PolyStor 8074A

Taming The Big Data Explosion

How to Get the Biggest Bang for Your Storage Dollar in the Big Data Era

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The Explosion of Big Data

IT administrators know the story all too well; just when they've got their network storage sorted out and running smoothly, along comes a new data processing demands that strain their systems to breaking point. Back in the 90's the email explosion and "paperless office" initiatives were the start of their challenges and then along came Sarbanes-Oxley requiring organizations to retain more documentation for longer periods of time. Along with those challenges came the hackers and identity thieves who forced the IT industry into increasingly deeper backups and data replication. That was bad enough but now we have increasingly common ransomware attacks that have compounded the storage and retention problems. These are some of the most significant factors that have driven the need for affordable high performance network storage but there's one driver that's eclipsing everything that has gone before: Big Data.

Big Data is the result of how collecting more data from more sources than ever before. What makes this data tsunami a different kind of problem than anything we've experienced before is that data that was once "offline" is now required to be immediately online right from the collection point. In today's Big Data environment there's no time for retrieval from large-scale archive systems; to be truly competitive, data has to be available in real time wherever it's needed along with assured integrity and security.

The Polywell Solution

Polywell, a leader in mega-scale storage solutions, has been meeting the unique needs Big Data for 30 years with solutions that not only meet today's challenges but also future-proof your infrastructure and allow cost-effective scale-up and scale-out as your storage needs evolve. Polywell's answer to the Big Data challenge is to combine the massively powerful Intel Xeon E5 processor with up to 1TB of ECC DDR3 RAM, add 74 drive bays that can hold a mix of SSD or HDD SATA or SAS drives delivering up to 900TB of storage combined with 3 channels of hardware accelerated RAID (a Polywell exclusive!) capable of delivering in excess of 6,000MB/sec of sustained reads and writes, all packaged in a super-compact 8U 19-inch rack form factor; that's the spec of the Polywell PolyStor 8074A, the solution to the biggest of Big Data challenges.

Hospital MRI Control Room

Big Data In the Real World

Need some examples where this technology has measurable, real world, short-term payback and long term value? Consider hospitals: Once upon a time, X-rays, lab results, and patient health records were considered "offline" resources and couldn't be accessed by a doctor without first identifying where the medical records were stored, then ordering the files, followed by waiting while archival storage was accessed, and then more waiting for the results delivered to her office. This way of organizing and accessing data was fine way back when but as Big Data exploded and competitive pressures mounted, it became obvious that we needed new data storage strategies.

Today the data handling, management, and storage requirements of the medical world have completely changed. X-ray and MRI imagery are digitized and sent over the network immediately from the capture point and immediately tied to a patient's digital medical record along with lab results, exam reports, and other data. This has dramatically improved information flow and allows doctors to collaborate and manage patient care far more effectively but the "dark side", at least for IT, is that a single patient record that was once a few kilobytes in size can easily grow to be measured in gigabytes and needs to be handled securely in real-time. Add to that the Health Insurance Portability

and Accountability Act (HIPPA) requirements for medical record accessibility and privacy and you have a serious data storage and management challenge.

Video and Big Data

Another driver in Big Data growth has been the explosion of video and still image recording and analysis and their impact on IT technology and resources. In particular, the rise of terrorism in the 21st Century created the demand for large-scale surveillance operations that, in turn, have created unheard of storage and data management requirements.

A great example of the Big Data impact of surveillance can be found at most modern International airports. These facilities now have networked video surveillance systems and the rise of advanced facial detection software connected to international law enforcement databases makes it possible to identify

Airport Video Surveillance

individuals of interest and alert security personnel in real-time. These technologies as well as other security systems such as millimeter-wave backscatter body scanners have contributed greatly to security programs but, at the same, they've driven data handling requirements through the roof putting enormous strain on networking and storage resources.

