Innovation Data Processing, recognized worldwide as a leader for its preeminence in Storage Management Software, has been creating leading backup and recovery solutions since 1972.

Beginning with the original timesaver—FDR (Fast Dump Restore)—Innovation Data Processing’s products have evolved into today’s ultra high-speed, safe, reliable storage management solution for MVS, OS/390, LAN and Open Systems Data.

FAST DUMP RESTORE, now an industry standard, with over 5,000 licenses, was the fulfillment of a commitment to deliver quality, innovation and service, INNOVATION’s hallmark ever since.

As a reputation for inventiveness was established with FDR, so too was a reputation for reliability. FDR today has the distinction of being the most widely installed independently-offered Storage Management Software product for large-scale IBM OS/390 systems. But, FDR was only the first in a string of innovative products that have proven to be forerunners in the application of software technology to DASD Storage Management.

IAM, an alternative for VSAM KSDS and ESDS files, eliminates the VSAM performance bottleneck, reduces VSAM file size by more than 50% and allows users to exceed VSAM’s KSDS 4GB limit.

FDRSOS and FDR/UPSTREAM is a fast, safe and reliable solution to backing up workstations, file servers and open systems, to the mainframe.

FDR INSTANTBACKUP, Innovation’s newest product, allows simple non-disruptive backups of offline DASD volumes.

Year 2000 Compliance
Modification to all Innovation Software Products for Year 2000 compliance was completed in July, 1998.

Commitment to Excellence
Innovation is firmly committed to developing innovative software solutions for the 21st century. Products that perform with unsurpassed efficiency and ease-of-use that you can depend on with certainty. A little innovation goes a long way!
USER EXPERIENCE

We are the proven resource most MVS users rely on. From the fury of Hurricane Andrew, surging St. Louis floodwaters to the California earthquakes, Innovation product users were able to attain “business as usual” conditions faster and more completely than those using other products.

Two decades of experience and client confidence make Innovation systems the preferred disaster recovery system of DASD managers. Our software offers unique capabilities you won’t find anywhere else. We are ready to handle your emergency needs today, and the DASD growth you have planned for the future. For fast backup and recovery of your valuable data, it’s critical you rely on Innovation.

FDR...THE WORLD’S FASTEST DUMP RESTORE SYSTEM

FDR is a complete, super-fast DASD Management system that is fine-tuned for outstanding performance, performance that is not acquired at the expense of reliability or ease-of-use. And the FDR system has been rated one of the top software products year after year.

With ABR, the DASD Management portion of FDR, data set backups can be automated—automatically creating a backup when updated. And datasets which have not been referenced for a long period of time can be migrated to less expensive media.

When used with FDR INSTANTBACKUP, FDR allows simple Non-Disruptive Backup of MVS DASD volumes.

FDR provides timely support for the latest technological changes. FDR supports the latest hardware and software advances, from IBM and other vendors.

Innovation’s leadership role is evident by FDR’s inclusion in IBM’s SystemPac®/MVS, an integrated, ready-to-IPL system that is pretested with current levels of maintenance applied.
FDR INSTANTBACKUP™
Non-Disruptive Backup of MVS DASD Volumes

FDR InstantBackup allows you to create a point-in-time image of an online DASD volume, on an offline DASD device, and backup that offline disk as if it was the online volume. The online volume is available for normal use and updates. Since the “frozen” offline image is actually read, changes to the online volume will have no effect on the backup.

During this FDR backup of the offline volume, datasets can be updated, allocated, scratched or extended on the primary volume without any effect on the backup!

<table>
<thead>
<tr>
<th>WITHOUT FDR INSTANTBACKUP</th>
<th>WITH FDR INSTANTBACKUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Create Offline Image of Volume A</td>
<td>• Create Offline Image of Volume A</td>
</tr>
<tr>
<td>• Relabel Offline Volume as Volume B</td>
<td>• NOT REQUIRED</td>
</tr>
<tr>
<td>• Vary Relabeled Volume B online</td>
<td>• NOT REQUIRED</td>
</tr>
<tr>
<td>• Backup Volume B</td>
<td>• Backup the Offline Image of Volume A</td>
</tr>
<tr>
<td>• During Restore, User Must Be Aware That Backup of Volume B is Really Volume A</td>
<td>• No Special Restore Considerations</td>
</tr>
</tbody>
</table>

During this FDR backup of the offline volume, datasets can be updated, allocated, scratched or extended on the primary volume without any effect on the backup!

