

ANNOUNCING FDRERASE— ERASING DISK VOLUMES

Innovation Data Processing is pleased to announce a new product: **FDRERASE**. FDRERASE can be licensed as an option to FDRPAS, or as a stand-alone product for use by any installation.

There are many times when you may wish to insure that all corporate data has been erased from a set of disk volumes, for example:

- At the end of a disaster test, or when leaving the disaster site after a real disaster
- When you are disconnecting a disk control unit, after moving all data with FDRPAS or some other means
- When reusing disk volumes for new purposes, to be sure that no residual data remains

FDRERASE meets these needs. It can quickly erase many disk volumes in parallel, allowing you to erase your data from a set of disks in the minimum elapsed time.

FDRERASE offers various levels of erase:

- The ERASE function of FDRERASE will overwrite every track with a single track-length record consisting of binary zeroes. This will make all data originally on each track unrecoverable by any normal means (through the disk control unit). This is sufficient for most purposes.
- Optionally you can specify a pattern of data for the record, a single hex byte which is replicated throughout the track-length record.
- Optionally you can cause the erase record to be written on each track multiple times, and can vary the pattern in each “pass”.
- The SECUREERASE function will default to 3 passes on each track, writing a random pattern, a complement of the first pattern, and finally another random pattern. This makes the original data unrecoverable even if the hard drives are removed from the control unit and may be used for sensitive data when the disks will be sold or scrapped.
- The QUICKERASE function will use hardware ERASE commands to erase all records from each track in a minimum amount of time. QUICKERASE is usually sufficient to eradicate corporate data when the disks will be reused, such as at a disaster site.



- The SIMERASE function will not erase any disks, but will validate your control statements and identify the disks that will be erased.

FDRERASE complies with the government National Computer Security Center (NCSC) guidelines for erasing computer disks. The ERASE function meets the NCSC definition for “clearing” a disk and the SECUREERASE function meets the NCSC definition for “purging” a disk.

continued...

Visit us at:

SHARE Technology Exchange • Aug. 15 - Aug. 20 • NYC
Storage Decisions • Sept. 15 - Sept. 20 • Chicago

Instructions for downloading all sample jobstreams referenced in this newsletterSee page 6

WE APPRECIATE YOUR FEEDBACK



Send us examples of Innovation product usage that you feel may be of use to other customers; we will enter you in a drawing for an Apple iPod and we may print your example in a future issue of FYI. iPod drawings will be held quarterly. *Send your examples to: support@fdrinnovation.com*

FDRERASE

NEW PRODUCT



ANNOUNCING FDRERASE—ERASING DISK VOLUMES

Continued from Cover...

The QUICKERASE function and the default form of the ERASE function transmit only a few bytes per track erased, so they can erase many disks concurrently without overloading the disk channels.

FDRERASE User Experience:

*“We are a state government and our data includes financial, personnel, motor vehicle and other sensitive data, which must be erased after a DR test. A minimal INIT of the volume would wipe out the VTOC but leave the data on the disk, which is not acceptable to our auditors. We used to take 12 hours out of our 48-hour test time to completely erase the disks. We used the QUICKERASE function of FDRERASE and **saved over 80%** of that time, giving us 10 more hours to test. The disk subsystems were EMC 8430 Symmetrix model.*

The Result: 612 3390-3 volumes took 83 minutes. Another set of 332 3390-3 volumes took 43 minutes and 18 3390-9 volumes took 9 minutes.”

You can run a considerable number of concurrent erase functions with little increase in time-per-disk, but your elapsed time will vary depending on the type of subsystem and type of channels. FDRERASE can erase up to 64 disks concurrently in a single step, and up to 8190 volumes total per step.

The SECUREERASE and other non-default operations may take longer since FDRERASE must send more data down the channel for each track.

FDRERASE operates only on offline disks. You specify device address, or an address prefix (such as 1A* to do devices 1A00-1AFF); FDRERASE will identify the offline disk devices and erase only those volumes. For FDRPAS customers, FDRERASE will erase only FDRPAS source volumes (previously online), but it can be told to erase any offline disk.

Here is a sample FDRERASE jobstream:

```
//ERASE EXEC PGM=FDRERASE,REGION=0M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
ERASE TYPE=FULL,MAXTASKS=20
MOUNT ERASEUNIT=(1A*,1B*)
```

This sample jobstream for FDRERASE can be downloaded as file: [FDRERASE.txt](#)

As an example of the results, we used FDRDSF PRINT to print a track on a disk; before the ERASE, you can see the data on the track:

```
FDR520 PRINTING FROM DEVICE TYPE 3390-3 TO OUTPUT DDNAME TAPE1
FDR521 CYLINDER 00003 TRACK 0000 ----- RECORD ZERO 0003000000000008 -- DATA 0003000000000000 -----
FDR522 COUNT FIELD 0003000001002350
000000 4E4EE4E2 C5D9D4D6 C44DD3C6 F5F0F3F5 F65D4040 40404040 40404040 40404040 *..USERMOD.LF50356. *
000020 615C4040 40404040 40404040 40404040 40404040 40404040 40404040 40404040 *.. *
...
```

