

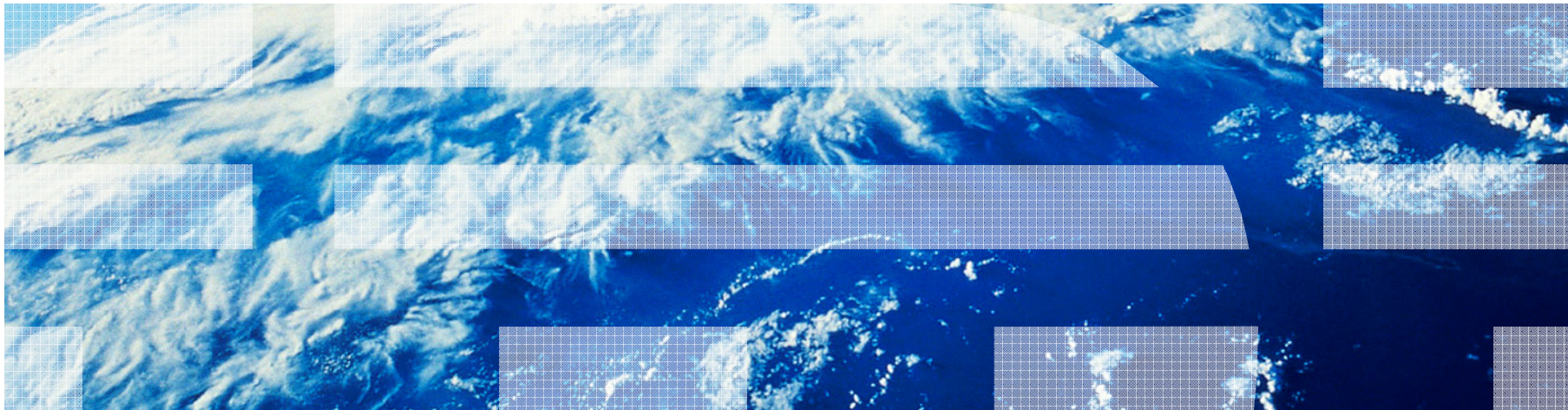
Stev Glodowski – z/VSE
Member of IBM Corporate Service Corps



<http://twitter.com/IBMzVSE>



FlashCopy IXFP SNAPSHOT



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AGENDA

- **What is FlashCopy ?**
 - Flashcopy basics behind the scene
 - HW considerations, usage, samples

- **What is FlashCopy SE ?**
 - difference to standard FlashCopy
 - HW considerations
 - FlashCopy SE specific commands
 - samples

- **FlashCopy exploiters in zVSE**
 - VSAM with IDCAMS SNAP
 - FCOPY

- Links, Redbooks and additional information

What is FlashCopy ?

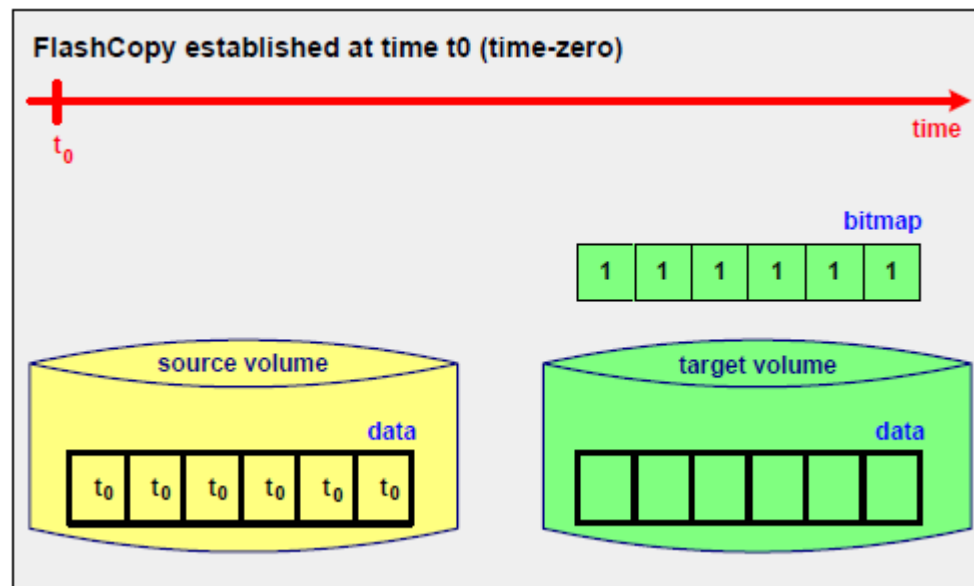
- FlashCopy creates an instant copy of a volume at a specific point-in-time, which is why it is often referred to as Point-in-Time Copy, instantaneous copy or time zero (t0) copy.
- FlashCopy is a hardware (storage system based) function that the software invokes.
- By doing a FlashCopy, a relationship is established between a *source* and a *target*. Both are considered to form a FlashCopy *pair*.



