OpenTech SYSTEMS, INC.

# Virtual Data Recovery

## Cost Effective Virtual Tape Vaulting and Recovery

**Vault virtual tape data without the need for virtual tape libraries at your DR site!**
**Recover data directly from tape to DASD, in one simple step!**

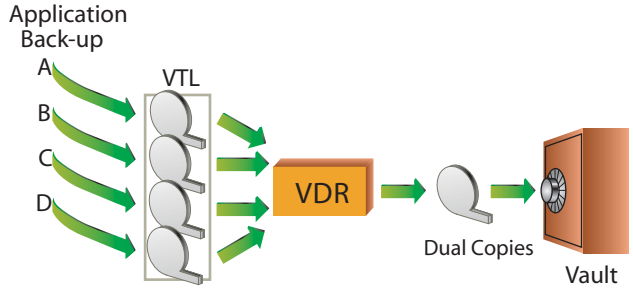
- ☑ Exploit your VTL investment by directing vault data into your VTL
- ☑ Create copies of virtual tape backups onto native non-proprietary media
- ☑ Reduce vaulted media by stacking virtual backups to high density media
- ☑ Eliminate JCL modification requirements for application recovery
- ☑ Recover faster without sacrificing D/R integrity
- ☑ Recover backups at the D/R site directly from native media to other tape media, virtual tape or directly to DASD


### VDR creates copies of virtual data targeted for vaulting.

Creating backups into your virtual tape library reduces the overall backup window. Using VDR to create stacked copies of these backups to high density media further reduces vaulted media and media handling costs. VDR backup data is in a non-proprietary format and resides on native media which can be read by native drives at the D/R location; thereby eliminating the expense of using virtual tape libraries at the D/R site.

**VDR can also save recovery time by providing the user with the option of recovering the data directly from native tape to DASD in a single step.**

### VDR Dual Copy Process




### VDR Dual Copy Management

| VTS Resident Back-ups | | Vaulted Dual Copies |
|---|---|---|
| New application back-ups created | → | VDR creates dual copies |
| Data set expires or returns | → | VDR expires dual copy |
| Data set modified | → | VDR creates new dual copy |

The current vaulting rules do not change when creating dual copies with VDR. Dual copies can be re-stacked when volumes no longer contain enough active data sets to justify the media costs.

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# The Virtual Data Backup & Recovery Process

## Dual Copy Selection & Creation

The user can select virtual data set candidates by using the vault code assigned by the vault management process, or by using any combination of data set selection criteria such as data set name, inclusion/exclusion patterns, creating job name, etc. Unique data set names for dual copy backups will be generated automatically by VDR as noted with the example below.

A one-to-one relationship is established between the original data set name and the dual copy data set name. This relationship is used to ensure all targeted data sets have a matching dual copy backup.

```
* CURRENT DATA SET NAME          DSN PREFIX
*
ABC./                            OT.VDR./
```

Using auto newnaming with the above example:

If the original dataset name is:

```
ABC.FILE.TEST.DATASET
```

which is file 2 on volser X98765.

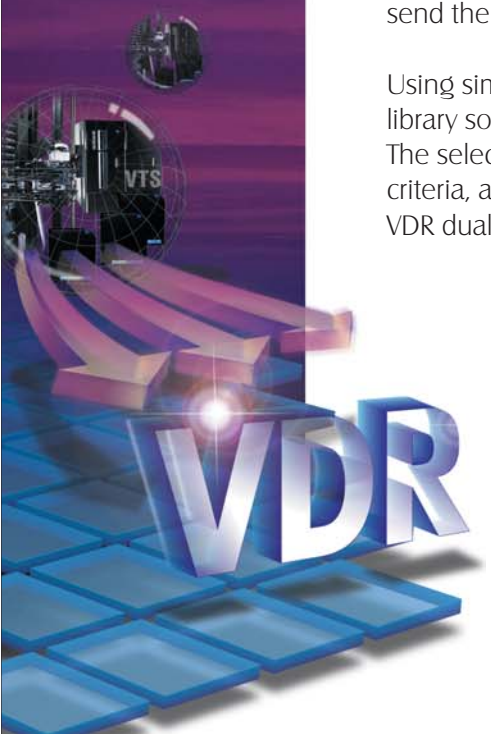
The resulting newnamed dataset would be:

```
OT.VDR.VX98765.F0002.FILE.TEST.DATASET
```

| Vault DSN Pattern | Vault | Cycle | |
|---|---|---|---|
| APPLA.MONTHLY.BKUP.* | ARCHIVE | EXPIRATION | |
| APPLA.WEEKLY.DRBKUP.* | DRVLT | EXPIRATION | |
| APPLB.WEEKLY.BKUP.* | DRVLT | 1 | |
| | ARCHIVE | EXPIRATION | |
| APPLC.CYCLE.BKUP.* | DRVLT | 1 | |
| | ARCHIVE | EXPIRATION | |
| APPLD.ARCHLOG%.D%%%%%.T%%%%%%%.* | DRVLT | EXPIRATION | |
| APPLE.WEEKLY.ARCHIVE.* | ARCHIVE | EXPIRATION | |
| VDRA* | VARCHIVE | EXPIRATION | ← Added Entry |
| VDRD* | VDRVLT | EXPIRATION | ← Added Entry |

