

Data Migration: Move Data Faster and Cheaper, with Less Business Disruption

What You Will Learn

Storage administrators striving to implement fast, trouble-free data migration face significant challenges. Host-, array-, and appliance-based solutions tend to be expensive, intrusive options. Migrating data through the SAN fabric is a faster, easier, and more cost-effective alternative with significant benefits:

- Reduces service disruption
- Transparently supports heterogeneous environments
- Speeds migration
- Reduces costs
- Eases management

The Cisco® Data Mobility Manager (DMM) for the Cisco MDS 9000 Family is a SAN fabric-based solution that helps administrators migrate data quickly and efficiently, using best practices.

Challenge

Data growth, equipment end-of-life (EOL), and increasing support costs have an often expensive common denominator: data migration. The cost of such migration is significant: customers traditionally average US\$200,000 per year on data migration services.

In addition to the expense, migration can present substantial business and technical challenges. Administrators striving to limit the effects on business operations must coordinate outage time with users and keep the amount of time needed for the migration as short as possible. Planning is critical and also complex because it must address the needs of multiple teams in separate departments. A variety of tools, frequently nonstandard, are often required to move data between arrays from different vendors or to newer equipment. A multifaceted tool environment means greater opportunities for error, which can undermine the best efforts of administrators to achieve a smooth migration process.

Traditional migration solutions do little to address these challenges. Host-based tools can reduce the performance of other business applications by consuming CPU cycles and I/O bandwidth. Array-based solutions either do not support heterogeneous storage environments, or offer a one-way transfer that locks customers into a single-vendor solution. Appliance-based solutions require a service technician to enter the data center, install the appliance in the data path between the host and the storage device, and then remove the appliance after performing the migration. The result is an expensive, intrusive approach that is not readily scalable and requires downtime before and after the migration.

To efficiently meet ongoing migration needs, storage administrators need a simpler, less disruptive, and more cost-effective way to migrate data between heterogeneous storage arrays.

Solution

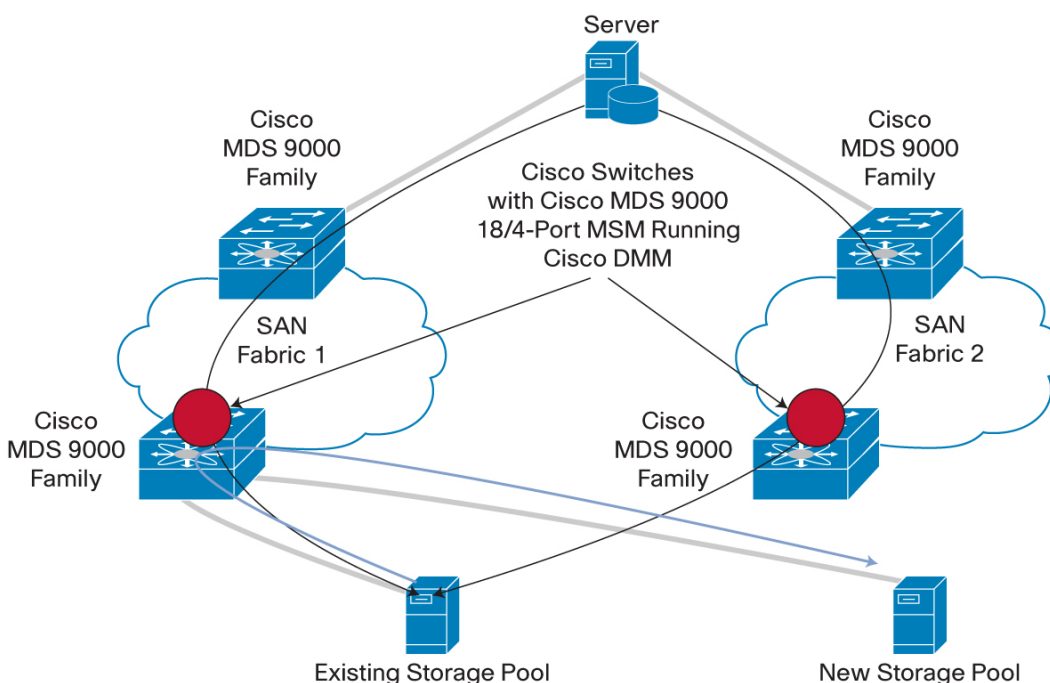
The Cisco® Data Mobility Manager (DMM) for the Cisco MDS 9000 Family is a SAN application for moving data from a source device to a destination device. Migrating data through the SAN fabric is a cost-effective, heterogeneous, nonintrusive solution that maintains application performance and minimizes service disruption.