FlashCopy Basics

1. The FlashCopy Relation

- When you start FlashCopy, the **relationship between source and target is established** by creating a pointer table, including a bitmap for the target.
- This process is **completed very quickly** and makes the copy appear to be instantaneous.
- While the FlashCopy relationship is being created, the DS8000 holds off I/O activity



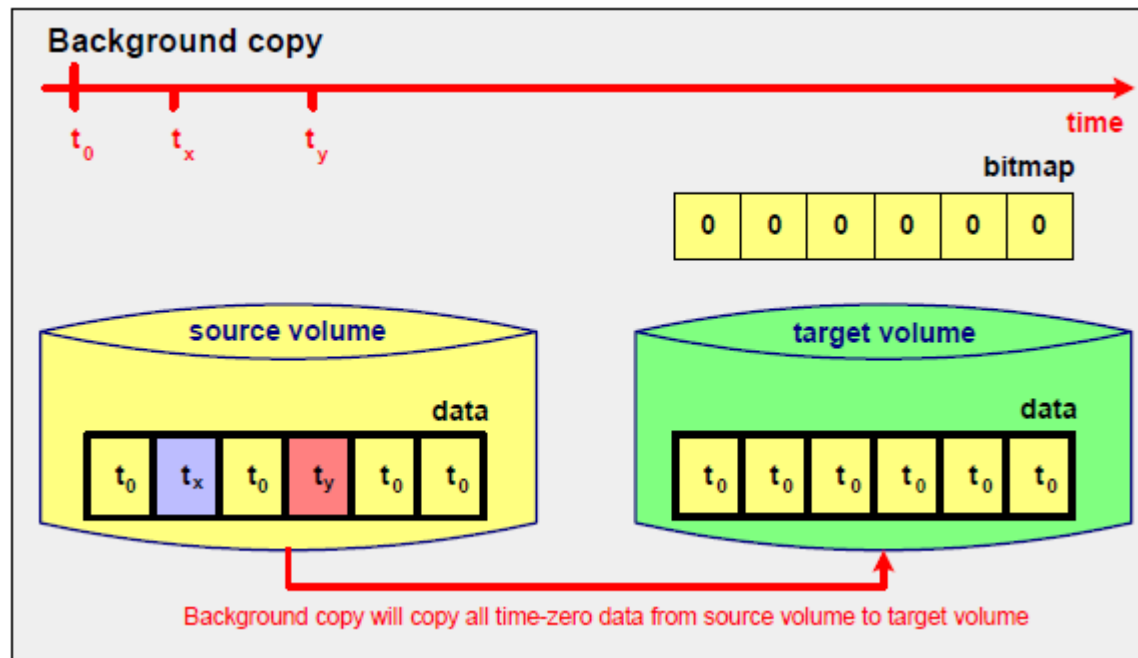
Flashcopy Basics

Background Copy

2. The Copy Process (using Background Copy)

- The Copy option initiates the copy process of all data from the source to the target volume
- The FlashCopy relationship ends automatically as soon as all data is copied