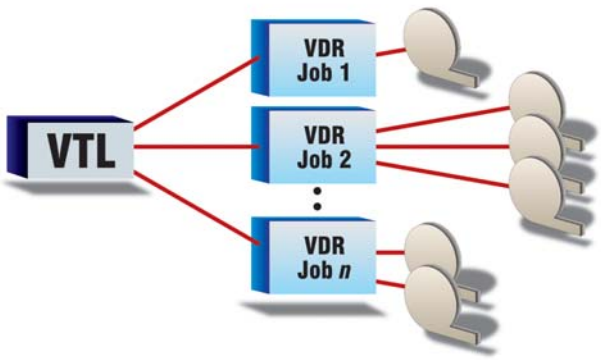
Vault entries are added to match the dual copy data set name patterns. Above are sample entries which will send the matching data sets to the vault location until they become expired.

Using simple ISPF panel dialog, the VDR dual copy selection job is then built and saved to a JCL library so that it can be executed by the data center's scheduling software at scheduled intervals. The selection job will identify data sets in the VTL that match the vault code or other user-defined criteria, and create the JCL needed to generate dual copy backups of those original data sets. The VDR dual copy backups will mirror the original data set information.

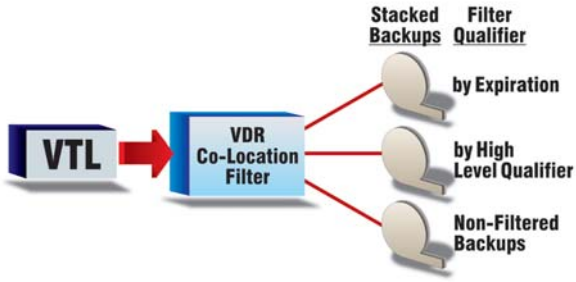



## VDR Execution Flexibility

Multiple VDR backup jobs can be run simultaneously to ensure your critical data is backed up within the available backup window. VDR backup jobs are only limited by the output devices available.



## VDR Data Co-Location

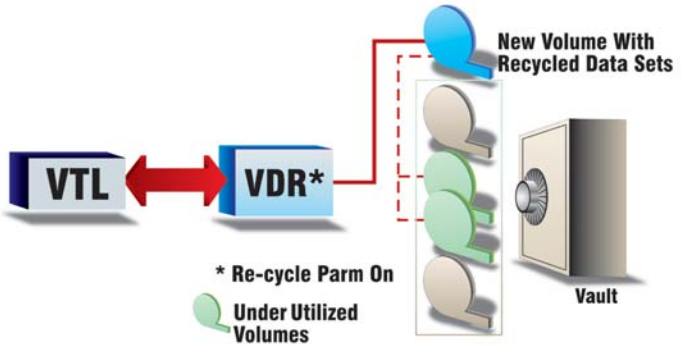



VDR allows users to control which data sets are stacked together on the VDR dual copy backup tape. The user can define rules based on the expiration date, creating program name or a number of other characteristics of the original data set. For example, by stacking data sets with similar expiration dates together, it ensures optimum recycling of vaulted media since the data will expire within a specific timeframe and the media can be returned from the vault promptly. VDR can automatically calculate expiration for cycle controlled data so that even if your data sets are primarily GDGs, they can still be stacked according to their expected expiration date. Co-location can also be used to minimize recovery conflicts and prioritize application recovery to meet business continuity requirements.

## VDR Media Recycling

VDR provides the capability to recycle vaulted dual copies without first returning the media to the data center. The recycle functionality allows the user to reselect and restack on the active, unexpired data and ensure that high capacity media remains well utilized.

VDR recycling uses the original VTL resident data set as input, rather than returning the vaulted dual copy backup from the vault. This allows the VDR dual copy backup to remain safely in the vault until a new dual copy takes its place. VDR will then expire the dual copy backups on the media that is less-utilized, and return that media to the data center.




## Dual Copy Recovery

VDR can restore all dual copies to the original data set name, or only restore the data sets specified by the user. The user can also choose the method of recovery; either restore from the existing backup media (which requires no data movement), or copy the data to the specified target media (other native tape, VTL or DASD).

