BEST STORAGE PRODUCTS
2004

As in past years, the 2004 Products of the Year awards vividly reflect the innovation in our industry. Each of the winning products solves real-world problems and makes your company's data more secure and accessible. And this year's awards prove that larger, older and more established companies don't have a monopoly on innovation.

Vendors and users alike are grappling with how to spread the benefits of storage networking beyond today's implementations. That means tackling WAN distribution problems, enabling greater consolidation, meeting lower cost points, simplifying complex environments, and improving manageability, data protection and availability. That's a long wish list, but this year's winners largely meet many of those goals.

As always, entrants are judged on six criteria:

- Innovation
- Performance
- Ease of integration into existing environments
- Manageability
- Functionality
- Value

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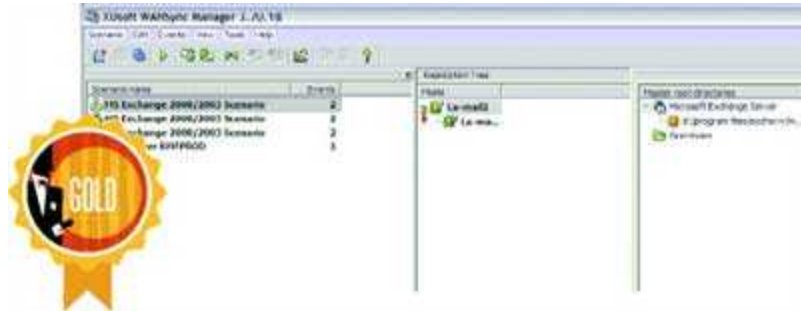
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I. Backup & Disaster Recovery Software

GOLD:

XOsoft's WANSyncHA
Data protection is at the top of most storage managers' minds these days, especially in companies where information fuels not only business decisions but the business itself. XOsoft Inc., Burlington, MA, has

carved a niche out of the burgeoning data protection market with a small arsenal of business-continuity products.

WANSyncHA, XOsoft's remote replication package, can manage WAN bandwidth.

WANSyncHA, the latest incarnation of XOsoft's remote replication package, continuously replicates data to a local or remote site and provides automatic failover to ensure uninterrupted access. WANSyncHA's innovation is evident from the start, with its non-disruptive agent installation that doesn't require rebooting servers or stopping applications.

WANSyncHA runs on Windows, Linux and Sun operating system servers. Application-specific versions for Microsoft Exchange, SQL Server and Oracle databases provide services such as the autodiscovery of database files and network configurations. WANSyncHA is hardware-agnostic and operates with nearly any storage system.

The server agent software monitors all changes to files and directories in the server's file system and records changes to a journal. The journals are then used to synchronize the master data and replica data over a LAN or a WAN.

When synchronizing replica data with master data, WANSyncHA compares the data at the two servers and sends only the changes to minimize WAN traffic. WANSyncHA can also sense slow connections and spool changes until sufficient bandwidth is regained; updates interrupted by lost connections will recover and resume when the connection is re-established.

WANSyncHA can be configured in a many-to-one arrangement where a single replica at a remote site serves multiple masters. For more resilient disaster recovery, WANSyncHA can be used in a "tree" structure to create multiple replicas at disparate sites.

In a crowded disaster recovery market, WANSyncHA is "outstanding data protection solution," said one judge, who cited its "high innovation, high functionality, high performance and high value." And with a price tag that starts at approximately $5,200 to $10,000 per license, it's also a cost-effective approach to disaster recovery.

SILVER:

Permabit's Permeon Compliance Vault 1.2
While disaster recovery is a prime concern, many companies are seeking ways to avoid disaster. Confronted by a slew of data-retention regulations, companies have turned to technology to help them ensure compliance. Cambridge, MA-based Permabit Inc.'s Permeon Compliance Vault (PCV) 1.2 answers the call by providing an effective way to lock down corporate data and rein in compliance costs.

Permabit's Permeon Compliance Vault locks down data for compliance.