- no updates to the target volume

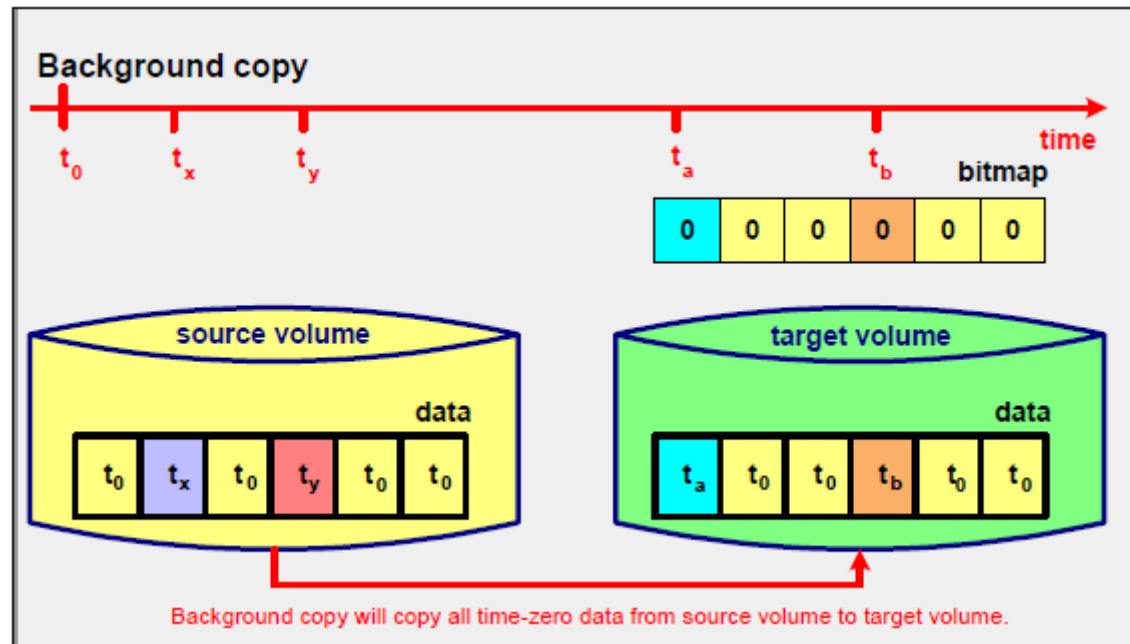


- Only the standard FlashCopy allows a full background copy

Flashcopy Basics

Background Copy

Update to the source & target volumes



Flashcopy Basics

Nocopy standard Flashcopy

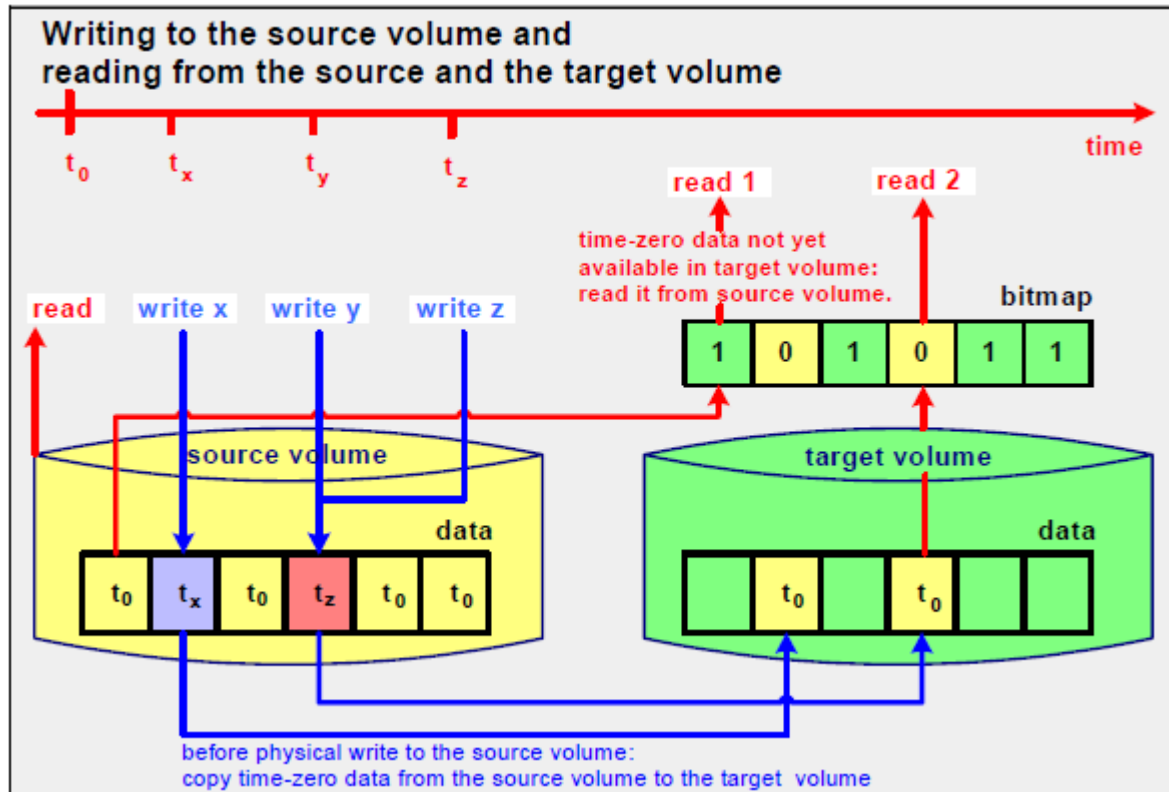
2. The Copy Process (using Nocopy option)

- The Nocopy option initiates **No** copy process of data from the source to the target volume
- For standard FlashCopy a real physical Target volumes needs to exist
- The FlashCopy **relationship lasts until it is explicitly withdrawn** (DDSR command)
- In z/VSE the target volumes needs to be **DVCDN** (device Down) in order to start a FlashCopy from **AR** (for **VSAM** IDCAMS SNAP the target needs to be **DVCUP** (Up))

Flashcopy Basics

Nocopy standard Flashcopy

2. The Copy Process (using Nocopy option)



- Whenever data is written to the source volume while FlashCopy relationship exists, then the time-zero data is copied to the target volume prior to overwriting it in the source volume.
- If time-zero data is already on the target then no further action is needed
- Physical write to the target volume occurs only if source data is updated while the FlashCopy relationship exists
- After the Nocopy relation has been withdrawn, the target volume is in a undefined condition.

Flashcopy Basics

Nocopy standard Flashcopy

2. The Copy Process (using Nocopy option)

- No copying process of data from the source to the target volume
 - physical Target volumes is needed
 - The FlashCopy relationship lasts until it is explicitly withdrawn (DDSR command)
 - Nocopy is the default for Flashcopy SE
 - ONLY If data is written to the source volume while the FlashCopy relationship exists, the storage subsystem makes sure that the time-zero-data is copied to the target volume
 - Target Volumes becomes unusable
- **Background Copy**
 - Realy physical COPY from Source to Target Volume
 - physical target volumes is needed
 - Flashcopy relationship is withdrawn automatically when copy from source to target has finished
 - Copy is not possible with FlashCopy SE
 - All time-zero-data is copied to storage regardless of updates to the source volume
 - Target Volume contains complete source copy if Background copy process was successfully completed

AR Command IXFP

- IXFP SNAP
 - To initiate the FlashCopy relation(s) between source and target volume(s)
 - To start the copy process

- IXFP DDSR
 - To terminate an existing FlashCopy relation after copy has finished or while copy is still ongoing

- IXFP STATUS
 - Present the status of all active FlashCopy relations

IXFP Flashcopy sample 1a complete volume (Background Copy)

volume 160

AR	CUU	CODE	DEV.-TYP	VOLID	USAGE	SHARED	STATUS	CAPACITY
AR 0015	160	6E	2105-000	STEV	UNUSED			32760 CYL
AR 0015	1I40I		READY					

volume 161

AR	CUU	CODE	DEV.-TYP	VOLID	USAGE	SHARED	STATUS	CAPACITY
AR 0015	161	6E	2105-000	STEV2	UNUSED		DOWN	32760 CYL
AR 0015	1I40I		READY					

ixfp SNAP,160:161,voll=stev2

AR+0015 IXFP23D SNAP FROM CUU=160 CYL='0000' TO CUU=161 CYL='0000' NCYL='7FF8'
- REPLY 'YES' TO PROCEED

15 yes

AR 0024 ATTENTION-MSG read for DEVICE=0160 Path=40
AR 0024 ATTENTION-MSG read for DEVICE=0160 Path=40
AR 0028 1H09I OPER INFO SYSXXX=160
AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED
AR 0028 1H09I OPER INFO SYSXXX=161
AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED
AR 0015 IXFP22I SNAP TO CUU= 161 STARTED AT 20:26:00 GMT 03/12/2010
AR 0015 IXFP20I SNAP FUNCTION COMPLETED AT 20:26:02 GMT 03/12/2010
AR 0015 1I40I READY

