

# UNDERSTANDING GLOBAL VIRTUAL LIBRARY CORE CONCEPTS AND USE CASES

## **ABSTRACT**

This white paper describes Disk Library for Mainframe (DLm) Global Virtual Library (GVL). It covers DLm GVL configuration rules, main components and customer use cases.

August, 2016

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Part Number H15352

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## EXECUTIVE SUMMARY

In today's 24X7 IT environment, customers need end-to-end solutions that provide high availability, resilience and flexibility. The strategy of running within critical business applications within one datacenter is not considered as appealing as it once was. Increasing flexibility of where business applications run should not diminish the value and desire of high availability. Therefore, customers should focus on increasing transparency between all layers of the IT infrastructure. Start by evaluating the storage and virtual tape environment where users enable and increase momentum that can be carried throughout the IT enterprise.

When evaluating solutions, customers consider the time and energy it takes to implement a new solution while considering the ROI of that solution. Therefore, when considering a solution it is critical to minimize any customizations to a user environment unless such customizations substantially improve exploitation of the solution. With EMC Disk Library for Mainframe, EMC added Global Virtual Library (GVL).

Global Virtual Library increases high availability and resilience while providing flexibility within a virtual tape environment. GVL is both a software and hardware based solution designed to address the following challenges;

- Limited view of tape library within one DLm instance
- Data availability
- Workload transparency in not restricting access to tape data across the IT environment

## AUDIENCE

This white paper is intended for information technology professionals, z/OS System Architects, IT Storage Administrators. It assumes that basic knowledge of EMC Disk Library for Mainframe technologies, operating environments and Disk Library for Mainframe concepts.

## Global Virtual Library Concepts

GVL is a software and hardware based solution part of the EMC's Disk Library for Mainframe (DLm) product. GVL provides a common view of the Virtual Tape Library (VTL) across multiple DLm environments. GVL components connect DLm environments leveraging the customer's intra-network and EMC-supplied switches.

## GVL Use Cases

The use cases scenarios for GVL:

- 1) Provides read and/or write access to any VOLSER in the library from any tape drive in any Virtual Tape Engine (VTE) in any DLm.
- 2) Provides workload management and planned swap without fail-over or fail-back processes for high-availability
- 3) Increases serviceability within DLm environments

## Read/Write Access across Virtual Tape Environment

When configuring GVL, each file system is referred to in the same way regardless what DLm the tape. For example, if DLm1 has a filesystem named /tapelibEMC, a second DLm (DLm2) would also have a filesystem named /tapelibEMC. Filesystem management occurs within the local VTE; therefore, DLm never chooses a scratch tape from a remote DLm VTE within the GVL environment. Although scratch synonyms are the same across the GVL environment, the differentiating factor is how users define the classes within each local DLm. For example, scratch synonym SCRTCH would be defined on DLm1 and DLm2. Classes 10 -19 would be for DLm1 and classes 20-29 could be defined for DLm2. Having similar logical structures of GVL tape libraries enables user workloads to run anywhere without modifying JCL. The user can now reference the synonym SCRTCH from ether DLm and it would use the associated CLASS (10-19 or 20-29) depending where the workload ran. Assuming that the Tape Management System (TMS) is being replicated to the remote site with the system catalogs, the LPAR can be moved after a shutdown and restarted.

## **z/OS Workload Management**

With a common view of the virtual tape environment with GVL, after LPAR relocation, users can access the same virtual tape data (as long as the DLms are in a GVL Environment). This enables a non-disruptive solution to applications that use tape data. This relocation can be completed without reconfiguring or restarting the DLm and drain replication links.

## **Increased Serviceability within DLm**

Currently, VTE maintenance can be done in a round-robin fashion, causing increased downtime while promoting maintenance to the environment. GVL provides the ability to non-disruptively apply services to user environments. While performing maintenance upgrades users could relocate workloads to a DLm within the GVL environment to continue processing while performing the upgrade. Once the upgrade has completed, users could migrate the workload back to the original DLm. There are certain situations where upgrading a backend storage array may cause minimal downtime. It is often best to reference <https://support.emc.com> prior to a DLm maintenance activity to understand the impact.

## **GVL Configuration Rules and Notes**

The following configuration rules apply to DLm 4.4 GVL release:

- A maximum of two DLms may be configured within a GVL environment.
- Data Domain and VNX backend storage are supported.
- GVL requires two 10 GbE ports per switch to connect the DLm networks to the user networks. The customer supplies these ports. However, DLm internal network and internal subnets will remain private to DLm.
- The distance between DLms in a GVL environment can be up to 120 km.
- A GVL environment can contain up to 500 file systems.
- CLASS changes requires careful management between all DLms in a GVL environment. A best practice is to change classes for the local DLm in a GVL environment rather than allowing a DLm change a remote storage class. After modifying storage classes, storage class definitions across the DLm GVL environment.
- All DLm environments included in GVL must be in the same time zone.

## **Conclusion**

DLm GVL functionality is the first step that offers users enhanced visibility across their DLm environment regardless of physical location. While customer environments continue to evolve, GVL provides high availability with a simplified view of your enterprise's IT environment.