Storage Research Report

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I. Executive Summary

A. Purpose

The purpose of this report is to examine the capital market, technological and competitive trends and assess near and medium-term mergers & acquisitions ("M&A") activity and strategies in the data storage sector. This report provides an overview of the industry, looking at the different sectors within data storage, an understanding of the current macroeconomic environment, structural market trends, corporate finance activity and an analysis of M&A activity.

B. Summary

The data storage market is highly fragmented and is experiencing continual technological change and significant macroeconomic and capital market pressures. The existence of an abundance of market players at all levels, from large-cap enterprise system providers to next-generation technology concept start-ups, ensures that competitive threats remain high and that success will be difficult in a declining economy. The evolution of technology standards has been accelerated by the economic downturn and collapse of technology spending. Competitors are creating robust, quality solutions that leverage currently available technology while reducing their development plans and activities for next-generation architectures. This is due to the fact that corporate consumers are focused on leveraging their existing IT assets and not expending cash flow for additional first-generation technologies. As corporations in the public equity markets become judged on their ability to conserve and grow cash flow, the pressure on IT departments to do more will continue to grow in the near-term. This significantly reduces opportunities to sell revolutionary technologies into the enterprise. The other source of capital for technology development, the capital markets, have ceased to provide development capital for all but the most established and effective organizations. IPO activity has been non-existent since 2000 and venture capital continues to dwindle. Only those companies that currently have significant balance sheet resources and profitable business models are assured survival going into 2003.

While revenues are stabilizing for the largest players, hardware manufacturers are quickly finding that their offerings are becoming commoditized. While data storage revenues are expected to be more resilient than most technology sectors, a substantial rebound in spending appears to be less likely with continued economic pressures. Many companies have or are in the process of reorienting their business models to focus on software, services and management. They are doing so in pursuit of higher-margin business models and because software appears to be a solution that can tie together disparate storage technologies and architectures that currently exist in the market.

This has created an environment where the established large-cap storage companies have seen their market capitalizations decline at roughly twice the rate of the technology focused Nasdaq. For smaller data storage companies, bankruptcies are beginning to appear as many companies have developed business models around technologies that are too advanced for the current state of technology and consumer market. These bankruptcies are usually Chapter 7, or liquidations, due to the lack of assets and revenues present at other "old economy" bankruptcies.

M&A in the data storage industry reached record levels in 2000 and 2001. Activity dropped off a lightly in the last quarter of 2001 and the first quarter of 2002, but is expected to reaccelerate as large storage companies look to broaden their offerings, strengthen their technology and take advantage of reasonable valuation levels. Accordingly, start-ups and other private storage companies will seek sale opportunities, as the IT spending environment will prevent them from scaling their revenues and business models to profitability. Agile expects the major storage customers to seek out the larger, well-established services firms for assistance in establishing their networked data storage strategies. Additionally, the number of companies competing in all sub-sectors of data storage creates a hyper competitive environment that reduces the opportunity to capture profits. Margins will continue to be pressured as competitors reduce prices in the face of financial distress.

Those companies competing in the data storage sector that are reliant upon additional capital funding from either the public or private equity markets should consider a strategic sale process within their current corporate finance activities. Many companies wait to explore M&A opportunities until it becomes clear that they will not be obtaining additional funding. This results in lower valuations, extended sales

processes and, often, failure to consummate a transaction. Delaying a sale process removes strategic options within the process and negotiating leverage in a market where the number of credible strategic buyers is falling rapidly. Many buyers are facing their own issues regarding growth and a falling stock price for currency.

Agile has experienced that a majority of recent M&A activity has consisted of large enterprise system vendors adding additional technology to their portfolio to meet customer demand for complete offerings. We believe that services and total solutions provision will also drive M&A activity as data storage embraces these business models. Enterprise customers realize that in order to gain a strategic advantage in their IT infrastructure, they need to rely on focused expertise provided by the leading services firms. Indeed, other more mature software sectors, such as databases, derive a significant amount of their revenues from service and maintenance contracts. For storage hardware, we expect to see transactions that increase operating and revenue scale and allow for economies of scale.

Agile believes that smart companies make their greatest strategic moves during industry turmoil. History has shown that successful companies place counterintuitive bets in a downturn in order to dramatically transform their market positions. If the core business is worth growing, focused acquisitions during market downturns may actually reduce risk, not increase it. In summary, we believe an effective M&A process is interconnected with – not separate from – corporate strategic planning. A clear strategic vision that considers changing markets and business models and is linked to rigorous valuation will be a strong predictor of M&A success.

This report will look at the dynamics involved in each sub-sector and describe the rationale for consolidation trends, demonstrated with recent activity and the opportunities that may lie ahead. This report assumes the reader has a working knowledge of the storage industry.

II. Industry Overview

The data storage market represents a dichotomy. On one hand, the fundamental demand for data storage continues to grow and the technology continues to evolve. IDC is forecasting growth for 2002 for SAN and NAS to be 8.3% and Dataquest projects the storage networking market will grow at a 67.0% CAGR to $16.9 Billion in 2005.1

On the other hand, these forces are being counterbalanced by a near-term slowdown in IT spending and constricting capital markets. A survey completed by META Group indicates that 2002 corporate IT spending levels would be unchanged from 2001 but security and storage spending would exceed those originally anticipated.2 Forrester agrees, saying sixty-one percent of Global 3,500 firms will consider purchases of hardware, software infrastructure, or network bandwidth in 2002. Only 26 percent will consider purchasing enterprise applications -- CRM, ERP, procurement, or supply chain -- which is down from 58 percent last year.3

Total venture funding for technology companies in 2001 fell 50% from 2000 levels and there were no storage related IPOs in 2001. This macroeconomic conflict creates a situation where additional technology development is desired, but the lack of spending and capital is reducing the financial resources available to companies to fund it.

Agile has witnessed three factors that are largely responsible for the decline in IT spending. First, is the decline of technology dependent start-ups that created unabated demand for complex systems. As EMC indicated in their first quarter 2001 10-Q that their margins for storage declined approximately 4%, primarily due to reduced sales to internet-related companies.4

Second is the reawakened focus on expense management and leveraging existing resources for economies of scale. As revenues for companies in all industries come under pressure, companies are looking to improve profitability through expense management efforts.

Lastly, the IT department budgeting process has temporarily halted many spending decisions as businesses revisit their capital expenditure plans, including IT, in the face of new realities. As the late 90's were characterized by expanding market opportunities and revolutionary technology; 2002 is transitioning towards declining spending and evolutionary solutions.

It is this tension between the current economic realities on IT expenditures and the fundamental need for storage capacity that defines the opportunities available for current storage market participants.

A. Future growth drivers

However, as initially stated, the fundamental drivers that propel demand in data storage still exist. Those factors include an increase in the types of applications being utilized by corporations to manage their businesses, the use of centralized storage repositories for enterprise data management and the proliferation of Internet, email and multimedia applications and data. A UC Berkeley study projects that the amount of information will double every year for the foreseeable future.

Companies are relying on an increasing number of sophisticated applications to manage and run their businesses. Within the last five years a number of application markets have emerged: Customer Relationship Management, Sales Force Automation, Procurement Systems, Business Intelligence, Data Warehousing, Virtual Markets and Supply Chain Management. Each one of these application sectors generates a significant amount of data that increases demand for enterprise storage.

Additionally, applications have increased in sophistication and complexity, capturing more granular data on their customers, processes and suppliers. This increased level of detail allows for companies to perform more sophisticated analysis on the trends that affect their business and act accordingly.

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[1] DM Review, Will IT Spending Flatline in 2002
[2] ibid.
[3] Forrester Research press release, 4/1/02
[4] EMC 10-Q, May 14, 2001

Companies are centralizing this data; moving the data from users' desktops to centralized repositories and data warehouses.

Digital multimedia is also a significant consumer of storage resources. Media itself requires a substantial amount of storage capacity; MPEG requires an average of 2.8MB per minute of video.[5] Whether it consists of production efforts of major motion pictures or mp3's sent to a friend on an internal corporate intranet, the amount and size of video, audio and graphic files are increasing rapidly.

B. Proliferation of new data storage technologies and standards.

Innovation in the data storage industry continues at a rapid pace but it is clear that the technology hasn't completely matured yet. The innovation is creating improvements on the hardware, the connections between the storage devices and the software that manages these increasingly complex systems. This has resulted in competing technologies that companies are trying to position as the standard for the future of data storage. We specifically note increasing competition amongst various storage interconnect standards: Fibre Channel (FC), SCSI-over-IP (iSCSI) and Fibre Channel-over-IP (FOIP). The debate between SAN and NAS architectures appears to be quieting down as it appears that both system architectures will co-exist within enterprise storage topologies. While many industry commentators have positioned this competition as winner-take-all propositions, it is likely that most of the standards and technologies will leverage their strengths to maintain their niches within the overall data storage market.

A significant number of alliances and joint ventures demonstrate the speed of technology evolution and the effort companies are using to stay current. The main driver behind this is an attempt to offer complete services to the enterprise customer. As technology providers realize that it is impossible to be all things to all consumers, they are identifying premier complementary technology companies and creating joint go-to-market efforts. As part of this, many companies are pushing their products to be compatible with as many other systems and standards as possible.

Additionally, success in technology leadership is often dictated by the strength and sales execution of the companies that support it not necessarily the quality of the technology. Management solutions that encompass a number of different storage topologies are being developed, allowing companies to efficiently manage their disparate systems using one point of control and allowing heterogeneous storage architectures.

The variety of standards and technologies has created a proliferation of companies focused directly on the data storage market. Additionally, we note that there is significant competition throughout many of the subsectors as well. For instance, we identified 12 competitors focused solely on the IP Storage Switches subsector. Other data storage subsectors exhibit similar characteristics, which create an environment of consolidation. Please review our company profiles later in this report for additional detail regarding the subsectors and the companies that compose them.

[5] internet.com, Does Multimedia Have a Dark Side?,

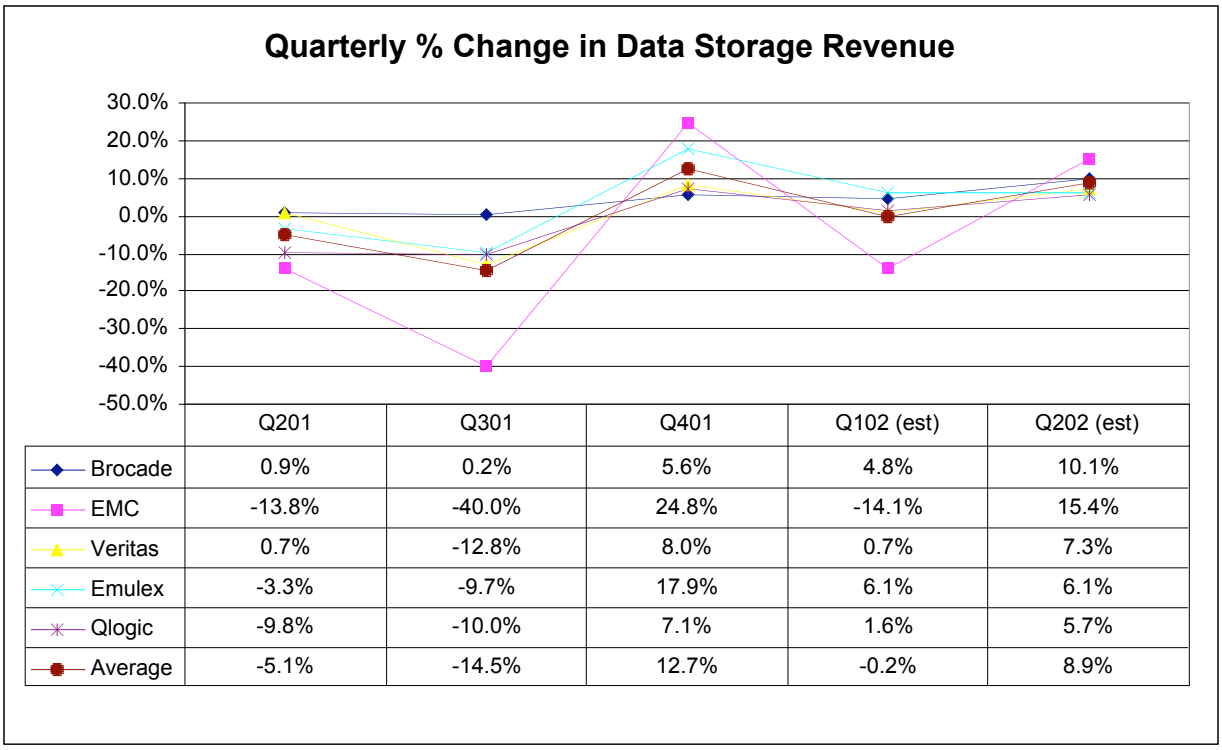
III. Industry Trends

A. Revenues are stabilizing

Spending on data storage appears to be stabilizing, while many areas of IT spending continue to decline. An examination of the quarterly spending by five leading public data storage companies illustrates that the first quarter of 2002 remained relatively stable, with a decline of 0.2%. Most of this decline is a result of the 14.1% drop experienced by EMC; the rest of the companies experienced sales growth of 0.7% to 6.1%. Additionally, the market is expecting these companies to experience 8.9% growth for the second quarter of 2002.

