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The Forrester Wave™: Enterprise Open Systems Virtual Tape Libraries, Q1 2008

by Stephanie Balaouras
for IT Infrastructure & Operations Professionals

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FalconStor, Fujitsu Siemens Computers, And EMC Are The Top Market Leaders

by Stephanie Balaouras
with Simon Yates, Galen Schreck, and Rachel A. Dines

EXECUTIVE SUMMARY

Forrester evaluated 12 virtual tape library (VTL) vendors across 58 criteria and found that FalconStor Software leads for the completeness of its product offering and strategy. Fujitsu Siemens Computers leads for its host support, architecture, and tape integration. First-to-market EMC continues to have a very competitive VTL. Quantum shows substantial promise with a VTL that supports both pre- and post-processing deduplication. NetApp has one of the strongest product strategies as it transforms itself into a heterogeneous data protection vendor. Sun Microsystems and COPAN Systems have created unique offerings with partner software and their own intellectual property. SEPATON leads pure-plays with the most complete offering. HP and IBM have improved VTL offerings but lack market traction. Deduplication pioneers Data Domain and Diligent don't integrate with tape but show promise with customers that want tape elimination.

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NOTES & RESOURCES

Forrester conducted product evaluations in September 2007 and interviewed 12 vendor companies: COPAN Systems, Data Domain, Diligent Technologies, EMC, FalconStor Software, Fujitsu Siemens Computers, HP, IBM, NetApp, Quantum, SEPATON, and Sun Microsystems.

Related Research Documents

"Will Data Deduplication Finally Make Disk As Cheap As Tape?"
July 23, 2007

"Choosing A Virtual Tape Library"
December 15, 2006

THE PROBLEM: BACK UP MORE DATA, MORE OFTEN, IN LESS TIME, WITH THE SAME BUDGET

It's often assumed that enterprises are transitioning more and more of their backups to disk because they're simply frustrated with tape. Tape is slower than disk, it's prone to more errors and failures, and it is difficult to manage hundreds — and potentially thousands — of individual tape cartridges. The reality is that enterprises aren't frustrated with tape. Many of its inherent challenges have been addressed through more intelligent automated tape library systems. They simply can't back up all the critical corporate data they need to with tape alone because: 1) There is more data to back up than ever before; 2) there is less planned downtime during which to complete backups; 3) application owners want more frequent backups and faster restores; and 4) IT operations must improve backup and restore service with its existing budget.

VTLs Improve Backup And Help Control Costs

Virtual tape libraries are disk subsystems that use tape emulation to appear as physical tape libraries and tape drives to backup and other software.[1] Why is it beneficial to trick your backup application into thinking that it's still backing up to tape when in fact it's backing up to disk? It's because VTLs:

- **Provide non-disruptive introduction of disk into existing backup operations.** Because the VTL appears as physical tape libraries and tape drives to the backup software, IT operations can introduce the VTL with minimal disruption to existing backup jobs and schedules. So, if you are a large enterprise that has potentially hundreds of backup jobs that an administrator configured to work with a particular tape library and a specified number of drives within that library, you do not have to modify all of those jobs to accommodate the VTL. If the backup jobs rely on 16 linear tape-open (LTO) drives, simply define 16 virtual LTO drives within the VTL.

- **Offer flexibility without complex disk administration.** The VTL masks the complexity of disk administration. An administrator can add additional virtual tape drives at any time to increase the number of concurrent backup streams to the VTL or to provide host or separate backup applications with their own dedicated resources.

- **Maximize your existing investment with physical tape.** While most large enterprises have a significant investment in tape, they are looking to introduce new technology that can help achieve better backup and restore performance. However, they still want to integrate tape. Many VTLs offer the ability to create physical tape directly from the VTL as well as the ability to increase tape media utilization through better compression and techniques such as tape stacking.

- **Lower the total cost of ownership of disk.** All of the VTLs in this study offer compression and either already offer deduplication or will offer deduplication within two quarters. These techniques help improve disk capacity utilization and lower capital expenditures on disk. It will also help some enterprises store more data longer on disk before it's vaulted to tape.