After an ERASE, the printout shows the erase record on the track; the original data is gone:

```
FDR520 PRINTING FROM DEVICE TYPE 3390-3 TO OUTPUT DDNAME TAPE1
FDR521 CYLINDER 00003 TRACK 0000 ----- RECORD ZERO 0003000000000008 -- DATA 0000000000000000 -----
FDR522 COUNT FIELD 000300000100DD58
000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.....*
LINE 000020-00DD40 SAME AS ABOVE
*
```

FDRERASE takes offline disk addresses as input. You can also use FDREPORT to select offline disks based on their volume serials and generate an FDRERASE step for those disks.

An example can be downloaded as file: [FDREPORT_FDRERASE.txt](#)

I receive an FDR152 ICF VSAM ERROR REASON=J trying to restore a VSAM cluster to a pre-allocated file. How can I restore this VSAM cluster?

Restoring VSAM clusters to pre-allocated target clusters where the source and the target clusters do not have the same attributes can result in message FDR152 ICF VSAM ERROR REASON=I, J, or N. In current MVS levels, the DEFINE CLUSTER attributes of IMBED, KEYRANGE, and REPLICATE are ignored, so the cluster created will not have those attributes. Also, the rules for the default index CISIZE changed in a recent release. So, even though you use the same DEFINE as the original cluster, the new cluster may have different attributes. An FDR dataset restore or copy requires that the target cluster have the same attributes as the original cluster. If they don't match, the FDR152 message is issued.

The solution is to let FDR allocate the cluster. FDR can force it to have the characteristics needed to perform a successful restore.

Can I produce a report of all VSAM files that are allocated with any of the obsolete options of IMBED, KEYRANGE, and REPLICATE?

This report can be produced by FDREPORT with the XSELECT AMDATTR= statement specifying the obsolete options (IMBED, KEYRANGE, REPLICATE) you wish to report on.



Here is an example of this report:

```
XSELECT  AMDATTR=IMBED
XSELECT  AMDATTR=KEYRANGE
XSELECT  AMDATTR=REPLICATE
REPORT   FIELD=(SPLCLS,COMPTYPE,VOL,CRDATE,SIZE,AMDATTR)
PRINT    ENABLE=ONLINE, SORT=YES
```

| CLUSTER NAME | CPTYP | VOLSER | CRDATE | ALLOC | AMDATTR | ATTRIBUTES |
|-----------------------------|-------|--------|----------|-------|---------|------------|
| CICS.V4R1M0.CICSIDP1.DFHGCD | DATA | SYSLB3 | 1997.227 | 15 | KS | IM |
| CICS.V4R1M0.CICSIDP1.DFHGCD | INDEX | SYSLB3 | 1997.227 | 1 | IM | RE |

This jobstream can be downloaded as file: [FDREPORT_Obsolete_Options_in_VSAM_Files.txt](#)

We backup our system catalogs after all other backups are complete. Occasionally, new catalogs are created and we may not realize a new catalog is not being backed up until there is a disaster. I would like to extract all the catalog names from the master catalog and create JCL for our catalog backup jobs. Is there a way to do this with FDREPORT?

A list of catalogs can be obtained by FDREPORT by selection on the OPTCD flag as follows:

```
XSELECT  OPTCD=BC,COMPTYPE=DATA
REPORT   FIELD=(SPLDSN,VOL,CRDATE)
PRINT    DATATYPE=CATALOG
```



This would produce the following listing:

| DATA SET NAME | VOLSER | CRDATE |
|------------------|--------|----------|
| AFEF.CATALOG | SCR083 | 1989.009 |
| BNCHMARK.ICFCAT | BMRKD9 | 2002.253 |
| CATALOG.ABRBASE | SYSLB2 | 1998.132 |
| CATALOG.ABRSCRCH | SAFEC1 | 1999.311 |

A similar jobstream which actually generates an ABR Application Backup job for those catalogs can be downloaded as file: [FDREPORT_Backup_Catalogs.txt](#)

How can I produce a “tape pull” list showing all the tape volumes for the most current generation?

FDREPORT can generate a tape pull list by extracting the backup data set names for the current ABR generation for each selected volume and then getting the backup data set information from the catalog. This is done in two passes where the first pass creates FDREPORT XSELECT statements for the backup data sets, and the second pass reads those statements to generate the backup tape report. A SUMMARY statement is used to generate the pull list (one line for each unique tape volser).



