



IAM/AIX New Cost Option: Alternate Index Support

IAM/AIX, a cost option to IAM, is now available. This brings IAM's outstanding performance and data compression to those VSAM files that previously could not be converted to IAM because they had alternate indexes. As with standard IAM support there are no changes required to application programs!

IAM/AIX uses 20% to 50% less CPU Time than VSAM.

IAM/AIX performs 50% to 80% fewer EXCPs than VSAM.

IAM/AIX runs in 50% to 80% less Elapsed Time than VSAM.



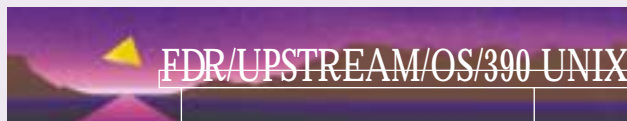
● FATSCOPY–Migration Aid/Tape Stacking

FATSCOPY, a cost option to FATAR (available 4th quarter 2000), will automate the migration and stacking of datasets onto higher density tapes like IBM MAGSTAR and StorageTek 9840 tapes. **You can specify the datasets by:**

Data set name prefixes or masks

Tape volume serial prefixes or ranges

Tape device type (Ex.: Migrating from 3480 to 3490)



● UPSTREAM OS/390 UNIX 3.1.2 Now available

UPSTREAM OS/390 UNIX 3.1.2 provides a significant improvement in elapsed time for incremental backup of OS/390 UNIX.

FDR can provide dump and restore of entire OS/390 UNIX file systems while UPSTREAM OS/390 UNIX allows you to do full and incremental backups of individual files.

In addition UPSTREAM OS/390 UNIX supports External Links, Symbolic Links, Hard Links, Auditing flags, HFS Extended Attributes, UNIX owners and permissions, and Case sensitivity.