This stabilization in revenues is significant, since it provides senior management with greater visibility of and understanding of where the core of their business is and a level of certainty around which to perform strategic planning. Growth plans will be significantly reduced from 2001, but the probabilities associated with uncertainty in performance are reduced.

Figure 1



	Q201	Q301	Q401	Q102 (est)	Q202 (est)
Brocade	0.9%	0.2%	5.6%	4.8%	10.1%
EMC	-13.8%	-40.0%	24.8%	-14.1%	15.4%
Veritas	0.7%	-12.8%	8.0%	0.7%	7.3%
Emulex	-3.3%	-9.7%	17.9%	6.1%	6.1%
Qlogic	-9.8%	-10.0%	7.1%	1.6%	5.7%
Average	-5.1%	-14.5%	12.7%	-0.2%	8.9%

B. Software and services growth

While the initial stage of development focused on hardware solutions, it is clear that the next stage of development is focused on the software that manages storage resources (Storage Resource Management or SRM). This need is driven by increasing storage options (SAN, NAS and DAS), companies desire to manage more physical resources with fewer human resources and a reluctance to completely replace legacy storage assets. As the price of hardware begins to decline, the price of hiring talent to service becomes relatively more expensive. Software solutions enable IT departments to exercise greater control using IT resources without having to scale personnel correspondingly. Aberdeen

research indicates that the SRM market will grow at a compound annual growth rate (CAGR) of 27.7% to nearly $21 billion by 2005.[6]

Gartner defines SAN Management as those systems that provide the following functionalities: discovery, visualization, event management, launch element management, asset management and reporting. They further define Storage Resource Management as the system which manages direct attached storage, SAN and NAS resources by providing policy-based management, storage provisioning, service-level management and chargeback, extended security and SAN design and implementation support.[7] The market has been slowed as it worked to develop common interfaces and Application Program Interfaces (APIs) that will allow software solutions to have greater interaction and control over the hardware components.

But software is the intermediate step on the growing demand for whole data storage solutions, not just piecemeal hardware and software products. the451, a technology strategy research firm, advises that storage solution providers should offer solutions that include services, software and hardware in order to defend against competitive threats.[8] While Storage Service Providers (SSPs) were figuratively hot out of the gate, their popularity has cooled as of late due to delays in enabling technology, namely storage-over-IP solutions. Due to the complexity of data storage systems, software companies will necessarily become involved in providing services. Just as Oracle generates over 60% of it revenues from services sold around their database platforms, data storage software vendors will expend significant resources assisting their clients' implement and maintain their systems.

C. Hardware standardization/commoditization

To examine the effects of standardization on hardware, one only has to look at the server industry as a recent exhibit. Prices for servers have declined dramatically with most of the development efforts centering on creating less expensive solutions that occupy less real estate in the data center. Dell's entry into the market, with its relentless focus on costs and efficient manufacturing, should provide a clear indication of the direction of this market. The storage market is not immune. The number of companies providing Host Bus Adapters (HBAs) is evidence of the forces of standardization. Historically, the proliferation of standards has supported a number of market participants. However, if one standard is able to capture and extend leadership in the data storage market, then those companies that are focused on alternative standards will be pressed to shift their focus or face a limited/declining share of market.

It is likely that those companies with massive economies of scale, such as EMC, HP/Compaq, IBM, Microsoft or Dell, will dictate the direction of data storage evolution.

D. Virtualization

Virtualization separates the representation of the storage to the server operation system from the actual physical storage.[9] This abstraction of the resources to end-user provides for better storage resource management. Having a centralized control system will allow for better reporting, analysis and control surrounding storage activities. This will allow enterprises to better forecast and meet their storage demands.

Storage has become a stew of different systems that employ different standards, operating systems and software controls. There are many reasons why diversity of storage architectures exists within enterprises. In the current economic environment companies are less likely to abandon existing storage investments and are instead searching for solutions that will leverage their current asset base. Mergers and acquisitions have created far-flung system architectures that were designed using different goals, methods, standards and protocols. As data management becomes a strategic activity of the enterprise, control over storage resources has become more centralized. Additionally, current efforts to create

[6] Aberdeen, Worldwide Storage Management Spending: Forecast and Analysis 2001-2005, March 2002
[7] Gartner, SAN Management Tools are Finally Here, November 16, 2001
[8] the451, Storage Virtualization: Bonanza or Banana Peel, October 2001
[9] the451, Storage virtualization – bonanza or banana skin, October 2001

integrated systems among multiple vendors have fallen short of consumer expectations. Virtualization offers IT departments the ability to weave separate systems into a unified resource with centralized control.

Virtualization also continues the tradition of increasing utilization efficiency in networked storage architectures. Because virtualization sits at the top of the storage fabric, it can provide high-level management of all of a company's storage resources.

However, this also means that hardware will continue to experience pressures in becoming a commodity as the IP for storage is abstracted into Virtualization systems.

E. Storage Service Providers Change Course

Storage Service Providers (SSPs) have had a relatively short half-life, even when compared to the rapid rise and fall of other leading edge technology sectors. The fuel was thrown on the fire with StorageNetworks IPO in July of 2000.

However, competition soon entered from unexpected places. Recently, Regional Bell Operating Companies (RBOCs) such as SBC, BellSouth and Qwest have all announced plans to offer outsourced storage to their customers. These RBOCs have the advantage of having much larger economies of scale, an existing customer baseand more comprehensive product offerings to combine with their storage offerings. This allows the RBOCs to offer the services at a lower cost. Additionally, RBOCs have a significant amount of experience offering outsourced services to large enterprises. Larger enterprises value stability and vendors that they can trust; something the start-up crowd never established.

To add to the competitive pressure, large enterprise providers such as IBM, CSC and Comdisco are also offering outsourced storage services.

SSP start-ups (and one public company) are attempting to adjust to the new economic and competitive realities, with two companies changing strategies to software management models. StorageNetworks announced a joint venture with EDS to provide its software as a management framework for EDS' internal data storage management. StorageNetworks will provide both primary and backup data storage management software to EDS Service Management Centers.[10] Start-up i-drive has recast itself as Anuvio Technologies, a developer of storage management software that will be involved in two main lines of business. First, it plans to license its Web file-sharing software to telecommunications providers. Second, its other business will be in the storage resource management space, providing network attached storage (NAS) aggregation and capacity management.[11]

[10] StorageNeworks Press Release, January 31, 2001
[11] i-drive reborn as Anuvio, Byte & Switch, January 15, 2002

IV. Storage Technology

For this report, Agile Equity divides the storage technology universe into four broad areas:

- **Data Storage Fabric** – The devices that compose the interconnections within networked storage environments. Typically these devices utilize Fiber Channel or other advanced, storage specific interconnection standards. This includes switches, HBAs, routers and SAN Appliances.
- **NAS** – Those devices that connect directly to the LAN to provide file-based storage resources.
- **Legacy Solutions** – This area includes storage solutions that are subsystems within modern SAN/NAS structures such as Direct Attached Storage (DAS), Redundant Array of Independent Disks (RAID) and tape/library systems.
- **Storage Management Software** – The software that provides control, reporting, analysis and management of storage resources and activities. This sector includes Virtualization, Visualization, Backup / Replication / Restore, Storage Resource Management and other storage software categories.

Within each area, there are as many different specific technologies as there are companies -- if not more as companies develop different solutions for various customer needs. It is also important to note that many of the solutions currently being offered span several of these areas at once. As companies continue to drive towards whole solutions for their customers and become more integrated throughout the storage architecture, it is difficult to discern specifically where one technology ends and another begins.

A. SAN Fabric

The SAN Fabric sector is composed of those devices -- switches, directors, HBAs, routers, gateways and servers -- that create the SAN infrastructure within an enterprise's storage environment.

The SAN can be viewed as an extension to the storage bus concept that enables storage devices and servers to be interconnected using similar elements as in Local Area Networks (LANs) and Wide Area Networks (WANs): routers, hubs, switches and gateways. A SAN can be shared between servers and/or dedicated to one server. It can be local or can be extended over geographical distances. SAN interfaces can be Enterprise Systems Connection (ESCON), Small Computer Systems Interface (SCSI), Serial Storage Architecture (SSA), High Performance Parallel Interface (HIPPI), Fibre Channel (FC) or whatever new physical connectivity emerges. SANs are used to connect shared storage arrays to multiple servers, and are used by clustered servers for failover. They can interconnect mainframe disk or tape to network servers or clients, and can create parallel data paths for high bandwidth computing environments. A SAN is another network that differs from traditional networks because it is constructed from storage interfaces. Often it is referred to as the network behind the server.[12]

Much of the SAN Fabric component terminology is derived from the networking lexicon as many of the products perform similar functions but tuned for SAN activities. The following are the most common devices that compose a SAN Fabric:

- **Directors** - High-speed switches that provide dynamic connection capability between attached units: servers and storage devices. With a Director's ability to create connections dynamically, a single channel can communicate with many control units, and can communicate with many channels on one or more host servers. This results in fewer channels and control units versus direct paths.
- **Hubs** - Used to connect up to multiple nodes into a logical loop. All connected nodes share the bandwidth of this one logical loop. Each port on a hub contains a Port Bypass Circuit (PBC) to automatically open and close the loop to support hot

[12] IBM Redbook, Introduction to Storage Area Networks, Sept. 1999

pluggability. Multiple hubs and links can be implemented to provide alternate path failover capability for high availability server environments.

- **Bridges** - Facilitate communication between LAN/SAN segments and/or networks with dissimilar protocols. An example of this would be a FICON bridge, which allows ESCON protocol to be tunneled over Fibre Channel protocol. FICON Bridges reduce the requirements of ESCON connections, ESCON channels, ESCON Director ports, and so on; they support large and small block multiplexing.
- **Gateways** - Station used to interconnect two or more dissimilar networks or devices, and may or may not perform protocol conversion. These boxes are typically used to provide access to WAN from a LAN. With gateways, SANs can be extended across a WAN.
- **Switches** - The highest performing devices available for interconnecting large numbers of devices, increasing bandwidth, reducing congestion and providing aggregate throughput. Fibre Channel protocol was designed specifically by the computer industry to remove the barriers of performance with legacy channels and networks. When a Fibre Channel switch is implemented in a SAN, the network is referred to as a fabric, or switched fabric. Each device connected to a port on the switch can access any other device connected to any other port on the switch, enabling an on-demand connection to every connected device. Various FC switch offerings support both switched fabric and/or loop connections. As the number of devices increases, multiple switches can be cascaded for expanded access (fanout).