There Are Two Opposing Philosophies In The VTL Market: Tape Is Good And Tape Is Bad

Forrester uses a simple taxonomy to divide the market into two major vendor camps:

- **Tape virtualization vendors.** These are the vendors like Fujitsu Siemens Computers and FalconStor that embrace tape and want to approach the use of disk and tape holistically in the environment. They are realistic about the use case for disk and tape and focus on physical tape integration in order to make it easier to vault or migrate data from disk to tape. Their VTLs have the broadest tape emulation support, offer multiple methods for physical tape creation, and provide media catalog management. In a sense, they are pursuing true tape virtualization — adding a layer of abstraction between independent software and the physical tape infrastructure in order to inure the software from changes in the physical tape infrastructure.

- **Tape elimination vendors.** These vendors — including Data Domain and Diligent — want to ultimately eliminate tape or at least drastically reduce the reliance on tape. Tape emulation is simply a means by which to introduce a disk target less disruptively into the environment. These vendors are the leaders in deduplication. They were the first to offer products with deduplication, and they have the most reference customers. They focus less on tape integration and media management and, in fact, let the backup software handle physical tape creation and media management. These vendors will spend the minimum on physical tape integration and focus more on capacity optimization techniques such as deduplication, hardware-based compression and other value-added features that will improve the total cost of ownership of disk versus tape.

ENTERPRISE OPEN SYSTEMS VIRTUAL TAPE LIBRARY EVALUATION OVERVIEW

To assess the state of the enterprise open systems virtual tape library market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top open systems virtual tape library vendors.

Evaluation Criteria Focused On Ecosystem, Scale, Strategy, And Traction

After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 58 criteria, which we grouped into three high-level buckets:

- **Current offering.** To assess product strength, we evaluated each offering against six groups of criteria: backup ecosystem interoperability, scalability, physical tape integration, resiliency, and manageability.

- **Strategy.** We considered how well each vendor's plans for product and portfolio enhancements position it to meet future demands from enterprises, particularly in unified data protection, remote-office backup consolidation, long-term archiving, and security. We looked at the

vendor's financial resources to execute its strategy globally. We also took into consideration the vendor's technology partnerships with the key independent software vendors and infrastructure vendors that are critical to a foothold in the broader IT ecosystem but are also strategic to the delivery of the VTL as an appliance.

- **Market presence.** To establish a product's market presence, we combined information about installed base, product revenues, dedicated product engineers, channel partners, and customer service.

Evaluated Vendors Offer VTLs That Scale To Meet Enterprise Requirements

Forrester included 12 vendors in the assessment: COPAN Systems, Data Domain, Diligent, EMC, FalconStor, Fujitsu Siemens Computers, HP, IBM, NetApp, Quantum, SEPATON, and Sun. Each of these vendors has a product that (see Figure 1):

- **Supports open systems.** The VTL must support open systems. Vendors with separate mainframe VTL offerings were not allowed to submit their mainframe VTL for evaluation.
- **Is an integrated appliance.** The VTL is delivered as an integrated appliance to the enterprise. Software-only solutions were not considered.
- **Scales to at least 200 physical terabytes.** This product comparison focuses on the needs of enterprises, so the VTL must scale to at least 200 terabytes of *physical* disk capacity.
- **Is a unique offering.** Vendors that license a partner technology must offer an integrated VTL appliance that is a unique combination of the licensed software and the vendor intellectual property. It can't be a simple hardware qualification and reseller arrangement.
- **Has client interest.** We have received at least three client inquiries on the current or previous generation of the product offering in a six-month period.