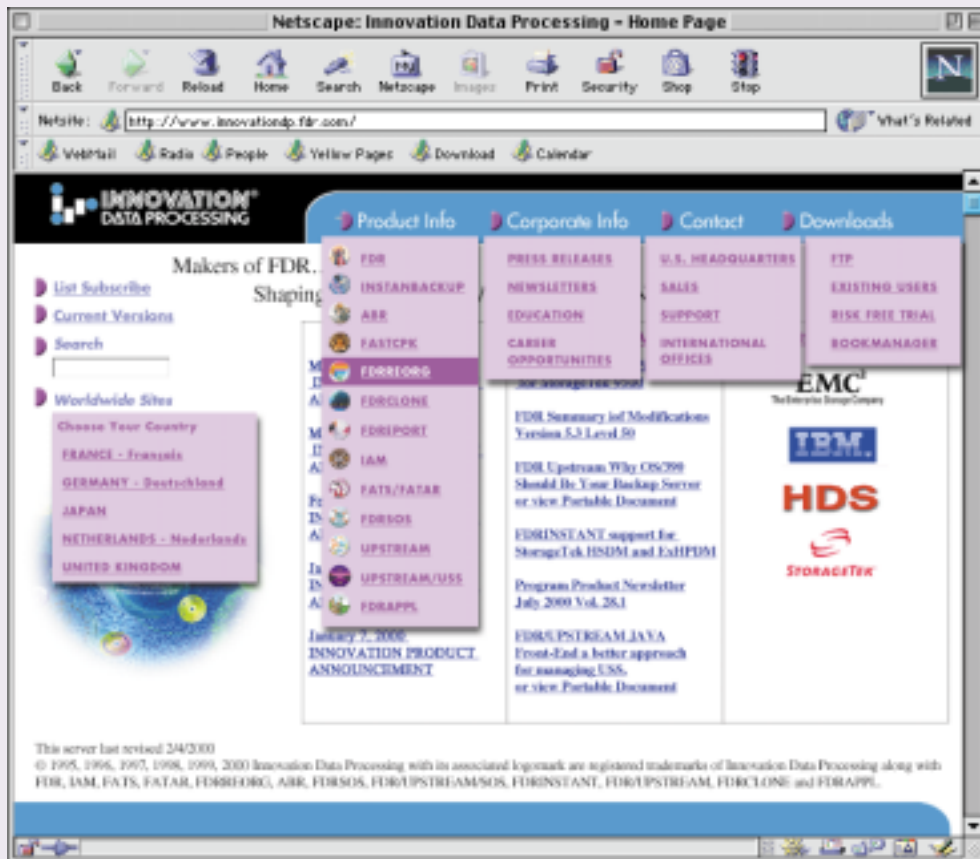
OPERATING SYSTEM REQUIREMENTS

The following versions are the **levels** required for OS/390 support within the Innovation products. **Check www.innovationdp.fdr.com/osreq.htm for updates to this page, and for additional considerations.**

IDP PRODUCT	OS/390 2.5/2.6/2.7/2.8		OS/390 2.9 and 2.10		Latest Version
	Minimum	Recommended	Minimum	Recommended	
FDR	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
COMPAKTOR	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
ABR	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
FDREPORT	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
FDRINSTANT	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
FDRCLONE	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
FDRDRP	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
FDRREORG	V5.3/20	V5.3/20	V5.3/40	V5.3/40	V5.3/50
FATS/FATAR	V4.5.05	V4.6.3	V4.5.05	V4.6.3	V4.7.03
FDRSOS	V5.3/20	V5.3/20	V5.3/20	V5.3/20	V5.3/50
IAM	V6.3/25	V6.4/12	V6.3/25	V6.4/12	V7.0/08
FDR/UPSTREAM	V3.1.0	V3.1.1	V3.1.0	V3.1.1	V3.1.2

NEW! IMPROVED WEBSITE

Use Innovation's new and improved website for latest software updates and product info.



FDRDRP ENHANCES FDRABR VOLUME RECOVERY

As you begin to replace older 3480/3490E tape drives with IBM 3590 Magstar and StorageTek 9840 cartridge drives, you need to review your disaster recovery procedures. These high-capacity cartridges can hold the incremental backups of hundreds of disk volumes. Although this greatly reduces the number of cartridges that must be carried to the disaster site, it also means that access to those cartridges can become a bottleneck during the restore process. The same cartridges will be needed over and over during the restore of your disk volumes.

FDRDRP (Disaster/Recovery Product) enhances the ABR volume restore process so that the disk volumes backed up on those high-capacity tapes can be restored in one pass of each tape. This eliminates repeated mounts of the backup tapes and greatly reduces the elapsed time of the disaster restores. Users have reported that volume recovery time has been reduced by up to 80%, getting their systems operational faster and giving them more test time during disaster tests.

Without FDRDRP, some users have felt that it was too time consuming to restore from daily incremental backups, so they limited the disaster restores to just the most recent full-volume backup or limited the number of incremental backups that they would apply. Therefore, the restored data is not as current as it could be. FDRDRP makes it practical to restore the most recent incremental backups and recover the most current data available.

USER EXPERIENCE

One user backed up 110 3390-3 volumes to StorageTek 9840 cartridges, using 8 cartridges for his weekly full-volume backups and 4 cartridges for one day's incremental backups. Tests with FDRDRP showed that he was able to restore all of the 110 volumes using only the full-volume backups in just 2.5 hours using 8 tape drives, and that additionally restoring a days worth of incremental backups added only 30 minutes to the restore.

The same user backed up 47 3390-9 volumes to 16 cartridges (disk data was already heavily compressed) for the full-volume backup and 4 cartridges for the incremental backup. Using 8 tape drives, he was able to restore all those volumes from the full-volume backups and one incremental in 80 minutes!

Because of the way FDRDRP overlaps tape processing, restoring from additional days of incremental backups would have added only a few minutes for each day to the restore time.