Connectivity Standards

Connectivity standards proliferate and are continuing to develop. Significant development in standards not yet conceptualized has slowed due to the lack of capital to fund start-up activities and encourage entrepreneurial efforts in those sectors. The following are some of the standards that currently exist or are close to being brought to market.

Figure 2

Standard		Throughput	Distance	Other Notes:
ESCON	Enterprise System CONnection	17 MB/sec half-duplex	43 km	
FICON	FIber channel system CONnection	100 MB/sec full duplex	100 km	
UltraATA		66 MB/sec		
SCSI	Small Computer System Interface		25 meters	16 devices
SSA	Serial Storage Architecture	4 x 40 MB/sec		
FC - AL	Fiber Channel-Arbitrated Loop	100 MB/sec		Loop architecture, 127 drives per loop
FC	Fiber (or Fibre) Channel			3 physical topologies: Point-to-point, Loop or Switched
ISCSI	Internet SCSI	GbE “wire speed”		Designed to transport SCSI commands over a FC infrastructure
FCIP	Fiber Channel over TC/IP			Designed to transport FC frames over an internet infrastructure
iFCP	Internet FC Protocol			Same as FCIP but with different addressing schemes. Allows for point-to-point tunnels to connect to FC SANs together with Ethernet.
Infiniband	Infiniband			IDC projects 50% of servers to be Infiniband enabled by 2003.

Currently, the largest technology issue facing the SAN Fabric sector is debate between the incumbency of Fiber Channel versus the promise of IP-based solutions. It appears that the economic slowdown and

constricting capital markets may throttle IP-based development as funding for this area continues to fall. Fiber Channel is firmly entrenched in many storage architectures and may be good enough for companies that are increasingly focused on expenses versus developing exponentially scalable storage environments. However, the promise of developing a network architecture that will contain both the application and storage traffic all in IP is very appealing. Enterprises also conceptually like the idea of possessing one network rather than two separate networks; each requiring their own capital expenditures, maintenance and personnel expertise. FCIP and iSCSI solutions combine the advantages of both, allowing companies to leverage their existing Fiber Channel investments while building an IP-based storage environment.

B. NAS

NAS describes technology in which an integrated storage system connects directly to a messaging network through a LAN interface, such as Ethernet, using messaging communications protocols like TCP/IP or IPX. The storage system functions as a server in a client/server relationship. It has a processor and an operating system or micro-kernel, and it processes file I/O protocols such as Network File System (NFS) to manage the transfer of data between itself and its clients. This represents the primary differentiation between NAS and SAN. SAN provides block-level control of data and NAS provides file-level control of data. Block-level control is considered necessary for most high-performance enterprise applications.

Improving Ethernet technologies will benefit NAS players

Already, moves to 2Gbps and 10Gbps Ethernet architectures are enabling NAS to remain competitive with SAN for certain types of applications. It is widely held that NAS is good for web serving and file/print sharing type storage, but that SAN has an edge where block-based storage management is required (i.e. enterprise applications). However, as Ethernet technologies improve, this will allow NAS technologies to improve their performance capabilities on the network.

C. Legacy Solutions

The Legacy Solutions category includes all of the hardware oriented storage solutions that were developed prior to the emergence of SAN/NAS solutions. This includes Direct Attached Storage (DAS), Redundant Array of Integrated Disks (RAID) and tape systems.

Direct Attached Storage (DAS) refers to the majority of storage implementations in use today. As storage developed historically, DAS became the de facto implementation in use until other advanced storage technologies were developed. In a DAS configuration, storage devices such hard disks, CD-ROM drives and tape devices are attached directly to the system through which they are accessed. These systems are normally a network server running an operating system such as Microsoft Windows, Novell NetWare, Linux or Unix.

Redundant Arrays of Independent Disks (RAID) aren't specific to DAS (they can be attached to SANs and contained within NAS structures) but comprise a significant amount of the DAS installations and were in existence prior to SAN/NAS configurations. Due to the extensive history behind RAID technologies, RAID solutions are robust, time-tested and ubiquitous. In fact, RAID firmware is considered to be more robust than many of the virtualization offerings in the market at the present time, they just aren't scalable across multiple RAID platforms.

Techniques to increase tape capacities combined with tape systems' significant cost advantages have ensured that they currently remain a part of the current storage landscape. Sony recently announced that they were able to achieve a new record for areal density in tape systems by demonstrating the storage of more than 11 billion bits of data on one square inch. This represents a significant improvement over the previous record of 6.5 Gbits/inch2 set in 2000. Additionally they announced that they would continue development of a sixth generation of tape systems based upon this technology.[13]

[13] EnterpriseStorageForum.com, Sony Shatters Areal Density Record for Tape Storage, May 1, 2002

D. Storage Management Software

Storage Management Software has become the most active segment within data storage technology. Many market participants have realized that owning the platform that controls the storage resources will dictate the direction of the entire system as well as the customer relationship. Additionally, it appears that no single standard will dominate the landscape, and in an environment where the IT department is doing more with less, management systems that create order of complex storage environments and leverage the existing asset base are finding their value within the storage world.

There are a variety of functions that Storage Management Software performs. Many software packages offer combinations of many of these to create management platforms.

Virtualization

Virtualization is an emerging category that internally wrestles with convenient definition. As discussed earlier in this report, Virtualization refers to the abstraction of the representation of the storage environment from its physical devices. This creates a centralized view of the entire pool of storage resources and advanced management capabilities that reach across the entire storage network. Virtualization provides many management capabilities found in other Storage Management Software platforms, such as: mirroring, capacity on demand, snapshot backup and data replication.

One of the issues in Virtualization deals with Network v. Server/Array – in which the software and data-pooling intelligence reside on the server or storage array. Server/Array only provides for virtualization of the directly attached storage hardware. Network allows for total system abstraction but exacts a cost on the fabric as all of the devices have to look to the host device for virtualization direction. This creates an overhead load on the storage fabric that is otherwise not present.[14]

Backup / Replication / Restore

The disaster of September 11th illustrated the need for effective data contingency plans, accordingly Backup and Restore and Disaster Recovery solutions have become very popular within the storage world. Even without the reminder, organizational realization of the value of data has driven this category of storage solutions to the forefront of the storage industry. Larger storage players have intensified their efforts in this category. The Enterprise Backup Storage Initiative (EBSI) was recently formed to accelerate development of issues facing backup technologies. These issues include: the time required for backup, the confidence in successfully completing backups within the available backup window and the latency associated with restoring backup data. Founding members of the EBSI include Atempo, Legato Systems, Network Appliance, OTG Software and Qlogic. [15]

Many of the larger system vendors have complete solutions in this category, although Gartner notes that their customers still have issues conducting these activities regardless of what vendor is utilized. Combined with pricing concerns, this creates an opportunity for smaller vendors to make headway in this sector. [16]

Recognizing the restrictions of only relying on tape back-up, companies today are integrating replication technology to maintain real-time copies of data and applications at one or more off-site locations. This is leading to significant growth in replication solutions. Gartner Group forecasts that by 2003, 75 percent of large enterprises will be combining disk-based data replication and tape-based technology for rapid application recovery.[17]

Replication issues include synchronous versus asynchronous replication techniques. Synchronous are vital in environments where real-time updating is crucial, such as financial environments. Asynchronous replication techniques track changes to the data as performed by the enterprise and perform those changes to the backup data. This method significantly reduces the overhead placed on the system communication and is utilized in environments where real-time processing is not crucial to the

[14] NWFusionWorld, Visions of virtualization, March 11, 2002
[15] Quantum Forms Disk Backup Group, ByteandSwitch.com, May 8, 2002
[16] Gartner, Enterprise Backup/Restore Market: Magic Quadrant, Dec. 21, 2001
[17] EnterpriseStorageForum.com, Farewell to Data Loss: Understanding Data Replication, May 2, 2002

performance of the business or where there is more reading of the data than writing of new data. Asynchronous techniques are more cost-effective to the enterprise.

V. Corporate Finance Trends

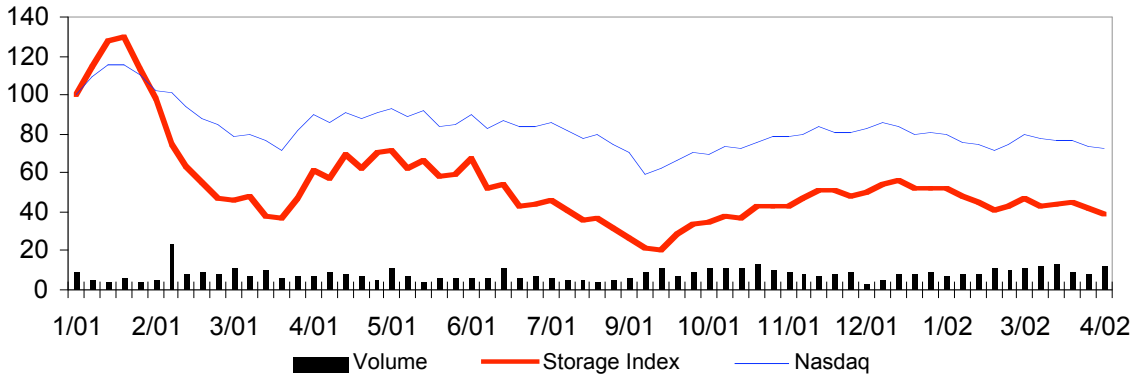
A. Public Equity Performance

The data storage industry has experienced significant declines in public equity value over the last two years. The following chart illustrates the decline in values for five large-cap storage companies: Veritas, Brocade, Emulex, EMC and Qlogic. The sector has experienced a more drastic decline than the Nasdaq in general, falling 45.4% in 2001 and 29.2% year-to-date in 2002 compared to the Nasdaq's decline of 14.5% in 2001 and 15.5% year-to-date. This implies that the data storage sector possesses a Beta of approximately 2, indicating that the sector varies almost twice as much than the Nasdaq as a whole.

B. IPO Activity

This substantial decline in equity performance has contributed to a corresponding decline in storage-related initial public offerings. The IPO market for storage companies in 2001 was impossible to break through. Storageapps Inc. withdrew their planned IPO in July, 2001. The last storage successful storage focused IPO was Storagenetworks, Inc. (Nasdaq: STOR) in June, 2000. Storagenetworks was subsequently able to perform a secondary offering in November, 2000 for $300 million.

Figure 3



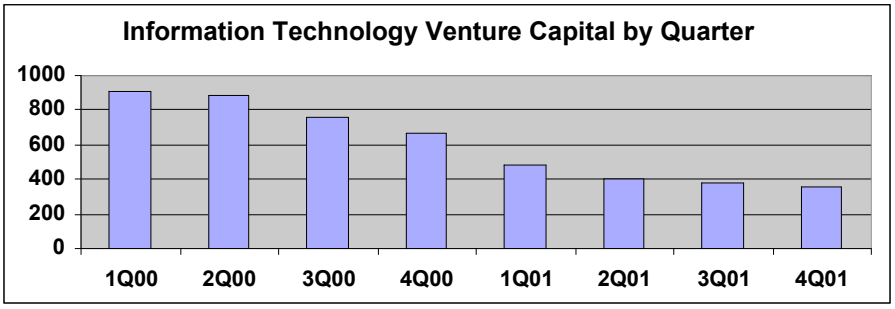
A turnaround in the IPO market is not in cards as of this date. The equity capital markets will have to see improving financial performance from, as well as a reduction in, the current public equity competitor universe. In general, the market has not exhibited minimal demand for any technology sector. The top 5 industries experiencing IPOs in the beginning of 2002 are: Health Products, Insurance, Consumer Products, Business Services and Retail.[18] Technology is not included in the top 10.

C. Venture Capital Funding

Venture capital activity has demonstrated minimal activity in comparison to previous levels. Venture capitalists began a process of examining their current portfolios with the goal of ensuring proper capitalization for selected companies with the best exit options. Very few VCs are continuing to fund new opportunities in the technology sector. The chart below illustrates the dramatic drop-off in funding of Information Technology firms as classified by VentureOne.