FDR INSTANTBACKUP Supports FDR & FASTCPK on:
- EMC TIMEFINDER™ feature (BCV Volumes)
- IBM® RVA with SNAPSHOT COPY feature
- STK ICEBERG with SNAPSHOT COPY feature

FDR INSTANTBACKUP Supports FDR on:
- HDS with HS-DATAPLEX feature
- AMDAHL with TDMF
- COMPAREX with CDRF/CMRF
- IBM Dual Copy

USER EXPERIENCE

• Critical data base required backup twice a day. Data base was not available for 30 minutes. Now with FDR INSTANTBACKUP the BCV volumes are split in seconds, FDR INSTANTBACKUP backs up the BCV volume and the users have access to the data base virtually 24 by 7.
• Significantly eased our Y2K testing.
• Dramatic savings using SNAPSHOT=YES to compakt volumes. FASTCPK reorganizes 3390-3 volume in less than 30 seconds.
• On RVA with SNAPSHOT=YES, FASTCPK takes only a few seconds to merge extents, consolidate free space and release overallocated space.
**USER EXPERIENCE**

- Incremental backup completes in 70% less elapsed time than DFSMS/hsm.

- We merged data centers. The number of DASD volumes tripled. We switched to ABR and are able to complete the backups in the same amount of time.

- The unthinkable occurred one day—before our full volume backups we were forced to evacuate our computer center. Within hours we were able to recover hundreds of DASD volumes at our disaster site from ABR incremental backups. ABR recovered the volumes as if we had done full backups the night before.

If you wish to recover data 7 days, 7 months or 7 years from now…let Innovation show you a much better way.

ABR, the DASD Management component of FDR, automates the backup of your disk volumes. Datasets are automatically backed up when updated. At some interval, usually once a week, full volume backups are taken. ABR can recover individual datasets or full volumes from current or older backups. TSO/ISPF panels give the end user easy access to the DASD Management reports and backup/restore functions.

Whether it is for a single dataset, an entire volume or in the event of a disaster, the recovery of the entire data center—ABR will provide you with the fastest recovery.

Higher capacity DASD and increasing usage of DASD present today’s storage administrator with new backup and recovery challenges. ABR is designed to meet your needs today and in the future as your DASD capacity grows.
ARCHIVING
ABR’s space management can be run hourly, daily, weekly, etc. to move inactive datasets to a less costly medium. Thresholds can be established on volumes so that ABR space management can be invoked to maintain a certain level of free space within the DASD storage pool. ABR allows you to archive data to disk and tape simultaneously, therefore allowing you to immediately send a copy of data offsite to satisfy your disaster recovery needs. Data is easily moved from migrated DASD to tape for long-term retention. ABR also supports the SMS management class, including support for expiration dates generated from management class attributes.

AUTO RECALL
Archived datasets can automatically be restored when referenced by either a batch job or a TSO user.

APPLICATION BACKUP & RECOVERY
Application backup is a procedure for the backup and recovery of a selected set of datasets usually belonging to one application system. Datasets are selected through the catalog so the user does not need to know the location of the datasets. Application backup is particularly suited to replace those backups that invoke DFSMSdss, IEBGENER or IDCAMS REPRO. Innovation application backup is comparable to IBM’s ABARS under DFSMShsm except ABR application backup is significantly faster.

