



DCC WHITE PAPER ISSUES IN TAPE ALLOCATION

When considering the use of the Disk Library for mainframe (DLm), a number of significant issues surrounding tape allocation and tape mounts arise. These issues must be successfully addressed in order to make effective and efficient use of the DLm.

ISSUE: Tape Mounts Going to the Wrong UNIT

When a DLm (or, indeed, any new type of tape device) is introduced, a new UNIT esoteric may be required to identify the tape units associated with the DLm. Real tapes cannot be mounted on the DLm, and tapes defined in the DLm cannot be mounted on real tape units. If the same UNIT name is used for both DLm and non-DLm devices, errors will occur when applications call for tape mounts that cannot be satisfied.

ISSUE: Disruptive JCL and Application Changes

If a new UNIT name is defined for tape drives within the DLm(s), then JCL changes will be required for jobs to use the new tapes and drives. These changes might be required for many jobs, both those that allocate new datasets to tape, and those that request existing tape datasets that reside in the DLm. Applications that dynamically allocate to tape, such as DFSMSHsm, may need to be changed to take account of the new unit names. In most installations, large-scale JCL and application changes are out of the question, leaving SMS-management of tapes as the only viable option.

ISSUE: Changes to the SMS Configuration

Most installations are unfamiliar with SMS-managed tape, since sophisticated tape management systems such as CA-1, RMM, Zeke, and so on handle most of the inventorying, assignment, and expiration of tape datasets and volumes. The need for JCL changes when DLms are introduced can be avoided by using an SMS-managed 'manual' tape library (MTL) – however, this requires significant changes to an installation's SMS configuration. Specifically:

- The OAM address space must be started
- Special catalogs (TCDB volume catalogs) must be defined
- Manual Tape Libraries must be defined in ISMF for the DLms
- Tape Storage Classes and Groups must be defined in ISMF
- The ACS Routines must be changed to assign tape datasets to SMS management

These changes require significant technical expertise and may take some time to implement into a production environment.

SOLUTION:

DCC eliminates the need for separate UNIT names for DLm units. With DCC, requests for tapes within the DLm are directed to DLm units while non-DLm requests are directed to devices outside the DLm.

SOLUTION:

With DCC, no JCL changes are required. DCC includes flexible policy rules that make device selection simple to understand and use.

SOLUTION:

DCC eliminates the need for SMS management of DLm tapes. With DCC, you can continue using existing JCL and tape and disk policies, without any changes to the SMS configuration.



ISSUE: SMS Management Conflicts

The changes needed to implement SMS-managed tape involve changes to both the SMS constructs and the ACS routines - critical installation resources usually maintained by the DASD storage administrator. DASD storage administrators are often unfamiliar with tape, and tape systems administrators are unfamiliar with SMS configuration and administration. Overlapping responsibilities for the SMS configuration can lead to inconsistencies, errors, and job failures. Care must be taken to insure that changes and updates made for SMS-managed tape do not affect disk allocations and vice versa.

ISSUE: Complex Tape Conversion Efforts

Installation of DLm(s) is often part of a tape conversion process in which existing tapes must be copied to new volumes on the DLm. There is no native conversion function in DFSMS, of course, so installations must rely on vendor utilities for this complex task. The conversion utility can be very complex to understand, since it must properly update the tape management system database and TCDB with the new volume serial numbers, location, and other information, and properly dispose of the original tapes.

ISSUE: Overuse and Underuse of Multiple VTEs

SMS allocation algorithms for disk datasets are quite sophisticated and complex. For tape devices, however, they are much simpler, since in the past there have been only a limited number of tape drives available in most installations. With multiple VTEs, however, there may be a very large number of tape drives (upwards of 1000) available, and it is possible for tape device selection to be skewed, with one VTE overutilized and other VTEs underutilized.

SOLUTION:

The DCC policy rules are separate from and easier to use than the DFSMS ACS routines. With DCC, the possibility of introducing errors in disk or tape ACS processing is eliminated.

SOLUTION:

DCC policy rules direct tape mount requests to the proper devices, and the DCC copy utility can make direct volume-for-volume copies to the DLm, eliminating the need for any updates to the tape management system databases.

SOLUTION:

DCC Load Balancing allows the selection of tape drives to be spread across multiple VTEs via policy-defined algorithms, eliminating over and under-use.

DLm Control Center (DCC) vs. SMS Manual Tape (MTL) **A Comparison**

Action/Requirement/ Facility	SMS Managed Tape	DLm Control Center
Tape Storage Classes/Groups	Must be defined	Not required
Manual Tape Libraries Defined in ISMF	Must be defined and match HCD	Not required
OAM Started Task	Must be active	Not required
TCDB Catalogs Defined	Required	Not required
TCDB Catalogs Populated	Loaded via OAM command or program	Not required
ACS Routines Assign tape Storage Groups	Required	Policy rules control allocation
JCL Overrides and Special Keywords	Not allowed	Allowed
Device Migration	No native utility	DLMCLONE creates exact volume duplicates in DLm
Device Management and Commands	None	ISPF, TSO, batch, GUI interfaces
Device Monitoring and Logging	None	Channel or SNMP interface, logs
Reporting	LISTCAT	Inventory Reports



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