At the heart of PCV is content-addressable storage (CAS) technology, which breaks data into chunks and then uses hashing algorithms to give each chunk a unique identifier. These chunks of data are retained in their original state and can't be altered or duplicated; digital certificates can be used to prove the data hasn't been changed. PCV works with any storage hardware, turning any type of disk media into secure write once, ready many (WORM) storage.

Fault tolerance is built in, with the ability to replicate protected data to other locations. As PCV secures data, it also distributes it across available disks to balance the load and provide fast retrieval.

Calling Permabit "one of the leaders in this space," one judge extolled PCV's "outstanding ease of use, and exceptional CAS and data protection integration." With a starting price of $25,000 for a 2TB configuration, plus $12,500 for each additional 1TB increment, PCV offers an inexpensive route to compliance that can leverage already-installed disk capacity.

BRONZE:

Asigra's Televaulting
Dollars and sense are the key virtues Toronto-based Asigra Inc.'s Televaulting brings to remote backup software. Televaulting breaks ground with volume-based pricing and sheer practicality, and it scores big with its agentless architecture.

Asigra Televaulting provides an agentless method to back up remote sites.

Televaulting's DS-System, a dedicated server located at the central site, collects backup data from each remote site's DS-Client server. The DS-Client is a commodity box running Windows or Linux attached to the local network; it discovers all connected servers and desktop PCs, and can back up any or all of them.

The DS-Client examines the collected data to weed out duplicate files and find changes to

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existing data. The backup sets are then compressed to bandwidth-friendly dimensions, encrypted and shipped over the WAN to the central DS-System. Data collected by the DS-System can then be backed up using normal data center procedures and software.

Asigra's agentless architecture means installation and upgrades involve only one machine at each site. And because users pay according to data volume, the number of devices that can be backed up is unlimited. "Agentless backup is incredibly innovative," noted one judge, adding that the product's "pricing is market disruptive."

Administration is centralized, so little--if any--training is required at remote sites. The built-in billing and chargeback system can be used to distribute backup costs. But with prices starting at a modest $11,250, departments aren't likely to object to paying their fair share.

II. Backup Hardware

GOLD:

Sepaton's S2100-ES VTL
Disk-based backup arrived in 2004, and Southborough, MA-based Sepaton Inc.'s S2100-ES Virtual Tape Library (VTL) appliance led the parade of products that confirmed disk-based backup's role in the data center.

Sepaton's VTL supports both ATA and SATA drives, and emulates almost any LTO, DLT and AIT tape drive. Scalability isn't much of an issue as the S2100-ES uses its own scalable replication engine, which starts at 3.5TB and can grow to 200TB.

Sepaton says its box is capable of 150MB/sec to 900MB/sec transfer rates and can back up 1.6TB per hour. "It is incredibly fast, scalable and uniquely understands what's in the backups it is receiving," one judge gushed. "This allows it to create an index of the data and

Sepaton's S2100-ES is a highly scalable VTL built around ATA or SATA disks.

perform synthetic backups, which simplifies recovery by consolidating incremental backups into one complete backup."

Synthetic backups are similar to Tivoli Storage Manager's incremental backups--where only changed data is moved during a full backup. But Sepaton takes this notion a step further. Because the S2100 knows where and what the backups are with its "content-aware architecture," it creates a new volume using pointers instead of recreating the data entirely. This method cuts the time needed for full backups and frees up application servers and the network which, in turn, leads to faster restores.

The S2100 is certified to work with backup software from BakBone Software Inc., CommVault Systems Inc., EMC Corp./Legato, IBM Tivoli and Veritas Software Corp.

The starting price for an S2100 is $58,000. Not chump change but, nevertheless, a bargain when your backup window shrinks an order of magnitude over conventional backup methods. And, yes, all restores are much quicker as well.

SILVER:

Network Appliance's NearStore R200
Network Appliance (NetApp) Inc.'s NearStore R200 is the first disk-based backup product that achieved a critical mass with users. Shipped in December 2003, our judges didn't forget it.