IXFP Flashcopy sample 1b complete volume (Background Copy)

ixfp status

```
AR 0015 IXFP71I 160 IS A SOURCE VOLUME OF A FL-COPY RELATION
AR 0015 IXFP72I      99.00% OF VOLUME REMAIN TO BE COPIED
AR 0015 IXFP71I 161 IS A TARGET VOLUME OF A FL-COPY RELATION
AR 0015 IXFP72I      99.00% OF VOLUME REMAIN TO BE COPIED
AR 0015 1I40I  READY
```

ixfp ddsr,161

```
AR+0015 IXFP29D DDSR FOR CUU=161 (WHOLE VOLUME) - REPLY 'YES' FOR DELETION
```

15 yes

```
AR 0015 1I40I  READY
AR 0028 1H09I  OPER INFO  SYSXXX=160
AR 0028      SUBSYSTEM STATUS CHANGE: FL-COPY RELATION TERMINATED
AR 0028 1H09I  OPER INFO  SYSXXX=161
AR 0028      SUBSYSTEM STATUS CHANGE: FL-COPY RELATION TERMINATED
```

ixfp status

```
AR 0015 IXFP70I NO FLASH-COPY FUNCTION ESTABLISHED OR PENDING
AR 0015 1I40I  READY
```

IXFP Flashcopy sample 2 partial volume (Background Copy)

ixfp SNAP,160(30-60):161

AR+0015 IXFP23D SNAP FROM CUU=160 CYL='001E' TO CUU=161 CYL='001E' NCYL='001F'
- REPLY 'YES' TO PROCEED

15 yes

AR 0028 1H09I OPER INFO SYSXXX=161

AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED

AR 0024 ATTENTION-MSG read for DEVICE=0160 Path=80

AR 0024 000B0201 A4000006 000000

AR 0024 ATTENTION-MSG read for DEVICE=0160 Path=80

AR 0024 00090000 00000000 00

AR 0015 IXFP22I SNAP TO CUU= 161 STARTED AT 20:55:03 GMT 03/12/2010

AR 0015 IXFP20I SNAP FUNCTION COMPLETED AT 20:55:03 GMT 03/12/2010

AR 0015 1I40I READY

AR 0028 1H09I OPER INFO SYSXXX=160

AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED

AR 0028 1H09I OPER INFO SYSXXX=161

AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION TERMINATED

AR 0028 1H09I OPER INFO SYSXXX=160

AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION TERMINATED

ixfp status

AR 0015 IXFP70I NO FLASH-COPY FUNCTION ESTABLISHED OR PENDING

AR 0015 1I40I READY

IXFP Flashcopy sample 3 partial volume (NOCOPY)

ixfp SNAP,160(30.3000):161(22760),NOCOPY

AR+0015 IXFP23D SNAP FROM CUU=160 CYL='001E' TO CUU=161 CYL='58E8' NCYL='0BB8'
- REPLY 'YES' TO PROCEED

15 yes

AR 0024 ATTENTION-MSG read for DEVICE=0160 Path=40

AR 0024 000B0201 A400000E 000000

AR 0024 ATTENTION-MSG read for DEVICE=0160 Path=40

AR 0024 00090000 00000000 00

AR 0028 1H09I OPER INFO SYSXXX=161

AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED

AR 0015 IXFP22I SNAP TO CUU= 161 STARTED AT 21:05:34 GMT 03/12/2010

AR 0015 IXFP20I SNAP FUNCTION COMPLETED AT 21:05:34 GMT 03/12/2010

AR 0015 1I40I READY

AR 0028 1H09I OPER INFO SYSXXX=160

AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED

ixfp status

AR 0015 IXFP71I 160 IS A SOURCE EXTENT OF A NO-COPY RELATION

AR 0015 IXFP71I 161 IS A TARGET EXTENT OF A NO-COPY RELATION

AR 0015 1I40I READY

z/VSE FlashCopy SE

IBM FlashCopy® SE:

- Today, the DS8000 IBM FlashCopy requires space to be set aside equal to the size of the volumes that are to be copied. IBM FlashCopy SE (space efficient) is intended to use only the amount of storage required, which can help lower the amount of storage needed by many clients and help lower costs by significantly reducing disk capacity needed for copies.
- IBM FlashCopy SE can be managed and configured via the DS Storage Manager, DS GUI.