At one of the United States' largest airports they have hundreds of IP cameras monitoring public and restricted access areas, along with more than a dozen backscatter scanners. These systems generate in excess of 20TB of data per day, a serious data management challenge in itself, and to compound that, this massive amount of data must be stored securely for several months.

Watchguard Police Body Cam

Another upcoming Big Data challenge is emerging in police departments, where officer-worn body cameras, dash-cams, and even license plate scanners mounted on patrol cars create enormous amounts of data all day, every day. Because this data may be used as evidence in a court of law, it must be retained and archived for a long time before it can be discarded.

Data Centers and Big Data

And while we're diving deeper into the growth explosion of Big Data, let's not forget about corporate data centers and the requirement to store and produce, on demand, an enormous

Security Checkpoint Backscatter Body Scanner

range and amount of data, including email from every single user, individual workstation critical data file backups, corporate transactional data backups, and facility video surveillance monitoring, along with industry-specific data and research files.

Beyond the staggering amounts of data they are responsible for, many corporate data centers have another significant challenge; they are often one of the most budget-starved departments in the enterprise. Many corporate data centers have to work around compromises that were made a decade or more ago so they may find themselves saddled with outdated technologies and complex legacy solutions don't meet their new Big Data needs. In this situation, integrating new technologies is usually difficult, frequently cumbersome, and always costly.

Another storage-hungry data center

Third-party and ISP data centers are also experiencing the impact of Big Data and they have additional challenges such as data processing and warehousing for their customers which requires maximum redundancy and up-time. In the most sophisticated cases, multiple geographically dispersed data centers are "mirrored" to each other over high-speed links to provide 100% data replication with dynamic, real-time switching in the event an entire data center goes off-line. To achieve this requires not only a tremendous amount of redundant storage but also the ability to scale up and scale out on the fly.

CASE STUDY – N.T. Technology Inc. (A Polywell Data Center customer)

In the heart of Silicon Valley, nestled in a non-descript building, resides N.T. Technology Inc., a full-service independent data center providing web hosting and services to some of the biggest brands. For over 15 years, N.T. Technology has relied on Polywell products to power its data center and recently the company installed a Polywell PolyStor 8074A storage server to help manage its own Big Data explosion by accommodating storage demands from an estimated 15 Million daily connection sessions.

N.T. Technology PolyStor 8074A is configured with 74 6TB Hitachi SAS hard drives, configured as RAID 6 with hot spares. The primary function the PolyStor 8074A serves in the data center is for incremental backup of the websites N.T. Technology hosts.

N.T. Technology's PolyStor 8074A provides incremental backup for clients' websites and has 74 6TB Hitachi SAS hard drives, configured as RAID 6 with hot spares. Mr. Chi Hac, N.T. Technology's TCO, commented: "We do have HP and other technology brands in our data center but we selected the PolyStor 8074A for our production backup needs because it was the largest capacity, single box solution we could get our hands on and we've enjoyed a 15-rear relationship with Polywell. When we need something, we can pick up the phone and they respond quickly. Of course, price is another consideration for us."

Key Takeaway – The Polywell PolyStor 8074A Allows N.T. Technology To Cost-effectively Backup Customer Data With A Scalable, High Capacity Single Box Solution.

While the current configuration of N.T. Technology's PolyStor 8074A perfectly fits the company's needs, there's plenty of expansion capability. When required the unit will easily scale up in capacity with the addition of 10TB (and soon larger) drives, or be expanded over the network with additional PolyStor 8074A units via iSCSI. Connectivity performance can be enhanced with 10GbE networking. The remarkable configuration flexibility of PolyStor storage products effectively provides nearly endless scale up potential.

Higher Density, Better Price

Polywell's PolyStor 8074A is the logical upgrade to storage solutions offered by HP and EMC as neither offers a better storage density or better performance in this form-factor. Moreover, at its price-point, the PolyStor 8074A is in a class of its own. And where other companies offers mostly pre-set configurations, the PolyStor 8074A is fully customizable with one phone call to Polywell.