USER EXPERIENCE
• Reduced our DASD cost significantly.
• ABR has the ability to create and track two copies of an archive dataset, making ABR easy-to-use for disaster recovery.
• ABR’s control file used 200 cylinders as compared to 1,500 cylinders used by DFHSM. More importantly, the I/O activity to the control files was reduced by over 90%.
FASTCPK...
Reorganizes DASD in 2-4 Minutes

USER EXPERIENCE

- A user ran FASTCPK on twenty 3390-3 volumes (75% to 90% allocated). FASTCPK reduced the number of free space areas by at least 90% and freed unused space from VSAM, DB2, PS and PO files. The results were:

<table>
<thead>
<tr>
<th># of Volumes</th>
<th>Elapsed Time</th>
<th>Tracks Released</th>
<th>Free Areas Eliminated</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 3390-3</td>
<td>2.1-4.5 minutes</td>
<td>78,735</td>
<td>4,782</td>
</tr>
</tbody>
</table>

- In minutes we recovered thousands of tracks of unused space from hundreds of volumes.

- FASTCPK automatically identifies volumes requiring reorganization by fragmentation index during the day, eliminating storage problems. CPK reduces the free areas by 90% in a few minutes.

COMPRAKTOR (CPK) is a disk management utility which provides an efficient and flexible tool for reorganizing DASD, 50 to 80% faster than IBM’s DFSMSdss DEFRAG.

- **Consolidates Free Space.**
  CPK reduces free space fragmentation on a volume to a specific goal (ex: 90% reduction) in minutes.

- **Consolidates dataset Extents.**
  CPK combines multi-extent DB2, VSAM and non-VSAM files into one extent.

- **Release Space from PS, PO, VSAM and DB2 files.**
  CPK can release all or a portion of the unused space during reorganization or as a stand-alone function.

- **VTOCS can be Enlarged or Relocated.**

FASTCPK can now be run daily, since it only requires a few minutes per volume. The resulting benefit is substantially better utilization of your DASD.

NEW FEATURE

If you license FDR INSTANTBACKUP and have IBM/STK SNAPSHOT Feature, most FASTCPK Reorganization jobs will run in less than 30 Seconds!
FDRREORG provides an easy and automated method of reorganizing VSAM, IAM and PDS datasets.

With FDRREORG, datasets are only reorganized when they need it. FDRREORG eliminates the manual effort of running reports to see how many CI/CA splits a cluster has or how much available space there is in a PDS and manually submitting batch jobs to REPRO or IEBCOPY the files.

When traditional methods of reorganization are used, dataset reorganization is usually scheduled as a weekly job based upon some previous experience with the file. In many instances reorganizations take place when there is only a marginal benefit, but emergency reorganizations are required because unforecasted changes have occurred resulting in wasted space and poor performance. **FDRREORG will eliminate these problems.**

FDRREORG can select files based upon their need to be reorganized. The management of all VSAM, IAM and PDS files can be centralized, therefore eliminating the time consuming training of individual departments on how and when to reorganize the files.

Using the Parallel Backup option, FDRREORG significantly reduces backup and reorganization time for large multi-volume VSAM and IAM files.

**IEBCOPY compatibility:** FDR’s REORG facility can be transparently invoked when IEBCOPY is called to compress PDS datasets without modifications to your operating system. IEBCOPY overhead is reduced by 50 to 98%.

**USER EXPERIENCE**

- Nightly VSAM reorganization reduced from 100 mins. to 20 mins., allowing the user to leave the online system available for an extra hour each night.

- New files added to applications automatically are eligible for reorganization. No separate IDCAMS REPRO JOB required for each new VSAM file added.

- Significant reduction in staff time required to monitor and schedule VSAM reorganization and PDS compression. The end-user is no longer responsible for or concerned about compression or reorganization.
FDREPORT…
Flexible Reporting

USER EXPERIENCE

• Using FDREPORT’s more than 50 Health check pre-defined reports, we saw immediate benefits.
• FDREPORT easily identifies volumes with VT0C and VVDS errors.
• We are able to identify space usage by specific applications, individual users, etc.
• FDREPORT identifies bottlenecks like VSAM files with high CI/CA splits that need reorganizing.
• Flexible Reporting on our DFSMSHsm MCDS and BCDS Data Base.