Figure 1 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product evaluated	Product version evaluated	Version release date
COPAN Systems	Revolution	300T(X)	October 2007
Data Domain	DDX	4.4	January 2008
Diligent	ProtecTIER	1.2.2	December 2006
EMC	Disk Library	3.1	November 2007
FalconStor Software	VirtualTape Library Enterprise	5	January 2008
Fujitsu Siemens Computers	CentricStor Virtual Tape Appliance	4.0	January 2008
HP	StorageWorks Virtual Library System	9000	October 2007
IBM	Virtualization Engine TS	7520	June 2007
NetApp	NearStore VTL	1400	Q1 2008
Quantum	DXi	7500	Q1 2008
SEPATON	S2100-ES2	750	November 2007
Sun Microsystems	StorageTek VTL Plus	2.0	Q1 2008

Vendor qualification criteria

Supports open systems. The VTL must support open systems. Vendors with separate mainframe VTL offerings were not allowed to submit their mainframe VTL for evaluation.
Is an integrated appliance. The VTL is delivered as an integrated appliance to the enterprise. Software-only solutions were not considered.
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Has client interest. We have received at least three client inquiries on the current or previous generation of the product offering in a six-month period.

Source: Forrester Research, Inc.

VTLs ARE MATURING, BUT THERE ARE SOME AREAS OF DIFFERENTIATION

The VTL market has matured enough that some features — such as open system operating support, backup software support, Fibre Channel SAN component support, disk subsystem reliability, and ease of setup — have commoditized. But there are some areas that create differentiation between the product offerings:

- **Clustered virtualization engines.** The ability to cluster virtualization engines helps to scale capacity and performance, enables high availability through engine failover, and reduces management complexity.

- **Deduplication.** Within two to three quarters of the publishing of this report, every VTL vendor will support deduplication. Deduplication is not a standalone market or product offering but an integrated feature of disk appliances and virtual tape libraries. However, there are multiple deduplication methods; some vendors will support only one method, such as pre- or post-processing; and there will be vendors that will offer both. In addition, nuances in duplication identification, verification, referencing, and data placement still create differentiation.

- **Tape management.** It has become evident that tape is not dead and, in fact, might be around for quite some time. Vendors with strong physical tape integration support multiple methods for creating physical tape, whether it's initiated and controlled by the backup application or the VTL. As VTLs become targets for archiving, and long-term management of tape becomes paramount, complete tape life-cycle management will be a differentiator. Additional areas of differentiation include the ability to maximize tape utilization through techniques such as tape stacking and intelligent tape compression.

- **Data security.** Security is an emerging functionality in VTLs, whether that's support for native VTL encryption, tape drive encryption, or encryption appliances, or whether it's the introduction of functionality such as write-once-read-many (WORM) virtual cartridges.

- **Complex replication configurations.** In order to solve the remote-office backup challenge, VTLs must support complex replication configurations such as many-to-one, as well as provide network optimization techniques such compression, deduplication, and network throttling. This is an area where many vendors lack comprehensive functionality.

- **Global management.** The ability to fully manage local and remote VTLs from a single console is critical to consolidation and effective management — whether that's the need to manage multiple VTLs at remote offices or at your disaster recovery site.

The evaluation uncovered a market in which established VTL vendors have more comprehensive offerings, younger companies are more aggressive with deduplication, and system vendors are hoping their new product offerings will finally establish their presence in the VTL market. Specifically, the evaluation uncovered a market in which (see Figure 2):

- **FalconStor, Fujitsu Siemens Computers, and EMC lead the pack.** The established vendors offer the most comprehensive ecosystem interoperability, good scale, solid resiliency features, and manageability. The completeness of these offerings is due in part to product maturity. Two of these three Leaders, FalconStor and EMC, use the same software base, and these offerings have been available since 2003. Fujitsu Siemens Computers has been selling into large enterprises in Europe for several years and has more than 500 systems deployed. These vendors have had a large jump on other competitors.

- **Quantum, Sun, and NetApp are closing the gap with the market leaders.** These vendors rank very close to the top three Leaders and are two to three product updates away from closing the gap in areas such as clustered engines, deduplication, and replication.