USING VIRTUAL TAPE SYSTEMS WITH INNOVATION PRODUCTS

Virtual Tape Systems (VTS) come in hardware versions (from IBM, StorageTek, and Sutmyn) and software versions (from Sterling/CA and EMC) but they all work roughly the same way. They look like real tapes to the operating system and tape management systems, and have volume serials like any real tape, but in reality, the virtual tape volumes are emulated on disk. Once a dataset has been written to a tape volume, the volume can be “mounted” and read back without any delay as long as it is still in the “disk cache”. Virtual tape volumes eventually will be copied to real tapes but they must be staged back to the disk cache before they can be read again. A hardware VTS connects to the tape channel and its disk cache and real tapes are internal, while a software VTS emulates tape hardware and uses standard OS/390 disks and tapes.

A VTS can solve the problem of inefficient use of high-capacity tapes such as IBM 3590 Magstar and StorageTek 9840. Many virtual tape volumes will be written to one real tape volume, automatically stacking data and improving tape utilization. Most existing tape applications, including **FDR**, **FDRDSF** and **FDRSOS** backups, can benefit from a VTS but installations considering a VTS need to determine whether backups from products such as **FDRABR** and **FDR/UPSTREAM** are appropriate for a VTS:

- **FDRABR** and **FDR/UPSTREAM** already use high-capacity tapes efficiently, automatically stacking multiple backups on a single tape, so the tape utilization improvement of the VTS may be unnecessary.
- Tapes created by **FDRABR** and **FDR/UPSTREAM** often need to go to an offsite vault for disaster recovery. Some VTS have the ability to create duplex or vaulted data, but some do not.
- When a virtual tape is still in the disk cache of the VTS, recall or restore from an **ABR** backup on a virtual tape is very fast since no physical mount is required. However, when the virtual tape is on a real tape, the *entire* virtual tape volume must be restored to the disk cache before *any* data on that virtual tape can be read. If a virtual tape volume contains many backups, but you are only restoring a few small datasets, the VTS may need to move a great deal of virtual tape data back to the disk cache before the restore can proceed.
- A VTS can be used for rapid auto-recall of datasets archived by **ABR** so it can be a good alternative to the Archive COPY1 on disk, but you may want to run the **ABR** ARCHIVE job with MAXFILES=1 (or a small number) to limit the number of disks that **ABR** will archive to a given virtual tape volume and improve the elapsed time of the recalls. However, if you are creating a second copy of the archive data on real tape for offsite storage, MAXFILE=1 may be inappropriate since it will use too many real tapes (to avoid this, use **FDRTSEL** to create the second copy).
- You can use **SAR** (Stand-Alone Restore) to restore from full-volume backups in a hardware VTS; the VTS documentation will tell you how to “manually” mount virtual tape volumes. You cannot use **SAR** to restore from a software VTS since OS/390 must be up to use it.

FATS functions (label, certify, erase) do not apply to virtual tapes, but **FATAR** can be used to copy data to and from virtual tape volumes.

IAM AND IAM/AIX WILL ALLOW YOU TO MEET THE PERFORMANCE DEMANDS OF YOUR USERS

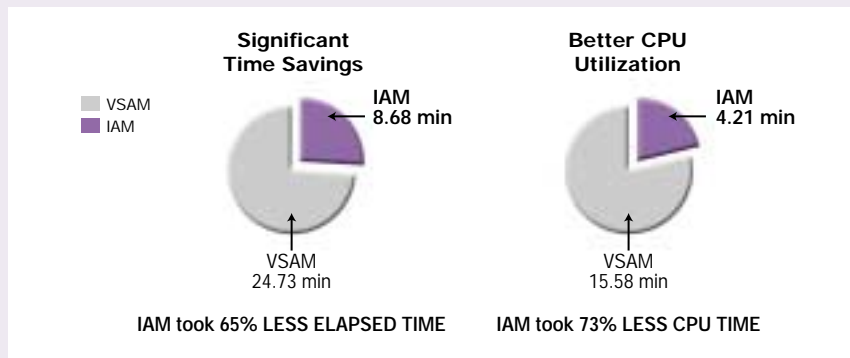
IAM 7.0 is now available and introduces a cost option, IAM/AIX which will allow you to convert VSAM files with alternate indexes to IAM files.