The first section of the listing shows backup information for the current generation of each disk:

```

BACKUP TAPES FOR CURRENT ABR GENERATION, SORTED BY DISK VOLUME
DISK          BACKUP          BACKUP          BACKUP          DEVICE
VOLUME       DATA SET NAME    DATE           VOLUME         SEQ  TYPE   CLASS
-----
...
VIDPBK0     FDRABR.VIDPBK0.C1030200  2004.065 ST0055      1 3590-1  TAPE
VIDPBK0     FDRABR.VIDPBK0.C2030200  2004.065 ST0071      1 3590-1  TAPE
VIDPBK0     FDRABR.VIDPBK0.C1030201  2004.068 ST0550     61 3590-1  TAPE
VIDPBK0     FDRABR.VIDPBK0.C2030201  2004.068 ST0555     61 3590-1  TAPE
    
```



The “tape pull list” is the FINAL TOTALS section of the listing, showing a sorted list of all the tape volumes and the number of backup files referenced on each tape:

```

PULL LIST FOR BACKUP TAPES FOR CURRENT GENERATION
FINAL TOTALS --
VALUE SUMMARY OF VOL      --- TOTAL NUMBER OF VALUES
VOL-----CCR047 (        1)
...
          ST0055 (        17)
          ST0063 (       129)
          ST0068 (       129)
    
```

This jobstream can be downloaded as file: [FDREPORT_Tape_Pull_List.txt](#)

Can we get a report showing all volumes that have a VTOC, VTOC Index, or VVDS that is full or close to being full?

FDREPORT can provide this report by comparing the volume-level fields VL%UDSCB, VL%UINDX, and VL%UVVDS with a specified percentage. Any volumes exceeding this percentage will be listed.



This sample report shows the volumes on which the VTOC, VTOC Index, or VVDS is more than 80% full.

```

VOLS WITH VTOC, VTOC INDEX, OR VVDS OVER 80% FULL
          %USED %USED %USED
VOLSER  UADR  DEVTYPE VTOC  VTOCIX VVDS
-----
IPLOSA  8050  3390-9   91    58    3
RVA7C6  07C6  3390-2    3     2   84
SH23C1  23C1  3390-27 100     0   31
SOFTC2  803E  3390-2   40    84   36
    
```

This jobstream can be downloaded as file: [FDREPORT_Full_VTOC_VTOCIX_VVDS.txt](#)

The Innovation Health Check jobstreams provide a wide variety of reports on the general status of your DASD installation, including several reports that show various problem conditions such as those above. These jobstreams are distributed in the FDR JCL library (default dsname IDP.JCLFDR54). Member HCHECKI is an index to the members containing the jobstreams. The Health Check jobstreams are discussed in the manual in section 54.02.

How can we identify volumes whose Indexed VTOCs are disabled?

FDREPORT can easily identify volumes that have a SYS1.VTOCIX. data set allocated but not active:

```
TITLE    LINE=' VOLUMES WITH INACTIVE VTOCIX'
REPORT  FIELD= (VLVOLSER, VLINDSTA)
XSELECT VLINDSTA=YES
PRINT   DATATYPE=VOLDATA, ENABLE=ONLINE
```

Is there a way I can determine if there are any VVR/DSCB mismatches on my volumes? IBM APAR OA03548 mentions that some products from Innovation provide the capability to cross-check the VVDS and VTOC.

The FDREPORT option DIAGNOSEVVDS checks the VVDS of the volumes for duplicate or orphaned VVRs and VVRs with certain errors, such as a mismatch between the extents in the VVR and the DSCB. It even suggests an IDCAMS jobstream to correct some errors. In V 5.4/40 and above, FDREPORT will do most of these checks regardless of whether DIAGNOSEVVDS is enabled. The option ICFERRPRT will print error messages from the ICF/VSAM identification processor.

If you include a //DIAGPCH DD statement in the JCL and add the option PUNCHDIAGNOS to the PRINT statement, FDREPORT will write out the corrective IDCAMS steps so you can edit and submit them.

Some of the possible diagnostic messages are shown in the sample report below.

In addition, in FDREPORT V 5.4/40 and above, a new field VVRSTATS can be used to select and report on VVR, NVR, and DSCB discrepancies. If you are using a level of FDREPORT less than V5.4/40, omit the XSELECT and the VVRSTATS report field from the following example; it will then report on all data sets, and give the diagnostic messages for those with VVDS errors.