[18] IPO.com, 4/9/2002

Figure 4



Most current funding activity within storage is focused on Storage Resource Management and Storage Security sectors.

Companies that seek additional capital from VCs should understand the low probabilities of obtaining capital. At a minimum, companies should factor a lengthened deal cycle and an increased risk of non-completion into their corporate finance strategy. Pursuing a parallel path of simultaneously preparing for the M&A market and attracting additional venture funding can mitigate the risk of not obtaining capital and provide shareholders with an additional corporate finance decision.

D. Bankruptcy

Technology companies are now familiar, even experienced, with the concept of bankruptcy. Unfortunately, due to the fact that many technology companies possess little in the way of hard assets or cash flow, Chapter 11 (reorganization) is usually not an option. Most bankruptcies in the technology sector have been Chapter 7 (liquidation) oriented. In fact, performing preemptive shut-downs prior to a Chapter 7 filings have become common as VCs attempt to recover some capital from high burn rate enterprises with no hope of survival or exit. The most significant asset in the Chapter 7 process to date is the intellectual property surrounding the technology. However, recoveries for pure IP/technology asset sales are very low. According to WebMergers.com, bankruptcies have accelerated from 3 in 2000 to 115 in 2001 and 37 through February of 2002. Industry observers currently expect a second wave of bankruptcies to occur as companies that may have survived in a growing IT spending environment are pressured by the continuing recession. It is likely that active acquirers will purchase greater amounts of assets within the bankruptcy process.

The storage industry is not immune to bankruptcy. NetConvergence, a start-up in the iSCSI software market filed for Chapter 7 on February 20, 2002. The company had de minimus assets and creditors received very poor recoveries of claims. Storage service providers have also had difficulties and significant additional bankruptcies are expected.

VI. Storage M&A Activity

A. Overview

The level of M&A activity in the storage industry for 2000 and 2001 has been unparalleled, with over $20 billion in M&A transactions in each year. Given the amount of storage companies remaining and given industry pressures, consolidation will accelerate through 2003 and 2004. Agile believes that storage related acquisitions will center around the smaller private companies as the larger competitors try to buildout complete storage offerings and create platforms that they control. Also, the proliferation of storage start-ups ensures that there will substantial acquisition candidates to supply this demand.

Consolidation is occurring across sub-sectors as leaders continue to build broad product offerings and meet consumer demand for comprehensive solutions. Large systems companies have targeted smaller, private companies with emerging technologies. Many larger industry players such as Sun, EMC and Veritas have utilized acquisitions to acquire additional capabilities in the Storage Resource Management and Storage Virtualization sub-sectors.

EMC has been a very prolific acquirer in the Storage Management Software arena. However, the size of their deals has declined from their $1.449 billion acquisition of Data General to their September 2001 $50 million acquisition of Luminate Software.

B. Active Acquirers

Veritas leads the acquisition rankings, performing 10 identified transactions. EMC and Sun Microsystems both have performed 6 acquisitions in the storage sector. The large amount of deals concentrated amongst these three companies illustrates large company appetite for emerging technology companies.

Inrange Technologies has focused on services, performing three small deals focused on building enterprise storage design and implementation expertise. Services were also one of the main factors behind HP and Compaq's recent merger as well.

C. M&A Trends

The trend towards lower deal valuations is repeated throughout the industry and is the result of the fact that the primary acquisition currency – stock – has experienced significant declines as outlined in the public equity performance section. Additionally, the public equity markets are effectively shut-off to private companies as an exit alternative in the short-term. This reduces the leverage available within the transaction process to extract premium valuations. Lastly, acquirers are now relatively seasoned to the acquisition process having witnessed significant deal flow in 1999 – 2001. This, added to the fact that equity markets are looking for survival rather than exponential growth creates tempered demand for acquisitions.

As venture funded companies expend their capital resources, increasing numbers of these companies will put themselves on the market as a last resort. Unfortunately, waiting until imminent danger of insolvency significantly reduces the likelihood of achieving a satisfactory transaction on favorable terms or any deal at all. M&A timetables are more fluid and increasing as acquirers are demanding more and greater scrutiny is coming from the acquirers Board members.. Private companies often experience financial distress as significant time and effort is usually required to address a buyer's concerns over the financial situation of the company and the overall viability of the proposed transaction. Alternatively, acquirers will utilize an extended process to extract better terms financially and tilt the scales of leverage in their favor.

A trend that benefits smaller, technology-focused companies is to make large acquirers comfortable with their technology offerings through the use of alliances and joint ventures. This initial relationship gives the potential acquirer time to know the company and develop a familiarity that eases any future discussions about being acquired. As the technology proves its appeal to the larger acquirer, then scale affords the acquirer to justify the acquisition through significant synergies by acquiring the smaller company outright..

D. Strategy and Tactics

The majority of the storage related M&A in the latter part of 2001 and the beginning of 2002 involved companies in the Storage Management sector. Large, systems-oriented companies are betting on software solutions to the myriad of hardware technologies, standards and architectures.

As the increasing number of players continues to confuse the picture as to what technology is chosen as the standard, large system providers will continue to acquire emerging storage technology innovators in order to maintain industry leadership. There have been few purely horizontal acquisitions, Inrange's services focus being the only example. Since September 11th, there has been a focus on Disaster Recovery and Backup technology. These acquisitions have been driven by customer demand based upon a reassessment of the risks of not having a comprehensive system.

A well-defined strategic rationale and market strategy is imperative for capturing shareholder value through acquisitions. To date, Agile has seen three primary drivers for consummating a transaction:

Broadening Scope – Systematically acquiring specific areas of expertise or technologies to accelerate product development and provide total solution offerings to the customer base. Very few storage companies offer a complete line of storage offerings to date, therefore these technology gaps and holes will be filled via acquisitions

Related Businesses – Expanding into businesses that are adjacent to current offerings creates pull-through revenue synergies. Companies acquire new products and services that are tangential to their current offerings because organic growth strategies are too slow and require too much effort. A healthy balance between internal growth and growth through acquisitions is rewarded by the capital markets.

Growing Scale – Increasing scale in specific elements of the business and using these elements to become more competitive overall. Understanding the business and market definitions of scale-based initiatives can be difficult, since they will continue to change in the storage industry over time. Leading companies must not only have a winning product and/or service, they must also find a way to master the art of transitioning to new technologies and markets.

In our view, M&A will become the primary exit strategy for a majority of the current storage market participants. IT consumers are reducing their expenditures, centralizing their storage purchasing and looking for total solutions to help navigate current storage architecture complexity. Additionally, the storage market is too fragmented, with most companies lacking the size and capital resources necessary to remain competitive.

We are surprised that the M&A function has not been a more important tool in implementing the business strategy for companies. To date, many storage companies lack an effective merger and acquisition program that provides clarity on what companies are developing technologies for tomorrow's marketplace. Building a solid M&A process provides these companies with the ability to identify, value and assess strategic targets. This process is vital to the successful integration of a company once a transaction is closed. Proper planning helps to align the vision, culture and strategic drivers of the transaction. A poor M&A process planning and execution leads to the detrimental effects that are well documented in business literature today. For many companies, the effects are disastrous. More importantly, the primary risk we have identified is not acquiring strategically important and possibly industry-transforming targets. Missing these catalysts, a company quickly becomes an acquisition target itself.

M&A strategies should be implemented earlier in the corporate planning process. Those companies that wait until there are very few options left on the table often find that they do not possess the leverage in the process to negotiate favorable or even acceptable terms.

Given the dearth of capital available to private technology companies in the IPO and VC arenas, it behooves companies to follow parallel processes of raising capital and developing company sale strategies. Failure to do so will often lead to insolvency. Technology companies do not possess enough tangible assets or customer history to extract any value from a bankruptcy process. Even if there are identifiable assets, asset valuation perspectives are significantly lower than valuations for operating businesses ("going-concerns"). In order to preserve going-concern valuations, the M&A process must be started early to maximize the strategic options available to the company.

E. Selected Acquisitions

Effective Date	Acquiror	Target	Sector
5/21/1997	BMC	Datatools Inc.	Backup and Restore
7/6/1998	Legato	Software Moguls, Inc.	Backup and Restore
4/2/1999	Legato	Intelliguard Software	Backup and Restore
7/27/1999	Legato	OTG	Backup and Restore
1/24/2001	Sanrise	Exodus Storage Assets	Backup and Restore
6/2/1999	Veritas	TeleBackup Systems	Backup and Restore
1/8/2002	Veritas	The Kernal Group, Inc.	Backup and Restore
9/5/2001	Adaptec	Platys Communications	Fabric
9/9/2000	Cisco	NuSpeed	Fabric
8/7/1998	LSI Logic	Symbios	Fabric
8/1/2000	QLogic	Ancor	Fabric
1/23/2001	QLogic	Little Mountain Group	Fabric
8/1/2000	TranSwitch	Alacrity	Fabric
2/24/1998	Vixel	Arxcel	Fabric
10/12/1999	EMC	Data General	Hardware
11/12/2001	Exabyte	Ecrix	Hardware
Pending	HP	Compaq	Hardware
9/29/1999	IBM	Mylex	Hardware
11/22/2000	Investor Group	Seagate	Hardware
7/20/2001	Legato	SCH Technologies	Hardware
	LSI Logic	AMI RAID business	Hardware
1/9/2001	Maxoptics	Breece Hill Technologies	Hardware
3/29/2000	Maxtor	MMC Technology	Hardware
3/30/2001	Maxtor	Quantum HDD	Hardware
9/14/1999	Quantum	Meridian Data	Hardware
2/7/2001	Quantum	M4 Holdings	Hardware
2/25/1996	Seagate	Conner Peripherals	Hardware
8/4/1997	Seagate	Quinta	Hardware
3/7/1995	StorageTek	Network Systems Corp.	Hardware
1/25/1999	Sun	Maxstrat	Hardware
11/22/2000	Veritas	Seagate	Hardware
2/2/1999	Western Digital	Crag Technologies	Hardware
5/11/2001	ADIC	Pathlight	Management Software
4/14/1999	BMC	New Dimension Software	Management Software
6/29/1999	Computer Associates	Platinum Technology Int'l	Management Software
4/10/2000	Computer Associates	Sterling Software	Management Software
9/8/1999	Dell	ConvergeNet	Management Software
8/10/1998	EMC	Conley Corp.	Management Software
1/14/2000	EMC	Terascape Software Inc.	Management Software
1/25/2000	EMC	Softworks	Management Software
8/16/2000	EMC	Avalon Consulting	Management Software
11/1/2000	EMC	CrosStor Software	Management Software
4/11/2001	EMC	FilePool	Management Software
9/20/2001	EMC	Luminate Software	Management Software
4/8/2002	Fujitsu	Vixel Fabric Managemet Software	Management Software
9/24/2001	HP	StorageApps	Management Software
12/14/1999	IBM	Mercury Computer Storage Div.	Management Software
1/29/2002	JNI Corporation	Troika	Management Software

Effective Date	Acquiror	Target	Sector
4/4/2002	LeftHand	North Fork	Management Software
4/20/1999	Legato	Fulltime Software	Management Software
8/2/1999	Legato	Vinca	Management Software
9/24/2001	McDATA	SANavigator (Western Digital)	Management Software
9/5/2000	NetworkAppliance	WebManage Technologies	Management Software
6/13/200	NetworkAppliance	Orca Systems	Management Software
3/28/2001	OTG Software	Smart Storage	Management Software
9/5/2001	Precise Software	W.Quinn Associates	Management Software
1/31/2000	Seagate	XIOtech	Management Software
11/24/1997	Sun	Encore Computer (storage assets)	Management Software
6/24/1998	Sun	Redcape Policy Software	Management Software
4/2/2001	Sun	HighGround Systems	Management Software
5/3/2001	Sun	LSC	Management Software
4/25/1997	Veritas	OpenVision Tech.	Management Software
2/8/1999	Veritas	Frontier Software Development	Management Software
6/1/1999	Veritas	Seagate Software	Management Software
8/17/1999	Veritas	NuView	Management Software
2001	Veritas	3 Unidentified Companies	Management Software
3/1/2001	Emulex	Giganet	NAS
11/1/1998	Maxtor	Creative Design Solutions	NAS
8/8/2001	Quantum	Connex NAS System Assets	NAS
12/7/2000	Sun	Cobalt	NAS
2/1/2000	VA Linux	NetAttach	NAS
1/10/2001	Inrange	Prevail Technology	Services
5/8/2001	Inrange	ONEX	Services
9/17/2001	Inrange	eB Networks	Services
2/25/2002	Xdrive	FreeDrive	SSP

VII. Storage Sub-Sector Analysis

The Data Storage industry contains many different sectors that evolve with the rapidly changing standards and demands of corporate consumers. Many companies are evolving their business models as the dynamics they experience in the market change underneath them. One of the most efficient ways to ensure technology leadership is to employ strategic M&A. A review of the activity in the Data Storage sectors underscores the popularity of that strategy.