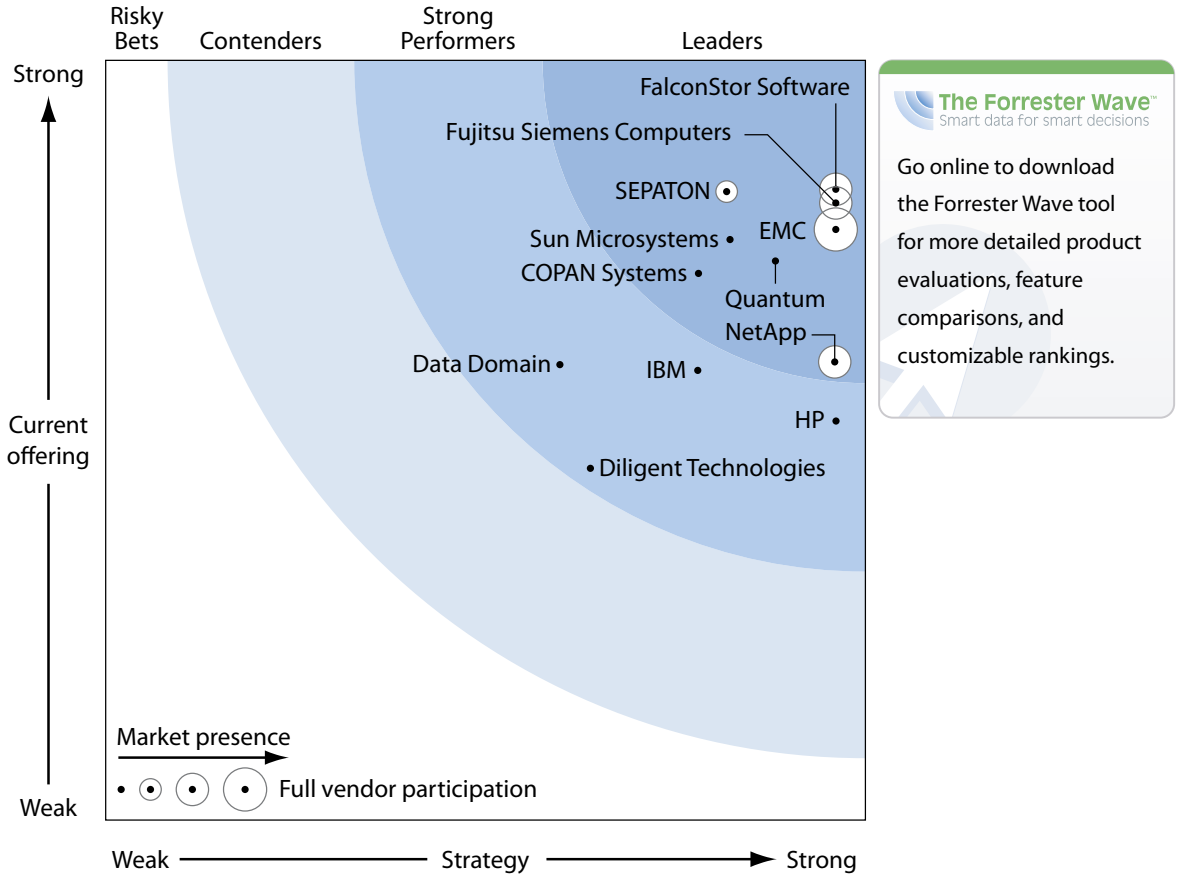
- **SEPATON and COPAN Systems have massively scalable VTLs.** Both of these vendors have massively scalable and dense virtual tape libraries, post-processing deduplication, and, in the case of COPAN Systems, disk drives that spin down to consume less power. COPAN Systems has better physical tape integration than SEPATON, but both vendors are still primarily focused on tape elimination.

- **HP and IBM have much improved offerings but still lack market traction.** The large system vendors struggled with their initial VTL product offerings. Their current offerings show significant improvement in scale and performance and are competitive offerings in their customer base.

- **Data Domain and Diligent offer strong deduplication but lack tape support.** These vendors have been the pioneers of data deduplication for the past several years. These vendors, more than any others, are sending a strong tape elimination message to customers. Not surprisingly, they didn't perform well in criteria related to tape integration.

This evaluation of the enterprise open systems virtual tape library market is intended to be a starting point only. Readers are encouraged to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

Figure 2 Forrester Wave™: Enterprise Open Systems Virtual Tape Libraries, Q1 '08



Source: Forrester Research, Inc.

Figure 2 Forrester Wave™: Enterprise Open Systems Virtual Tape Libraries, Q1 '08 (Cont.)