"The NearStore R200 allows the user to take advantage of all of the wonderful replication capabilities of Network App's snapshot applications using very low-cost disk. They were one of the first, if not the first, with this technology," said one judge.

The R200 comes with a 14-drive disk shelf with SATA/FC-AL disks and scales from 8TB to 96TB. Prices start at $7.00/GB for a low-end system, but it's flying out of NetApp's door. According to ESG, NetApp shipped nearly 35PB of R200 storage since the product's inception.

NetApp's pioneering--and popular--disk backup product.

BRONZE:

Spectra Logic's RXT/T950
Imagine a world where removable disk and tape can reside in the same enclosure--and you can take them both on the road, too.

Stop imagining. The RAID eXchangeable TeraPack (RXT) from Spectra Logic Corp., Boulder, CO, does all that and more. Each shoebox-sized RXT can hold up to 12 2.5-inch SATA disks or two 3.5-inch disks, providing up to 960GB per TeraPack enclosure. The packs offer RAID 0, 1 and 5; act like LTO-2; and work with most major backup software products.

If you want to use this at a remote office, just buy a standalone RTX docking station with its portable media. Then when you get back to the main data center, you can plug it into a T950 and reuse the RXT. Or it can be used to transfer data to a server, rack or otherwise.

Spectra Logic's RXT/T950 deftly blends tape and disk backup in one box.

"Spectra Logic started with a clean sheet of paper and has delivered a pretty innovative solution that combines the benefits of tape [removability, relative low-cost, long-term reliability] with disk [faster access, RAID protection]," said one judge. "And the library supports all major tape drives, tape media and network connectivity types."

III. Disk & Disk Subsystems

GOLD:

Hitachi Data Systems' TagmaStore Universal Storage Platform

Hitachi Data Systems' (HDS) TagmaStore Universal Storage Platform (USP), the successor to HDS' Lightning 9900 V series, considerably ups the ante of what a storage area network (SAN) array can do.

Our judges gave TagmaStore very high marks for its innovation. TagmaStore isn't only a high-performance block storage array, it can also virtualize Hitachi and selected third-party storage devices attached to it. In other words, it's possible to access TagmaStore's internal storage as well as externally hosted storage through a single interface.

Hitachi's TagmaStore arrays can virtualize external storage systems.

Virtualization isn't new, but embedding it into a storage array is. Unlike virtualization pioneers such as DataCore Software Corp. and FalconStor Software Inc., or more recent entrants like IBM's TotalStorage SAN Volume Controller, HDS has foregone putting virtualization in the network in the form of an appliance or as part of an intelligent switch. Instead, the virtualization capabilities reside in the "control unit," as HDS puts it. This allows TagmaStore users to employ the same software functionality they are familiar with from HDS Lightning arrays, and apply it to any virtualized storage managed by TagmaStore. Harnessing the power of virtualization without having to learn a new system is a big win.

Then there are TagmaStore's performance specs, which are not too shabby. HDS says its top-of-the-line model boasts an incredible 2 million I/Os per second; 81GB/sec aggregate internal bandwidth; scalability to 32PB (that's right, petabytes) of capacity, including 332TB of internal storage; and up to 192 Fibre Channel, 64 ESCON or 48 FICON ports. TagmaStore also has an innovative cache partitioning feature that allows you to carve up TagmaStore storage resources for various servers. This allows you to guarantee an application a certain level of service.

Powered by the third-generation Universal Star Network Crossbar Switch architecture, TagmaStore comes in three models: the USP1100, the USP600 and the entry-level USP100. But be forewarned; this power and innovation doesn't come cheap.

SILVER:

Adaptec's Snap Server 18000

Adaptec's Snap Server 18000 is targeted squarely at small- to medium-sized businesses. The device is a combination block (iSCSI) and file array based on technology acquired from Snap Appliance, San Jose, CA, which is now a division of Adaptec. It scored highly for ease of use, integration and, of course, value.