Cisco DMM software runs on a Cisco MDS 9000 Series Switch module. The module can be inserted into a free slot while the switch operates, without rewiring or reconfiguring existing SANs. If the switch already contains the appropriate module, the migration process is started simply by activating a software license. Neither the source nor the target array needs to be directly connected to the module, and no downtime is required for the host server before or during the migration, until the final cutover. In fact, the server will be unaware that data is being copied to a new location. This technology frees storage, network, system, and application administrators from the need to coordinate host downtime and eliminates much of the user impact commonly associated with data migrations.

Activating a Cisco DMM license initiates an enterprise-class solution capable of moving up to 1.5 terabytes (TB) of data per hour between any storage devices across a heterogeneous network. Administrators can select synchronous migration to move data to a new array within the data center, or asynchronous migration to move data to a SAN in a remote data center.

Synchronous migration supports a dual fabric topology, with one Cisco DMM node in each fabric. The Cisco DMM engine redirects traffic from each host and mirrors write operations to the existing and new storage devices (Figure 1). Meanwhile, a background process copies the data from the existing storage device to the new device, so the migration occurs in real time.

Figure 1. Figure 1 Synchronous Data Migration



Asynchronous migration is better suited to migrating data between data centers. In this case Cisco DMM again uses a dual fabric topology and redirects traffic through the Cisco DMM engine, but it does not mirror the I/O to the new storage device. Instead, it keeps a log of all the data blocks that are changed. Then the logs are synchronized using the IP interface of the network, and data is moved in the background.

Cisco DMM is supported on the Cisco MDS 9000 18/4-Port Multiservice Module (MSM) and the Cisco MDS 9222i Multiservice Modular Switch. Both require Cisco MDS 9000 NX-OS Software Version 4.1 or later.

Business Benefits

The nondisruptive, fabric-based approach of Cisco DMM makes the process of data migration faster, easier, and less expensive.

- **Faster:** A typical data migration process requires 10 to 21 days. During this time, multiple administrators must work together to coordinate the downtime required at the beginning and end of the migration process, install the necessary hardware, and perform the migration and cutover to the new device. Cisco DMM eliminates the time required for interdepartmental coordination, new hardware installation (with its associated downtime), and hardware removal after the migration. Add throughput of 1.5 TB per hour, and the data migration window is reduced to just 5 days.
- **Easier:** No rewiring or coordination between administrative staffs is required, so implementation is fast and easy. Cisco DMM is storage-vendor independent and fault tolerant, providing a unified solution throughout a heterogeneous environment and the assurance that applications will not be affected by any problems that may arise during the migration. Storage administrators with less experience performing data migration can take advantage of the Cisco Data Mobility Manager Planning and Design Service, offered by Cisco Advanced Services. This service provides the proven expertise and practices needed to successfully deploy Cisco DMM in a SAN fabric and helps empower storage administrators to successfully manage future migrations.
- **Less expensive:** Customers typically lease storage equipment on 3- or 4-year cycles, so each year the data on one-quarter to one-third of leased storage devices must be migrated. If a customer spends an average of US\$200,000 per year on migration services, the cost of using Cisco DMM is dramatically less than the 3-year cost for these services. In addition, after the Cisco DMM license is purchased, it supports an unlimited number of arrays, with no restriction on the amount of data moved.

Why Cisco?

Cisco offers exceptional advantages in network storage. The Cisco DMM solution provides a unique blend of product and service innovation as customers address their data migration challenges.

Innovative Products

Cisco DMM is exceptional in its ability to transparently and nondisruptively redirect traffic from the host server to the new storage location. The technology that supports this capability is called Fibre Channel Redirect. It is a core Cisco MDS technology that is unique to Cisco and differentiates the Cisco DMM solution from all other data migration tools available today.

Outstanding Service

In addition to providing innovative, industry-leading technology, Cisco offers customers the advantages of the Cisco support organization. Cisco engineers have extensive experience with customer networks and broad exposure to the latest technologies and implementations. All Cisco Services are delivered by knowledgeable professionals with direct experience in planning, designing, and supporting data migration solutions. They hold a wide range of industry certifications and are subject-matter experts in data center and data migration technologies.

Cisco DMM customers can benefit from Cisco support expertise throughout the data migration process by taking advantage of the Cisco Data Mobility Manager Planning and Design Service. Part of the wide range of services that Cisco offers for the data center, this service helps customers successfully deploy Cisco DMM in a SAN fabric. Service activities include:

- Discovery and data collection to determine the readiness of the SAN environment for Cisco DMM
- Design development that includes software recommendations, high- and low-level design documents, and SAN design assistance
- Onsite knowledge transfer, configuration, and implementation support

By selecting Cisco solutions and support services for storage migration needs, customers can simplify data migration with a process that is on time, on budget, and based on best practices.

For More Information

To learn more about Cisco storage solutions for the data center, visit <http://www.cisco.com/go/storage>.



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