	Forrester's Weighting	COPAN Systems	Data Domain	Diligent Technologies	EMC	FalconStor Software	Fujitsu Siemens Computers	HP	IBM	Network Appliance	Quantum	SEPATON	Sun Microsystems
CURRENT OFFERING	50%	3.61	3.01	2.33	3.96	4.15	4.09	2.64	2.95	3.02	3.68	4.14	3.82
Backup ecosystem interoperability	20%	3.41	2.88	2.96	4.35	4.40	3.90	2.90	2.58	4.26	3.51	3.43	3.49
Scalability	20%	2.95	3.25	2.45	3.35	4.00	3.60	2.65	3.05	2.10	2.20	4.70	2.60
Physical tape integration	10%	3.60	0.90	0.50	3.40	4.40	4.40	2.50	3.20	4.20	3.00	0.90	3.80
Resiliency	30%	4.40	2.65	1.80	4.05	3.90	4.30	1.25	2.80	2.15	4.45	4.75	4.40
Manageability	20%	3.30	4.50	3.30	4.30	4.30	4.30	4.50	3.30	3.40	4.50	5.00	4.50
STRATEGY	50%	3.90	3.00	3.20	4.80	4.80	4.80	4.80	3.90	4.80	4.40	4.10	4.10
Product strategy	50%	4.20	3.00	3.40	4.60	4.60	4.60	4.60	2.80	4.60	3.80	4.60	3.80
Geographic presence	30%	4.00	3.00	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	4.00
Financial resources to support strategy	20%	3.00	3.00	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00
Cost	0%	3.90	3.30	2.40	3.60	3.00	4.10	3.30	1.30	4.10	0.40	3.40	3.10
MARKET PRESENCE	0%	0.94	1.00	1.91	4.18	3.57	3.92	1.50	1.20	3.58	1.48	2.14	1.77
Installed base	10%	2.35	0.00	3.05	4.30	4.65	3.70	0.00	0.00	3.30	1.75	4.35	2.65
Revenue	15%	0.00	0.00	4.00	5.00	3.00	5.00	0.00	0.00	4.00	0.00	0.00	0.00
Revenue growth	15%	0.00	0.00	0.00	4.00	5.00	4.00	0.00	0.00	5.00	0.00	0.00	0.00
Dedicated engineers	20%	0.00	0.00	0.00	5.00	3.00	5.00	0.00	0.00	4.00	0.00	4.00	0.00
Channel partners	20%	0.50	2.00	2.00	2.00	3.50	1.00	2.50	1.00	0.50	1.50	1.50	2.50
Customer service	20%	3.00	3.00	3.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc.

VENDOR PROFILES

Leaders: FalconStor, FSC, EMC, Quantum, Sun, SEPATON, NetApp, And COPAN Systems

- **FalconStor Software.** FalconStor is best known as the technology partner of major vendors such as EMC and Sun. What you might not know is that FalconStor has more than 2,000 customers for its own branded VTL offerings, 15 sales offices globally, and more than 200 channel partners. It has a comprehensive offering that scored well in all criteria and in key areas of differentiation such as deduplication, tape management, replication, and global management. Its VTL offering is built on its IPStor platform, which enables not only VTL, but snapshots, continuous data protection, and IP-based replication. Because all of its data protection offerings are based on a common technology framework, it has the ability to provide a unified console for data protection and create one common deduplication repository.

- **Fujitsu Siemens Computers.** The Fujitsu Siemens Computers CentricStor is a unique VTL offering. It supports mainframe and open systems simultaneously, and its architecture is best described as grid-like. All of its nodes are clustered together into a single VTL system, and there is automatic failover between the nodes and non-disruptive upgrades. Because it competes in the mainframe VTL market, it has a mainframe VTL approach to tape management. The VTL is responsible for complete tape life-cycle management. Fujitsu Siemens Computers has also enhanced the disk capacity and functionality of the VTL. The VTL disk capacity can be used as a disk cache, disk library, or disk-only repository. It has increased disk capacity and has announced that it will support deduplication in early 2008. As a major systems vendor in Europe, Fujitsu Siemens Computers has a solid installed base of more than 300 customers and more than 500 VTLs, mostly in large enterprises. It has solid growth in new customers and one of the highest percentages of repeat customers.