Snap server 18000, from Adaptec, is a low-cost array with RAID 5 SATA disks.

Priced at less than $5/GB, Snap Server 18000 scales to 30TB. That price is achieved by using low-cost serial ATA disk drives (hot swappable), but the array also packs in RAID 5, dual Gigabit Ethernet ports, redundant power and cooling, and UPS support. Then there's the software: BakBone Software Inc.'s

NetVault backup and restore, and Computer Associates International's eTrust Antivirus and snapshot software.

Snap Server's Instant Capacity Expansion (I.C.E.) feature lets users expand capacity simply by plugging in another storage shelf, which is automatically recognized and added to the pool. Adaptec says setup and integration can be performed in less than 30 minutes, thanks to its reliance on the ubiquitous Ethernet infrastructure.

BRONZE:

Exanet's ExaStore 2.0
A network-attached storage (NAS) startup that received high praise from our judges for innovation and performance, New York City-based Exanet Inc. aims its product at shops requiring high-performance and highly scalable file storage. In benchmark tests last fall, the company clocked a six-node cluster at more than 200,000 operations per second on a single file system NAS system. ExaStore's distributed file system and distributed coherent caching allow the system to scale linearly in terms of performance, capacity and bandwidth.

Exanet's ExaStore 2.0 is a high-performance, highly scalable NAS array.

ExaStore software is hardware-independent, but the firm offers several preconfigured systems--the EX200, EX400, EX600 and EX800. In addition to support for NFS and CIFS, it supports the Apple File Protocol and boasts integration with Veritas' NetBackup, EMC's Legato NetWorker, and digital media applications such as Adobe, Dalim, Helos, Prinergy, Quark and Xinet. But when one judge noted the premium pricing, he wasn't kidding. List price for a SATA-based 10TB, two-node configuration is $125,000.

IV. Networking Equipment

GOLD:

Acopia Networks' ARX 1000 and 6000 switches
In an industry dominated by proprietary solutions, Lowell, MA-based Acopia Networks Inc.'s ARX 1000 and ARX 6000 switches create a unified storage pool with a global namespace from disparate NAS devices. It's a less-expensive, easier way to manage NAS, and the switches can also move less-critical files onto tiered storage platforms.

With a single pool of Unix/Linux NFS and Microsoft CIFS files, storage administrators can make changes to the composition or location of storage resources in the pool without disrupting users or changing client configurations.

manage NAS boxes to create a virtual pool of storage.

The benefits of a single storage pool are huge: It becomes a no-brainer to establish policies delivered through the in-band ARX switches for fine-grained file management, such as capacity balancing and information lifecycle management (ILM). An administrator, for example, can set policies to migrate files from primary to secondary storage based on file type, file age, frequency of access or other criteria.

"This is the first product to put NAS virtualization within an Ethernet switch," one judge wrote. "It delivers lots of functionality, excellent performance and value."

Speaking of performance, any in-band device that's making real-time decisions in an enterprise-class network needs to be fast and have exceptionally low latency. In a recent test conducted by the Enterprise Strategy Group (ESG), Milford, MA, the Acopia switches achieved 600,000 file operations per second and 2.6GB/sec of throughput while incurring 0.5% insertion latency. "The performance and scale of the Acopia products comfortably exceed the capabilities of any single traditional NAS system," ESG reported.

Because they reside smack in the middle of the network, ARX switches can adjust to client access or network conditions. For example, if users consistently access certain files across a WAN link, a policy might automatically move those files to storage closer to users to minimize WAN traffic and improve access times. Another benefit of an in-band device is that there's no need to install (and manage) agents on hosts or storage devices. And security poses no problem for the switches because all client permissions are passed through to the particular device where the files reside.

In a world of rapidly proliferating NAS boxes, Acopia brings a sensible, elegant way to manage NAS capacity and has the switch smarts to implement tiered storage at the network layer.

