

# Case Study: Microsoft Internal Internet Service Provider



“HP’s line of Windows Storage Server 2003 solutions, including the HP StorageWorks NAS 2000s, provides a strategic solution to consolidate Web server content into a centralized storage solution. The 2000s is a shining example of an enterprise storage solution that scales to accommodate increased usage and is easier to manage through the comprehensive quotas, content filtering and reporting, at a low TCO.”

Christopher Whyte  
Group Program Manager—Microsoft  
Enterprise Application Services

The Microsoft Internal Provider delivers Internet Service Provider (ISP) services to internal clients. To rapidly accommodate increased usage, Microsoft Internal Provider found it necessary to add storage to existing servers or acquire more servers. Such an approach created additional management complexity and did not provide the long-term solutions they were looking for. In order to achieve greater scalability and manageability, Microsoft Internal Provider wanted to move to a model where Web server content could be consolidated into a centralized storage solution. They explored the possibility of a storage area network (SAN), but instead chose a Hewlett-Packard Network Attached Storage (NAS) solution powered by the Windows Storage Server 2003, because it was the most cost effective, scalable and easy-to-manage option. The HP NAS solution also integrated seamlessly within the existing IT infrastructure.

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## Solution Overview

### Customer Profile

Microsoft Internal Provider is an internal service provider at Microsoft, supplying internal clients with a range of traditional ISP services, including internet access, e-mail, Web hosting, database hosting, streaming media and managed co-location services.

### Business Situation

Microsoft Internal Provider needed an affordable, scalable and easy-to-manage solution that could consolidate its existing Web storage into a centralized location, without service disruption.

### Solution

Microsoft Internal Provider opted to add a network attached storage (NAS) solution to their existing infrastructure—specifically the HP StorageWorks NAS 2000s, running Windows Storage Server 2003—as the optimum consolidation solution for their Web server content.

### Benefits

- Simplified management.
- 100% improved scalability, with the ability to add extra storage quickly.
- Significant time and cost savings.

## Software and Services

Microsoft® Windows® Storage Server 2003

Microsoft® FrontPage® 2002

## Hardware

HP StorageWorks NAS 2000s with 2.5 TB of storage

## Company Overview

The Microsoft Internal Provider is an internal Internet service provider offering a range of ISP services, including e-mail, Web hosting, database hosting, and managed co-location services for internal clients. Their Web hosting services provides disk space and bandwidth for Web sites, which vary in space and bandwidth utilization, and have Microsoft® FrontPage® 2002 Server Extensions and/or FTP as available publishing mechanisms.

Microsoft Internal Provider has been in business for nearly four years, and has increased the number of hosted Web sites from under a hundred sites to a few thousand sites since startup, now getting about 50 million hits each month to the Web sites they host. As their business has grown, they have faced the challenge of keeping costs down while maintaining a competitive offering with other external ISPs.

## Business Challenge

As customer service demands increased, the staff at Microsoft Internal Provider began to experience a number of costly and time-intensive drawbacks to multiple independent Web servers with direct attached storage (DAS). Eventually, storage demands began to exceed capacity, despite the fact that many users were still below their allocated quotas for disk space. Not only did Microsoft Internal Provider find it necessary to implement additional customer support to anticipate and rectify quota problems, but they were also faced with the problem of purchasing additional Web servers each time a Web server reached drive bay capacity. The traditional paradigm of DAS was clearly becoming an impediment to organizational growth. With storage distributed across the Web servers, not only was it difficult to add disk capacity without disrupting customer services, it was an increasing challenge to manage the existing physical space, or to make accurate predictions about how effectively Web hosting services could be expanded.

With these problems in mind, the staff at Microsoft Internal Provider began to look for a different approach to solving their Web storage problems. From the outset, they had some firm goals in mind. Whatever solution they adopted, it must consolidate their existing distributed resources into a more manageable solution-ideally, Web server storage would be in a single, centralized location. Additionally, whatever solution they adopted must also provide user-friendly means of managing existing storage resources. Finally, Microsoft Internal Provider wanted the solution to easily and quickly scale as they host new customer Web sites. And the group wanted to accomplish these goals while keeping their IT budget in check.

## Solution

"We looked at a number of possibilities to quickly address the problem," says John Ashland, one of the staff responsible for designing the Microsoft Internal Provider solution. "One was to add more Web servers or disk arrays, but that's impractical for resource and technology reasons." They also explored the possibility of adopting SAN technologies, he says, but while the SAN solution offered excellent storage benefits, given Microsoft Internal Provider's current needs, putting in the SAN infrastructure was "not a cost-effective approach."

Microsoft Internal Provider turned instead to a NAS solution, which, like a SAN solution offers the advantages of attaching storage to the network rather than directly to the server, but unlike SAN, uses existing local area networks. Microsoft Internal Provider wanted a Windows-based device; looking into the new Microsoft® Windows® Storage Server 2003 release, they felt that it could meet their storage needs effectively. As the leader in networked storage, and an early adopter of Windows Storage Server 2003, Hewlett-Packard was selected as the NAS vendor of choice. The combined solution of Windows® Storage Server 2003 and HP StorageWorks NAS 2000s provided simplified management, enhanced performance, reduced IT staff hours and decreased cost for an overall lower total cost of ownership.