Most OS/390 data centers still make extensive use of KSDS and ESDS VSAM files. When these VSAM files are converted to IAM you will see a significant benefit in Elapsed Time, Space and System Resources.

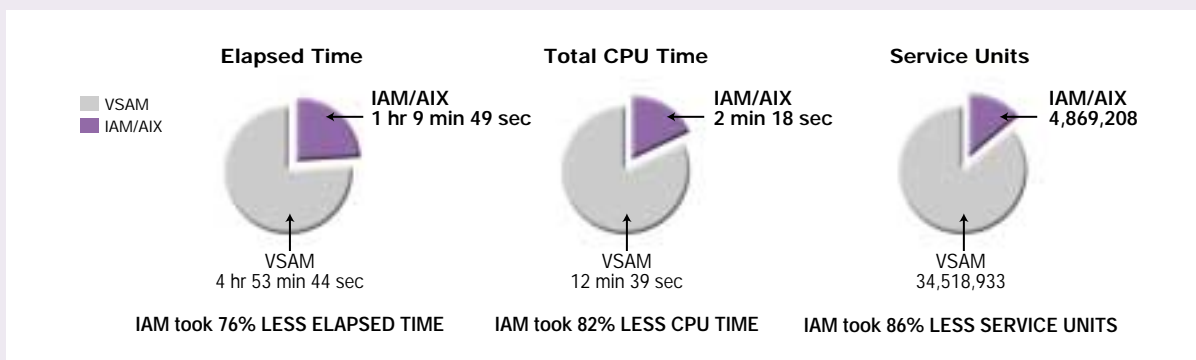
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Extensive tests have shown that IAM's file structure and software compression technique are significantly faster than even VSAM's hardware compression, while giving comparable or better space reduction. IAM delivers superior performance and better space savings while using less CPU time.

IAM Compared to VSAM using hardware compression, sequentially reading an 11GB file without Alternate Indexes.



Batch Performance: IAM/AIX Compared to VSAM with Alternate Indexes.



THE IAMSMFVS PROGRAM

You can easily identify the I/O activity of your VSAM files. Use the IAMSMFVS program (Section 40 in the IAM manual) to identify the most active and largest VSAM files. In most cases these would be excellent candidates for conversion from VSAM to IAM and IAM/AIX. **IAM's SIGNIFICANT REDUCTION IN SYSTEM RESOURCES CAN ALLOW YOU TO POSTPONE CPU UPGRADES!**



FDR INSTANTBACKUP

FDR INSTANTBACKUP Version 5.3 L50 is available and now provides support for IBM's 2105 ESS (SHARK) DASD with FLASHCOPY in addition to the other hardware vendors above.

Unlike DFSMSdss, FDR allows you to back up the offline volume, therefore allowing you to take non-disruptive backups of your data.

FDR INSTANTBACKUP in conjunction with the hardware features, allows you to take backups non-disruptively.

FDR V5.3 L50 IS NOW AVAILABLE

INSTANTBACKUP SUPPORT FOR:

- FDR and ABR with IBM **FLASHCOPY** on the IBM 2105 ESS "SHARK" disk
- ABR with Hitachi Data Systems **SHADOWIMAGE**
- EMC **TIMEFINDER** "differential split" and "instant split" which will significantly improve the split function

ADDITIONAL FEATURES IN FDR V5.3 L50

- FDRREORG support for IAM/AIX
- FDR support for cataloging multi-volume data sets (up to 59 disk volumes)
- ABR improvements when restoring archiving and auto-recall of VSAM files with Alternate Indexes (AIX)



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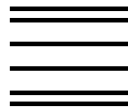
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