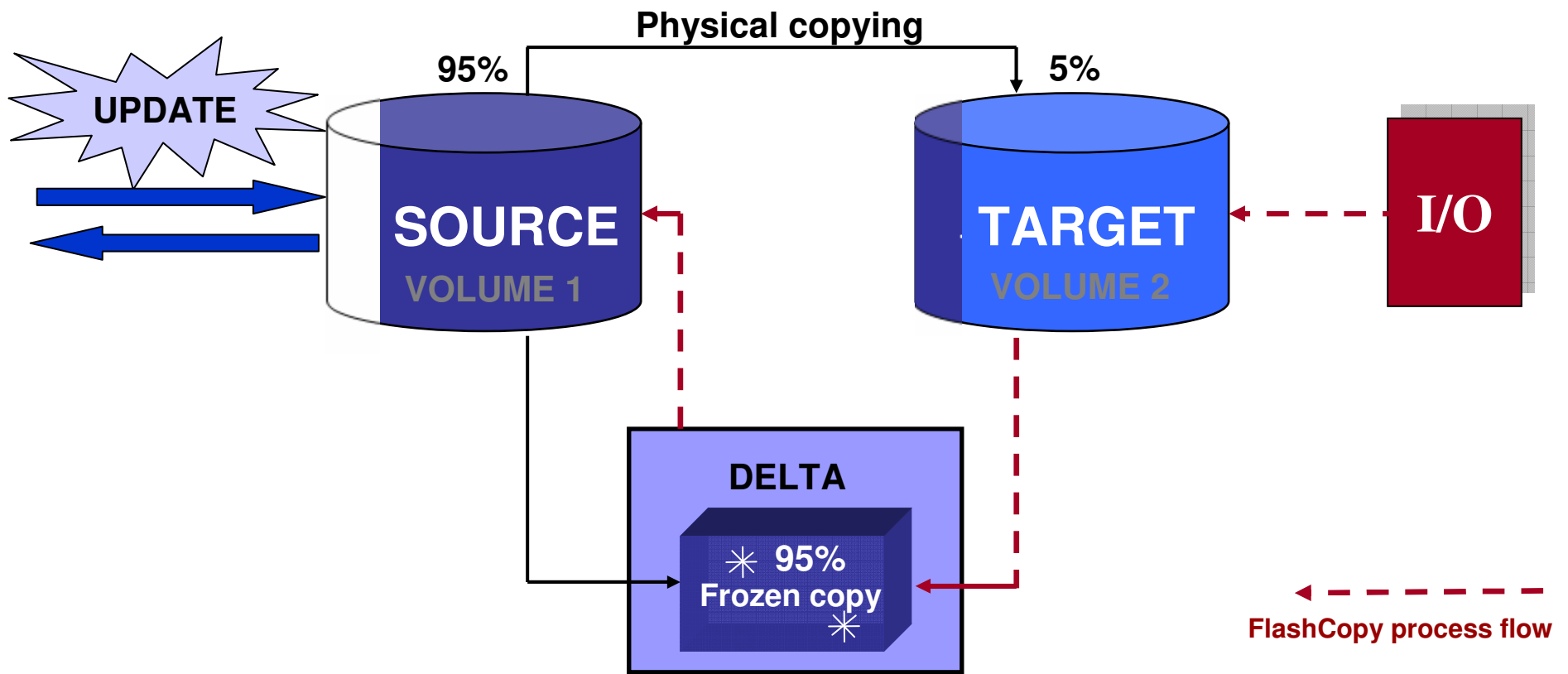
- New **NOCOPY** parameter of the IDCAMS SNAP command creates the FlashCopy. The physical copying of data to target volumes is not performed.
- New **DDSR** parameter of the IDCAMS SNAP command terminates the FlashCopy relation between the source and target volumes and frees the used resources.
- New 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”.