Difference between Standard and Space Efficient (SE)

Standard FlashCopy

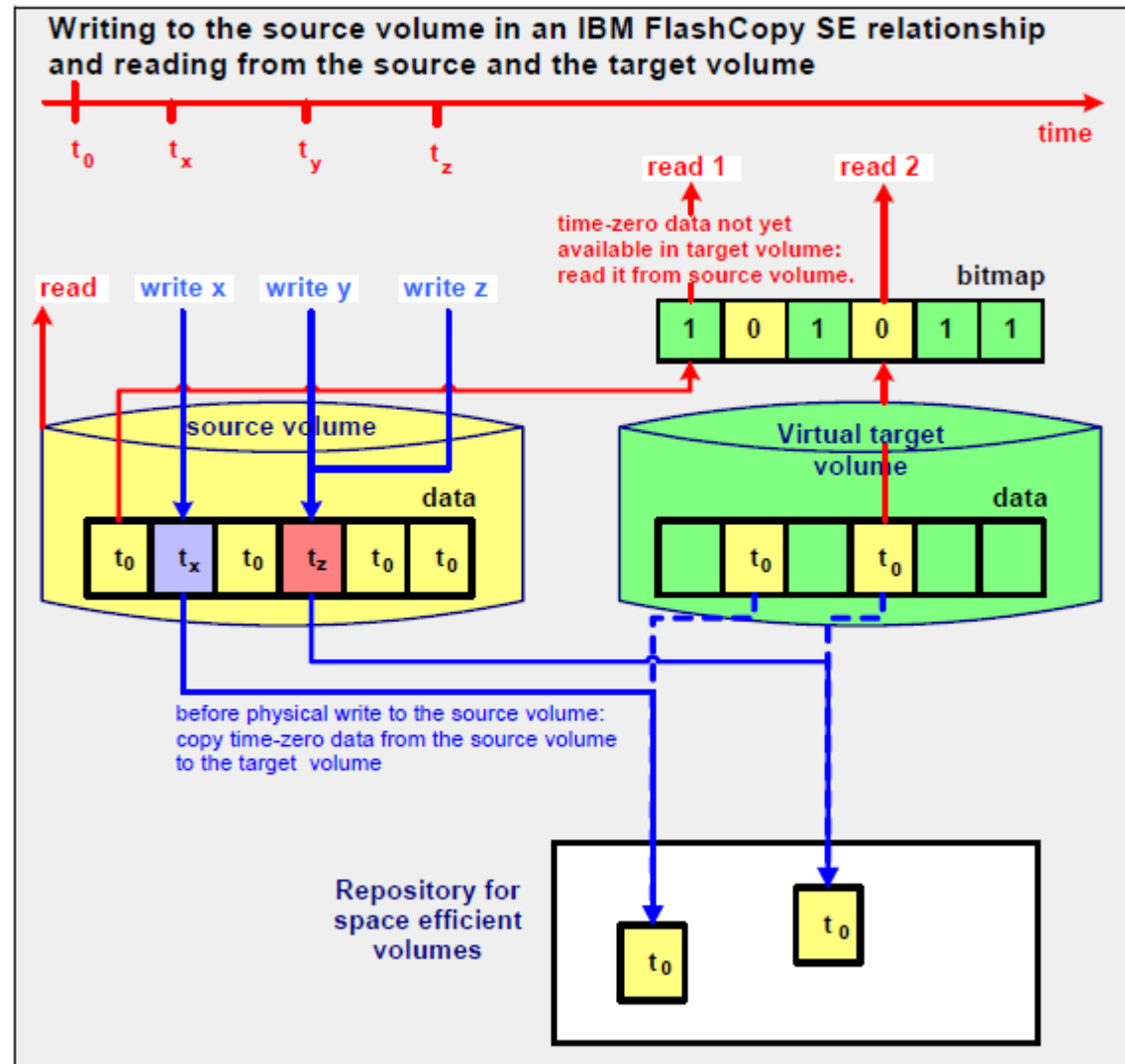
- Standard FlashCopy uses a normal volume as target volume. This target volume has to have the same size (or larger) as the source volume, and that space is allocated in the storage subsystem.

FlashCopy SE

- IBM FlashCopy SE uses space efficient volumes as FlashCopy target volumes. A space efficient volume has a virtual size that is equal to the source volume size.
 - Space is not allocated for this volume when the volume is created and the FlashCopy is initiated; instead,
 - space is allocated in the repository when a first update is made to original tracks on the source volumes and those tracks are copied to the FlashCopy SE target volume.
-
- FlashCopy and FlashCopy SE are optional and distinct licensed features of the IBM DS8000

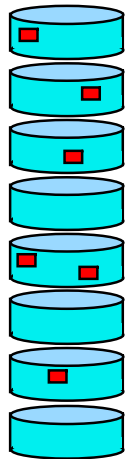
FlashCopy SE Basics

- when writing to the source volume, the time-zero data is copied from the source volume to the target volume prior to overwriting it in the source volume
- When reading from the target, the bitmap identifies if the data must be retrieved from the source or from the target.
- If the bitmap states that the time-zero data has not yet been copied to the target, then the physical read is directed to the source.
- If the time-zero data was already copied to the target, then the read is performed immediately against the target.
- Virtual target space is needed only for the time-zero data !

