



A Better Approach

XIOtech's new Magnitude 3D offers an exclusive clustered storage solution that provides unique responsiveness, resiliency and scalability.

From their earliest years, children are warned of the dangers in the world. Indeed, for just about everyone, much of life is spent trying to remain safe.

The world of computing is not much different.

From the beginning, a huge amount of research and development time has been focused on making the land of technology a safer place to be. Now, XIOtech's Dimensional Storage Cluster (DSC) architecture defines a new standard in storage reliability by combining remarkably strong resilience with increased responsiveness and scalability.

DSC provides government with an innovative and cost-effective approach to vital business continuity and disaster recovery strategies.

Notable Node

The new Magnitude 3D, XIOtech's DSC storage solution, is built around the company's exclusive Dimensional Controller Nodes (DCNs) — sophisticated storage controllers — that can reside apart from the Magnitude 3D's drive bays in locations of the user's choice and up to 300 meters apart from each other.

Yet, the nodes appear to users as if they were a single system.

"This clustered architecture brings all the value of the original Magnitude, the single virtual pool of storage; dynamic provisioning; and the ability to create and expand, change and move virtual disks," said Rob Peglar, chief architect for XIOtech. "And

Backup Plan

Sedgwick County, Kan., implements Magnitude to meet disaster recovery requirements.

For a long while, the IT staff in Sedgwick County, Kan., did exactly what they thought they were supposed to do, carefully following long-standing data storage rules.

“We had most of our records stored in the data center basket,” said Ken Keen, Sedgwick County’s technical support services manager. “There’s been a lot of talk about putting everything in one basket when you’re consolidating and then watching it very closely. We lived with that for a number of years.”

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— Ken Keen, technical support services manager, Sedgwick County, Kan.

But paradigms in data storage began to shift shortly after Sept. 11, 2001, when unfathomable disasters and the unexpected need for disaster recovery suddenly catapulted to the forefront of the minds of IT professionals everywhere — including those in Sedgwick County.

So, the county IT staff began an effort to move storage away from server CPUs to achieve more flexibility in upgrading, backup and day-to-day management. That effort resulted in an RFP issued last year for alternative storage solutions.

“We tried to lay out what our problem was and then cast it out to the vendor world and say, ‘Give us a solution,’” explained Keen. “We created a short-list and ended up with about five different presentations from vendors.”

Recovery Revelation

Among the vendors making a presentation was XIOtech. The company’s Magnitude offered the capabilities that Sedgwick County IT professionals were looking for.

Intrigued by the novel technology, Keen and two coworkers visited XIOtech’s headquarters in Eden Prairie, Minn., to take a firsthand look at the Magnitude solution.

“The site visit was really useful,” said Keen. “We gained a lot, and we got to see a couple of them (Magnitudes) in action.”

The county originally considered purchasing two Magnitude units, which would interface with a high-speed tape backup. After the trip, Sedgwick County officials decided to purchase a third Magnitude and eliminate tape altogether.

Within a short time, Sedgwick had three new Magnitudes — with one unit backing up the data stored in the other two.

Safe, Secure Storage

Now Magnitudes store just about every record kept by the county government.

“We’ve got all the normal county data,” Keen said. “There is some imaging of records, and we have a good share of confidential records for our mental health agency, emergency medical service and our disability organization. There is all kinds of information.”

Although the implementation process still is underway, Keen said the county already sees the advantage of Magnitude over traditional storage technology.

“We like the flexibility of the equipment,” said Keen, “the ability to define things, copy them on the fly and change the sizes of disk. And we just like the idea of separating the data away from the processor itself.”

Returns in Dollars and Sense

As for ROI, Keen said much of the return on investment will come from Magnitude’s flexibility and scalability.

“We’re pretty convinced we got a good return and good value for the taxpayer’s buck,” Keen said. “I think we will get the return in terms of flexibility and being able to sleep at night because of the disaster recovery ability.”

The cost of server purchases also will drop because the new technology allows Sedgwick County to buy diskless servers, he added.

As for the implementation process itself, Keen said the transition has gone smoothly. XIOtech professionals traveled to Sedgwick County to help set up the system, and they remain available whenever help is needed.

“For the most part, we don’t have to call XIOtech,” he said. “But when we do, they’ve been more than happy to answer questions, and on a couple of occasions they’ve even come down to make a site visit.”

The new technology is preparing the county for 21st-century data storage demands, said Keen.

“All in all, it’s really been a great project,” Keen said. “And XIOtech has been great to work with.”

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— **Rob Peglar**, chief architect, XIOtech

now we’ve gained increased resilience, yet kept complexity to a minimum.”

In fact, a primary goal in designing the Magnitude 3D was eliminating planned downtime traditionally required with storage provisioning changes.

“That’s the value proposition we’ve had since day one,” Peglar said. “We implement clustering without complexity. It’s easy to use and manage, and that’s the way it should be.”

Each easy-to-manage controller node includes multiple layers of resilience. With four ports on each node, losing one could spell disaster with conventional storage equipment. But if a single Magnitude 3D node port fails, traffic from that port is instantly redirected to a different port in the same node.