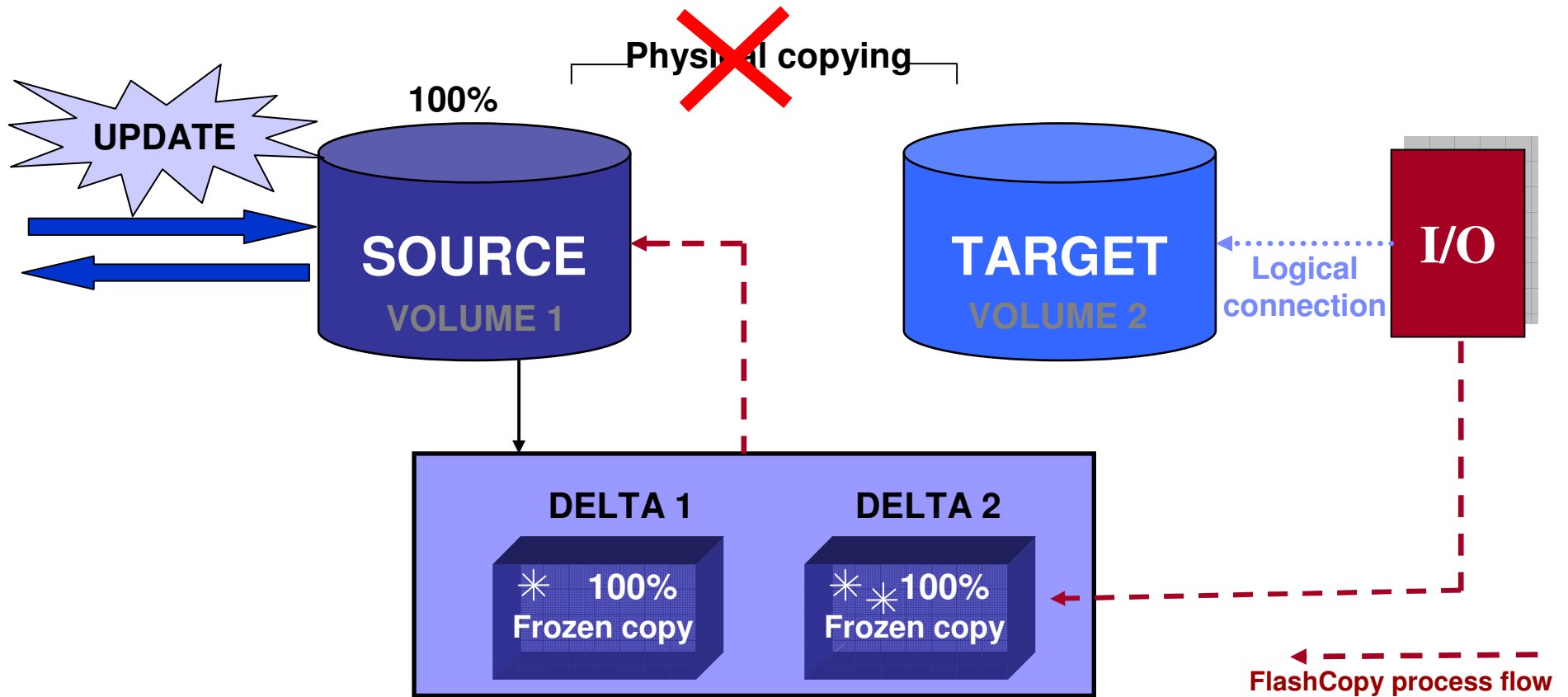
IDCAMS SNAP COPY parameter

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



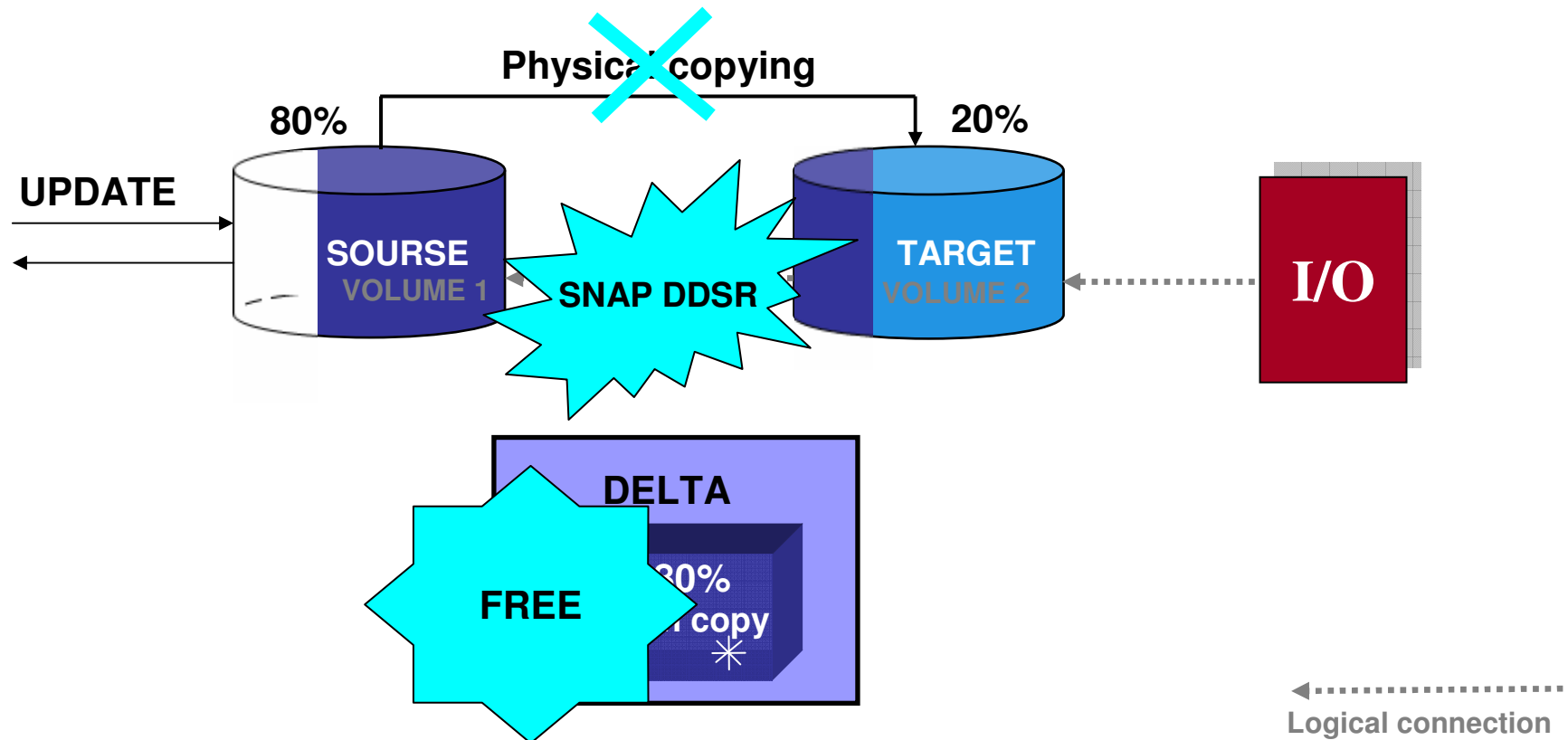
IDCAMS SNAP **NOCOPY** parameter

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 (Deleted Data Space Release) 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
```



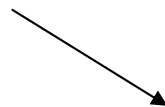
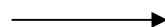
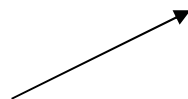
everybody is allowed to use SNAP...DDSR command

```
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    PAGE    2

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    PAGE    3
    
```

