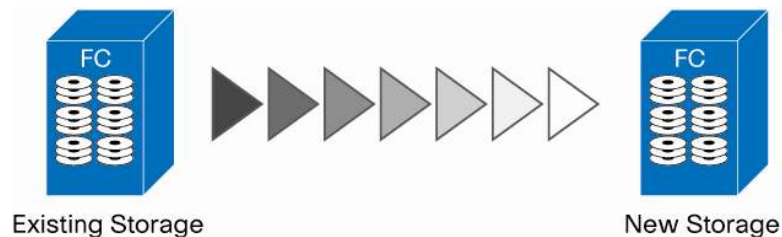


# Cisco Data Mobility Manager: Meeting the Data Mobility Challenge

## Data Mobility in the Spotlight

Storage administrators have been seeking reliable, nondisruptive data migration mechanisms since the first disk drives were upgraded (Figure 1). Traditional approaches include dumping the data to tape and then restoring it to the new devices, and using host-based and array-based software to transfer the data from the old devices to the new devices. However, both approaches have downsides negatives that make them less-than-perfect solutions for many storage administrators. The practice of conventional planned-outage periods for server maintenance and changes is nearly obsolete, as businesses increasingly require continuous system operation; a special outage period solely for the purpose of upgrading storage is often difficult for IT administrators to schedule.

**Figure 1.** Nondisruptive Data Migration: A Requirement, Not an Option



The data migration task today typically is complex and manual because of the myriad operating systems, file systems, application servers, volume management systems, physical devices, and networks involved. IT departments face challenges in migrating data: the downtime incurred, the need to add data migration software to servers, the potential for data loss and corruption, additional errors from the complexities of heterogeneous environments, and simply running out of time before the job is done.

A solution that addresses all these data migration concerns will greatly diminish the challenges currently experienced in migrating data. The Cisco® Data Mobility Manager (DMM), a fabric-based data migration solution that transfers block data nondisruptively across heterogeneous storage volumes and across distances, irrespective of whether the host is online or offline, is such a solution. With no host components to deploy, the time-consuming, costly, and sensitive task of installing and licensing hardware and software on servers is avoided. In addition, host CPU and bandwidth cycles are available to the application in their entirety, so applications do not experience any deterioration in performance.

## Storage Virtualization and Data Migration

In the past few years, early adopters have begun to deploy storage virtualization solutions and to develop best practices and provide feedback about their experience with these solutions. Storage virtualization solutions continue to be the goal for the management, administration, and delivery of storage applications. Most storage virtualization solutions have now evolved to their second-

generation implementations, and major progress is being made in the feature set, performance, and scalability that these solutions offer.

After they are implemented, storage virtualization solutions do solve the data migration problem, and so at first it may seem that a solution such as Cisco DMM is not needed. However, the Cisco DMM solution can play an important role in extending the value of these storage virtualization solutions. While all storage virtualization solutions deliver the promised capability, migrating data so that the storage virtualization solution owns the data remains a challenge. This hurdle is significant enough that many customers have delayed adoption of virtualization solutions while they wait for effective tools that address this problem. Cisco DMM is a tool for this task.

### **Cisco DMM Benefits: Minimal Performance Effects and Downtime**

Cisco DMM offers the following benefits:

- Transparent online data migration across heterogeneous storage arrays
- Centralized management with GUI and wizard for easy configuration
- Per-server and per-storage array configuration
- Large-scale, high-performance migration with rate limiting options
- No rewiring required in most cases
- No host agents required, minimizing effect on CPU and mitigating software image management concerns
- High-performance Cisco MDS 9000 Storage Services Modules (SSMs) or Cisco MDS 9000 Multi Service Module (MSM-18/4)
- Support for active-active or active-passive storage access across dual redundant fabrics

### **Integrating Data Migration into the Fabric**

Many performance-critical IT infrastructure functions, such as online migration of data, can benefit from being deployed and managed as part of a storage area network (SAN) fabric. Benefits include high availability, scalable performance with low latency, and simplified load balancing through network traffic management. Recognizing these benefits, Cisco developed the Cisco MDS 9000 family of intelligent directors and fabric switches to provide an open, standards-based platform for hosting intelligent fabric applications and services

As a platform, the Cisco MDS 9000 family switches provide all essential features required to deliver secure, highly available, enterprise-class Fibre Channel SAN fabric services. Cisco is integrating block storage data migration as a transparent fabric service to take full advantage of this platform, and Cisco DMM is a heterogeneous solution for block storage data with comprehensive management features. Cisco DMM is managed with Cisco Fabric Manager and a command-line interface (CLI) for unified SAN management and provisioning.

