


EMC²
 where information lives[®]
**REDUCE THE COST AND COMPLEXITY
OF YOUR STORAGE**

 >> [Read the IDC
white paper.](#)

Networked Storage Info Center - SPONSORED BY EMC

[← RETURN TO THE INFO CENTER MAIN PAGE](#)

NETWORKED STORAGE TIPS

[TIP TOPICS](#) | [SUBMIT A TIP](#)

Which is better: Cheap mirroring or RAID?

[→ VIEW ALL TIPS TOPICS](#)

SUBMITTED BY: Alex Barrett, Trends Editor

DATE: 03 Jan 2005

 RATING: **4.25** (out of 5)

This article first appeared in "Storage" magazine in their December issue. For more articles of this type, please visit www.storagemagazine.com.

What you will learn from this tip: Want to avoid the cost and complexity of RAID? Mirroring is one option to consider.

Here's a question for you: If hard disk drives get cheap enough, will storage system vendors start to bypass complex, parity-based data protection schemes like [RAID-5](#)?

It's an idea whose time may have come. Consider ExaGrid Systems, a [network-attached storage \(NAS\)](#) startup in Westborough, Mass., which last month announced the general availability of Advanstor, a storage system that incorporates NAS, [backup](#), automated data migration -- a.k.a. [hierarchical storage management \(HSM\)](#) -- as well as remote replication and disaster recovery, but forgoes RAID altogether.

"It's not that there's anything wrong with RAID -- there isn't," says Mark Kaufman, ExaGrid president and CEO. "But for us, it just added cost and complexity without adding much value."

Instead of RAID within the array, Advanstor protects the data on its primary storage tier by mirroring it multiple times to separate, inexpensive storage nodes, "GRIDdisks" in ExaGrid-speak. GRIDdisks are 1U servers equipped with four 250 GB [SATA](#) drives in a [JBOD](#) configuration, plus ExaGrid's proprietary software. By default, the system provides "2x2" protection -- one copy on primary storage, one on local GRIDdisk storage and two copies at two distinct GRIDdisks at a remote location.

ExaGrid's Advanstor is not the first storage system to use this architecture, usually referred to as Redundant Arrays of Inexpensive Nodes (RAIN), says Arun Taneja, consulting analyst and founder of the Taneja Group, Hopkinton, Mass. EMC's Centera does as well. But at \$2/GB for raw Centera storage, its mirroring architecture brings the price up to \$4/GB -- a lot for archival-class storage. These days, Centera also supports EMC's proprietary RAID-S, which brings the cost of protected Centera storage down to approximately \$3.5/GB, Taneja says.

The economics of ExaGrid's Advanstor are different, though. An Advanstor bundle that

 PROVIDED BY 

Network Attached Storage Solutions:

Reduce costs and optimize performance with EMC NAS solutions

Featured Technology

- >> [Pund-IT: EMC Announces Celerra NSX](#)
- >> [Evaluator Group: EMC Celerra NSX Analysis](#)
- >> [EMC Celerra NSX - Data Center-Class NAS Gateway](#)

White Papers:

- >> [Using iSCSI Targets on EMC Celerra: EMC NAS Solutions](#)
- >> [Operational Recovery: Using Disk Backup](#)

Analyst Research

- >> **NEW!** [Robert Frances:](#) Backup Jobs Driving You Crazy? Archive That Old Data.
- >> **ESG:** EMC CLARiiON iSCSI Support
- >> **Sageza Group:** EMC Energizes iSCSI Deployment for Windows Servers
- >> **ESG Whitepaper:** iSCSI turns the corner
- >> **PUNT-IT Research:** EMC and Dell announce New iSCSI Systems

Making Storage Simple

includes 1 TB of high-performance primary NAS, secondary GRIDDisks and all the software is listed at \$62,000. Additional 1 TB GRIDDisks cost approximately \$5,000.

From a raw capacity standpoint, Advanstor's pricing may be a bit high, says Taneja. At the same time, the system is a good fit for small and medium-sized businesses (SMBs) that "want to buy something as close to self-contained as possible," he adds.

Foregoing RAID has another advantage -- simplicity, says Dave Therrien, ExaGrid CTO and founder. Because there's no software or hardware RAID to track, ExaGrid can easily change hardware suppliers for its GRIDDisks. "With every tweak you make to the hardware layer, you have to track another layer of firmware," he says. "It's better to keep it simple and make up the functionality in our software."

Advanstor's 2x2 protection equals four copies of a file. That may seem like overkill to some, but not to Robert Reeder, CIO at W.A. Wilde, a direct marketer and fulfillment company in Holliston, Mass. The company is beta-testing Advanstor as a replacement for a more traditional storage setup, i.e., file servers protected with tape backup and no remote replication.

"I'm not really bothered by it," Reeder says of the 2x2 protection. "I have seen so many backup and recovery strategies that try to be foolproof and fail." By spreading the data across four independent disk locations, "I'm not relying on a single server not failing, but on the laws of probability that state that I can't possibly lose all four copies," he explains.

Aaron Sawchuk, CTO at ColoSpace Inc., a hosting service provider in Rockland, MA, and another Advanstor beta-tester, agrees. "This gives us the ability to take a significant hit at one location and still have protected data," he says. ColoSpace is using Advanstor as a backup target for its various application servers, and replicates between its Boston and Watertown, Mass., offices.