Backup/Restore Enhancements Sample

BACKUP OBJECT CROSS-REFERENCE LISTING (BOCR)

OBJECT NAME	OBJECT	TYPE	EXTSEQ	VOLSER	SEGMENT	TYPE
VSMCKD.KSDS.KEY8.A.C001	KSDS	CMP	001	WRK002	ONLY	
VSMCKD.KSDS.KEY8.A.C002	KSDS		001	WRK002	ONLY	
VSMCKD.KSDS.KEY8.A.C003	KSDS		001	WRK002	ONLY	
VSMCKD.KSDS.KEY8.A.C004	KSDS		001	WRK002	ONLY	
VSMCKD.KSDS.KEY8.A.C005	KSDS	CMP	001	WRK002	EMPTY	
VSMCKD.KSDS.KEY8.A.C006	KSDS	CMP	001	WRK002	ONLY	
VSMCKD.KSDS.KEY8.A.C007	KSDS	CMP	001	WRK002	ONLY	
VSMCKD.KSDS.KEY8.A.C008	KSDS	CMP	001	WRK002	ONLY	
IDCAMS SYSTEM SERVICES			TIME: 10:10:06	XX/XX/2008	PAGE	4

BACKUP EXTENT LIST

EXTSEQ	VOLSER	LOW LIMIT	HIGH LIMIT
001	WRK002	00010005	0043000E