SILVER:

NetEx's HyperIP
the price of bandwidth is dropping, but it's still one of the largest expenses for an IT organization. Exponential data growth and new

HyperIP, from NetEx, is an antidote to TCP/IP ills that improves WAN storage links.

regulations have combined to place added pressure on storage applications to meet geographically dispersed user requirements. When a TCP/IP WAN has a typical packet loss of approximately 1%, data protection windows for operations such as volume replications can be missed. Packet loss is a direct result of bit error rate (BER), jitter, network congestion, distance, router buffer overruns and multiple service providers.

By eliminating or reducing TCP/ IP network degradation, Network Executive (NetEx) Software Inc.'s HyperIP accelerates application throughput, the company claims, from 300% to 1,000% compared to the transmission rate of typical IP networks. HyperIP's compression can increase that throughput an additional two to 15 times, depending on the data's compressibility. Of course, your mileage will vary, but those are pretty impressive numbers.

Said one judge: "[HyperIP] solves a costly market problem. [It's] a unique product that is very easy to use and manage. The value is exceptional." Users simply plug the HyperIP appliance into their IP switch and assign the storage applications to accelerate. HyperIP works with any IP-based storage application, and has been certified with EMC's SRDF Adaptive Copy, IBM's Tivoli Storage Manager, Microsoft's Exchange NetBios, Network Appliance's SnapMirror, Oracle Corp.'s databases, and Veritas Software's Volume Replicator and NetBackup.

For companies looking to reduce backup windows and increase productivity, HyperIP can help them to achieve those objectives.

BRONZE:

QLogic's SANbox 5200 switch
QLogic Corp.'s SANbox 5200 is the first stackable switch featuring 10Gb FC technology. Starting at $5,795 for an eight-port configuration, the SANbox 5200 comes with many ease-of-use features such as wizards for installation, configuration and zoning. QLogic's bundled management application--SANsurfer Management Suite--also simplifies stack management by allowing users to monitor status, diagnose problems and perform upgrades from one application.

The SANbox 5200, QLogic's stackable 10Gb switch, offers easy configuration.

The SANbox 5200 can scale to 64 ports (you only pay for the ports you use) and delivers the performance of a modular switch. A single, 10Gb inter-switch link (ISL) ensures low latency between switches and eliminates the cost and complexity of trunking 2Gb ports. And the SANbox 5200 features non-disruptive code load and activation, so a user can install firmware upgrades without the need to reboot the system.

According to one judge, the SANbox 5200 "is incredibly easy to use, with all the SAN functionality you could ask for at a very low price. It makes SANs a no-brainer [for small businesses or remote

offices]."

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V. Storage Management

GOLD:

Onaro's SANscreen

Onaro Inc.'s SANscreen predictive change management software, the only product of its kind available today, troubleshoots problems caused by changes to SANs. Its analysis simulation capabilities can predict the impact of alterations made to a storage network before they occur.

Onaro's SANscreen lets you test configuration changes before committing to them.

It uses root-cause analysis to detect and advise how to fix errors before, during and after changes are made. "It helped us to more easily see the complex access paths, relationships and interdependencies within our [1,000-port] SAN," said Robert Shinn, a principal at State Street Global Advisors. He also uses SANscreen to record changes for audit purposes and regulatory compliance.

