

Quantum's DXi8500 – The Next Step in Enterprise Deduplication

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Quantum has long been a leading vendor of data protection storage, and a number of years ago extended a rich history of tape system innovation with a series of new disk-based data protection appliances under the product family banner of DXi™. The family began with the introduction of several appliances that utilized Quantum's patented variable-length deduplication technology in 2005 and followed in 2007 with the release of its flagship DXi7500 enterprise-sized system. Since then, Quantum has continued to enhance its DXi offerings. In the past year, the company has completely refreshed and expanded its entire DXi product line with the new DXi6000 mid-range NAS and VTL appliances as well as the DXi4500 for the SMB and ROBO markets and, most recently, the introduction of the new DXi8500 enterprise system. For the large enterprise, the DXi8500 anchors a cost effective, multi-site, multi-tiered storage infrastructure.

Together with the latest enhancements to the DXi-Series, Quantum simplified and cost optimized their data protection offerings. Gone is capacity-based feature licensing, and in its place are complete packages including deduplication, replication, direct path-to-tape, all interfaces (CIFS, NFS, VTL), Quantum Advanced Reporting, and support for Symantec OpenStorage (OST) API. The inclusion of new data protection and reporting capabilities provide customers with significant added value when compared with competitive solutions like EMC's DD880 that require many of these applications to be purchased separately. This Solution Profile examines Quantum's new DXi8500 and its streamlined backup management, performance and scalability enhancements.

The Quantum DXi8500 – Bundled Performance & Scalability

With the release of the DXi8500, Quantum is taking enterprise deduplication to the next level. Multiple performance enhancements on the DXi8500 boosted ingest speeds to more than 3 times that of the DXi7500. Add to this the data protection solutions now bundled with the base system and Quantum

holds a strong price/performance position in the enterprise deduplication market. There also exists a multi-threaded story to the DXi8500 that includes enhanced scalability and management – let's look at each in turn.

Performance

According to Quantum's internal testing, the DXi8500 raises the bar another notch in the enterprise deduplication market by boasting

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data ingest speeds of up to 6.4TB per hour (Note that these speeds are claimed for Fiber Channel VTL configurations with no dependencies on additional software like Symantec's OST or EMC's DD Boost.) Looking under the hood there are a couple of enhancements responsible for driving these dramatic new performance levels:

1. Technology Advancements. The DXi8500 is equipped with the new Intel 6-core Nehalem processors. These processors are designed to handle multi-core operations and provide optimal speed by intelligently allocating processing resources to match multiple workloads streaming through the box.

The DXi8500 also takes advantage of an updated RAID 6 algorithm along with much larger data pipes inside and outside the box. Fiber Channel throughput is doubled versus the DXi7500 – going from 4Gbit/sec to 8Gbit/sec - along with the addition of six Fiber Channel ports, two 10Gbit/sec Ethernet ports and four gigabit Ethernet ports.

2. Data Management Intelligence Enhancements. Deduplicating data is a very compute-intensive task and many constraints limit how much of this process can be performed in memory. Having a portion of those tasks leverage data stored on high-speed disks has the net effect of dramatically boosting deduplication performance.

In designing the DXi8500, Quantum did just this. A block of 15,000 RPM, 6G SAS drives is now dedicated to the task of

index lookup operations as well as the management of some elements of the deduplication store's metadata. This multi-terabyte pool of high-speed disk allows block comparison lookups to take place much faster than competitive offerings that store all data on the same drives, regardless of its importance.

As noteworthy as the increased ingest speeds, Quantum's claimed read speeds may be more disruptive in the market. Utilizing the same enhancements for data ingest, the DXi8500's read performance is approximately 85% of the ingest speed, allowing data to be read out of the block pool at up to 5.4TB per hour.

Most competitors shy away from disclosing read performance statistics since reading data out of the block pool is usually a much slower operation. While being able to ingest data faster shrinks the backup window, all administrators understand that backup is just a means to an end. The real benefits to customers of high-speed read throughput are clear: faster recovery of data, less downtime and significant cost savings.

Scalability

Enterprise appliances need to provide scalability to meet the changing requirements of datacenters; the DXi8500 scales from 20TB to 200TB of useable capacity. The device includes interfaces for a wide range of environments: deduplication-enabled VTL, Common Internet File System (CIFS), Network File System (NFS) and Symantec's OST, along with native mode VTL and NAS shares. These protocols can be run simultaneously on the box or replicated in

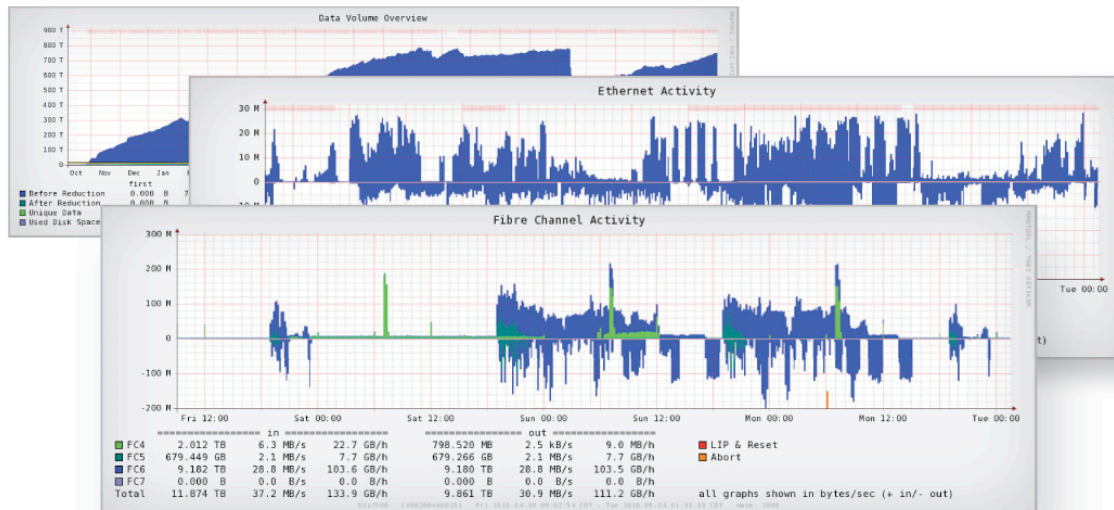


Figure 1. Quantum’s Advanced Reporting Software provides a detailed view of internal appliance operations.

from other interfaces. Providing protocol and interface versatility makes the DXi8500 well suited to its place at the center of distributed enterprise environments.