Even within certain technology standards, the march of technology evolution has created opportunities for aggressive start-ups to gain traction. The 2Gbps switch trend is an example of the evolution of a component of one part of storage fabric technology that requires competitors to continue their development activities.

A. Data Storage Fabric Providers

"Fabric" refers to those components of new enterprise storage systems such as switches, controllers, routers and HBAs. They are the additional hardware, layered with storage specific functionality that provides the network connectivity in high throughput data storage systems. The major standards in the Fabric sectors are: 1Gbps Fiber Channel, 2Gbps Fiber Channel, 1Gbps Ethernet, 10Gbps Ethernet, iSCSI and Infiniband.

Industry trends

In recent history, the capital markets overfunded an abundance of these companies, creating oversupply and detrimental competition within the sector. Several public fabric companies (Gadzoox, Vixel, Interphase) have experienced significant revenue declines over the last two years. They were early to market as the storage opportunity has been delayed by the economic and IT spending declines. However, fourth quarter of 2001 proved to be a stabilizing point for publicly traded Fabric companies.

This severe decline in expectations and financial performance as illustrated by the public players indicates that many will be looking to sell to larger, more financially stable industry players. Brocade, Emulex and Qlogic are the major players in this sector with around $1 billion in combined latest twelve months revenues.

Technologically, fabric devices are incorporating security concepts, Quality of Service (QoS) functionality and providing management through open access to the larger software platforms. Brocade recently announced a technology roadmap that incorporated many of these directions for their products.[19]

The switch market is currently moving from 1Gbps to 2Gbps Fiber Channel switches. While Brocade and Qlogic have actually introduced product, start-ups are hustling to push their products across the finish line. Publicly traded Entrada wasn't able to finish at all, recently announcing their decision to kill its Torrey Pines subsidiary, developer of its Silverline SAN product. Two more start-ups, 3PARdata and Cereva, required last minute financing to continue their efforts.

M&A Activity

Qlogic has demonstrated its strategy to expand its presence in these areas with two acquisitions in the last two years. It acquired Ancor in a controversial acquisition in August, 2000 for $1.8 billion. It later acquired Little Mountain Group for $30 million in January, 2001. The pricing differential between those transactions demonstrates the decline in pricing that has developed in during the last three years for the storage market.

There has also been activity that crosses into the semiconductor sector as many fabric components rely heavily on ASIC technology to provide superior performance and functionality. LSI Logic, a semiconductor company, purchased Symbios, a storage controller company, in 1998. More recently, in September, 2001, Adaptec purchased Platys Communications for $150 million. As ASIC remains central to fabric product development, Agile Equity expects substantial additional "cross-sector" deals to continue.

[19] Brocade Press Release, March 25, 2002

B. Network Attached Storage

Network Attached Storage has been under siege from the SAN establishment. SAN players try to position NAS solutions as being fundamentally simpler and to basic for advanced storage strategies. However, NAS has been able to defend its market position as demand for simplified, file-centric storage solutions has emerged.

Industry Trends

One of the more significant trends for NAS is the acquiescence by the SAN community that NAS will be a part of most storage ecosystems. EMC recently surpassed Network Appliances in NAS total dollar volume shipped. Further, EMC and Compaq have largely lead efforts to combine the two technologies into a shared platform, with Auspex following close behind. This is being accomplished by providing Fiber Channel connectivity into existing systems. While this is good news for NAS because it ensures a place at the table, it could be bad news if control over the system is absorbed into the all-encompassing storage resource management and virtualization platforms being aggregated by the leading storage companies. NAS companies will have to weigh losing system control versus the additional volume created by interoperating with leading storage systems.

NAS companies are positioning their products to take advantage of the backup market. As disk prices continue to fall, it makes disk-based backup techniques attractive when compared to tape technologies. This has become an attractive positioning tactic in light of the recent attention given to backup, within a larger disaster recovery context, in recent months.

M&A Activity

Over the past few years the NAS M&A activity encompassed a wide range of strategies and techniques. Sun's blockbuster acquisition of Cobalt in December, 2000 for $2.0 billion marked the high point for NAS acquisitions. This was spurred by the emerging popularity of NAS solutions as evidenced by Network Appliance's high valuation at that time and the general market desire for storage as a sector. Earlier, VA Linux purchased NetAttach, a NAS company for $40 million in an attempt to capture open source revenues surrounding storage platforms. This strategy proved to be fatally flawed and is representative of the abnormal activity during that time period.

Quantum bought Connex's NAS assets in August, 2001 in order to accelerate its plans to bring enterprise-class features to its Snap Server product line. Additionally, Connex's engineering talent and research and development expertise in the area of storage management played an important role in scaling Quantum's Snap Server OS technology.

C. Legacy Solutions

Legacy solutions have been seeing a market revival as economics regain preeminence in corporate spending priorities. Companies are looking at existing storage assets and trying to maximize their return on those assets before spending crucial dollars on new capital equipment. DAS, RAID and Tape systems are by no means the future of strategic storage investments, but resources are being expended to extract additional return on investment from these assets.

Industry Trends

Like other storage sub-sectors, legacy solutions are beginning to see a revival as they are at the heart of many existing backup and recovery solutions. Hierarchical Storage Management (HSM) is contributing to the revival of tape system and DAS popularity as it defines a continuing role for it going forward. With HSM, infrequently used data is taken off of more expensive SAN and NAS systems, and dropped on to less expensive storage disk arrays. Data that is rarely touched is stored on tape. HSM does not change a company's backup, restore, or data mirroring policies.

M&A Activity

Agile Equity has identified 18 deals worth approximately $50 billion in the legacy systems. Two deals account for over $40 billion of the deal flow value. The acquisition of Compaq by HP for approximately $25 billion amounts for half of the dollar value. The deal was driven by multiple technology factors

including services and complete storage management services as contributed by Compaq's business. The acquisition of Seagate by Veritas in December, 2000 was valued at $18.5 billion.

Two out of the next three acquirers were actually acquired themselves. Quantum purchased Meridian Data and M4 Holdings for approximately $150 million in value. Quantum was subsequently purchased by Maxtor for $1.3 billion along with MMC Technology as part of a hard disk drive consolidation effort. Seagate also performed two acquisitions prior to being acquired by Veritas.

LSI Logic performed an acquisition of AMI's RAID business, demonstrating the semiconductor concerns' storage efforts.

D. Storage Management Software

Storage Management Software has been the most prolific area of activity in the storage sector. Agile Equity identified 32 deals with a total transaction value of $13 billion with 4 deals with values undisclosed.

EMC tied as the most prolific acquirer with 7 deals performed for a total deal value of $640 million. Its two most recent deals performed in 2001 were of FilePool, a Belgian storage software concern, and Luminate Software, a performance management software company for storage-intensive applications. The Luminate transaction demonstrates EMC's strategy of addressing the concerns of their focus customer, the large enterprise.

Veritas also performed 7 deals and had the highest dollar volume of deals with $1.9 billion over 5 deals. The bulk of the value, $1.6 billion, is attributed to their acquisition of Seagate's Software assets in June, 1999. Veritas' acquisitions of OpenVision and NuView illustrate their strategy of adding functionality to their platform.

Sun performed 4 acquisitions totaling $676 million in value. Their acquisition of HighGround Systems in April 2000 for $400 million demonstrates their intention to remain committed to open systems.

Recently, the power of the larger storage solution providers was demonstrated when Vixel sold off its SAN management software capabilities to Fujitsu Softek in April, 2002. Vixel's SAN management software platform created conflicts with larger enterprise storage providers that possessed their own offerings. Exiting the software business allows Vixel to focus on the embedded storage switch and rich-media SAN markets and avoid conflicts with EMC, Veritas and Sun.[20]

E. Backup / Replication / Restore

Summary

The Backup and Restore sector has received significant attention lately due to the September 11th tragedy. While worst-case data scenarios had always been predicted, recent events provided substantial proof of their value. Business publications covering the effects of the tragedy provided numerous illustrations of companies that had to rely on their disaster recovery plans and the role that Backup and Restore technologies played in those efforts. Add in the fact that companies are becoming more dependent upon their data as a critical component of their operating strategy. These factors provide significant impetus for companies in this sector to drive business with consumers who may not have fully appreciated the value of such systems.

As Data Storage is explicitly related to Backup and Restore strategies, solution providers will have to provide total solutions to their consumers. The companies with the most compelling offerings in this area can use them to establish relationships with IT spending decision makers and upsell additional services. Backup and Restore analysis often leads to larger data storage analysis and presents an opportunity for large account capture.

Acquisitions in the Backup and Restore area will continue to be feature-based in the near-term as this sector is affected by the dynamically changing data storage standards. Larger system vendors still do not possess comprehensive enough solutions as the industry continues to define the scope and role of data storage technologies.

[20] Vixel Press Release, April 8, 2002

Industry Trends

The new awareness of the value of Backup and Recovery technologies has created demand for companies that are focused directly on this sector. This demand is apparent on the consumption side and in recent M&A activity. As evidence of consumer demand, Veritas has indicated that more than 16,000 IT professionals have attended disaster recovery seminars between November, 2001 and March, 2002. Many market prognosticators, such as Giga Information Group and Forrester Research, feel that Backup and Restore technologies will grab more of the IT spending dollar.

Backup and Restore technologies possess a linear speed to recovery and price relationship. Data recoveries that can be done overnight usually employ low-cost, tape-based solutions. Applications and systems that require restoration within minutes, utilize expensive real-time disk-mirroring solutions.[21]

Traditional NAS appliance manufacturers are entering the backup market. Network Appliances, Quantum, Maxtor and Nexsan all provide specialized backup appliances.[22]

M&A Activity

Recent activity illustrates the level of interest in this sector. Veritas' acquisition of The Kernal Group in January, 2002 was a focused effort to capitalize on this opportunity. Veritas indicated that The Kernal Group's Bare Metal Restore product was the best cross-platform (Windows and Unix) on the market. Analysts also indicated that this acquisition filled-in some feature gaps for the company in its Backup and Restore offerings. Lastly, it was noted that Veritas could realize significant incremental revenues by promoting the product to its current customer base.

The rest of the major storage system vendors will continue this trend. Competition is highest among the larger system providers: EMC, Veritas, Compaq and Legato. Currently, Compaq, EMC, Hitachi Data Systems and IBM offer disk-mirroring solutions. Veritas and Legato currently have quality Restore offerings.

Sanrise's recent acquisition of Exodus' tape back-up and restore services demonstrates that this sector attractiveness preceded legacy technology concerns. It is also an illustration of aggressive companies identifying assets within bankruptcy situations.

[21] Disaster Recovery: Expecting the Worst, Byte & Switch, April 2, 2002
[22] ibid.