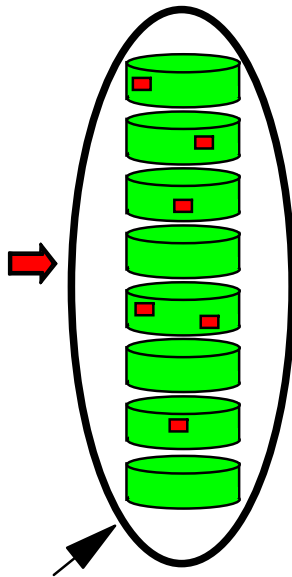


FlashCopy SE Repository

Source volumes

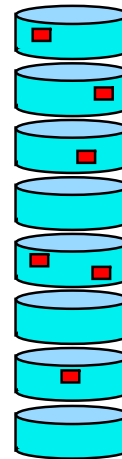


Standard FlashCopy target volumes

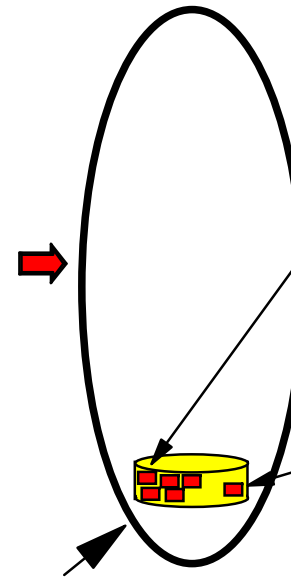


Space needed for FlashCopy targets

Source volumes

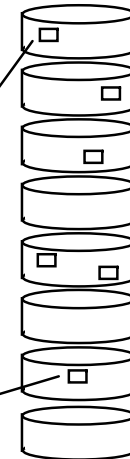


Repository



Space needed for FlashCopy targets

IBM FlashCopy SE virtual target volumes

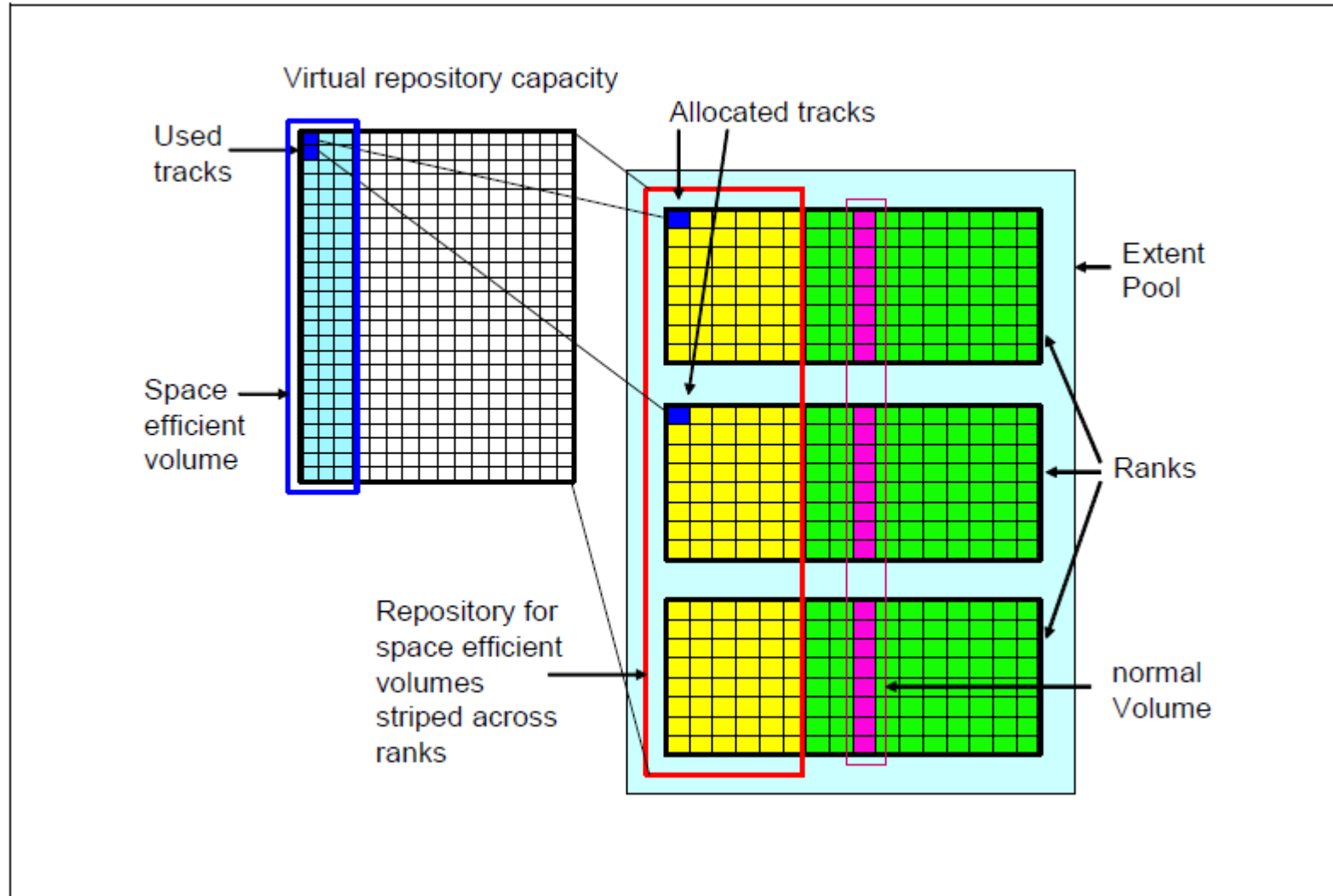


FlashCopy SE Virtual Target Volume

FlashCopy SE target volume : which is to be defined by the DS GUI

- The SE Target volume is a **virtual volume** but acts like a fully provisioned volume
- The actual **space is provided by a storage pool inside of a repository** and many SE target volumes have a physical storage pool in a common repository
- the physical size of the repository is the amount of space that is allocated in the extent pool
- **Space is only used as needed** for the updates on the source volume to the target disk and no need to have a full real target volume being available for a SNAP Nocopy
- Repository has a physical (amount of space allocated in the extent pool and a logical size (amount of space available for all SE volumes)
e.g. 20GB physical and 50GB logical space
- Repositories can not be expanded, so planning for the right size is important