The preponderance of disk in the backup market is unquestioned; however there will always be a need for tape storage. The DXi8500 includes integrated path-to-tape technology that provides a dedicated path out of the box and writes directly to an attached tape library, bypassing the backup server. Direct path-to-tape is integrated with most backup applications. The DXi8500 works with the backup software to provide a single point of management and fully synchronized backup catalogues, across both disk and tape, making it well suited for multi-site and multi-tiered enterprises. Data is kept on disk in near-line status and can be kept there even after a copy is made on tape, presenting customers with short and long-term data retention strategies across multiple storage tiers.

Management

Consolidation remains a common goal for enterprises increasingly challenged by complexity of systems across widespread environments. Consolidating backup data requires both high powered systems and systems with the management sophistication to deliver efficiency and insight under an onslaught of data.

As part of the data protection solution set bundled with the base system, Quantum offers the Advanced Reporting software for the DXi-Series. Advanced Reporting provides internal statistics on the DXi such as CPU utilization or activity by port along with flexible trend analysis for smarter planning and lower long-term storage costs.

For a single portal to manage, report on and monitor all Quantum-based solutions in an environment – tape and disk - Quantum

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offers the optional Vision management software with the DXi8500. The resulting benefits to IT are faster time to resolution and reduced administrative time of their enterprise.

These enhanced management capabilities – common and available across the DXi portfolio – provide customers with another extensive value-add that sets them apart from the competition.

Architecting the Protected Enterprise Around the DXi8500

The DXi8500 is not only a ready foundation for next-generation intelligent data protection in the enterprise, but it simultaneously leverages a technology infrastructure, common across the family of DXi products. With a common foundation of technology, the DXi8500 can integrate with all of the other DXi systems, and extend the enterprise's data protection capabilities. Let's take a look:

Setting the Foundation for the Highly Available Datacenter

When organizations rely on computing systems for critical business operations, keeping those systems and the associated data within them available is essential to the health of the business. Nothing is more catastrophic to a business than an unexpected system outage. Therefore, a typical disaster recovery plan within most enterprise environments involves deploying a remote failover infrastructure to provide a secondary or "standby" datacenter to take over operations in the event of a disaster to

the primary datacenter. With its ability to handle multiple presentations simultaneously, along with built-in remote replication and management capabilities, the DXi8500 can easily be deployed in multiple locations, with distributed failover across locations. Such an approach not only enhances data resiliency, but also does so with significantly less footprint and greater management efficiency than other disk-based backup approaches commonly seen in the market.

Anchoring the Distributed Enterprise

On the heels of various regulations instituted over the past decade, corporations need to ensure data is protected across the entire enterprise, regardless of location. Thus, protecting data at remote locations has shifted from being a nuisance to now being a legal necessity. Many remote offices are isolated from the corporate datacenter and require local protection of their data with consolidation to the main datacenter. Over the last few years, deploying deduplication locally at remote offices used in conjunction with remote replication back to a central datacenter has proven to be a successful blueprint for protecting distributed enterprises.

Quantum's DXi-Series contains a range of products appropriate for almost any need that can be coordinated to centrally protect the data behind the most distributed of enterprises. The DXi4500 and DXi6000 series of backup and deduplication appliances, providing protection in remote and branch offices and mid-range environments, can easily copy protected data

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to a centralized DXi8500-based site. Utilizing Quantum's built-in remote replication in conjunction with remote office appliances allows data to be deduplicated locally, encrypted and then replicated to the DXi8500 at the corporate datacenter, eliminating potential bandwidth bottlenecks. The centralized DXi8500 can then easily write data directly to tape, all under application control. Furthermore, end-to-end data protection and movement can happen under a single unified management umbrella, regardless of how complex or distributed an enterprise is.

Taneja Group Opinion

As businesses continue to recognize the benefits from capacity optimization technology, it is creating a rapid and lasting shift in how backup data is captured and stored. The benefits associated with deduplication are just too compelling for IT to pass up, especially in the enterprise. It's no wonder the deduplication market is one of the hottest segments in the storage industry.

But in a hot segment, in order to rise above the noise, deduplication vendors need to continually innovate, push the envelope and provide clear competitive differentiation.

Quantum's differentiation has long been centered on delivering tightly integrated data protection products – across highly optimized platforms – that extend anywhere data is stored. With the refreshed DXi-Series, Quantum now offers one of the most expansive collections of data protection storage systems available, with a system for nearly any-sized customer.

The latest release in the series, the DXi8500, provides significant performance, scalability and management benefits to the enterprise that raises the competitive bar and forces EMC and the rest of the market to react to avoid being drowned out. At this writing, the DXi8500's performance enhancements and cost optimization of their data protection offerings have nicely positioned Quantum as the new price/value leader in the noisy deduplication market.

If you are looking to leverage deduplication technologies in your environment to reduce overall storage costs, Taneja Group recommends looking at Quantum's DXi-Series of backup and deduplication appliances. The DXi-Series offers a sustainably differentiated solution.

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