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EMC CLARiiON Disk Library



OVERALL RATINGS

Installation		Configuration wizard makes initial setup simple, even for first-time users.
Manageability/Configuration		Comprehensive reporting tools will help storage administrators to optimize operations.
Operation/Functionality		Arguably the broadest, most comprehensive set of practical features on the market.
Recoverability		Offers complete recovery options, but can be a critical path in some configurations.
Problem Resolution and Support		We were very impressed with EMC's technicians, all the way up through their engineering group
Interoperability		EMC has added ACS/LS and iSeries support to CDL
User Level		Requires a storage administrator with an average level of experience.
List Price as Tested	Starts at \$100,000	

Scale: 1 flame = poor; 2 flames = fair; 3 flames = satisfactory; 4 flames = very good; 5 flames = excellent

User level: ● = novice; ■ = intermediate; ◆ = advanced; ◆◆ = experts only

PRODUCT SUMMARY

EMC's CLARiiON Disk Library (CDL) offers arguably the broadest set of useful features and functionality of any virtual tape library (VTL) on the market. We felt the same way when we first reviewed the product in 2005, and EMC has only improved the product since then. CDL does not offer non-redundant storage (de-duplication) technology, but that's about the only key feature not offered. During the past year, EMC added automated failover between CDL units, ACS/LS and IBM iSeries support, as well as tighter integration with its NetWorker backup software. The product line has also been expanded to the entry-level CDL 210 and extended on the high-end with the CDL 740. Plus, CDL offers a critical feature that we did not find in any other disk-to-disk backup product: tape "shredding" using the Department of Defense 5220.22-m algorithm.

CDL is based on EMC's CLARiiON mid-range disk array products, combined with an embedded Linux server and FalconStor's virtual tape library emulation software. This "disk library" functions like a virtual tape library (VTL). System components are shipped pre-installed and pre-configured. Disks are configured with RAID 3, a setting that cannot be changed. Whereas RAID 5 and RAID 0+1 are optimized for data protection and integrity, RAID 3 is specifically optimized for I/O throughput, especially for long write operations. Some technicians may object to this RAID 3 default, as it optimizes write operations at the expense of read operations. We don't consider this an issue because the additional read latency of RAID 3 is measured in milliseconds, which is inconsequential to data recovery.

Although CDL arrives preconfigured and is simple to install, EMC recommends professional assistance during installation. For our testing, EMC provided a technician to assist for two days. Although we felt this to be overkill, such precaution is in keeping with EMC's high-service philosophy and assures minimal installation problems. In our case, we used the extra time to delve into the deeper reporting and management aspects of the system.

One of the biggest improvements to CDL is enhanced resiliency. The top-end 720 and 740 systems can be configured with active-active failover. (This requires identical systems and an extra cost

About the Review

Diogenes Analytical Laboratories and SearchStorage.com teamed together to create disk-to-disk buyer's guidelines that help IT buyers differentiate between products and select the best candidates for their own situation. For this report, we took 13 different products into the lab and ran them through their paces. We compared products based on ease-of-use, manageability, features/functions and technical support systems. Our opinions are based on the experience of more than a decade of implementing and managing data protection systems.

licensing option.) In the event of failover during a backup operation, the backup software will detect an I/O error, issue a retry, and continue normally. This feature worked perfectly when we tried it with NetWorker. (Note that this capability is operating system-dependent; check with EMC for compatibility.)

CDL's management reporting facility impressed us. The management interface contains enough storage resource management (SRM) functionality to help storage administrators optimize resource utilization and avoid problems through predictive analysis. The updated GUI also allows administrators to group CDL administrator views together for easier common management.

CDL includes a feature that EMC calls "capacity on demand" which can be used with the

consume-upon-write option. Using capacity on demand, more virtual media can be specified than is supported in the associated physical library. The benefit of over allocation is that virtual media that will not be rotated out of the VTL need not have a physical element allocated to it. The risk associated with this feature is that the B/R application may “think” that it has more space than is physically available on the disk, resulting in B/R job failures. This risk can be alleviated by monitoring total disk capacity to assure that sufficient space exists to meet backup requirements.

CDL’s only negative operation that we discovered during our testing was the inability of the administrator to control the physical layout of virtual media on disk. CDL spreads the media across LUNs automatically. However, if the backup application selects two pieces of media in the same LUN, the controller and/or disk drive contention may hurt performance. Having pointed this out, however, we will confess that the impact to a backup job is not likely to be noticeable, nor likely to cause a job to exceed the backup window. EMC believes the overall effect is beneficial due to easier use.

CLARiiON Disk Library offers a solid blend of useful functionality and ease of use. It is designed to meet the needs of a breadth of enterprises, and reasonably skilled administrators should have no difficulty in managing the product.

DIFFERENTIATING FEATURES AND FUNCTIONS

FEATURE/FUNCTION	DESCRIPTION
<i>Simplicity</i>	<i>Virtual tape libraries, as a category, tend to be non-disruptive. B/R jobs can be scheduled to a virtual tape just as a physical tape. In addition, CDL hides much of the system complexity from the storage administrator. The administrator does not need to fuss with disk configuration, LUN allocations or array configuration.</i>
<i>Configuration wizard</i>	<i>CDL's configuration wizard steps the first-timer through system set-up and was very easy to use. After the administrator is comfortable managing the system, the wizard can be bypassed.</i>
<i>Storage resource reporting</i>	<i>CDL is the only D2D backup device that includes comprehensive reports for managing the storage in the device. Storage administrators can be alerted when thresholds are exceeded or when problems are encountered. CDL also includes a variety of graphical and tabular reports regarding disk usage, virtual tape utilization, and more.</i>
<i>Resiliency</i>	<i>CDL supports cascading units and automated failover between systems. Job recovery is automatic with some backup applications (e.g., NetWorker)</i>
<i>Tape "shredding"</i>	<i>Uses the Department of Defenses' 5220.22-m algorithm</i>

Buyer Guidance

Kudos:

We think CDL is an optimized blend of functionality, simplicity and scalability. It is well integrated with backup application software and tape libraries to reduce the possibility of backup job failure and data loss without becoming a point of failure itself. Some organizations will be satisfied with the default configuration, but the product can also be customized by more advanced administrators who wish to do so.

Caveat:

Our only criticism of CDL is that it does not offer non-redundant storage (data de-duplication).

Who should consider this product:

CDL may be over-kill for entry level operations. However, its breadth of functionality and scalability make it a viable short list candidate for most data centers, ranging from medium-scale on up.

ABOUT DIOGENES ANALYTICAL LABORATORIES, INC

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