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Diligent ProtecTIER

OVERALL RATINGS

Installation		Installation is performed by Diligent technicians.
Manageability/Configuration		Lacks some useful management functions.
Operation/Functionality		Fastest de-duplication design we've seen.
Recoverability		Designed for fast restore but has no native replication or failover.
Problem Resolution and Support		We did not encounter any problems while testing the product.
Interoperability		Support by all the main systems and vendors.
User Level		Requires a seasoned storage architect to optimize deployment configurations.
List Price as Tested	\$190,000	Includes software, quad processor and 10 TB storage array.

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

Diligent has designed its new ProtecTIER product from the ground up to be the highest performance and scalable disk-to-disk (D2D) platform on the market. When we reviewed Diligent's VTF Open system in 2005, we noted a decent but unremarkable product. IT buyers familiar with VTF should take a fresh look at ProtecTIER because the two products are related only by ownership. ProtecTIER is a "race car"-like VTL. Although benchmarking is not part of our product review, after understanding its architecture and seeing its operation we believe it is a high-performance product. Just as serious drivers would not drive a race car to the grocery store, ProtecTIER is purely an enterprise-class data center product. It is designed for companies that require the highest performance and scalability for both backup and restore operations and have the budget to support it.

To carry our race car analogy further, ProtecTIER functions best with premium fuel. Our test configuration was hosted on a Linux-based Opteron Quad processor system with 16 GB of RAM, compared with one- and two-way processors for most other D2D products. Our tests also used a Hitachi AMS modular storage array configured with Fibre Channel (FC) drives. Whereas most D2D products operate with tier 3 storage (e.g., large-capacity SATA disk arrays), Diligent recommends tier 2 arrays with FC drives. ProtecTIER can be used with tier 3 arrays, as well, but such configuration could substantially reduce performance. Diligent also suggests that more disk spindles will increase performance, which would lead one to implement more small drives rather than a few large ones.

The heart of ProtecTIER is Diligent's HyperFactor de-duplication engine. HyperFactor takes a different approach to de-duplication. Not surprisingly, the architecture is designed for speed, especially for restore operations. Most de-duplication engines take small blocks of data (8 KB) and assign a hash key to each, whereas HyperFactor processes a stream of data. This approach means that more data can be processed on the front end, and it also improves speed on restores: It's more efficient to reassemble large blocks of data rather than many small blocks. The price for this

performance is on the back end, which will require more disk I/O operations and CPU processing than conventional algorithms. However, we think that Diligent has its priorities right as restore operations are the most critical element of data protection.

In addition to data-stream processing, HyperFactor also has the advantage of creating a very efficient index. Diligent claims that 1 PB of data can be supported with just 4 GB of index space (0.000004% of the total). (We did not have a test system capable of verifying this claim.) In comparison, a typical hashing environment uses 0.3% of the primary disk space. So, a 100 TB system in a typical environment would create a 3 TB index. HyperFactor's entire index can thus remain resident in memory, whereas other architectures would have to store the index on disk. Accessing the index on disk changes access

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.

time from nanoseconds to milliseconds and will be noticeable, especially on restore operations. Here again, the trade-off is back-end processing, but for organizations with hundreds of TB of data, the trade-off may well be worth it.

As much as we liked the architecture of ProtecTIER, the product does have a few rough edges that perhaps can be expected from a new design. For example, the product lacks some of the reporting functionality that we'd like to see, such as watermark monitoring and replication between systems. Setting alerts via e-mail and SNMP can be accomplished only through the command line interface (CLI). ProtecTIER also does not have native replication between units. Of course, many Tier 1 and even Tier 2 storage arrays have these features, but users will be forced to use two separate interfaces and to correlate events manually or via a third-party product.

Diligent has created a product that will appeal to large-scale data centers with up to hundreds of TB of data and that demand top performance. IT buyers considering ProtecTIER should also be prepared to invest in the necessary infrastructure and professional services to optimize the system. With apologies to one automaker's slogan, ProtecTIER is not your father's VTL.

DIFFERENTIATING FEATURES AND FUNCTIONS

FEATURE/FUNCTION	DESCRIPTION
<i>HyperFactor de-duplication engine</i>	<i>HyperFactor processes streams of data rather than small blocks. The result is much faster processing of data on the front-end and faster restoration of data.</i>
<i>Index efficiency</i>	<i>Diligent claims that the index needed to de-duplicate 1 PB of information is just 4 GB. Thus, the entire index can easily remain in resident memory on the ProtecTIER server, assuring the highest performance.</i>
<i>High Performance</i>	<i>ProtecTIER's entire architecture is designed for the highest performance on the largest systems.</i>

BUYER GUIDANCE

Kudos:

ProtecTIER is highly differentiated from other D2D products and VTLs in that the emphasis is on high performance rather than low price. ProtecTIER and HyperFactor should provide a highly scalable solution.

Caveat:

The initial cost of ProtecTIER is higher than other D2D solutions because of the higher-cost supporting infrastructure, a cost that may be off-set by lower long-term storage costs due to de-duplication.

Who should consider this product:

Large-scale data centers with high performance and scalability demands (financial services, online transaction processing) and large data volumes will want to consider ProtecTIER.

ABOUT DIOGENES ANALYTICAL LABORATORIES, INC

Diogenes Analytical Laboratories, Inc. is an independent organization dedicated to helping Information Technology buyers reduce the inherent risk and uncertainty associated with technology purchases. Our goal is to create an informed I.T. consumer and provide the complete information needed to make smart purchase decisions. This report is based on Diogenes Analytical Laboratories' actual lab testing experiences and was not funded, sponsored or commissioned by any vendor. The opinions expressed in this report are those of Diogenes Analytical laboratories, Inc.

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