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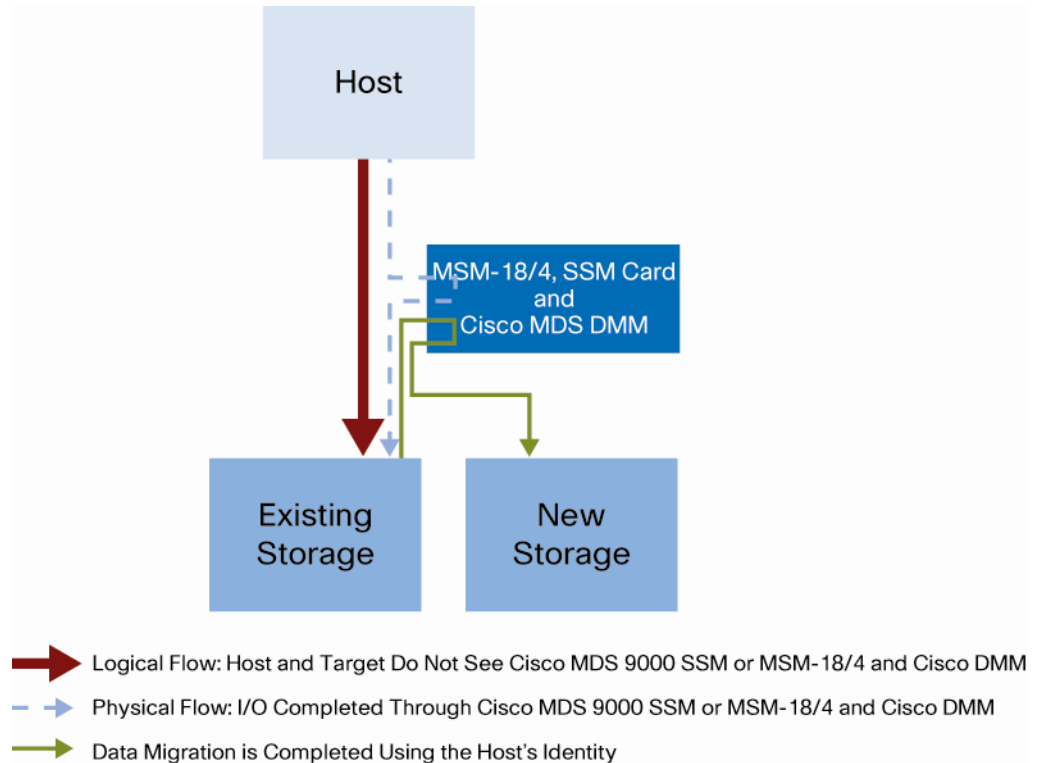
“By simply enabling the feature on the [Cisco MDS 9000] Storage Services Module (located anywhere in the SAN), the migration can be configured without host agents, without rewiring, with minimal performance impact, and without downtime.”

—Rajeev Bhardwaj, Director, Cisco Storage Product Management

## Innovative Cisco Solution

Customers seeking heterogeneous data migration solutions have chosen Fibre Channel SAN-based solutions to preserve their investment in existing storage devices, achieve high throughput, and simplify management. Deployment of SAN-based solutions has been challenging, because existing solutions are disruptive add-ons rather than integrated into the fabric as part of a mainstream, industry-leading SAN switch. The Cisco DMM is a comprehensive network-integrated data migration solution that works transparently with existing and new SANs (Figure 2).

**Figure 2.** Secure, Nondisruptive Data Migration



The innovative Cisco network-integrated solution has numerous advantages over competitive solutions available today:

- Cisco DMM integrates transparently into the existing environment, so that neither the host server nor the storage array need reconfiguration when Cisco DMM is introduced into the user environment, nor is any zoning configuration required. The storage administrator thus can complete the migration task without needing to inform the server, system, or database administrator that a migration is being planned.
- Cisco DMM can move data over long distances when the copy operation must be completed asynchronously with write I/O operations.
- Cisco DMM can securely erase the data from the existing storage so that this step can be completed before the array leaves the customer data center.
- Cisco DMM also includes capabilities to pace the data migration job, schedule the start and cutover times, and view the effect on the SAN of the extra traffic generated by the data movement. A configuration wizard simplifies setup and use, and a CLI allows advanced users to complete their migration tasks using scripts.

## Easy Deployment

The Cisco DMM solution is fully integrated into the industry-leading Cisco MDS 9000 family switches, greatly simplifying installation and day-to-day operations. To deploy this feature on SAN fabrics containing Cisco MDS 9500 Series Multilayer Directors and MDS 9200 Series Multilayer Fabric Switches, customers simply need to insert Cisco MDS 9000 SSMs or Cisco MSM-18/4 that include the DMM software solution, verify that the software with Cisco DMM support is installed, and enable the feature with a license.

Using standard Cisco MDS 9000 family software features such as role-based access control (RBAC) and the Cisco Fabric Manager, customers can immediately secure access and start provisioning Cisco DMM services. Deployment time is greatly reduced compared to other SAN-based solutions, because SAN fabric rewiring and reconfiguration are not required, eliminating associated network disruption and downtime.

## Available in 2007

Data migration technology is a core area where Cisco continues to innovate. Cisco plans for the Cisco DMM feature set and interoperability matrix to expand rapidly over the next year to facilitate widespread deployment. In the first release, Cisco DMM will be deployed in an environment that uses exclusively Cisco MDS 9000 family switches. Support for migration of data in a heterogeneous SAN storage switch environment will be included in future releases of Cisco DMM. First shipments to Cisco customers are planned for the third quarter of calendar year 2007.

To learn more about Cisco storage solutions for the data center, visit

<http://www.cisco.com/go/datacenter>.



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