

CASE STUDY:

# MulvannyG2 Embraces 3D Architectural Modeling – and Conquers a Few Storage Hurdles Along the Way

Top-50 global architecture firm relies on data compression, seconds-long backups, and raw storage performance to harness massive 3D design files

For MulvannyG2, listed among the top 50 largest architecture firms in the world, the size of architectural digital models it uses to give clients a lifelike, three-dimensional “walk-through” of a building design before construction is a critical daily concern. Files for 3D models and renderings can be orders of magnitude larger than the traditional 2D files. New 3D modeling tools make the technology practical and give clients a remarkable sense of a new architectural masterpiece when it’s still in the making. But, as MulvannyG2 has prospered with 3D, it has also seen its “data under management” nearly triple in just one year. One repercussion has been that data backup times were becoming untenable, stretching from hours to entire weekends.

That was when Mike Brester, System Administrator for MulvannyG2, made the move to converged storage and backup with the aid of a Nimble CS240 converged storage array. “Our circumstances at the time created a perfect storm,” said Brester. “With multiple storage devices in operation, storage management had become a growing challenge. However, three maintenance contracts were about to expire. We realized we could replace those three contracts – plus an expensive third-party application handling disaster recovery – with a single contract for the Nimble CS240.”

And the move to Nimble, added Brester, resulted in an additional bonus: while reducing overnight backup times to

## **Storage Profile: MulvannyG2 Architecture**

### **Challenges**

- Weekend-long backups of design files put client responsive at risk
- Tripling storage space requirements
- Managing four storage systems posed severe budget and staffing implications

### **Solution**

- Deploy two Nimble CS240 converged storage arrays

### **Immediate Benefits**

- Move to converged storage eliminates separate storage systems, use of tapes
- Storage consolidation reduces costs dramatically
- High-performance capacity-optimized primary storage tackles massive 3D modeling files
- Straightforward GUI simplifies management

### **Long-Term Objectives**

- Eliminate remote-office SANs
- Implement VDI
- Deploy Cisco UCS

under a minute, cutting backup costs by 50 percent, and vastly reducing storage complexity, the relief to his budget meant he could add a second CS240 array for offsite data replication and disaster recovery.

### **Task One: Eliminate Tape, Slash Back-up Times**

With the move to Nimble, Brester's initial goal was to eliminate the use of tape for backup. "Our previous backup regimen involved a costly and complex combination of disk and tape. But one of our goals was to go completely tapeless this year, and the move to Nimble has allowed us to do that."

By eliminating tapes, Brester also eliminated the expense and complexity of tape libraries. "We recently had our offsite tape storage provider destroy 1,300 legacy tapes," he said.

With the aid of Nimble's efficient snapshot technology, Brester found that he could set up snapshots that would achieve two of his objectives: allow backups to run frequently and nearly instantly in the background, and protect user data in the event of file corruption or loss. With Nimble, he learned, taking hourly snapshots would require no additional storage capacity than daily snapshots.

"With Nimble it takes, literally, a couple clicks of the mouse to establish a backup schedule and meet our data retention policy," said Brester. "Backups today take under a minute, versus the hours or days in the past with the legacy hardware and software we had in place." With a recovery point objective of one hour today, he says, a staffer would have no more than 59 minutes of remedial effort – worst case – in the event of data loss.

By increasing the frequency of snapshots and replicating them across servers, Brester was also able to eliminate separate backup software from his data-protection regimen. "Removing backup agents from key servers allowed us to cut the number of backup agent licenses, resulting in further savings."

### **Conquering the Challenges – and Savoring the Rewards – of 3D**

Enterprise-class design tools such as AutoCAD, Revit, Photoshop and 3ds Max account for 75 percent of the data developed at MulvannyG2, with 3D renderings accounting for an ever-higher percentage of the mix. Complicating matters, many files are stored multiple times as iterations are made but earlier versions are maintained for the sake of continuity. "The client who originally spec'ed a 10-story office building may come back and say that he's now envisioning a 20-story," said Brester. "But he may always revert to the former design concept, of course, and so saving all design files along the way is mandatory."

MulvannyG2 architects progressively rely more heavily on Revit for its sophistication in producing 3D Building Information Models (BIM). "With Revit, I can give a client a complete virtual 'walk-through' of a building, showing him, for example, how it will appear at 12:30PM on a sunny day in August." But that sophistication further feeds the requirement for storage capacity, he noted. "A

standard AutoCAD file comes in at around two megabytes, and rarely more than ten. But a Revit file, which is structured in a database-like format, commonly consumes 100 to 200 megabytes.”

As a result, Brester says data compression is one of his best weapons for coping with the mounting storage challenges and forestalling the purchase of new storage capacity. “Today we’re able to leverage the power of the Nimble array in regards to raw speed (IOPS, or Input/Output Operations per Second), and front-end compression, as two weapons for managing data.”

His team has achieved 67% compression on one volume storing a number of databases, and he says he expects to see “very high” compression on past volumes of data as he moves them to the Nimble CS240. He also looks to Nimble’s integrated flash architecture, which he said offers dramatic performance improvements. “In one test in our Shanghai office, a Revit file opened 10 times as fast on the Nimble array as it did on our legacy SAN.”

### **Storage Architecture to Help Remote Offices “Go Virtual”**

Brester’s short-term plans include the move to VDI, or virtual desktops, in phases, with two offices scheduled to go live as a pilot effort. In the program, entire remote offices will “run through a virtual experience,” with user desktops virtualized and project data stored at company headquarters in Bellevue, Washington.

Brester said the pilot program is now feasible due to the front-end compression and sheer IOPS performance offered by the Nimble arrays. Those underpinnings, along with a high-bandwidth connection, are the keys to success, he said.

Longer term, Brester has even greater plans. “We plan to remove all of the local SANs from our regional offices, and the savings we have seen as a result of the move to Nimble will be one catalyst for that move.” He also plans to deploy a Cisco UCS system to support all VMware instances, using a local Nimble array to store all virtual machine data. With this configuration, he says, snapshots from each data volume will be replicated to the second, offsite Nimble array.

### **Management Console Demystifies Storage**

Brester says that storage is complex enough to require specialists, but adds that this complexity shouldn’t be allowed to create a mystique about the underlying technologies that make storage systems work. He points to the management console of the Nimble CS240 as a tool for demystifying the complex.

“The Nimble GUI presents everything a storage administrator needs to manage an array: from current performance and throughput to compression ratios, event summaries and available disk space. I could feel comfortable handing the reins to someone who understands storage basics but has never administered storage. I would expect that, within 15 minutes, he could reach a comfort level with the GUI and could set up storage volumes independently.”

He added: “We’re trying to make storage simple, and I think we’re headed in the right direction.”



### **About MulvannyG2**

MulvannyG2 Architecture designs retail, mixed-use, and corporate offices and interiors for clients and brands of global significance. MulvannyG2 is among the world's 50 largest architecture firms and is consistently ranked among the world's top three retail designers.

Founded in 1971, the firm employs a staff of 300 among five offices: Bellevue, Wash.; Portland, Ore.; Irvine, Calif.; Washington DC; and Shanghai, China. Clients include Hyatt Hotels & Resorts, OliverMcMillan, The Irvine Company, Hines, Gerding Edlen Development, The Kroger Company, Target, Nike, REI, Kohl's Department Stores, Costco Wholesale, Shanghai Investment Group, Dalian Yida Group, Sino-Ocean Land Holdings Ltd., Suning Real Estate Development, Ivanhoe Cambridge, and Fujian Provincial Power Company.

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