VIII. Data Storage Company Profiles

A. Data Storage Fabric Providers

Private Companies

3PARData — Data Storage Fabric
www.3pardata.com — Fremont, CA

3PAR is the leading developer of Utility Storage servers, which permit organizations with multiple lines of business, departments, or customers to share access to one centralized secure repository of information or one set of storage assets. Utility storage is defined as any enterprise- or carrier-class storage system or server that supports multiple users or departments and provisions storage to multiple applications. Management is done from a single, consolidated view.

Akara — Data Storage Fabric
www.akara.com — Ottowa, Ontario

Akara extends business continuance applications between data centers and across the MAN/WAN. Akara's Optical Utility Services Platform (OUSP) multiplexes data center protocols such as Fibre Channel (FC), FICON, ESCON and Gigabit Ethernet (GbE) directly into flexible SONET payloads to extend enterprises' business continuance applications over existing SONET/SDH, dark fiber or DWDM networks. The OUSP product family is "enterprise-ready" with OC-3, OC-12 and OC-48 connectivity, enabling the majority of Global 2000 enterprises to easily connect their storage networks to carriers' ubiquitous SONET services for high-performance, cost-effective extended storage networking. Akara's OUSP enables enterprises and carriers to create multiple FC links over a single metro-DWDM wavelength or carrier-leased SONET circuit. The OUSP also enables carriers to deliver differentiated, high ROI services such as FC private lines and GbE private lines by utilizing existing enterprise assets.

Cambex — Data Storage Fabric
www.cambex.com — Waltham, MA

Cambex develops, manufactures and markets leading-edge hardware and software solutions for building SANs. Our solutions include Fibre Channel host bus adapters, hubs, switches, and routers, Fibre Channel RAID disk arrays and tape libraries, as well as high availability and management software for the deployment of heterogeneous SAN solutions. We also offer SAN assessment, planning, design, integration, and implementation services. Thier Fibre Channel connectivity products include the FibreQuik family of Fibre Channel HBAs and hubs and high availability Dynamic Path Failover software.

Chaparral Network Storage, Inc. — Data Storage Fabric
www.chaparralnet.com — Longmont, CO

The company, formerly Chaparral Technologies, offers redundant array of independent disks (RAID) controllers and storage routers. Its products help speed the transfer of data between computer network devices for backup and storage purposes. Chaparral's products are designed primarily for use in storage area networks (SANs). The company, which outsources its manufacturing, generates most of its sales from equipment makers such as Quantum. Distributors including Arrow and Bell Microproducts also resell its products.

InfiniCon Systems — Data Storage Fabric
www.infinicon.com — King of Prussia, PA

The Company develops sharable I/O subsystems that provide InfiniBand-enabled servers and network-attached storage (NAS) devices access to Fibre Channel and Ethernet networks. The Company is

currently developing Iris, a hardware and software system that aims to streamline server connections and reduce network management costs.

Nishan Systems — Data Storage Fabric
www.nishansystems.com — San Jose, CA

Nishan Systems builds open storage networking products based on IP and Ethernet, the international networking standards. Nishan's Multiprotocol Storage framework supports iSCSI, iFCP, iSNS, Fibre Channel, SCSI, and Network-Attached Storage (NAS) interfaces. Nishan IP Storage switches are used to link Fibre Channel storage devices and servers across a high-speed IP network. The products support Fibre Channel switching, Gigabit Ethernet switching, and wire-speed conversion between Fibre Channel and Gigabit Ethernet. The SANvergence Management Suite is a GUI-based Java software application for managing IP Storage Fabrics and logically partitioning enterprise SANs into secure zones for manageability and access control.

Pirus Networks — Data Storage Fabric
www.pirus.com — Acton, MA

Pirus Networks, a startup founded in 1999, is developing a “storage utility switch”. Pirus Storage Utility Switch is designed to enable the creation of scalable, reliable, highly manageable, and cost-effective storage networks, media type or location. The Pirus intelligent infrastructure blends together multiple protocols (Fibre Channel and Ethernet) and data access methods (block and file services), as well as support for a wide range of industry-proven storage subsystems, under centralized and secure management.

Sanera Systems — Data Storage Fabric
www.sanerasystems.com — Sunnyvale, CA

Sanera Systems is building a data center class terabit switching system for the Storage Area Network Market. Sanera is building a large, high port density, multiprotocol SAN switch, expected to ship in the first half of 2002.

Sanrad — Data Storage Fabric
www.sanrad.com — Tel Aviv, Israel

Developer of an iSCSI/Fiber Channel switch with management and virtualization functions.

Storigen — Data Storage Fabric
www.storigen.com — CityState

Storigen’s products will combine centralized management software with distributed edge devices that store, stream, file serve, cache and web serve. Storigen's solution consists of flexible Edge Storage Servers that store and deliver multiple types of data and centralized Edge Storage Manager software that provides unified data and device management to distributed enterprise storage environments.

Voltaire — Data Storage Fabric
www.voltiare.com — Bedford, MA

Voltaire is developing an intelligent IP to InfiniBand router, based on its TCP Termination Architecture, for server markets. Voltaire's Architecture addresses the bandwidth and CPU bottlenecks that occur when other solutions such as IP Tunneling or bridging are used to connect InfiniBand Fabrics to TCP/IP networks. Voltaire will introduce a family of products based on its TCP Termination architecture that will

focus on four high-end application areas - high performance database clusters, network attached storage (NAS), storage area networks (SAN) and disaster recovery.

Yotta Yotta — Data Storage Fabric
www.yottayotta.com — Kirkland, WA

The Company develops storage controllers that utilize parallel supercomputing techniques under the NetStorager brand name. Their parallel computing processing techniques utilize cache sharing and coherence techniques to make data distributed and immediately available.

Public Companies

Adaptec, Inc. — Data Storage Fabric
www.adaptec.com — Milpitas, CA

Market Capitalization - $1.5 billion — Nasdaqa: ADPT
TTM Sales - $418.7 million
TTM EBITDA - $(153.4) million

The company's adapters and controllers speed data transfer (between computers, peripherals, and networks) and connect servers and PCs to storage devices. Adaptec is a leader in the market for small computer system interface (SCSI) technology, which lets several peripherals connect to one adapter card. The company's Storage Solutions Group, which makes redundant arrays of independent disks (RAID) controllers, accounts for almost 80% of sales. Adaptec sells directly to hardware vendors (including Dell and IBM) and manufacturers (Solectron), as well as through resellers and distributors. Half of its sales come from its operations in Singapore.

Brocade Communications — Data Storage Fabric
www.brocade.com — San Jose, CA

Market Capitalization - $5.8 billion — NASD: BRCD
TTM Sales - $471.1 million
TTM EBITDA - $(3.2) million

Brocade Communications Systems, Inc. is a leading provider of infrastructure for SANs, offering a product family of Fibre Channel fabric switches. Brocade delivers and enables hardware and software products, education and services. Brocade's SilkWorm family of fabric switches connects servers and storage devices throughout Fibre Channel SAN fabrics.

Crossroads Systems, Inc. — Data Storage Fabric
www.crossroads.com — Austin, TX

Market Capitalization - $79.4 million — Nasdaq: CRDS
TTM Sales - $36.6 million
TTM EBITDA - $(42.7) million

Crossroads Systems, Inc. is a provider of enterprise data routing solutions for open system storage area networks. The Company has developed or acquired extensive expertise in several different input-output (I/O) and networking protocols, including SCSI, Fiber Channel, ESCON, TCP/IP, iSCSI and InfiniBand. To date, the Company has sold its products primarily to OEMs of servers and storage systems. These computer equipment manufacturers sell the Company's storage routers to end user organizations for use in their storage area networks. The Company also sells its storage routers through companies that distribute, resell or integrate its storage routers as part of a complete SAN solution.

Emulex Corporation — Data Storage Fabric
www.emulex.com — Costa Mesa, CA

Market Capitalization - $2.5 billion — Nasdaqa: EMLX
TTM Sales - $242.9 million
TTM EBITDA - $41.7 million

Emulex Corporation is a designer, developer and supplier of a broad line of storage networking host bus adapters, application-specific computer chips (ASICs) and software products that provide connectivity solutions for storage area networks (SANs), network attached storage and redundant array of independent disks storage. The Company's products are based on internally developed ASIC, firmware and software technology, and offer support for a wide variety of SAN protocols, configurations, system interfaces and operating systems.

Gadzoox Networks — Data Storage Fabric
www.gadzoox.com — San Jose, CA

Market Capitalization - $9.4 million — Nasdaq: ZOOX
TTM Sales - $21.8 million
TTM EBITDA - $(69.3) million

Gadzoox is a provider of SAN switches including: Slingshot, their line of 2Gb/1Gb open fabric embedded switches, and Capellix, modular SAN switches.

Interphase Corporation — Data Storage Fabric
www.interphase.com — Dallas, TX

Market Capitalization - $24.0 million — Nasdaq: INPH
TTM Sales - $25.1 million
TTM EBITDA - $(11.9) million

Interphase Corporation designs, develops, manufactures, markets and supports high-performance connectivity products used in telecommunication and enterprise data/storage networks. Interphase's products include telecom server communication controllers, server-based adapter cards, network operating system device drivers, software development tools and management software applications.

Interphase's hardware solutions include: PowerSAN Fiber Channel HBAs, SlotOptimizer adapters, ENTIA communication controllers.

JNI Corporation — Data Storage Fabric
www.jni.com — San Diego, CA

Market Capitalization - $159.3 million — Nasdaq: JNIC
TTM Sales - $66.1 million
TTM EBITDA - $(19.1) million

JNI Corporation is a designer and supplier of enterprise storage connectivity products. The Company designs, markets and sells a broad range of Fibre Channel host bus adapters that connect servers to storage subsystems to facilitate the integration and management of devices used in storage area networks (SANs). JNI also designs, markets and sells high-performance application specific integrated circuits (ASICs) based on its proprietary Fibre Channel technology. The Company released its first InfiniBand products, its InfiniStar host channel adapter (HCA) modules that allow stand-alone servers to cluster with InfiniBand connectivity operating at 2.5 gigabit per second (Gb) or 10 Gb per port.

McDATA Corporation — Data Storage Fabric
www.mcdata.com — Broomfield, CO

Market Capitalization - $808 million — NASD: MCDTA
TTM Sales - $325.9 million
TTM EBITDA - $(55.0) million

McDATA Corporation is a provider of open-storage networking solutions and provides highly available, scalable and centrally managed storage area networks (SANs) that address enterprise-wide storage problems. The Company provides high performance enterprise switches and related software for connecting servers and storage systems in a storage area network. The Company's core-to-edge enterprise solutions consist of hardware products, software products and professional services.

McDATA's hardware solutions include: Intrepid Directors, Spherion Fabric Switches, Edge Switches and accessories. McDATA also offers core-to-edge 2Gb/s storage networking products — including its Intrepid 6000 Series Directors and its Sphereon 3000 Series 16 and 32 port Fabric Switches —built on its common Extendible Open Network (EON™) Architecture.

McDATA's software solutions include: SANavigator Management Software (fabric management software that provides planning, discovery and automation), Enterprise Fabric Connectivity Manager and the Enterprise Operating System (high availability firmware resident in their fabric switches and directors).

Qlogic — Data Storage Fabric
www.qlogic.com — Aliso Viejo, CA

Market Capitalization - $4.5 billion — NASD: QLGC
TTM Sales - $344.2 million
TTM EBITDA - $109.9 million

QLogic Corporation is a designer and supplier of Storage Area Networking (SAN) infrastructure building blocks. Its SAN infrastructure building blocks, comprised of semiconductor chips, host board adapters and switches, are integrated into storage networking solutions of system and storage manufacturers. Companies such as Sun, IBM, Dell Computer Corporation, HP/Compaq, Fujitsu. and Hitachi all use some or all of its components in the storage and systems solutions they sell to the world's largest information technology environments. In addition to its original equipment manufacturer relationships with these and other companies, in January 2000 the Company started delivering selected Fibre Channel building blocks through leading distributors, systems integrators and resellers, thereby expanding its reach and visibility to the information technology community. QLogic brands include: SANblade Fibre Channel HBAs, SANbox Fibre Channel switches, SANsurfer / QMS fabric management software' ISP Fibre Channel and SCSI controller chips, Ultra SCSI HBAs, GEM enclosure management controllers, Zircon baseboard management controllers.