This sample report combines the above features for detecting VVDS errors.

```
XSELECT  VVRSTATS.NE.NONE
REPORT   FIELD= (VOL, SPLCLS, SPLDSN, VVRSTATS, DSORG, SIZE)
PRINT    ENABLE= (ONLINE, DIAGNOSEVVDS, ICFERRPRT, PUNCHDIAGNOS) ,
         DISABLE=CONTROLBREAK
```

| VOLSER | CLUSTER NAME | DATA SET NAME | VVR/NVR | D/S | ERRSTATS | ORG | ALLOC |
|--------|---|--------------------|----------------------|-----|---------------------------------|-----|-------|
| FDR421 | ICF LOCATE ERROR | -- RETURN CODE---4 | REASON IGGOC LAH-120 | -- | DSN=ICF006.KRNG.A0007.DATA.A002 | | |
| FDR495 | NO DATA SETS MATCHED SELECTION CRITERIA | -- VOLSER=RVA7C7 | | | | | |

ORPHANED VVR ON VOLUME RVA7C9 AT RBA 00002008 WITHIN VVDS SYS1.VVDS.VRVA7C9
<followed by a dump of the VVR>
REMOVE ORPHANED VVR WITH:
//STEPXX EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//DD1 DD UNIT=SYSALLDA, DISP=SHR, VOL=SER=RVA7C9
//SYSIN DD *
DELETE ICF7C6.KSDS92.KRNG.MULTIVOL.EXTS6.T7F34.D -
FILE(DD1) VVR CATALOG(CATALOG.VRVA7C6)
//

```
FDR421  ICF LOCATE ERROR -- NO MATCHING VVR -- ICFSOURCE=VVDS -- DSN=XCAT.TIMKO
SAFEC8          XCAT.TIMKO          NVVR          EF          30
FDR421  ICF LOCATE ERROR -- NO MATCHING VVR -- ICFSOURCE=VVDS -- DSN=XCAT.TIMKO.CATINDEX
SAFEC8          XCAT.TIMKO.CATINDEX  NVVR          EF          1
FDR421  ICF LOCATE ERROR -- MULTIPLE VVRS (02) ON VOLUME IDPT01 -- DSN=NATIVE.VSAM.KSDS1.DATA
VVR/DSCB EXTENT MISMATCH -- RBA=00024CA9 -- VOL=IDPT01
IDPT01  NATIVE.VSAM.KSDS1          NATIVE.VSAM.KSDS1.DATA  EXTM MLTR EF          855
FDR421  SMS LOCATE ERROR -- NO MATCHING NVR -- SMSSOURCE=VVDS -- DSN=TEST.STRIPE.D.SEQ
IDPT01          TEST.STRIPE.D.SEQ   NVVR          PSE          15
```

The codes of 4 and 120 indicate that the catalog for this VVR no longer exists. The FDR495 message indicates the volser.

This example can be downloaded as file: FDREPORT_Diagnose_VVDS.txt

We are using FDREPORT to produce a daily report on the DFSMSHsm MCDS and would like to have the Migration Volser as one of the fields within the report. Is the Migration Volser mapped by FDREPORT as it is returned from the DFSMSHsm HSEND LIST command?

For users of the IBM program product DFSMSHsm, FDREPORT can report basic information about HSM migrated data sets. The MCDS contains a field for each migrated data set or cluster called MCDVSN, the volume serial number of the first ML1 or ML2 migration volume containing the migrated data set. FDREPORT release 5.4 and above can report this volser using field name HSMIGVOL (the column heading will be FMIVOL).



An example of this report would be:

```
TITLE LINE=' DFSMSHSM MIGRATED DATASETS '
DEFAULT MCDSCUSTER=HSM.MCDS
XSELECT XDSN=**
REPORT FIELD=(SPLDSN,VOL,ADATE,LRDATE,HSMIGVOL)
PRINT DATATYPE=MCDS,TITLE=LEFT

 DFSMSHSM MIGRATED DATASETS
DATA SET NAME VOLSER ADATE LRDATE FMIVOL
-----
JSB.HSM.TEST2 BMRKE2 2004.026 2004.026 BMRK00
JSB.HSM.TEST5 BMRKC5 2004.026 2004.026 BMRK00
```

This example can be downloaded as file: FDREPORT_DFSMSHsm_Migrated_Report.txt

When I run FDREPORT, the value for %FREE always shows as zero for POE datasets. Is there any way I can report on the free space in POE datasets?

To get free space values for POE (PDSE) or HFS datasets, you need to turn on the FAMSFREESP and POEUSEPAGE options of FDREPORT, which enables calls to IBM services to get these values. These are enabled on a PRINT or DEFAULT statement by the operand:

ENABLE=(FAMSFREESP,POEUSEPAGE).

I want a report of all cataloged datasets on a group of volumes that have the data-set-changed (update) flag turned on. Is there a way to get this report with FDREPORT?

The UPDATE flag is in the DS1DSIND field in each DSCB in the VTOC; DSIND=UPDAT will select updated data sets. CATALOG=YES and VOL=mask will limit the search to data sets that are cataloged to the volumes specified.

Sample control cards to create this report:

```
XSELECT DSIND=UPDAT,CATALOG=YES,VOL=(mask)
REPORT FIELD=(SPLDSN,VOL,DSIND,LRDATE,other fields)
PRINT
```

How do I tell FDREPORT to give me total statistics for multi-volume datasets?

