



Bell Microproducts Spans the Continent with FalconStor — A Case Study in Storage Virtualization

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Management Summary

There is nothing like a surge of growth and the realization of vulnerability, seasoned by the now pervasive insecurity about blackouts, to make a company act decisively. Information technology products and solutions distributor Bell Microproducts Corporation, headquartered in San Jose, California, recently bought three storage companies, spreading its global reach from the Americas to Europe, and added a B2B extranet that gave them access to new markets. Their I.T. needs were growing fast. Their data center in San Jose had numerous servers running different operating systems, each with their own direct attached storage. They needed to back up data remotely for disaster recovery. With the amount of data they had and their different operating systems (implemented on Windows NT, with testing being done on AIX and Linux), this was not an easy problem to solve.

At the same time, Bell Microproducts' data center in San Jose, like most other growing companies in that region, was facing many challenges including hiring experienced staff and the continuous availability of electrical power. This, and the proposed cost of contracting for a dedicated remote site for disaster recovery, led them to decide to build a second data center of their own in Montgomery, Alabama. The Alabama site would become their primary (and expanding) data center, while the data center in San Jose would become a hot site of replicated data, in the event that the Montgomery site became unavailable. Bell Microproducts built their new data center to be totally redundant, so that they could use on-site mirroring for high availability. They chose Alabama for its lower cost and more reliable source of electrical power, less expensive labor costs, and extensive experience of the available work force.

In its search for a storage solution, Bell Microproducts set the following objectives:

1. To have a redundant storage solution in Montgomery.
2. To also backup data onto tape in Montgomery.
3. To connect their NT and Linux servers in Montgomery to storage via IP.
4. To have a replicated storage solution in San Jose and also be able to support the local NT and UNIX servers.
5. To use low-cost, non-proprietary RAID arrays, preferably from a Bell Microproducts source.
6. To keep their storage architecture as flexible as possible.
7. To keep the solution as simple as possible. The fewer components, the better.
8. To handle growth for several years without a redesign of the storage solution.

Storage virtualization¹ was not the goal – but it soon became evident that it was the answer that Bell Microproducts was seeking. Read on to find out what Bell Microproducts did, and why they chose IPStor (from their business partner FalconStor) as their virtualization vehicle.

¹ For an introduction to the topic of storage virtualization, see **The Clipper Group Explorer**TM dated April 9, 2001, entitled *Storage Virtualization in 2001: A Space Odyssey*. It is available at Clipper's web site at www.clipper.com.

The Search for a Storage Solution

Early in the search process, it became clear that establishing a remote disaster recovery site through a service provider was going to be expensive and require expensive additional bandwidth. Moreover, all of the remote resources would sit idle until a disaster occurred. This realization changed the search from a disaster-recovery solution to a broader storage solution also capable of meeting the disaster recovery requirements.

The Need for Storage Virtualization

Hard partitioning of storage arrays might have been a solution, but it would not have had the flexibility and particularly the ability to reconfigure storage on the fly without having to reboot critical NT servers. **The ability to allocate storage to application servers anywhere on the fly, and the ability to remote-manage the system from anywhere became key requirements and the answer appeared to be some form of storage virtualization.** James Dyches, Director of Computer Operations for Bell Microproducts, said he researched his options extensively. He was slightly apprehensive about virtualization at first, but the more he learned, the more comfortable he became.

The next big realization was that some Fibre-Channel-based solutions would become very expensive when the cross-country replication component was added. The gateways needed to surmount the distance barrier of Fibre Channel were expensive components, and potentially more sources of failure. The result was that many of the traditional storage vendors had “very expensive solutions,” according to Dyches, who also felt that many were “proprietary.”

In the end, Bell Microproducts preferred to use its own and partner components in its solution, to own both sites themselves, and to put the San Jose backup center to productive use as a development site, until a crisis occurred in Montgomery. **IPStor from FalconStor was one of the virtual storage solutions considered and proved to be the best one for Bell Microproducts.** Randy Anderson, Technical Support Specialist for Bell Microproducts and a member of its

virtualization team, said “IPStor offered simplicity, redundancy, protection and ease of use. It was a user-friendly and practical solution that met every one of Bell Microproducts’ demands.”

Deploying IPStor from FalconStor

FalconStor was already a business partner of Bell Microproducts, but not the only one providing storage virtualization. FalconStor came in with a statement of work and a strong, knowledgeable and competent team of professionals. They presented a clear, simple plan to accomplish all Bell Microproducts’ objectives using the existing local network and the existing servers in San Jose. Dyches felt that the documented experience from FalconStor’s four rounds of beta testing of IPStor was convincing evidence of the product’s readiness. FalconStor certified that the storage and networking hardware from Bell Microproducts’ Rorke Data subsidiary could be used with the IPStor solution, and then gave IPStor to Rorke to certify before the project started. Bell Microproducts’ I.T. management and engineers talked to the FalconStor team and studied their proposal. Everybody agreed that FalconStor was the way to go.