DISK ADDRESS LAST USED : 000100050B

IDCAMS SYSTEM SERVICES TIME: 10:10:06 XX/XX/2008 PAGE 5
 IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 0

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 **UI 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**

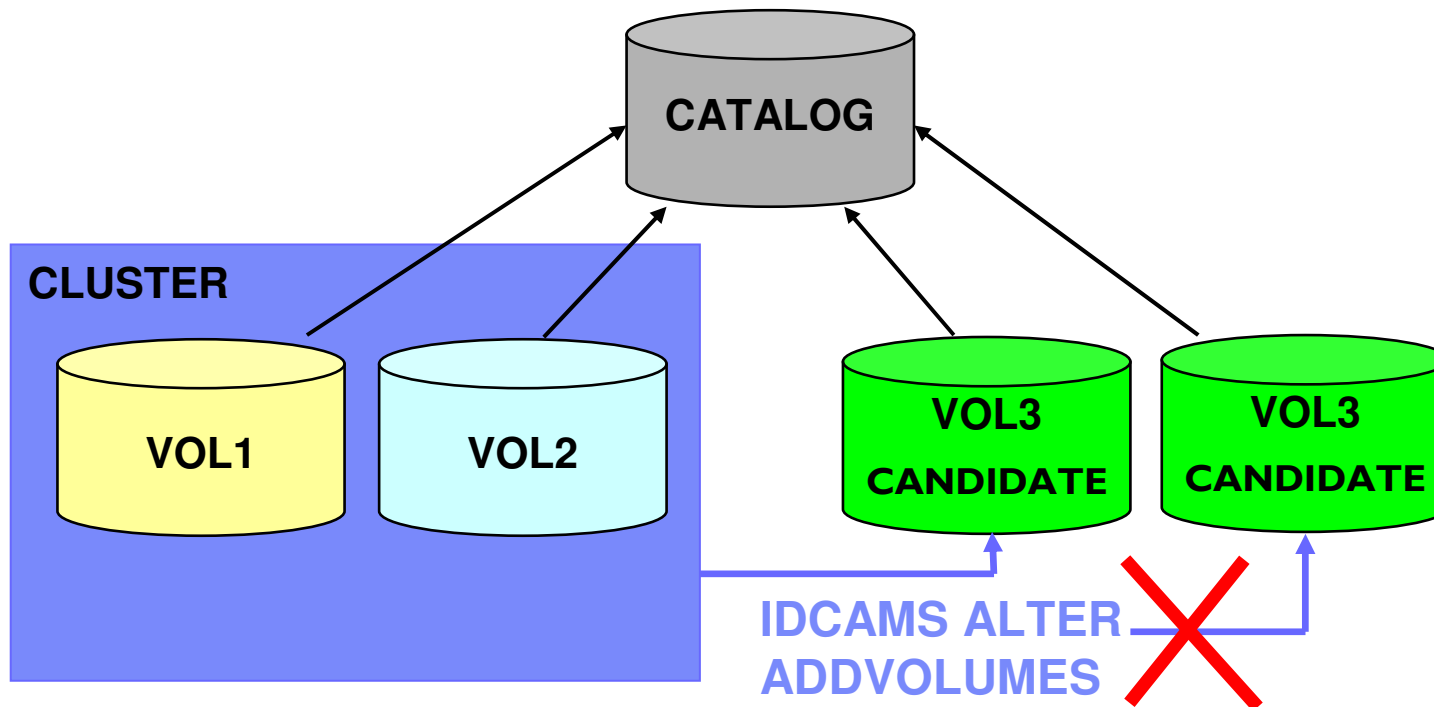
VSAM Meaningful Clusternames

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.



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	Explanation: An attempt was made to add a volume to the object which already has this volume as candidate. Request rejected.



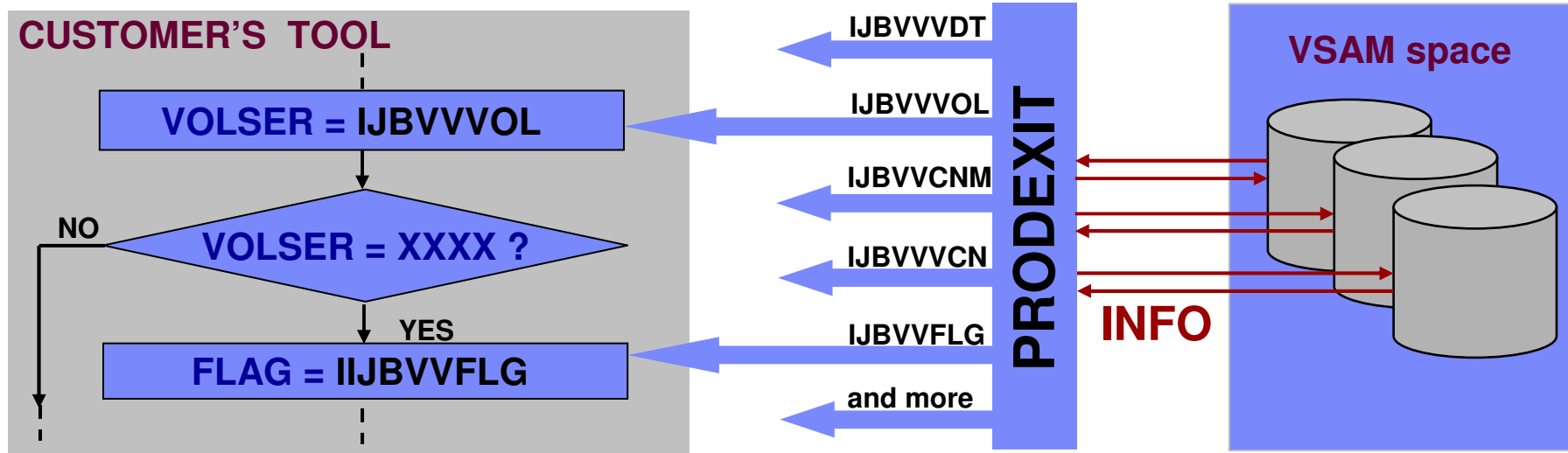
See “z/VSE Messages and Codes Volume 2”.