In FDREPORT V5.4, you can generate a report that contains only one line per dataset, even if the dataset extends across multiple volumes, using the operand RECORDSUMMARY. For VSAM, you can choose either one line per cluster (RECORDSUMMARY=CLUSTER) or one line per component (RECORDSUMMARY=COMPONENT). For this feature to work, the input must be sorted by cluster and dataset name. DATATYPE=CATARCH or CATVTOC automatically sorts in this sequence.

This jobstream can be downloaded as file: FDREPORT_Using_RECORDSUMMARY.txt

The jobstreams for all examples shown in this newsletter are available from the Innovation FTP site.

- Go to the Innovation web site at: www.innovationdp.fdr.com
- Click on "Customer Support and FTP Access" and "FTP Downloads". Enter your access code (if you don't have one, you can request it on this page).
- Click on the "Download" directory, then on "Tech_Support_Samples", then on "May2004".



Can I copy an FDR backup tape or transmit an FDR backup from one computer site to another directly?

Backups created by FDR, FDRDSF, SAR, and FDRABR are in a unique FDR format and cannot be correctly copied by programs other than the FDR utilities FDRTCOPY and FDRTSEL or our tape utilities FATAR and FATSCOPY. If you copy FDR-format backups with any other copy utility, such as the IBM utility IEBGENER, the copy may appear to be successful, but any attempt to restore from the copied backup will fail. Similarly, programs that transmit files from one computer site to another will usually corrupt FDR backups.

FTP, for example, does not handle binary mainframe files with variable-length or undefined-length records, so if you want to transmit an FDR backup file with FTP, it is necessary to use a procedure like TRANSMIT/RECEIVE or the IBM Terse program TRSMAN to convert the backup file to fixed-length records. To use TRANSMIT/RECEIVE, the steps are:

1. Direct the FDR backup to a disk data set, so that the backup records are no larger than 32760 bytes (FORMAT=SPLIT).
2. From TSO READY, ISPF Option 6, or a batch job executing the TMP, issue the following command to convert the backup to a RECFM=FB, LRECL=80 file that can be FTP'd:

TRANSMIT X.X DA('inputdsn') OUTDA('outputdsn')

X.X is required, exactly as shown, but is ignored when OUTDA is specified.
3. FTP this output data set in Binary mode to the receiving system. It can go through intermediate systems (such as PCs) if necessary, but be sure each transfer is done in Binary mode.
4. When the FTP'd file reaches the destination mainframe, be sure that the data set still has attributes RECFM=FB and LRECL=80.

5. At the destination mainframe, receive the dataset from TSO READY, ISPF Option 6 or a batch job executing the TMP by issuing:

```
RECEIVE INDA('inputdsn')
```

You will be prompted for the data set name to be assigned to the reconstructed FDR backup file.

6. You can now execute an FDR restore against that backup file.

If you are using FTP directly from a mainframe to a mainframe (no intermediate non-mainframe systems) and the backup file is in split format (that is, the backup file was created by FDR on disk, or on tape with FORMAT=SPLIT), then it is possible to send the FDR backup dataset directly using FTP block data transfer mode without using TRANSMIT/RECEIVE. Block mode is specified by the FTP subcommands:

```
TType E      or      EBcdic
```

```
MOde B      or      BLock
```

Although the FDR data is binary, not EBCDIC, no translation will be done on the data in this mode, so the FDR data is preserved.

We use FDRINSTANT to create backup images of our volumes and then dump these backup images at a later time, leaving the backup images on the offline volumes. Now that we have FlashCopy V2, is it possible to use FlashCopy to recover a data set from the offline volumes after the DUMP job has run?

As long as the flashed point-in-time copy of the volume still exists on the target volume, you can copy data sets from the offline copy by using FDRCOPY with FCOPY=USE, as shown below. This will work with or without FlashCopy V2. If you wish to use FlashCopy V2 to recover the data sets, there are additional requirements.

To be able to recover data sets from the offline copy, you will use a sequence such as:

1. Take an FDRINSTANT backup, using PGM=FDRFLASH with FCOPY TYPE=FDR or PGM=FDRABR with FCOPY TYPE=FDR or TYPE=ABR. FDRINSTANT uses a FlashCopy NOCOPY session to create an offline copy of the source volume; in NOCOPY mode, tracks are physically copied only when they are updated, and the FlashCopy session will continue to run until it is released.
2. Dump the offline volume, using PGM=FDR with DUMP TYPE=FDR or PGM=FDRABR with DUMP TYPE=FDR or TYPE=ABR. On the DUMP command, specify FCOPY=USE, which leaves the session active (do not specify FCOPY=(USE,REL), which would end the FlashCopy NOCOPY session and make the offline volume unusable).
3. You can then recover data sets from the offline volume using PGM=FDRCOPY with FCOPY=USE, similar to this example:

```
//FDRCOPY EXEC PGM=FDRCOPY,REGION=0M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
COPY TYPE=DSF,FCOPY=USE
SELECT CATDSN=PLOUS.FCV2.TEST,NEWI=MARK5,NVOL=SH20C9
```

where CATDSN finds the online volume serial from the catalog, FCOPY=USE tells FDRCOPY to use the flashed offline volume as input instead of the online volume and NVOL specifies the output volume, which could be either the original online volume or a different volume.