SE Repository



IXFP Flashcopy SE sample (a)

complete volume

volume f83

```
AR 0028 1H09I OPER INFO SYSXXX=F83
AR 0015 CUU CODE DEV.-TYP VOLID USAGE SHARED STATUS CAPACITY
AR 0015 F83 6E 2107-900 SSD312 UNUSED SE 3339 CYL
AR 0015 1I40I READY
```

volume f84

```
AR 0028 1H09I OPER INFO SYSXXX=F84
AR 0015 CUU CODE DEV.-TYP VOLID USAGE SHARED STATUS CAPACITY
AR 0015 F84 6E 2107-900 *NONE* UNUSED SE 3339 CYL
AR 0015 1I40I READY
```

ixfp snap,f83:f84,nocopy

```
AR+0015 IXFP23D SNAP FROM CUU=F83 CYL='0000' TO CUU=F84 CYL='0000'
NCYL='0D0B'
- REPLY 'YES' TO PROCEED
```

15 yes

```
AR 0028 1H09I OPER INFO SYSXXX=F83
AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED
AR 0028 1H09I OPER INFO SYSXXX=F84
AR 0028 SUBSYSTEM STATUS CHANGE: FL-COPY RELATION ESTABLISHED
AR 0015 IXFP22I SNAP TO CUU= F84 STARTED AT 14:21:08 GMT 03/26/2010
AR 0015 IXFP20I SNAP FUNCTION COMPLETED AT 14:21:08 GMT 03/26/2010
AR 0015 1I40I READY
```

IXFP Flashcopy SE sample (b) complete volume

AR **IXFP STATUS** command will show the following additional message when the target volume is SE

IXFP74I FL/SE QUERY CUU=... POOLID=... ALLOCATED SPACE='....' CYL POOL SIZE='....' CYL

ixfp status

```
AR 0015 IXFP71I F83 IS A SOURCE VOLUME OF A NO-COPY RELATION
AR 0015 IXFP74I FL/SE QUERY CUU=F83 POOLID=000 ALLOCATED SPACE='0D0B' CYL
        POOL SIZE='4EF5' CYL
AR 0015 IXFP71I F84 IS A TARGET VOLUME OF A NO-COPY RELATION
AR 0015 IXFP74I FL/SE QUERY CUU=F84 POOLID=000 ALLOCATED SPACE='0000' CYL
        POOL SIZE='4EF5' CYL
AR 0015 1I40I READY
```

FlashCopy SE restrictions and recommendations

- FlashCopy SE is supported for full volume copy only.
- FlashCopy SE is not supported with Background copy (NOCOPY option only)
- FlashCopy SE is designed for temporary copies. Copy duration should generally not last longer than 24 hours unless the source and target volumes have little write activity or where about 5 % of the source volume is updated during the relationship.
- FlashCopy SE volumes are not supported for production, only as FlashCopy target volumes.
- If the FlashCopy SE repository becomes full, the next write and read operation to the target will fail with an Intervention Required msg until the space gets released by the **IXFP DDSR** command , which withdraws the relationship

FlashCopy SE, DEBUG ON & z/VM

Messages :

running with DEBUG ON and having set a warning threshold

```
AOMOS01I POOL=001, SPACE EFFICIENT TARGET REPOSITORY HAS REACHED A WARNING WATERMARK
```

```
AOMOS02I POOL=001, SPACE EFFICIENT TARGET REPOSITORY HAS BEEN EXHAUSTED
```

Note:

z/VM is currently not supporting FlashCopy SE and does not propagate the attention messages (e.g. warning watermark) to the guest system .

The operator must check the repository level on the DS8K GUI level instead.