**The option of recovering from the native backup tape directly to disk, allows VDR to save data centers a substantial amount of time during D/R recovery.**

## Dual Copy Recovery Report

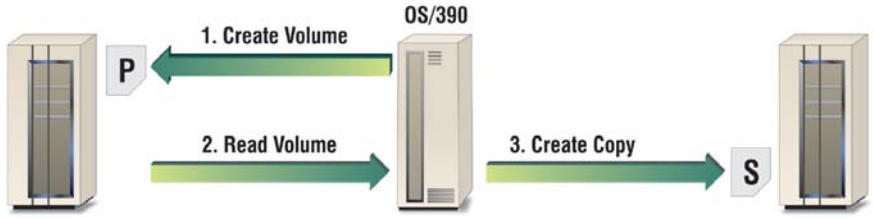
Dual copy restores are reflected in the Dual Copy Recovery Report, which contains the VDR dual copy and original data set names as well as creation & volser information.

```
DATE:  xx/xx/xxxx   TIME:  xx:xx:xx     DUAL COPY RECOVERY REPORT FOR OPENTECH_SYSTEMS,_INC.                    PAGE      1

                                DATASET NAME                                    VOLSER  SEQ   DATE     TIME    JOB NAME PGM NAME

  SUBMITTED V2500VR0 TO RECOVER OT.CA1VDR.TEST0101.F01.ORIGINAL.BKUPFILE     009101    1 2002/204 10:14:00 TEST0101 IEBGENER
    FROM DUAL COPY BACKUP       VDR.V009101.F0001.ORIGINAL.BKUPFILE          009201    1

  SUBMITTED V2500VR0 TO RECOVER OT.CA1VDR.TEST0101.F02.ORIGINAL.G1234V00     009101    2 2002/204 10:15:00 TEST0101 IEBGENER
    FROM DUAL COPY BACKUP       VDR.V009101.F0002.ORIGINAL.G1234V00          009201    2

  RECOVERED DATASET             OT.CA1VDR.TEST0102.F01.ORIGINAL.G1234V00     009102    1 2002/203 10:21:00 TEST0102 IEBGENER
    FROM DUAL COPY BACKUP       VDR.V009102.F0001.ORIGINAL.G1234V00          009201    3

  RECOVERED DATASET             OT.CA1VDR.TEST0102.F02.ORIGINAL.BKUPFILE     009102    2 2002/203 10:22:00 TEST0102 IEBGENER
    FROM DUAL COPY BACKUP       VDR.V009102.F0002.ORIGINAL.BKUPFILE          009201    4

  RECOVERED DATASET             OT.CA1VDR.TEST0102.F03.ORIGINAL.G1234V00     009102    3 2002/203 10:23:00 TEST0102 IEBGENER
    FROM DUAL COPY BACKUP       VDR.V009102.F0003.ORIGINAL.G1234V00          009201    5
```

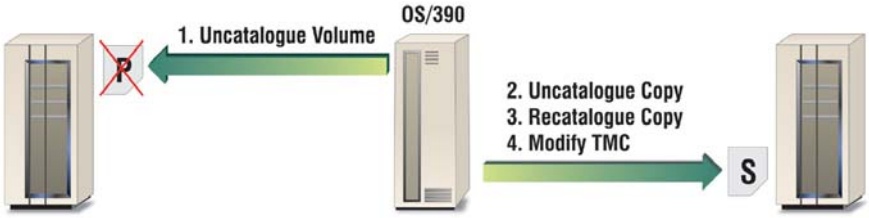
## Using VDR for Data Availability

VDR's architecture allows virtual tape users to create dual copies of critical data sets and store them in any other virtual or non-virtual tape device. If a production data set becomes unavailable, the dual copy can be restored as the production data set without modifying your production JCL. Since there is no data movement involved, the restore process is completed quickly and ensures timely data availability. The concept is similar to using VDR as a dual copy vaulting solution. However, directing the dual copy backups to another virtual tape device allows for the fastest restoration of the dual copy backups.

### Dual Copy Creation




### Dual Copy Restore Process




## User Comments

"We initially purchased Tape Copy and VDR to populate the VTS which we acquired late last year. It took us about a month or less to move 25,000 3490 tapes into the VTS/ATL. Since then, we have used these products for two functions: one, to stack datasets for permanent offsite storage (slotted tapes); and two, to stack batch cycle input tape datasets to offsite tapes for Disaster Recovery."

## Major Benefits

1. "Reduction in offsite storage costs (offsite slotted tapes went from 500 to five; offsite DRP tapes went from 30/daily to one/daily; offsite DRP tapes went from 70/weekend to one/weekend; we use the recycle function of VDR to drop old copies of datasets and consolidate tapes)."
2. "Reduction in tape handling by operators."

**Gary D. Waterworth**
System Manager, Systems and Database Administrator
Mazda North American Operations

OpenTech Systems, Inc.

405 State Highway 121
Building C, Suite 130
Lewisville, Texas 75067
800.460.3011
469.635.1500 outside North America
www.opentechsystems.com
info@opentechsystems.com