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:

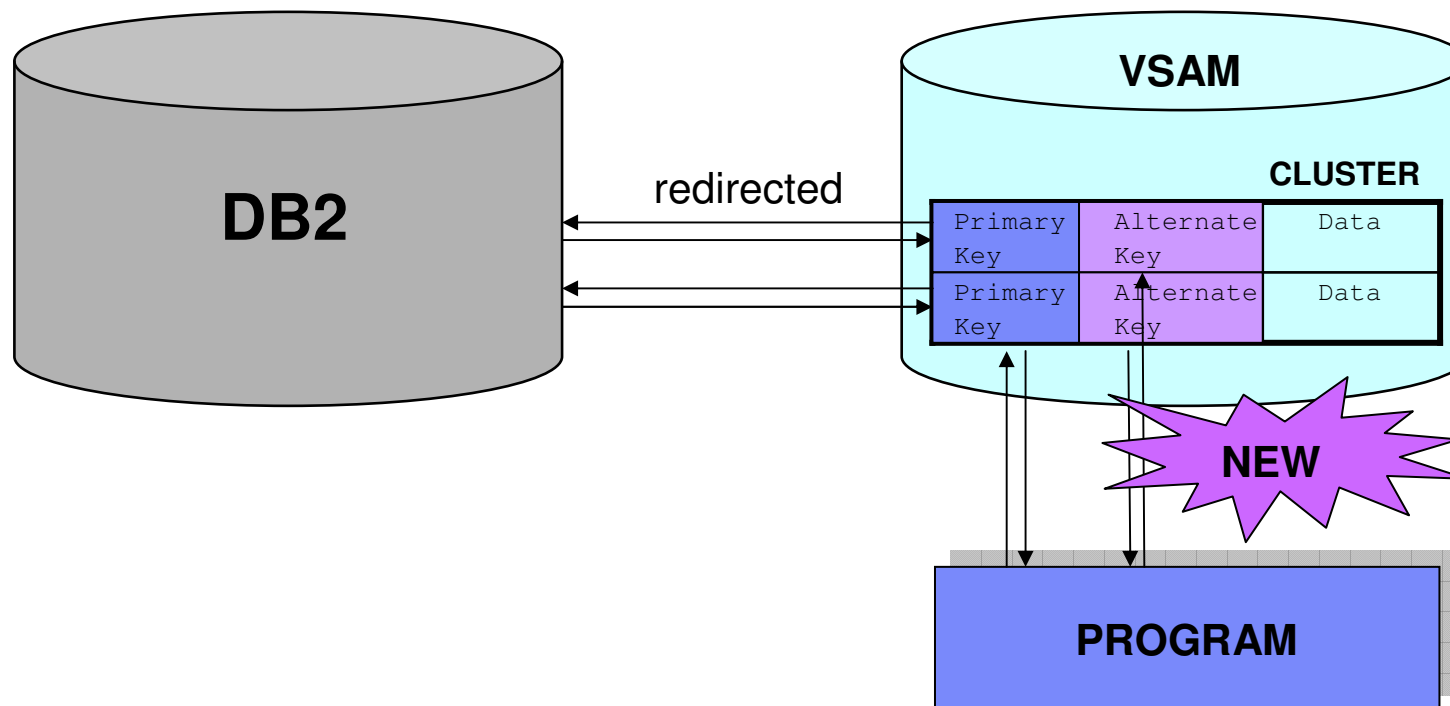
```
Y2 0047 4228I FILE OPEN ERROR X'A8'(168) CAT=IJSYSCT  
(OPNH1-45) FILE ALREADY OPEN IN ANOTHER PARTITION, RC X'04' TASK X'0020'
```

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
aix1	STRING	0	6
key	STRING	4	8
aix2	STRING	9	3
suffix	STRING	12	28

New VSAM Redirector AIX Support

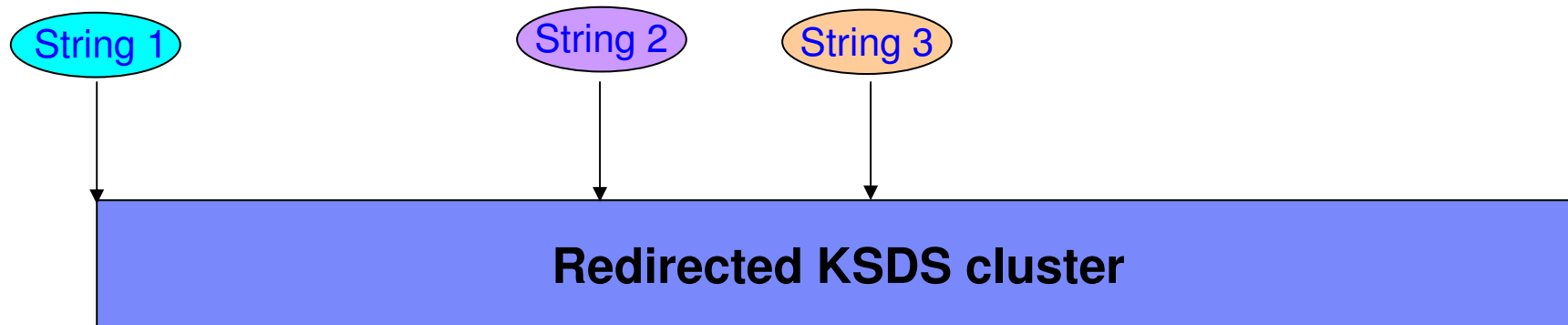
- Support of concurrent access with multiple strings to Redirected KSDS clusters is provided (over base cluster or path).

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.



VSAM data Encryption / Protection

z/VSE V4.2 Additional Enhancements

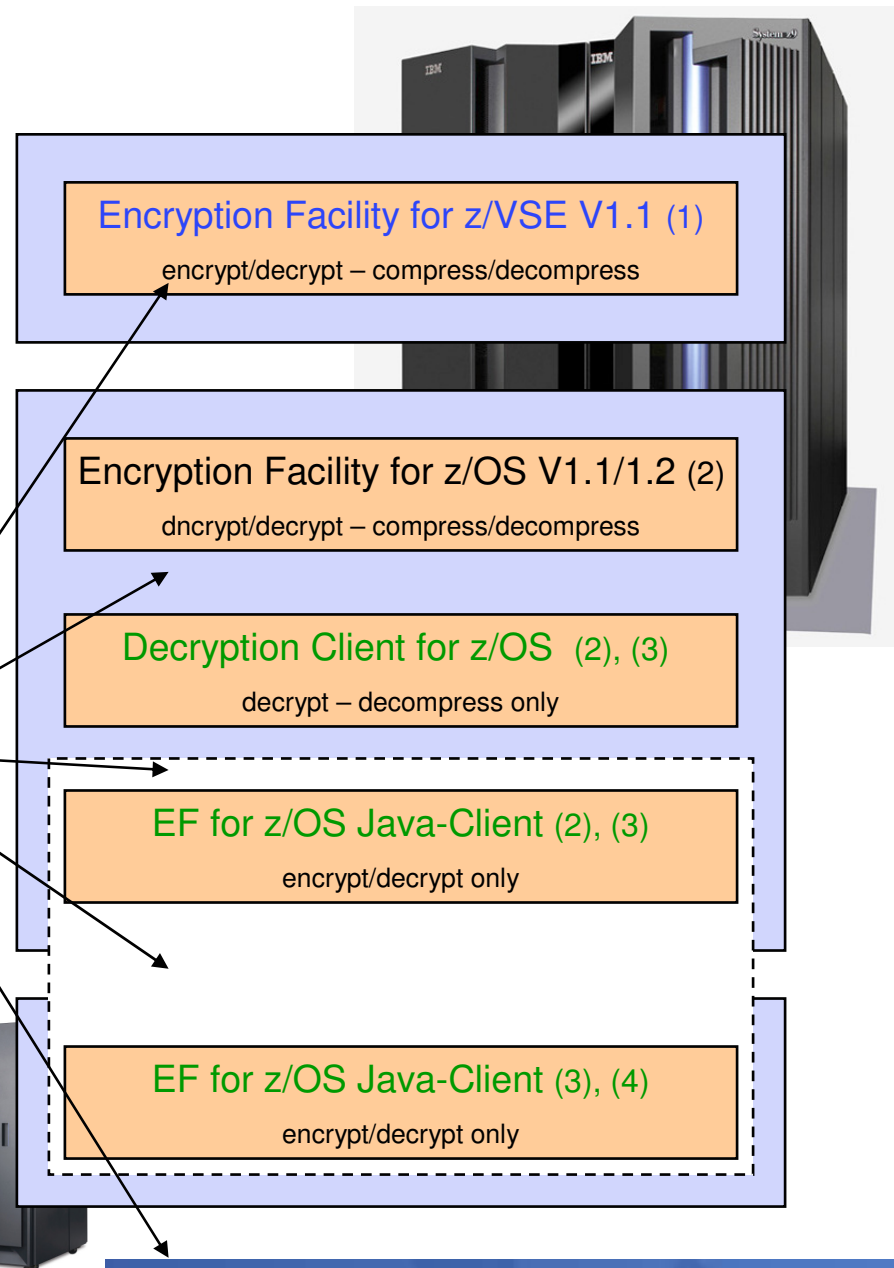
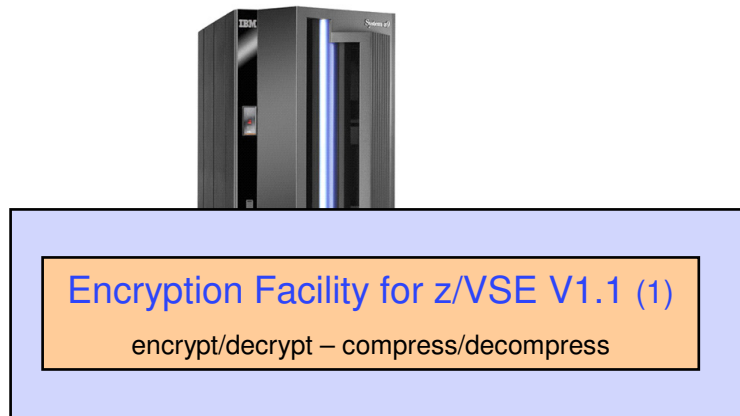
Planned availability: July 17, 2009



- **Parallel Access Volume (PAV)** feature of System Storage series DS8000 and DS6000
 - ▶ I/O performance improvements