FlashCopy exploitation by VSAM

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

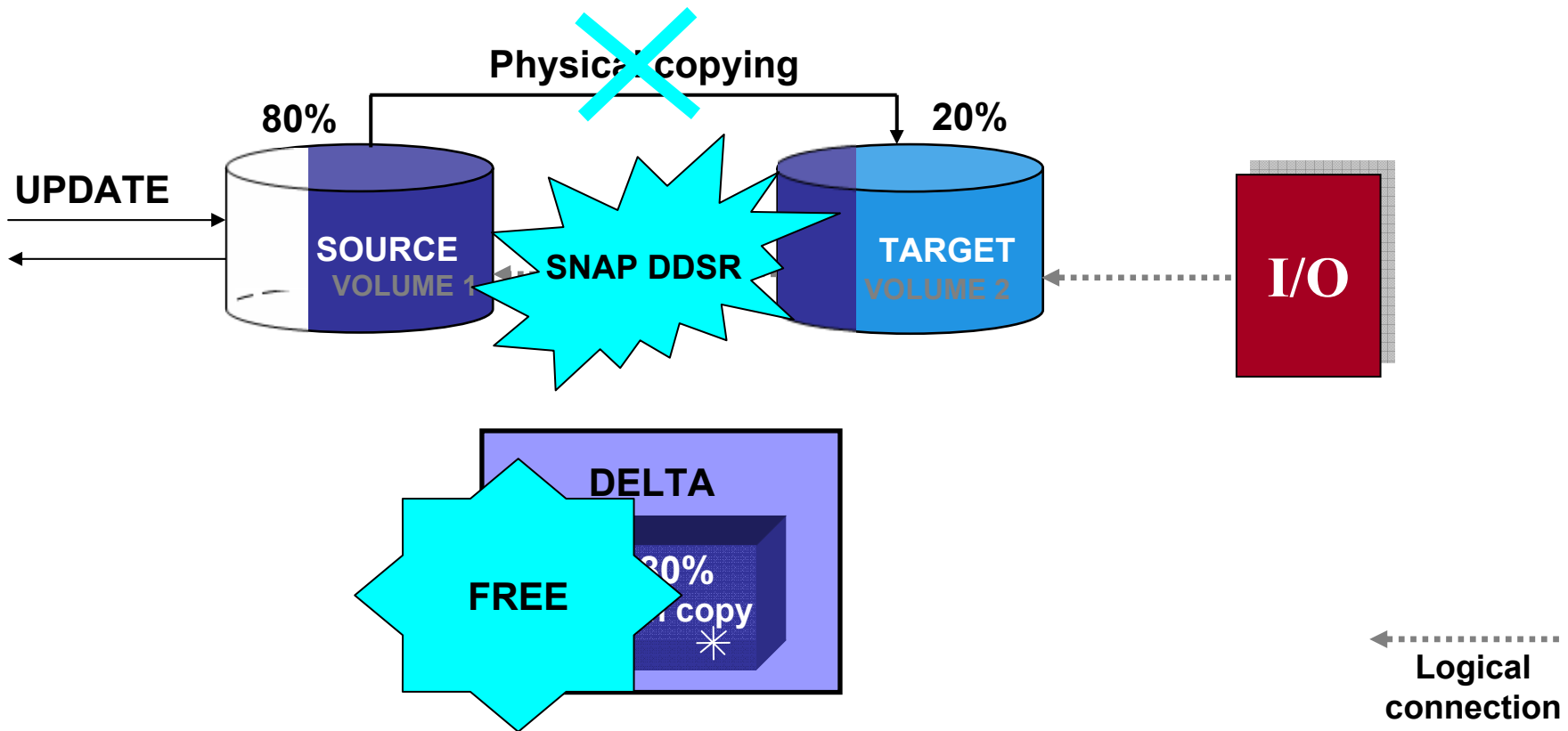
- **NOCOPY** parameter of the IDCAMS SNAP command creates a FlashCopy relation. The physical copying of data to target volumes is not performed.
- **DDSR** parameter of the IDCAMS SNAP command terminates the FlashCopy relation between the source and target volumes and frees the used resources.
- **COPY** parameter of the IDCAMS SNAP command to initiate a background copy. This is the default.
- Provides 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 DDSR parameter

The DDSR parameter of the IDCAMS SNAP command allows the user to delete FlashCopy relations and to stop unnecessary managing of a Delta File and to release internal 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)
```

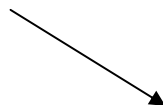
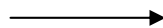
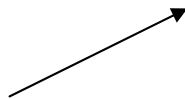
```
BG 0000 BST904I RETURN CODE OF ADD IS 00
```

```
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 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 **IDCAMS SNAP** function is executed as requested and is accompanied by the following message:

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

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

FlashCopy exploitation by FCOPY

VSE/Fast Copy supports the following FlashCopy related commands and parameters

- **COPY ALL** (IXFP SNAP – Background copy)
- **COPY VOLUME** (IXFP SNAP – Background copy)
- **COPY VOLUME NOCOPY** (IXFP SNAP – NOCOPY)
- **COPY ALL NOCOPY** (IXFP SNAP – NOCOPY)
- **DDSR** (withdraw FlashCopy relation, SYS005 required)
- **IV** (verify VOLSER of source volume)
- **OV** (verify VOLSER of target volume)
- **NV** (the equivalent to the VOL1 parm in IXFP FlashCopy)

Note: Parameters that force FastCopy not to use Flashcopy are EXCLUDE, NOVSAM and NOEXPIRED

VSE/Fast Copy sample

NOCOPY:

```
// ASSGN SYS004, ANYDISK, VOL=DSKB8A, SHR
// ASSGN SYS005, ANYDISK, VOL=DSKB8B, SHR
// EXEC FCOPY
    COPY VOLUME NOCOPY NOVERIFY NV=DSKB8B
8F02I END OF PROCESSING. NOCOPY RELATION ESTABLISHED
1S55I LAST RETURN CODE WAS 0000
```

DDSR:

```
// ASSGN SYS005, ANYDISK, VOL=DSKB8B, SHR
// EXEC FCOPY
    DDSR
8F02I END OF PROCESSING. DDSR COMPLETED
```

Note: DDSR and NOCOPY Not supported for VSE/Fast Copy stand-alone

„Remove FlashCopy relation“ UI dialog

The „Remove FlashCopy relation“ dialog (fastpath 3773) is now available to allow User to withdraw a IXFP FlashCopy relation using VSE/Fast Copy

```
IESADMSL.IESECPDD          COPY A VOLUME OR FILE
                                     APPLID: DBDCCICS
Enter the number of your selection and press the ENTER key:
1  Copy a Volume
2  Copy a File
3  Remove FlashCopy relation
```

PF1=HELP

3=END

4=RETURN

6=ESCAPE (U)

9=Escape (m)

==>

Path: 377

FlashCopy SE Documentation

- z/VSE 4.2 Planning Guide
- z/VSE 4.2 Administration
- VSE/VSAM User's Guide
- VSE System Utilities
- IBM System Storage DS8000 Series : IBM FlashCopy SE redbook REDP 4368-00
<http://www.redbooks.ibm.com/redpapers/pdfs/redp4368.pdf>

For more Information go to ...

- z/VSE
 - Homepage:
www.ibm.com/servers/eserver/zseries/zvse/



Stev Glodowski
stev.glodowski@de.ibm.com

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Stev Glodowski

stev.glodowski@de.ibm.com



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