



Analytico, Inc.
Analysis from all Angles™

DataDirect Networks

Extreme Storage For An Extremely Digitized World



*Tom Trainer
President
Analytico, Inc.*

Designing and Delivering Storage for the Extremes

The task can be daunting, it can take years of design, development, acquisition, integration of disparate products, and application testing that can thwart even the largest global technology companies. Especially if uniquely designed products are combined to solve problems for which they were initially not designed to solve.

Why? One answer may reside in the working with theories on how technologies will inter-operate and how they can be tweaked, or adjusted, from their original design, or form, to meet the current needs of demanding digital requirements as opposed to designing storage systems for extremes of performance, throughput, density, and scalable capacity from the ground up.

What is the difference? Why not cobble together isolated products and attempt to use them for new purposes? The answer comes back, full circle, to application engineering and purpose built architectures and experience, built over time, that satisfy the massive data I/O requirements for extreme digital applications.

In the highly creative and fast paced worlds, of digital broadcasting, digital post production, CGI, on-line communities, entertainment, high-performance computing of scientific applications, and geophysical exploration and exploitation, there is zero time for theories and tweaking to be done in real-time. Extreme storage products must have proven and trusted real-time characteristics in environments where I/O rates have become business-critical numbers and stellar other characteristics, such as power efficiency, connectivity, and density per square foot which have become jacks or better in order to play.

Yesterdays' typical user profile, defined as a person who used a mainframe application to process a financial transaction, or one who updated a database and who expected sub-second response time – has changed dramatically. Today, while that user may yet exist, he or she now demands drastically faster response times and he or she joins a new generation of users who span uniquely new profiles. From the age of eight to 80, users now demand instant responses via cloud computing environments running worldwide video gaming, information sharing, and internet-based learning content. To top it off, access to information must be 24x7xForever and downtime is no longer a word in this new generation's vernacular.

When it comes to designing and delivering systems for extremely intensive streaming environments, sharing communities, or simply any environment that demands extremely high bandwidth storage (i.e. 100 GB's/sec of consistent throughput), users must demand extreme real-world application experience from their vendors. After all turn-about is fair play when bandwidth is the business-critical element.



Comparisons Help Make Decisions

	DDN S2A9900	EMC-CX3-80	HP 9100	LSI XBB2	SUN X4500 Thumper	Isilon IQ
<i>Availability</i>	Now	Now	Q4 2008	Now	Now	Now
<i>Host Throughput</i>	6 GB/6GB sec	1.6 / 1.6 GB/sec	3.2 GB/sec	4.4 / 3.2 GB/sec	800 / 500 MB/sec	100 / 50 MB/sec
<i>Single System Max Capacity</i>	1.2 PB	471 TB	246 TB	480 TB	48 TB	12 TB
<i>No Performance Penalty RAID 6</i>	Yes	No	Q4	No	No	No
<i>No Performance Penalty Drive Rebuild</i>	Yes	No	Unknown	No	No	No
<i>No Performance Penalty Integrity Checking</i>	Yes	No	No	No	No	No
<i>No Performance Penalty Write Penalty</i>	Yes	No	Unknown	No	No	No
<i>No Performance Penalty Error Detection & Correction</i>	Yes	No	Unknown	No	No	No
<i>Drive Spin Down Power Saving</i>	Yes	No	No	No	No	No
<i>Same Enclosure Intermix SAS & SATA</i>	Yes	No	No	No	No	No

Table 1 – Availability / Feature / Function Comparisons



Table 1 above illustrates comparisons between various storage subsystems that are positioned for extreme content-intensive environments. HP is the latest entrant in this field, with its newly introduced “Extreme” Data Storage System, however the product is not all that extreme considering that it offers less than ¼ the capacity of the DataDirect Networks S2A9900, as well as less than half the host throughput and no Dynamic MAID (D-MAID) capability. With D-MAID, DataDirect Networks enables clients to dynamically spin down LUNS and enter a power saving mode based on user-specified parameters. Contrast to other MAID implementations, DataDirect Networks can have all of its disks spinning up or down simultaneously which enables transparent access to all data sets and truly makes this the greenest storage platform for extreme environments so far. Users must pay careful attention to product availability, features, and function comparisons while in the architectural and purchase decision-making phases of high performance scale-out. Product comparisons such as the chart above help users make the correct implementation decisions as some products, like HP’s EDS9100, only exist in press release form at this time, and will not be generally available for another 8 months.

Time Lines and Experience Have Meaning and Impact

One vendor, DataDirect Networks, has over 10 years of design, development, and real-world storage system delivery and installation experience in extremely high bandwidth environments. Architected from the onset to meet the time-sensitive performance demands of the broadcast industry, DataDirect Networks has supplied extremely high performance storage for many years.

The benefits of a long history in design and implementation in extremely high performance environments are clear: experience, availability, capability, and a trusted vendor installed in a wide range of vertical markets. Primary research and discussions with active users indicates DataDirect Networks has 100’s of PB’s installed in vertical markets such as:

- Internet – Photo and image sharing; Online Services
- Oil & Gas – Major global exploration, process, and delivery companies
- High Performance Computing – Research, Scientific, Aeronautical
- Entertainment – Television Industry, Motion Picture Industry & Periphery

Over the many years of experience, DataDirect Networks have become the standard product used within extreme backup and archive solutions used by major corporations, worldwide, including:

- Financial Institutions
- Automotive Industry
- Worldwide Package Delivery
- Scientific
- Aeronautics



In fact, many major computer and solutions integrators have embedded the DataDirect Networks high bandwidth products within their overall larger solutions simply because of the years of experience, ease-of-deployment, and assurance that the extreme requirements will be met.

Summary - Recognizing Experience, Integrity, and Assurance

Analytico believes that over 10 years experience in design and delivery of high performance storage systems has evolved into an ability by DataDirect Networks to deliver products that go beyond meeting the standard requirements--they meet the extreme environment requirements. With storage platforms that form the data backbone of the XBOX Live and Zune Marketplace; that serve as the throughput enablers for Pacific Title to create a multitude of HD trailers for the forthcoming box office mega hit, The Dark Knight; to the storage that enables Slide.com--the 200th most visited site on the Web--to serve images to millions of users on Facebook.com, DataDirect Networks is the leader in extreme storage environments.

Users who define, and demand, high I/O bandwidth as mission-critical should look to experienced storage providers who bring integrity and assurance to their environments. We suggest users take an analytical approach to broad marketing claims and promises of vast solutions, long lead times, and combined solutions that are intended to provide something new.

The bottom line is that DataDirect Networks represents Extreme Storage deliverable today, while competitor's recently announced production intentions are extreme for sure—with extremely long lead time to actual product delivery.