The new data center in Montgomery is populated with many Intel servers running Microsoft Windows 4.0 NT and two Rorke Data Galaxy 55 RAID arrays managed by two Linux-based IPStor servers in fail-over mode. Two gigabit Ethernet cards inside each NT server, supporting iSCSI protocol, are cabled through a Cisco 6500 series switch to the IPStor servers and then to each of the two redundant Galaxy storage arrays. One IPStor server has an additional Fibre Channel card to transfer backup files to the ADIC Scalar tape library. There is very little copper in the Montgomery data center; all critical applications are running on optical fiber.

The data center is totally redundant, and is provisioned so that, barring new acquisitions, no new storage will have to be ordered for several years. Still, the Galaxy arrays have plenty of room for growth. When the time comes, another array or two can be easily and non-disruptively added. Bell Microproducts gets reliability, redundancy, low downtime,

Profile of FalconStor, Inc.

Founded in 2000, FalconStor, Inc., of Melville, NY, with offices worldwide, leverages storage-via-IP technology to provide high performance, network-based storage infrastructure. As the first software-only IP-based storage solution, IPStor is designed to help enterprises manage the expanding volume of enterprise data, while at the same time delivering mission-critical storage management and disaster recovery services that ensure business continuity.

IPStor goes beyond the traditional boundaries of device, RAID-cabinet, vendor/brand, and interface protocols to provide a truly enterprise-wide, network-based storage infrastructure. It is the industry's first open, high-performance, software-only storage infrastructure that aggregates and virtualizes storage resources and provisions services as SAN and/or NAS over IP.

IPStor's unique architecture unifies Storage Area Networks (SANs) and Network Attached Storage (NAS) under a common management umbrella and enhances them with high availability, active-active failover, snapshot, mirroring,² replication, zero-impact backup and recovery.²

IPStor is hardware-agnostic. FalconStor is working with industry partners to certify IPStor with off-the-shelf, standard components, such as Gigabit Ethernet, SCSI, iSCSI, and Fibre Channel. FalconStor will sell its solutions through Value Added Resellers, distributors like Bell Microproducts, and via relationships with OEMs.

Privately held FalconStor, Inc., is engaged in a reverse merger with Network Peripherals, Inc. (NASDAQ: NPIX), which will result in FalconStor taking control of the resulting company with IPStor as its flagship product.

plus the PR value of a showcase for the new technology.

Across the continent in San Jose, there is another Rorke Data RAID array and another Cisco switch. The original servers are there, too. Data is replicated from Montgomery to San Jose asynchronously in minutes, as well as being mirrored locally at Montgomery.

The basic deployment of loading the operating systems and test data in Montgomery, and testing cross-country replication, went smoothly. An IPStor-generated snapshot of the corporate data in San Jose will be copied to tape and shipped to Alabama for installation, and the incremental

log files since the snapshot will be replicated to Montgomery to complete the installation.

The only surprise FalconStor gave the folks at Bell Microproducts, according to James Dyches, was how easy it was. The technical staff was experienced in Windows and had to get up to speed on Linux commands to install the system, but this was not a big problem, and did not involve a steep learning curve. FalconStor was there to help. FalconStor more than stood behind their product, and has been around for the last three weeks to ensure that the system is working optimally, a treatment that early customers often get. Throughput on the SAN side in Montgomery is 85-100 megabytes per second. "Now, nothing waits. It is all fast, very fast," said Dyches. They are still tuning the system and the data center will open next week.

For Bell Microproducts, it was a matter of cost, and of trust. At the Bell Microproducts Solution Center, Randy Anderson of Rorke Data says he will be recommending IPStor to his customers. Bell Microproducts is confident that they will continue to get the 24x7x365 support when they need it, but things are running so smoothly that they do not expect to invoke it for a long time.

Conclusion

This is the story of a company that was wise enough not to make a difficult problem more complicated. Bell Microproducts looked for a solution that was not unnecessarily expensive, but in particular it looked for a solution that was simple. It has chosen to rely on its supplier and business partner, FalconStor, to assist it in finding the best solution. It also used FalconStor's expertise, which was considerable, to implement the solution. The choice was smoothly implemented and met or exceeded expectations, empowering the enterprise. Any story with a happy ending is a good one, and this one is.



² For a discussion of NAS versus SAN, see *The Clipper Group Explorer* dated September 27, 2000, entitled *SAN versus NAS: The Holy War Not Worth Fighting*. It's also at www.clipper.com.

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