As mentioned, Microsoft Internal Provider wanted a configuration that would allow for scaling storage as they took on hosting additional Web sites, and as they migrated content off preexisting Web servers. They also wanted something quick and easy to deploy, without requiring extensive infrastructure changes. The purchase of the HP StorageWorks NAS 2000s with 19, 146.8 GB drives in a rack mount configuration, gave them 2.5 terabytes of scalable storage capacity and the stability required for Internal Provider's environment through complete, seamless and fast integration. The operating



system volume is a RAID 0 + 1 array with 2 sets of mirrored drives; the primary content volume is a RAID-5 array of 16 drives, which are all hot swappable to ensure business continuity.

Using Windows Storage Server, Microsoft Internal Provider administrators are able to monitor storage capacity and manage resources easily, through either a Web interface or locally on the NAS. Through native support for HTTP, FTP and FPSE, content stored on the Windows Storage Server can be readily viewed or edited.

## Business Benefits

### Consolidation

Using Windows Storage Server 2003, Microsoft Internal Provider was able to consolidate their Web server content from several existing servers onto a single Hewlett-Packard NAS server, thus providing centralized services for content serving. Instead of multiple Web servers with local storage distributed among them, the consolidation onto Windows Storage Server allows Microsoft Internal Provider to use fewer Web servers, lowers both total cost of ownership and the management overhead that resulted from trying to manage distributed storage while ensuring that equipment needs scaled as business dictates. In addition, network storage consolidation of servers improves overall resource availability. "Losing a Web server used to mean losing all the sites on that server," says Ashland. Now, with their Web files consolidated onto Windows Storage Server, if a drive fails, built-in redundancy keeps the server online, so service to Microsoft Internal Provider customers is unaffected.

By moving from direct attached storage for each Web server to the thin (diskless) Web servers and centralized back-end storage, Microsoft Internal Provider has dealt with its burgeoning problems of lack of physical space. Efficiency has been enhanced tremendously. For example, the storage from several Web servers have been consolidated into the HP StorageWorks NAS 2000s, and the hard drives have been removed from the existing Web servers and reallocated for other purposes. Additional servers will also be consolidated, which will provide additional management simplification and reduced RoT. Consolidation of storage has enabled Microsoft Internal

Provider to move Web files off of the Web production servers, thereby reducing the load on the Web servers and helping to ensure that they have the capabilities to deal with escalating performance requirements.

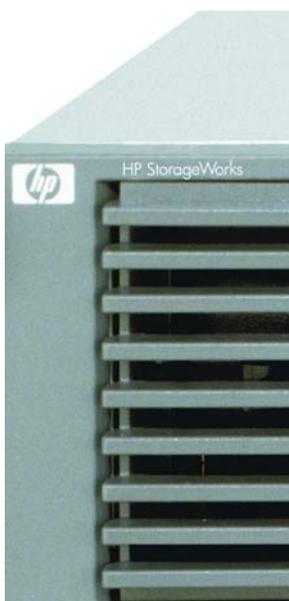
### Manageability

Windows Storage Server 2003 provides Web administrators at Microsoft Internal Provider the ability and flexibility to manage storage from a single, centralized location, using a variety management tools. "Setup was very simple," says Ashland, who was able to use the built-in capabilities of Windows Storage Server to configure the HP NAS 2000s remotely through terminal services, working from his office rather than the lab.

Staff is enthusiastic about the management tools. "The great reporting capabilities make Storage Server almost self managing," Ashland says. "It can be configured to send us reports when users are reaching quota limits, or when restricted file types are being uploaded, and we can set policies to allow us to prevent restricted files from being uploaded." The Microsoft Internal Provider group is also finding Windows Storage Server useful for predicting growth. They are now able to use the Storage Manager tool to quickly view existing disk space and predict future growth requirements. "And we can generate these reports from a single system, rather than having to gather reports from each individual Web servers. It's a much more manageable approach."

### Scalability

The traditional storage paradigm that the Microsoft Internal Provider had been using, that of storing content on each Web server, had proven difficult to scale as service demand grew. Before adding the Windows Storage Server device, they were sometimes forced to add additional Web servers when the existing servers had run out of disk space and available drive bays, a costly and disruptive solution. Because Windows Storage Server can accommodate network attached storage capacities ranging from several gigabytes to multiple terabytes, the staff at Microsoft Internal Provider found that they could add a single, high capacity HP NAS 2000s to their network, and provision storage resources to the applications and users that needed them, when they needed them. This scaling flexibility is already enabling Microsoft Internal Provider to add more Web sites to its current lineup.



Because the Windows Storage Server and HP StorageWorks NAS 2000s solution seamlessly integrates with the existing IT infrastructure, Microsoft Internal Provider plans to use DFS (distributed file system) to have storage on multiple file servers appear as one share. "If one file server goes offline for maintenance, other file servers will serve the content and we're ensuring services are not disrupted," says Ashland.

### Security

Storing Web site and database content on Web servers is not as secure as storing such content in a location that is less susceptible to intrusions, such as a storage network. Like all effective ISP providers, the Microsoft Internal Provider has put multiple security measures in place to ensure that the integrity of its Web servers is not compromised. And while they have never had a problem

in the past with invasive hackers attempting to compromise their data and services, moving their file content onto Windows Storage Server is giving them greater peace of mind. Since Windows Storage Server supports a broad range of third party anti-virus software, Windows Storage Server 2003 becomes an even more compelling addition to the task of keeping customer data secure.

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