FDREPORT provides extensive customized reporting capabilities to suit many needs and purposes.

At any computer site, users at a variety of levels need to be able to refer to accurate and timely information about the use of DASD resources. Accurate information is the only basis for sound decision making and future planning. Without adequate information it is impossible to determine how efficiently DASD space is being used, or predict how needs will grow. Accurate information is also essential for solving existing problems and for preventing problems from arising in the future.

COST SAVINGS

FDREPORT provides easy-to-read management level reporting that allows you to easily see how effectively your DASD storage is being used, separated by departments, projects or individual users.

Since storage costs represent a significant part of the data processing budget, the ability to accurately monitor and adjust for current and future needs will result in significant cost savings and a more competitive cost for your end-user.

FDREPORT analysis of DASD will provide you with accurate information on which to base your decision making.

REAL TIME REPORTING

Real Time Reporting that can be easily modified by the user. The user can specify which dataset attributes should be displayed and in what order.

YEAR 2000 SUPPORT

Date fields print with 4-digit year.
IAM®...
The Power Over VSAM

- REDUCES DASD SPACE REQUIREMENTS BY 30 TO 70%
- IMPROVES ONLINE AND BATCH PERFORMANCE
- CUTS CPU UTILIZATION...OF MAJOR APPLICATIONS

CICS and Batch applications make heavy use of keyed indexed VSAM (KSDS) files. VSAM is a prime bottleneck to the performance of these systems.

IAM, a transparent alternative to VSAM, eliminates VSAM’s (KSDS and ESDS) bottleneck by slashing I/O and CPU time. IAM’s Real Time Tuning monitors I/O activity, dynamically changing the number of buffers and I/O chaining. IAM completely eliminates the I/O to the VSAM index.

IAM executes fewer instructions per record request. Batch processing times are dramatically reduced by 50 to 80%.

IAM does not require users to make any modifications to their operating system. IAM does not replace any operating system access methods. IAM is designed to coexist with VSAM.

IAM with data compression takes less CPU time than VSAM and significantly less than software compression products.

IAM’s file structure and software compression technique is significantly faster than VSAM’s hardware compression, while giving comparable or better space reduction. IAM delivers superior performance and better space savings while using less CPU time.

Many of the popular application vendors make extensive use of VSAM KSDS files. Many of these files are excellent candidates for conversion from VSAM to IAM.

USER EXPERIENCE

- IAM reduced RMDS space requirements from 106,000 tracks to less than 53,000 tracks.

- Each day our VSAM file was getting close to 4GB. We were left with some painful choices: split the file into 2 or 3 sub-files requiring thousands of hours of programming changes and testing; purge records leaving only the most current ones on the file; or, archive older entries.

  We converted our VSAM files to IAM without change. Now the file is over 20GB.

- Replaced existing VSAM compression package with IAM and saw a 50% savings in CPU time.
FAST ANALYSIS OF TAPE SURFACES
FATS is a tape utility program which permits online tape certification, verification and erasure.

• **FATS** certification allows you to insure that new tapes are of acceptable quality and that existing tapes can still be used.

• **FATS/FATAR** can verify that archive/historical tapes are readable.

• **FATS** data security erase feature can be used to insure that all company confidential data is gone from tapes before they leave the site. **FATS** can erase a 3480 tape in 1.8 minutes; a 3490E tape in 3.6 minutes.

• **FATS** provides a permanent record of each tape tested in the form of comprehensive detail and summary reports.

FAST ANALYSIS OF TAPE AND RECOVERY
FATAR is a tape utility program which analyzes and copies tapes.

• **FATAR** recovery has saved millions of dollars recovering data from overwritten tapes or damaged tapes. FATAR can map a tape, providing the characteristics of all its files.

• **FATAR** can easily automate the copying of 3480/3490E tapes to MAGSTAR/REDWOOD and update the tape management system (CA-1, CA-TLMS).

• **FATAR** can stack files from separate tapes to one 3490E/MAGSTAR/REDWOOD.

• **FATAR** can modify data on tape (while copying).