- **EMC.** Given that the EMC Disk Library has been available in the market for more than three years, it has the largest installed customer base of any vendor and has an impressive number of new customers, repeat customers, and reference accounts. Due to its deep relationship with FalconStor, product maturity, and massive resources, EMC can offer broad ecosystem interoperability as well as quickly bringing new features and functionality to market. It also benefits from CLARiiON and Symmetrix DMX engineering. Because these storage platforms are underlying disk subsystems for the VTL, any advances in these platforms — whether in interfaces, interconnects, or drives — improve the scale and reliability of the VTL.

- **Quantum.** The strongest features of the Quantum DXi7500 are its deduplication capabilities (both inline and post-processing), its active-active virtualization engines, and its hardware-based compression. However, the DXi maxes out at 240 TB of useable physical capacity, which is somewhat small for the largest enterprise customers. But with a deduplication ratio of 10 to 1, the VTL could scale to more than 1 PB of logical capacity. As an automated tape systems vendor, Quantum is focused on a more holistic approach to disk and tape in enterprise data protection.

It has strong physical tape integration capabilities with backup application vendors such as Symantec, compression matching, and integration with encryption appliances. Quantum can leverage its existing channel to sell all of its VTL product offerings — a channel that already understands tape systems, backup applications, and all the challenges very well. Quantum has done a good job of transitioning into a disk and tape vendor.

- **Sun Microsystems.** Sun's StorageTek VTL Plus is another FalconStor-based VTL offering. However, Sun has used its own intellectual property and hardware to create a differentiated offering. Sun's VTL consists of Sun servers, Solaris, the Zettabyte File System (ZFS), and Sun storage. This enables active-active clustering in the VTL and many of the resiliency features in the disk subsystem. Sun believes that the Solaris OS and ZFS will enable it to increase scale and reliability through OS-level clustering and software RAID at an affordable price because the company will rely on software-based approaches. The long-term goal is to use ZFS to enable intelligent data classification, movement, and integration into its identity management solutions for enhanced security.

- **SEPATON.** SEPATON has one of the most scalable architectures of any open systems VTL. It scales to more than 1.2 PB of physical capacity and can accommodate up to 32 virtualization nodes, all clustered interconnected into a single VTL. It also supports a large number of tape emulations, host connectivity, and performance. It already has several reference customers for its deduplication technology that was launched in the middle of 2006. SEPATON has a very resilient architecture, with significant redundancy in its underlying disk subsystems and excellent replication capabilities — and, of course, there is the fact that its 32 nodes are clustered interconnected into a single VTL system. The one place where SEPATON is weak is in physical tape integration.

- **NetApp.** The NetApp NearStore VTL is one of the few VTL offerings from a major storage or systems vendor that is based entirely on the company's own technology. NetApp owns the VTL software (based on its 2005 acquisition of Alacritus), and the VTL disk subsystem uses NetApp's controller and disk shelves. NetApp has some of the strongest performance and capacity management capabilities of any VTL vendor. Data streams are dynamically balanced across the most available disks. Capacity is added non-disruptively and is immediately useable. The VTL also has very strong tape integration with direct-to-physical tape creation and intelligent tape compression. NetApp has a strong vision of the entire data protection market and a strong road map for planned VTL enhancements — as well as ways to leverage its native Data ONTAP storage operating system, write anywhere file layout (WAFL) file system, and Decru security offering — to create more comprehensive and integrated data protection offerings.

- **COPAN Systems.** COPAN Systems is all about scale. The company's VTL can scale to more than 6 PB of logical capacity. The company also emphasizes its massive array of idle drives (MAID) technology as a means by which to store this 6 PB of information using the least of

amount of cost for power and cooling. The company does not necessarily offer as many nodes for performance as other vendors or the same number of virtual components like drives, libraries, cartridges. The COPAN Systems VTL is another offering based on FalconStor Software and, because of this, COPAN Systems has strong physical tape integration despite its focus on tape elimination. COPAN Systems' strategy is to focus on the massive capacity requirements of nearline or persistent data, data that is too valuable to store on disk but is generally infrequently accessed. The COPAN Systems MAID platform will serve as the core platform upon which COPAN Systems can add multiple interfaces such as VTL, block, or file access to support various requirements.