Vixel Corporation — Data Storage Fabric
www.vixel.com — Bothell, WA

Market Capitalization - $76.7 million — NASD: VIXL
TTM Sales - $20.5 million
TTM EBITDA - $(21.3) million

Vixel Corporation is a provider of SAN interconnect solutions. These consist of a variety of products that connect computers to data storage devices in a network configuration. The Company's Fibre Channel product portfolio consists of its SAN systems, which include the SAN management software, switches, hubs and transceivers sold with switch products and other components, which include the Company's transceivers sold to original equipment manufacturers for incorporation into their products. In April 2002, the Company's SAN management software business was sold to Fujitsu Softek.

B. NAS

Private Companies

Acirro — NAS
www.acirro.com — San Jose, CA

Acirro's Global Distributed File System (GDFS) technology simplifies the management of enterprise's distributed storage networks. GDFS-based Acumula software embeds NAS aggregation, smart replication and automated capacity management capabilities directly into a distributed meta-file system resulting in a non-obstructive approach to simplifying the management of Network Attached Storage (NAS) throughout a WAN environment.

BlueArc Corporation — NAS
www.bluearc.com — San Jose, CA

BlueArc is a developer of a NAS system called the Si7500. The BlueArc OS is a symmetric multi-processing operating system, designed to take full advantage of the three subsystems that make up BlueArc's Si7500 Storage System. Founded in 1998, BlueArc Corporation is headquartered in San Jose, California. BlueArc UK headquarters are located in Bracknell, England.

Spinnaker Networks — NAS
www.spinnakernet.com — Pittsburgh, PA

Spinnaker was founded in 1999 and is headquartered in Pittsburgh, Pa., a geographic region with significant storage systems development and research. The Spinnaker management team comprises industry veterans from startups and F50 enterprise server, storage, and networking companies. The first generation of Spinnaker Networks storage server is under development.

Xstore Extreme Storage — NAS
www.xstore-es.com — City of Industry, CA

Xtore Extreme Storage is an innovative designer/OEM manufacturer of high quality data storage products for server solution providers, system integrators, and value-added resellers. Xtore Extreme Storage product lines include: NASolution - midrange to enterprise level Network Attached Storage, X-RAID - RAID Subsystems and Controller Switches, X-POD - JBOD and Drive Enclosures, X-SAN - IP- Storage Area Networks.

Z-force — NAS
Costa Mesa, CA

Z-force is developing a “file switch” that enables NAS arrays. In concept, the file switch is similar to RAID controllers and Web switches used today in hard-drive and server markets, respectively. The idea is to turn a cluster of NAS devices into a single, scalable, higher-performing NAS array. The file switches are usually implemented in pairs for fault-tolerance; additional switches can be used at remote locations to reduce latency between primary and remote sites. Each array is managed as a single file system, which allows for non-disruptive upgrades, and supports capacities to 128TB and speeds to 2400MBps. Any CIFS or NFS device can be connected to the device.

Zambeel — NAS
www.zambeel.com — Fremont, CA

Zambeel is developing storage systems that deliver a highly scalable, self-managed pool of storage that provides resource allocation. Taking a distributed computing approach to networked storage, Zambeel is building storage systems that scale up to hundreds of terabytes while maintaining the management ease

of a single NAS appliance. In addition, the systems offer flexibility so a single Zambeel system can satisfy the requirements of multiple users, business units, or customers with differing storage requirements.

Public Companies

Auspex Systems NAS
www.auspex.com Santa Clara, CA

Market Capitalization - $36.5 million Nasdaq: ASPX
TTM Sales - $33.6 million
TTM EBITDA - $(53.7) million

Auspex Systems, Inc. develops, manufactures, distributes and supports a line of multi-protocol (network file system (NFS), common Internet file system (CIFS) and file transfer protocol (FTP)) network a attached storage (NAS) devices, also referred to as network file servers, network filers and NAS Gateways, which include specialized software for storing, serving and managing network and computer data. The Company's focuses on the creation of a thin server or specialized file server, a specialized device that utilizes highly efficient software to optimize input/output performance.

Network Appliance, Inc. NAS
www.netapp.com Sunnyvale, CA

Market Capitalization - $4.7 billion Nasdaq: NTAP
TTM Sales - $798.4 million
TTM EBITDA - $20.7 million

Network Appliance, Inc. is engaged in the business of network-attached data management and storage solutions. Network Appliance hardware, software, and service offerings are used to create, manage and scale seamless data fabrics, moving information to users globally. The Company's products consist of filer storage and caching appliances, data management and content delivery software, and support services. Network Appliance storage appliances, or filers, are systems that provide highly reliable data storage management. The Company's NetCache appliances allow customers to scale network infrastructure, reduce bandwidth costs, ease network bottlenecks, and simplify data management and content delivery. The Company's customer service and support organization provides technical support, education and training.

Tricord Systems, Inc. NAS
www.tricord.com Plymouth, MN

Market Capitalization - $7.5 million Nasdaq: TRCD
TTM Sales - $374.0 thousand
TTM EBITDA - $(20.9) million

Tricord Systems, Inc. designs, develops and markets clustered server appliances and software for content-hungry applications. Tricord's new technology is its patented Illumina software that aggregates multiple appliances into a cluster, managed as a single resource. Tricord's products allow users to add capacity to a cluster with low administration. Appliances are plug-and-play, offering growth and continuous access to content with no downtime. The technology is suited for applications including general file serving, server-based computing, imaging and security. Tricord's initial server appliance utilizing Illumina is Lunar Flare NAS. Lunar Flare NAS is a scalable general file-serving storage device for Windows users.

Procom Technology, Inc. NAS
www.procom.com Irvine, CA

Market Capitalization - $18.1 million Nasdaq: PRCM
TTM Sales - $33.0 million
TTM EBITDA - $(16.6) million

Procom Technology is a manufacturer of server appliances and developer of Network Attached Storage (NAS) technology. Procom leveraged their position as market-share leader in CD servers to developing disk-based NAS solutions for enterprise, workgroup, ISP and business applications. Procom appliances feature proprietary embedded server operating systems and integration into all major networking environments, including UNIX, Windows NT and the World Wide Web. Procom's technological innovations include the first plug-and-play protected data appliance for workgroups, as well as Internet-enabling "virtual zero downtime" clustered failover servers for non-stop business applications.

C. Legacy Solutions

Private Companies

3ware Legacy
www.3ware.com Mountain View, CA

3ware, Inc. develops switched storage solutions delivering reliable, scalable, high-performance storage connectivity and management. Since its founding in 1997, the privately held company has been focused on developing and refining their packet switching storage architecture to develop a class of ATA RAID controllers that satisfy the growing need for reliable, affordable storage.

Avantis Legacy
www.avantisworld.com Abercynon, UK

Established in 1995, Avantis is a ICT company dedicated to the development of CD-ROM and DVD networking solutions. Avantis pioneered the use of hard disk technology to store and distribute multimedia information in 1996 and was the first supplier to launch a hard disk based CD-ROM Server into the UK market. Considerable commercial success resulted from its first generation of CD server products with the company receiving several awards for innovation.

Cambex Legacy
www.cambex.com Waltham, MA

Cambex develops, manufactures and markets leading-edge hardware and software solutions for building Storage Area Networks (SANs). Our solutions include Fibre Channel host bus adapters, hubs, switches, and routers, Fibre Channel RAID disk arrays and tape libraries, as well as high availability and management software for the deployment of heterogeneous SAN solutions. We also offer SAN assessment, planning, design, integration, and implementation services.

Cenatek Legacy
www.cenatek.com Morgan Hill, CA

CENATEK develops solid state disk (SSD) storage devices for transaction-intensive applications in enterprise computing systems. The company's high-speed, data-access products are designed to remove the hard disk input/output (I/O) bottleneck that throttles the speed of major applications such as databases and e-mail servers.

ExaDrive — Legacy
www.exadrive.com — Amherst, NY

ExaDrive Networks is the market leader in enterprise class ATA storage solutions. ExaDrive Networks was founded in 1999 and has been shipping advanced storage solutions to customers since 2000. ExaDrive focuses on selling solutions to resellers, integrators, value added resellers (VAR's) and large end users of storage. Our Diamond Series RAID Storage Arrays are designed to meet the challenging and rapidly expanding needs of SAN (Storage Area Network), SAS (Server Attached Storage) and DAS (Direct Attached Storage) storage applications by offering extraordinary capacity, ease of operation and high speed host interfaces.

Seagate Technologies — Legacy
www.seagate.com — Scotts Valley, CA

Seagate provides a broad range of disc drives in capacities ranging from 20 gigabytes to an industry-leading 180 gigabytes. This comprehensive line of disc drives includes products for the price-sensitive desktop PC market, Consumer Electronics market, higher performance PC and workstation drives, and higher-capacity drives for the storage and performance-intensive network server, disc array and audio-visual (A/V) markets. Seagate is also the market leader in storage technology for Consumer Electronics devices, and has shipped nearly 3 million disc drives in this segment. Seagate's XIOtech Corp., subsidiary is a key element of the Company's Internet strategy. XIOtech designs, manufactures, and markets high performance, application-driven Storage Area Network (SAN) solutions. The award-winning XIOtech MAGNITUDE is a Storage Area Network (SAN) in a Box, and with XIOtech's exclusive REDI software family, is the only storage subsystem to offer server clustering and a true zero backup window. Seagate and its affiliated companies are controlled by New SAC, a Cayman Island limited liability company, organized in late 2000 to acquire the hard disc drive, tape drive, software and storage solutions businesses and certain other assets of Seagate Technology, Inc. These businesses include: Seagate Technology (which includes hard disc drives and XIOtech Corp.), Seagate Removable Storage Solutions, and Crystal Decisions (formerly Seagate Software).

Public Companies

Advanced Digital Information Corporation — Legacy
www.adic.com — Redmond, WA

Market Capitalization - $488.1 million — Nasqaq: ADIC
TTM Sales - $353.3 million
TTM EBITDA - $(6.6) million

Advanced Digital Information Corp. (ADIC) provides hardware- and software-based data storage solutions optimized for large-scale data sets and designed for the open systems marketplace, including storage area network environments. The Company offers a broad range of products designed to enable organizations to effectively capture, protect, manage and archive the increasing amount of complex mission-critical data in computer networks based on open systems standards. ADIC, along with its value-added resellers (VARs), original equipment manufacturer (OEM) partners and customers, incorporates its proprietary hardware, software and connectivity products, as well as its service and support expertise with third-party hardware and software products to deliver reliable, flexible and scalable storage solutions. The ADIC product families fall broadly into three categories: automated storage library systems, storage networking appliances and storage management software.

Maxtor Corporation — Legacy
www.maxtor.com — Milpitas, CA

Market Capitalization - $1.3 billion — NYSE: MXO
TTM Sales - $4.2 billion
TTM EBITDA - $(456.2) million

Maxtor Corporation is a provider of hard disk drives and related storage solutions for a variety of applications, including desktop computers, high-performance Intel-based servers, network-attached storage (NAS) and consumer electronics. The Company operates in two groups, the Hard Disk Drive Group, which offers hard disk drives for desktop computers and Intel-based servers, and the Network Systems Group, which offers a line of NAS storage servers. In April 2001, Maxtor completed the merger with Quantum Corporation's Hard Disk Drive Group. In September 2001, the Company completed the acquisition of MMC Technology, Inc., a wholly owned subsidiary of Hynix.