The SANscreen server runs on Windows 2000; clients run on Windows, Unix or Mac OS X Java-enabled machines. No other software is required in the network. It performs its discovery out-of-band or off the portion of the network that handles live data. Onaro claims that SANscreen supports all leading storage equipment. Pricing for a perpetual license starts at $125 per port; a subscription license is $64 a year per port.
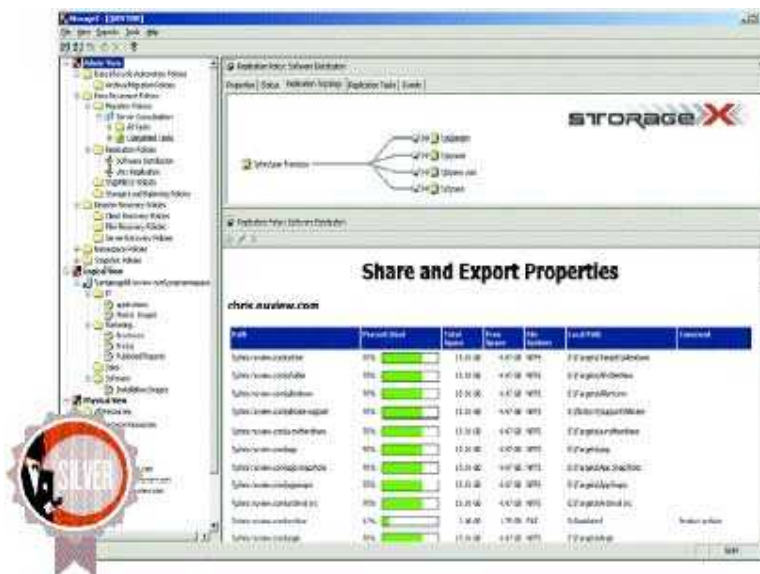
If you manage a large SAN, SANscreen is a tool you need for all the obvious reasons. It blows the doors off anything else in the storage network management space.

SILVER:

NuView's StorageX 5.0

Release 5.0 of StorageX has solidified Houston-based NuView Inc.'s position as a pioneer in global namespace technology amid a host of new competitors entering this market.

A global namespace acts as a logical layer that sits between clients and file systems for the purpose of aggregating multiple, geographically dispersed heterogeneous file systems. It then presents file information to users and applications in a single, logical view.

StorageX 5.0, from NuView, uses a global namespace to aggregate file systems.

The benefits of a global namespace are clear and compelling: Users (and applications) are shielded from physical storage complexities. Administrators can add, move, rebalance and reconfigure physical storage without affecting how users view and access it. And it provides a platform for developing functions such as data migration, server consolidation and disaster recovery.
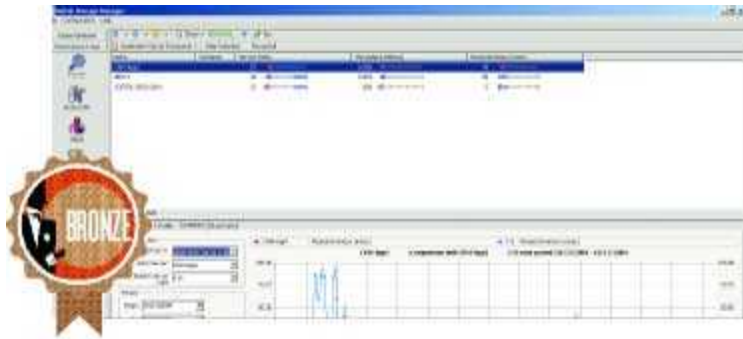
Enhancements in release 5.0 include byte-level file differential replication, which avoids replicating entire files that tax WAN bandwidth and storage capacity; policy-based provisioning; integration with Network Appliance's NearStore for disaster recovery purposes; and the ability to create a tiered architecture.

"StorageX solves an important NAS management problem," said one judge. "By pooling NAS filers into a single image, it greatly reduces management disruptions and cost."

BRONZE:

Softek's Performance Tuner 1.1
Performance Tuner, from Softek Storage Solutions Inc., Vienna, VA., identifies existing, as well as potential, storage bottlenecks and component failures. However, it adds a new capability not commonly found in storage resource management (SRM) suites-- storage admins can analyze whether metrics are related. For instance, they can

Softek's Performance Tuner can spot existing and potential bottlenecks.

analyze whether problems on a database server are connected to the saturation of an ISL in their SAN environment.

The ability to look at any two devices and see if there is a causal effect of one on the performance of the other is a unique feature. It's also one that puts users in a position to take an active management role in tuning the performance of the storage network supporting their critical applications.