However, because the FlashCopy NOCOPY session is still active, normal read/write I/Os must be used to copy data from the offline copy. If you have FlashCopy V2, and are running FDRINSTANT V5.4/30 or above, you can make it possible for FDRCOPY to use FlashCopy to copy the data. To do so, add the operand FCOPY=COPY to the FCOPY statement in step 1 above. An example of the FCOPY statement is:

```
FCOPY TYPE=FDR,FCOPY=COPY,...
```

Then FDRINSTANT will use a FlashCopy COPY session, which will physically copy all of the tracks from the source volume to the offline target in the background. Once this session ends automatically (usually just a few minutes), the later FDRCOPY step will automatically use data set FlashCopy to copy the data sets from the offline volume, usually taking only a few seconds. If the session hasn't ended yet, normal read/write will be used to copy the data.

Usually, the extra overhead of copying all of the tracks to the offline volume would outweigh the benefit of copying individual data sets back with FlashCopy, but it could be worthwhile to use FCOPY=COPY when the data sets must be recovered from the offline volume quickly, or when a large number of data tracks must be recovered.

Similar FDRCOPY jobs will work with the other types of FDRINSTANT (for Hitachi ShadowImage, EMC TimeFinder, and RVA/SVA SnapShot) by using the appropriate parameters, as documented in the FDR manual.

How can I use FDREPORT to simply give me a single line of output of space information for an entire SMS storage group?

FDREPORT 5.4/40 includes a VOLUME SUMMARY service that allows you to get summary information on volume fields, with one report line for each group of volumes. Volumes can be summarized by SMS storage group, volume prefix or device type.



Here is an example of this report, showing total free space by storage group:

| STORAGE GROUP | TOTAL CYLINDERS | FREE CYLINDERS | FREE TRACKS | FREE PCT |
|---------------|-----------------|----------------|-------------|----------|
| DATABASE | 60705 | 26041 | 391437 | 42 |
| PRODRSVD | 99057 | 88217 | 1323304 | 89 |
| PROD0 | 25599 | 6267 | 94804 | 24 |
| PROD1 | 23373 | 2468 | 37050 | 10 |
| TEMP | 70119 | 69718 | 1045898 | 99 |

The jobstream to produce this report can be downloaded as file:

[FDREPORT_Volume_Summary_Service.txt](#)

How can I get the output from FDREPORT to a format suitable for importing into a spreadsheet?

The output of FDREPORT can be written to a dataset by adding RPTYPE=TABLE and RPTDDNAME=ddname on the PRINT statement. This generates the output in fixed-column format that can be imported into other programs or spreadsheets. DISABLE=HEADINGS on the PRINT statement will disable the column headings.

The following FDREPORT control statements will write a report on total capacity and allocated tracks per volume, in megabytes, to a sequential data set. This can be imported into a spreadsheet or reporting program where you can summarize and graph the data as needed.

```

DEFAULT  DATEFORMAT=MMDYY, BYTEFORMAT=MEGABYTES
XSELECT  VOL=IDP*
REPORT   FIELD= (VOL, VLBYTVOL, VLALOBYT, RUNDATA)
SORT     FIELD= (VOL)
PRINT    RPTYPE=TABLE, DATATYPE=VOLDATA, RPTDDNAME=TABLE
    
```

This example can be downloaded as file:

[FDREPORT_to_Spreadsheet.txt](#)

Where is the complete documentation on the FDRQUERY program located?

The FDRQUERY program is intended to show the benefits of incremental backup and ARCHIVE under FDRABR. FDRQUERY produces reports giving estimates of the savings from backing up only data sets that have been updated instead of backing up all data sets (incremental backup), and of the disk space that would be saved by removing data sets that have not been used recently (ARCHIVE). These FDRQUERY reports are documented in section 10.25 of the FDR manual.

However, FDRQUERY can also generate various useful reports from SMF data. The SMF report functions are documented in member FDRQUERY in the ICL (Installation Control Library) loaded as part of the FDR installation (default dsname IDP.ICLFDR54).



