FDRDRP™...
Enhancing FDRABR Volume Recovery

As high-capacity cartridge drives such as the IBM 3590 Magstar and StorageTek 9840 continue to replace older 3480/3490E's, Storage Administrators are being forced to review their disaster recovery procedures.

Today's high-capacity cartridges can hold the incremental backups of hundreds of disk volumes. Although this greatly reduces the number of cartridges required to hold each night's backups, it also means that access to those cartridges becomes a bottleneck during the restore process, as the same cartridges are needed over and over again.

Because of these bottlenecks, some users have found it too time-consuming to restore from their daily incremental backups. Instead, they either restore only from the most recent full-volume backup, or they limit the number of incremental backups that they apply to it. This means that the restored data is not as current as it could be.

The FDRDRP Solution

FDRDRP (Disaster/Recovery Product) makes it practical to restore data right up to the point of the most recent incremental. FDRDRP enhances ABR volume recovery. With FDRDRP, multiple disk volumes that have been backed up onto 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. *As a result, recovery time can be slashed by up to 80%.*

No changes to the ABR backup process are required to achieve these savings!

User Experiences

One ABR user backed up 110 3390-3 volumes onto high-capacity StorageTek 9840 cartridges, using 8 cartridges for the weekly full-volume backups and 4 cartridges for one day's incremental backups. Using FDRDRP, the user then achieved the following results utilizing 8 cartridge drives for the restore:

- He was able to restore all *110 volumes*, using only the full-volume backups, in *2.5 hours*.

- He was able to restore from the full-volume *and* the incremental backup in just 3 hours. *Applying the incrementals took just an additional 30 minutes!*

Another user backed up 47 3390-9 volumes onto high-capacity StorageTek 9840 cartridges, using 16 cartridges for the full-volume backup and 4 cartridges for the incremental backup. Again, using FDRDRP, he saw the following results:

- He was able to restore all 47 3390-9 volumes, using the full-volume backups *and* the incremental, in just 80 minutes!

Faster Disaster Recovery with FDRDRP

FDRDRP will slash your Disaster Recovery time:

- You'll be able to spend more time on your DR testing, and not on your DR restores!

- Get more testing done without expanding your already-stretched DR window!

Here's what one user of FDRDRP had to say:

> *"FDRDRP paid for itself! We only have 48 hours to spend on our DR testing, four times a year. It used to take us 10 hours to recover our data—now we can do it in less than three!"*

FDRDRP Example

Let's take a look at a simple example to illustrate how FDRDRP operates. The diagram shows the backups of three DASD volumes—PROD01, PROD02 and PROD03. Full-volume backups of these disks were taken at the weekend with ABR, and written to tape 111111. Daily incremental backups were then taken on Monday and Tuesday evenings, written to tapes 222222 and 333333 respectively.

Ordinarily, the standard ABR Full-volume reconstruct process would have to mount and rewind each of the tapes 3 times (9 mounts/rewinds) and would take time to position to the required backup file. FDRDRP, on the other hand, would mount and rewind each tape only once (3 mounts/rewinds) and it would eliminate all of the positioning delays. This results in a typical elapsed time saving of over 80%.
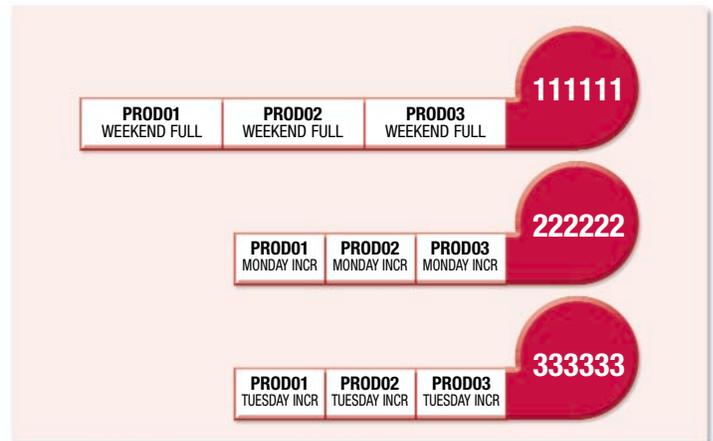
The Process

FDRDRP initiates a recovery subtask for each of the three DASD Volumes, which are then sorted by the tape volser and fileseq required for the first backup. This allows the subtasks to read the backup files on a tape in *physical* order with minimal positioning.

In our example, the restore subtask for PROD01 dynamically allocates and mounts tape 333333 and begins the restore from File 1 on the tape, which is PROD01's Tuesday incremental. The subtasks for PROD02 and PROD03 wait for tape 333333.

When the PROD01 restore subtask has finished with tape 333333, the restore subtask for PROD02 picks up the tape (*without* rewinding or dismounting it) and begins the restore from File 2, which is PROD02's Tuesday incremental. The restore subtask for PROD01 then mounts tape 222222 and starts the restore from the Monday incremental.

And so the process continues…until all the weekend Full backups have been restored and all the tapes dismounted.

Power and Control

The above example was simplified to make the FDRDRP restore process easier to describe. In the event of a real disaster, hundreds of DASD volumes will need to be restored. Most Disaster Recovery Centers have a large number of cartridge drives available and it is essential that these drives are used as effectively as possible to ensure the most efficient and speedy recovery.

FDRDRP offers the power and control required to get the very best out of the facilities provided. An FDRDRP job can use multiple cartridge drives and multiple concurrent FDRDRP restore jobs can be initiated, each restoring a different set of disk volumes. An operand (MAXTAPES=n), controls the total number of tape drives that will be devoted to each FDRDRP job. If two jobs require the same tape volume at the same time, FDRDRP will pass the tape from one job to the other without dismounting or rewinding it.

So with FDRDRP, you're always in control!

PROD01 WEEKEND FULL	**PROD02 WEEKEND FULL**	**PROD03 WEEKEND FULL**

111111

PROD01 MONDAY INCR	**PROD02 MONDAY INCR**	**PROD03 MONDAY INCR**

222222

PROD01 TUESDAY INCR	**PROD02 TUESDAY INCR**	**PROD03 TUESDAY INCR**

333333

PROD01	PROD02	PROD03
Mount tape 333333 Restore from File 1 (Tuesday Incremental)	Wait for tape 333333	Wait for tape 333333
Mount tape 222222 Restore from File 1 (Monday Incremental)	Pick up tape 333333 Restore from File 2 (Tuesday Incremental)	
Mount tape 111111 Restore from File 1 (Weekend Full)	Pick up tape 222222 Restore from File 2 (Monday Incremental)	Pick up tape 333333 Restore from File 3 (Tuesday Incremental)
PROD01 RESTORED	Wait for tape 111111	Pick up tape 222222 Restore from File 3 (Monday Incremental)
	Pick up tape 111111 Restore from File 2 (Weekend Full)	Wait for tape 111111
	PROD02 RESTORED	Pick up tape 111111 Restore from file3 (Weekend Full)
		PROD03 RESTORED

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