• **FATAR** can convert ASCII data to EBCDIC, EBCDIC to ASCII.
FDRSOS® & FDR®/UPSTREAM®/SOS...
High Speed Mainframe Backup of Open Systems Storage

Joining forces with EMC and its Symmetrix® DASD with Enterprise Storage Platform (ESP), Innovation paves the way for a backup/restore solution for open systems storage to S/390 tape or disk directly across high speed mainframe channels.

FDRSOS…Nondisruptive backup
FDRSOS features an almost totally non-disruptive physical image backup for SCSI disk devices at the level of the Symmetrix logical disk volume and recovery for multiple volumes in parallel, independent of operating systems or networks.

FDRSOS in conjunction with the EMC TimeFinder™ reduces the downtime for open system backup to be next to nothing.

UPSTREAM/SOS…Logical Backups
UPSTREAM/SOS provides FDRSOS users with logical file Backup/Restore support, Job Scheduling and Coordination between the mainframe and UNIX/LAN/PC Systems, Reporting and Administrative control.

UPSTREAM/SOS…Incremental Backups
FDRSOS and UPSTREAM/SOS work together to provide a total backup solution for your LAN/UNIX systems.

UPSTREAM/SOS can determine if a file has changed and back it up through specially formatted disk volumes (local backup) shared by ESCON and SCSI channels. The backups can also remain on the local backup volume for immediate retrieval, or until the space is needed by a new backup.

FDRSOS & UPSTREAM/SOS…
Point in Time Recovery
Entire servers are easily recoverable.

USER EXPERIENCE

- FDRSOS full volume backup running on an IBM 9672-R45 CPU, backing up a 4GB Windows NT Server to Magstar Tape Drives. Incremental backups during the week.

FDRSOS Elapsed Time
Full Volume Backup of 4.3GB 8.7 Minutes

UPSTREAM/SOS Elapsed Time
Incremental backup of 322MB (14 Files) 1.9 Minutes

UPSTREAM/SOS using SYMMETRIX DASD allows the data to go directly to the Escon channel and not through the network.
FDR/UPSTREAM®
PC/LAN/UNIX to Mainframe Backup

USER EXPERIENCE

• With forward merge backup we can do a full volume backup of a 2GB server in less than 1 hour.

• FDR/UPSTREAM’s physical disk support allowed me to perform a single disk disaster recovery restore of my Windows NT and OS/2 servers.

• By using UPSTREAM’s batch features that allow for condition code checking, I get to use my MVS scheduler to control conditional UPSTREAM operations. This allows the backups to be a lights out automated process.

• UPSTREAM’s ULTra option allows us to backup hundreds of workstations from one PC.

FDR/UPSTREAM®...a powerful, feature rich, storage management product for centralized, automated, unattended backup/restore and archival from PC/LAN/UNIX systems to OS/390 MVS mainframe server tape and DASD.

High speed communications...FDR/UPSTREAM supports LU6.2 and TCP/IP communications providing a comprehensive solution for Windows NT®, Novell®, OS/2®, Sun Solaris, AIX, UNIX and HP-UX and can be operated from the command line, ISPF or GUI interfaces.

Database Aware...FDR/UPSTREAM supports online, hot backups for Oracle, Lotus Notes, SQL Server and Exchange. UPSTREAM also provides support for BMC’s SQL Backtrack product for Oracle, Sybase and Informix databases.

Flexible Operations...FDR/UPSTREAM uses the MVS tape management, Security and Scheduling systems, to allow multiple simultaneous backup and restore operations, while still allowing client control of FDR/UPSTREAM functions.

Advanced Data Reduction...Techniques minimize the amount of data to be sent across the network: “Full Merge Backups” which drastically reduce the elapsed time of full backups; Automatic Duplicate File Support; Compression; and Local Backup. The local backup volume is also used with EMC DASD and UPSTREAM/SOS as the pass-through volume!

And More...Restart recovery for backups and restores, Extensive reporting, Preprocess & Post Process jobs, and File Transfer with ASCII-EBCDIC translation.