An example of an SMF report on usage of a specific dataset is:

```

FDR303  CARD IMAGE - *  QUERY      DSN=LLS.TEST2.SEQ, FROMDATE=2004092, TODATE=2004092
DSN---LLS.TEST2.SEQ      DATE-----2004.092      TIME-----22.47.15
JOB-----LLS2           DDNAME--ISP19186        DSORG-----PS        USE-----OUTPUT
EXCP COUNTS-----      DISK-----43
DSN---LLS.TEST2.SEQ      DATE-----2004.092      TIME-----22.48.27
JOB-----LLS2COPY       DDNAME--SYSUT1         DSORG-----PS        USE-----INPUT
EXCP COUNTS-----      DISK-----44
    
```



An example of an SMF report on a specific job is:

```

FDR303  CARD IMAGE - *  XREPORT  ENABLE=NODSNAMES, FROMDATE=2004092, TODATE=2004092,
FDR303  CARD IMAGE - *  JOBNAME=DBACKUPS, FROMDDNAME=SMFHIST
JOB NAME.....DBACKUPS  DATE...2004.092
STEP NAME...DUMP        PGM...FDRABR          REGION REQ...9192     REGION USE..14052     COMP CODE..C-0000     PERFORM.....3
START..21.00.37        STOP...21.28.10      WALL..00.27.32.91     CPU...00.01.26.40     SRB...00.00.27.58
TAT...00.27.32.02     TNA...00.00.00.89     TRT...00.27.32.02
SUMMARY OF I/O ACTIVITY..... PAGE IN.....0        PAGE OUT.....0        TAPE.....22846        DISK.....17115
SWAP IN.....0         SWAP OUT.....0        SWAP COUNT.....0     SRVU....3781641
    
```

These examples can be downloaded as file: [FDRQUERY_Report_Examples.txt](#)

Is there any way I can use COMPAKTOR to repair the free space area of a volume? I'm receiving message: CPK540W FORMAT n DSCB AT CCHHR(HEX)

If the only VTOC error is free space that is not reflected in the free space maps, COMPAKTOR will correct this any time a volume is COMPAKted (TYPE=FASTCPK) or excess space is released from datasets (TYPE=RLSE). If you want to correct the free space without making any other changes to the volume, then:

- Allocate a data set that has empty tracks. A convenient way to do this is to allocate a PDS with 2 tracks and 1 directory block; one track will be used for the directory block and one track will be empty.
- Run a CPK TYPE=RLSE on the volume selecting just this data set.

This sample jobstream allocates a PDS with an empty track, invokes FDRCPK to release space from this data set, and then deletes the data set.

```
//ALLOC      EXEC PGM=IEFBR14
//PDS        DD DSN=temp.pds,UNIT=SYSALLDA,VOL=SER=volser,
//           DISP=(,CATLG),SPACE=(TRK,(2,,1))
//*
//CPKRLSE    EXEC PGM=FDRCPK,REGION=0M
//SYSPRINT   DD SYSOUT=*
//SYSMAP     DD SYSOUT=*
//SYSUDUMP   DD SYSOUT=*
//SYSIN      DD *
             CPK      TYPE=RLSE,VOL=volser,HI=NO
             SELECT   DSN=temp.pds,RLSE=ALL
//*
//CLEANUP    EXEC PGM=IDCAMS
//SYSPRINT   DD SYSOUT=*
//SYSIN      DD *
             DELETE   temp.pds
```

This example can be downloaded as file: [FDRCPK_Fix_CPK540W_Errors.txt](#)

You should be aware that COMPAKTOR will only detect the inaccurate free space (message CPK540W) on a volume that does not have an active indexed VTOC (VTOCIX). However, this COMPAKTOR jobstream will correct the free space in an indexed or non-indexed VTOC.

If you want to create or activate an indexed VTOC on the volume, then after fixing the free space error as above, run FDRPAS with SWAPBUILDIX, or ICKDSF with BUILDIX IXVTOC. If you use ICKDSF, and you do not have APAR OW52855 installed, then you must VARY the volume OFFLINE to all systems except the one where you run ICKDSF, and then re-MOUNT the volume on the other systems. FDRPAS allows the volume to remain online to all sharing systems while the VTOC index is rebuilt.

After an FDRPAS SWAP of a volume, the volume label on the old volume is modified so that it cannot be varied online. Does this cause any problems or messages when the system is IPLed?

FDRPAS source volumes with the modified label will not produce any problems, but for each volume this message is generated during IPL:

IEA311I UNLABELED DASD ON uuuu, UNIT PUT OFFLINE

These messages will not require any operator reply or action.

If you eventually disconnect the old control unit, the messages will go away. If not, once you are certain that the new disks are working properly and you don't need to revert back to the old disks, you can either run ICKDSF INIT on the old disks or run the FDRPAS function MONITOR TYPE=RESETVOL to relabel the volumes. The RESETVOL is much easier to use, since it can reset many volumes in one step.

RESERVOIR

NEW PRODUCT

UPSTREAM
RESERVOIR



UPSTREAM Reservoir — a Non-Mainframe Backup Solution

We are excited to formally announce our newest member of the FDR/UPSTREAM family, **UPSTREAM Reservoir**. FDR/UPSTREAM was originally designed

to use an OS/390 mainframe system exclusively as its data storage server, but now **UPSTREAM Reservoir** extends the power of UPSTREAM so you can utilize UPSTREAM either in mixed MVS and Open System environments or in entirely non-mainframe environments. The **UPSTREAM Reservoir** provides the same comprehensive and rock solid client support as FDR/UPSTREAM in addition to the online database agents.