The Polywell PolyStor 8074A – World's Largest Capacity, Single Box Storage Solution

PolyStor 8074A Key Features at a glance

- Up to 4 Intel® Xeon E5 Processors for high IOPS applications and multiple concurrent tasks;

- High speed 10Gbit multi-port for network connectivity options including copper, Fibre Channel with SFP, and Ethernet over Infiniband;

- High performance hardware RAID acceleration delivers up to 8,000Mb throughput

- Support for RAID 0, 1, 5, 6,10, 50, and 60

- Highest storage capacity per unit: Up to 900TB in 4U form factor with front and back load: 8U 74 Drives, Top Load: 4U60 Drives / 4U90 Drive JBOD, 2x Front/Back Load: 4U72 Drives / 4U90J

- Mix and match SSD, SATA, and SAS drives for cost-effective tiered storage and file migration

- Up to 1TB memory for RAM disk and caching options

- SAS-12Gb and NVMe SSD Fusion Configuration supported

- High-availability configuration supported (multi-cluster server sharing one storage)

- True petabyte-scale solution, designed for Big Data and NoSQL

- User-friendly storage management software interface (root access open)

- Maximum mission flexibility: NAS, iSCSI, SAN hybrid configurations

- Redundant power supplies for built-in fault tolerance and maximum up-time

- Built with pride in the USA

- View complete specs

What Segments and Industries Does Polywell Serve?

Polywell network storage solutions have found their way into virtually every segment of the IT marketplace. Amongst the industries that have experienced the Polywell difference are:

Healthcare
Massive storage of digital medical records and imagery

Security
Airports, shopping centers, office complexes, and so on – ideal for surveillance and body scanner image files as well as backups for general operations

Law Enforcement
backup and archive of police officer and patrol car video recordings

Aerospace and defense
backup and archiving of development documents, engineering, test data, telemetry, etc.

Government funded projects
Backup and archiving of project data as well as supporting Sarbanes-Oxley compliance

Video production and editing
Massive raw video storage from field shoots at 4K or higher resolution

Pharmaceutical and biomedical research
Document storage mandated by government regulatory oversight, storage and archiving of clinical trial data

Corporate internal data centers

Ongoing backup and data replication service and Sarbanes-Oxley compliance applications

Third-party data centers and ISPs

Client incremental backups and disaster recovery and disaster mitigation replication applications

Government and military

Storage of massive amounts of intelligence gathering (signals, images, video, etc.)

Educational institutions

Massive storage needed by many of the advanced technology and research programs that generate humongous amounts of scientific data

Why Choose Polywell?

So, why should you trust Polywell to meet the rapidly evolving Big Data storage requirements of your business? You've have heard the old adage "nobody ever got fired for buying IBM" but times have changed and smaller, more nimble data storage vendors are taking market-share away from the traditionally "safe" brands such as HP, EMC, and others at an increasing rate simply because safe brands innovate more slowly and aren't as price conscious; Polywell is a leader in this new marketplace.

Polywell has been in the data storage industry for nearly 30 years, serving some of the biggest brands, many of them Fortune 500 companies. It's not just because of price (though it's worth mentioning our fully customized storage solutions are typically half the cost of HP and EMC); it's because Polywell is a proven innovator in network storage and the PolyStor 8074A is a shining example of our ability to deliver.

Service and support are also business critical areas in which Polywell excels. Ordering from our competitors can often be frustrating when you've got an urgent requirement but one call to Polywell's sales department will get you what you need faster than you'll believe. We offer free consultation paired with our pre-sales support services to assist customers in analyzing their network environment to develop a best-fit storage network solution.

In addition to storage technologies, Polywell offers a full lineup of desktop, workstation, and server solutions as well as specialized solutions for industrial automation, digital signage, and video and audio recording and editing.

Start A Conversation With Polywell

Ready to find out more about how Polywell networked storage solutions can help your organization cope with the Big Data Explosion? We'd welcome a discussion with you, so please reach out to us:

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