But while companies like ExaGrid are examining ways to forego parity RAID schemes, others are looking to enhance them. InoStor, a spin-off of Tandberg Data, recently announced the IntelliNAS line of NAS arrays that feature the company's patented RAIDn technology, where "n" can be set to the number of simultaneous disk drive failures you want to be able to withstand, explains David Licosati, vice president of business development.

Other vendors offering RAID levels that protect against multiple disk drive failures are thus far limited to NetApp with RAID-DP and Hewlett-Packard with its Advanced Data Guarding (ADG) option on select storage controllers. IBM has also stated that it's working on dual-parity RAID protection.

In the meantime, plain old RAID-5 will probably be around for a long time to come. "There's a lot of industry inertia around RAID-0, 1, 4 and 5," says Jeff Hornung, vice president and general manager for NetApp's Gateway Business Unit. "It's very well adopted, and IT shops are very comfortable with it." Mirroring, in his mind, is on the outs. "Deployments that do require mirrored architectures are moving toward more mission-critical environments. In local environments, I think you'll see less and less of it in favor of dual-parity systems."

For information:


Checklist: [Seven RAID configuration essentials](#)


Tip: [A quick and dirty way to increase a RAID-5 array](#)

Tip: [The critical link in mirroring](#)

About the author: Alex Barrett is "Storage" magazine's trends editor.

→ [VIEW ALL TIPS TOPICS](#)

 Rate this Tip: In order to rate this tip, you must be a registered member of searchStorage.com

 [Register now](#) to start rating these tips

- » [Making Storage Simple Brochure](#)
- » [Clipper Group: EMC's "Making Storage Simple" Approach Solves Business Problems for Mid-Sized Enterprises](#)
- » [IDC Making Storage Simple: The Changing Information Management Needs of Mid-Sized Enterprise and SMB Customers](#)
- » [EMC Express Solutions Overview](#)

Top 5 Reasons to Choose EMC

- » **NEW!** [iSCSI Solutions](#)
- » **NEW!** [NAS Solutions](#)

Articles:

- » [EMC SAN is an Easy Install - Watch the Embedded Video](#)
- » [NAS Gateways Allow IP Access to SANs](#)

On Demand Webcast

- » [The Power of Integrated Solutions for Backup, Recovery, and Archive](#)
- » [Deploying a Simple SAN and When to Use iSCSI](#)

EMC Solution Briefs

- » [iSCSI Consolidation Solution Sheet](#)
- » [NAS Consolidation](#)
- » [EMC Backup-to-Disk Solutions](#)

TCO Calculator

- » [NAS TCO Calculator: Analyze your infrastructure](#)

24x7

- » **NEW!** [Global Support](#)

Receive More Information...

- » **You & EMC:**
Subscribe today for free EMC e-mail and online publications.

Already a member? [Log In](#)

DISCLAIMER: Our Tips Exchange is a forum for you to share technical advice and expertise with your peers and to learn from other enterprise IT professionals. TechTarget provides the infrastructure to facilitate this sharing of information. However, we cannot guarantee the accuracy or validity of the material submitted. You agree that your use of the Ask The Expert services and your reliance on any questions, answers, information or other materials received through this Web site is at your own risk.

TechTarget
Storage Media

STORAGE

[View this month's issue and subscribe today.](#)

Storage Decisions

[Apply online for free conference admission.](#)

 **SearchStorage.com**

[HOME](#) • [NEWS](#) • [TOPICS](#) • [ITKNOWLEDGE EXCHANGE](#) • [TIPS](#) • [ASK THE EXPERTS](#) • [WEBCASTS](#) • [WHITE PAPERS](#) • [PRODUCTS](#)

[About Us](#) | [Contact Us](#) | [For Advertisers](#) | [For Business Partners](#) | [Reprints](#) | [RSS](#)

SEARCH

SEARCH

SearchStorage.com is part of the TechTarget network of industry-specific IT Web sites

WINDOWS

[SearchExchange.com](#)
[SearchSQLServer.com](#)
[SearchVB.com](#)
[SearchWin2000.com](#)
[SearchWindowsSecurity.com](#)
[SearchWinSystems.com](#)
[Labmice.net](#)

APPLICATIONS

[SearchCRM.com](#)
[SearchSAP.com](#)

ENTERPRISE IT MANAGEMENT

[SearchCIO.com](#)
[SearchDataCenter.com](#)
[SearchSMB.com](#)

CORE TECHNOLOGIES

[SearchEnterpriseVoice.com](#)
[SearchMobileComputing.com](#)
[SearchNetworking.com](#)
[SearchOracle.com](#)
[SearchSecurity.com](#)
[SearchStorage.com](#)
[SearchWebServices.com](#)
[WhatsIs.com](#)

PLATFORMS

[Search390.com](#)
[Search400.com](#)
[SearchDomino.com](#)
[SearchEnterpriseLinux.com](#)



[TechTarget Expert Answer Center](#) | [TechTarget Enterprise IT Conferences](#) | [TechTarget Corporate Web Site](#) | [Media Kit](#)

Explore [SearchTechTarget.com](#), the guide to the TechTarget network of industry-specific IT Web sites.

All Rights Reserved, [Copyright 2000 - 2005](#), TechTarget

[Read our Privacy Statement](#)