UPSTREAM Reservoir system:

- Is managed by the UPSTREAM “**Director**”, JAVA and browser interface.
- Offers the UPSTREAM **Dispatcher**, an **integrated** batch job and event scheduling system.
- Supports a wide range of disk, tape and robotic devices. The UPSTREAM Reservoir Backup server can use any tape drive or library such as STK 9840, Magstar, DLT, LTO, AIT, Ultrium.
- Provides the ability to backup to disk or tape, and provides the option for data to be backed up to disk and then automatically moved to tape.
- Profile Sets—a new form of grouping that simplifies the definition and policy creation of the backup tasks while also providing excellent tape utilization by stacking multiple file server data on high capacity tape drives.
- UPSTREAM Provides extensive non-disruptive agents for databases and messaging systems.

UPSTREAM Reservoir provides the highest degree in flexibility by allowing tapes on compatible media to be interchanged with the FDR/UPSTREAM Product. IBM Magstar and StorageTek 9840 tapes on the UPSTREAM Reservoir system can be imported and read on the FDR/UPSTREAM mainframe system and vice versa.

For more information or to order a FREE NO-OBLIGATION Trial please contact us.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 18 LITTLE FALLS NJ

POSTAGE WILL BE PAID BY ADDRESSEE



INNOVATION PLAZA
275 PATERSON AVENUE
LITTLE FALLS NJ 07424-9968



PRODUCT UPDATES

This table shows, for each current release of OS/390 and z/OS, the minimum levels of each Innovation product that should be installed. Use the table when upgrading your OS/390 or z/OS system, to verify that you have the correct Innovation software in use. If not, you should install the latest version. If you already are using the indicated minimum level, you may wish to install the latest version anyway in conjunction with the Operating System upgrade. If not, please review the Product Notes that follow the table on our website at www.innovationdp.fdr.com/osreq.cfm for ZAPs that may be required depending on the hardware and software in use at your installation.

NOTE: While prior versions might still work, the versions listed are the minimum supported versions.

As of May 2004

| | OS/390 2.4-2.10 | z/OS 1.1-1.2 | z/OS 1.3-1.5 | |
|---------------------------|--------------------|-----------------|-----------------|----------------|
| PRODUCT | Minimum | Minimum | Minimum | Latest Version |
| FDR | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| COMPAKTOR | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| ABR | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| FDREPORT | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| FDRINSTANT | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| FDRCLONE/FDRDRP | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| FDRREORG | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| FDRPAS/FDRERASE | V5.4/24 | V5.4/24 | V5.4/24 | V5.4/41 |
| FDRSOS | V5.4/20 | V5.4/20 | V5.4/20 | V5.4/41 |
| FATS/FATAR/FATSCOPY | V4.8/10 | V4.8/10 | V4.8/10 | V4.8/40 |
| IAM | V8.0/12 | V8.0/12 | V8.0/12 | V8.0/26 |
| UPSTREAM CLIENT | V3.2.0 | V3.2.0 | V3.2.0 | V3.3.1 |
| UPSTREAM zSeries & OS/390 | V3.2.0 | V3.2.0 | V3.2.0 | V3.3.0 |
| UPSTREAM Reservoir | - | - | - | V3.3.1 |

For minimum requirements and up-to-date information visit the website at: <http://www.innovationdp.fdr.com/osreq.cfm>



CORPORATE HEADQUARTERS: 275 Paterson Ave., Little Falls, NJ 07424 • (973) 890-7300 • Fax: (973) 890-7147
E-mail: support@fdrinnovation.com • sales@fdrinnovation.com • <http://www.innovationdp.fdr.com>

| | | | | | |
|-------------------|--------------------------|-------------------------|-----------------------------|---------------------------------|-------------------------------------|
| EUROPEAN OFFICES: | FRANCE 01-49-69-94-02 | GERMANY 089-489-0210 | NETHERLANDS 036-534-1660 | UNITED KINGDOM 0208-905-1266 | NORDIC COUNTRIES +31-36-534-1660 |
|-------------------|--------------------------|-------------------------|-----------------------------|---------------------------------|-------------------------------------|

PLEASE SEND ME:

Product Overview for:

- FDR
 IAM
 FATS
 UPSTREAM
 FDRPAS
 FDRSOS
 RESERVOIR
 FDRERASE

- FREE No-Obligation Trial & Keychain Flashlight.
 Check this box if you want a Documentation CD-ROM shipped to you.
 Check this box if you want the latest version of a licensed product shipped to you.
 Send White Paper on Corporate Data Protection with Special Focus on DB2.
 Send Comparison of ABR to IBM's DFSMSHsm.

USER COMMENTS:

FIRST-CLASS
U.S. POSTAGE
PAID
Little Falls, NJ
Permit No. 65

Telephone

E-mail