Further, if a node should fail — or if its power is lost due to blackout or other catastrophic accident — the entire workload from that node is quickly and transparently shifted to any of the other surviving nodes in the cluster. Because agencies can locate nodes as much as 300 meters apart — even in different buildings — continuity of service is almost guaranteed.

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With Magnitude 3D, XIOtech achieved an industry first by introducing distributed, clustered storage. Magnitude’s modular design places system controllers in a physically separated, distributed cluster topology — an approach entirely new to the storage industry — eliminating any single point of failure. Moreover, the system is designed to quickly react to equipment malfunctions by automatically shifting data to another device when a potential failure is detected.

Magnitude 3D’s clustered architecture is easily

scalable by installing additional nodes or by increasing storage capacity of existing nodes. Clustering occurs without additional software on the server, and Magnitude works with Windows, Linux, NetWare or UNIX operating systems.

And there is more.

Vanishing Footprint

“The beauty of this solution is that the Magnitude 3D as well as the original Magnitude requires no server or host-side software to accomplish clustering,” explained Peglar. “We call this zero server footprint. We don’t require any additional software on any of the servers to take advantage of the intra-controller failure or cross-cluster fail-over.”

Magnitude 3Ds offer simple, affordable scalability with new drives and nodes easily added to a cluster. Currently, each cluster of two nodes can support as much as 32 terabytes of data — with an increase to 64 terabytes expected next year.

“We think this is the optimal model for scaling economically,” said Peglar. “It’s the ability to buy the components of a cluster that you can add dynamically and deploy just what you need, when you need it.”

Along with the Magnitude 3D’s exclusive clustering design comes replication capabilities that allow the 3D cluster to replicate and transparently link from one cluster to another across distance.

All Along the Active Watch Tower

Of course, the entire Magnitude value proposition is backed by XIOtech’s innovative Active Watch program, which is embedded in each system and proactively watches over the service needs of the equipment. Active Watch even sends messages to XIOtech’s technical support headquarters so that technical issues are addressed — and replacement parts often dispatched — even before users know there is a problem.

In all, XIOtech’s Magnitude 3D delivers a complete storage solution that provides unique clustered architecture, easy scalability, high resiliency, innovative support, and best of all, peace of mind.

Rocky Mountain High-Volume Storage

XIOtech's innovative Magnitude provides the city of Arvada with an innovative Storage Area Network solution.

It's not as large, well known, or glamorous as its mile-high neighbor, but of Arvada, Colo., is home to just over 100,000 residents who love their bustling, close-knit community, located just 10 miles from Denver.

City officials take seriously the reputation Arvada has gained as one of the area's most desirable places to live. In fact, Morgan Quitno Press recently named Arvada the 12th-safest city of over 75,000 people in America.

To better protect and serve the people of their community, Arvada Police Department IT administrators last year decided to implement a Storage Area Network (SAN) as part of an overall information systems upgrade. But demands on the new storage network would be high.

"We need 99.999 percent uptime," said Ira Cohen, systems manager for the Arvada Police Department.

That was a tall order, especially given the dazzling amount of data the SAN would be storing — everything from arrest records, citations and mug shots, to 15 years of information from the department's legacy system. Luckily, Cohen knew where to turn for help.

Storage Capabilities of Great Magnitude

Two years earlier, Ron Czarnecki, network systems manager for Arvada, had created a storage area network using XIOtech's innovative Magnitude SAN technology.

Arvada's SAN solution separated storage from servers, greatly reducing server acquisition and operating costs.

"Rather than buying a \$15,000 to \$20,000 server, we're now buying \$2,000 to \$3,000 servers," said Czarnecki.

The technology also improved reliability. When one of the city's servers failed recently, Czarnecki said, "We were able to just slide in another server, not having to worry about the hard drives. And we boot off the SAN, so it's just plug and play once we get the old one out and the new one in."

Expecting More from the Future

Now that they are enjoying the benefits of using easily scalable Magnitude technology, Arvada Police officials intend to deliver capabilities that help officers serve the public even more efficiently.

"We're moving toward the era when an officer on the street will be able to bring up a suspect name file from our records management file and actually see the mug shot for that individual," Cohen said.

Drawing on the department's vast database of mug shots, officers soon will access such information in their cars via mobile computers. And Magnitude's scalability ensures the department can add storage capability to accommodate future applications.

"It's really easy to do," Cohen said. "You send a purchase order to XIOtech, get some hard drives and pop them in. That disk space is immediately available to expand on the servers that you have."

And there's more.

"The important part is it's on the fly," Cohen said. "You're not shutting down anything. You're not taking anything offline."

At Your Service

Of course, no system works perfectly at all times, but Cohen and Czarnecki are enthusiastic about the support provided by XIOtech.

"If something fails, XIOtech is notified by e-mail automatically, and they'll call us," said Czarnecki. "Or sometimes parts will just show up, and they'll let us know, 'you have a hard drive failing, you need to replace this,' without us having to even call them."

With its innovative capabilities, easy scalability and failure protection, as well as excellent customer support, it's easy to see why Arvada chose Magnitude for its SAN technology.

"Magnitude works great, and XIOtech's support is the best I've ever seen," said Czarnecki.

Cohen agreed.

"It's especially true for the police department, where a lot of our stuff is mission critical," he explained. "XIOtech is there for us."



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