Strong Performers: HP, IBM, Data Domain, And Diligent Technologies

- **HP.** HP's VTL software is based on partner technology; in this case, SEPATON's. HP has had some success with its first product offering the VLS6000, but HP significantly increased the capacity of its VTL with the introduction of the VLS9000 in November 2007. The VLS9000 scales up to 300 useable, native terabytes and supports up to eight virtualization engines. Engines are managed together, but they are not clustered for automatic failover. HP has planned product enhancements in 2008 to add hardware compression, deduplication, IP-based replication, and additional tape integration. It also plans to introduce a new midrange disk appliance offering based on its own intellectual property that will support replication between both product platforms. HP is mostly focused on selling the VTL into its own customer base.

- **IBM.** IBM's VTL software is also based on FalconStor. IBM's TS7520 is a vast improvement over the previous TS7510. It has good scale and availability — up to four nodes can be configured into failover pairs. It also provides a sufficient number of virtual libraries, drives, and cartridges, and it offers strong performance. Dedicated hardware compression cards, deduplication, increased drive capacity, additional virtual library and tape drive support, and RAID 6 support are all planned for future releases. IBM has not provided clear guidance on planned portfolio enhancements, but as a vendor that has focused its strategy on green IT, IBM will likely concentrate on the future release items mentioned above and continue the integration with physical tape to reduce power and cooling costs. IBM is mostly focused on selling the VTL into its own customer base.

- **Data Domain.** Data Domain has good support for host operating systems, backup applications, and network connectivity. It also has strong interoperability testing. However, it lacks broad emulation of popular tape drives and tape libraries because of its focus on tape elimination rather than tape integration. For Data Domain, the VTL interface is simply a means by which to introduce a disk appliance less disruptively into the environment. The ultimate goal is to reduce reliance on tape as much as possible. Data Domain has very strong replication capabilities. It supports replication over IP, complex replication configurations, global deduplication, and global management. For remote-office data protection, Data Domain is a strong solution. The

DDX array has excellent scale. It scales up to 1 PB of logical capacity and 16 modes. The only downside to the DDX array architecture is that its nodes are not clustered for high availability today. In the future, Data Domain plans to penetrate other nearline storage markets such as archiving.

- **Diligent Technologies.** Like Data Domain, Diligent has been one of the pioneers of data deduplication. ProtecTIER has been generally available since December 2005, and Diligent has more than 100 ProtecTIER customers. The VTL has solid operating system and backup application support, and mainframe support is on the road map for 2008. The company does not support a wide variety of virtual tape drive and tape library emulations due to the fact that the company is mostly focused on tape elimination rather than tape integration. The VTL only scales to one VTL node, but it will increase to two nodes in early Q1 2008. When this occurs, it will increase many of the scalability characteristics of the platform. It will also support failover between nodes and add native VTL replication in 2008. Diligent has several major resellers of ProtecTIER, including Hitachi Data Systems, Sun Microsystems, and Overland Storage.

SUPPLEMENTAL MATERIAL

Online Resource

The online version of Figure 2 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of two data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.

- **End user data.** We gathered data on the vendors through multiple end user client advisory sessions and tens of VTL inquiries over the past year.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires,

demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and readers are encouraged to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

ENDNOTES

[1] VTLs emulate popular tape libraries and appear as physical libraries to the backup application. As a result, they integrate more easily with existing backup (it uses the standard backup application software — not the add-on disk software module), backup processes, and procedures. They facilitate vaulting the data from the VTL to physical tape to accommodate off-site tape vaulting for disaster recovery purposes or long-term backup history archiving. In addition, VTLs offer compression to reduce the amount of physical capacity actually required to store data — something conventional disk arrays do not offer. See the December 15, 2006, "Choosing A Virtual Tape Library" report.

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