Quantum Corporation	Legacy
www.quantum.com	Milpitas, CA
Market Capitalization - $1.1 billion	NYSE: DSS
TTM Sales - $1.1 billion	
TTM EBITDA - $(90.3) million	

Quantum Corporation provides back-up, archiving and recovery of business-critical data through solutions. Quantum is a supplier of DLTtape automation systems, with a wide range of tape libraries for workgroup, departmental, mid-range and enterprise-class applications. Quantum is also a supplier of DLTtape drives, a widely adopted tape format. Quantum is also engaged in the market for workgroup Network Attached Storage (NAS) appliances through its Snap Server product line.

Read-Rite Corporation	Legacy
www.readrite.com	Fremont, CA
Market Capitalization - $332.8 million	Nasdaq: RDRT
TTM Sales - $518.0 million	
TTM EBITDA - $26.3 million	

Read-Rite Corporation is an independent supplier of magnetic recording heads for the hard disk drive (HDD) and tape drive markets. The Company designs, manufactures and markets magnetic recording heads as head gimbal assemblies (HGAs), and incorporates multiple head gimbal assemblies into head stack assemblies (HSAs). Read-Rite's products are sold primarily for use in hard disk drives for desktop computer devices, for high performance enterprise hard disk drives used in network and mainframe applications, and for consumer electronic devices such as game stations or personal video recorders. The Company also provides magnetoresistive (MR) and inductive tape heads to the entry level through mid-range tape drive markets.

Western Digital Corporation	Legacy
www.wdc.com	Lake Forest, CA
Market Capitalization - $852.9 million	NYSE: WDC
TTM Sales - $2.1 billion	
TTM EBITDA - $68.9 million	

Western Digital Corporation (WD) operates as the parent company of Western Digital Technologies Inc., which designs, develops, manufactures and markets hard drives. The Company's WD Caviar and WD Protege hard drive products are designed to serve the advanced and value portions, respectively, of the desktop PC (personal computer) market, entry-level server markets and game console markets, and its WD Performer hard drive products are designed to serve the emerging audio-visual portion of the hard drive market. Western Digital offers customized design capabilities and hard drive technologies for consumer applications. The Company also offers broadband products and services, personalized digital video entertainment and analytical software and services for enterprise-wide supply chain intelligence, product lifecycle intelligence and decision support in the manufacturing industry.

D. Storage Management Software

Private Companies

Arkivio — Storage Management Software
www.arkivio.com — Mountain View, CA

Arkivio develops intelligent storage resource and data management software that allows administrators to efficiently manage their distributed data and storage resources with minimum intervention. Arkivio's software integrates with leading enterprise and Internet solutions. The user interface is browser-based enabling access from remote networks. This storage resource and data management solution is neutral to the types of heterogeneous storage hardware deployed or the connection method they use—direct, NAS or SAN.

AppIQ — Storage Management Software
www.appiq.com — Burlington, MA

AppIQ is a storage management solutions developer that is utilizing the Common Information Model (CIM) being promoted by the SNIA.

Astrum Software — Storage Management Software
www.astrumsoftware.com — Mountain View, CA

Astrum develops Storage Resource Management solutions including StorCast, an integrated operational framework for effectively managing storage and system resources, improving data and application availability and optimizing planning for consolidation, migration, capacity increases and backup. StorCast for the Enterprise is a storage resource management solution for Windows NT/2000, Novell NetWare, Sun Solaris, HP/UX, IBM AIX and Red Hat Linux environments.

CreekPath Systems Inc. — Storage Management Software
www.creekpath.com — Boulder, CO

CreekPath Systems is a developer of policy-based, process-driven storage management software solutions. CreekPath recently introduced the AIM Suite, a storage management solution that defines storage management processes and automates provisioning of shared storage resources. The AIM Suite includes StoragePool Advisor, a management application that discovers, displays, reports and proactively monitors network storage resources the StoragePool Process Automation Managers, applications that automate workflows and provide service level assurance.

DataCore Software — Storage Management Software
www.datacore.com — Ft. Lauderdale, FL

DataCore is the developer of SANsymphony, consolidated storage management and virtualization software. SANsymphony's virtualization approach is completely independent from the storage and host supplier allowing for drag-and-drop functionality from a central GUI to allocate any size virtual volume from the network pool to UNIX, Windows, NetWare, Linux or Mac OS servers.

InterSAN — Storage Management Software
www.intersan.com — Scotts Valley, CA

InterSAN is a provider of application-based storage area management (SAM) software. InterSAN's flagship product, PATHLINE™, manages the relationship between applications and their data storage. Using InterSAN's patent-pending Virtual Private DataPath technology, PATHLINE centralizes and automates monitoring, provisioning, and control of complex, geographically distributed storage networks from an application perspective.

Invio Software — Storage Management Software
www.inviosoftware.com — Palo Alto, CA

Invio provides enterprise software that automates information management processes across networked storage environments. Invio solutions are designed to enable storage utility, allowing applications to directly access storage resources and information management services.

Netreon — Storage Management Software
www.netreon.com — Mountain View, CA

Netreon, Inc., a provider of storage design and management software, announced SANexec Designer, an application to integrate design, configuration and monitoring of storage area networks. SANexec Designer applies the techniques of computer-aided engineering (CAE) to transform the disparate steps of designing a SAN into a process that lowers the complexity of installation and deployment.

NuView Inc. — Storage Management Software
www.nuview.com — Houston, TX

NuView is a software developer that has created NuView StorageX, an enterprise-level storage management for Windows environments. NuView StorageX is a file virtualization solution for managing distributed storage in Windows environments. StorageX uses file virtualization as a platform to deliver enterprise storage management solutions.

PowerQuest Corporation — Storage Management Software
www.powerquest.com — Orem, UT

PowerQuest Corporation delivers solutions for data storage management, enabling businesses and individuals to effectively manage, deploy and protect data on everything from home PCs to enterprise network server storage resources. A privately held company founded in 1993, PowerQuest launched its premier product, PartitionMagic, in March 1995. PowerQuest then expanded into the enterprise storage management market.

Prisa Networks — Storage Management Software
www.prisa.com — San Diego, CA

Prisa Networks, Inc. is an independent OEM supplier of network management software for SANs. The Company's product line, VisualSAN includes service level, performance and configuration management tools for SANs built upon Fiber Channel, Ethernet and Infiniband technologies.

Storability, Inc. — Storage Management Software
www.storability.com — Southborough, MA

Storability develops storage management solutions, technology and services. AssurENT Architecture provides an open, standards-based management and operation framework that delivers solutions. Global Storage Manager gives a centralized view of a complete storage infrastructure, provides historical trending, and up-to-the-minute inventory, status, and utilization data. AssuredStorage Management Systems (ASMS) offers the technology, services, best practices, and knowledge service providers need to independently deliver and support managed storage services.

TeraCloud, Corp. — Storage Management Software
www.tcloud.com — Bellevue, WA

TeraCloud Corporation was founded in 1991 as Trilogy Software. Originally, the company focus was as a solution provider in the mainframe world, but as mainframe and distributed environments have begun to converge, TeraCloud has evolved to provide solutions for both markets. TeraCloud enables companies to: centrally manage complex storage infrastructures for both mainframe and distributed environments; manage storage resources efficiently across different software and hardware platforms; and, discover, monitor, report, manage, automate, and predict resource and file-level data throughout the information lifecycle.

TrelliSoft Inc. — Storage Management Software
www.trellisoft.com — Glen Ellyn, IL

TrelliSoft was founded in 1999 to JAVA- and web-based Storage Resource Management (SRM) solution. Supporting the most popular operating systems, including Windows, Solaris, AIX, HP-UX, Novell NetWare, and Linux, StorageAlert helps organizations ensure application availability and forecast future growth.

TrueSAN Networks, Inc. — Storage Management Software
www.truesan.com — Scotts Valley, CA

TrueSAN Networks, Inc. provides storage software that simplifies and enhances the management of storage networks. TrueSAN's Cloudbreak Storage Operating System is a network-based platform for managing heterogeneous storage environments. It includes storage virtualization, storage network and device management, storage resource management, business continuance applications and policy management in one platform.

Public Companies

FalconStor Software, Inc. — Storage Management Software
www.falconstor.com — Melville, NY

Market Capitalization - $262.4 million — NASD: FALC
TTM Sales - $7.8 million
TTM EBITDA - $(11.4) million

FalconStor Software, Inc. is a provider of storage networking infrastructure software. The Company's open software approach to storage networking enables companies to capture and manipulate enterprise data and existing storage solutions, without rendering those solutions obsolete. FalconStor allows companies to adopt fiber channel technology while maximizing their prior investments in ethernet information technology, infrastructure and taking full advantage of the ubiquitous connectivity of Internet protocol (IP). IPStor, the Company's flagship product, is a storage solution that combines industry-standard connectivity with network storage services. The IPStor platform began shipping in May 2001. On August 23, 2001, FalconStor, Inc. completed a reverse merger with Network Peripherals, Inc. to form FalconStor Software, Inc.

BMC Software, Inc. — Storage Management Software
www.bmc.com — Houston, TX

Market Capitalization - $4.3 billion — NYSE: BMC
TTM Sales - $1.3 billion
TTM EBITDA - $(41.8) million

BMC Software, Inc. is an independent systems software vendor, delivering comprehensive enterprise management. The Company is focused on Assuring Business Availability by providing software solutions that enhance the availability, performance and recoverability of customers' business-critical applications to help them better manage their businesses. The Company's portfolio of systems management solutions

allows its customers to manage the various components and technologies within their information technology (IT) systems from end to end, from legacy databases and applications on large mainframes to customer-facing Web portals and exchanges.

EMC Corporation — Storage Management Software
www.emc.com — Hopkington, MA

Market Capitalization - $17.0 billion — NYSE: EMC
TTM Sales - $6.1 billion
TTM EBITDA - $(640.7) million

EMC Corporation designs, manufactures, markets and supports a wide range of hardware and software products and provides services for the storage, management, protection and sharing of electronic information. These integrated solutions enable organizations to create an enterprise information infrastructure (E-Infostructure). Information storage products consist of information storage systems and information storage software sold to customers that use a variety of computing platforms for key applications, including electronic commerce, data warehousing and transaction processing, and information storage systems provides consulting, assessments, implementations, integration, operations management, day-to-day support and maintenance to customers. In September 2001, the Company acquired Luminate Software Corporation, a privately held software company based in Redwood City, California.

Legato Systems, Inc. — Storage Management Software
www.legato.com — Mountain View, CA

Market Capitalization - $577.2 million — Nasdaq: LGTO
TTM Sales - $237.2 million
TTM EBITDA - $(162.2) million

Legato Systems, Inc. develops, markets and supports software products and services for information management of distributed, open systems environments. Information management includes the protection, recovery and avoidance of failures of data and applications so that business users can gain access to the information that they need when they need it. Distributed, open systems are generally understood to include UNIX, Windows NT, Windows 2000 and Linux server computer systems. The Company offers software products for backup, recovery and archive of data; for managing the performance and operation of application services, and for optimizing the use of storage devices and media, including disk and tape. The Company's customers use its products and services to safeguard and manage their information assets and associated applications so that their businesses can continue to operate, and do so in a more cost-effective manner.

Veritas Software Corp. — Storage Management Software
www.veritas.com — Mountain View, CA

Market Capitalization - $9.6 billion — Nasdaq: VRTS
TTM Sales - $1.5 billion
TTM EBITDA - $(307.2) million

Veritas Software Corporation is an independent supplier of storage software products and services. Storage software includes storage management and data protection software, as well as clustering, replication and storage area networking software. The Company offers solutions to help solve the problems of data-intensive business environments by providing essential storage software and storage virtualization solutions that enable customers to protect and access their business-critical data. The Company's products operate across computing environments ranging from the desktop computer to the large enterprise data center, including storage area networks, to protect critical data, to provide high availability and to guard against disasters.