- **IBM DS8000 Full Disk Encryption**
 - ▶ Highest security for business-critical data
- **IBM Virtualization Engine TS7700 Release 1.5** including support for the **TS7720 virtual tape system**
 - ▶ Support includes disk-only virtual tape systems with up to 70 TB of disk cache
- **Encryption Facility for z/VSE V1.2** supporting the **OpenPGP** format
 - ▶ Flexible and highly secure data exchange with business partners and peers
- **IBM Rational COBOL Runtime** for z/VSE V7.5
 - ▶ Execute modern **Enterprise Generation Language (EGL)** developed with **Rational Business Developer**
- **IBM WebSphere MQ** for z/VSE V3.0
 - ▶ Improved interoperability on distributed and mainframe platforms

VSAM data Encryption / Protection

z/VSE V4.2 tool:
Encryption Facility for z/VSE V1.1



Note 1: z10 EC, z9 EC, z9 BC, z990/890

Note 2: z10 EC, z9 EC, z9 BC, z990/890, z900/800

Note 3: No charge, downloadable from web

Note 4: Any Java-capable platform

VSAM data Encryption / Protection

Encryption Facility for z/VSE V1.2 (EF)

- **OpenPGP**

- ▶ Complies with selected OpenPGP standard (RFC 4880) requirements
- ▶ Encryption of SAM files, VSE/VSAM files, VSE library members, tapes, or virtual tapes

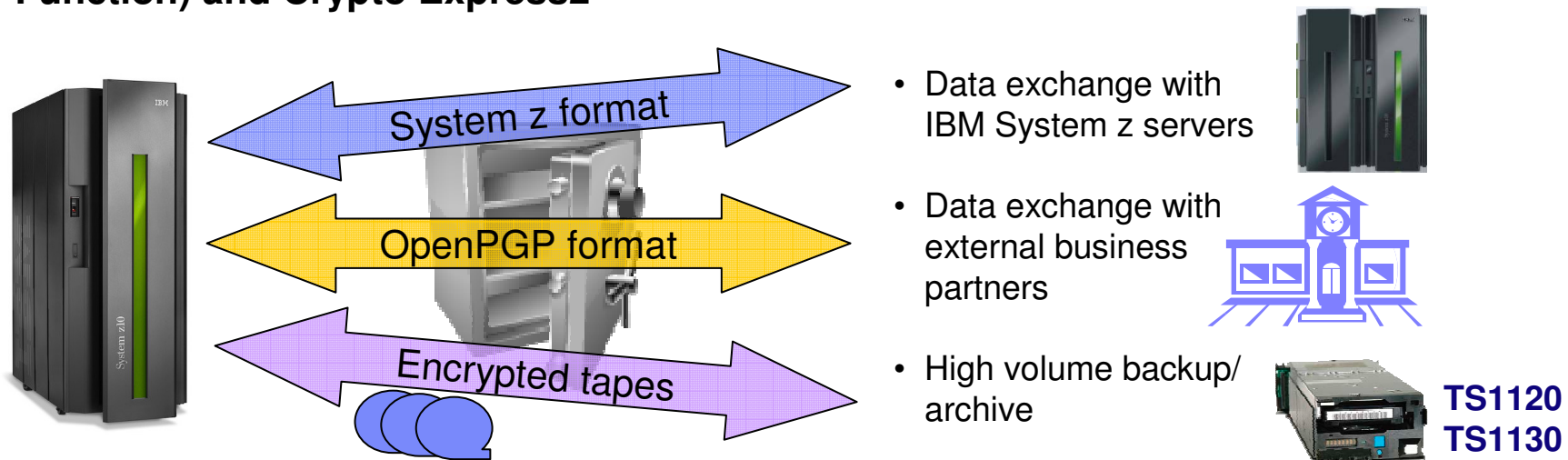
- **Choice of two formats:**

- ▶ System z format (introduced with EF for z/VSE V1.1) - compatible with EF for z/OS
- ▶ OpenPGP - compatible with other products that are OpenPGP-compliant

- **EF is an optional priced feature for VSE Central Functions V8**

- ▶ Requires z/VSE V4.1 or later
- ▶ MWLC-eligible

- **Exploits hardware encryption technology: CPACF (CP Assist for Cryptographic Function) and Crypto Express2**

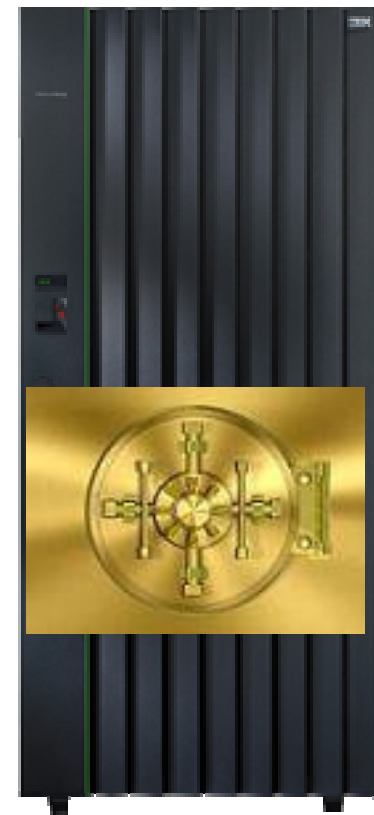


VSAM data Encryption / Protection

Full Disk Encryption on DS8000

- **Encrypted data on DS8000 series storage controller**
 - ▶ Capability to install encrypted 146 GB, 300 GB, and 450 GB 15,000 rpm Fibre Channel drives
 - ▶ Full Disk Encryption drive sets are optional to DS8000 series
 - ▶ Available only as plant order
 - ▶ Transparent to applications
 - ▶ Can be used by z/VSE V3.1 or later

- **Helps to mitigate the threat of**
 - ▶ **Theft**
 - ▶ **Data-mis-management**
 - ▶ **Loss of critical data**



VSAM data Encryption / Protection

IBM System Storage TS7700 Virtualization Engine Release 1.5

- **TS7720 is a new member of IBM's family of virtualization products**
 - ▶ Virtual tape system designed for use in a mainframe environment
 - ▶ Tape Volume Cache capacity up to 70 TB but without a physical tape library for back-end processing
- **TS1130 Model E06 and Model EU6 Tape Drive support**

The TS7700 Virtualization Engine tape solution is well suited for

- ▶ **Disaster recovery**
- ▶ **Data consolidation**
- ▶ **Data protection**
- ▶ **Data sharing**

